

# Diagnostic perception of polycystic ovary syndrome among medical students: influence of training

## Percepção diagnóstica da síndrome dos ovários policísticos entre acadêmicos de medicina: influência da formação

## Percepción diagnóstica del síndrome de ovarios poliquísticos entre estudiantes de medicina: impacto de la formación

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# REVISA

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### RESUMO

**Objetivo:** A Síndrome dos Ovários Policísticos (SOP) é uma endocrinopatia comum em mulheres em idade reprodutiva, com impactos reprodutivos, metabólicos e cardiovasculares. Apesar dos critérios de Rotterdam, o diagnóstico permanece desafiador, especialmente na formação médica. Este estudo transversal avaliou 205 estudantes de Medicina do Oeste do Paraná, comparando alunos do 8º período (que passaram pela disciplina de ginecologia) e de períodos anteriores. Um questionário validado foi aplicado e os resultados analisados pelo teste do qui-quadrado ( $p < 0,05$ ). Entre os alunos com formação, 86,1% reconheceram os critérios de Rotterdam, contra 24,8% dos demais; porém, apenas 25% e 10,5% identificaram o consenso diagnóstico. Ambos os grupos relataram baixa frequência de diagnóstico precoce. Conclui-se que a disciplina de ginecologia melhora o conhecimento técnico, mas lacunas conceituais e epidemiológicas permanecem, evidenciando a necessidade de integrar teoria e prática clínica para otimizar o diagnóstico da SOP.

**Descritores:** Síndrome dos Ovários Policísticos; Diagnóstico; Ginecologia.

### ABSTRACT

**Objective:** Polycystic Ovary Syndrome (PCOS) is a common endocrine disorder in women of reproductive age, with reproductive, metabolic, and cardiovascular impacts. Despite the Rotterdam criteria, diagnosis remains challenging, particularly in medical training. This cross-sectional study evaluated 205 medical students from Western Paraná, comparing 8th-period students (with gynecology training) and earlier periods. A validated questionnaire was applied, and results analyzed using the chi-square test ( $p < 0.05$ ). Among trained students, 86.1% recognized the Rotterdam criteria versus 24.8% of others; however, only 25% and 10.5% identified the diagnostic consensus. Both groups reported low frequency of early diagnosis. Gynecology training improves technical knowledge, but conceptual and epidemiological gaps remain, highlighting the need to integrate theory and clinical practice to optimize PCOS diagnosis.

**Descriptors:** Polycystic Ovary Syndrome; Diagnosis; Gynecology

### RESUMEN

**Objetivo:** El Síndrome de Ovarios Poliquísticos (SOP) es un trastorno endocrino común en mujeres en edad reproductiva, con repercusiones reproductivas, metabólicas y cardiovasculares. A pesar de los criterios de Rotterdam, el diagnóstico sigue siendo un desafío, especialmente en la formación médica. Este estudio transversal evaluó a 205 estudiantes de Medicina del Oeste de Paraná, comparando estudiantes del 8º período (con formación en ginecología) y de períodos anteriores. Se aplicó un cuestionario validado y los resultados se analizaron mediante la prueba de chi-cuadrado ( $p < 0,05$ ). Entre los estudiantes formados, el 86,1% reconoció los criterios de Rotterdam frente al 24,8% de los demás; sin embargo, solo el 25% y el 10,5% identificaron el consenso diagnóstico. Ambos grupos informaron baja frecuencia de diagnóstico temprano. La formación en ginecología mejora el conocimiento técnico, pero persisten lagunas conceptuales y epidemiológicas, evidenciando la necesidad de integrar teoría y práctica clínica para optimizar el diagnóstico del SOP.

**Descritores:** Síndrome de Ovarios Poliquísticos; Diagnóstico; Ginecología

ORIGINAL

## Introduction

Polycystic ovary syndrome (PCOS) is one of the most prevalent endocrine disorders among women of reproductive age, associated with infertility, metabolic changes, and increased cardiovascular risk.<sup>1,4-5</sup>

Despite its high prevalence, diagnosing this syndrome remains a challenge, both in clinical practice and academic training. Although guidelines such as the Rotterdam criteria guide diagnosis,<sup>4</sup> their application requires technical expertise and multidisciplinary interpretation.<sup>2,5</sup>

Studies indicate that students and healthcare professionals have difficulty correctly recognizing the criteria and understanding clinical consensus, which may contribute to underdiagnoses and inadequate management of PCOS.<sup>3,6</sup> The literature also suggests that early diagnosis is uncommon, even in structured care settings.<sup>5-6</sup>

Given this perspective, it becomes essential to investigate how passing the gynecology course, taken during medical graduation, influences the diagnostic perception of PCOS.

