

DOI: <https://dx.doi.org/10.18203/2320-1770.ijrcog20262539>

Original Research Article

Assessment and evaluation of knowledge pertaining to PCOS among MBBS students in Western Maharashtra

Bhargavi Joshi¹, Shounak Subhedar^{1*}, Sushma Sharma², Shreya Sambharam²

¹Department of Obstetrics and Gynecology, BJ Government Medical College, Pune, Maharashtra, India

²Department of Obstetrics and Gynecology, MIMER Medical College, Talegaon, Pune, Maharashtra, India

Received: 27 May 2026

Revised: 09 July 2026

Accepted: 14 July 2026

*Correspondence:

Dr. Shounak Subhedar,

E-mail: shounak.subhedar04@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Polycystic ovary syndrome (PCOS) is a common endocrine-metabolic disorder among reproductive-age women. Despite its inclusion in undergraduate medical curricula, gaps persist in knowledge regarding its diagnosis, screening, and management. This study assessed PCOS awareness among MBBS students in Western Maharashtra.

Methods: A cross-sectional questionnaire-based study was conducted among 200 MBBS students using a pre-validated online survey. Data were analyzed using descriptive statistics and chi-square test, with $p < 0.05$ considered significant.

Results: Most participants demonstrated knowledge regarding the etiology, risk factors, and management of PCOS, particularly hormonal imbalance, obesity, lifestyle factors, and use of lifestyle modification in management. 68.8% identified ultrasonography as an important diagnostic modality. No association was observed between academic year and knowledge of most risk factors, whereas perception regarding the importance of screening showed a association with year of study ($p = 0.0063$).

Conclusions: MBBS students demonstrated satisfactory baseline awareness regarding PCOS; however, deficiencies remain in diagnostic and screening-related knowledge. Strengthening longitudinal and clinically integrated PCOS teaching within the medical curriculum may improve competency and awareness.

Keywords: Polycystic ovary syndrome, MBBS students, Awareness, Screening, Diagnosis, Medical education

INTRODUCTION

PCOS is one of the most common endocrine disorders affecting reproductive-age women worldwide, characterized by hyperandrogenism, ovulatory dysfunction and polycystic ovarian morphology, with associated metabolic abnormalities including obesity, insulin resistance and type 2 diabetes mellitus.¹⁻⁴ In India, the prevalence of PCOS ranges from 3.7% to 22.5%, depending on the diagnostic criteria and study population.^{2,5} Despite being included in undergraduate medical curricula, several studies have demonstrated persistent knowledge gaps among medical students regarding diagnosis, long-term complications and management of PCOS.⁶⁻¹¹ Assessing MBBS students'

understanding provides insight into curricular adequacy and awareness of chronic disease aspects.

Aims and objectives

To assess the level of knowledge regarding PCOS among MBBS students in Western Maharashtra. To analyze associations between knowledge, gender, and year of study. To determine whether awareness of metabolic risk factors predicts overall knowledge adequacy.

METHODS

The study being conducted is cross-sectional, descriptive, questionnaire-based observational study utilizing a

quantitative survey methodology to assess the knowledge profiles of undergraduate medical students and was conducted in MIMER Medical College, Talegaon, Pune, Maharashtra after due ethical committee clearance. The study was conducted for a period of 2 month (July 2025-September 2025). Total of 200 students was participated in the study. The sampling framework was implemented to select study participants based on the following pre-established eligibility criteria.

Inclusion criteria

Active undergraduate medical students (MBBS) of any gender, currently enrolled in academic years 1, 2, 3, or 4, or undergoing their compulsory rotatory residential internship at the designated medical colleges in Western Maharashtra.

Exclusion criteria

Medical students who declined to participate, students from non-allopathic streams (such as Ayurveda, Homeopathy, or nursing), individuals who submitted duplicate responses, or those who left essential fields of the questionnaire incomplete.

A pre validated questionnaire digitized using Google Forms and distributed electronically via institutional academic networks and communication platform.

