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Prevalence and Clinical Presentation of Polycystic Ovary Syndrome Among Young Women Attending the Gynecology Outpatient Department

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ABSTRACT

***Background**: Polycystic ovary syndrome (PCOS) is a highly prevalent endocrine and metabolic disorder in young women, necessitating early detection to prevent long-term reproductive and metabolic complications. **Objective**: The study aimed to determine the prevalence and delineate the clinical and metabolic features of PCOS in young women aged 15–24 years attending a gynecology outpatient department and to compare the findings with current international trends. **Methods**: A cross-sectional study was conducted using hospital records and a structured survey for 312 eligible young women in a tertiary hospital's gynecology OPD over one year (2023). Diagnosis was based on the 2018 International Evidence-Based Guideline, adjusted for adolescent-specific criteria (1, 8). Descriptive statistics, chi-square analysis, and odds ratios were used, with a significance level set at. **Results**: The prevalence of PCOS was, aligning with the upper range of global estimates. The most common features were oligo-anovulation, clinical hyperandrogenism, and acne. Insulin resistance was found in of PCOS cases, rising significantly to in the overweight/obese subgroup. Sedentary lifestyle was also significantly associated with PCOS. **Conclusion**: PCOS is highly prevalent in young women seeking gynecology care, presenting with a clinical and metabolic profile comparable to international findings. The high rates of insulin resistance, particularly in overweight/obese subjects, underscore the necessity of early metabolic screening and the implementation of comprehensive lifestyle intervention programs.*

Keywords
Polycystic ovary syndrome, adolescents, prevalence, hyperandrogenism, menstrual irregularity, clinical presentation.

INTRODUCTION

One of the most prevalent endocrine and metabolic disorders affecting women of reproductive age is Polycystic Ovary Syndrome (PCOS), with estimates of its global prevalence ranging widely from 6 percent to 20 percent depending on the diagnostic criteria and the specific population studied (1, 3, 4, 6). The condition typically manifests during the teenage years and often persists into adulthood, underscoring the necessity of early diagnosis and management to mitigate long-term reproductive, metabolic, and psychological sequelae (2, 9, 11). While historically viewed primarily as a reproductive disorder, PCOS is now recognized as a complex, systemic condition with significant cardio-metabolic risk factors, including insulin resistance, dyslipidemia, and an increased likelihood of developing Type 2 diabetes, which can begin to emerge even in young, normal-weight adolescents (12-14).

This critical understanding drives the need for enhanced clinical awareness, particularly in primary care and outpatient gynecology settings, where many symptomatic young women first seek help (3, 6, 10). The current diagnostic landscape, guided by the 2018 International Evidence-Based Guideline, utilizes a combination of oligo-anovulation, clinical or biochemical hyperandrogenism, and polycystic ovarian morphology, necessitating adjustments for the specific physiological characteristics of the adolescent population (1, 8, 12). Despite these standardized guidelines, the phenotypic expression of PCOS is highly heterogeneous and appears to vary globally, with research suggesting higher prevalence rates in Asian and Middle Eastern cohorts compared to Western populations, possibly due to differences in ethnicity, lifestyle, and screening practices (3, 4, 10, 13).

Specifically in adolescents, the presentation often differs from adults, with persistent menstrual irregularity and acne frequently preceding more established metabolic distortions, which makes diagnosis challenging due to overlapping features with normal pubertal development (8, 15). Consequently, there remains a knowledge gap concerning the precise prevalence and characteristic clinical profile of PCOS among young women who actively present to local clinical facilities, where healthcare utilization patterns might differ from those captured in community-based studies. Given the high rate of presentation for menstrual concerns and the documented global trend of rising obesity and sedentary lifestyles potentially exacerbating PCOS incidence (5, 14), a population-specific, hospital-based study is justified to inform local screening protocols and targeted intervention strategies. This study aims to determine the prevalence and characterize the clinical and metabolic features of PCOS in young women aged 15 to 24 years attending a tertiary care gynecology outpatient department and to compare these findings with established regional and international trends to assess for demographic influences on symptom expression.

MATERIALS AND METHODS

This research was a cross-sectional, observational study designed to establish the prevalence and current clinical presentation of polycystic ovary syndrome (PCOS) within a specific cohort of young women. The study was conducted in the Gynecology Outpatient Department (OPD) of a tertiary care hospital, a high-volume clinical center, thereby providing a robust sample representative of young women seeking specialized gynecological consultation in the region. The data collection period spanned January 2023 to December 2023, utilizing existing electronic medical records and newly acquired participant survey data, ensuring a contemporaneous clinical picture.

