International Journal of Medical and Pharmaceutical Research

Online ISSN-2958-3683 | Print ISSN-2958-3675
Frequency: Bi-Monthly
Available online on: https://ijmpr.in/

Research Article

CLINICAL PROFILE AND OUTCOMES OF PATIENTS WITH POLYCYSTIC OVARIAN SYNDROME

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OPEN ACCESS

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Received: 02-08-2025
Accepted: 24-08-2025
Available online: 11-09-2025

ABSTRACT

Background: Polycystic ovarian syndrome (PCOS) is a common endocrine disorder affecting women of reproductive age, with diverse reproductive, metabolic, and clinical manifestations. Its variable presentation often delays diagnosis and increases long-term morbidity. This study was conducted to evaluate the clinical profile and treatment outcomes of women with PCOS attending a tertiary care hospital.

Materials and Methods: This hospital-based observational study included 50 women diagnosed with PCOS using the Rotterdam criteria. Detailed history, clinical examination, anthropometry, hormonal evaluation, and ultrasound findings were recorded. Patients were assessed for menstrual irregularities, infertility, obesity, hyperandrogenism, and metabolic abnormalities. Treatment outcomes including conception rates were evaluated during follow-up. Data were analyzed using descriptive statistics.

Results: The mean age of participants was 24.6 years. Menstrual irregularities (80%) and infertility (46%) were the most common complaints. Obesity was present in 60% of women, while clinical hyperandrogenism manifested as hirsutism (42%) and acne (38%). Metabolic abnormalities included insulin resistance (40%) and dyslipidemia (32%). Thyroid dysfunction was noted in 12% of patients. Ultrasound showed bilateral polycystic ovaries in 70% of cases. Among infertile women, 78% conceived within six months following treatment with ovulation induction or assisted reproductive techniques.

Conclusion: PCOS in our study predominantly affected young women and was characterized by menstrual disturbances, obesity, hyperandrogenism, and significant metabolic derangements. Early diagnosis, lifestyle modification, and individualized treatment are essential to optimize reproductive and metabolic outcomes.

Keywords*: Polycystic ovarian syndrome, Clinical profile, Infertility, Insulin resistance, Outcomes.*

INTRODUCTION:

Polycystic ovarian syndrome (PCOS) is one of the most common endocrine disorders affecting women of reproductive age and a leading cause of anovulatory infertility. Globally, the prevalence of PCOS ranges from 6% to 20% depending on the diagnostic criteria applied (Rotterdam, NIH, AE-PCOS), study population, and geographic location (1,2). In India, community-based studies have reported prevalence rates between 9% and 36%, reflecting both genetic and lifestyle -related predispositions (3,4).

The syndrome is characterized by a heterogeneous spectrum of clinical, biochemical, and ultrasonographic features. The **Rotterdam consensus (2003)**, widely adopted for diagnosis, requires the presence of at least two of the following: oligo/anovulation, clinical/biochemical hyperandrogenism, and polycystic ovarian morphology on ultrasound (5). However, due to its diverse presentation, patients may present to clinicians with a wide variety of complaints, ranging from menstrual irregularities, hirsutism, acne, and obesity to infertility and metabolic disturbances (6,7).

The pathophysiology of PCOS is complex and multifactorial, involving genetic, environmental, and lifestyle factors. Insulin resistance plays a pivotal role, contributing not only to hyperandrogenism but also to long-term complications such as impaired glucose tolerance, type 2 diabetes mellitus, dyslipidemia, metabolic syndrome, and increased cardiovascular risk (8,9). In addition to physical morbidities, PCOS is associated with psychological issues such as depression, anxiety, and reduced quality of life, further emphasizing its multidimensional impact on women's health (10).

From a reproductive perspective, PCOS is a major cause of infertility due to chronic anovulation. Women with PCOS also face higher risks of adverse pregnancy outcomes, including gestational diabetes, hypertensive disorders, and preterm birth (11,12). The variability in clinical manifestations necessitates region-specific studies to better understand patient profiles, as lifestyle, diet, and genetic predispositions differ across populations.

In India and other low- and middle-income countries, where awareness about reproductive and metabolic health is still limited, PCOS often remains underdiagnosed or diagnosed late, increasing the risk of long-term complications (3,13). Understanding the clinical profile and outcomes of women with PCOS in a hospital setting can provide valuable insights into early diagnosis, risk stratification, and management strategies tailored to local populations.

Hence, the present study was undertaken to evaluate the **clinical presentation, biochemical profile, and reproductive outcomes** of patients diagnosed with PCOS in a tertiary care hospital, with the aim of contributing to evidence-based management of this common yet challenging condition.

MATERIALS AND METHODS:

Study Design and Setting

This was a **hospital-based cross-sectional observational study** conducted in the Department of Obstetrics and Gynaecology in a tertiary care teaching hospital over a period of **12 months**

Study Population

Women of reproductive age group (15–40 years) presenting to the gynecology outpatient department (OPD) with features suggestive of polycystic ovarian syndrome (PCOS) were screened for eligibility.

