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Prevalence of Polycystic Ovary Syndrome (PCOS) in Adolescent Girls and Young Women: A Cross-Sectional Questionnaire-Based Study.

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Abstract

Background:

Polycystic Ovary Syndrome (PCOS) is a common endocrine and metabolic disorder affecting adolescent girls and young women, with significant reproductive and long-term health consequences. Early diagnosis and awareness are crucial for effective management and prevention of complications.

Methods:

A questionnaire-based **cross-sectional** study was conducted over six months (January–June 2024) among 300 females aged 13–30 years attending a tertiary care hospital in Visakhapatnam, Andhra Pradesh. Data on sociodemographic characteristics, clinical features, lifestyle factors, and knowledge, attitude, and practices (KAP) related to PCOS were collected using a pre-validated questionnaire. Diagnosis was based on the Rotterdam criteria. Statistical analysis was performed using the chi-square test.

Results:

The mean age of participants was 23.5 years, with the majority belonging to the 21–25-year age group. PCOS was diagnosed in 76.7% of participants. Awareness regarding PCOS was high, with 89.7% recognizing it as a common disorder. Positive attitudes were observed, as 79.2% believed that PCOS is increasing rapidly, and 71.0% agreed that early diagnosis and lifestyle modification can improve outcomes. However, preventive practices were inconsistent, with 28.8% reporting no regular physical activity and a substantial proportion exhibiting sedentary behaviour. Lifestyle factors were identified as the most common perceived cause of PCOS by 52.6% of participants.

Conclusion:

The study demonstrates a high prevalence of PCOS among adolescent girls and young women with good awareness and positive attitudes toward early diagnosis and lifestyle modification. However, gaps in preventive practices highlight the need for structured educational and lifestyle-based intervention programs.

Recommendation:

Structured awareness programs focusing on early screening, lifestyle modification, and adolescent counselling should be implemented at institutional and community levels to reduce long-term complications of PCOS.

Keywords: *Polycystic Ovary Syndrome (PCOS), prevalence, awareness, young women, lifestyle disorder, diagnosis.*
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Introduction

Polycystic ovary syndrome (PCOS) stands as the most prevalent endocrine disorder among women, impacting approximately 10% to 15% of the female population worldwide [1]. In 2012, the World Health Organisation reported that approximately 116 million women globally were affected by PCOS, accounting for roughly 3.4% of the total female population worldwide [2]. In India, while experts estimate that approximately 10% of women could be impacted by PCOS, there exists a notable absence of dependable, published statistical data regarding its actual prevalence in the nation [3].

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The estimates of prevalence for PCOS exhibit considerable variation across various regions, with figures ranging from a minimum of 2.2% to a maximum of 26%. The condition was initially recognised and articulated by Irving Stein and Michael Leventhal, who coined the term "polycystic ovarian disease" to encapsulate a clinical triad characterised by amenorrhoea, obesity, and hirsutism [4]. Consequently, it is commonly known as Stein-Leventhal Syndrome or Hyperandrogenic Anovulation. The phrase "Syndrome O" has been employed to emphasise the condition's link to insulin overproduction, ovulatory dysfunction, and overnutrition. Women diagnosed with PCOS face a heightened risk of encountering various long-term health complications, such as endometrial cancer, cardiovascular disease, dyslipidaemia, type 2 diabetes, and infertility [5]. The syndrome manifests through a diverse array of symptoms, including elevated androgen levels, irregular menstrual cycles, multiple ovarian cysts, obesity, acne, hypertension, hirsutism, diabetes, and challenges related to fertility [5,6].

Given the prevalence of PCOS in gynaecological practice, it is crucial to grasp its chronic characteristics and wider health ramifications to ensure holistic care. Management strategies generally encompass a combination of non-pharmacological and pharmacological techniques. The cornerstone of treatment lies in lifestyle modifications, encompassing both dietary and behavioural changes. The pharmacological alternatives encompass oral contraceptives, antiandrogens, antidiabetic agents, anti-obesity pharmaceuticals, and statins. In instances where conditions are particularly severe or resistant, one might contemplate surgical intervention, such as cystectomy, as a final recourse [7,8].

