



Understanding the Holistic Etiological Nature of Premenstrual Syndrome: Insights into its Biopsychosocial Roots

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ABSTRACT

Premenstrual syndrome (PMS) stands as one of the prevalent conditions impacting women of reproductive age, significantly impacting both emotional well-being and productivity. Recognizing the intricate layers contributing to its emergence, this current study aimed to explore the biopsychosocial roots of PMS. A comprehensive review of studies conducted between 1987 and 2015 was conducted, focusing on the three domains of biological, psychological, and social causes. Originally, Medical Subject Headings were employed to identify pertinent terms such as biological, psychological, social, and premenstrual syndrome. These key terms were then employed to conduct searches across diverse online databases, including Google Scholar, Scopus, and PubMed. The results were divided into three distinct categories. Within the field of biology, scientists conducted a thorough examination of the impacts and roles of sex hormones and their variations in PMS. Within the psychological sphere, diverse hypotheses surrounding PMS and the influence of psychological factors on its onset were explored. The social dimension explored the societal, religious, and cultural position of women, investigating its connection with PMS. It is advised to provide girls with basic scientific knowledge about puberty and premenstrual health in order to lessen the effects of PMS. The findings indicated that addressing issues related to premenstrual symptoms is essential to a comprehensive evaluation of women's health and is critical to the diagnosis of both physical and psychological disorders.

Purpose of the Review: The purpose of "Understanding the Holistic Etiological Nature of Premenstrual Syndrome: Insights into its Biopsychosocial Roots" is to explore and analyze the various factors contributing to Premenstrual Syndrome (PMS) from a comprehensive, holistic perspective. Rather than focusing solely on biological or psychological aspects, this study or paper aims to integrate the biological, psychological, and social dimensions (biopsychosocial model) to provide a more complete understanding of the causes and nature of PMS. By doing so, it seeks to identify the interconnected influences that contribute to PMS, which could lead to more effective approaches in managing and treating the syndrome.

Keywords: Biopsychosocial, Etiology, Premenstrual syndrome, PMS.

INTRODUCTION

In contemporary society, women's health is acknowledged as a fundamental right and a crucial aim of social and economic development, in a significant health concern for women, and encompasses a range of physical as well as psychological symptoms that manifest in the days preceding menstruation and diminish shortly after it commences. These symptoms, which can severely impact a woman's physical and mental well-being, highlight the importance of prioritizing women's health issues¹. In initial Frank in 1931 described severe tension and impulsive behavior in premenstrual syndrome. Symptoms included intense headaches, swelling in the face, hands, and feet, reduced urination, weight gain, subcutaneous bleeding, asthma, and occasional seizures. Symptoms eased during menstruation but worsened towards the end of the cycle, especially with delayed menstruation. In 1933, Thomas observed significant edema, and weight gain of 12 to 14 pounds, relieved by menstruation. Sweeny, in 1934, noted tight clothing and stiff hands, with 30% of healthy women gaining 3 pounds premenstrual. Puech, in 1942, highlighted premenstrual asthma, rhinorrhea, fever, and lumbar pain, Rubenstein, in 1942, focused on severe headaches linked to abnormal hunger, associated with

hypoglycemia by Morton and McGavock in 1946. Stieglitz and Kimble, in 1949, found emotional instability, headaches, backaches, depression, thigh aches, and abdominal bloating among their patients, Cooke, in 1945, noted 84% of violent crimes by women occurred during or just before menstruation. Morton et al., in 1952, found 62% of violent crimes by prison inmates during the premenstrual week, 19% of women experience symptoms, while 17% are affected at mid-cycle, 17% during menstruation, and only 2% after menstruation². Recent research on premenstrual symptoms has focused on cognitive functioning and symptomatology. One study discovered that the assessment of subjective symptoms was significantly worse premenstrual compared to postmenstrual. This was particularly evident in cognitive functions such as visual perception, visual memory, immediate auditory recall, working memory, cognitive flexibility, planning ability, and the integration of cognitive responses⁸. One of the research unveiled that premenstrual syndromes impact women across socioeconomic divides, with symptoms mirroring those observed in women of higher socioeconomic status. Additionally, among women seeking therapy for PMS, the study found a statistically significant correlation between a history of sexual abuse and psychiatric hospitalization.



