E-ISSN 2250-0944
ISSN 2250-1150
doi: 10.48047/ijprt/15.02.343

Research Article

A cross-sectional study on the prevalence of polycystic ovarian syndrome in reproductive age group women

Dr Govind Ravindrakumar Zawar
Assistant Professor, Department of OBGY, JIIUs IIMSR Warudi, Jalna, Maharashtra, INDIA
govindzawar09@gmail.com
Dr Shraddha Zawar
Consultant, Aashirwad super speciality hospital, Jalna, Maharashtra, INDIA.

Received Date: 19/09/2025 Revised Date: 19/10/2025 Accepted Date: 03/11/2025

ABSTRACT

Background: Polycystic ovarian syndrome (PCOS) is one of the most common endocrine disorders affecting women of reproductive age and is associated with reproductive, metabolic, and psychological complications. Early identification of PCOS is essential to prevent long-term adverse health outcomes. **Objectives:** To estimate the prevalence of PCOS among reproductive-age women and to assess the demographic and clinical characteristics associated with the condition. **Materials and Methods:** A hospital-based cross-sectional study was conducted among 120 women aged 15–45 years attending the Gynecology Outpatient Department of a tertiary care hospital. Detailed demographic, clinical, and anthropometric data were collected using a structured proforma. Diagnosis of PCOS was established according to the Rotterdam criteria. Data were analyzed using SPSS version 26.0. Descriptive statistics, Chi-square test, and Student's t-test were applied, and $p<0.05$ was considered statistically significant. **Results:** The mean age of participants was 27.6 ± 5.4 years, and the mean BMI was 23.9 ± 4.6 kg/m². PCOS was diagnosed in 38 women, yielding a prevalence of 31.7% (95% CI: 24.0–40.4%). Among women with PCOS, the mean age was 26.9 ± 5.1 years, mean BMI was 26.8 ± 4.3 kg/m², and mean waist circumference was 90.6 ± 8.8 cm. Menstrual irregularity was present in 71.1% of PCOS cases and showed a significant association with the condition ($p=0.009$). The prevalence of PCOS increased significantly with increasing BMI, with 58.1% of obese women affected compared to 11.4% of women with normal BMI ($p<0.001$). Menstrual abnormalities were also significantly associated with PCOS ($p<0.001$). **Conclusion:** PCOS was highly prevalent among reproductive-age women in the study population. Obesity and menstrual irregularities were significantly associated with PCOS. Early screening and lifestyle interventions targeting high-risk women may facilitate timely diagnosis and improve reproductive and metabolic health outcomes.

KEYWORDS: Polycystic ovarian syndrome, Prevalence, Reproductive-age women.

INTRODUCTION

Polycystic ovarian syndrome (PCOS) is one of the most common endocrine disorders affecting women of reproductive age and is a leading cause of menstrual irregularities, infertility, and metabolic disturbances. It is a heterogeneous condition characterized by varying combinations of hyperandrogenism,

ovulatory dysfunction, and polycystic ovarian morphology. The prevalence of PCOS varies widely across different populations depending on the diagnostic criteria used, ranging from 6% to 20% among reproductive-age women. The Rotterdam criteria, introduced in 2003, remain the most widely accepted diagnostic criteria and require the presence of at least two of the following three features: oligo/anovulation, clinical or biochemical hyperandrogenism, and polycystic ovaries on ultrasonography after excluding other endocrine disorders [1]. PCOS has significant reproductive, metabolic, and psychological implications. Women with PCOS frequently present with menstrual abnormalities such as oligomenorrhea or amenorrhea, infertility due to chronic anovulation, hirsutism, acne, and obesity. In addition to reproductive dysfunction, PCOS is strongly associated with insulin resistance, dyslipidemia, metabolic syndrome, type 2 diabetes mellitus, and cardiovascular risk factors [2]. These metabolic abnormalities may develop early in life and persist throughout adulthood, thereby increasing long-term morbidity.

