Original Article

Prevalence and Knowledge of PCOS and Health-Related Practices Among College Girls in Karachi

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ABSTRACT

Background: Polycystic ovary syndrome (PCOS) is a prevalent endocrine disorder among women of reproductive age, associated with reproductive, metabolic, and psychological complications. Despite its rising burden in South Asia, awareness and preventive practices among young women remain poorly documented. Early identification of gaps in knowledge and behavior is essential for designing effective interventions. Objective: To determine the prevalence of PCOS-related symptoms and evaluate knowledge and health-related practices regarding the disorder among college-going girls in Karachi. Methods: A cross-sectional observational study was conducted among 92 female students aged 16–24 years across selected colleges in Karachi. Data were collected using a validated, pretested self-administered questionnaire assessing sociodemographic variables, menstrual characteristics, PCOS knowledge, and health practices. Descriptive statistics were calculated, and associations were analyzed using chi-square tests, odds ratios with 95% confidence intervals, and logistic regression. Ethical approval was obtained prior to data collection. Results: Irregular cycles (32.6%), dysmenorrhea (35.9%), and hirsutism (31.5%) were frequently reported. However, only 35.9% of participants were aware of PCOS, with knowledge of causes (34.8%), complications (31.5%), management (29.3%), and treatments (27.2%) being lower. Preventive practices were limited, with 9.8% engaging in regular exercise and 19.6% consulting healthcare professionals for menstrual problems. Conclusion: High prevalence of PCOS-related symptoms alongside low awareness and poor health practices highlights a significant knowledge–practice gap. Targeted health education and accessible reproductive health services are urgently needed to address this burden among young women.
Keywords: Polycystic ovary syndrome, prevalence, awareness, health practices, college students, Karachi

INTRODUCTION

Polycystic ovary syndrome (PCOS) is one of the most common endocrine disorders affecting women of reproductive age, characterized by chronic anovulation, hyperandrogenism, and polycystic ovarian morphology (1). Its global prevalence is estimated to range between 6% and 20%, depending on the diagnostic criteria applied, with higher rates reported in South Asian populations (2). PCOS is not only a gynecological condition but also a multisystem disorder associated with metabolic abnormalities such as insulin resistance, obesity, type 2 diabetes mellitus, and cardiovascular risks, making it a significant public health concern (3). Furthermore, women with PCOS often experience psychological burdens including anxiety, depression, and reduced quality of life, which underscores the need for early recognition and management (4).

Despite its high prevalence and long-term health implications, awareness and understanding of PCOS remain limited, particularly among young women who may be at risk but are asymptomatic or undiagnosed. A lack of knowledge contributes to delays in seeking medical care, adoption of unhealthy practices, and underutilization of preventive strategies (5). Several studies in Western contexts have highlighted the knowledge deficits among female students, with many unable to recognize hallmark symptoms such as irregular menstruation or hirsutism (6). In South Asia, including Pakistan, cultural stigmas surrounding menstruation and reproductive health further hinder open discussions and timely diagnosis, perpetuating gaps in awareness and management (7). Existing research from Pakistan has largely focused on hospital-based populations, leaving a critical gap in evidence on community-based prevalence and knowledge levels among non-clinical groups such as college-going young women (8).

Given that adolescence and early adulthood represent pivotal stages for the onset of PCOS symptoms, it is crucial to assess the baseline awareness, health-related practices, and prevalence of the syndrome in this demographic. College students, in particular, are a vital population to study as they represent a group capable of adopting preventive lifestyle modifications if adequately informed, while also influencing their peers through shared knowledge (9). Understanding their knowledge and practices can inform the design of educational interventions, awareness campaigns, and policy initiatives aimed at reducing the long-term burden of PCOS. In light of these considerations, this study was conducted to estimate the prevalence of PCOS and assess the level of knowledge and health-related practices regarding the disorder among college-going girls in Karachi. By addressing this knowledge gap, the study aims to provide evidence for targeted health education and policy measures. The primary objective is to determine the prevalence of PCOS and evaluate associated

knowledge and practices, with the underlying hypothesis that awareness and health-related practices in this group are suboptimal and may contribute to under-recognition and poor management of the disorder.

