CMH Journal of Allied Health Sciences
www.cmhjahs.com

Original Article

OPEN ACCESS

Awareness Regarding Polycystic Ovary Syndrome and Its Diagnostic Criteria Among Female Medical and Non-Medical Undergraduate Students

Noor Fatima[1], Fatima Batool[2*], Javeria Khan[2], Muhammad Mudassar Mahmood[3], Natasha Irum[4]

[1*] University of Health Sciences, [2*]Green International University, Lahore, Pakistan, [3]Services Hospital, Lahore, Pakistan, [4]SZMC Rahim Yar Khan, Pakistan.

Submitted: 03-04-2026
Revised: 28-04-2026
Accepted: 14-05-2026
Published: 30-06-2026

Corresponding Author

Fatima Batool
Green International University, Lahore, Pakistan
fatimabatool4541@gmail.com

Keywords
Awareness
Diagnosis
Polycystic Ovary Syndrome
Questionnaire

Copyright (c) The Authors 2026. CMH Journal of Allied Health Sciences, published by CMH Lahore Medical College and Institute of Dentistry. This article is licensed under the terms of the Creative Commons Attribution License, which permits use, distribution, and reproduction in any medium, provided the original work is properly cited, in accordance with accepted academic practice. No use, distribution, or reproduction is permitted.

ABSTRACT

Background: Polycystic ovary syndrome is a common metabolic and reproductive disorder in women of reproductive age. Accurate awareness of its clinical features and diagnostic criteria may facilitate timely recognition and appropriate care.
Objective: To assess awareness regarding polycystic ovary syndrome and its diagnostic criteria among female medical and non-medical undergraduate students.
Methods: This analytical cross-sectional study was conducted from September 2024 to January 2025 after obtaining approval from the Ethical Review Committee of CMH Lahore Medical College & Institute of Dentistry. A self-structured questionnaire was used. Its internal consistency was assessed using Cronbach's alpha, which was 0.90. Content validity was assessed through detailed review and discussion with three specialist female gynecologists. A pilot study involving 30 participants was conducted to assess feasibility and clarity. The questionnaire consisted of two sections: general awareness of polycystic ovary syndrome (9 questions) and awareness of diagnostic criteria based on the Rotterdam criteria (4 questions). The survey was distributed electronically via Google Forms to medical and non-medical undergraduate students. A total of 136 medical students from CMH Lahore Medical College & Institute of Dentistry and 119 non-medical students from the University of Lahore participated. Informed consent was obtained from all participants, ensuring confidentiality and voluntary participation. Data were analyzed using SPSS version 26, with $p<0.05$ statistically significant. The Chi-square test was used to compare categorical variables between groups. The Shapiro-Wilk test was used to assess normality of data. Because the awareness scores were not normally distributed, the Mann-Whitney U test was used to compare awareness levels between medical and non-medical students.
Results: Of the participants, 136 (53.3%) were medical and 119 (46.7%) were non-medical students. General polycystic ovary syndrome awareness scores were higher among medical students (mean 37.74±4.43) than non-medical students (31.45±6.05), as were diagnostic-awareness scores (15.49±2.3 vs. 11.28±3.82). Mann–Whitney U testing demonstrated significant association between-group differences for both diagnostic awareness ($U=2,884.5$, $p<0.001$) and general awareness ($U=2,701.0$, $p<0.001$).
Conclusion: Medical students demonstrated significantly higher awareness than non-medical students; however, gaps in understanding polycystic ovary syndrome diagnostic criteria remained in both groups. Targeted educational initiatives may improve polycystic ovary syndrome health literacy among undergraduate students.

How to cite the article: Fatima N, Batool F, Khan J, Mahmood MM, Irum N. Awareness regarding polycystic ovary syndrome and its diagnostic criteria among female medical and non-medical undergraduate students. CMH Journal of Allied Health Sciences. 2026;1(1): 8–15.

