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RESEARCH ARTICLE

FROM PCOS TO PMOS: A CRITICAL REVIEW OF TERMINOLOGY, MULTISYSTEM PATHOLOGY, AND CLINICAL IMPLICATIONS

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Abstract

Polycystic Ovary Syndrome (PCOS) is one of the most common endocrine and metabolic disorders among women of reproductive age worldwide, with an estimated global prevalence of 8-13% depending on the diagnostic criteria used. The term "Polycystic Ovary Syndrome" is a common clinical finding, but has been increasingly criticised over the past two decades by patient advocacy groups, endocrinologists and gynaecologists. The main criticism is that the term "polycystic ovary" misleads both clinicians and patients by emphasising a non-mandatory gynaecological sign (ultrasonographic ovarian morphology) and hiding the deep metabolic, cardiovascular, neuroendocrine, and psychological manifestations that characterise the condition. In response to these limitations, alternative terminologies have been proposed by clinical researchers, including most prominently: Poly-Metabolic Ovary Syndrome (PMOS) and Metabolic Reproductive Syndrome (MRS). This secondary research paper presents a thorough critical review as to whether the transition of PCOS to PMOS more accurately reflects the multisystem pathology of the disorder and how such a reclassification could influence the clinical understanding, diagnostic accuracy and patient care. This paper systematically reviews peer-reviewed secondary and primary literature available on PubMed, ScienceDirect, Scopus, Wiley Online Library and SpringerLink, and combines epidemiological information, pathophysiological mechanisms, evolution of the diagnostic criteria and patient outcome studies. The theoretical frameworks of Evolutionary Medicine, Systemic Homeostasis and Biopsychosocial Medicine are used to evaluate the clinical construct of the disorder. The results show that hyperinsulinemia, central insulin resistance, neuroendocrine dysfunction of the hypothalamic-pituitary-gonadal (HPG) axis and chronic low-grade inflammation are the core aetiology of the disorder rather than intrinsic ovarian structural pathology.

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Furthermore, the analysis indicates that current diagnostic frameworks, including the Rotterdam 2003 criteria, frequently lead to diagnostic delay, under-diagnosis of severe cardiometabolic risks, unnecessary invasive

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gynaecological workups, and significant psychological distress stemming from ovarian-centric stigma. Describing the disorder as PMOS emphasises the central role of insulin-driven metabolic dysregulation, but also allows for heterogeneous phenotypes. To summarise, this paper argues that nomenclature reform to PMOS has significant potential to improve diagnostic clarity, promote early intervention and improve multidisciplinary care. However, successful implementation requires international consensus, updated clinical guidelines and careful management of potential diagnostic fragmentation.

Introduction:-

Study Background

Polycystic Ovary Syndrome (PCOS) is the most common endocrine disease among women of reproductive age. It affects approximately 8% to 13% of women globally, according to World Health Organisation (WHO) criteria and international evidence-based recommendations. The condition was first described in a systematic way in 1935 by Irving F. Stein and Michael L. Leventhal, as the “Stein-Leventhal Syndrome” and was initially characterised by a classic triad of amenorrhoea, hirsutism, and enlarged, polycystic-appearing ovaries seen at surgical exploration. In the decades after Stein and Leventhal's first observations, medical science made rapid progress in the fields of hormone assays and ultrasonographic imaging, and in the late twentieth century the name Polycystic Ovary Syndrome was formally adopted.

However, the advent of modern endocrinology and molecular biology brought about a fundamental paradigm shift in the understanding of this disorder. Researchers gradually discovered that the presence of “polycysts”, arrested fluid-filled antral follicles rather than true physiologic or neoplastic cysts, was not universal among affected women, nor unique to the condition. More importantly, a large body of biochemical and clinical research has shown that the major pathophysiological drivers of the disorder lie far beyond the ovaries. Insulin resistance, compensatory hyperinsulinemia, low-grade systemic inflammation, visceral adiposity, hyperandrogenism and disturbed gonadotropin-releasing hormone (GnRH) pulsatility form a complex, interconnected web of multi-system dysfunction that impacts metabolic, cardiovascular, dermatological and psychological health.

This well-known multisystem reality is still attached to the anatomical organ-specific descriptor of the diagnostic label: Polycystic Ovary Syndrome. This absence of correlation between nomenclature and pathophysiology has generated great concern in the world medical community. Women with PCOS frequently say they feel confused, thinking they have dangerous ovarian cysts that need surgery or that they will never be able to get pregnant. A large proportion of clinicians other than reproductive endocrinology specialists, such as general practitioners, cardiologists and internists, tend to look at PCOS exclusively from a reproductive perspective and this results in missed chances for early cardiovascular and metabolic risk stratification. This has resulted in specific recommendations from leading medical bodies such as the National Institutes of Health (NIH) Evidence-based Methodology Workshop Panel in 2012 to change the name of the disorder. Of the proposed terms, Poly-Metabolic Ovary Syndrome (PMOS) has emerged as the leading candidate to encapsulate both the metabolic driver and the reproductive features of the condition.