Statistical analysis

Raw digital survey responses were systematically compiled, reviewed for completeness, and transferred into Microsoft Excel. Frequencies and percentages were calculated for all categorical variables, and baseline knowledge scores were determined. Bivariate cross-tabulations were constructed, and Pearson's Chi-square (χ^2) test of independence was utilized to evaluate the statistical significance of associations between categorical variables, including gender, academic year of study, and specific knowledge parameters. Cramer's V was employed to evaluate the effect size of significant associations.

RESULTS

Amongst the students who had heard of PCOS a majority correctly identified hormonal imbalance (93.3%), poor lifestyle (75.9%) and genetic predisposition (61.0%) as causes of PCOS indicating awareness regarding the etiological factors of the condition. 93% of the students who believed that PCOS can be modified by lifestyle modifications also correctly identified high BMI as a risk factor for PCOS. Amongst the students who considered screening important USG was identified by 68% as the diagnostic modality followed by clinical evaluation and blood investigations. 83% of the students who recognized early menarche as a risk factor showed higher awareness of irregular menstrual bleeding as a risk fact.

Analysis of knowledge of risk factors with respect to academic year of MBBS

Chi-square test: $p=0.814$ (Not significant)

Students across all years identified diabetes mellitus a risk factor for PCOS, however no statistically significant association was observed between the year of study and identifying high glycemic index of food effect except in the students of 4th year where it was found to be significant.

Chi-square test: $p = 0.314$ (Not significant)

Knowledge regarding family history as risk factor was compared among students of different academic years, the difference in response was not statistically significant

Chi-square test: $p= 0.314$ (Not significant)

The association between year of MBBS training and selecting glycemic index as a risk factor is not statically significant.

Chi-square test: $p = 0.145$ (Not significant)

Knowledge regarding irregular bleeding as a presenting symptom and academic year of study was not statistically significant.

Chi-square test: $p = 0.952$ (Not significant)

Knowledge regarding early menarche as risk factors and academic year of study was not statistically significant.

When comparing the year of study (1st, 2nd, 3rd, 4th year, Internship) vs. perception of screening importance the following were observed.

Chi-square test:

$\chi^2=14.33$, $df = 4$, $p \text{ value}=0.0063$

Cramér's V

0.273 (small to moderate effect size).

Interpretation

Statistically significant association between year of study and perception of screening importance ($p<0.01$).

Logistic regression

Dependent variable

Perception of screening importance (Yes=1, No=0).

Predictor

Year of study (ordinal: 1–5) coefficient (year): -0.5922, p=0.0058

Interpretation

Higher years are less likely to consider screening important.

Table 1: Demography as per gender and year of study.

Year of MBBS	Female	Male	Total
1 st	22	5	27
2 nd	29	11	40
3 rd	21	11	32
4 th	42	45	87
Internship	5	9	14
Total	119	81	200

Table 2: Association between awareness of PCOS and knowledge of causes and lifestyle modification and BMI as risk factor.

Heard of PCOS	Hormonal imbalance	Poor lifestyle	Genetic predisposition	Don't know
Yes	182 (93.3%)	148 (75.9%)	119 (61.0%)	4 (2.1%)
No	3 (60.0%)	2 (40.0%)	1 (20.0%)	1 (20.0%)
PCOS manageable by lifestyle changes	High BMI–Yes	High BMI–No		
Yes	185 (93.0%)	14 (7.0%)		
No	1 (100.0%)	0 (0.0%)		

Table 3: Importance of screening and diagnostic modality and early menarche as a risk factor and irregular bleeding as a symptom.

Screening important	Blood test	Clinical	None	USG
Yes	15 (8.8%)	34 (20.0%)	4 (2.4%)	117 (68.8%)
No	3 (10.0%)	9 (30.0%)	0 (0.0%)	18 (60.0%)
Early menarche risk factor	Irregular bleeding–No		Irregular bleeding–Yes	
No	42 (44.7%)		52 (55.3%)	
Yes	18 (17.0%)		88 (83.0%)	

Table 4: Diabetes mellitus and family history (DM/HTN/PCOS) as a risk factor, unhealthy/high glycemic index food effect on PCOS.