INTRODUCTION

Polycystic ovary syndrome (PCOS) is a common endocrine disorder affecting women of reproductive age. Its clinical presentation is heterogeneous and may include reproductive, metabolic, dermatologic, and psychological features. Reported prevalence varies by population studied and diagnostic criteria used. In reproductive-age women, PCOS is associated with ovulatory dysfunction, hyperandrogenism, and/or polycystic ovarian morphology. [1,2,3]

PCOS is diagnosed through clinical assessment supported, when indicated, by biochemical testing and pelvic ultrasonography; diagnosis requires consideration of alternative causes of the presenting features. Women with PCOS may have increased risks of infertility and metabolic complications, including dyslipidemia, impaired glucose regulation, and type 2 diabetes.[4,5] PCOS involves complex genetic, hormonal, metabolic, and environmental factors. Familial predisposition, insulin resistance, obesity, lifestyle factors, and genetic variation may contribute to its development and clinical expression.[6,7,8] The condition was first described by Stein and Leventhal in 1935.[9,10]

The Rotterdam consensus introduced a widely used diagnostic framework in which two of three features ovulatory dysfunction, clinical and/or biochemical hyperandrogenism, and polycystic ovarian morphology are considered after exclusion of other relevant disorders.[11] More recent international guidance further refines the diagnostic approach and emphasizes evidence-based assessment rather than reliance on ultrasonography alone. Insufficient awareness about PCOS can lead to delayed treatment. Untreated PCOS also significantly impacts psychological well-being, causing anxiety, depression, and low self-esteem. Persistent symptoms like weight gain, acne, and irregular menstrual cycles affect daily life and academic performance, leading to lower grades. Students may also rely on inaccurate information and follow harmful self-treatment practices.[12,13]

Medical students are expected to have better knowledge of PCOS and its diagnostic criteria, while non-medical students may have limited awareness, potentially leading to delayed diagnosis and improper management. Comparing awareness levels between these two groups can help identify gaps in knowledge and highlight the need for targeted educational interventions. This study aims to assess the awareness of PCOS and its diagnostic criteria among female undergraduate students, emphasizing the importance of health literacy in improving early detection and management of the condition.

METHODS

This analytical cross-sectional study was conducted at CMH LMC & IOD from September 2024 to January 2025 after obtaining approval from the Ethical Review Committee (81/ERC/CMH/LMC). The sample size was calculated using the WHO/Geneva sample-size calculator,[14] with a PCOS prevalence of 20%.[15] A self-structured questionnaire was used. Its internal consistency was assessed using Cronbach's alpha, which was 0.90. Content validity was assessed through detailed review and discussion with three specialist female gynecologists. A pilot study involving 30 participants was conducted to assess feasibility and clarity.

The questionnaire consisted of two sections: general awareness of PCOS (9 questions) and awareness of diagnostic criteria based on the Rotterdam criteria (4 questions).[16] The survey was distributed electronically via Google Forms to medical and non-medical undergraduate students. A total of 136 medical students from CMH LMC & IOD and 119 non-medical students from the University of Lahore participated. Informed consent was obtained from all participants, ensuring confidentiality and voluntary participation.

Data were analyzed using SPSS version 26, with $p<0.05$ considered statistically significant. The Chi-square test was used to compare categorical variables between groups. The Shapiro-Wilk test was used to assess normality. Because the awareness scores were not normally distributed, the Mann-Whitney U test was used to compare awareness levels between medical and non-medical students.

RESULTS

The data were collected from a total of 255 female undergraduate students (136 medical and 119 non-medical). Values are presented as mean ± standard deviation. Table 1 shows mean scores and standard deviations for diagnostic criteria among 136 medical and 119 non-medical undergraduate students. The mean

Table 1: Mean and standard deviation of PCOS awareness scores

Variables	Medical	Non-Medical
	Mean±SD	
PCOS Diagnostic awareness	15.48±2.29	11.27±3.81
PCOS General awareness	37.73±4.43	31.45±6.05

diagnostic awareness score was 15.49±2.3 for medical students and 11.28±3.82 for non-medical students. The mean general-awareness score was 37.74±4.43 for medical students and 31.45±6.05 for non-medical students.