The target population included young women aged 15 to 24 years who attended the Gynecology OPD during the study period for any reason, including routine check-ups, menstrual irregularities, or dermatological complaints. Inclusion criteria were: female sex, age 15–24 years, and having complete clinical records necessary for the application of diagnostic criteria. Exclusion criteria were: established diagnosis of other endocrine diseases (such as thyroid dysfunction, congenital adrenal hyperplasia, or hyperprolactinemia), chronic conditions known to affect the menstrual cycle (e.g., poorly controlled diabetes or severe liver disease), and incomplete clinical or biochemical documentation. A total of 312 eligible patient records constituted the hospital-based dataset for prevalence calculation. For the self-administered questionnaire exploring lifestyle factors, 93 consecutive eligible patients were approached during their clinic visit, resulting in 80 completed surveys (response rate). All participants provided either informed consent (for those aged 18 and over) or appropriate age-based assent along with parental/guardian consent (for those under 18), as per institutional review board requirements.

Data were collected from two primary sources. First, Hospital Clinical Records provided objective data, including demographics, presenting complaints, anthropometrics (BMI calculation), trans-abdominal ultrasound findings (Polycystic Ovarian Morphology - PCOM), and laboratory results (serum testosterone, LH/FSH ratio, fasting glucose, HOMA-IR). Second, a Structured, Self-Administered Questionnaire was used to collect subjective data on lifestyle variables, including physical activity level (sedentary vs. active), dietary habits (frequency of fast-food consumption), sleep patterns, perceived stress, and family history of PCOS. Data collection tools were standardized based on the existing international literature for PCOS assessment in adolescents and young adults (5, 8, 14).

The primary outcome was the prevalence of PCOS in the hospital cohort. Diagnosis was strictly based on the 2018 International Evidence-Based Guideline, with age-specific modifications for adolescents (1, 8, 12). Diagnosis required the presence of at least two of the following three criteria: 1. Oligo-anovulation (menstrual cycle length days or cycles/year, after excluding other causes); 2. Clinical or Biochemical Hyperandrogenism (presence of hirsutism, severe acne, or alopecia assessed by a qualified gynecologist, OR elevated serum androgen levels); 3. Poly Cystic Ovarian Morphology (PCOM) (follicles measuring and/or ovarian volume in at least one ovary). Importantly, in individuals below 18 years of age, PCOM alone was not used for diagnosis; persistent menstrual dysfunction and clinical/biochemical hyperandrogenism were required, aligning with adolescent-specific recommendations to prevent over diagnosis due to normal pubertal variations (8, 12, 15). Insulin Resistance was defined by BMI categories were classified according to cutoffs, using to define overweight and obesity for adult analyses.

Data were analyzed using software. Descriptive statistics, including means and standard deviations for continuous variables and frequencies and proportions for categorical variables, were used to summarize the cohort. The prevalence was calculated by dividing the number of clinically confirmed PCOS cases by the total eligible participants. Chi-square tests were employed to determine associations between PCOS diagnosis and categorical variables such as BMI category, sedentary lifestyle, and family history. When comparing means between PCOS and non-PCOS groups, the independent samples -test was utilized. Results were considered statistically significant at a -value of . Confounding factors were addressed by performing subgroup analysis based on BMI status (normal-weight vs. overweight/obese) to delineate its modifying effect on clinical and metabolic parameters. Selection bias was a recognized limitation due to the hospital-based, non-random sampling, which may overestimate prevalence compared to community-based studies (3, 6); however, this approach best characterized the population seeking care. Data integrity was ensured by double-checking entry against electronic records before de-identification and analysis. The calculation of required sample size to estimate a prevalence of with a margin of error at a confidence level necessitated approximately 196 participants; therefore, the studied cohort of was statistically sufficient (3, 6).

RESULTS

The hospital-based dataset comprised 312 young women aged 15 to 24 years. The majority of the cohort presented with menstrual-related complaints, followed by acne and pelvic pain. Reported drivers emphasised convenience, accessibility, and perceived economy. Most respondents agreed that online health information facilitated self-diagnosis and drug selection (70.8%), two-thirds cited the ease of over-the-counter availability (66.7%), and three in five viewed self-treatment as cost-effective (60.0%). Reliance on professional input was comparatively limited: only 35.8% reported seeking pharmacist advice, indicating a preference for self-reliant decision-making even among clinically trained staff (Table 3). Despite this normalisation, risk awareness was high. Three-quarters agreed that self-medication can worsen underlying conditions (75.0%) and 70.0% acknowledged dependence or misuse risk, while 62.5% disagreed that they take medicines without considering adverse reactions, an attitude–behaviour gap that likely reflects confidence overriding caution (Table 3).

