

Prevalence and Symptoms of Polycystic Ovaries and Polycystic Ovary Syndrome

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Abstract

Original Research Article

Background: Polycystic ovary syndrome (PCOS) and polycystic ovaries (PCO) are common endocrine disorders among women of reproductive age, often associated with reproductive, metabolic, and psychological consequences. This study aimed to determine the prevalence and symptom patterns of PCO and PCOS among women of reproductive age group. **Methods:** This descriptive cross-sectional study was conducted from January to December 2023 among 150 women aged 15–45 years who visited the outpatient department of 250 Beded Sadar Hospital, Sirajganj for gynecological or general consultations. Participants were selected using convenience sampling. Data were collected through a pretested semi-structured questionnaire and pelvic ultrasonography. Diagnosis of PCOS was based on the Rotterdam criteria. Descriptive statistics and Chi-square tests were used to analyze the data. **Results:** Among the 150 women, the prevalence of PCO and PCOS was 30.7% and 21.3%, respectively. Most PCOS cases were in the 25–34 age group and had BMI ≥ 25 . Women with PCOS showed higher rates of menstrual irregularity (84.4%), hirsutism (71.9%), acne (65.6%), alopecia (46.9%), and obesity (56.3%) compared to those with only PCO. The association between BMI and both PCO and PCOS was statistically significant ($p = 0.04$). Among women diagnosed with PCO, 43.5% fulfilled the criteria for PCOS, 32.6% had one related symptom, and 23.9% had no clinical symptoms. **Conclusion:** The study reveals a considerable prevalence of PCO and PCOS among reproductive-aged women, with significant clinical symptoms and associations with higher BMI. Early identification and management of PCOS, especially in overweight women, are essential to mitigate long-term complications.

Keywords: Polycystic ovary syndrome, Polycystic ovaries, Prevalence, Symptoms, Rotterdam criteria, Bangladesh.

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INTRODUCTION

Polycystic ovary syndrome (PCOS) is one of the most common endocrine disorders affecting women of reproductive age, characterized by a combination of clinical, hormonal, and ultrasonographic features. It is estimated that PCOS affects 4% to 20% of women globally, depending on the diagnostic criteria used and the population studied [1,2]. The Rotterdam criteria, introduced in 2003, are the most widely accepted diagnostic guidelines, requiring at least two of the following: oligo- or anovulation, clinical or biochemical signs of hyperandrogenism, and polycystic ovaries on ultrasound [3].

Polycystic ovaries (PCO), which are identified through transvaginal or pelvic ultrasound, refer to the presence of ≥ 12 follicles in each ovary measuring 2–9 mm in diameter and/or increased ovarian volume (>10

cm³) [4]. However, the presence of PCO alone does not confirm PCOS, as polycystic morphology may occur in healthy women without clinical symptoms [5]. PCOS has multifactorial etiologies, including genetic, environmental, and lifestyle-related factors. It is often associated with a range of symptoms such as menstrual irregularities, hirsutism, acne, alopecia, and obesity, which not only affect physical health but also have profound psychosocial implications [6,7].

The prevalence of PCOS varies widely by region and population characteristics. A community-based study in India reported a prevalence of 9.13% using the Rotterdam criteria [8,9], while another study in Bangladesh reported a prevalence of 6.4% among urban women of reproductive age [9,10]. Despite its high burden, PCOS remains underdiagnosed and often mismanaged due to a lack of awareness and inconsistent

clinical practices, particularly in low-resource settings [10,11].

Recent studies have demonstrated that women with PCOS commonly exhibit increased insulin resistance and elevated levels of oxidative stress markers, suggesting a strong metabolic component underlying the syndrome [11,12]. Early identification of PCO and PCOS is essential for timely management and to prevent long-term complications such as infertility, type 2 diabetes, metabolic syndrome, and cardiovascular disease [13]. However, many women remain undiagnosed due to variability in symptom presentation and limited access to diagnostic facilities [14].

Given the growing public health relevance of PCOS and the diagnostic challenges posed by its heterogeneous presentation, there is a need to better understand its prevalence and associated symptomatology in various populations. This study aims to assess the prevalence and common symptoms of polycystic ovaries and polycystic ovary syndrome among women of reproductive age, providing insights that may support early diagnosis and appropriate interventions.