	Diabetes mellitus as a risk factor for PCOS				Family history as a risk factor for PCOS				Unhealthy/high glycaemic index food effect on PCOS			
Year	Yes	No	Total	p value	Yes	No	Total	p value	Yes	No	Total	P value
1 st year	19	8	27	0.11	14	13	27	0.321	25	2	27	0.42
2 nd year	33	7	40	0.72	27	13	40	0.912	39	1	40	0.62
3 rd year	24	8	32	0.32	15	17	32	0.223	30	2	32	0.53
4 th year	70	17	87	0.0001	45	42	87	0.831	84	3	87	0.81
Internship	11	3	14	0.792	6	8	14	0.421	14	0	14	0.3
Total	157	43	200	0.814	107	93	200	0.314	192	8	200	0.31

Table 5: Early menarche as a risk factor and irregular bleeding as a presenting symptom for PCOS.

	Early menarche as a risk factor				Irregular bleeding as a presenting symptom for PCOS			
Year	Yes	No	Total	P value	Yes	No	Total	P value
1 st	16	11	27	0.801	21	6	27	0.823
2 nd	26	14	40	0.221	31	9	40	0.92
3 rd	20	12	32	0.623	25	7	32	0.945

Continued.

	Early menarche as a risk factor				Irregular bleeding as a presenting symptom for PCOS			
4 th	57	30	87	0.897	56	31	87	0.124
Internship	10	4	14	0.503	7	7	14	0.153
Total	129	71	200	0.952	140	60	200	0.145

Table 6: Perception about importance of screening.

Year	Yes	No	Total	P value
1 st	24	2	26	0.016
2 nd	35	3	38	0.083
3 rd	30	0	30	0.003
4 th	66	19	85	0.308
Internship	9	4	13	0.201

Analysis of multiple response questions

Figure 1 shows the count of respondents for each proposed cause of PCOS, with percentage labels above each bar. (185, 92.5%) selected hormonal imbalance. Poor lifestyle factors and genetic predisposition were also commonly chosen (150 and 120 respondents, or 75% and 60%, respectively). Only 5 respondents (2.5%) answered Don't know. This graph highlights that hormonal imbalance was perceived as by far the most important cause.

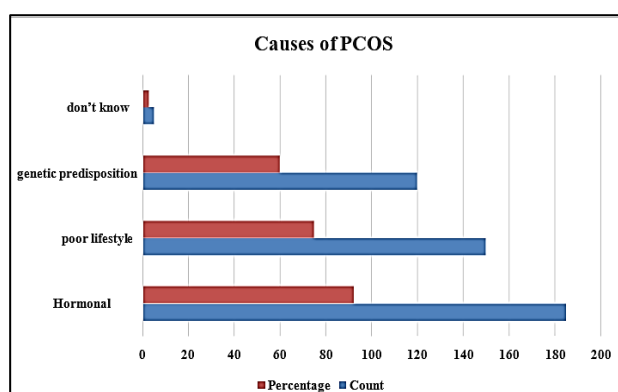


Figure 1: Causes of PCOS.

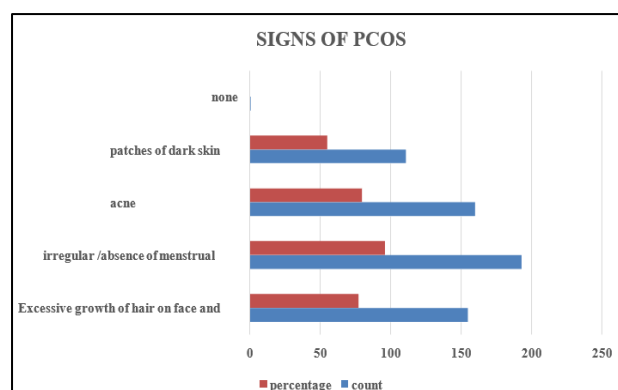


Figure 2: Signs of PCOS.