The identification of PCOS frequently relies on the Rotterdam criteria, necessitating the manifestation of at least two of the following three characteristics: oligo- or anovulation; clinical or biochemical indicators of hyperandrogenism; and the presence of polycystic ovaries as observed through ultrasound imaging. Prior to establishing a definitive diagnosis, it is crucial to rule out other possible causes that may present with similar symptoms, including congenital adrenal hyperplasia, androgen-secreting tumours, Cushing's syndrome, thyroid dysfunction, and hyperprolactinemia.

This study aims to investigate the prevalence and attributes of PCOS in adolescent girls and young women between the ages of 13 and 30, placing special emphasis on evaluating their awareness of the condition. The overarching aim is to investigate the knowledge, attitudes, and practices (KAP) of women impacted by PCOS, offering insights that could enhance educational and management approaches.

Methods

Study Design and Setting

This investigation was conducted as a questionnaire-based cross-sectional survey. The setting for the survey was the Department of Obstetrics and Gynaecology at Gayatri Vidya Parishad Medical College, located in Visakhapatnam, Andhra Pradesh. Gayatri Vidya Parishad Medical College is a tertiary care teaching hospital located in Visakhapatnam, Andhra Pradesh, catering to urban and semi-urban populations with comprehensive obstetric and gynaecological services. The study was conducted from January 2024 to June 2024.

Study Population and Sampling

The survey targeted females aged between 13 and 30 years. A total of 300 participants were included in the final analysis. Participants were approached directly, and only those who provided informed consent were enrolled. The sampling approach was purposive, based on voluntary participation.

Inclusion and Exclusion Criteria

Participants were included if they were within the specified age range of 13 to 30 years and expressed willingness to take part in the survey. Females below 13 years or above 30 years of age, pregnant women, and those unwilling to participate were excluded. Pregnant women and those unwilling to participate were also not considered for inclusion.

Bias

Selection bias was minimized by including all eligible participants who consented during the study period. Information bias was reduced by using a pre-validated questionnaire and standardized anthropometric measurements.

Data Collection Tools and Diagnostic Criteria

Data were gathered using a pre-validated, structured questionnaire specifically designed to assess symptoms and diagnostic features of PCOS based on the Rotterdam criteria. The tool included questions related to menstrual irregularities, signs of hyperandrogenism (such as hirsutism or acne), and ultrasound findings indicative of polycystic ovaries. Participants self-reported their symptoms, and responses were evaluated to determine if they met the diagnostic criteria. This method facilitated a non-invasive, large-scale assessment of PCOS prevalence among young females.

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Anthropometric Measurements

Each participant's height and weight were measured using standardized equipment to ensure accuracy. Body Mass Index (BMI) was then calculated using the formula: weight in kilograms divided by the square of height in meters (kg/m²). BMI values were categorized according to the WHO classification for underweight, normal, overweight, and obesity. This provided an insight into the correlation between body weight and PCOS symptoms.

Ethical Considerations

Ethical approval for the research was obtained from the Institutional Ethics Committee prior to the initiation of the survey, ensuring adherence to ethical standards throughout the study period.

Statistical Analysis

The collected data were analysed using the chi-square test to determine associations between variables and evaluate the significance of findings.

Results

The majority of the participants were young, with a mean age of 23.5 years, and approximately 59.9% fell within the 21–25-year age group. Most were well-educated, with 71.6% being graduates. Urban residents made up 94.2% of the sample, indicating a strong urban representation. A significant proportion of the participants were married (83.0%) and students (75.0%), reflecting the study's focus on adolescent and young adult females in academic settings (Table 1).

