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KNOWLEDGE OF POLYCYSTIC OVARY SYNDROME AMONG PHYSICAL THERAPISTS WORKING IN PRIVATE AND PUBLIC HOSPITALS OF PESHAWAR: A CROSS-SECTIONAL STUDY

Original Research

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ABSTRACT

Background: Polycystic Ovary Syndrome (PCOS) is one of the most common endocrine disorders among women of reproductive age, characterized by menstrual irregularities, hyperandrogenism, and metabolic complications. Globally, PCOS prevalence ranges between 4% and 20%, yet awareness among healthcare professionals, particularly physiotherapists, remains inadequate. Physiotherapists play a central role in promoting lifestyle modifications, including exercise and physical activity, which are first-line strategies for managing PCOS. Despite this, evidence from Pakistan exploring physiotherapists' knowledge on PCOS is limited.

Objective: This study aimed to assess the knowledge of physiotherapists in Peshawar regarding PCOS and to determine associations between knowledge levels and demographic or professional characteristics.

Methods: A descriptive cross-sectional study was conducted between July and December 2024 among 152 physiotherapists working in public and private hospitals in Peshawar. Participants were recruited through a census approach, ensuring inclusion of the entire accessible population. Eligibility required at least six months of professional experience. Data were collected using a structured, validated, self-administered questionnaire consisting of 20 items, which was piloted for reliability (Cronbach's alpha = 0.903). Knowledge scores were categorised as poor (≤31) or good (>31). Data were analyzed using SPSS version 22, applying descriptive statistics and Chi-square tests, with $p < 0.05$ considered significant.

Results: Among the 152 participants, 80 (53%) were male and 72 (47%) were female. Overall, 83 (54.6%) demonstrated poor knowledge of PCOS, while 69 (45.4%) exhibited good knowledge. Gender was significantly associated with knowledge levels ($p = 0.028$), with 46 males displaying good knowledge compared to 23 females. No significant associations were found with age ($p = 0.326$), specialty ($p = 0.207$), work experience ($p = 0.449$), number of workshops attended ($p = 0.963$), patients managed ($p = 0.10$), or family history ($p = 0.274$).

Conclusion: The study highlights considerable knowledge gaps among physiotherapists in Peshawar, particularly among female professionals. These findings underscore the urgent need for targeted educational programs, awareness initiatives, and curriculum integration of women's health to strengthen multidisciplinary management of PCOS and improve patient outcomes.

Keywords: Exercise Therapy, Knowledge, Pakistan, Physical Therapists, Polycystic Ovary Syndrome, Reproductive Health, Women's Health.

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INTRODUCTION

Polycystic Ovary Syndrome (PCOS), historically termed Polycystic Ovary Disease (PCOD) and earlier described as Stein-Leventhal syndrome, is a prevalent endocrine disorder characterized by ovarian dysfunction and hyperandrogenism (1,2). While the terminology has evolved, with recent proposals suggesting renaming PCOS to "functional female hyper-androgenism" or "estrogenic ovulatory dysfunction" to more accurately describe its underlying mechanisms (3), the precise etiology remains elusive. Current evidence supports the view that PCOS arises from a complex interplay of genetic susceptibility, environmental exposures, and lifestyle influences, which together disrupt normal ovarian physiology (2). Clinically, PCOS presents with a broad spectrum of manifestations including menstrual irregularities, hirsutism, acne, obesity, first-trimester miscarriage, and infertility (4,5). Contributory factors such as stress, obesity, and prenatal influences further exacerbate its clinical burden (6). Lifestyle changes associated with modernization—particularly increased consumption of calorie-dense fast food, sugary beverages, and processed diets—have been strongly linked with metabolic and hormonal imbalances, leading to elevated androgen levels, anovulation, and the development of ovarian cysts (4,7). These heterogeneous features make diagnosis particularly challenging. In the absence of a single definitive test, the syndrome often overlaps with other metabolic conditions, contributing to frequent misdiagnosis and delayed management (8).