METHODOLOGY

This descriptive cross-sectional study was conducted from January to December 2023 at 250 Beded Sadar Hospital, Sirajganj to determine the prevalence and symptoms of polycystic ovaries (PCO) and polycystic ovary syndrome (PCOS) among women of reproductive age. The study population included women aged 15–45 years who visited the outpatient department for gynecological or general health consultations during the study period. Women were included if they were aged 15 to 45 years, had undergone pelvic ultrasonography, and provided informed consent. Those with known endocrine disorders such as Cushing's

syndrome or thyroid dysfunction, those who were pregnant, or those unwilling or unable to provide complete information were excluded. A total of 150 participants were enrolled using a convenience sampling method. Data were collected using a pretested semi-structured questionnaire covering sociodemographic details, menstrual history, clinical symptoms of PCOS (e.g., hirsutism, acne, weight gain, alopecia), and diagnostic findings including ultrasonography and available hormonal profiles. The presence of polycystic ovaries was confirmed through ultrasound based on the Rotterdam criteria, which also guided the diagnosis of PCOS—defined by the presence of at least two of the following: oligo/anovulation, clinical or biochemical signs of hyperandrogenism, and polycystic ovaries. Data were entered and analyzed using SPSS version 25, with descriptive statistics used to summarize findings. The prevalence of PCO and PCOS was calculated and associations of sociodemographic factors with PCO and PCOS valuated using Chi-square tests, with p-values <0.05 considered statistically significant.

RESULTS

Sociodemographic Characteristics of Study Participants

Table-1 presents the sociodemographic characteristics of study participants. A total of 150 women participated in the study. The majority of participants (46.7%) were aged between 25–34 years, followed by 29.3% in the 15–24 age group. Regarding BMI, most participants were either normal weight (38.7%) or overweight (36.7%), with 24.7% being obese. 70% of the women were married, reflecting a sample that predominantly includes women of reproductive age likely engaged in family planning or fertility care. In terms of education, about 80% of women had secondary or higher education, indicating a moderately educated sample.

Table 1: Sociodemographic Characteristics of Study Participants (n = 150)

Variable	Frequency (n)	Percentage (%)
Age Group (years)		
15–24	44	29.3%
25–34	70	46.7%
35–45	36	24.0%
BMI Category		
Normal (<25)	58	38.7%
Overweight (25–29.9)	55	36.7%
Obese (≥30)	37	24.7%
Marital Status		
Married	105	70.0%
Unmarried	45	30.0%
Education Level		
Below Secondary	30	20.0%
Secondary	73	48.7%
Higher Secondary+	47	31.3%

Prevalence of Polycystic Ovaries and Polycystic Ovary Syndrome

Among the 150 women, 46 (30.7%) were diagnosed with polycystic ovaries (PCO) and 32 (21.3%)

with polycystic ovary syndrome (PCOS). The remaining 72 participants (48.0%) had neither PCO nor PCOS [Table-2].

Table 2: Prevalence of Polycystic Ovaries and Polycystic Ovary Syndrome (n = 150)

Condition	Frequency (n)	Percentage (%)
Polycystic Ovaries (PCO)	46	30.7%
Polycystic Ovary Syndrome (PCOS)	32	21.3%
No PCO/PCOS	72	48.0%

Symptom Distribution Among Women with PCO and PCOS

Women with PCOS exhibited a significantly higher frequency of symptoms compared to those with PCO. Menstrual irregularity was reported in 84.4% of

PCOS cases versus 60.9% of PCO cases [Table-3]. Similarly, hirsutism (71.9%), acne (65.6%), alopecia (46.9%), and obesity (BMI ≥ 30) (56.3%) were more prevalent among women with PCOS than those with only PCO.

Table 3: Distribution of Symptoms Among Women with PCO and PCOS

Symptom	PCO (n = 46)	PCOS (n = 32)	p-value
Menstrual Irregularity	28 (60.9%)	27 (84.4%)	0.002
Hirsutism	18 (39.1%)	23 (71.9%)	0.001
Acne	15 (32.6%)	21 (65.6%)	0.003
Alopecia	9 (19.6%)	15 (46.9%)	0.004
Obesity (BMI ≥ 30)	13 (28.3%)	18 (56.3%)	0.005

Association of Sociodemographic Factors with PCO and PCOS

Table-4 shows the association of sociodemographic factors with PCO and PCOS. A higher prevalence of both PCO and PCOS was found in the 25–

34 age group and among women with BMI ≥ 25 . The association with BMI was statistically significant ($p = 0.04$). Marital status and education level were not significantly associated with PCO or PCOS.