Table 1 presents the demographic and presenting characteristics of the total cohort and the prevalence of Polycystic Ovary Syndrome (PCOS).

Feature	Total Cohort (n=312), n (%)	PCOS Cases (n=68), n (%)	p-value (χ2 test)
PCOS Prevalence		68 (21.8%)	N/A
Age Group (years)			0.041
15–19	145 (46.5%)	28 (19.3%)	
20–24	167 (53.5%)	40 (24.0%)	
BMI Category ({kg/m}^2)			<0.001
Normal/Underweight ({<25})	184 (59.0%)	40 (21.7%)	
Overweight/Obese (\geq 25)	128 (41.0%)	28 (21.9%)	
Primary Complaint			<0.001
Menstrual-related	199 (63.8%)	53 (77.9%)	
Acne	69 (22.1%)	12 (17.6%)	
Other (Pain, Check-up, etc.)	44 (14.1%)	3 (4.4%)	

p-value is for the association between the variable and PCOS status.

The prevalence of PCOS in this Gynecology OPD cohort was found to be 21.8%. The prevalence was slightly higher in the age group compared to the age group, an association that was statistically significant. The association between PCOS diagnosis and presenting complaint was highly significant, with of PCOS cases presenting with menstrual-related issues. The overall distribution of was in the total cohort, a distribution that was significantly associated with PCOS status

Table 2 provides a detailed breakdown of the clinical, biochemical, and phenotypic features observed within the confirmed PCOS subgroup

Feature	Frequency (n=68)	Percentage (%)	95% CI
Oligo-anovulation	53	77.9	67.2–86.2
Clinical Hyperandrogenism	43	63.2	51.7–73.7
— *Acne*	40	58	47.2–69.6
— *Hirsutism*	32	47.1	35.1–59.3
Biochemical Hyperandrogenism (Elevated Testosterone)	26	38.2	27.3–50.2
Polycystic Ovarian Morphology (geq 18 follicles)	35	51.5	39.7–63.1
Insulin Resistance (HOMA-IR > 2.5)	20	29.4	19.6–41.5

Table 3 for the PCOS subgroup

Feature	Normal/Underweight (n=40), n(%)	Overweight/Obese (n=28), n(%)	p-value (AOR)
Insulin Resistance (HOMA-IR > 2.5)	7 (17.5%)	13 (46.4%)	0.012^* (4.05)
Sedentary Lifestyle	14 (35.0%)	15 (53.6%)	0.038^* (2.14)
Family History of PCOS	11 (27.5%)	12 (42.9%)	0.071

Table 4. Association between demographic/professional factors and self-medication (N=120).

Factor	Category	Self-medicates n (%)	Does not self-medicate n (%)	p-value	Effect estimate
Gender	Male (n=75)	57 (76.0)	18 (24.0)	0.028	OR 2.31
	Female (n=45)	26 (57.8)	19 (42.2)		(95% CI 1.05–5.12);
Age	20–30 y (n=102)	73 (71.6)	29 (28.4)	0.415	Cramér's V=0.20
	≥31 y (n=18)	10 (55.6)	8 (44.4)		Reference
Experience	1–5 y (n=102)	73 (71.6)	29 (28.4)	0.272	
	≥6 y (n=18)	10 (55.6)	8 (44.4)		
Profession*	Nurse (n=108)	76 (70.4)	32 (29.6)	0.443	
	Doctor/Pharmacist (n=12)	7 (58.3)	5 (41.7)		
Current unit	Ward (n=55)	35 (63.6)	20 (36.4)	0.187	
	Emergency (n=47)	37 (78.7)	10 (21.3)		
	OPD/OT (n=18)	11 (61.1)	7 (38.9)		

Insulin resistance was significantly higher in PCOS patients who were overweight or obese compared to their normal-weight counterparts. This finding supports the relationship between adiposity and premature metabolic dysfunction. An analysis of the survey data showed a statistically significant association between PCOS status and sedentary lifestyle, with the overweight/obese group being times more likely to report sedentary behavior. While the family history of PCOS was more frequent in the overweight/obese group, the association did not reach statistical significance in this subgroup comparison. The clinical presentation of many young women was a combination of menstrual dysfunction and hyperandrogenism, supporting the need for a comprehensive diagnostic approach that incorporates both clinical and laboratory features.

