

# THERAPEUTIC APPROACHES FOR ACNE IN POLYCYSTIC OVARY SYNDROME: AN INTEGRATIVE REVIEW

## ABORDAGENS TERAPÊUTICAS PARA ACNE EM SÍNDROME DOS OVÁRIOS POLICÍSTICOS: UMA REVISÃO INTEGRATIVA

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### ABSTRACT

**Introduction:** Polycystic Ovary Syndrome (PCOS) is a common endocrine condition in reproductive-aged women, characterized by multisystemic manifestations, including acne. This study reviews therapeutic approaches to treat acne in patients with PCOS, evaluating efficacy, safety, and tolerability. **Method:** An integrative literature review was conducted using the PRISMA Guideline. Articles were searched in PubMed, Scielo, and BVS databases in March 2024. Articles in English or Portuguese, published in the last 5 years, were included. **Results:** Initially, 873 articles were selected, reduced to 6 after applying inclusion and exclusion criteria. The treatments analyzed included isotretinoin, metformin with myoinositol, oral contraceptives, among others. Results showed varied efficacy, but with limitations such as small samples and short follow-up periods. **Conclusion:** The review highlights the need for a personalized approach to treat acne in PCOS. Future research should focus on larger and long-term clinical trials to provide more robust evidence, improving clinical practice and patient quality of life.

**KEYWORDS:** Acne; metabolic disorder; polycystic ovary syndrome; insulin resistance.

### RESUMO

**Introdução:** A Síndrome dos Ovários Policísticos (SOP) é uma condição endócrina comum em mulheres em idade reprodutiva, caracterizada por manifestações multissistêmicas, incluindo a acne. Este estudo revisa abordagens terapêuticas para tratar a acne em pacientes com SOP, avaliando eficácia, segurança e tolerabilidade. **Método:** Foi realizada uma revisão integrativa da literatura utilizando o Guideline PRISMA. Artigos foram pesquisados nas bases PubMed, Scielo e BVS em março de 2024. Foram incluídos artigos completos em inglês ou português, publicados nos últimos 5 anos. **Resultados:** Foram selecionados 873 artigos inicialmente, reduzidos a 6 após critérios de inclusão e exclusão. Os tratamentos analisados incluíram isotretinoína, metformina com mioinositol, anticoncepcionais orais, entre outros. Os resultados mostraram eficácia variada, mas com limitações como amostras pequenas e curto acompanhamento. **Conclusão:** A revisão destaca a necessidade de uma abordagem personalizada para tratar a acne em SOP. Futuras pesquisas

devem focar em ensaios clínicos maiores e de longo prazo para fornecer evidências mais robustas, melhorando a prática clínica e a qualidade de vida das pacientes.

**PALAVRAS-CHAVE:** Acne; distúrbio metabólico; síndrome dos ovários policísticos; resistência à insulina.

### 1. INTRODUCTION

Polycystic Ovary Syndrome (PCOS) is a prevalent endocrine-metabolic condition in women of reproductive age, characterized by multisystemic effects including cardiovascular, aesthetic, and psychosocial manifestations. Its pathophysiology involves a hormonal imbalance, notably hyperandrogenism, resulting from alterations in reproductive hormone levels such as LH, FSH, estrogen, and testosterone, leading to menstrual irregularities and distinct clinical and laboratory symptoms.<sup>1,2</sup>

Acne is one of the most common manifestations of PCOS and significantly impacts the psychosocial well-being of affected women. Given this reality, it becomes imperative to investigate the best therapeutic strategies for effective acne treatment in this challenging clinical context.<sup>1,2</sup> The aim of this integrative review is to analyze the efficacy, safety, and tolerability of pharmacological and non-pharmacological therapeutic approaches for acne treatment in PCOS patients. Additionally, it aims to identify gaps in the literature and suggest directions for future research to improve the clinical management of acne in individuals with PCOS, thereby promoting their health and quality of life.

### 2. METHODS

An integrative literature review with a descriptive and exploratory approach was conducted, referencing the PRISMA guidelines used in systematic reviews. Articles were searched in the PubMed, Scielo, and Virtual Health Library (BVS) databases in March 2024. Inclusion criteria were full-text articles available in English or Portuguese. Exclusion criteria were duplicated articles in more than one database and review

articles.

Descriptors used in Portuguese were "Acne Vulgar" and "Síndrome do Ovário Policístico," and in English were "Acne Vulgaris" and "Polycystic Ovary Syndrome." After searching the descriptors in the databases, filters were applied for articles published in the last five years. The raw search file was inserted into the Rayyan tool. Through this, duplicate articles were excluded, and the remaining were screened by two collaborators independently. Titles of articles addressing acne vulgaris and PCOS were evaluated, and abstracts were read, followed by the full text of relevant articles.

Article selection was based on the guiding question "What are the therapeutic approaches to acne vulgaris in patients with Polycystic Ovary Syndrome?" This question was developed using the PICO strategy: P - Population/Problem: Individuals with Polycystic Ovary Syndrome and Acne Vulgaris; I - Intervention: Pharmacological and non-pharmacological therapy; C - Comparison: Comparison between approaches; O - Outcome: Assessment of efficacy and adverse effects.