These findings highlight the vital importance of considering past traumatic experiences and conducting a thorough assessment for depressive disorders when evaluating women with premenstrual symptoms. This underscores the need for a holistic approach to addressing PMS, taking into account both psychological and physiological factors⁶. The primary challenge of premenstrual syndrome lies in the limited understanding of its etiology. Throughout the menstrual cycle, a woman's bodily tissues become sensitive to changes in hormone levels. Variations in hormone levels (estrogen and progesterone) may impact brain chemicals, particularly serotonin, which influences mood³. Both the precise pathophysiological role of the luteal phase and the roles of the ovarian hormones progesterone and estrogen in premenstrual syndrome are still unknown. It's interesting to note that mifepristone, a progesterone receptor antagonist, does not reduce PMS symptoms when used to disrupt the luteal phase. This highlights the complexity and elusive nature of the syndrome's underlying mechanisms⁴. However, ovarian suppression using gonadotropin-releasing hormone agonist analogues usually alleviates the symptoms. When combined, these results support the hypothesis that hormone-related events that transpire prior to the mid-luteal phase of the menstrual cycle cause premenstrual syndrome¹⁶. All age groups are affected by this illness, however, women between the ages of 25 and 45 are the most likely to experience it. Additionally, symptoms appear to significantly worsen as one ages. The prevalence of premenstrual syndrome (PMS) varies significantly across the globe, with 61% of women in South America, 83% in Africa, 46% in Asia, and 41% in Europe experiencing its symptoms. On a global scale, the overall prevalence of PMS stands at 48%. Various studies highlight these disparities, reporting rates as high as 98% in Iran and as low as 10% in Switzerland. These figures underscore the diverse impact of PMS on women's health worldwide¹⁸. While premenstrual disorders are not confined to specific cultures, cultural influences significantly affect the prevalence, severity, and manifestation of symptoms, as well as the patterns of seeking help⁵. With this knowledge, it is imperative to investigate the biological, psychological, and social causes of PMS and to promote more informed and comprehensive discussions about possible treatments. Comprehending these fundamental elements will facilitate the creation of more efficient and all-encompassing approaches to tackle and mitigate the influence of PMS on the well-being of females.

Biological Factors

Biological factors contributing to premenstrual syndrome (PMS) involve hormonal fluctuations, neurotransmitter imbalances, and genetic predispositions. Hormonal changes, particularly in estrogen and progesterone levels, influence mood regulation and physical symptoms. Imbalances in neurotransmitters, like serotonin and gamma-aminobutyric acid (GABA), can

significantly influence mood and anxiety levels. Genetic factors also contribute, with specific gene variants potentially heightening susceptibility to PMS symptoms. These discoveries emphasize the intricate biological underpinnings of PMS and its impact on mental health.