Global estimates suggest that PCOS affects between 4% and 20% of women of reproductive age, with variation depending on diagnostic criteria and population studied (1,9). This high prevalence underscores its wide-ranging impact not only on reproductive health but also on physical, psychological, and social wellbeing. Importantly, many women face prolonged delays in obtaining a diagnosis, often receiving limited guidance on effective lifestyle modifications. This delay amplifies the long-term risks of infertility, metabolic complications, and diminished quality of life. Lifestyle modification, especially physical activity and dietary regulation, is consistently recognized as the first-line approach for managing PCOS, offering a simple, cost-effective, and sustainable intervention strategy (10,11). Such measures have the potential to reduce hyperandrogenism, restore ovulatory function, and mitigate associated metabolic risks. Beyond physical health, lifestyle-based strategies also empower women with PCOS to regain a sense of control over their condition and daily lives, while encouraging healthcare providers to adopt more holistic, patient-centered management approaches. Given these challenges and opportunities, this study seeks to explore the multifaceted impact of PCOS on women's health and wellbeing, while emphasizing the significance of lifestyle interventions—particularly diet and physical activity—as primary, accessible, and effective strategies for improving outcomes. The objective of this research is to highlight the complexity of PCOS, identify the gaps contributing to delayed diagnosis and inadequate support, and rationalize lifestyle modification as a cornerstone of management to reduce long-term risks and enhance overall quality of life.

METHODS

This study was designed as a descriptive cross-sectional survey and was conducted over a six-month period from July 2024 to December 2024. The target population comprised physiotherapists working in both public and private healthcare institutions, including tertiary care hospitals in Peshawar, Pakistan. The total accessible population consisted of 152 physiotherapists, all of whom were invited to participate using a census sampling technique. The sample size was calculated at a 95% confidence level with a 5% margin of error, ensuring representativeness of the study population. Participants were eligible if they had a minimum of six months of professional clinical experience and provided written informed consent. Both male and female physiotherapists were included. Those excluded were individuals who did not consent, were unavailable during the data collection period, or were employed as interns without independent clinical responsibility. Data were collected using a structured, closed-ended questionnaire adapted from a previously validated tool developed in Malaysia (6). The questionnaire consisted of 20 items designed to assess knowledge of polycystic ovary syndrome (PCOS). To establish reliability and ensure suitability for the local context, a pilot study was conducted with 15 physiotherapists, resulting in a Cronbach's alpha value of 0.903, which indicated excellent internal consistency. Based on the scoring system, participants scoring below 10 were categorized as having poor knowledge, while those scoring 11 or higher were categorized as having good knowledge.

The study received ethical clearance from the Institutional Research Committee of NCS University System, Peshawar. Additional permission was obtained from the heads of the respective institutions where the study was conducted. Written informed consent was

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secured from all participants prior to their inclusion in the study, and confidentiality of the data was assured. Data analysis was performed using the Statistical Package for the Social Sciences (SPSS) version 22. Descriptive statistics, including frequencies and percentages, were used to summarize categorical variables such as gender, age, area of specialization, years of experience, participation in workshops, number of PCOS patients managed, and family history of PCOS. Continuous variables were analyzed by calculating means and standard deviations. To examine associations between knowledge levels and independent variables such as gender, specialty, clinical experience, workshop participation, and family history, the Chi-square test was applied. A p-value of less than 0.05 was considered statistically significant. The results were presented using tables and graphical representations to enhance clarity.

RESULTS

The level of knowledge regarding PCOS among the physiotherapists was determined on the basis of the mean score. A total of 83 participants (54.6%) demonstrated poor knowledge, while 69 participants (45.4%) demonstrated good knowledge, indicating that more than half of the sample lacked adequate understanding of the condition. When gender was considered, 46 males had good knowledge compared to 35 males with poor knowledge, while 23 females showed good knowledge and 48 females demonstrated poor knowledge. The association between gender and knowledge was statistically significant ($p = 0.028$). In relation to age, the majority of participants in both knowledge categories belonged to the 26–30 years group, where 45 participants had good knowledge and 46 had poor knowledge. The association between age and knowledge was not statistically significant ($p = 0.326$). Analysis of specialty showed that neuro-specialists ($n = 44$) and musculoskeletal physiotherapists ($n = 47$) constituted the largest groups. Among neuro-specialists, 23 participants had good knowledge and 21 had poor knowledge, while among musculoskeletal specialists, 17 had good knowledge and 30 had poor knowledge. No statistically significant association was observed between specialty and knowledge ($p = 0.207$). With respect to work experience, 15 participants with 6 months to 1 year of experience reported good knowledge compared to 21 with poor knowledge. Among those with 1–3 years of experience, 29 had good knowledge and 27 had poor knowledge, whereas among participants with more than 3 years of experience, 25 had good knowledge and 35 had poor knowledge. This distribution did not show statistical significance ($p = 0.449$).