3. RESULTS

A total of 873 articles were selected, and after analyzing titles and abstracts using the Rayyan digital platform, 17 articles met the inclusion and exclusion criteria for full-text reading. After completion, 7 articles were excluded due to irrelevance to the topic and 4 due to lack of full access, resulting in 6 articles. The search and selection strategy followed the PRISMA protocol as shown in the flowchart (Figure 1).

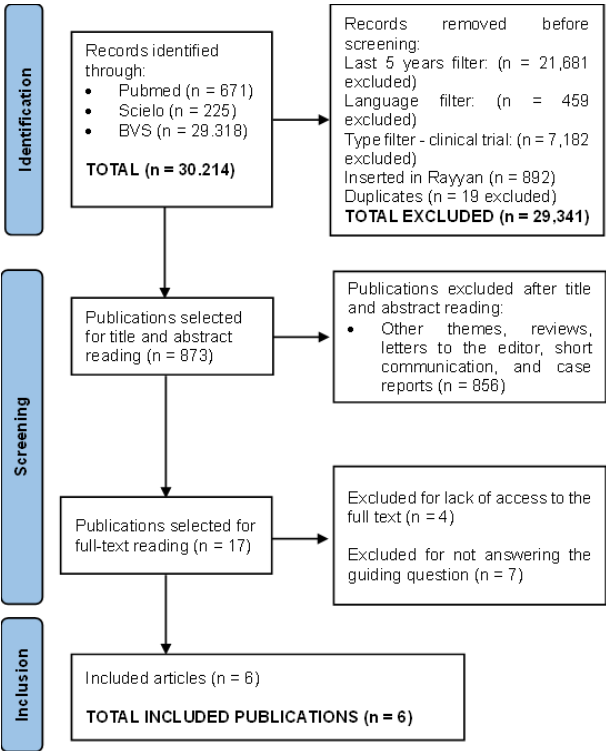


Figure 1. Flowchart of data search. Source: The Authors.

After selection, the articles were inserted into a table for better visualization (Table 1).

Table 1. Summary of the selected articles

AUTHOR, YEAR	TREATMENTS	SAMPLE SIZE	EFFICACY	SIDE EFFECTS	STUDY GAPS
ELNAGAR, 2024 <sup>3</sup>	Isotretinoin	40	Statistically significant decrease in acne score.	Increased triglycerides	Small sample size, lack of long-term follow-up without control arm.
LEE, 2023 <sup>4</sup>	Mobile application for lifestyle change	34	Improvement in acne score, but scores were already low before the intervention.	Not described	Needs long-term follow-up.
BAHADUR, 2021 <sup>5</sup>	Metformin vs Metformin + Myo-inositol + D-chiro-inositol	72	Improvement in acne score.	Not described	Small sample size.
SANTOFIMIA, 2023 <sup>6</sup>	Oral contraceptive vs Oral contraceptive + combination of antioxidants (alpha-lipoic acid, N-acetylcysteine, vitamin B6 and S-adenosyl-L-methionine)	96	Improvement in acne.	No serious adverse events	Lack of randomization.
RONDANELLI, 2021 <sup>7</sup>	Berberine	12	Decrease in acne score.	No adverse events	Small sample size, lack of long-term follow-up and control arm.
AMIRI, 2020 <sup>8</sup>	Ethinylestradiol + Levonorgestrel or Desogestrel or Acetate of Cyproterone or Drospirenone for 6 months vs Levonorgestrel-containing products	200	Contraceptives containing Drospirenone for 6 months are associated with better acne improvement compared to products containing Levonorgestrel.	Nausea, headache, dizziness, spots. One case of superficial venous thrombosis.	Loss of follow-up of participants.

Source: The Authors.

4. DISCUSSION

It is noteworthy that the reviewed literature revealed a significant gap in studies directly focusing on acne treatment in PCOS patients. Only one study had acne as the primary outcome, while in the others, acne was considered a secondary outcome. However, most studies used validated scores to assess acne severity, which lends greater reliability to the results. Additionally, some studies associated commonly used drugs for PCOS treatment, such as metformin and contraceptives, with acne improvements in patients with this condition. These findings highlight the importance of considering multifaceted therapeutic approaches that can address both endocrine and cutaneous manifestations such as

acne in PCOS.

## 5. CONCLUSION

In conclusion, the results of this integrative review emphasize the importance of a comprehensive and personalized approach to treating acne in patients with Polycystic Ovary Syndrome (PCOS). While several promising therapeutic options were identified, including pharmacological and non-pharmacological interventions, it is crucial to recognize the limitations of existing studies, such as small sample sizes and short follow-up periods. Therefore, it is recommended that future investigations focus on clinical trials with larger participant numbers and longer follow-up to provide more robust and conclusive evidence on the efficacy, safety, and long-term impact of acne treatment strategies in PCOS patients. These additional studies are essential to adequately inform clinical practice and promote better health outcomes and quality of life for this patient population.

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