Sample Size

A total of **50 patients** were included in the study. The sample size was based on feasibility and patient availability during the study period. Similar small-sample studies have been conducted in tertiary centers to evaluate clinical profiles of PCOS patients (Joshi et al., 2014; Nidhi et al., 2011).

Inclusion Criteria

- Women aged 15–40 years.
- Diagnosed with PCOS as per **Rotterdam 2003 criteria** (at least two of the following):
    1. Oligo/anovulation.
    2. Clinical and/or biochemical features of hyperandrogenism.
    3. Polycystic ovaries on ultrasound (≥12 follicles of 2–9 mm in diameter and/or ovarian volume >10 mL in at least one ovary).

Exclusion Criteria

- Women with other endocrine disorders (thyroid dysfunction, hyperprolactinemia, Cushing's syndrome, congenital adrenal hyperplasia).
- Patients with ovarian tumors or adrenal disorders.
- Women on hormonal treatment within the last 3 months.

Data Collection Tools and Procedure

A predesigned, pretested structured proforma was used to collect the following data:

1. **Sociodemographic details** – age, marital status, socioeconomic status, educational background.
2. **Clinical history** – menstrual irregularities (oligomenorrhea, amenorrhea, polymenorrhea), infertility, weight gain, acne, hirsutism, alopecia.
3. **General and systemic examination** –
    - Height, weight, and BMI classification (WHO criteria for Asians).
    - Waist–hip ratio.
    - Assessment of hirsutism by **modified Ferriman-Gallwey (mFG) score** (≥8 considered significant).
    - Grading of acne and alopecia.
4. **Investigations** –
    - Hormonal assays: LH, FSH, LH/FSH ratio, serum testosterone, prolactin, thyroid profile.

- Metabolic profile: fasting blood sugar, fasting insulin (HOMA-IR for insulin resistance), lipid profile.
- Ultrasound: Transvaginal (married women) or transabdominal (unmarried women) sonography for ovarian morphology.

Outcome Measures

- **Clinical profile:** distribution of menstrual disturbances, hirsutism, acne, obesity, infertility.
- **Biochemical profile:** prevalence of insulin resistance, dyslipidemia, altered LH/FSH ratio.
- **Reproductive outcomes:** conception rates after lifestyle modification, ovulation induction, or assisted reproductive techniques (for those seeking fertility treatment).

Follow-Up

Patients desiring fertility were followed up for **6 months** with lifestyle advice and treatment (clomiphene citrate/letrozole for ovulation induction; metformin for insulin resistance as required). Outcomes were noted in terms of menstrual regularization and pregnancy.

Statistical Analysis

Data were entered in Microsoft Excel and analyzed using **SPSS software version 20.** Descriptive statistics were used: mean ± SD for continuous variables, proportions (%) for categorical variables.

RESULTS:

The mean age of patients was **24.6 ± 4.2 years** (range 17–36 years). The majority of patients (60%) were in the 20–29 years age group as shown in Table 1

Table 1: Age Distribution of Study Population

Age group (years)	Number of patients	Percentage (%)
<20	10	20
20–29	30	60
≥30	10	20
Total	**50**	**100**

The most common presenting complaint was **menstrual irregularity** (80%), followed by infertility (46%), hirsutism (42%), acne (38%), and obesity (30%) as shown in Table 2

Table 2: Presenting Complaints in PCOS Patients

Complaint	Number of patients	Percentage (%)
Menstrual irregularity	40	80
Infertility	23	46
Hirsutism	21	42
Acne	19	38
Obesity	15	30
Alopecia	6	12

The mean BMI of patients was **27.3 ± 3.8 kg/m²**. Overweight and obesity were observed in 60% of patients as shown in Table 3

Table 3: Distribution of Patients According to BMI

BMI Category (WHO-Asian)	Number of patients	Percentage (%)
Normal weight (<23)	12	24
Overweight (23–24.9)	8	16
Obese (≥25)	30	60
Total	**50**	**100**

Clinical hyperandrogenism was present in 42% (hirsutism) and 38% (acne). Acanthosis nigricans (marker of insulin resistance) was observed in 28% as shown in Table 4

Table 4: Distribution of Clinical Features in PCOS

Feature	Number of patients	Percentage (%)
Hirsutism (mFG ≥8)	21	42
Acne	19	38
Acanthosis nigricans	14	28
Alopecia	6	12

Hormonal abnormalities included elevated LH/FSH ratio in 34%, raised testosterone in 30%, and deranged thyroid profile in 12%. Insulin resistance was found in 40%, while dyslipidemia was seen in 32% as shown in Table 5

Table 5: Biochemical and Metabolic Abnormalities

Parameter	Number of patients	Percentage (%)
Elevated LH/FSH ratio (>2)	17	34
Elevated testosterone	15	30
Insulin resistance (HOMA-IR)	20	40
Dyslipidemia	16	32
Hypothyroidism	6	12

Bilateral polycystic ovaries were found in 70% of patients, while 30% had unilateral findings as shown in Table 6.

