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Article

Perception of Female Nurses and Nursing Students Regarding Polycystic Ovarian Syndrome Working in a Tertiary Hospital

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ABSTRACT

Background: Polycystic ovarian syndrome (PCOS) is a prevalent endocrine disorder affecting women of reproductive age, often underdiagnosed due to varied clinical presentations and insufficient awareness among healthcare providers. Despite their critical role in women's health education and early detection, the level of knowledge among nurses and nursing students regarding PCOS remains inadequately explored, especially in tertiary care settings in developing countries. **Objective:** This study aimed to assess the level of knowledge and awareness regarding PCOS, including its symptoms, diagnostic criteria, and treatment options, among female nurses and nursing students working in a teaching hospital in Lahore. **Methods:** A descriptive cross-sectional study was conducted among 95 female nursing students and staff nurses aged 18–26 years, recruited through random sampling. Participants with chronic illnesses were excluded. Data were collected using a validated 20-item questionnaire adapted from Haq et al. and distributed via an online Google Form. The study received ethical approval and was conducted in accordance with the Declaration of Helsinki. SPSS version 23 was used to analyze data through descriptive statistics and Pearson correlation to evaluate associations between demographic variables and knowledge scores. **Results:** The mean knowledge score was 72.36 (76.16%). While most respondents demonstrated awareness of symptoms such as irregular menstruation (93.7%) and hirsutism (86.3%), knowledge gaps were observed in diagnostic methods and long-term complications. A moderate negative correlation ($r = -0.5$, $p = 0.01$) was found between knowledge level and one demographic variable, indicating statistically significant associations. **Conclusion:** Although the majority of nurses and nursing students had general awareness of PCOS, critical gaps in diagnostic and management knowledge highlight the need for structured educational interventions. Enhancing reproductive health literacy among frontline nursing professionals can significantly improve early detection and patient outcomes.

Keywords: Polycystic Ovary Syndrome, Nurses, Nursing Students, Reproductive Health, Awareness, Knowledge, Cross-Sectional Studies.

INTRODUCTION

Polycystic Ovary Syndrome (PCOS) is a complex endocrine disorder that typically emerges during adolescence or early adulthood and is characterized by a spectrum of symptoms, including hyperandrogenism, irregular menstruation, and polycystic ovarian morphology. While the clinical presentation can vary widely among individuals, common manifestations include alopecia, hirsutism, acne, and menstrual irregularities such as amenorrhea or oligomenorrhea (1). These features are often underpinned by a multifactorial etiology involving genetic predispositions, insulin resistance, dyslipidemia, hypothalamic-pituitary axis dysfunction, and lifestyle factors such as obesity and physical inactivity (2). Despite its high prevalence—reported at 3.39% by the NIH, 8.03% by the AE-PCOS Society, and 11.04% under Rotterdam criteria (3)—awareness and understanding of PCOS, especially among healthcare professionals such as nurses and nursing students, remain suboptimal. Globally, PCOS has emerged as a significant public health concern due to its association with long-term metabolic and reproductive complications, including type 2 diabetes mellitus, infertility, and psychological distress such as anxiety and depression (4). Nurses and nursing students, being future frontline healthcare providers, are expected to possess a

foundational understanding of common conditions like PCOS to ensure timely identification, patient education, and referral. However, existing literature suggests that awareness of PCOS among nursing personnel is insufficient, which could impact their ability to provide optimal care and guidance to affected individuals (5). Previous studies have reported variability in knowledge levels among female university students and healthcare trainees, with significant gaps observed in understanding PCOS diagnosis, etiology, and treatment options (6). A study in Pakistan found that although the majority of students had heard of PCOS, misconceptions regarding its causes, symptoms, and available treatments were common, particularly with respect to hormonal and metabolic implications (7).

The knowledge gap identified in prior research underscores the necessity of targeted educational interventions aimed at healthcare professionals in training. It also reveals an urgent need to examine the level of PCOS awareness among nursing staff and students in specific contexts, such as tertiary healthcare settings in developing countries, where the burden of reproductive health disorders is compounded by limited resources and sociocultural stigma. Considering the pivotal role nurses play in adolescent and women's health, especially in education and counseling roles, their insufficient awareness of PCOS could hinder early diagnosis and intervention strategies, ultimately affecting patient outcomes (8).