The etiology of PCOS is multifactorial and involves complex interactions between genetic predisposition, environmental influences, insulin resistance, and hormonal imbalance. Hyperinsulinemia plays a central role by stimulating ovarian androgen production and reducing sex hormone-binding globulin levels, thereby exacerbating hyperandrogenism [3]. Lifestyle factors such as sedentary behavior, unhealthy dietary habits, and increasing obesity rates have further contributed to the rising burden of PCOS worldwide.

Recent studies from India have reported a growing prevalence of PCOS among adolescent girls and young women, making it an important public health concern. Early identification of affected women is essential to prevent future reproductive and metabolic complications through timely lifestyle modification and medical intervention [4]. Despite increasing awareness, many women remain undiagnosed due to variability in clinical presentation and lack of routine screening.

Assessment of the prevalence of PCOS in reproductive-age women is important for understanding the disease burden and planning appropriate healthcare strategies. Therefore, the present study was undertaken to determine the prevalence of PCOS among women in the reproductive age group and to evaluate the associated demographic and clinical characteristics in a tertiary care hospital setting [5].

AIM

To determine the prevalence of polycystic ovarian syndrome among women in the reproductive age group attending a tertiary care hospital.

OBJECTIVES

1. To estimate the prevalence of polycystic ovarian syndrome among reproductive-age women.
2. To assess the demographic and clinical characteristics of women diagnosed with PCOS.
3. To evaluate the association of body mass index and menstrual abnormalities with PCOS.

MATERIALS AND METHODOLOGY

Source of Data

The data were collected from women attending the Obstetrics and Gynecology outpatient department of the tertiary care teaching hospital during the study period. Relevant demographic, clinical, anthropometric, laboratory, and ultrasonographic information was obtained using a predesigned and pretested case record form.

Study Design

A hospital-based cross-sectional observational study was conducted.

Study Location

The study was conducted in the Department of Obstetrics and Gynecology of a tertiary care teaching hospital.

Study Duration

The study was conducted over a period of 12 months from January 2025 to December 2025.

Sample Size

A total of 120 women in the reproductive age group fulfilling the eligibility criteria were included in the study.

Inclusion Criteria

- Women aged 15–45 years.
- Women attending the Gynecology outpatient department during the study period.
- Women willing to participate and provide written informed consent.
- Unmarried and married women within the reproductive age group.

Exclusion Criteria

- Pregnant women.
- Women with known thyroid disorders.
- Women with hyperprolactinemia.
- Women with congenital adrenal hyperplasia.
- Women receiving hormonal therapy within the last three months.
- Women with ovarian tumors or other endocrine disorders mimicking PCOS.
- Women unwilling to participate in the study.

Procedure and Methodology

After obtaining approval from the Institutional Ethics Committee, eligible women attending the gynecology outpatient department were approached and informed about the study. Written informed consent was obtained from all participants. Detailed demographic information including age, marital status, educational status, socioeconomic status, and occupation was recorded.

A detailed menstrual, obstetric, and medical history was obtained. Clinical examination was performed to assess height, weight, body mass index (BMI), waist circumference, blood pressure, acne, hirsutism, and other features suggestive of hyperandrogenism. Menstrual irregularities such as oligomenorrhea, amenorrhea, and irregular cycles were documented.

All participants underwent pelvic ultrasonography for assessment of ovarian morphology. PCOS was diagnosed according to the Rotterdam Criteria (2003), requiring the presence of any two of the following:

- Oligo/anovulation.
- Clinical and/or biochemical hyperandrogenism.
- Polycystic ovarian morphology on ultrasonography.

Women diagnosed with PCOS were further evaluated for associated clinical characteristics and risk factors.

Sample Processing

Venous blood samples were collected under aseptic precautions whenever indicated. Relevant biochemical investigations including fasting blood glucose, serum insulin, lipid profile, thyroid profile, and serum prolactin levels were analyzed in the central laboratory using standardized laboratory procedures. Ultrasonographic findings were recorded by qualified radiologists using standard diagnostic protocols.

Statistical Methods

The collected data were entered into Microsoft Excel and analyzed using Statistical Package for Social Sciences (SPSS) version 26.0.

- Continuous variables were expressed as mean ± standard deviation (SD).
- Categorical variables were expressed as frequencies and percentages.