Table 1: Key Sociodemographic Characteristics (N = 300):

Variable	Category	n (%)
Age (Mean = 23.5)	21–25 yrs approx.	180 (59.9%)
Education	Graduate	215 (71.6%)
Residence	Urban	282 (94.2%)
Marital Status	Married	249 (83.0%)
Occupation	Student	225 (75.0%)

Awareness and diagnosis-related findings revealed that 76.7% of participants had already been diagnosed with PCOS (Fig. 1), with the most common age at diagnosis being between 18 and 20 years. A large majority (89.7%) were aware that PCOS is a common lifestyle disorder (Fig. 2). Among those evaluated for PCOS, 76.1% had undergone blood tests, and 72.0% had an ultrasound scan as part of the diagnostic process (Table 2).

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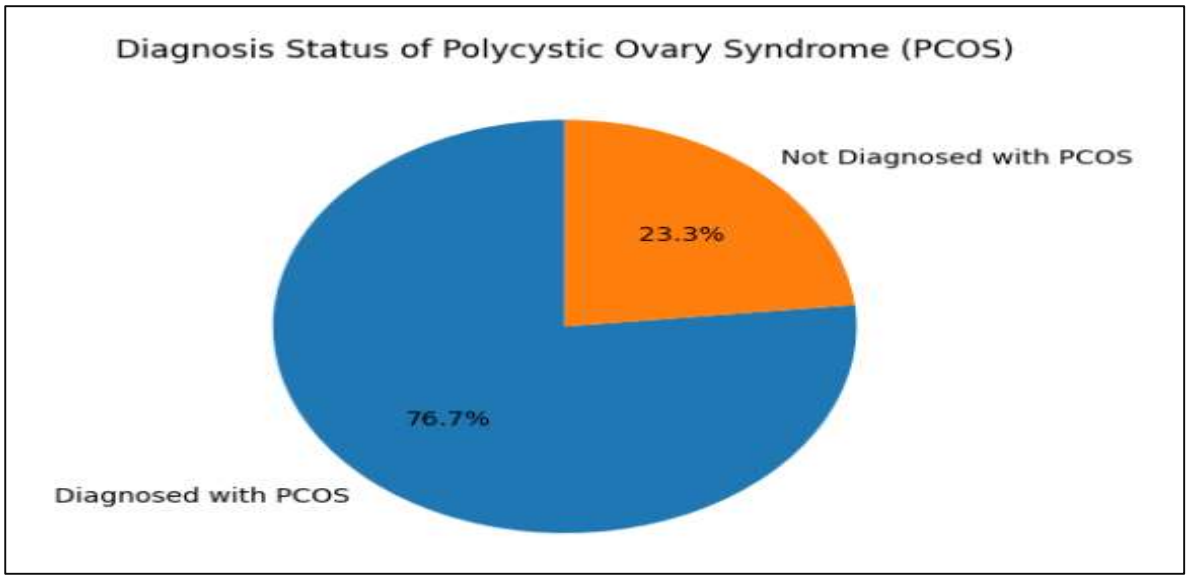

Fig 1. Diagnosis status of PCOS

Table 2: Awareness and Diagnosis of PCOS:

Variable	**n (%)**
Diagnosed with PCOS	230 (76.7%)
Age at diagnosis (18–20 years)	—
Aware that PCOS is a common disorder	269 (89.7%)
Blood tests were done for diagnosis	228 (76.1%)
Ultrasound done for diagnosis	216 (72.0%)