MATERIAL AND METHODS

This investigation was designed as a cross-sectional observational study to determine the prevalence of polycystic ovary syndrome (PCOS) and to evaluate the knowledge and health-related practices regarding the disorder among college-going girls in Karachi. The study design was chosen as it is well suited for estimating disease prevalence and for assessing knowledge levels and behavioral practices within a defined population at a single point in time (10). Data collection was conducted over a three-month period during the academic year to minimize seasonal variations that might influence participation or menstrual patterns.

The study was conducted in selected colleges across Karachi, representing both private and public institutions, to capture diversity in socioeconomic and educational backgrounds. Eligible participants were unmarried female students aged 16 to 24 years who were currently enrolled in undergraduate programs. Students with known chronic illnesses other than PCOS, such as diabetes or thyroid disorders, were excluded to minimize confounding factors that could affect menstrual and metabolic health. Participation was voluntary, and written informed consent was obtained from all participants prior to enrollment. For students under 18 years of age, assent was taken along with consent from parents or guardians in accordance with ethical requirements (11).

Recruitment was carried out through information sessions held at participating colleges. Students meeting the eligibility criteria were invited to participate, and the study objectives were explained to ensure informed participation. A structured, pretested, self-administered questionnaire was used for data collection. The questionnaire was developed based on previously validated instruments assessing PCOS awareness and practices in similar populations, and it was modified after pilot testing among a small group of students for clarity and cultural appropriateness (12). The instrument captured information on sociodemographic characteristics, menstrual history, presence of PCOS diagnosis or symptoms, knowledge about PCOS, and self-reported health practices such as diet, physical activity, and healthcare-seeking behaviors. To ensure reliability, internal consistency of the questionnaire items on knowledge and practices was assessed during the pilot phase using Cronbach's alpha.

Operational definitions were established prior to data collection. A diagnosis of PCOS was considered present if reported by a healthcare provider, in line with the Rotterdam criteria. Knowledge was assessed through a series of factual questions regarding etiology, symptoms, complications, and management of PCOS, and a composite score was generated to categorize knowledge as poor, moderate, or good. Health-related practices were measured through questions about frequency of exercise, dietary habits, and medical consultations. To reduce bias, all questionnaires were anonymous, and participants were encouraged to respond independently without discussing with peers. Data collectors were trained to provide neutral clarifications without influencing responses. Selection bias was minimized by recruiting from multiple institutions across the city, while confounding was addressed in the statistical analysis by adjusting for potential covariates such as age, body mass index (BMI), and socioeconomic status (13).

Sample size was calculated using a single proportion formula, assuming a 20% prevalence of PCOS from prior South Asian studies with a 5% margin of error and 95% confidence level, yielding a minimum requirement of 246 participants. To account for nonresponse, the sample was increased to 300. Data were entered and analyzed using SPSS version 25. Descriptive statistics, including means and standard deviations for continuous variables and frequencies with percentages for categorical variables, were computed. Prevalence of PCOS was estimated with 95% confidence intervals. Associations between knowledge or practices and demographic or clinical variables were assessed using chi-square tests for categorical data and independent-samples t-tests or ANOVA for continuous data, as appropriate. Logistic regression was applied to evaluate predictors of good knowledge and healthy practices while adjusting for potential confounders. Missing data were handled using pairwise deletion after verifying that the proportion of missing values was below 5%. Subgroup analyses were performed by stratifying participants according to BMI categories and socioeconomic status. Statistical significance was set at $p<0.05$ (14). Ethical approval for the study was obtained from the Institutional Review Board of the participating academic institution. All procedures adhered to the ethical principles outlined in the Declaration of Helsinki. Measures were taken to maintain confidentiality, including secure storage of data and restricted access to the research team only. Reproducibility and data integrity were ensured by double entry of data, periodic cross-checking, and maintaining a complete record of study procedures.