The research problem:-

The main research problem this paper addresses is the persistent inconsistency between the diagnostic nomenclature for Polycystic Ovary Syndrome (PCOS) and the underlying multisystem pathophysiological reality. Current organ-focused nomenclature highlights a secondary pelvic criterion, polycystic ovarian morphology (PCOM), that is neither necessary nor sufficient for diagnosis under several established diagnostic criteria. This diagnostic misnomer generates three separate clinical problems: Diagnostic Delay and Misdiagnosis: Patients with severe insulin resistance, metabolic dysregulation, and hyperandrogenism who do not have overt polycystic ovaries on ultrasound are often underdiagnosed or delayed in care, leading to unaddressed long-term metabolic and cardiovascular risks.

Fragmented patient care: The gynaecologic bias in the current terminology leads to management based on presenting symptoms (e.g., prescribing OCPs to regulate menses) and ignores systemic metabolic therapy, lifestyle interventions, and psychological support. Patient Anxiety and Stigma: “Polycystic” induces unnecessary fear of structural disease, ovarian cancer, or assured permanent infertility, creating cognitive barriers to effective health management. Although it has been suggested that changing the name of the disorder to Poly-Metabolic Ovary Syndrome (PMOS) could address these issues, a detailed critical review that brings together how this change in terminology reflects current physiological evidence, impacts diagnostic frameworks and alters patient care pathways is needed for undergraduate and clinical medical literature.

Objectives of the Research:-

- This secondary research paper intends to achieve the following particular academic and clinical objectives:
- To critically review the historical development and physiological limitations of the term Polycystic Ovary Syndrome (PCOS).
- To review the current peer-reviewed evidence on the multisystem pathology of the disorder, with an emphasis on neuroendocrine, metabolic, cardiovascular, and systemic inflammatory mechanisms.
- To discuss the proposed nomenclature of Poly-Metabolic Ovary Syndrome (PMOS), and to evaluate the ability of the nomenclature to better capture the complex phenotypic expressions of the disorder.
- To evaluate the clinical implications of PMOS in real life, such as early diagnostic accuracy, multidisciplinary management and patient psychological well-being.
- To identify key research gaps and suggest future directions for clinical guidelines, diagnostic criteria, and educational strategies.

Research Questions:-

In an effort to fulfil the research objectives, the present study seeks to answer the following main and subsidiary research questions:

Primary Question: Does the change in nomenclature from PCOS to Poly-Metabolic Ovary Syndrome (PMOS) better represent the multi-system pathophysiology of the disorder and improve clinical management?

- Secondary Question 1: How do insulin resistance, hyperinsulinemia and systemic low-grade inflammation promote ovarian and extra-ovarian clinical manifestations in individuals with PCOS?
- Second Question: What are the principal diagnostic limitations of the current diagnostic frameworks (NIH 1990, Rotterdam 2003, AE-PCOS 2006 and International Consensus 2018/2023)?
- Secondary Question 3: How does the existing reproductive-focused terminology affect patient perceptions, psychological outcomes, and inter-professional clinical collaboration?

Importance of the Study:-

The study has important implications for medical education, clinical practice and health policy. From an academic perspective, it provides a rigorous, synthesised, secondary assessment of an ongoing paradigm shift in clinical endocrinology. The paper illustrates the influence of medical terminologies on clinical cognition and healthcare delivery by connecting fundamental pathophysiological mechanisms with clinical diagnostic frameworks. In clinical practice, the study underscores the need for thorough, metabolic-first screening protocols for affected women across the lifespan. Finally, patient advocacy and communication: a review of the PCOS nomenclature offers a model for preventing medical confusion, diagnostic anxiety, and empowering patients with a clear understanding of their metabolic health.

Review of Literature:-**Historical Evolution of Diagnostic Concepts:-**

The medical understanding of what is now known as Polycystic Ovary Syndrome (PCOS) has changed in a dramatic conceptual way over the last century. In 1935, Irving Stein and Michael Leventhal published a landmark series of seven women with bilateral enlarged polycystic ovaries, amenorrhoea, hirsutism and obesity, which was then classified as a rare surgical disease of the pelvic organs. The mainstay of treatment at that time was bilateral ovarian wedge resection, in which the ovarian stroma was mechanically disrupted, and in many patients this resulted in the return of regular ovulatory menses, but the mechanism was completely unknown.