Figure 2 shows irregular or absent menstrual cycle was by far the most cited sign (193 respondents, 96.5%). Other common signs were acne (160 respondents, 80.0%) and excessive hair growth (155 respondents, 77.5%). Patches of dark skin (acanthosis nigricans) were selected by 111 respondents (55.5%), and only 1 respondent (0.5%) answered "None." The graph clearly shows that irregular cycles were identified as a sign by most respondents.

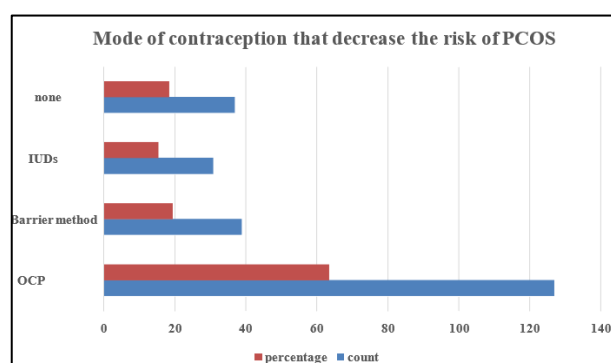


Figure 3: Mode of contraception that decrease the risk of PCOS.

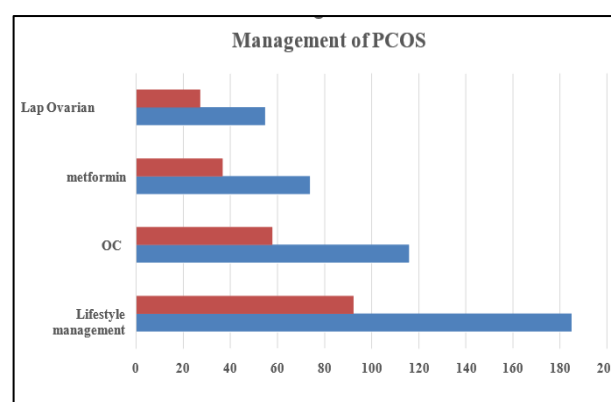


Figure 4: Management of PCOS.

Figure 3 shows oral contraceptive pills were selected by 127 respondents (63.5%), making it the most popular

choice. Barrier methods (39 respondents, 19.5%) and intrauterine devices (31 respondents, 15.5%) were chosen less often. Thirty-seven respondents (18.5%) chose “none of the above.” This indicates that a majority associate OCP use with a lower risk of PCOS. Figure 4 shows the lifestyle management was the top response (185 respondents 92.5%) oral contraceptives pills were selected by 116 respondents (58.0%). metformin (74 respondents, 37.0%) and laparoscopic ovarian drilling were less frequently chosen. The graph emphasizes that respondents view lifestyle changes as the most import.

DISCUSSION

The present study found that awareness of PCOS among Western Maharashtra MBBS students was 93%, notably exceeding figures reported in earlier surveys.⁸ Upadhye et al and Shembekar et al found that 28% of adolescent medical students were unaware of PCOS (implying only ~72% awareness), and Jha et al reported PCOS knowledge in only about 61–70% of healthcare students. Findings thus indicate rising baseline awareness, yet still echo these authors’ call for enhanced education: Jha and colleagues explicitly advised periodic academic activities (seminars, workshops) to improve PCOS knowledge, and Upadhye et al, Shembekar et al recommended embedding thorough PCOS education and counselling in the medical curriculum.^{8,9}

Students correctly identified key etiologic factors and risk determinants of PCOS. This finding is consistent with current evidence describing PCOS as a multifactorial disorder influenced by endocrine, genetic and metabolic factors (3,4). 92% recognized hormonal imbalance and 75% lifestyle factors (diet/exercise) as causes. This high level of knowledge parallels observation that female medical students have good knowledge of PCOS causes and risk factors.¹⁰ Correspondingly, 93% of the participants believed that lifestyle modification (especially weight loss) can manage PCOS and linked high BMI with increased PCOS risk. This is encouraging, since clinical guidelines emphasize weight reduction as first-line therapy: weight loss improves menstrual irregularities and androgen excess in PCOS.^{6,12,13}

Likewise, students aligned with pharmacologic treatments in line with standard practice oral contraceptives and metformin were cited as important management strategies. In fact, the guidelines note that after lifestyle measures, OCPs are recommended for cycle regulation and hirsutism, and metformin has a role in managing metabolic aspects and infertility.^{6,14,15} Thus, student perceptions of treatment priorities (lifestyle first, then OCPs/metformin) agree with evidence-based PCOS management.