The Influence of Hormones on Premenstrual Syndrome

Dopamine and serotonin, pivotal neurotransmitters, govern mood and appetite. Ovarian hormones influence neurotransmitter synthesis and uptake, precipitating physical and behavioral PMS symptoms. Prostaglandins serve as catalysts in physiological responses such as inflammation and vascular dilation. Prolactin, emanating from the pituitary gland, modulates estrogen and progesterone secretion. Excessive prolactin secretion, known as hyperprolactinemia, is deemed a potential instigator of PMS, fostering dysphoria, breast tenderness, water retention, and depression while curtailing corpus luteum function and progesterone production. Endorphins, those remarkable neuropeptide hormones of the endocrine system, are like conductors orchestrating a symphony of physiological functions—pain transmission, emotional balance, appetite cues, and hormone regulation. Imagine this intricate dance: during the luteal phase, whispers suggest that shifts in progesterone levels or the delicate balance of estrogen and progesterone might just tweak the rhythm of endorphin activity, setting the stage for the days leading up to menstruation¹⁷. Estrogen exerts its influence on intricate neurotransmitter systems, involving serotonin, noradrenaline, GABA, dopamine, and acetylcholine. These systems are essential for controlling behavior, emotion, and mental processes. Furthermore, estrogen is essential for neural irritability, highlighting the variety and complexity of its effects on the nervous system. Hence, the escalation of the luteal phase and estrogen level decline contribute to PMS symptom manifestation. Nonetheless, the simplistic hypothesis of estrogen fluctuations during the follicular phase, gradually approaching asymptote, suggests that additional factors are involved in PMS symptom development.¹⁶

When using progestogens to treat PMS, postmenopausal women with a history of the condition reported more severe side effects than those without one. Furthermore, in comparison to control issues the sedative effect of intravenous pregnanolone, a progesterone metabolite and GABA_A receptor agonist, was significantly reduced during the luteal phase. These findings underscore a reduced sensitivity to pregnanolone's calming effects during the luteal phase and suggest that a history of PMS may significantly influence the response to hormonal treatments later in life.⁷

Genetics Influences on Premenstrual Syndrome

The genetic influence on premenstrual syndrome (PMS) involves the interplay of inherited factors in symptom manifestation. Genetic predisposition contributes to the variability in symptom severity and susceptibility across



individuals experiencing PMS.

Genetic influences on menstrual characteristics have been identified. Several early studies suggested that genetics play a role in premenstrual symptoms. However, these studies often faced methodological issues such as small sample sizes, reliance on case reports, and difficulties in separating genetic and environmental factors. While some studies have identified familial clustering, others have not. Furthermore, environmental factors and stress have been associated with premenstrual syndrome (PMS). Only a few studies have investigated premenstrual symptoms using the classical twin method.⁹

The genetic predisposition to premenstrual symptoms is widely recognized and greatly impacts the manifestation of PMS. A study conducted in 1971 unveiled a robust association between mothers and their daughters concerning premenstrual tension, with striking resemblances in particular PMS symptoms. About 69.8% of daughters born to mothers who had symptoms like anxiety, exhaustion, and irritability also exhibited comparable symptoms, whereas 62.5% of daughters born to mothers who did not experience any symptoms did not exhibit any symptoms at all¹⁰.

Body metabolites and their role in premenstrual syndrome

The involvement of body metabolites in premenstrual syndrome (PMS) refers to the influence of metabolic processes on the manifestation of PMS symptoms. Metabolites, including hormones and neurotransmitters, play a pivotal role in governing physiological functions and can influence mood, behavior, and physical symptoms encountered throughout the menstrual cycle.

Psychological Factor

Premenstrual behavior is occasionally labeled as temporary insanity or incapacity in women. Nonetheless, there is scant evidence to substantiate this assertion, and no laboratory test can verify a woman's incompetence or temporary insanity¹². Clinicians have little interest in or credibility for premenstrual syndrome due to the large number of inconsistent studies that have been conducted on the condition. However, with the recent standardization of diagnostic criteria, psychiatrists have shown increased concern about this syndrome due to its associated anxiety and mood disturbances, which lead to social dysfunction and the necessity for medical intervention. Anger, irritation, anxiety, tension, depression, crying hypersensitivity and significant mood swings are the most common mood-related symptoms of PMS¹³ and also include aggression, lethargy, insomnia, impaired concentration, and psychological issues like self-loathing and feelings of oppression. During this period, individuals with a prior history of mental disorders may undergo heightened levels of anxiety in contrast to those lacking such a history¹².

