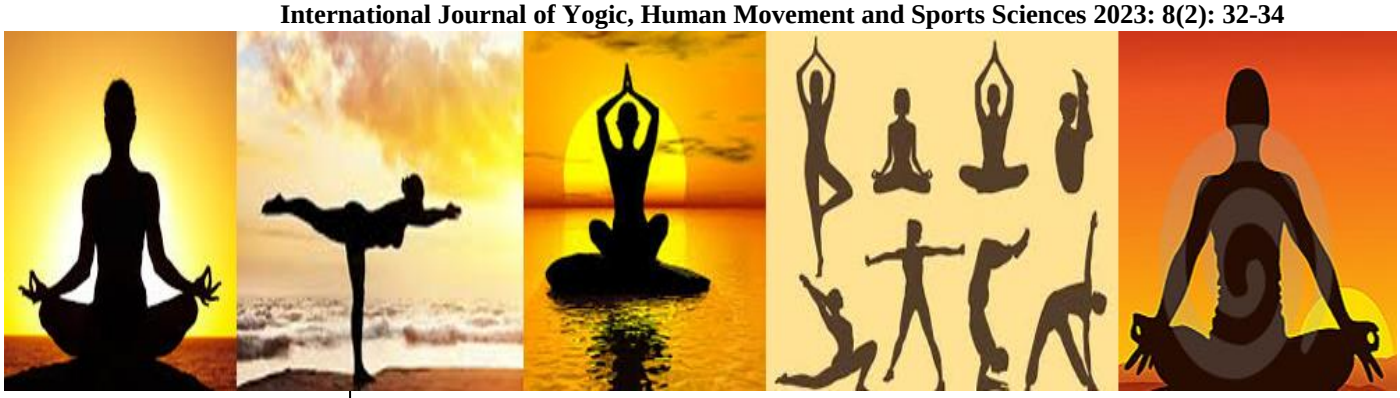
International Journal of Yogic, Human Movement and Sports Sciences 2023: 8(2): 32-34



ISSN: 2456-4419
Impact Factor: (RJIF): 5.18
Yoga 2023; 8(2): 32-34

www.theyogicjournal.com
Received: 25-05-2023
Accepted: 03-07-2023

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Polycystic ovarian syndrome: A literature Review

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DOI: https://doi.org/10.22271/yogic.2023.v8.i2a.1430

Abstract
This paper presents a comprehensive exploration of various aspects related to a specific disease, aiming to enhance the understanding of its clinical manifestations and implications. The introduction delves into the historical context and emerging challenges associated with the disease, providing a basis for the subsequent discussions. Prevalence rates are analyzed through an extensive review of epidemiological data, shedding light on the global burden of the condition and potential risk factors. Furthermore, the paper thoroughly examines the established diagnostic criteria, incorporating recent advancements in medical technology and research. The objective is to aid clinicians and healthcare professionals in accurately identifying and categorizing cases, facilitating timely interventions and tailored treatment plans. An integral part of this study involves the elucidation of different types and subtypes of the disease. These distinctions are crucial for understanding the heterogeneity in clinical presentation, prognosis, and response to therapies, thereby guiding personalized approaches to patient management. By amalgamating introductory insights, prevalence statistics, diagnostic guidelines, and classification nuances, this paper strives to contribute to the existing knowledge base, ultimately fostering advancements in disease management and improving patient outcomes.

Keywords: Polycystic ovarian syndrome, Types, Women disorders, PCOS

Introduction
Polycystic ovarian syndrome (PCOS) is a complex and multifaceted endocrine disorder that affects a significant number of women worldwide. First described in 1935 by American Gynecologists Stein and Leventhal. Its etiology remains elusive, encompassing a combination of genetic, hormonal, and lifestyle factors that contribute to its heterogeneous presentation [1]. PCOS is characterized by a range of clinical manifestations, including irregular menstrual cycles, hyperandrogenism, and polycystic ovaries on ultrasound examination [2]. Furthermore, this syndrome is associated with a multitude of metabolic and reproductive complications, such as insulin resistance, obesity, infertility, and an increased risk of developing type 2 diabetes and cardiovascular diseases [3]. As PCOS significantly impacts te quality of life and poses considerable health risks, understanding its pathophysiology and developing effective management strategies are critical areas of research in women's health.