Table 4: Association of Sociodemographic Factors with PCO and PCOS

Factor	Category	PCO (n = 46)	PCOS (n = 32)	p-value
Age Group (years)	15–24	15 (32.6%)	6 (18.8%)	
	25–34	23 (50.0%)	18 (56.3%)	
	35–45	8 (17.4%)	8 (25.0%)	0.020*
BMI Category	BMI ≥ 25	34 (73.9%)	27 (84.4%)	0.040*
Marital Status	Unmarried	15 (32.6%)	8 (25.0%)	0.160
Education Level	$\geq$ Higher Secondary	21 (45.7%)	11 (34.4%)	0.110

Proportion of Women with PCO Meeting PCOS Criteria

Out of 46 women with PCO, 20 (43.5%) met ≥ 2 Rotterdam criteria and were diagnosed with PCOS.

Additionally, 15 (32.6%) had one symptom related to PCOS, while 11 (23.9%) had no related clinical symptoms [Table-5].

Table 5: Proportion of Women with PCO Meeting Diagnostic Criteria for PCOS (n = 46)

Diagnosis Details	Frequency (n)	Percentage (%)
PCO without clinical symptoms	11	23.9%
PCO with one PCOS-related symptom	15	32.6%
PCO meeting ≥ 2 Rotterdam criteria (PCOS)	20	43.5%

DISCUSSION

This study found that 30.7% of women had polycystic ovaries (PCO), while 21.3% were diagnosed with polycystic ovary syndrome (PCOS) based on Rotterdam criteria. These prevalence figures are consistent with findings from similar population-based studies conducted in South Asia and the Middle East,

where PCOS prevalence ranged from 18% to 22% depending on the diagnostic criteria and study population [15,16].

The age distribution showed a higher prevalence of both PCO and PCOS in women aged 25–34 years. This is consistent with previous reports indicating that PCOS is most frequently diagnosed in

women of reproductive age, particularly between the ages of 20 and 35, when hormonal fluctuations and fertility issues become more prominent [17,18].

Obesity (BMI ≥ 25) was significantly associated with both PCO and PCOS, with 84.4% of PCOS patients having a BMI ≥ 25 . This aligns with earlier findings that obesity exacerbates PCOS symptoms through insulin resistance and hyperinsulinemia, which in turn enhances androgen production [19]. A study in Brazil also found that overweight and obese women had a markedly increased likelihood of presenting with PCOS compared to those with normal BMI [20]. Moreover, the bidirectional relationship between PCOS and obesity poses a significant challenge for treatment, especially in low-resource settings [21].

Regarding clinical symptoms, women with PCOS reported significantly higher rates of menstrual irregularities (84.4%), hirsutism (71.9%), acne (65.6%), and alopecia (46.9%) compared to women with only PCO. These findings are consistent with international data indicating that hyperandrogenism-related manifestations are core features of PCOS [22]. For instance, a European cohort study highlighted similar symptom distributions, emphasizing that hirsutism and menstrual dysfunction are highly predictive of PCOS when coupled with polycystic ovarian morphology [23].

Interestingly, among women with PCO, 43.5% met two or more Rotterdam criteria and were diagnosed with PCOS. This supports the understanding that PCO and PCOS are related but not synonymous; many women with polycystic ovarian morphology do not meet the clinical or biochemical thresholds for PCOS diagnosis [24]. As noted in the literature, PCO can be considered a subclinical phenotype, particularly in asymptomatic or younger women [25].

While the study did not find a statistically significant association between education level and PCOS, This contrasts with a few reports suggesting that higher education may increase awareness and thus diagnosis, although cultural and healthcare access differences may mediate this effect [26,27]. In the present study, no significant association was observed between marital status and the presence of PCO or PCOS. Alessa *et al.*, (2021) conducted a cross-sectional study in Saudi Arabia and found no significant correlation between marital status and PCOS diagnosis among reproductive-aged women. They concluded that PCOS prevalence was more strongly associated with BMI, age, and hormonal levels than with social variables like marital status [28]

This study's strengths include the use of well-established diagnostic criteria and a comprehensive symptom assessment. However, it is limited by its cross-sectional design, relatively small sample size, and single-center nature, which may affect external validity. Future

longitudinal studies across multiple centers are recommended to further explore causality and the natural history of PCO and PCOS.

CONCLUSION

This study explored the relationship between sociodemographic factors and the presence of Polycystic Ovary Syndrome (PCOS) or Polycystic Ovaries (PCO) among reproductive-aged women. This study found a high prevalence of PCO (30.7%) and PCOS (21.3%) among reproductive-aged women. The findings highlighted a significant association between BMI and age with both PCO and PCOS, underlining the influence of metabolic and reproductive age factors in the pathogenesis of these conditions. In contrast, marital status and education level were not significantly associated. PCOS cases exhibited more frequent clinical symptoms such as menstrual irregularity, hirsutism, and acne. The findings highlight the importance of early screening and targeted interventions, particularly for overweight women, to prevent progression and manage symptoms effectively.

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