Table 2 displays the Shapiro-Wilk normality test results. The p-values were <0.001 and 0.009 for diagnostic awareness among medical and non-medical students, respectively, and <0.001 and 0.021 for general PCOS awareness, respectively. All p-values were <0.05, indicating non-normal distributions. A p-value <0.05 indicates deviation from normality. This table reveals significant differences in both diagnostic and general PCOS awareness between medical (n=136) and non-medical (n=119) undergraduate students. Medical students had notably higher mean ranks for diagnostic awareness (166.29 vs. 84.24) and PCOS awareness (167.64 vs. 82.7), with Mann-Whitney U values of 2,884.5 and 2,701.0, respectively, and p-values of <0.001 for both, indicating strong statistical significance. These findings suggest that medical students possess a higher level of awareness in both areas compared to their non-medical peers.

Figure 1 shows the overall distribution of awareness regarding the diagnosis of PCOS among 255 participants, categorized into three levels: low, moderate, and high. Forty-six (18.0%) participants had low awareness (<10), 116 (45.5%) had moderate awareness (10–15), and 93 (36.5%) had high awareness (16–20). Figure 2 represents the distribution of general PCOS awareness: 9 (3.5%) participants had low awareness (<22), 103 (40.4%) had moderate awareness (22–35), and 143 (56.1%) had high awareness (36–45).

This table includes all questions about general knowledge of PCOS awareness, its symptoms, causes, complications, treatment, prevention, and whether it should be included in the academic curriculum. The Chi-Square values indicate statistically significant differences between the two groups (medical vs. non-medical), with medical students generally showing a higher level of awareness across all questions. The p-values are below 0.05, suggesting that the differences in responses are significant. Percentages in the medical and non-medical columns are calculated within each group; the total column is based on 255.

Table 5 compares medical (n=136) and non-medical (n=119) participants' understanding of PCOS diagnostic criteria, pelvic ultrasound, and blood tests. Medical participants showed higher agreement regarding blood tests (69.1%) and pelvic ultrasound (52.2%), while non-medical participants showed greater disagreement. The between-group differences were statistically significant (p<0.001).

DISCUSSION

Polycystic ovary syndrome is a common endocrine disorder with important reproductive, metabolic, and psychological implications. The 2023 International Evidence-based Guideline emphasizes the broad burden of PCOS, the need for accurate diagnosis, and improved health-professional and patient education.

A comparative study by Alshdaifat et al. assessed PCOS awareness among university students in Jordan and reported that awareness varied with students' academic characteristics and exposure to information.[17]

Table 2: Shapiro-Wilk normality test for PCOS awareness scores

Variables	Educational field	p-value		
PCOS Diagnostic awareness	Medical	0.838	136	<0.001
	Non-medical	0.970	119	0.009
PCOS general awareness	medical	0.702	136	<0.001
	non-medical	0.974	119	0.021

Table 3: Comparison of PCOS awareness scores between medical and non-medical students

Variables	Medical mean rank	Non-medical mean rank	Mann-Whitney U	p-value
Diagnostic Awareness	166.29	84.24	2,884.50	<0.001*
PCOS Awareness	167.64	82.70	2,701.00	<0.001*