Despite strong overall awareness, gaps remain in diagnostic knowledge and preventive attitudes. Only 68.8% of respondents identified pelvic ultrasonography as the primary diagnostic modality for PCOS. By contrast, the Rotterdam consensus—a cornerstone of PCOS

diagnosis—requires ultrasonographic evidence of polycystic ovaries along with clinical criteria.¹ The fact that 31.2% students were unaware of the diagnostic role of ultrasound suggests a curricular deficit in teaching PCOS evaluation protocols.

Similarly, authors found a significant effect of year of study on perceived screening importance ($p=0.0063$), with senior students less inclined to value PCOS screening. This decline in screening emphasis is not widely reported elsewhere and may reflect a shift in focus toward treatment of symptomatic patients in clinical years. However, given that delayed diagnosis of PCOS contributes to metabolic and reproductive complications, this attitude gap warrants attention.¹⁰ Educators should reinforce that early recognition (even in high-risk asymptomatic women) can mitigate long-term sequelae of PCOS like metabolic syndrome, cardiovascular and reproductive complications

Interestingly, knowledge of PCOS risk factors did not significantly increase with advancing year ($p>0.05$). In other words, first-year and final-year students displayed similar knowledge levels. This contrasts with the expectation that senior students, having completed more coursework and clinical exposure, would know about the clinical condition of PCOS. It suggests that fundamental PCOS concepts are introduced early in basic sciences or anatomy/physiology but then not consistently reinforced. It has highlighted that medical curricula do include PCOS content and that basic understanding may stem from formal education yet our results imply that without ongoing emphasis, knowledge plateaus, our data support this, although students demonstrated baseline awareness, sustained reinforcement is needed to deepen understanding, especially of diagnostic and screening aspects.

Importantly, student perspectives on management of PCOS were strong. The overwhelming emphasis on lifestyle modification accords with the consensus that weight loss is foundational in PCOS care.² Recognition of OCPs and metformin as key therapies reflects current practice, and compares favourably with Shah et al showing comparable awareness of management options.^{6,14,15} Together, these findings imply that while teaching on PCOS pathophysiology and risk factors has been effective, “preventive” elements (screening for at-risk individuals) and diagnostic criteria need bolstering. Consistent with Malini et al, Surekha et al and Jha et al the study confirms that medical students have a sound grasp of PCOS basics but may lack depth in certain domains. PCOS education should be systematically integrated into the MBBS curriculum at multiple stages.^{6,8,10,12} For example, case-based discussions in obstetrics/gynecology and endocrinology courses could emphasize ultrasound diagnosis and screening considerations, and community medicine lectures could cover epidemiology and health promotion. Regular academic activities—such as seminars, workshops, or awareness months could maintain interest and update students on PCOS developments. By

reinforcing PCOS content through varied teaching methods, educators can convert the high baseline awareness into comprehensive, practice-ready knowledge.⁸⁻¹¹