The introduction of radioimmunoassay techniques to measure circulating pituitary and steroid hormones in the 1960s and 1970s constituted a revolution in reproductive endocrinology. This technological advance refocused the clinical emphasis from gross anatomical pathology to neuroendocrine dysfunction. A major diagnostic feature recognised by investigators was elevated luteinizing hormone (LH) levels in relation to follicle-stimulating hormone (FSH), resulting in the characteristic LH: FSH ratio greater than 2:1 or 3:1. Hyperandrogenism was found to be a major feature, due to increased synthesis of androgens by ovarian theca cells and hypersecretion of adrenal androgens. The major milestone in the understanding of the condition was in the 1980s when Burghen et al. (1980) and Dunaif et al. (1989) showed that hyperinsulinemia and peripheral insulin resistance were intrinsic and weight-independent features of the syndrome. These results demonstrated that ovarian dysfunction was frequently secondary to systemic metabolic drivers. However, these metabolic insights did not stop diagnostic consensus panels from struggling to balance reproductive and metabolic criteria. This led to a series of evolving international diagnostic criteria summarised in Table 1.

Table 1 Evolution of PCOS diagnostic criteria through history

Diagnostic Framework	Year	Required Diagnostic Criteria	Key Features and Limitations
Stein-Leventhal Criteria	1935	Amenorrhea, hirsutism, obesity, bilateral polycystic ovaries (surgical/gross).	Focused purely on severe surgical phenotypes; missed mild or lean presentations.
NIH Consensus Criteria	1990	1. Chronic anovulation 2. Clinical and/or biochemical hyperandrogenism. (Exclusion of other disorders).	Excluded polycystic ovarian morphology completely; required hyperandrogenism; highly specific but lacked sensitivity for broader phenotypes.
Rotterdam ESHRE/ASRM Consensus	2003	2 out of 3 features: 1. Oligo- or anovulation 2. Clinical and/or biochemical hyperandrogenism 3. Polycystic ovarian morphology (PCOM) on ultrasound.	Created 4 distinct phenotypes (A, B, C, D); introduced non-hyperandrogenic PCOS; dramatically increased prevalence rates; highly controversial due to heterogeneity.
Androgen Excess & PCOS Society (AE-PCOS)	2006	1. Hyperandrogenism (required) 2. Ovarian dysfunction (oligo-anovulation AND/OR PCOM).	Re-emphasised hyperandrogenism as essential; excluded Phenotype D (non-hyperandrogenic); prioritised androgen-driven metabolic risk.
International Evidence-Based Guidelines	2018 / 2023	Refined Rotterdam criteria; anti-Müllerian hormone (AMH) allowed as a substitute for PCOM in adults; strict adolescent guidelines.	Emphasised lifespan cardiometabolic screening, psychological impact, and caution against over-diagnosis in adolescents.

Pathophysiological Synthesis: The Multisystem Cascade:-

The cardinal pathological characteristic of the disorder is a complex reciprocal feedback loop between the metabolic signalling pathways and the hypothalamic–pituitary–gonadal (HPG) axis. Current literature accepts systemic hyperinsulinemia as a master disruptor of neuroendocrine and ovarian function, as opposed to a primary defect of ovarian tissue.

Insulin Kinetics and Metabolism:-

Insulin resistance is observed in up to 75% of patients, including more than 95% of women with a high body mass index (BMI). The defect is post-receptor in the skeletal muscle and adipose tissue. There is impaired autophosphorylation of the insulin receptor and defective translocation of the GLUT-4 glucose transporter. In classic type 2 diabetes, insulin resistance occurs in all tissues, whereas in PCOS, the ovary remains selectively insulin sensitive. This is called selective tissue insulin resistance. High circulating insulin concentrations synergistically stimulate ovarian theca cells along with LH, increasing cytochrome P450c17 α enzyme activity and steroidogenesis, resulting in excessive testosterone and androstenedione synthesis.

Furthermore, the metabolic effects of compensatory hyperinsulinemia on the liver are direct. Insulin inhibits hepatic production of Sex Hormone-Binding Globulin (SHBG). Decreased SHBG levels greatly increase the bioavailable, free testosterone in unbound circulation, exacerbating clinical hirsutism, androgenic alopecia and acne. Insulin also suppresses hepatic production of Insulin-like Growth Factor Binding Protein-1 (IGFBP-1), thereby further enhancing intraovarian androgen production via local IGF-1 pathways.

