

Prevalence and Phenotypic Features of Polycystic Ovary Syndrome in Adolescent Girls

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Abstract

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Polycystic Ovary Syndrome (PCOS) is a multifaceted endocrine disorder affecting adolescent girls, characterized by ovarian cysts, hormonal imbalances, and ovulatory dysfunction. It is one of the most prevalent disorders in young women, often leading to infertility, metabolic complications, and psychological challenges. The study explores the prevalence, phenotypic features, and associated factors of PCOS in adolescent girls (13-20 years), focusing on lifestyle, dietary habits, and the psychological impact of the condition. The findings indicate that PCOS is a significant

health issue, with moderate to mild cases observed in 52% of the sample. Key risk factors for the development of PCOS include diet, obesity, and lack of awareness about the condition. The results emphasize the need for early diagnosis, education, and lifestyle changes to prevent long-term health complications.

INTRODUCTION

Polycystic Ovarian Disease (PCOD), also known as Polycystic Ovary Syndrome (PCOS), is a multifactorial endocrine disorder marked by enlarged ovaries with numerous small cysts and a thickened ovarian capsule, primarily resulting from ovulatory dysfunction that commonly manifests as amenorrhea or irregular menstrual cycles¹. Normal ovulation relies on the intricate coordination of the hypothalamic-pituitary-ovarian axis, and disruptions in this system lead to the characteristic anovulation and polycystic ovary formation². Affecting approximately 5% of young women globally, it is one of the leading causes of infertility, with an estimated 75% of

women with PCOD experiencing anovulatory infertility³⁴. The condition poses significant reproductive challenges, as about one-third of pregnancies in affected women end in spontaneous abortion⁵. Obesity, present in roughly half of all cases, worsens the condition and increases the risk of complications like gestational diabetes and preeclampsia, making early lifestyle interventions crucial⁶. Beyond reproduction, adolescents with PCOD face a heightened lifetime risk of type II diabetes, cardiovascular disease, and persistent infertility⁷. The physical symptoms, such as hirsutism and acne, can severely impact self-esteem and body image⁸, and women with PCOD have a 2.5 times greater risk of developing ovarian cancer⁹, while persistent dysfunctional bleeding can lead to anemia¹⁰. Therefore, early diagnosis and management are vital to mitigating these severe long-term risks, underscoring the need for increased research and awareness¹¹⁻¹².

METHODS

This prospective observational cross-sectional study will be conducted at Timergara Teaching Hospital from March to July 2025, aiming to comprehensively evaluate the prevalence and multifaceted complications of Polycystic Ovary Disease (PCOD) among women of reproductive age (13-40 years). The research will enroll women presenting with menstrual irregularities, infertility, or other PCOD-suggestive symptoms, while excluding those with severe chronic conditions or prior reproductive surgeries. Through a structured multidimensional approach, we will collect demographic data, reproductive histories, and lifestyle factors via questionnaires; perform physical assessments (BMI, abdominal circumference); conduct diagnostic investigations including ovarian ultrasonography and hormonal profiling (FSH, LH, Testosterone, Prolactin, Thyroid function); and administer psychological evaluations focusing on self-esteem and body image. Participants will be monitored for fertility outcomes and pregnancy complications such as gestational diabetes, preeclampsia, and spontaneous abortion. Data analysis will employ descriptive statistics, chi-square tests, and logistic regression to identify significant relationships between obesity, lifestyle factors, and PCOD manifestations. The study, conducted with ethical approval and strict confidentiality, expects to determine local PCOD prevalence, clarify the role of modifiable risk factors, examine reproductive and psychological

complications, and inform future interventions, while acknowledging limitations including its observational design and potential self-reporting biases specific to this patient population.

RESULTS

A cross-sectional study conducted at Timergara Teaching Hospital, involving 100 adolescent girls, provided critical insights into the prevalence and influencing factors of Polycystic Ovary Disease (PCOD). The findings revealed a spectrum of PCOD severity, with nearly half the cohort (48%) showing no signs of the condition, while 23% were classified as mild and 29% as moderate; notably, no cases of severe PCOD were identified. Statistical analysis demonstrated a significant association ($p<0.05$) between PCOD prevalence and key demographic and lifestyle variables. Age emerged as a pivotal factor, with the highest proportion of affected individuals (28%) concentrated in the 18-20 years age group. Dietary patterns were strongly correlated with disease severity, as adolescents on mixed diets exhibited the highest incidence of moderate PCOD (19%), while a vegetarian diet was associated with fewer moderate cases. Source of food also proved significant, with a higher occurrence of mild PCOD among those consuming predominantly home-made food. Furthermore, the study highlighted the crucial role of media in health awareness, with mass media serving as the primary source of PCOD information for 24% of participants. The mean prevalence score of 7.14 (± 5.114) across the cohort reinforces the concentration of cases in the mild-to-moderate range. These results collectively underscore the multifactorial nature of PCOD, emphasizing the substantial influence of age, dietary habits, and information sources on its presentation, thereby pointing to the urgent need for targeted public health strategies and lifestyle education to mitigate its impact on adolescent populations.