Workshop attendance was also assessed. Among participants who had attended 0–5 workshops, 41 had good knowledge compared to 49 with poor knowledge. For those who attended more than 5 workshops, 28 demonstrated good knowledge while 34 had poor knowledge. No significant association was found between workshop attendance and knowledge ($p = 0.963$). The number of PCOS patients managed also influenced knowledge. Among those who had managed 0–5 patients, 65 demonstrated good knowledge and 62 had poor knowledge. In the group that attended 6–10 patients, 4 had good knowledge while 18 had poor knowledge. Among those who attended more than 10 patients, none had good knowledge, while 3 had poor knowledge. Although a trend was visible, the association did not reach statistical significance ($p = 0.10$). Family history of PCOS was also examined. Among participants with a positive family history, 26 had good knowledge compared to 38 with poor knowledge. In those without family history, 43 had good knowledge while 45 had poor knowledge. The association was not statistically significant ($p = 0.274$). In addition to general knowledge levels, analysis was extended to explore participants' awareness regarding lifestyle interventions in the management of PCOS, particularly physical activity and dietary modifications. The findings revealed that a considerable proportion of physiotherapists lacked adequate understanding in this domain. Out of the total respondents, 91 (59.9%) demonstrated poor knowledge about the role of lifestyle changes, whereas only 61 (40.1%) reflected good knowledge in this area. These results suggest that despite being frontline professionals equipped to guide patients in exercise and lifestyle counseling, many physiotherapists did not possess sufficient awareness about lifestyle-centered strategies for PCOS management. This gap highlights a critical area for targeted training and education, aligning with the study's objective of emphasizing lifestyle modification as a cornerstone of treatment.

Table 1: Overall Knowledge Levels of Physiotherapists Regarding PCOS

Level of Knowledge	Frequency	Percentages
Poor knowledge	83	54.6%
Good Knowledge	69	45.4%

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Table 2: Association of Gender and Knowledge of the Participants.

Characteristics		Association of Level of Knowledge		P-value
		Good	Poor	
Gender (n)	Male	46	35	0.028
	Female	23	48	
Age (n)	20-25	10	21	0.326
	26-30	45	46	
	31-50	14	16	
Specialty (n)	Cardiopulmonary	5	7	0.207
	Neuro	23	21	
	MSK	17	30	
	Orthopedic	12	6	
	Sports	8	4	
	Women Health	0	2	
	Pediatrics	2	3	
Work Experience (n)	6 M -1 Y	15	21	0.449
	1-3 Year	29	27	
	>3 Y	25	35	
Workshops Attend (n)	0-5	41	49	0.963
	>5	28	34	
PCOS Patients attended (n)	0-5	65	62	0.10
	6-10	4	18	
	>10	0	3	
Family Hx (n)	Yes	26	38	0.274
	No	43	45	

Table 3: Knowledge of Physiotherapists Regarding Lifestyle Modification in PCOS Management

Knowledge Category	Frequency	Percentage (%)
Poor Knowledge	91	59.9%
Good Knowledge	61	40.1%

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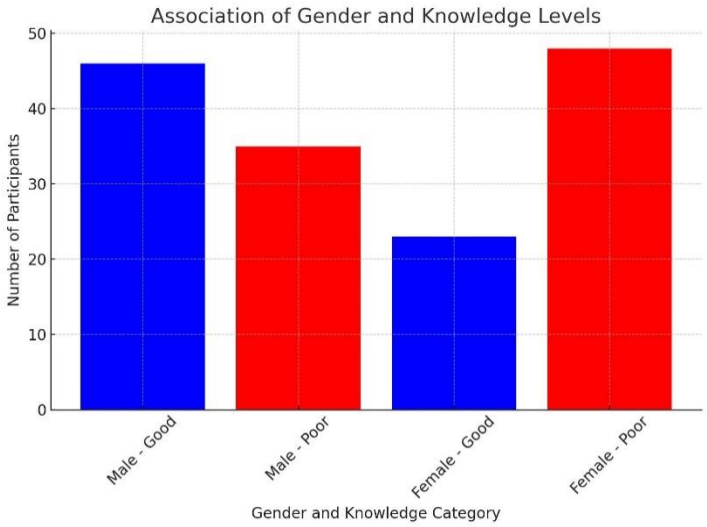