Table 6: Distribution of Ovarian Morphology on Ultrasound

USG Findings	Number of patients	Percentage (%)
Bilateral PCOS ovaries	35	70
Unilateral PCOS ovary	15	30
Total	50	100

Out of 23 women seeking treatment for infertility, 8 conceived spontaneously, 10 after ovulation induction (clomiphene/letrozole), and 2 required assisted reproductive techniques (ART). Three did not achieve conception during the follow-up period as shown in Table 7.

Table 7: Fertility Outcomes in PCOS Patients Seeking Pregnancy

Mode of conception	Number of patients	Percentage (%)
Spontaneous conception	8	34.8
After ovulation induction	10	43.5
After ART (IVF/ICSI)	2	8.7
No conception during study	3	13.0

DISCUSSION:

Polycystic ovarian syndrome (PCOS) is one of the most common endocrinopathies among women of reproductive age, manifesting with varied clinical, hormonal, and metabolic features. In our study of 50 women, the mean age was 24.6 years, with the majority between 20–29 years. This aligns with previous reports, which highlight that PCOS predominantly affects women in their reproductive years (14,15). A similar age distribution was reported by Nidhi et al. (16) in an Indian cohort of adolescents and young women, emphasizing that PCOS often begins early in life but is frequently diagnosed later due to heterogeneous manifestations.

The most common presenting complaint in our study was menstrual irregularity (80%), followed by infertility (46%). This is consistent with other Indian studies, where menstrual dysfunction was reported in 75–85% of cases (17,18). Infertility was seen in nearly half of our patients, a finding comparable to Joshi et al. (19), who observed infertility in 40–50% of Indian women with PCOS. These findings underscore the reproductive implications of PCOS, particularly in populations where early marriage and fertility expectations are common.

Obesity was observed in 60% of our patients, with a mean BMI of 27.3 kg/m². Several Indian studies have reported high rates of overweight and obesity among PCOS patients, though slightly lower than in Western populations (20,21). The high prevalence of obesity is clinically relevant, as it worsens insulin resistance, hyperandrogenism, and reproductive outcomes.

Notably, a meta-analysis by Lim et al. (22) found that lifestyle modification and weight reduction significantly improve menstrual regularity and ovulation rates in obese PCOS patients, highlighting the importance of early intervention.

Clinical hyperandrogenism, manifested as hirsutism (42%) and acne (38%), was observed in our cohort. These figures are comparable to studies by Azziz et al. (23), who reported hirsutism in 50–70% of PCOS women, although prevalence varies by ethnicity, with South Asians having higher rates of hirsutism compared to East Asians. This supports the role of ethnic and genetic differences in phenotypic expression of PCOS.

Metabolic abnormalities were common in our study: insulin resistance (40%) and dyslipidemia (32%). This is in line with studies by Legro et al. (24) and Diamanti-Kandarakis et al. (25), who emphasized insulin resistance as a central feature of PCOS, present in 50–70% of women, independent of obesity. Insulin resistance not only contributes to hyperandrogenism but also predisposes women to type 2 diabetes, metabolic syndrome, and cardiovascular risk. Early screening and management are therefore crucial in long-term care.

Thyroid dysfunction was observed in 12% of our patients, similar to reports suggesting a higher prevalence of subclinical hypothyroidism in PCOS compared to the general population (26). This overlap complicates the clinical picture and reinforces the need for thyroid screening in PCOS patients.

Ultrasound findings revealed bilateral polycystic ovaries in 70% of cases, consistent with the Rotterdam diagnostic criteria (18). However, it is well recognized that ultrasound findings alone are insufficient for diagnosis, as polycystic morphology can be found in up to 20–30% of healthy women without clinical features (27). Thus, clinical correlation remains essential. Among infertile women in our study, 78% achieved conception within six months of treatment—either spontaneously, with ovulation induction, or with ART. This is encouraging and comparable with reports that ovulation induction agents like letrozole and clomiphene citrate achieve pregnancy rates of 40–50% (28,29). Recent evidence suggests that letrozole may be superior to clomiphene for ovulation induction, especially in obese women (30).

Overall, our findings are consistent with both Indian and international studies, reinforcing that PCOS is a multifaceted disorder with reproductive, metabolic, and psychological consequences. Importantly, the high prevalence of obesity and insulin resistance in our study population highlights the need for integrated management strategies—incorporating lifestyle modification, pharmacological interventions (metformin, ovulation induction agents), and psychological support.

CONCLUSION:

Our study demonstrates that menstrual irregularities, infertility, obesity, and clinical hyperandrogenism are the predominant features of PCOS, with significant metabolic abnormalities including insulin resistance and dyslipidemia. Early diagnosis, lifestyle interventions, and individualized treatment are crucial for optimizing both reproductive and metabolic outcomes.

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