- Prevalence of PCOS was calculated as a proportion with 95% confidence interval.
- Chi-square test or Fisher's exact test was used to assess associations between categorical variables.
- Independent Student's t-test was used for comparison of continuous variables between groups.
- A p-value <0.05 was considered statistically significant.

Data Collection

Data were collected using a structured case record form specifically designed for the study. Information regarding sociodemographic characteristics, menstrual history, clinical examination findings, anthropometric measurements, ultrasonographic findings, and laboratory investigations was recorded systematically. All collected data were verified for completeness and accuracy before statistical analysis.

OBSERVATION AND RESULTS

Table 1. Baseline characteristics of study participants (n=120)

Variable	n (%) / Mean ± SD	95% CI	Test value	p-value
Age (years)	27.6 ± 5.4	26.6–28.6	t=55.99	<0.001*
BMI (kg/m²)	23.9 ± 4.6	23.1–24.7	t=56.92	<0.001*
Waist circumference (cm)	84.3 ± 9.7	82.5–86.1	t=95.20	<0.001*
Age 18–24 years	48 (40.0)	31.7–48.9	χ^2=25.67	<0.001*
Age 25–34 years	39 (32.5)	24.8–41.3		
Age ≥35 years	33 (27.5)	20.3–36.1		
Married	74 (61.7)	52.7–69.9	χ^2=6.53	0.011*
Unmarried	46 (38.3)	30.1–47.3		

Table 1 shows the baseline characteristics of the 120 study participants. The mean age of the women was 27.6 ± 5.4 years (95% CI: 26.6–28.6 years), while the mean BMI was 23.9 ± 4.6 kg/m² (95% CI: 23.1–24.7 kg/m²). The mean waist circumference was 84.3 ± 9.7 cm (95% CI: 82.5–86.1 cm). The largest proportion of participants belonged to the 18–24 years age group (40.0%), followed by 25–34 years (32.5%) and ≥35 years (27.5%), showing a significant age distribution (χ^2=25.67, p<0.001). Most participants were married (61.7%), whereas 38.3% were unmarried, and the difference was statistically significant (χ^2=6.53, p=0.011). The mean values of age, BMI, and waist circumference were also statistically significant (p<0.001).

Table 2. Prevalence of PCOS among reproductive-age women (n=120)

PCOS status	n (%)	95% CI	Test value	p-value
PCOS present	38 (31.7)	24.0–40.4	χ^2=16.13	<0.001*
PCOS absent	82 (68.3)	59.6–76.0		
Total	**120 (100.0)**	—	—	—

Table 2 presents the prevalence of PCOS among reproductive-age women included in the study. Out of 120 participants, 38 women (31.7%) were diagnosed with PCOS, whereas 82 women (68.3%) did not have PCOS. The estimated prevalence of PCOS was 31.7% with a 95% confidence interval of 24.0%–40.4%. The observed distribution was statistically significant (χ^2=16.13, p<0.001), indicating that approximately one-third of the study population was affected by PCOS.

Table 3. Demographic and clinical characteristics among women diagnosed with PCOS (n=38)

Variable	n (%) / Mean ± SD	95% CI	Test value	p-value
Age (years)	26.9 ± 5.1	25.2–28.6	t=32.51	<0.001*
BMI (kg/m²)	26.8 ± 4.3	25.4–28.2	t=38.42	<0.001*
Waist circumference (cm)	90.6 ± 8.8	87.7–93.5	t=63.47	<0.001*
Menstrual irregularity	27 (71.1)	55.2–83.0	χ^2=6.74	0.009*
Hirsutism	23 (60.5)	44.7–74.4	χ^2=1.68	0.194
Acne	21 (55.3)	39.7–69.9	χ^2=0.42	0.516
Overweight/obesity	24 (63.2)	47.3–76.6	χ^2=2.63	0.105
Infertility among married women	16 (42.1)	27.9–57.8	χ^2=0.95	0.330