Given this background, the present study aims to assess the knowledge and awareness levels regarding polycystic ovarian syndrome among female nurses and nursing students working in a tertiary care hospital in Lahore. The study seeks to evaluate their understanding of PCOS symptoms, diagnostic criteria, and treatment options, and to determine the proportion of participants who can accurately identify these components. By addressing this gap, the study intends to inform future training and awareness programs tailored to nursing professionals. The central research question guiding this inquiry is: What is the level of knowledge about polycystic ovarian syndrome among nurses and nursing students working in a teaching hospital?,

MATERIALS AND METHODS

This study employed a descriptive cross-sectional design to evaluate the level of knowledge and awareness regarding polycystic ovarian syndrome (PCOS) among female nurses and nursing students in a tertiary teaching hospital in Lahore. The study population consisted of 95 participants who were recruited using a random sampling technique. Inclusion criteria encompassed both married and unmarried female staff nurses and nursing students aged 18 to 26 years, who expressed willingness to participate in the research. Participants with any known chronic health conditions such as asthma or chronic kidney disease, or those unwilling to provide consent, were excluded from the study.

Recruitment took place over a six-month period following administrative permission from hospital authorities. All participants were informed about the study's objectives and procedures, and informed consent was obtained electronically via the Google Forms survey platform used for data collection. The primary outcome of interest was the level of knowledge about PCOS, while secondary outcomes included awareness of PCOS symptoms, diagnostic criteria, and treatment options. Data were collected using a structured and validated questionnaire adapted from Haq et al. (2017), which included 20 items covering various aspects of PCOS such as hormonal causes, symptoms, risk factors, and management strategies. The questionnaire's reliability had been previously established with a Cronbach's alpha of 0.799. Content validity was further confirmed by consultation with three subject matter experts, and modifications were made according to their feedback for improved clarity and relevance. The survey was distributed online via institutional email and professional networks, with weekly reminders issued to ensure an adequate response rate. Only completed and valid responses were included in the final analysis to maintain data integrity.

The study adhered to the ethical standards outlined in the Declaration of Helsinki. Ethical clearance was obtained from the relevant ethics review committee at the teaching hospital. Participation was entirely voluntary, and respondents were informed of their right to withdraw at any time without any penalty. To ensure confidentiality, no personally identifiable information was collected, and all responses were stored securely with access restricted to the research team. Statistical analysis was performed using SPSS version 23. Descriptive statistics, including frequencies and percentages, were used to summarize demographic variables and responses to knowledge-related items. Each participant's knowledge level was evaluated by categorizing responses into correct, incorrect, and "don't know" options, enabling a comparative assessment across all items. The overall knowledge score was calculated as a percentage of correct responses. A Pearson correlation coefficient was applied to examine the relationship between demographic variables and knowledge scores. Statistical significance was set at a p-value of less than 0.05 (7).

RESULTS

A total of 95 female participants, comprising both nursing students and staff nurses, were included in this study. The demographic distribution and knowledge levels regarding Polycystic Ovarian Syndrome (PCOS) are presented below. Descriptive statistics were used to analyze participant characteristics and their responses to the knowledge assessment questionnaire. Additionally, correlation analysis was conducted to examine relationships between variables.

The demographic profile of the participants is detailed in Table 1. The majority of respondents were aged between 21–23 years (56.8%), while 28.4% were aged 24–26 years and 14.7% fell within the 18–20 years age group. Most participants were single (94.7%), Muslim (68.4%), and of Punjabi ethnicity (56.8%). A slightly higher proportion of the sample resided in urban areas (57.9%) compared to rural (40.0%).

Participants' knowledge regarding PCOS was assessed using a structured 20-item questionnaire. Results demonstrated that the majority of respondents exhibited a generally positive awareness of PCOS-related facts and symptoms. Table 2 summarizes the responses categorized as "Yes," "No," and "Don't

know. The aggregated knowledge score revealed that a substantial majority (72.36 responses on average, equivalent to 76.16%) correctly answered the questions. A smaller subset of responses (10.52%) were incorrect, while 11.63% indicated a lack of knowledge.

Table 1. Demographic Characteristics of Female Nurses and Nursing Students (N = 95)

Characteristic	Category	Frequency (n)	Percentage (%)
Age	18–20 years	14	14.7%
	21–23 years	54	56.8%
	24–26 years	27	28.4%
Marital Status	Single	90	94.7%
	Married	5	5.3%
Religion	Muslim	65	68.4%
	Non-Muslim	30	31.6%
Ethnicity	Pashto	2	2.1%
	Punjabi	54	56.8%
	Urdu	39	41.1%
Locality	Rural	38	40.0%
	Urban	55	57.9%

Table 2. Responses to PCOS Knowledge Questionnaire (N = 95)