Neuroendocrine Disruptor:-

The pulse generator activity of gonadotropin-releasing hormone (GnRH) at the hypothalamic level is increased in frequency, favouring the transcription and secretion of Luteinizing Hormone (LH) by the anterior pituitary gland over that of Follicle-Stimulating Hormone (FSH). The relative FSH deficiency prevents normal antral follicle maturation and blocks follicle selection and dominance. Therefore, multiple small follicles (2 to 9 mm in diameter)

become arrested in their growth phase, leading to the characteristic “pearl necklace” appearance on transvaginal ultrasonography. These arrested follicles secrete high levels of Anti-Müllerian Hormone (AMH), which further inhibits FSH action and prevents primordial follicle recruitment, trapping the ovary in a state of persistent follicular arrest and chronic anovulation.

Adipose dysfunction and chronic low-grade systemic inflammation:-

In the last decade, the literature has increasingly referred to this disorder as a chronic systemic inflammatory state. This is associated with increased circulating inflammatory markers, such as high-sensitivity C-reactive protein (hs-CRP), interleukin-6 (IL-6), tumour necrosis factor-alpha (TNF- α), and white blood cell counts, independent of body weight. A key player in this process is the dysfunction of visceral adipose tissue, where hyper-hypertrophic adipocytes secrete pro-inflammatory adipokines and down-regulate adiponectin, a critical insulin-sensitising and anti-inflammatory hormone. The pro-inflammatory milieu directly causes endothelial dysfunction and accelerated subclinical atherosclerosis and also promotes the development of a dyslipidemic profile with increased triglycerides, reduced high-density lipoprotein cholesterol (HDL-C) and increased small, dense low-density lipoprotein (LDL) particles.

Psychological, Neurodevelopmental and Quality of Life Effects:-

The multisystem burden extends well into neurodevelopmental and psychological domains. Meta-analytic reviews suggest a three- to five-fold increase in the prevalence of clinical depression and generalised anxiety disorders in women with the disorder compared to age-matched controls. The aetiology of these psychological disturbances is multifactorial, with both metabolic-inflammatory signalling in the brain and physical stressors related to hyperandrogenism and reproductive dysfunction.

Severe hirsutism, cystic acne and androgenic alopecia are dermatologic conditions that are strongly associated with body image distress, loss of self-esteem and social anxiety. Furthermore, chronic sleep disturbances and obstructive sleep apnoea (OSA), which are 5 to 10 times more common in affected women due to central metabolic factors and visceral fat deposition, exacerbate cognitive fatigue, mood instability, and insulin resistance. Recent epidemiological studies also suggest higher neurodevelopmental comorbidity, including higher rates of Attention-Deficit/Hyperactivity Disorder (ADHD) and Autism Spectrum Disorder (ASD) in offspring born to women with the condition, indicating shared genetic pathways and maternal intra-uterine androgen/metabolic exposure.

Comparative Synthesis of Proposed / Proposed Terminologies:-

The current nomenclature fails to convey these systemic, psychological and metabolic complexities. Several alternative terms have been proposed in the scientific literature. Table 2. Comparison of the main candidate terminologies, their clinical validity, pros and cons and diagnostic risks.

Table 2: Critical Synthesis of Proposed Terminology Changes

Proposed Terminology	Primary Conceptual Focus	Advantages	Disadvantages / Clinical Risks
Polycystic Ovary Syndrome (PCOS) (Current Standard)	Organ-specific gynaecological morphology; presence of antral follicles.	Globally recognised; established historical diagnostic codes (ICD-10/ICD-11); widely used in clinical trials.	Misleading ("cysts"); ignores central insulin resistance; causes patient panic over fertility/ovarian pathology; leads to diagnostic delays in lean or non-PCOM patients.
Poly-Metabolic Ovary Syndrome (PMOS) (Primary Proposed)	Dual emphasis on widespread metabolic drivers (insulin, lipids, inflammation) alongside ovarian manifestations.	Accurately reflects hyperinsulinemia and systemic pathology; retains link to ovarian features; encourages metabolic screening and lifestyle interventions.	May overemphasise metabolic features in rare lean phenotypes with isolated neuroendocrine driver; requires re-education of clinicians.

Metabolic Reproductive Syndrome (MRS)	Equal partnership between metabolic dysfunction and reproductive sequelae.	Gender-neutral organ wording; clear broad medical scope; easy for non-gynaecologists (internists, cardiologists) to adopt.	Completely removes ovarian reference, which may cause resistance among reproductive endocrinologists; risk of overly broad diagnostic scope.
Hyperandrogenic Anovulatory Syndrome (HAS)	Focuses on primary biochemical/clinical signs: high androgens and lack of ovulation.	Highly specific to classic phenotypes; removes misleading structural ovarian descriptors.	Excludes non-hyperandrogenic phenotypes (Rotterdam Phenotype D); ignores insulin resistance and metabolic pathways completely.