Figure 1: PCOS diagnostic criteria frequency chart

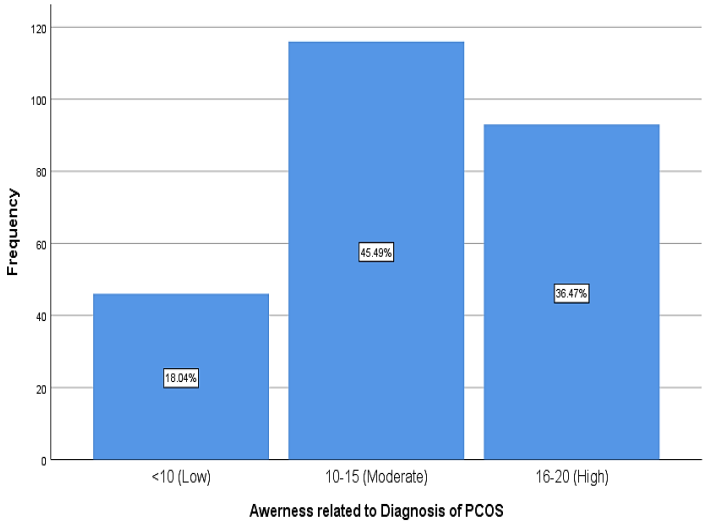
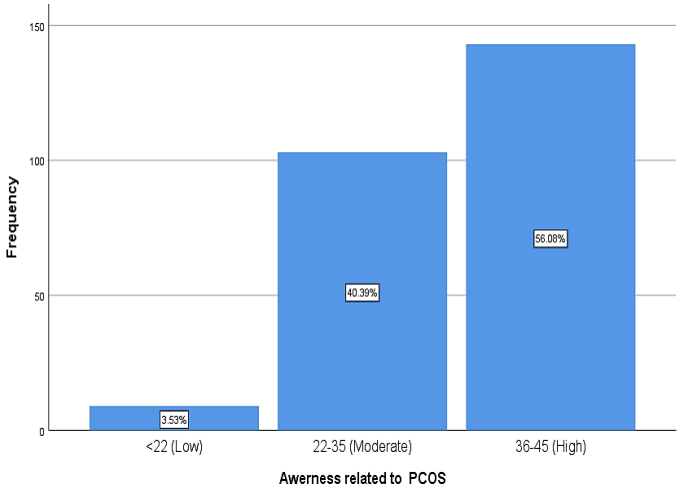


Figure 2: General PCOS awareness frequency chart



In the present study, 255 female undergraduate students were included, comprising 136 medical and 119 non-medical students. Among medical students, 130 (95.6%) had heard of PCOS, compared with 12 (10.1%) non-medical students. This marked difference suggests that academic exposure may influence recognition of PCOS.

A cross-sectional study by Rizvi et al. among Pakistani undergraduate students reported that medical students had higher PCOS knowledge scores than non-medical students and identified important gaps in disease knowledge and discussion of PCOS. Consistent with those findings, the present study demonstrated higher mean general-awareness scores among medical students (37.74±4.43) than non-medical students (31.45±6.05).[18]

In 2021, Sasikala et al. assessed PCOS knowledge and awareness among nursing students and reported substantial awareness of infertility as a complication. In the present study, 47.1% of medical students strongly agreed that they were aware of PCOS complications, compared with 29.4% of non-medical students; the overall difference between groups was statistically significant ($p<0.001$).[19]

A study by Jahangir Safa among female non-medical undergraduate students reported that ultrasonography was recognized as a diagnostic tool by a substantial proportion of participants. Similarly, in the present study, 40.4% of medical students and 26.1% of non-medical students strongly agreed that they were familiar with the use of pelvic ultrasound in PCOS diagnosis. However, current international guidance indicates that PCOS diagnosis should not be based on ultrasonography alone. The findings demonstrate a clear disparity in PCOS awareness between medical and non-medical students. Medical students had significantly higher general and diagnostic awareness scores, yet gaps remained in both groups, particularly regarding the diagnostic framework. These findings support targeted educational initiatives and curriculum-based health-literacy interventions for undergraduate students. Recent evidence from Lahore also suggests that awareness among university students may coexist with misconceptions regarding the nature, diagnosis, and management of PCOS.[20]

The findings demonstrate a significant difference in awareness regarding PCOS and its diagnostic criteria between female medical and non-medical students, with medical students showing higher general and diagnostic awareness. Nevertheless, important gaps in understanding the diagnostic framework were present in both groups. Structured educational interventions and curriculum-based PCOS health-literacy initiatives may help improve recognition of symptoms, understanding of diagnostic criteria, and appropriate healthcare-seeking among undergraduate students.

CONCLUSION

The findings of this study reveal a significant difference in awareness regarding polycystic ovary syndrome and its diagnostic criteria between female medical and non-medical undergraduate students, with medical students demonstrating a higher level of knowledge. This disparity highlights the impact of medical education in enhancing awareness and understanding of polycystic ovary syndrome. However, the lower awareness among non-medical educational programs to improve early recognition and timely management of this ovarian syndrome. Increasing awareness across groups can contribute to better health outcomes by promoting early diagnosis and preventive measures.