TABLE 1: PREVALENCE AND ASSOCIATED FACTORS OF PCOD AMONG ADOLESCENT GIRLS (N=100)

Category	No PCOD (F)	No PCOD (%)	Mild PCOD (F)	Mild PCOD (%)	Moderate PCOD (F)	Moderate PCOD (%)	Chi- Square	P- Value
Age in Years							C=34.612	P<0.05
11-14	7	7%	4	4%	14	14%		
15-17	13	13%	8	8%	15	15%		
18-20	28	28 %	11	11 %	-	-		
Food Pattern							C=22.773	P<0.05
Vegetarian	20	20%	10	10%	-	-		
Ova Vegetarian	6	6%	8	8%	10	10%		
Mixed	22	22 %	5	5 %	19	19 %		
Consumption of Food from							C=25.788	P<0.05
Fast Food	11	11%	5	5%	6	6%		
Hotel	7	7%	-	-	12	12%		
Home-made	22	22%	18	18%	11	11%		
Hostel	8	8%	-	-	-	-		

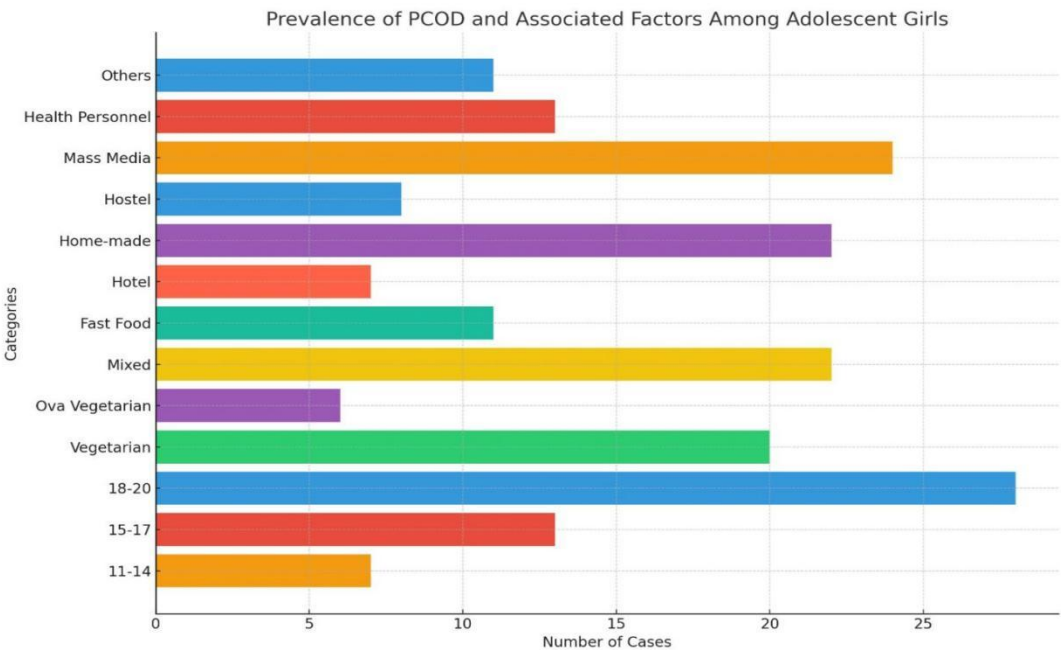


TABLE 2: FREQUENCY DISTRIBUTION OF PREVALENCE OF PCOD AMONG ADOLESCENT GIRLS (N=100)