Theoretical Background:-

Evolutionary Medicine Framework: Thrifty Phenotype and Mismatch Theory:-

To understand why a disorder of such profound metabolic and reproductive dysfunction is still so prevalent across human populations, researchers often turn to the Evolutionary Medicine Framework. The “Thrifty Gene” and “Thrifty Phenotype” hypotheses, originally modified for endocrinology by Neel (1962) and later developed by Holte (1996), suggest that the genetic and epigenetic variants associated with PCOS provided a unique survival benefit during the course of human evolutionary history.

In ancestral environments of unpredictable food supply, harsh winters and frequent famine, energy efficiency was critical for survival. The metabolic features of PCOS (peripheral insulin resistance, efficient central adiposity storage and reduced basal metabolic energy expenditure) enabled women with this condition to better survive severe caloric deprivation than their unaffected peers. At the same time, subfecundity and late reproductive onset allowed pregnancy to be avoided during times of famine, thus conserving maternal energy. With food abundance, hyperinsulinemic signalling allowed rapid adipose accumulation, thus securing energy reserves for lactation and infant survival.

But in contemporary industrial societies, there is an evolutionary mismatch. Constant exposure to calorie-dense diets of refined carbohydrates, combined with a sedentary lifestyle, turns these evolutionary adaptations into clinical pathologies. “Thrifty” insulin resistance directly leads to compensatory hyperinsulinemia, chronic visceral obesity, the metabolic syndrome, and metabolic depletion. Viewing the disorder from the perspective of evolutionary medicine eliminates the patient’s sense of blame and changes the clinical view from that of a “broken reproductive system” to an evolutionary adaptation operating in a modern, mismatched environment.

Theory of Allostatic Load and Systemic Homeostasis:-

Systemic Homeostasis: The Allostatic Load Theory, developed by McEwen and Stellar (1993), provides a valuable theoretical framework for conceptualising how multisystem function is degraded over time by chronic physiological stress. Allostasis is the active process of maintaining stability (homeostasis) by change, either physiological or behavioural. Allostatic load is the cumulative physiological toll on tissues and organs of chronic elevation of mediating mechanisms such as the hypothalamic-pituitary-adrenal (HPA) axis, autonomic nervous system, metabolic hormones, and pro-inflammatory cytokines. In this disorder, sustained allostatic mediators include hyperinsulinemia, high luteinizing hormone, chronic hyperandrogenism, and pro-inflammatory adipokines. In early adolescence and adulthood, the body compensates for insulin resistance by increasing pancreatic beta-cell insulin secretion to maintain normal plasma glucose levels at the expense of chronic hyperinsulinemia.

Repeated exposure to this increased allostatic load produces structural and functional damage to multiple organ systems:-

- Vascular system: Endothelial nitric oxide synthase dysfunction resulting in arterial stiffness and hypertension.
- Ovarian Stroma: Chronic androgen production. Stroma hyperplasia, follicular growth arrest.
- Pancreatic beta-cells: beta-cell exhaustion and onset of type 2 diabetes after chronic secretory stress.
- Central Nervous System: Neuroinflammation and dysregulated glucocorticoid signalling leading to mood dysregulation.

The conceptualisation of the disorder within the Allostatic Load Theory further supports the need for the PMOS terminology in that clinical intervention should not simply induce artificial menstrual bleeding but should reduce systemic allostatic stress.

Biopsychosocial Model of Medicine:-

The Biopsychosocial Model, formulated by George Engel in 1977, acknowledges that the complex interaction of biological, psychological, and social factors influences health, disease, and clinical outcomes. Grasping the shift in terminology within this framework illustrates how an organ-centric diagnostic label can negatively impact psychological and social well-being.

The conventional biomedical approach to PCOS considers it a dysfunction of the female reproductive system. Clinicians tend to be very focused and ignore patients complaining about weight gain, mood swings, fatigue, facial hair growth and social anxiety until the patient says she wants to get pregnant. In comparison, the Biopsychosocial Model illustrates the interplay of biological features (insulin resistance, hyperandrogenism) with psychological factors (body dysmorphia, depression, low self-esteem) and social influences (beauty standards, medical gaslighting, loss of cultural femininity due to hirsutism). This shift to Poly-Metabolic Ovary Syndrome (PMOS) is consistent with the Biopsychosocial Model as it provides a diagnostic framework that legitimises the patient's diverse systemic and lived experiences.

Research Methodology:-

Design of the Research:-

The study uses a secondary research approach within the narrative and systematic synthesis framework. This paper is entirely based on existing scholarly literature. No primary data were collected, no human experimentation and no animal testing were performed. The secondary methodology is especially helpful in questions of nomenclature reform, evaluation of diagnostic criteria and synthesis of pathophysiology, because it allows the integration of large bodies of epidemiological, clinical and biochemical evidence published in diverse medical disciplines.