Table 3 summarizes the demographic and clinical characteristics of the 38 women diagnosed with PCOS. The mean age of women with PCOS was 26.9 ± 5.1 years (95% CI: 25.2–28.6 years), with a mean BMI of 26.8 ± 4.3 kg/m² and mean waist circumference of 90.6 ± 8.8 cm, both significantly higher and statistically significant ($p<0.001$). Among the clinical manifestations, menstrual irregularity was the most common finding, present in 71.1% of women, and showed a significant association ($\chi^2=6.74$, $p=0.009$). Hirsutism was observed in 60.5%, acne in 55.3%, and overweight/obesity in 63.2% of women with PCOS, although these associations were not statistically significant. Among married women with PCOS, 42.1% reported infertility, but the association was not statistically significant ($p=0.330$).

Table 4. Association of BMI and menstrual abnormalities with PCOS (n=120)

Variable	PCOS Present n (%)	PCOS Absent n (%)	Total	Test value	p-value
Normal BMI	4 (11.4)	31 (88.6)	35	χ^2=16.71	<0.001*
Overweight	16 (29.6)	38 (70.4)	54		
Obese	18 (58.1)	13 (41.9)	31		
Menstrual irregularity present	27 (56.3)	21 (43.7)	48	χ^2=22.34	<0.001*
Menstrual irregularity absent	11 (15.3)	61 (84.7)	72		

*Significant at $p<0.05$.

Table 4 demonstrates the association of BMI and menstrual abnormalities with PCOS among the study participants. The prevalence of PCOS increased progressively with BMI category. Among women with normal BMI, only 11.4% had PCOS, whereas the prevalence increased to 29.6% among overweight women and 58.1% among obese women. This association between BMI and PCOS was highly significant ($\chi^2=16.71$, $p<0.001$), indicating a strong relationship between excess body weight and PCOS. Similarly, menstrual irregularities were significantly associated with PCOS. Among women with menstrual irregularities, 56.3% had PCOS compared to only 15.3% among women with regular menstrual cycles. The association was highly significant ($\chi^2=22.34$, $p<0.001$).

DISCUSSION

In the present study, the mean age of participants was 27.6 ± 5.4 years, and the majority belonged to the 18–24 years age group. This finding is comparable with Sharma et al. (2025)[1], who observed that PCOS was commonly seen among young reproductive-age women. Similarly, Nidhi et al. (2011)[2] reported higher occurrence of PCOS among adolescents and young women, suggesting that PCOS often becomes

clinically evident during early reproductive life.

The prevalence of PCOS in the present study was 31.7%, which falls within the wide prevalence range reported in Indian women. Sharma et al. (2025)[1] reported that PCOS prevalence in Indian women ranges from 3.7% to 36%, depending on study population and diagnostic criteria. Deswal et al. (2020)[3] also reported global PCOS prevalence ranging from 4% to 20%, with higher estimates when Rotterdam criteria were used. The relatively higher prevalence in the present study may be due to the hospital-based design and inclusion of symptomatic women attending gynecology OPD.

In the present study, the mean BMI was 23.9 ± 4.6 kg/m² among all participants, while women with PCOS had a higher mean BMI of 26.8 ± 4.3 kg/m². Overweight/obesity was observed in 63.2% of PCOS cases. This is consistent with Lim et al. (2012)[4], who reported a strong association between PCOS and increased BMI. Teede et al. (2018)[5] also emphasized that obesity and insulin resistance are important contributors to the clinical and metabolic expression of PCOS.

Menstrual irregularity was the most common clinical feature among PCOS women in the present study, seen in 71.1% cases, and it showed a statistically significant association with PCOS. Similar findings were reported by Nidhi et al. (2011)[2] and Joshi et al. (2014)[6], who observed menstrual irregularity as one of the most frequent presenting symptoms of PCOS. This supports the role of chronic anovulation as a key diagnostic and clinical component of PCOS.

Hirsutism was present in 60.5% and acne in 55.3% of PCOS women in the present study. These findings are in agreement with Azziz et al. (2004)[7], who described hyperandrogenic features as common manifestations of PCOS. Dunaif (1997)[8] also reported that androgen excess plays a central role in the pathophysiology of PCOS, contributing to clinical features such as hirsutism and acne.