Figure 1 Association of Gender and Knowledge Levels

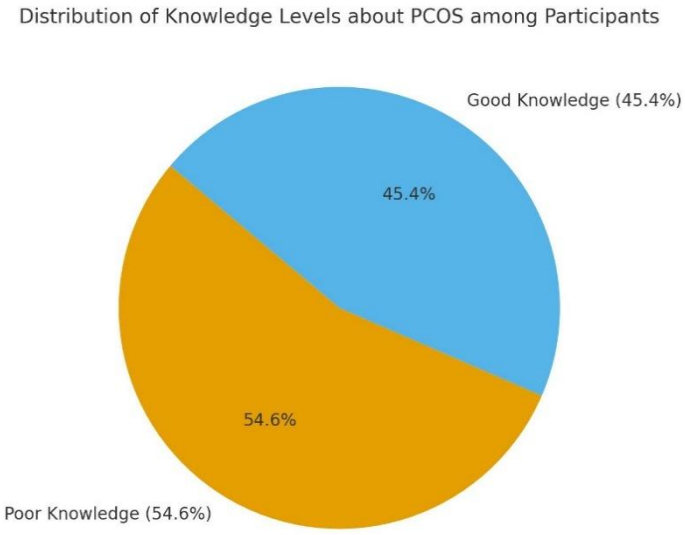

Figure 1 Distribution of Knowledge Levels about PCOS among Participants

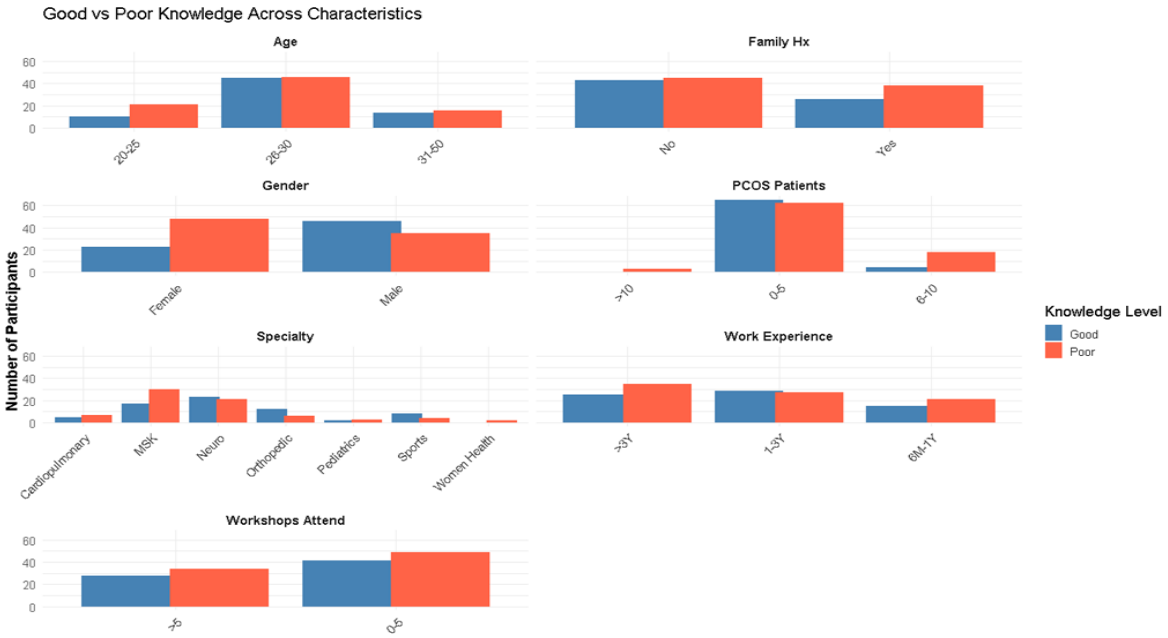

Figure 3Good vs Poor Knowledge Across Characteristics

DISCUSSION

The findings of this study demonstrated that more than half of the participating physiotherapists possessed poor knowledge regarding PCOS, with only a minority displaying a satisfactory understanding. These results align with previously published evidence in which a significant proportion of healthcare professionals were found to have inadequate knowledge of PCOS, although the proportion of insufficient knowledge reported in earlier work was higher compared to the current findings (12). In contrast, studies conducted among nursing students have revealed comparatively better awareness, with the majority displaying average to good knowledge and only a