Incidence and Prevalence Rates
Polycystic ovary syndrome (PCOS) is a prevalent endocrine disorder that has emerged as a significant health concern in today's scenario. Its increasing incidence and prevalence rates have raised alarm bells among healthcare professionals and researchers worldwide.
PCOS is estimated to affect a considerable proportion of reproductive-age women globally. However, due to variations in diagnostic criteria and study methodologies, the exact incidence rates of PCOS remain difficult to ascertain. Current estimates suggest that PCOS affects approximately 4-20% of women, with variations observed among different ethnic groups and geographical regions worldwide [4]. While the exact cause of PCOS remains unknown, various factors such as genetic predisposition, insulin resistance, and lifestyle choices are believed to contribute to its development. The challenges associated with PCOS are multifaceted. Women with PCOS often struggle with fertility issues, including difficulty in conceiving and higher

rates of miscarriage [5]. Additionally, the condition can lead to a range of health complications such as obesity, diabetes, cardiovascular problems, and mental health issues like anxiety and depression.

Diagnostic Criteria

The recognition of PCOS as a distinct clinical entity began in the mid-20th century. In 1935, Dr. Irving F. Stein and Dr. Michael L. Leventhal first described a condition characterized by amenorrhea (absence of menstrual periods), hirsutism (excessive hair growth), and enlarged ovaries with multiple cysts. This condition was later named Stein-Leventhal syndrome, now known as PCOS [6, 7].

Over the years, the diagnostic criteria for PCOS have undergone several revisions and refinements to improve accuracy and standardization. This is an overview of the historical evolution of PCOS diagnostic criteria and present the current diagnostic criteria used in clinical practice.

National Institutes of Health (NIH) criteria

The diagnostic criteria for PCOS evolved over time as researchers and clinicians gained a better understanding of the syndrome. In the 1990s, the National Institutes of Health (NIH) sponsored a conference that proposed the first standardized diagnostic criteria for PCOS. These criteria, known as the NIH criteria, required the presence of two out of the following three features: oligo- or anovulation (irregular or absent menstrual periods), clinical or biochemical signs of hyperandrogenism (such as hirsutism or elevated androgen levels), and exclusion of other causes of hyperandrogenism or ovulatory dysfunction [8].

Rotterdam Criteria

In 2003, an international expert panel convened in Rotterdam to further refine the diagnostic criteria for PCOS. Currently, there is no universally accepted diagnostic criterion for PCOS. However, the most widely used criteria are those based on the Rotterdam criteria, with the addition of the AE-PCOS Society's recommendation for the diagnosis of hyperandrogenism.

The resulting criteria, known as the Rotterdam criteria, expanded the diagnostic options by requiring the presence of at least two out of the following three features: oligo- or anovulation, clinical and/or biochemical signs of hyperandrogenism, and polycystic ovaries on ultrasound examination. These criteria allowed for a broader inclusion of women with PCOS, acknowledging the heterogeneity of the syndrome [9].

1. Oligo- or Anovulation

Oligo- or anovulation refers to irregular or absent menstrual periods. It is a key feature of PCOS and is characterized by infrequent or prolonged menstrual cycles, often exceeding 35 days or more. This criterion acknowledges the disrupted ovulatory function commonly observed in women with PCOS.

2. Clinical and/or Biochemical Signs of Hyperandrogenism

Hyperandrogenism refers to the presence of excessive levels of androgens, the male sex hormones, in women. Clinical signs of hyperandrogenism include acne, and androgenic alopecia. Biochemical signs of hyperandrogenism involve elevated levels of androgens, such as testosterone, as detected through laboratory tests. The presence of either clinical signs or biochemical evidence of hyperandrogenism is considered sufficient to fulfill this criterion.

3. Polycystic Ovaries on Ultrasound Examination

Polycystic ovaries are characterized by the presence of multiple small cysts in the ovaries. These follicles may appear as a "string of pearls" on ultrasound imaging. The Rotterdam criteria define polycystic ovaries as the presence of 12 or more follicles measuring 2-9 mm in diameter, or an increased ovarian volume (>10 mL). This criterion acknowledges the characteristic ovarian morphology often seen in PCOS.

Androgen Excess and PCOS Society Criteria

In 2006, the Androgen Excess and PCOS Society proposed a modification to the Rotterdam criteria. The AE-PCOS Society criteria retained the requirement of two out of three features but introduced stricter guidelines for the diagnosis of hyperandrogenism. It specified that the biochemical evidence of hyperandrogenism should be present in addition to clinical signs, ensuring a more accurate diagnosis of PCOS [10].

Types of PCOS

Polycystic ovary syndrome (PCOS) is a complex endocrine disorder that affects a significant number of women worldwide. It is characterized by a wide range of symptoms and hormonal imbalances, and it often manifests in different phenotypes. PCOS phenotypes A, B, C, and D are commonly used to categorize the clinical presentations of PCOS, each with its own unique features and diagnostic criteria [11]. In this article, we will explore each of these phenotypes in detail, highlighting their distinguishing characteristics and potential management strategies.