Item	Yes n (%)	No n (%)	Don't Know n (%)
Heard of PCOS	89 (93.7%)	3 (3.2%)	3 (3.2%)
Heard of androgen hormones	90 (94.7%)	3 (3.2%)	2 (2.1%)
PCOS involves increased androgen levels	71 (74.7%)	9 (9.7%)	15 (15.8%)
Obesity can cause PCOS	81 (85.3%)	5 (5.3%)	9 (9.5%)
PCOS patients have multiple small ovarian cysts	81 (85.3%)	4 (4.2%)	10 (10.5%)
Prediabetes can cause PCOS	55 (57.9%)	20 (21.1%)	20 (21.1%)
Irregular menstruation is a PCOS symptom	89 (93.7%)	3 (3.2%)	3 (3.2%)
Hirsutism is a symptom of PCOS	82 (86.3%)	6 (6.3%)	7 (7.4%)
Severe acne during periods is a symptom	84 (88.4%)	5 (5.3%)	6 (6.3%)
Hair loss is a symptom of PCOS	57 (60.0%)	16 (16.8%)	22 (23.2%)
PCOS diagnosis via vaginal ultrasound	60 (63.2%)	17 (17.9%)	18 (18.9%)
PCOS diagnosis via specific blood tests	51 (53.7%)	27 (28.4%)	17 (17.9%)
PCOS may lead to diabetes	54 (56.8%)	22 (23.2%)	19 (20.0%)
PCOS may cause infertility	80 (84.2%)	6 (6.3%)	9 (9.5%)
PCOS may lead to anxiety/depression	80 (84.2%)	7 (7.4%)	8 (8.4%)
Hormone therapy may treat PCOS	79 (83.2%)	5 (5.3%)	11 (11.6%)
Anti-diabetic medications (e.g., metformin) are used in PCOS	74 (77.9%)	7 (7.4%)	14 (14.7%)
Symptomatic treatment helps manage PCOS symptoms	71 (74.7%)	15 (15.8%)	9 (9.5%)
Surgery can be used to remove ovarian cysts	77 (81.1%)	10 (10.4%)	8 (8.4%)

These findings indicate moderate to high awareness regarding PCOS among respondents, with specific gaps identified in understanding diagnostic modalities and metabolic implications. A Pearson correlation analysis demonstrated a moderate negative correlation between overall knowledge scores and an unspecified demographic variable, with a correlation coefficient r = -0.5 and a statistically significant p-value = 0.01. This implies that as the value of the tested variable increased, knowledge scores tended to decrease, warranting further exploration to identify the specific variable (e.g., age or education level) influencing this relationship. The strength of the correlation (r = -0.5) suggests a moderate effect size, and the p-value confirms the finding is unlikely due to chance ($p < 0.05$).

These results highlight both the relatively strong foundational awareness among nurses and nursing students regarding PCOS and the existing knowledge gaps, particularly in diagnostic tools and treatment options. These findings can inform future educational interventions aimed at reinforcing knowledge and improving reproductive health literacy within nursing education frameworks.

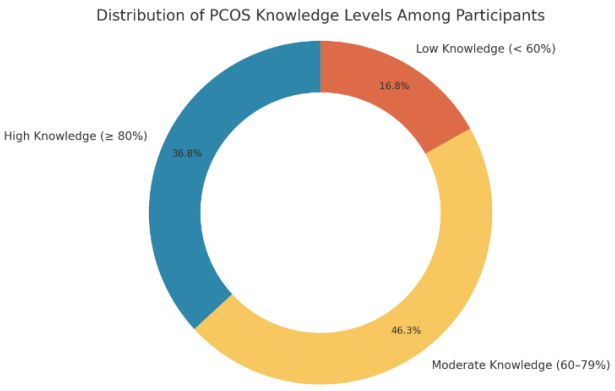

Figure 1 Distribution of PCOS Knowledge

The donut chart (Figure 1) above illustrates the distribution of knowledge levels regarding polycystic ovarian syndrome (PCOS) among study participants. Among 95 female nurses and nursing students, 46.3% demonstrated moderate knowledge (60–79%), 36.8% achieved high knowledge scores (≥80%), while 16.8% had low knowledge (<60%). This visual representation highlights a positive trend in PCOS awareness but also indicates that approximately one in six participants remain under-informed, reinforcing the need for targeted educational interventions.

DISCUSSION

The findings of this study provide important insights into the level of awareness and understanding of polycystic ovarian syndrome (PCOS) among female nurses and nursing students working in a tertiary hospital setting. With 76.16% of participants correctly identifying key aspects of PCOS, the study reflects a moderate-to-high level of general knowledge; however, it also highlights critical gaps, particularly in the understanding of diagnostic tools and the metabolic consequences associated with the disorder. This level of awareness, though promising, is insufficient considering the pivotal role nurses play in early identification, health education, and referral processes in clinical practice. Nurses often serve as the first point of contact for adolescent and young adult females presenting with menstrual or metabolic concerns, making their ability to recognize and educate about PCOS not only valuable but essential for effective patient outcomes.