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small proportion falling in the poor category (13). This discrepancy may be explained by differences in participant backgrounds, as the majority of respondents in this study did not specialize in women's health, had limited exposure to PCOS patients, and reported attending fewer workshops on the subject, all of which likely contributed to knowledge gaps. The results also highlighted a significant gender-based disparity in knowledge, with male participants demonstrating greater awareness compared to females. This finding was consistent with studies from diverse settings that similarly reported lower knowledge levels among females (14,15). Such differences may be influenced by sociocultural barriers, limited access to health education resources, and stigma surrounding reproductive health discussions, which disproportionately affect women. The absence of an association between specialty and knowledge in the current study reflects the general prevalence of PCOS as a common endocrine condition. Physiotherapists from specialties such as neuro-rehabilitation, musculoskeletal practice, and cardiopulmonary care appeared to have a baseline level of awareness. This observation was supported by previous work indicating that knowledge levels are often associated with prior exposure, personal diagnosis, or training within medical fields rather than with professional specialization (16-18). The analysis further revealed that younger participants, particularly those in the 26–30 years age group, tended to demonstrate better knowledge compared to older or younger peers. This trend may reflect a greater likelihood of engagement with recent educational material and clinical exposure. However, studies from other contexts have shown that awareness of PCOS is not consistently associated with age, suggesting that factors such as training opportunities and exposure to awareness programs may play a stronger role (19,20). The role of continuing education and structured training is further supported by the observation that most respondents in the current study had attended fewer workshops, while less than half had participated in more than five. These findings emphasize the importance of structured awareness programs and continuing professional development sessions to strengthen the knowledge base of physiotherapists in this area.

No significant association was identified between family history of PCOS and knowledge levels, although existing literature has indicated a potential link between personal or familial diagnosis and improved awareness (21). This contrast may be due to underreporting of family history or insufficient discussion of reproductive health topics within families. The overall results of the study underscore the need for structured educational interventions targeted at healthcare professionals, particularly female physiotherapists, to address existing knowledge gaps. By strengthening their understanding of PCOS and its management, physiotherapists may be better equipped to guide patients in adopting lifestyle modifications, an essential first-line treatment strategy. The strengths of this study include its focus on a professional group with direct involvement in exercise and lifestyle-based management of PCOS and the use of a validated tool with demonstrated reliability. However, the study also carried several limitations. The cross-sectional design limited the ability to infer causality, and the reliance on self-reported responses may have introduced reporting bias. The study was restricted to physiotherapists in Peshawar, which constrains the generalizability of findings to other regions and healthcare disciplines. The relatively small sample size and lack of random sampling further limit the external validity. Despite these limitations, the study provides valuable insights into the knowledge gaps of physiotherapists regarding PCOS and highlights the pressing need for targeted awareness and training initiatives. Future studies should incorporate larger and more diverse samples, include professionals from multiple healthcare disciplines, and employ mixed methods to explore both quantitative knowledge levels and qualitative insights into barriers faced by practitioners. Expanding such research may not only enhance the professional understanding of PCOS but also improve patient outcomes by promoting timely diagnosis, holistic management, and greater emphasis on lifestyle-based interventions.

CONCLUSION

This study concludes that physiotherapists in Peshawar demonstrate a considerable gap in their knowledge of PCOS, underscoring the importance of targeted awareness initiatives, continuing education, and the integration of women's health into physiotherapy curricula. By addressing these gaps, physiotherapists can be better equipped to contribute meaningfully to the multidisciplinary management of PCOS, ensuring more effective patient care and improved health outcomes.

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AUTHOR CONTRIBUTION

Author	Contribution
Muhammad Mustafa Durrani*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Huma Hameed	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Remsha	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Umair Rauf	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published

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