1. Phenotype A

Phenotype A, also known as classic PCOS, is the most common phenotype observed in women with PCOS. It is characterized by hyperandrogenism, which refers to increased levels of male hormones such as testosterone. Women with phenotype A typically exhibit hirsutism (excessive hair growth), acne, and male-pattern baldness. They also experience irregular menstrual cycles or even an absence of menstruation (amenorrhea). Insulin resistance and obesity are commonly associated with this phenotype, increasing the risk of developing type 2 diabetes and cardiovascular diseases. Management strategies for phenotype A PCOS often involve lifestyle modifications, such as adopting a healthy diet, engaging in regular physical activity, and maintaining a healthy weight.

2. Phenotype B

Phenotype B PCOS is characterized by hyperandrogenism and polycystic ovaries, but without insulin resistance or obesity. Women with this phenotype usually have regular menstrual cycles, and they may not exhibit the same degree of hirsutism or acne as those with phenotype A. However, they may still experience fertility issues due to anovulation (lack of ovulation). Lifestyle modifications, such as weight management and exercise, are beneficial in improving fertility outcomes.

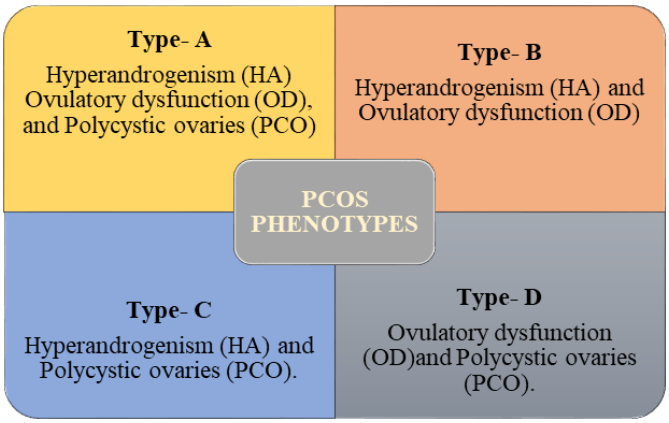
3. Phenotype C

Phenotype C PCOS is primarily associated with polycystic ovaries and insulin resistance, but without significant hyperandrogenism. Women with this phenotype often have regular menstrual cycles and may not present with hirsutism

or acne. However, they are at a higher risk of developing metabolic abnormalities, including impaired glucose tolerance and type 2 diabetes. Lifestyle modifications focused on weight management, dietary changes, and physical activity play a crucial role in managing phenotype C PCOS. Additionally, medications such as metformin, which improves insulin sensitivity, may be prescribed to help regulate metabolic parameters.

4. Phenotype D

PCOS, also known as ovulatory PCOS, is characterized by regular ovulation and normal androgen levels but presents with polycystic ovaries. Women with phenotype D PCOS may have a higher body mass index (BMI) and are more likely to experience fertility issues due to other factors such as fallopian tube abnormalities or endometriosis. Management of phenotype D PCOS often involves addressing the specific fertility-related issues. Lifestyle modifications to achieve a healthy weight and optimizing overall health are also important considerations in managing this phenotype.



Conclusion

This paper has provided a comprehensive analysis of a specific disease, covering crucial aspects to enhance our understanding of its clinical impact and management. The introduction shed light on the historical context and emerging challenges associated with the disease, setting the stage for a deeper exploration. The examination of prevalence rates through epidemiological data unveiled the substantial global burden of the disease, emphasizing the urgency for effective public health strategies and research efforts to combat its spread. The discussion on diagnostic criteria highlighted the importance of accurate and timely identification of the disease, enabling early interventions and appropriate treatment plans. Incorporating recent advancements in medical technology and research, the diagnostic guidelines presented in this paper aim to improve diagnostic accuracy and minimize misdiagnosis. Furthermore, the comprehensive classification of different types and subtypes of the disease revealed its heterogeneity, providing valuable insights for tailoring treatment approaches and improving patient outcomes. Understanding these distinctions is essential for healthcare professionals to offer personalized care based on specific disease presentations. Collectively, the findings in this paper contribute to the existing knowledge base surrounding the disease and serve as a foundation for further research and advancements in its diagnosis and management. By addressing the introduction, prevalence, diagnostic criteria, and types of the disease, we have taken a holistic approach to comprehensively comprehend the complexities and challenges associated with this condition. In light of these insights, this paper calls for collaborative efforts from researchers, healthcare providers, policymakers, and the public to combat the disease's impact effectively. Together, we can work towards improving prevention strategies, early detection, and patient-centered treatment approaches, ultimately aiming for a healthier future for affected individuals and communities worldwide.

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