Table 4: General PCOS awareness: Combined analysis

Variables	Response category	Medical	Non Medica	Total (%	Chi-square	p-value
I am familiar with the symptoms of PCOS	strongly disagree	3(2.2)	13(10.9)	16(6.3)	30.392	<0.001*
	disagree	1(0.7)	17(14.3)	18(7.1)		
	neutral	14(10.3)	14(11.8)	28(11)		
	agree	30(22.1)	25(21)	55(21.6)		
	strongly agree	88(64.7)	50(42)	138(54.1)		
I understand that a gynecologist is preferred to consult for PCOS	strongly disagree	2(1.5)	45(37.8)	47(18.4)	98.662	<0.001*
	disagree	2(1.5)	20(16.8)	22(8.6)		
	neutral	45(33.1)	10(8.4)	55(21.6)		
	agree	47(34.6)	11(9.2)	58(22.7)		
	strongly agree	40(29.4)	33(27.7)	73(28.6)		
I think factors like family history, obesity, hormonal imbalances, and genes can cause PCOS	strongly disagree	2(1.5)	25(21)	27(10.6)	36.796	<0.001*
	disagree	3(2.2)	11(9.2)	14(5.5)		
	neutral	27(19.9)	10(8.4)	37(14.5)		
	agree	27(19.9)	22(18.5)	49(19.2)		
	strongly agree	77(56.6)	51(42.9)	128(50.2)		
I think following factors like irregular menses, excess facial and body hair, acne, mood swings, and weight gain are symptoms of PCOS	strongly disagree	2(1.5)	33(27.7)	35(13.7)	84.518	<0.001*
	disagree	2(1.5)	24(20.2)	26(10.2)		
	neutral	57(41.9)	9(7.6)	66(25.90)		
	agree	36(26.5)	22(18.5)	58(22.7)		
	strongly agree	39(28.7)	31(26.1)	70(27.5)		
I am aware that diabetes, CVS disease, infertility, abortion, and breast cancer are complications of PCOS	strongly disagree	4(2.9)	44(37)	48(18.8)	68.148	<0.001*
	disagree	3(2.2)	15(12.6)	18(7.1)		
	neutral	36(26.5)	10(8.4)	46(18)		
	agree	29(21.3)	15(12.6)	44(17.3)		
	strongly agree	64(47.1)	35(29.4)	99(38.8)		
I know that PCOS can be treated.	strongly disagree	1(0.7)	34(28.6)	35(13.7)	59.239	<0.001*
	disagree	3(2.2)	11(9.2)	14(5.5)		
	neutral	49(36)	16(13.4)	65(25.5)		
	agree	40(29.4)	19(16)	59(23.1)		
	strongly agree	43(31.6)	39(32.8)	82(32.2)		
I am aware that these measures healthy diet intake, weight control, regular physical activity, and stress reduction- can be taken to prevent PCOS	strongly disagree	3(2.2)	37(31.1)	40(15.7)	65.204	<0.001*
	disagree	1(0.7)	14(11.8)	15(5.9)		
	neutral	32(23.5)	23(19.3)	55(21.6)		
	agree	36(26.5)	17(14.3)	53(20.8)		
	strongly agree	64(47.1)	28(23.5)	92(36.1)		

I think the topic of PCOS should be included in the academic curriculum	strongly disagree	2(1.5)	0(0.00)	2(0.8)	40.041	<0.001*
	disagree	0(0.0)	2(1.7)	2(0.8)		
	neutral	19(14)	2(1.7)	21(8.2)		
	agree	37(27.2)	8(6.7)	45(17.6)		
	strongly agree	78(57.4)	107(89.9)	185(72.5)		
I think improvements are required to increase the awareness of PCOS in undergraduate medical and non-medical students.	strongly disagree	2(1.5)	1(0.8)	3(1.2)	3.663	0.454
	disagree	0(0.0)	1(0.8)	1(0.4)		
	neutral	1(0.7)	2(1.7)	3(1.2)		
	agree	16(11.8)	8(6.7)	24(9.4)		
	strongly agree	117(86)	107(89.9)	224(87.8)		
Total		136(100)	119(100)	255(100)		