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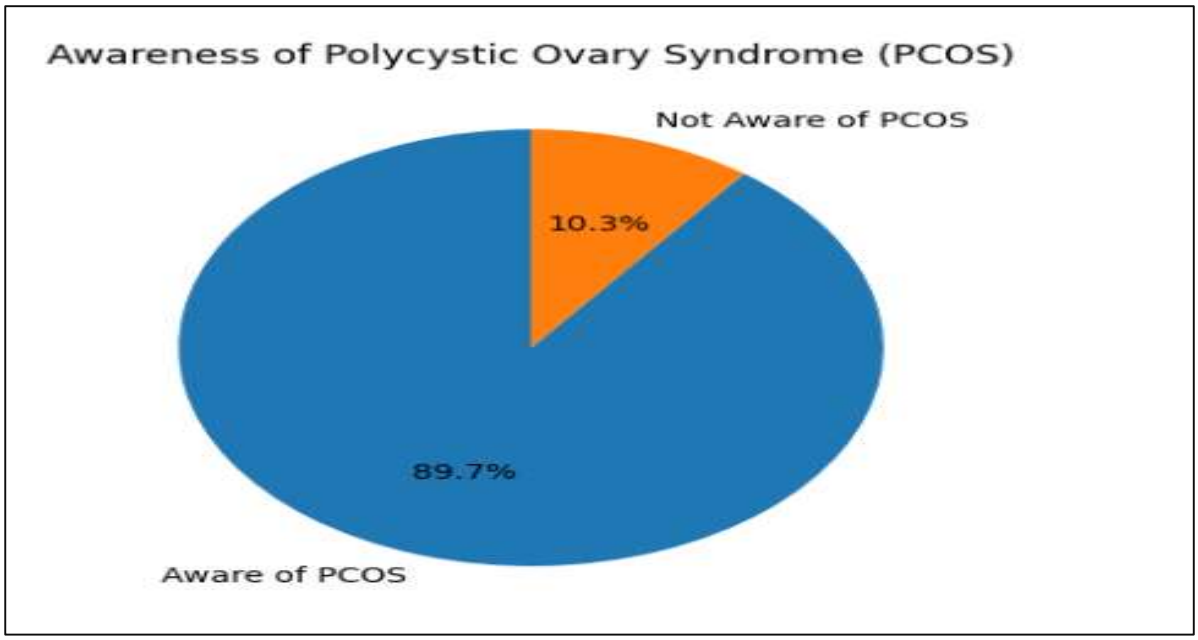

Fig 2. Awareness of PCOS

Most participants (52.6%) attributed PCOS to lifestyle disorders, while only 10.5% believed genetics were a contributing factor. A smaller percentage thought it was environmentally triggered or controllable through medication, and 16.1% had no idea about its causes.

BMI assessment revealed that 56% of the participants had normal weight, 34% were overweight, and 8% were obese. In terms of dietary habits, only 38% consumed fruits daily, while others had less frequent intake. About 6% smoked regularly, and 20.8% consumed alcohol daily. Participants showed positive awareness, with 79.2% agreeing that PCOS is increasing rapidly. However, lifestyle habits were inconsistent—only 71% exercised daily, while 28.8% did not exercise at all. Sedentary behaviour was common, with 35.1% sitting for 8–10 hours daily. Daytime napping was reported by 22.8% daily and 50.5% occasionally.

Sleep-related issues included snoring (16.5%) and excessive daytime sleepiness. A majority (64.6%) reported continuous weight gain, and 56.5% struggled to lose weight. Around 69.5% had waistlines exceeding 35 inches.

Common symptoms included acne (53.3%), unwanted hair growth—mainly on the chin (24.6%) and upper lip (22.1%)—and hair thinning (55.8%). Pigmentary changes were noticed by 24.2%, and 56.1% experienced mood swings.

A strong family history of comorbid conditions was seen: 46.7% reported diabetes, 39.6% hypertension, 13.7% obesity, and 6% cancer. Additionally, 69.5% complained of irregular menstrual cycles, underscoring the hormonal and metabolic disruption in this population.

Discussion

Polycystic Ovary Syndrome (PCOS) is primarily considered a hormonal imbalance disorder. In the present research, the average age of participants was 23.5 years, whereas it is noted that PCOS most commonly presents between the ages of 25 and 32, often during the reproductive years due to ovarian hyperstimulation [9]. Educational status significantly influences awareness of PCOS. It has also been reported that 65% of graduates were knowledgeable about PCOS, attributing this to greater access to health education programs [10]. They also observed higher awareness among urban residents compared to rural populations, which aligns with current findings.