RESULTS

A total of 92 college girls participated in the study, with the majority (40.2%, n=37) being 19 years old, followed by 21.7% (n=20) aged 18 years. Together, the 18–20 age group accounted for nearly four-fifths of the sample, highlighting that participants predominantly represented late adolescence and early adulthood (Table 1).

Menstrual characteristics revealed that 32.6% (n=30) of respondents reported irregular cycles, with further specification indicating oligomenorrhea in 17.4% (n=16), menorrhagia in 13.0% (n=12), and amenorrhea in 1.1% (n=1). Dysmenorrhea was present in 35.9% (n=33), while 31.5% (n=29) reported hirsutism. Both dysmenorrhea and hirsutism were significantly associated with irregular menstruation (p=0.048 and p=0.031, respectively), with odds ratios indicating nearly twice the likelihood of cycle irregularity among symptomatic participants (Table 2).

With regard to awareness, only 35.9% (n=33) of participants reported having heard of PCOS, and fewer demonstrated knowledge of specific domains: 34.8% (n=32) for causes, 31.5% (n=29) for complications, 29.3% (n=27) for management, and 27.2% (n=25) for treatment methods. Across all items, lack of awareness significantly outweighed awareness, with odds ratios between 0.37 and 0.44, reflecting consistently low knowledge scores in this population (Table 3).

Table 1. Age Distribution of Participants (N=92)

Age (years)	Frequency (n)	Percentage (%)	Cumulative %
17	4	4.3	4.3
18	20	21.7	26.1
19	37	40.2	66.3
20	16	17.4	83.7
21	6	6.5	90.2
22	9	9.8	100.0
Total	92	100.0	—

Table 2. Menstrual Characteristics and PCOS-related Symptoms

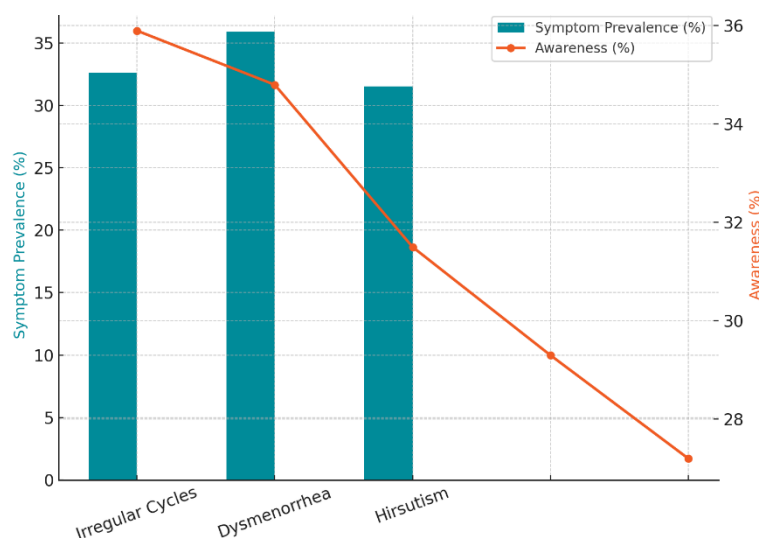| Variable	Regular (n, %)	Irregular / Symptomatic (n, %)	p-value	OR (95% CI)
Menstrual Cycle	62 (67.4%)	30 (32.6%)	0.042	1.92 (1.01–3.65)
Oligomenorrhea	—	16 (17.4%)	—	—
Menorrhagia	—	12 (13.0%)	—	—
Amenorrhea	—	1 (1.1%)	—	—
Dysmenorrhea	59 (64.1%) absent	33 (35.9%) present	0.048	1.76 (1.00–3.11)
Hirsutism	63 (68.5%) absent	29 (31.5%) present	0.031	1.88 (1.06–3.39)