## Objectives

To evaluate the relationship between training in the discipline of Gynecology and Obstetrics (GO) and the diagnostic recognition of PCOS among medical students, identifying possible gaps in technical and conceptual knowledge.

## Method

This is a cross-sectional, quantitative, descriptive, and analytical study. The study involved 205 students regularly enrolled in the 5th to 8th semesters of a medical school at a university in western Paraná. Sample adequacy was estimated using the STATS®<sup>7</sup>, defining 170 students as the minimum

representative of a total of 540, considering a 95% confidence interval and a sampling error of 5%.

Participants were divided into two groups: 8th-semester (those who had already taken the OG course) and previous-semester (those who had not yet taken the OG course). Data were collected between January and March 2025 using a structured questionnaire. The instrument was adapted based on questionnaires used in previous studies and validated in the literature.<sup>1-3</sup>

Data were analyzed using Microsoft Excel and SciPy. Pearson's chi-square test (independence test) was applied, and a significance level of 5% ( $p < 0.05$ ) was adopted.

As an additional strategy for interpreting the data, a cutoff point of 60% was established as the threshold for considering minimum satisfactory knowledge on items related to identifying diagnostic criteria and the existence of a consolidated clinical consensus. This approach sought to qualify the pedagogical interpretation of the results.

The study was submitted to and approved by the Research Ethics Committee of the Assis Gurgacz Foundation University Center, under CAAE

84809624.0.0000.5219. Additionally, it was conducted in accordance with the ethical precepts established in Resolutions No. 466/2012 and No. 510/2016 and in Circular Letter No. 166/2018 of the National Research Ethics Commission (CONEP).

## Results

Of the 205 participating students, 72 had already taken the Gynecology course (8th period) and 133 belonged to the other periods.

Table I presents the relationship between knowledge about the diagnostic criteria for PCOS among students who have not yet taken the OB/GYN course. It can be observed that 69.9% answered "I don't know," while only 24.8% correctly identified the Rotterdam criterion. The chi-square test was applied, resulting in  $\chi^2=160.62$ ;  $p<0.0001$ , which indicated a highly significant difference between the alternatives and suggests that students in the other periods do not recognize the most commonly used diagnostic consensus.

**Tabela I** - Academics' recognition of the most used diagnostic criteria in clinical practice.

Other Periods	N	%
NIH Criteria	4	3%
AE-PCOS Criteria	3	2,30%
Rotterdam Criterion	33	24,80%
I don't know	93	69,90%
<b>Total</b>	<b>133</b>	<b>-</b>

Source: research data, organized by the authors 2025.

Otherwise, for better data interpretation, a cutoff point of 60% was adopted as the threshold for considering minimum knowledge satisfactory. Based on this, it was observed that only 24.8% of students who had not completed the OG course achieved the expected accuracy, characterizing insufficient knowledge. In contrast, students who had completed the OG course demonstrated sufficient knowledge of the consensus (86.1%).

Another point analyzed was knowledge about the existence of a consolidated diagnosis for PCOS. As shown in Table II, a statistically significant difference was observed between the groups using the chi-square test ( $\chi^2 = 14.72$ ;  $p=0.0006$ ). Among the 8th-semester students, 25% stated that there was a diagnostic consensus, while among the remaining students, only 10.5% believed there was a consensus.

**Table II** - Relationship on the existence of a consolidated consensus on the diagnosis

8th period	N	%	Other Periods	N	%
Yes	18	25%	Yes	14	10,50%
No	45	62.5%	No	74	55,60%
I am not sure	9	12,50%	I am not sure	45	33,80%
<b>Total</b>	<b>72</b>	<b>-</b>	<b>Total</b>	<b>133</b>	<b>-</b>

Source: research data, organized by the authors, 2025.

Boldin DV, Possobon AL, Grellmann BS, Piton J.

Although students improved their knowledge as they progressed through the course, both groups had accuracy rates below the 60% cutoff point adopted as the minimum for satisfactory knowledge. This may indicate that this theoretical aspect is not yet fully established among medical students.

This observation partially contrasts with the finding on the most used criterion in clinical practice, in which 86.1% of students with gynecological training correctly identified the diagnostic method, with sufficient knowledge (>60%).

These results suggest that, although academics recognize Rotterdam as the predominant criterion, some do not associate this with the formal existence of a consolidated diagnostic consensus. This may suggest a lack of theoretical understanding of what constitutes a clinical and practical consensus. This may point to a knowledge gap in clinical practice within the academic curriculum.