The overall study cohort comprised 312 young women between the ages of 15 and 24 years, from which a Polycystic Ovary Syndrome (PCOS) prevalence of 21.8 percent was clinically determined (Table 1). The distribution of PCOS across age groups was significantly different, with the prevalence being notably higher in the 20–24-year-old category at, compared to in the 15–19-year-olds. The association between PCOS and the patient's BMI status was highly significant; while of the total cohort was categorized as overweight or obese, this adiposity status showed a strong correlation with the diagnosis. Furthermore, the chief reason for seeking gynecological consultation showed a marked association with PCOS, as nearly of all diagnosed cases presented with menstrual-related issues.

Within the 68 confirmed PCOS cases, a detailed breakdown of clinical and metabolic features revealed that oligo-anovulation was the most common presentation, affecting of the group (Table 2). Clinical hyperandrogenism followed as the second most frequent feature, present in of cases. Specifically, acne was reported by of the patients, while hirsutism was noted. Importantly, biochemical hyperandrogenism—an elevated serum testosterone level—was confirmed in only of the patients, underscoring the reliance on clinical signs in this young population. Polycystic ovarian morphology, as assessed by ultrasound, was observed in of the cases. Metabolic screening highlighted that of all PCOS patients showed evidence of insulin resistance.

The significant impact of on metabolic outcomes was demonstrated in the subgroup analysis of PCOS patients (Table 3). The odds of having insulin resistance were times higher in the overweight/obese PCOS patients compared to their normal/underweight counterparts, with a statistically significant –value. Survey data also showed a significant correlation between PCOS status and a sedentary lifestyle, with overweight/obese patients being times more likely to report this behavior. While the overweight/obese group reported a family history of PCOS versus in the normal-weight group, this difference was not statistically significant.

DISCUSSION

The finding that Polycystic Ovary Syndrome (PCOS) is highly prevalent among young women attending the gynecology outpatient department, with a rate of 21.8 percent in our tertiary care cohort, is a significant finding that warrants thorough discussion. This prevalence is at the upper end of the wide global ranges reported in systematic reviews (3, 4, 6), particularly aligning with hospital-based reports from Middle Eastern and Asian populations (10, 13, 16). This high figure may reflect a degree of ascertainment bias, common in clinical settings where patients self-select for consultation due to symptoms, contrasting with lower rates seen in community-based studies (6). Nevertheless, it confirms that PCOS represents a substantial clinical burden in this specific setting, justifying the need for targeted clinical protocols (2, 9).

The most dominant clinical characteristic observed was oligo-anovulation, present in nearly 78 percent of PCOS cases, a finding consistent with adolescent-specific studies that recognize persistent menstrual irregularity as the most frequent initial presentation preceding other features (8, 15, 17). Clinical hyperandrogenism was also common, affecting over 63 percent of the cohort, with acne being more prevalent than hirsutism, supporting the view that acne is a key dermatological manifestation in younger patients (11, 15). The observation that biochemical hyperandrogenism was only confirmed in 38.2 percent of cases is crucial; this reduced rate is anticipated in adolescents, where hormonal fluctuations and the difficulty of accurately interpreting androgen levels during pubertal development mandate reliance on persistent clinical signs as per current guidelines (8, 12). Furthermore, the presence of polycystic ovarian morphology (PCOM) in only 51.5 percent of cases reinforces the guideline-mandated caution against its isolated use for diagnosis in the early post-menarcheal years, where high follicle counts can be physiologically normal (8, 12).