Regarding community knowledge about PCOS, a significant portion of participants believed it to be a lifestyle-related disorder, with some attributing it to genetic or environmental factors, while a small percentage were unaware of its causes. This variability in understanding highlights the necessity for comprehensive awareness about PCOS and its management. The condition is linked to various complications such as

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infertility, type 2 diabetes, gestational problems, cardiovascular disease, endometrial cancer, and obesity. Research has shown associations between PCOS and hyperlipidaemia, hypertension, endothelial dysfunction, and subclinical atherosclerosis, all of which raise the risk of developing obesity-related complications [11]. Obesity in PCOS can result in menstrual irregularities, gestational diabetes, pre-eclampsia, menorrhagia, infertility, and increased risk of foetal loss [12].

Studies have highlighted that women with PCOS face elevated levels of infertility and often express significant concern over their reproductive potential [13]. Among women aged 18–30, symptoms such as irregular menstruation, ovulatory dysfunction, and ovarian enlargement are common. Prolonged symptoms may escalate the risk for serious conditions such as heart disease, diabetes, and endometrial cancer [14]. Early interventions, including weight loss and lifestyle modifications, are considered first-line treatments. Evidence suggests that losing as little as 5% of body weight can positively impact hormonal balance, increase ovulatory cycles, and enhance fertility outcomes [15].

Furthermore, PCOS is closely linked with increased BMI, which is associated with weight gain, perceived loss of femininity, reduced libido, and difficulty conceiving [16]. Addressing PCOS effectively requires a comprehensive lifestyle-based approach. Adopting a balanced diet and maintaining regular physical activity can facilitate a 10–14% reduction in body weight, leading to improved reproductive and metabolic health. Exercise has also been shown to reduce visceral fat, lower blood glucose and lipid levels, decrease androgen concentrations, and promote regular menstruation, fertility, and ovulation.

Beyond physical improvements, regular physical activity can alleviate psychological symptoms such as stress, depression, and anxiety, and enhance self-esteem in women with PCOS [17]. As per a study, engaging in 90 minutes of moderate-intensity exercise per week (at 60–70% VO_2 max) can substantially improve fertility, regulate menstrual cycles, and reduce insulin resistance in overweight women with PCOS [18].

Nonetheless, it is important to acknowledge that self-reported data, such as those obtained in this research, may be subject to reporting biases. Participants might have under- or overestimated their knowledge, attitudes, or behaviours due to the subjective nature of the questionnaire.

Generalizability

As this was a single-canter, urban-based study, the findings may not be generalizable to rural populations or different socioeconomic settings. Multi-center studies are recommended for broader applicability.

Conclusion

The findings highlight a notably high prevalence of polycystic ovary syndrome among young women, particularly in the 18–25 age group, with a considerable proportion already diagnosed and aware of the condition. Despite this, misconceptions persist, and a segment of the population remains unaware of its causes and diagnostic options. Lifestyle factors were widely recognized as contributing elements, yet gaps in preventive practices and regular health monitoring suggest the need for more structured awareness initiatives. Promoting accurate knowledge, early diagnosis, and holistic lifestyle modifications can play a crucial role in managing and preventing the long-term complications of PCOS.

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List of Abbreviations

PCOS – Polycystic Ovary Syndrome
BMI – Body Mass Index
WHO – World Health Organization
KAP – Knowledge, Attitude, Practice

Source of Funding

None

Conflict of Interest

The authors declare no conflict of interest.

Author Contributions

All authors contributed equally to study design, data collection, analysis, manuscript drafting, and final approval.

Data Availability

Data supporting the findings are available from the corresponding author upon reasonable request.

Author Biography

The authors are faculty members in the Department of Obstetrics and Gynaecology with research interests in reproductive endocrinology and women's health.

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