CONCLUSION

This study demonstrated that MBBS students in Western Maharashtra possess good overall awareness of PCOS, with most participants correctly identifying its major causes, risk factors, clinical features, and first-line management. However, important knowledge gaps persist regarding the diagnostic criteria, particularly the role of ultrasonography, and attitudes toward screening, indicating areas requiring greater educational emphasis. The absence of a consistent improvement in knowledge across academic years suggests that current undergraduate teaching may not adequately reinforce PCOS concepts throughout medical training. These findings provide valuable evidence on the current level of PCOS awareness among medical students and highlight specific areas for strengthening competency-based medical education through better vertical and horizontal integration of women's health topics, thereby contributing to improved preparedness of future physicians in the early recognition and management of PCOS.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Rotterdam ESHRE/ASRM-Sponsored PCOS consensus workshop group. Revised 2003 consensus on diagnostic criteria and long-term health risks related to polycystic ovary syndrome (PCOS). Hum Reprod. 2004;19(1):41-7.
2. Sirmans SM, Pate KA. Epidemiology, diagnosis, and management of polycystic ovary syndrome. Clin Epidemiol. 2013;6:1-13.
3. Azziz R, Carmina E, Dewailly D, Diamanti-Kandari's E, Escobar-Morreale HF, Futterweit W, et al. The Androgen Excess and PCOS Society criteria for the polycystic ovary syndrome: the complete task force report. Fertil Steril. 2009;91(2):456-88.
4. Goodarzi MO, Dumesic DA, Chazenbalk G, Azziz R. Polycystic ovary syndrome: etiology, pathogenesis and diagnosis. Nat Rev Endocrinol. 2011;7(4):219-31.
5. Chaitrani V. Awareness of polycystic ovarian syndrome among young women in Navi Mumbai. Int J Reprod Contracept Obstet Gynecol. 2019;8(7):2766-70.
6. Teede HJ, Misso ML, Costello MF, Dokras A, Laven J, Moran L, et al. Recommendations from the international evidence-based guideline for the assessment and management of polycystic ovary syndrome. Hum Reprod. 2018;33(9):1602-18.
7. Escobar-Morreale HF. Polycystic ovary syndrome: definition, aetiology, diagnosis and treatment. Nat Rev Endocrinol. 2018;14(5):270-84.
8. Jha S, Patil A, Deshmukh P. Knowledge and perception of polycystic ovary syndrome among medical and paramedical students in Maharashtra. Afr J Biomed Res. 2023;26(2):185-90.
9. Upadhye J, Shembekar C. Awareness of polycystic ovarian syndrome among medical students in Nagpur, India. Int J Reprod Contracept Obstet Gynecol. 2018;7(2):648-52.
10. Malini S, Surekha M. Knowledge and awareness of polycystic ovarian syndrome among medical students of Andhra Pradesh. Int J Res Med Sci. 2022;10(3):560-5.
11. Al Ketbi LM, Mosallam RA, Al-Qassabi SS, Al-Damaki RS, Al-Mansoori AA. Awareness and knowledge of polycystic ovary syndrome among university students in the United Arab Emirates. J Multidiscip Healthc. 2021;14:347-54.
12. Fauser BCJM, Tarlatzis BC, Rebar RW, Legro RS, Balen AH, Lobo R, et al. Consensus on women's health aspects of polycystic ovary syndrome (PCOS). Hum Reprod. 2012;27(1):14-24.
13. Moran LJ, Hutchison SK, Norman RJ, Teede HJ. Lifestyle changes in women with polycystic ovary syndrome. Cochrane Database Syst Rev. 2011;(7):7506.
14. Melo AS, Ferriani RA, Navarro PA. Treatment of infertility in women with polycystic ovary syndrome: approach to clinical practice. Clinics (Sao Paulo). 2015;70(11):765-9.
15. Shah D, Patil M; National PCOS Working Group. Consensus Statement on the Use of Oral Contraceptive Pills in Polycystic Ovarian Syndrome Women in India. J Hum Reprod Sci. 2018;11(2):96-118.
16. Teede HJ, Misso ML, Costello MF, Dokras A, Laven J, Moran LJ, et al. international evidence-based guideline for the assessment and management of polycystic ovary syndrome. Clin Endocrinol (Oxf). 2018;89(3):251-68.

Cite this article as: Joshi B, Subhedar S, Sharma S, Sambharam S. Assessment and evaluation of knowledge pertaining to PCOS among MBBS students in Western Maharashtra. Int J Reprod Contracept Obstet Gynecol 2026;15:3090-5.