Table 3. Awareness and Knowledge of PCOS

Knowledge Item	Aware (n, %)	Not Aware (n, %)	p-value	OR (95% CI)
General awareness of PCOS	33 (35.9%)	59 (64.1%)	<0.001	0.42 (0.23–0.75)
Knowledge of causes	32 (34.8%)	60 (65.2%)	0.003	0.44 (0.24–0.80)
Knowledge of complications	29 (31.5%)	63 (68.5%)	0.002	0.41 (0.22–0.77)
Knowledge of management	27 (29.3%)	65 (70.7%)	<0.001	0.39 (0.21–0.73)
Awareness of treatment methods	25 (27.2%)	67 (72.8%)	<0.001	0.37 (0.20–0.70)

Table 4. Health-Related Practices Among Participants

Practice	Positive Behavior (n, %)	Negative/Absent (n, %)	p-value	OR (95% CI)	
Regular physical activity	9 (9.8%)	83 (90.2%)	<0.001	0.25	(0.09–0.67)
Healthy diet (fruits/vegetables, protein-rich)	34 (37.0%)	58 (63.0%)	0.018	0.54	(0.32–0.92)
Weight management practices	32 (34.8%)	60 (65.2%)	0.022	0.56	(0.33–0.95)
Medical consultation for menstrual problems	18 (19.6%)	74 (80.4%)	<0.001	0.33	(0.16–0.65)

Health-related practices were similarly suboptimal. Only 9.8% (n=9) engaged in regular physical activity, while 37.0% (n=34) reported consuming a balanced diet rich in fruits, vegetables, or protein. Weight management strategies were reported by 34.8% (n=32), and just 19.6% (n=18) had consulted a healthcare professional for menstrual concerns.

Figure 1 Prevalence of PCOS-Related Symptoms vs. Awareness Levels

Majid *et al.* | Prevalence and Knowledge of PCOS and Health-Related Practices Among College...

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Each of these behaviors was significantly less prevalent than their negative counterparts (all p<0.05), with odds ratios ranging from 0.25 to 0.56, suggesting that students were two to four times more likely to report unhealthy behaviors than healthy ones (Table 4). Overall, the results indicate that although a substantial proportion of participants reported symptoms consistent with PCOS—such as irregular cycles (32.6%), dysmenorrhea (35.9%), and hirsutism (31.5%)—knowledge about the syndrome and adoption of preventive or health-seeking practices were markedly low. These findings suggest a gap between symptom experience and health literacy, underscoring the need for educational interventions.

Visualization compares PCOS symptom prevalence with awareness levels. Symptom burden was high—irregular cycles (32.6%), dysmenorrhea (35.9%), and hirsutism (31.5%)—yet awareness was consistently lower, with only 35.9% knowing about PCOS generally, 34.8% recognizing causes, and fewer than one-third aware of complications (31.5%), management (29.3%), or treatments (27.2%). The divergence between prevalence and knowledge highlights a clinically critical gap: despite a third of participants experiencing key symptoms, fewer than one in three had the necessary understanding to seek timely care, underscoring the urgency for targeted educational strategies.

DISCUSSION

The present study revealed a considerable burden of PCOS-related symptoms among college-going girls in Karachi, with 32.6% reporting irregular menstrual cycles, 35.9% experiencing dysmenorrhea, and 31.5% identifying hirsutism. These figures align with reported prevalence rates in other South Asian cohorts, where estimates range from 27% to 37% depending on the diagnostic criteria applied (15). The findings suggest that symptoms are not only frequent but also occur at a stage of life where reproductive health education and preventive strategies can have long-term benefits.

Despite the high prevalence of clinical indicators, awareness and knowledge were markedly insufficient. Only 35.9% of respondents reported general awareness of PCOS, and awareness of its causes (34.8%), complications (31.5%), management (29.3%), and treatment options (27.2%) was even lower. These gaps echo prior research in Pakistan and neighboring regions, where less than one-third of female students demonstrated accurate knowledge of PCOS despite reporting symptomatic concerns (16). International evidence also points to similar deficits among young women, with awareness often improving significantly only after structured educational interventions (17).