Table 5: PCOS diagnostic criteria awareness: Combined analysis

Variable	Response categor	Medical	Non Medical	Total (%)	Chi-square	p-value
I can identify the main diagnostic criteria for PCOS	Strongly disagree	2(1.5)	43(36.1)	45(17.6)	213.361	<0.001*
	Disagree	5(3.7)	25(21)	30(11.8)		
	Neutral	56(41.2)	17(14.3)	73(28.6)		
	Agree	56(41.2)	13(10.9)	69(27.1)		
	Strongly agree	17(12.5)	21(17.6)	38(14.9)		
I understand the role of pelvic ultrasound in PCOS diagnosis	Strongly disagree	2(1.5)	47(39.5)	49(19.2)	103.915	<0.001*
	Disagree	3(2.2)	22(18.5)	25(9.8)		
	Neutral	60(44.1)	7(5.9)	67(26.3)		
	Agree	24(17.6)	14(11.8)	38(14.9)		
	Strongly agree	47(34.6)	29(24.4)	76(29.8)		
I understand the role of blood tests in PCOS diagnosis	Strongly disagree	6(4.4)	32(26.9)	38(14.9)	34.293	<0.001*
	Disagree	5(3.7)	13(10.9)	18(7.1)		
	Neutral	31(22.8)	18(15.1)	49(19.2)		
	Agree	34(25)	16(13.4)	50(19.6)		
	Strongly agree	60(44.1)	40(33.6)	100(39.2)		
I am familiar with the fact that pelvic ultrasound is used for diagnosis of PCOS	Strongly disagree	1(0.7)	30(25.2)	31(12.2)	67.147	<0.001*
	Disagree	2(1.5)	23(19.3)	25(9.8)		
	Neutral	39(28.7)	19(16)	58(22.7)		
	Agree	39(28.7)	16(13.4)	55(21.6)		
	Strongly agree	55(40.4)	31(26.1)	86(33.7)		
Total		136(100)	119(100)	255(100)		

DECLARATIONS

Consent to participate: Ethical approval for this study was obtained from the Institutional Ethics Review Committee, CMH Lahore Medical College (CMH LMC), under approval number 81/ERC/CMH/LMC. Written informed consent was obtained from all participants before enrollment.

Availability of Data and Materials: Data will be

made available upon request. The corresponding author will submit all dataset files.

Competing interests: None
Funding: No funding source involved.

Authors' contributions: All authors have read and approved the final manuscript.
NF & JK: Conceptualization, methods, investigation, data curation, formal analysis, and writing.
FB: Supervision, project administration, and critical review.
MM: Statistical analysis and visualization, validation.
IN: Investigation and data collection.