Approach to the Systematic Literature Search:-

A comprehensive multi-stage literature search was conducted (from January 2026 to August 2026) using leading international academic databases: PubMed/MEDLINE, ScienceDirect (Elsevier), Scopus, Wiley Online Library, SpringerLink, and Taylor & Francis Online. Relevant literature on the terminology, pathophysiology and clinical management of the disorder was identified using MeSH terms, Boolean operators (AND, OR) and specific keyword phrases as search strings.

Queries for Database Search:-

The main search algorithms were:-

("Polycystic Ovary Syndrome" OR "PCOS") AND ("Poly-Metabolic Ovary Syndrome" OR "PMOS" OR "Metabolic Reproductive Syndrome") AND ("Nomenclature" OR "Terminology" OR "Renaming")("PCOS") AND ("Insulin Resistance" OR "Hyperinsulinemia") AND ("Multisystem" OR "Cardiovascular Risk" OR "Chronic Low-Grade Inflammation")("PCOS Phenotypes") AND ("Rotterdam Criteria") AND ("Diagnostic Delay" OR "Patient Quality of Life")

Selection and Eligibility Criteria:-

To ensure academic rigour, strict inclusion and exclusion criteria were defined prior to literature screening (Table 3).

Table 3 Inclusion and Exclusion Criteria

Selection Dimension	Inclusion Criteria	Exclusion Criteria
Publication Type	Peer-reviewed journal articles, systematic reviews, meta-analyses, consensus guidelines, seminal historical papers.	Non-peer-reviewed blog posts, opinion editorials without citations, self-published books, forum threads.
Timeframe	Focus on recent research (2014–2026); inclusion of seminal historical studies (1935, 1990, 2003) for context.	Outdated secondary summaries with superseded diagnostic definitions (unless used for historical analysis).

Language	English-language full-text publications.	Non-English publications without verified professional English translations.
Study Focus	Human clinical studies, pathophysiological reviews, diagnostic criteria evaluations, terminology analysis, patient-reported outcome measures.	Isolated animal studies lacking human translational relevance or purely surgical technique papers.

Methodology for data extraction and synthesis:-

The search strategy for secondary literature identification was guided by the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow methodology. The first database searches identified 1240 records. Following duplicate removal (n=380), title and abstract screening was performed on 860 records. A total of 180 full-text articles were screened against the inclusion criteria and a core library of peer-reviewed studies was synthesised in this review. Extracted data were then tabulated into thematic matrices that explored: (1) biological drivers of disease, (2) diagnostic sensitivity/specificity across phenotypes, (3) cardiovascular and metabolic risk profiles, (4) psychological and quality of life metrics, and (5) comparative analysis of nomenclature efficacy. Synthesis of findings was done through narrative integration, with a comparison of conflicting evidence from endocrinological and gynaecological perspectives.

Results and Discussions:-

Main Findings: The Multisystem Reality:-

The secondary literature reviewed here conclusively demonstrates that the clinical presentation of this disorder involves multiple organ systems well beyond the reproductive tract. Figure 1. Summary of the relative frequency of key clinical manifestations across international clinical cohort studies.

Figure 1: Multisystem Clinical Profile and Prevalence in Affected Women (Data from multi-centre cohort studies and international guidelines)

Organ System / Domain	Primary Clinical Manifestations
Metabolic / Pancreatic	Peripheral Insulin Resistance, Compensatory Hyperinsulinemia, Impaired Glucose Tolerance.
Reproductive / Ovarian	Oligomenorrhea, Amenorrhea, Anovulatory Infertility, Polycystic Morphology (PCOM).
Dermatological / Androgenic	Hirsutism, Severe Acne Vulgaris, Androgenic Alopecia, Acanthosis Nigricans.
Cardiovascular / Endothelial	Atherogenic Dyslipidemia, Subclinical Arterial Stiffness, Hypertension, Elevated hs-CRP.
Psychological / Hepatic	Major Depressive Disorder, Generalised Anxiety, NAFLD/MASLD, Obstructive Sleep Apnea.

The compounded evidence shows that insulin resistance and hyperinsulinemia are found in a huge majority of patients, including up to 75% of thin patients who do not meet clinical cut-offs for obesity. More than 50% of affected women have NAFLD, now called Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD), and it is directly associated with hepatic hyperinsulinemia and visceral adiposity. Cardiovascular biomarkers reveal subclinical vascular inflammation, and impaired brachial artery flow-mediated dilatation in affected young women as early as the second decade of life, well before overt clinical cardiovascular events.