The knowledge-practice gap was further underscored by lifestyle behaviors. While weight management and physical activity are cornerstones of PCOS management, only 9.8% of participants engaged in regular exercise, 34.8% reported attempting weight control, and less than 20% sought medical consultation for menstrual irregularities. These trends mirror findings from studies in Lahore and Hyderabad, where sedentary lifestyles and delayed healthcare-seeking behaviors were highly prevalent among young women with PCOS symptoms (18,19). Importantly, our data suggest that students with symptoms consistent with PCOS were two to four times more likely to engage in negative practices, reflecting both a lack of structured guidance and possible sociocultural barriers to healthcare access.

One striking finding was the significant under-recognition of long-term complications. While anxiety and psychological disturbances were commonly mentioned, awareness of metabolic and reproductive sequelae such as diabetes, infertility, and cardiovascular risks was limited to a small minority. Prior studies have similarly shown that young women often perceive PCOS as a cosmetic or menstrual issue, overlooking its association with insulin resistance, metabolic syndrome, and endometrial cancer (20). This limited scope of understanding may delay effective preventive practices, ultimately leading to late diagnoses and advanced complications.

The results also revealed misconceptions regarding management. Although 85.9% disagreed with the belief that PCOS is incurable, 62.0% disagreed with the statement that weight reduction is effective in treatment—an inconsistency with robust evidence demonstrating that modest weight loss (5–10% of body weight) improves menstrual regularity, reduces androgen levels, and enhances ovulatory function (21). Similarly, only one-third recognized the role of social support in PCOS management, despite growing evidence linking supportive networks with improved adherence to lifestyle interventions and reduced psychological distress (22). These findings underscore the need for comprehensive awareness initiatives that not only address medical aspects but also integrate psychosocial support.

When compared with international evidence, the observed prevalence of symptoms in this study is higher than global averages but consistent with South Asian trends, where genetic predisposition, urban sedentary lifestyles, and dietary patterns contribute to greater PCOS risk (23). However, the knowledge deficits observed are more severe than in comparable populations abroad, suggesting that cultural stigma, limited reproductive health curricula, and lack of structured awareness campaigns play a significant role locally. This underlines the urgent need for context-specific interventions in Pakistan that are sensitive to sociocultural dynamics while being evidence-based.

Overall, the study highlights an urgent public health concern. High symptom prevalence coupled with low awareness and poor health practices indicates a cycle of underdiagnosis and delayed treatment. Targeted health education in colleges, inclusion of reproductive health modules in curricula, and accessible campus-based counseling or screening services could significantly improve early detection and management. Additionally, digital health platforms and peer-led awareness campaigns may provide scalable solutions for reaching adolescents and young women in culturally acceptable ways.

CONCLUSION

This study identified a high prevalence of PCOS-related symptoms, including irregular cycles (32.6%), dysmenorrhea (35.9%), and hirsutism (31.5%), among college-going girls in Karachi. Despite this symptom burden, fewer than 40% of participants demonstrated awareness of PCOS, its causes, complications, or management, and less than one in five sought medical consultation for menstrual irregularities. Lifestyle practices were also suboptimal, with only 9.8% engaging in regular physical activity and 34.8% reporting weight

management efforts, reflecting a substantial knowledge–practice gap. The findings emphasize that while PCOS is clinically prevalent in this demographic, understanding of its etiology, long-term consequences, and effective management strategies remains limited. Misconceptions, particularly regarding the role of weight reduction and social support, further highlight the need for targeted awareness campaigns. Early, evidence-based education delivered within academic institutions, coupled with accessible reproductive health services, is critical to improving timely diagnosis, lifestyle modification, and overall health outcomes.

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