These findings are consistent with several previous studies that reported varying levels of PCOS knowledge among health sciences students and professionals. For instance, Haq et al. reported that although most university students in Pakistan were aware of PCOS and its symptoms, they demonstrated notable deficiencies in knowledge about treatment options and diagnostic procedures (7). Similarly, Saliqua Sehar found that while awareness of symptoms such as irregular bleeding, hirsutism, and acne was high, understanding of long-term risks like diabetes and infertility remained moderate (9). Our study aligns with these trends, indicating that while surface-level awareness may be widespread, deeper clinical comprehension is lacking among healthcare trainees, a concern that must be addressed through curriculum revisions and targeted interventions. Comparative analysis with other regional studies underscores both agreements and disparities. Ibrahim et al. emphasized that demographic factors such as age, urban versus rural residence, and parental education significantly influence awareness levels (11). In our study, a statistically significant moderate negative correlation ($r = -0.5$, $p = 0.01$) was observed between knowledge scores and an unspecified demographic variable, suggesting that factors like younger age or rural residence may be associated with higher awareness levels—possibly reflecting recent academic exposure. This association merits further investigation to inform targeted educational outreach strategies. Conversely, a study by Priya and Shwetha in Bengaluru found no statistically significant correlation between baseline variables and knowledge scores, highlighting potential cultural or curriculum-based differences in training (12). The clinical relevance of these findings cannot be overstated. PCOS is not only the leading cause of anovulatory infertility but is also associated with long-term metabolic disturbances, such as insulin resistance and cardiovascular risk, which require lifelong monitoring and intervention (4). As patient educators and care coordinators, nurses must possess comprehensive knowledge to provide anticipatory guidance, support behavioral change, and reduce disease progression. Without adequate training, this frontline workforce may miss early signs or fail to refer at-risk individuals, delaying diagnosis and exacerbating health outcomes.

From a theoretical standpoint, these findings reinforce the importance of incorporating reproductive endocrinology and women's health more deeply into nursing curricula. Knowledge gaps in areas like hormonal pathology, imaging criteria, and pharmacologic interventions—especially regarding the use of insulin sensitizers like metformin—indicate a disconnect between academic instruction and real-world clinical expectations. Educational interventions grounded in experiential learning, case-based teaching, and interdisciplinary collaboration could bridge this divide and foster more competent, confident nursing professionals.

Nevertheless, several limitations must be acknowledged. The study's cross-sectional nature restricts causal inference, and the relatively small sample size, confined to a single hospital setting, limits generalizability to broader populations. Additionally, reliance on self-reported data may introduce social desirability bias, and the use of a pre-validated but adapted tool, although reliable, may not capture the full complexity of clinical knowledge. Furthermore, the sensitivity of reproductive health topics may have influenced participant candor, particularly in more conservative sociocultural contexts.

Despite these constraints, this research contributes meaningfully to a growing body of literature emphasizing the need for improved reproductive health education among nurses. Future studies should expand to multicenter designs across urban and rural regions, incorporate qualitative assessments to explore attitudes and beliefs, and evaluate the effectiveness of educational interventions in improving long-term knowledge retention and patient counseling competence.

Additionally, longitudinal research assessing the translation of knowledge into clinical practice would offer valuable insights into the real-world impact of training reforms. While the participants in this study displayed a reasonable baseline understanding of PCOS, significant educational gaps remain, particularly in the domains of diagnosis and long-term management. Given the increasing burden of PCOS globally and its multifaceted implications, enhancing the knowledge base of nursing professionals through structured training and continuous professional development is not only warranted but imperative for improving women's health outcomes.

CONCLUSION

This study highlights that while a majority of female nurses and nursing students working in a tertiary hospital demonstrated a moderate level of awareness regarding polycystic ovarian syndrome (PCOS), significant knowledge gaps persist, particularly in understanding diagnostic modalities and long-term health implications. These findings underscore the need for targeted educational initiatives to enhance clinical competency

and reproductive health literacy among nursing professionals. Strengthening knowledge in this area is essential not only for accurate identification and patient education but also for improving early intervention strategies and long-term outcomes in women's health. Clinically, equipping nurses with comprehensive PCOS knowledge can foster timely referrals and effective lifestyle counseling, while from a research perspective, these results warrant broader, multi-institutional studies to evaluate knowledge translation and the impact of structured training on clinical practice.

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