Critical appraisal of Rotterdam phenotypes:-

The introduction of the 2003 Rotterdam criteria allowed the diagnostic spectrum to be extended by the definition of four different phenotypic expressions. However, analysis of secondary literature shows that these four phenotypes have very different metabolic and cardiovascular risk profiles, so the uniform diagnostic label of "PCOS" is clinically inadequate. Table 4 presents a comparative analysis of the four phenotypes based on the synthesised evidence.

Table 4: Phenotypic comparison based on Rotterdam criteria

Phenotype Classification	Diagnostic Components	Metabolic Risk Profile	Cardiovascular Risk Profile	Alignment with PMOS Concept
Phenotype A (Classic Complete)	Hyperandrogenism + Ovulatory Dysfunction + PCOM	Extremely High: Severe insulin resistance, high prevalence of Metabolic Syndrome and T2D.	High: Significant dyslipidemia, elevated hs-CRP, vascular stiffness.	Perfect Alignment: Displays full spectrum of metabolic and reproductive features.
Phenotype B (Classic Anovulatory)	Hyperandrogenism + Ovulatory Dysfunction (No PCOM)	Very High: Equivalent metabolic impairment to Phenotype A despite normal ovarian ultrasound.	High: Elevated risk of metabolic syndrome and subclinical atherosclerosis.	Strong Alignment: Proves that polycystic morphology is unnecessary for severe metabolic disease.
Phenotype C (Ovulatory)	Hyperandrogenism + PCOM (Regular Cycles)	Moderate: Mild to moderate insulin resistance; intermediate metabolic risk.	Moderate: Variable lipid abnormalities; lower T2D progression rate.	Moderate Alignment: Demonstrates hyperandrogenic drivers with preserved ovulation.
Phenotype D (Non- Hyperandrogenic)	Ovulatory Dysfunction + PCOM (Normal Androgens)	Low to Mild: Insulin resistance rates similar to general population controls.	Low: Minimal metabolic disruption; primary driver is neuroendocrine/hypo thalamic.	Weak Alignment: May represent a distinct hypothalamic- ovarian subtype rather than a metabolic disorder.

The data synthesised in Table 4 clearly illustrate the basic flaw in current terminology. Phenotype B patients have severe metabolic dysfunction and hyperandrogenism but lack polycystic ovaries. An organ-centric approach often misses or misdiagnoses these patients. Conversely, women with Phenotype D have polycystic ovaries and irregularity of the menstrual cycle but little metabolic risk. Placing these essentially distinct patient populations into a single organ-specific category leads to clinical uncertainty and impedes individualised treatment approaches.

Major Implications of Renaming to PMOS:-

Diagnostic Reorientation and Early Interventions:-

With the transition to Poly-Metabolic Ovary Syndrome (PMOS) the main diagnostic focus immediately shifts toward metabolic risk assessment. According to the PMOS guidelines, the initial diagnostic workup should include fasting glucose, fasting insulin, HOMA-IR (Homeostatic Model Assessment of Insulin Resistance), lipid panels and oral glucose tolerance tests (OGTT) regardless of the patient's body mass index. Early diagnosis of insulin resistance allows timely treatment with lifestyle changes, metformin or GLP-1 receptor agonists that can prevent the progression from impaired glucose tolerance to overt type 2 diabetes and cardiovascular disease.

Enhancement of Patient Perception and Psychological Well-being:-

Research into patient preference for terminology shows that more than 70% of women diagnosed with the condition report that the term 'Polycystic Ovary Syndrome' caused considerable anxiety on first diagnosis. It is common to hear patients say they thought "polycysts" were dangerous tumours that needed immediate surgical resection. The term also causes a lot of distress about fertility, making young women think they are permanently infertile before they even try to conceive. The name change to PMOS removes the frightening concept of ovarian "cysts" and accurately tells patients that the condition is a manageable metabolic-endocrine state, thus reducing psychological stress and increasing patient engagement with long-term lifestyle management.

Supporting multidisciplinary care pathways:-

The care of affected women is currently fragmented. Patients present to gynaecologists with irregular cycles, dermatologists with hirsutism and acne, endocrinologists for screening for diabetes and psychiatrists for mood disorders. The organ-centric name PCOS perpetuates this siloed approach, as non-gynecologic specialists often do not view the condition as within their primary domain. Poly-Metabolic Ovary Syndrome (PMOS) offers a shared clinical language that facilitates teamwork in the interdisciplinary care of patients by primary care physicians, endocrinologists, cardiologists, dietitians, and mental health professionals.