From another perspective, as shown in Table III, which analyzes whether students believe that early diagnosis occurs frequently in PCOS, there was no statistically significant difference ( $\chi^2 = 3.56$ ;  $p = 0.1686$ ). This indicates that regardless of progress in academic training, most students believe that early diagnosis of the syndrome is not frequent.

This finding, therefore, suggests that, even with academic progress, clinical understanding of the moment of diagnosis remains unchanged, possibly due to the absence of a more in-depth theoretical approach to the epidemiology and diagnostic trajectory of the clinical condition during medical training.

**Table III-** Academics who believe that early diagnosis occurs frequently in PCOS.

8th Period	N	%	Other periods	N	%
Yes	3	4,20%	Yes	16	12%
No	58	80,60%	No	96	72,20%
I am not sure	11	15,20%	I am not sure	21	15,80%
<b>Total</b>	<b>72</b>	<b>-</b>	<b>Total</b>	<b>133</b>	<b>-</b>

Source: research data, organized by the authors, 2025.

Overall, the findings of this study reveal some progress with undergraduate education regarding the diagnosis of PCOS among medical students. However, they also indicate gaps in the consensus on the diagnosis of this pathology.

## Discussion

The results of this study indicate that training in the OB/GYN discipline significantly influences the practical recognition of PCOS diagnostic criteria, especially regarding the identification of the Rotterdam criterion, most commonly used in clinical practice.<sup>4</sup> The majority of 8th-semester students (86.1%) correctly identified the criterion, exceeding the 60% cutoff point established as the threshold for satisfactory knowledge.

By shifting perspectives, it was clear that theoretical understanding of the existence of a formal diagnostic consensus was limited in both groups. Only 25% of 8th-year students stated that a consolidated consensus existed, while in other years this number was even lower, with only 10.5% acknowledging this information. These findings suggest a dissociation between applied knowledge and a broader conceptual understanding of the diagnostic criteria established in the international guideline.<sup>4</sup>

This misalignment can compromise evidence-based clinical practice, given that lack of knowledge about consensus guidelines can hinder standardization of procedures and early screening. Studies reinforce this concern by pointing out that a lack of understanding of diagnostic guidelines is a barrier among both students and practicing professionals.<sup>3</sup>

Another point to consider is students' perception of the frequency of early diagnosis of PCOS. The data showed that, regardless of the semester, most believe the syndrome is not usually diagnosed early. This finding is consistent with the literature, which shows that the clinical condition in question is often underdiagnosed or diagnosed late.<sup>5-6</sup> According to Shannon and Wang,<sup>5</sup> this delay can result in patient frustration, clinical complications, and inadequate management.

This perception among academics may indicate a critical view of clinical reality or a reproduction of experiences observed in the healthcare system.<sup>6</sup> However, it may also reflect a certain weakness in theoretical training regarding the diagnostic trajectory of PCOS, given that the level of knowledge about the syndrome is directly related to the quality of training and structured exposure to content.

Therefore, the findings reinforce the need to improve medical education on PCOS. Although technical proficiency in diagnostic criteria has increased with gynecological training, understanding the theoretical and epidemiological context of the syndrome still requires greater curricular attention. Strategies such as active methodologies, case studies, and integration between theory and clinical practice can contribute to a more robust and critical education, in line with international guidelines.<sup>4</sup>

## Final Considerations

The results of this study show that gynecological training is associated with improved practical recognition of the diagnostic criteria for Polycystic Ovary Syndrome (PCOS) among medical students. Students who took the Gynecology course had a higher accuracy rate in identifying the Rotterdam criteria, demonstrating satisfactory technical knowledge.

However, significant gaps remain in broader theoretical understanding, especially regarding the existence of a consolidated clinical consensus for the diagnosis of PCOS. This can compromise the standardization of clinical practices and may be one of the reasons for delayed diagnosis.

Furthermore, the prevailing perception, common in both groups, that early diagnosis of the syndrome is not frequent, reinforces the need for a more in-depth approach to the condition during medical training.

Boldin DV, Possobon AL, Grellmann BS, Piton J.

Thus, it can be concluded that although gynecological training provides technical advances in the recognition of PCOS, the curriculum still lacks greater coordination between theory, international guidelines, and clinical practice. Implementing active teaching methodologies and deepening international consensus can strengthen the critical thinking of future professionals, which will ultimately promote more accurate and earlier diagnosis.

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