REFERENCES

1. Sruthi VL, Bindu PM, Sri Y. A study on prevalence of polycystic ovarian syndrome in medical students in a medical college. International Journal of Academic Medicine and Pharmacy. 2023;5(3):117-22. DOI:10.47009/jamp.2023.5.3.26.
2. Upadhye JJ, Shembekar CA. Awareness of PCOS (polycystic ovarian syndrome) in adolescent and young girls. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2017;6(6):2297-301. DOI:10.18203/2320-1770.ijrcog20172119.
3. Haq N, Khan Z, Riaz S, Nasim A, Shahwani R, Tahir M. Prevalence and knowledge of polycystic ovary syndrome (PCOS) among female science students of different public universities of Quetta, Pakistan. Imperial Journal of Interdisciplinary Research. 2017;3(6):385-92.
4. Mazia F. Knowledge and awareness of polycystic ovarian syndrome among university students in Narayanganj [dissertation]. Dhaka: East West University; 2017.
5. Hussin SN, Abd Kadir NH. A study on knowledge, attitude and perception of polycystic ovary syndrome (PCOS) among young students in higher educational institutions, Perak. Journal of Social Science Advanced Research. 2020;1(2):160-81.
6. Abdalla H, Osman N, Morgham A, Sultan M. Prevalence of polycystic ovary syndrome in fourth-year medical students of University of Tripoli. Alqalam Journal of Medical and Applied Sciences. 2021;4(1):151-4. DOI:10.5281/zenodo.5515467.
7. Sunanda B, Nayak S. A study to assess the knowledge regarding PCOS (polycystic ovarian syndrome) among nursing students at NUINS. Journal of Health and Allied Sciences NU. 2016;6(3):24-6. DOI:10.1055/s-0040-1708657.
8. Salama AM, Elbana HM. Effect of self instructional module on awareness of polycystic ovarian syndrome among adolescent students. American Journal of Nursing Research. 2019;7(6):1009-19. DOI:10.12691/ajnr-7-6-15.
9. Thabet H, Alsharif F, Garoot L, Almutairi L, Kutbi R. The level of awareness of nursing students regarding polycystic ovarian syndrome in King Abdulaziz University. Saudi Nursing Journal. 2021;9(26):172-81. DOI:10.21608/ASNJ.2022.99698.1242.
10. Teede HJ, Tay CT, Laven JJE, Dokras A, Moran LJ, Piltonen TT, et al.; International PCOS Network. Recommendations from the 2023 International Evidence-based Guideline for the Assessment and Management of Polycystic Ovary Syndrome. Human Reproduction. 2023;38(9):1655-79. DOI:10.1093/humrep/dead156.
11. Zaitoun B, Al Kubaisi A, AlQattan N, Alassouli Y, Mohammad A, Alameeri H, et al. Polycystic ovarian syndrome awareness among females in the UAE: a cross-sectional study. BMC Women's Health. 2023;23(1):181. DOI:10.1186/s12905-023-02318-y.
12. Pramodh S. Exploration of lifestyle choices, reproductive health knowledge, and polycystic ovary syndrome (PCOS) awareness among female Emirati university students. International Journal of Women's Health. 2020;12:927-38. DOI:10.2147/IJWH.S272867.
13. Riaz MW, Ashraf S, Azam MS, Butt NI, Waris B, Ghoauri MSA. Awareness of polycystic ovarian syndrome (PCOS) in young adult female university students from Lahore Pakistan. Journal of Current Health Sciences. 2026;6(1):21-8. DOI:10.47679/jchs.2026143.
14. Cochran WG. Sampling techniques. 3rd ed. New York: John Wiley & Sons; 1977.
15. Chang S, Dunaif A. Diagnosis of polycystic ovary syndrome: which criteria to use and when? Endocrinology and Metabolism Clinics of North America. 2021;50(1):11-23. DOI:10.1016/j.ecl.2020.10.002.
16. Franks S. Controversy in clinical endocrinology: diagnosis of polycystic ovarian syndrome: in defense of the Rotterdam criteria. The Journal of Clinical Endocrinology & Metabolism. 2006;91(3):786-9. DOI:10.1210/jc.2005-2501.
17. Alshdaifat E, Sindiani A, Amarin Z, Absy N, AlOsta N, Abuhayyeh HA, et al. Awareness of polycystic ovary syndrome: a university students' perspective. Ann Med Surg (Lond). 2021;72:103123. Annals of Medicine and Surgery DOI:10.1016/j.amsu.2021.103123.
18. Rizvi M, Islam MA, Aftab MT, Naqvi AA, Jahangir A, Ishaqui AA, et al. Knowledge, attitude, and perceptions about polycystic ovarian syndrome, and its determinants among Pakistani undergraduate students. PLoS One. 2023;18(5):e0285284. DOI:10.1371/journal.pone.0285284.

19. Sasikala R, Shanmugham D, Varghese J, Saravanan D. A study of knowledge and awareness on polycystic ovarian syndrome among nursing students in a tertiary centre in South India. National Indian Journal of Obstetrics. 2021;8(1):121-5. DOI:10.21276/obgyn.2021.8.1.23.
20. Jahangir S. A study on knowledge and awareness of polycystic ovarian syndrome among female non-medical undergraduate students [dissertation]. Dhaka: East West University; 2017.