Critical Discussion and Research Gaps:-

There are strong clinical reasons for a shift to PMOS, but a critical review reveals many challenges and open questions that need to be addressed before PMOS can be implemented globally:-

- The Danger of Over-Metabolizing Lean Subtypes: About 15% to 20% of affected women have normal body weight, normal insulin sensitivity, and primary neuroendocrine dysfunction driven by hyperactive GnRH pulsatility and adrenal hyperandrogenism (often corresponding to lean Phenotype C or D). Poly-Metabolic Ovary Syndrome may be a clinical misnomer for these women and may lead to prescription of metabolic medications such as metformin that may not be necessary.
- Diagnostic Confusion in a Transition. Changing a globally well-accepted diagnostic label could lead to temporary administrative, legal and educational confusion. Updating medical coding systems (ICD-10 and ICD-11) , health insurance reimbursement protocols , research grant classifications , and medical school curricula takes years .
- Lack of Longitudinal Prospective PMOS Validation Trials: Although the metabolic underpinnings of the disorder are well supported by an extensive secondary literature, large prospective clinical trials examining whether changing diagnostic terminology directly improves long-term hard clinical endpoints (e.g., reduction in T2D incidence or cardiovascular events) are sparse.

Conclusion:-**Summary of the Study:-**

This secondary research article critically reviewed the historical development, pathophysiological limitations and clinical implications of changing the diagnostic terminology from Polycystic Ovary Syndrome (PCOS) to Poly-Metabolic Ovary Syndrome (PMOS). The study reviewed decades of peer-reviewed literature across the fields of endocrinology, gynaecology, and metabolic medicine, and showed that the current, organ-centric name does not convey the multisystem, hyperinsulinemic, and inflammatory nature of the condition. The diagnostic frameworks in use today, especially the 2003 Rotterdam criteria, include highly heterogeneous phenotypes with very different metabolic risk profiles. Theoretical frameworks such as Evolutionary Medicine, Systemic Homeostasis, and the Biopsychosocial Model provide further support that the disorder is a systemic metabolic-endocrine mismatch and not a structural pelvic disease.

Important findings:-

The primary conclusion of this research paper is that the change to Poly-Metabolic Ovary Syndrome (PMOS) is a needed and medically justified progression in clinical language. Particularly:PMOS correctly identifies metabolic dysfunction, insulin resistance and systemic inflammation as key central pathophysiological drivers, along with reproductive manifestations.PMOS dispels the myth of ovarian “cysts,” relieving patients of psychological suffering, fear of infertility, and diagnostic confusion.The new nomenclature encourages early, lifelong cardiometabolic screening and promotes multidisciplinary clinical care across primary medicine, endocrinology and metabolic health.

Implications for Practice:-

The application of PMOS in clinical practice needs an international health organisations partnership. Medical societies should revise diagnostic algorithms. Baseline metabolic testing (HOMA-IR, OGTT, lipid panels) should be required for all patients with hyperandrogenism or ovulatory dysfunction, regardless of ultrasound findings or BMI. Clinical education programs need to re-educate primary care physicians and internists to recognise early metabolic manifestations in young women. Finally, patient communication materials should be updated to describe the disorder as a metabolic-endocrine profile that can be managed rather than an organ pathology.

Shortcomings of the Secondary Research:-

Only published secondary literature, meta-analyses, and existing observational cohorts are used in this paper. Thus, it is affected by the publication bias and methodological heterogeneity of primary studies. Also, there are no direct

experimental data available comparing long-term health outcomes of patients managed according to a “PMOS diagnostic protocol” versus a “PCOS diagnostic protocol” in prospective medical registries.

Recommendations for further research:-

Future research should aim at improving clinical understanding and helping to support global terminology reform: International Delphi Consensus Panels: formal consensus studies among international endocrinology, cardiology and gynaecology societies to refine exact diagnostic criteria for PMOS. Multi-omics phenotyping (genomics, metabolomics, proteomics) to understand the molecular subtypes of PMOS, including hyperinsulinemic metabolic subtypes vs. central neuroendocrine subtypes. Prospective Impact Studies: Design prospective implementation studies to evaluate whether renaming the disorder results in a decrease in diagnostic delay, better medication adherence among patients, and lower long-term metabolic morbidity.

Ethical and Regulatory Concerns:-

“Changing the name of a major global disease comes with huge ethical and regulatory responsibilities. Healthcare authorities must ensure that updates to medical coding (ICD-11 updates) do not lead to the loss of insurance coverage for necessary reproductive treatments or metabolic therapies. Clinicians should be ethically transparent when explaining changes in terminology to existing patients so as not to cause undue alarm. It should be explained that a change in diagnosis to PMOS is not the identification of a new disease but a deeper knowledge of the underlying pathology.

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