Psychological factors wield significant influence over

menstrual health. Neuroticism, gauged through various assessments, emerges as a reliable forecaster of cycle irregularity. Yet, its impact transcends mere prediction; neuroticism intertwines closely with a gamut of menstrual tribulations, encompassing premenstrual tension, irritability, melancholy, bloating, and headaches. Intriguingly, while neuroticism fails to align with dysmenorrhea, those afflicted with it often manifest heightened levels of depression, anxiety, and withdrawal. This paints a portrait reminiscent of a neurotic cohort, despite not meeting the formal criteria for neuroticism itself¹⁴.

Social Factor

Social factors in PMS encompass the diverse societal influences and circumstances that affect the perception, experience, and handling of premenstrual syndrome. These elements include cultural standards, societal viewpoints, religious doctrines, and the degree of awareness and education about PMS within a society. They determine how symptoms are identified, communicated, and managed, often affecting the stigma or support associated with those experiencing PMS.

Although premenstrual syndrome (PMS) had been studied for decades, it remained relatively obscure until the 1980s when it finally grabbed the public's attention. Through the lens of social constructionism and exploring the realms of literature, social issues, and medicalization, I delineate three pivotal eras in the evolution of premenstrual syndrome into a recognized social concern¹⁵. The findings were drawn from various and conflicting hypotheses about PMS and its social and religious perceptions. This contradiction has often been labeled a common abnormality, and at times, it has been suggested that PMS possesses hidden benefits, such as contributing to human evolution¹¹. Additionally, discrimination against women and girls has been justified by PMS. To attain a more profound insight into human society, it is imperative to confront the stigma and concealment associated with the menstrual cycle. Promoting awareness and understanding of the intricate fluctuations in the body's emotions across the lifespan is paramount¹⁴. Culture influences the likelihood and prevalence of PMS. Attitudes significantly impact the onset and severity of symptoms. Religion also predicts menstrual discomfort. Positive religious views on menstruation correlate with reduced anxiety and stress. For instance, Jewish women, bound by numerous menstruation-related taboos, experience heightened discomfort, while Protestants, being a diverse religious group, tend to suffer less.

THE CONCLUSION

Regarding the etiology of PMS, considering biopsychosocial factors is that it arises from a complex interplay of biological, psychological, and social influences. Biologically, hormonal fluctuations and genetic predispositions play a crucial role.



Psychologically, individual stress levels, mental health history, and emotional resilience are significant contributors. Socially, cultural norms, societal attitudes, and support systems impact the perception and severity of PMS symptoms. This multifaceted understanding underscores the necessity of a holistic approach to managing and treating PMS, integrating medical, psychological, and social interventions. It is advisable for women experiencing ambiguous mood and physical symptoms to seek guidance from healthcare professionals who ought to conduct a thorough reproductive history assessment. Furthermore, it is essential to equip children with explicit and sufficient knowledge about typical and atypical menstrual indicators at the outset of puberty.

PRACTICAL IMPLICATION OF PMS STUDY

The Practical implication of studies on PMS involves utilizing the findings to improve patient care and management strategies. This includes:

1. **Developing tailored treatment plans:** Based on the understanding of biopsychosocial factors contributing to PMS, healthcare providers can create personalized treatment approaches that address individual symptoms and underlying causes.
2. **Enhancing patient education:** Providing patients with accurate and comprehensive information about PMS, including its causes, symptoms, and available treatments, empowers them to engage proactively in their healthcare and make well-informed choices.
3. **Implementing holistic interventions:** Recognizing the multifaceted nature of PMS, healthcare professionals can employ holistic interventions that combine medical, psychological, and social approaches to optimize patient outcomes.
4. **Fostering interdisciplinary collaboration:** Collaboration among healthcare professionals from various specialties, such as gynecology, psychiatry, and psychology, facilitates a comprehensive assessment and management of PMS, ensuring a holistic and integrated approach to patient care.
5. **Conducting further research:** Continuously advancing our understanding of PMS through ongoing research enables the development of more effective treatment modalities and interventions, ultimately improving patient outcomes and quality of life.
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