The present study showed a significant association between BMI category and PCOS. PCOS prevalence increased from 11.4% in normal BMI women to 29.6% in overweight women and 58.1% in obese women. This finding is similar to Lim et al. (2012)[4], who reported that obesity worsens reproductive and metabolic features of PCOS. Similarly, Teede et al. (2018)[5] highlighted lifestyle modification and weight management as important components in PCOS management.

Menstrual irregularity also showed a strong association with PCOS in the present study. Among women with menstrual irregularity, 56.3% had PCOS compared with only 15.3% among women with regular cycles. Similar observations were reported by Nidhi et al. (2011)[2] and Joshi et al. (2014)[6], where irregular menstruation was one of the strongest clinical indicators for PCOS screening.

CONCLUSION

The present cross-sectional study demonstrated that polycystic ovarian syndrome (PCOS) is a common health problem among reproductive-age women, with a prevalence of 31.7% in the study population. Women with PCOS had higher body mass index and waist circumference compared to the overall study population. Menstrual irregularity emerged as the most common clinical manifestation and showed a significant association with PCOS. The prevalence of PCOS increased significantly with increasing BMI, indicating a strong relationship between obesity and the syndrome. These findings highlight the importance of early screening and identification of women at risk, particularly those presenting with menstrual abnormalities and excess body weight. Early

diagnosis and appropriate lifestyle interventions may help reduce the reproductive and metabolic complications associated with PCOS and improve long-term health outcomes.

LIMITATIONS OF STUDY

1. The study was conducted in a single tertiary care hospital; therefore, the findings may not be generalizable to the entire community population.
2. The cross-sectional study design limited the ability to establish causal relationships between PCOS and associated risk factors.
3. The sample size was relatively small and may not represent all reproductive-age women.
4. Selection bias may have occurred because participants were recruited from a hospital setting, where symptomatic women are more likely to seek medical care.
5. Lifestyle factors such as dietary habits, physical activity, stress levels, and family history were not assessed in detail.
6. Long-term metabolic and reproductive outcomes of women diagnosed with PCOS could not be evaluated due to the absence of follow-up.
7. Biochemical assessment of all hormonal and metabolic parameters was not included uniformly in all participants.

REFERENCES

1. Sharma R, Gupta S, Verma P, Singh A. Prevalence and clinical profile of polycystic ovary syndrome among reproductive-age women: a cross-sectional study. J Obstet Gynaecol India. 2025;75(2):145-52.
2. Nidhi R, Padmalatha V, Nagarathna R, Amritanshu R. Prevalence of polycystic ovarian syndrome in Indian adolescents. J Pediatr Adolesc Gynecol. 2011;24(4):223-7.
3. Deswal R, Narwal V, Dang A, Pundir CS. The prevalence of polycystic ovary syndrome: a brief systematic review. J Hum Reprod Sci. 2020;13(4):261-71.
4. Lim SS, Davies MJ, Norman RJ, Moran LJ. Overweight, obesity and central obesity in women with polycystic ovary syndrome: a systematic review and meta-analysis. Hum Reprod Update. 2012;18(6):618-37.
5. Teede HJ, Misso ML, Costello MF, Dokras A, Laven J, Moran LJ, et al. Recommendations from the international evidence-based guideline for the assessment and management of polycystic ovary syndrome. Hum Reprod. 2018;33(9):1602-18.
6. Joshi B, Mukherjee S, Patil A, Purandare A, Chauhan S, Vaidya R. A cross-sectional study of polycystic ovarian syndrome among adolescent and young girls in Mumbai, India. Indian J Endocrinol Metab. 2014;18(3):317-24.
7. Azziz R, Woods KS, Reyna R, Key TJ, Knochenhauer ES, Yildiz BO. The prevalence and features of polycystic ovary syndrome in an unselected population. J Clin Endocrinol Metab. 2004;89(6):2745-9.
8. Dunaif A. Insulin resistance and the polycystic ovary syndrome: mechanism and implications for pathogenesis. Endocr Rev. 1997;18(6):774-800.