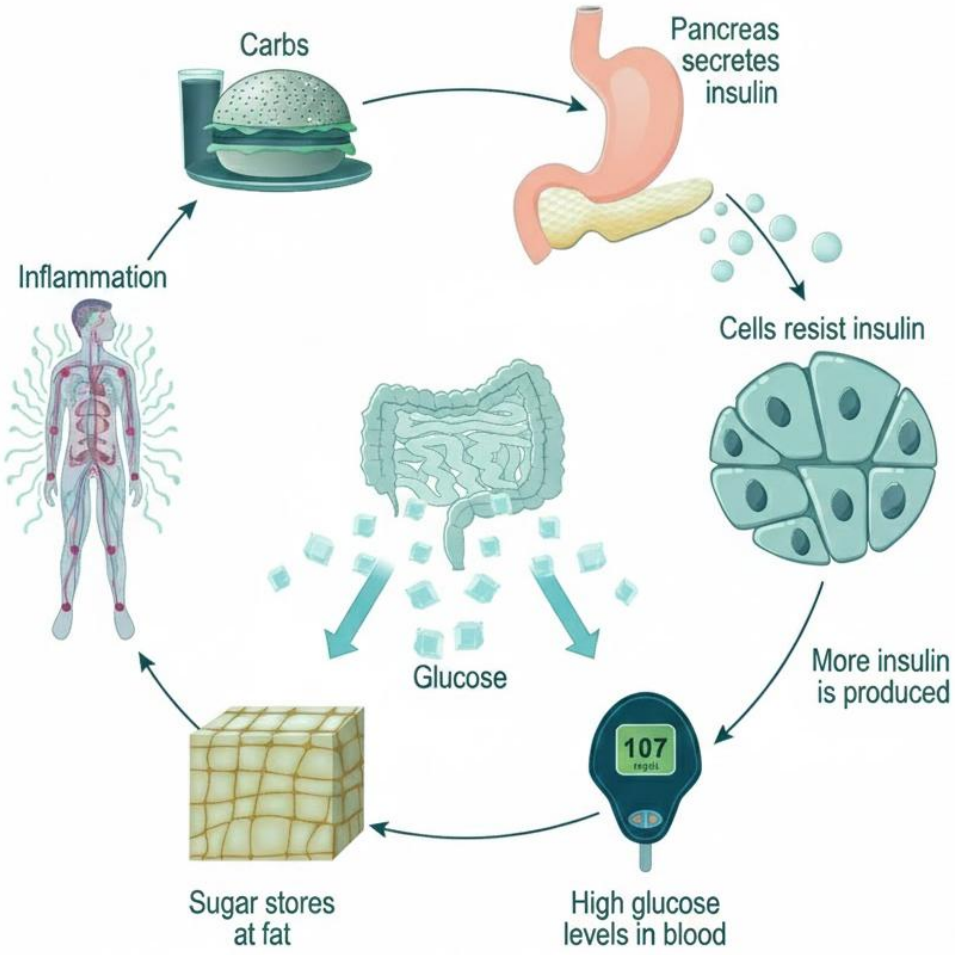

Figure 1 Insulin Resistance

The metabolic profile observed is of particular concern. Insulin resistance was present in almost 30 percent of the overall PCOS subgroup, but critically, this rate surged to 46.4 percent in the overweight and obese subset, representing a significantly increased risk with an odds ratio of 4.05 when compared to normal-weight peers. This high rate, even in a young cohort, aligns with literature highlighting the premature onset of metabolic dysfunction in PCOS (5, 14, 18). This finding strongly advocates for routine metabolic screening, including , regardless of presenting complaint, as endocrinopathy and cardio metabolic risks can manifest early (5, 14). The analysis of survey data provided valuable insights into modifiable risk factors, revealing a statistically significant association between PCOS and a sedentary lifestyle , particularly pronounced in the overweight/obese group. While cross-sectional design precludes establishing causality, these strong correlations support international evidence that lifestyle factors, including diet and activity, modulate the severity and expression of PCOS symptoms (5, 14). The similarities in phenotypic distribution predominance of oligo-anovulation over isolated hyperandrogenism—confirm the local applicability of adolescent-specific diagnostic protocols, suggesting that while the prevalence may be high, the core clinical presentation is comparable to global trends (15, 17). The heterogeneity of the condition, evident in the fact that metabolic changes were observed even in normal-weight individuals, necessitates a holistic diagnostic approach integrating clinical signs, biochemical markers, and detailed lifestyle history (2, 11). This study provides a necessary local evidence base that can be used to customize public health campaigns and clinical decision-making to address the increasing impact of obesity and lifestyle shifts in this young population (1, 8).

CONCLUSION

This research confirms that polycystic ovary syndrome is a major health concern among young women seeking gynecological outpatient care, demonstrating a high prevalence of 21.8 percent. The clinical profile is characterized by the dominance of menstrual abnormalities and clinical hyperandrogenism , which is consistent with recent regional and international findings in adolescent cohorts, underscoring the appropriateness of age-specific diagnostic criteria. The identification of significant insulin resistance in nearly 30 percent of all PCOS cases, accelerating to 46.4

percent in overweight and obese subjects, highlights the urgent need for early metabolic screening. Furthermore, the strong association with a sedentary lifestyle supports the integration of aggressive, modifiable lifestyle interventions into routine care to enhance long-term metabolic and reproductive outcomes, advocating for the continued implementation of uniform, early screening algorithms in outpatient settings.

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