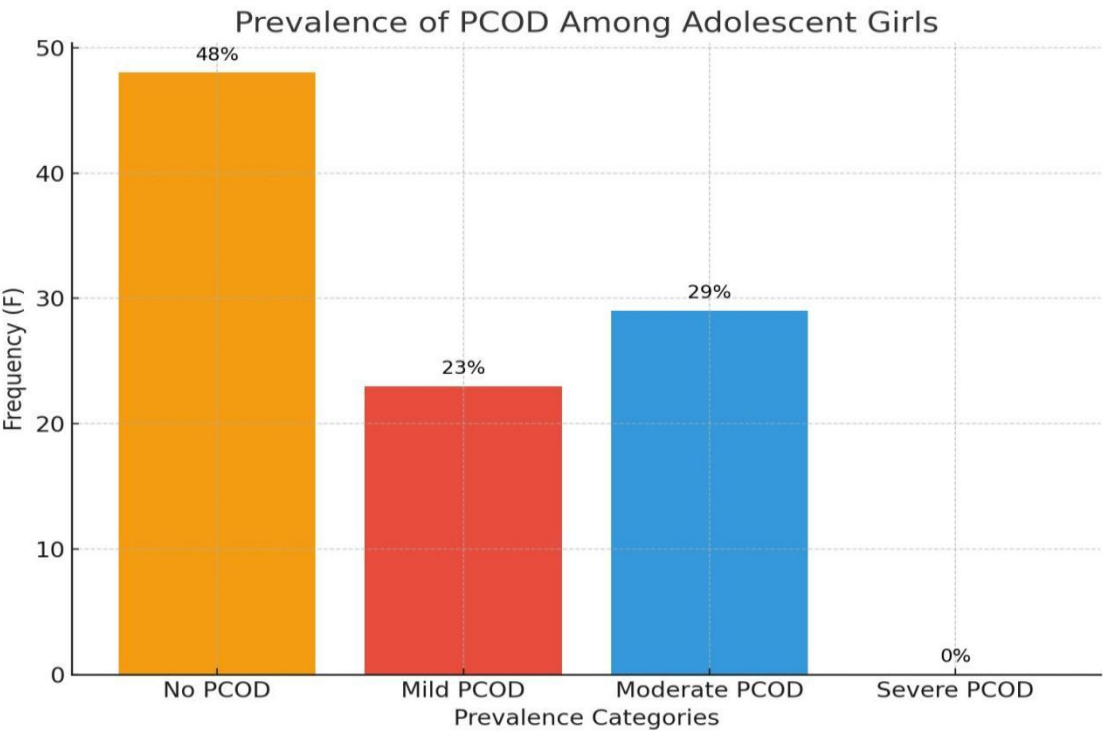


TABLE 3: MEAN AND STANDARD DEVIATION OF PREVALENCE OF PCOD AMONG ADOLESCENT GIRLS (N=100)

Category	Mean	Standard Deviation (SD)
Adolescent Girls	7.14	5.114

DISCUSSION

The findings of this study reveal insightful trends in the prevalence and factors associated with Polycystic Ovary Disease (PCOD) among adolescent girls at Timergara Teaching Hospital. The study shows that **48%** of the adolescents had no PCOD, while **29%** had moderate PCOD, and **23%** had mild PCOD, with no cases of severe PCOD being reported. These results are consistent with studies highlighting that PCOD is one of the most common endocrine disorders in young women, with variable degrees of severity ranging from mild to severe cases. 14 A significant portion of the population (48%) did not exhibit PCOD, which may indicate an early stage of the condition or even a lack of manifestation of symptoms in younger adolescents. This observation supports findings that the condition can be underdiagnosed in adolescent girls due to the subtle nature of its symptoms in early stages. However, the moderate PCOD group, accounting for 29%, aligns with findings from previous research, where moderate PCOD cases often present with hormonal imbalances, menstrual irregularities, and cystic ovaries, leading to reproductive complications later in life .15 The association between food patterns and the prevalence of PCOD is another critical finding. Adolescents with mixed diets had the highest percentage of moderate PCOD (19%), suggesting a potential link between modern dietary habits (which often include processed and high-fat foods) and the development of the syndrome. This is in line with other studies that have suggested a relationship between dietary habits and the onset of PCOD, with processed foods and obesity being key risk factors. Home-made food consumption, associated with lower PCOD prevalence, may be indicative of a healthier, more balanced diet, which has been recommended as part of the management of PCOD .16 In terms of information sources, **mass media** (24%) was the primary source of knowledge about PCOD, followed by **health personnel** (13%). This suggests a need for increased awareness and education regarding

PCOD, particularly through healthcare professionals. Many adolescent girls may gain misinformation from mass media or social media platforms, which could lead to confusion or delays in seeking proper diagnosis and treatment .¹⁷ The significant association between age and PCOD prevalence indicates that as adolescents mature, the symptoms of PCOD may become more pronounced, and the condition becomes easier to diagnose. Studies have shown that PCOD frequently manifests more clearly in women during their late teens and early twenties .¹⁸

CONCLUSION

study provides valuable insights into the prevalence and associated factors of PCOD among adolescent girls. The findings underscore the importance of early diagnosis, lifestyle interventions, and accurate health education to manage and mitigate the risks of PCOD. Addressing dietary habits, promoting balanced eating patterns, and ensuring accurate information through healthcare professionals are critical steps in improving the outcomes for adolescents with PCOD. Further research is needed to explore long-term effects and the impact of early interventions on PCOD progression.

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Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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Author Contributions

Tariq Hassan: Conceptualization, Methodology, Supervision, Writing - Original Draft. **Jalal Uddin & Habib Ahmad Khan:** Data Curation, Formal Analysis, Investigation Samreen Sultana & Lubna Tahir: Investigation, Resources, Project Administration. **Mohammad Imran Younus:** Software, Validation, Writing - Review & Editing. **Masood & Wasi Ullah:** Investigation, Visualization.

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