# Hormones in Havoc: Exploring the Roots and Remedies of PMS

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***Key points:***

- Introduction to PMS
- Causes and Pathophysiology
- Symptoms and Diagnosis
- Impact on Daily Life
- Management and Treatment

## Introduction

Premenstrual syndrome (PMS) is a condition that causes both physical and emotional symptoms in the weeks leading up to menstruation. These symptoms typically begin during the luteal phase of the menstrual cycle and disappear once menstruation ends, leaving a symptom-free period until ovulation [1]. While 50–80% of women of reproductive age experience mild premenstrual symptoms, about 30–40% of women report PMS symptoms significant enough to need treatment [2], with approximately 5–8% of women experiencing severe premenstrual syndrome (PMS), the majority of which also meet the diagnostic criteria for premenstrual dysphoric disorder (PMDD) [6]. A figure simpler to understand is estimated by Mayo Clinic which is that 3 out of every 4 menstruating women experience some form of premenstrual syndrome. However, many women with premenstrual symptoms endure them without seeking diagnosis or treatment [2].

## Causes and Pathophysiology

The underlying cause of PMS is not yet fully understood, but it is believed that sex steroids produced by the corpus luteum in the ovary contribute to symptom development [3]. The idea that PMS is linked to the ovarian cycle is reinforced by its absence before puberty, during pregnancy, after menopause, and when undergoing treatment with gonadotropin-releasing hormone (GnRH) analogs [1].

Currently, two main theories have been proposed to explain the causes of PMS, both of which are linked to the ovarian hormone cycle [1]:

1. One theory suggests that some women have an increased sensitivity to progesterone and progestogens, despite having similar serum estrogen and progesterone levels as those without PMS. [1]
2. The second theory proposes that estrogen and progesterone contribute to a reduction in serotonin levels, a neurotransmitter that plays a key role in mood regulation. This is supported by the effectiveness of selective serotonin reuptake inhibitors (SSRIs), which alleviate PMS symptoms by boosting serotonin levels. Additionally, low serotonin levels have been linked to conditions such as depression and anxiety [1].

Other potential factors include deficiencies in essential nutrients such as calcium, magnesium, and pyridoxine 3. Furthermore, PMS is also influenced by a combination of factors, including lifestyle habits, dietary choices, alcohol consumption, smoking, and levels of physical activity. [3]

**Symptoms and Diagnosis**

PMS presents with both psychological and physical symptoms, affecting multiple physiological systems. While over 300 symptoms have been identified, most women experience around 20 key symptoms.[4] Symptoms emerge right after ovulation, progressively worsen until approximately five days before menstruation, and diminish after the menstrual cycle ends. [3] The most frequently occurring symptoms are classified into physical, psychological, and behavioral categories [2].

**Behavioral symptoms:** fatigue, insomnia, dizziness, food cravings, and overeating.[7] Psychological symptoms: irritability, anger, depression, tearfulness, anxiety, tension, mood swings, difficulty concentrating, confusion, forgetfulness, restlessness, feelings of loneliness, decreased self-esteem, and emotional distress. [7]

**Physical symptoms:** headaches, breast tenderness and swelling, back pain, abdominal pain and bloating, weight gain, swelling and water retention, nausea, muscle and joint pain, dysmenorrhea, and worsened irritable bowel syndrome. [9]

According to the American College of Obstetrics and Gynecology (ACOG), a diagnosis of PMS requires at least one psychological and one physical symptom of moderate or high severity. Meanwhile, the DSM-IV criteria for diagnosing premenstrual dysphoric disorder (PMDD), a more severe form of PMS, require the presence of at least five symptoms from the specified list, including at least one severe psychological symptom [3].

**Impact on Daily Life**

PMS symptoms can vary from mild to severe, often impacting both personal and professional life. Nearly every aspect of a woman's normal functioning can be affected by hormonal fluctuations during the menstrual cycle. Research in the USA has found that PMS is associated with increased workplace absences and reduced productivity [3].

In a large group survey, dysmenorrhea was the most prevalent symptom, affecting 85% of women, followed by psychological complaints at 77% and fatigue at 71%. One in three women had to stop daily activities due to menstrual and premenstrual symptoms, yet half did not disclose menstrual discomfort as the reason for task delegation within their household. Given the significant impact of menstrual symptoms on daily life, it is essential to foster open societal discussions and enhance education for both patients and healthcare providers [8].

**Management and Treatment**

The primary goals of PMS treatment are to alleviate or eliminate symptoms, lessen their impact on daily activities and interpersonal relationships, and minimize any adverse effects associated with treatment [7].

All patients with PMS should first be offered non pharmacological treatment. Medication should be considered for those with persistent symptoms or those who meet the criteria for PMDD. Non pharmacologic strategies for managing PMS include patient education, supportive therapy, and lifestyle modifications. Many women find that tracking symptoms with a diary helps them better manage PMS or PMDD. Maintaining a consistent sleep schedule, particularly during the luteal phase, is also recommended to promote overall well-being. Dietary adjustments can play a crucial role in symptom relief. Reducing sodium intake may help minimize bloating, fluid retention, and breast tenderness while limiting caffeine can alleviate premenstrual irritability and

insomnia. Regular aerobic exercise has also been shown to reduce PMS symptoms, with women who engage in physical activity reporting fewer issues compared to those who do not [7].

Non pharmacologic interventions should be evaluated every three months to assess their effectiveness. If symptoms remain bothersome, pharmacologic treatment may be considered. Medications are tailored to either alleviate specific symptoms or regulate the menstrual cycle, with treatment plans customized to address the most distressing symptoms for each individual [7]. Treatment focuses on inhibiting ovulation through either pharmacological or surgical methods. When medication is required, selective serotonin reuptake inhibitors (SSRIs) or combined oral contraceptives (COCs) are potential options. PMS symptoms are thought to result from a heightened sensitivity to elevated progesterone levels following ovulation. Suppressing ovulation appears to help alleviate these symptoms [3].

## Conclusion

As the research article enforces, PMS is an exhausting period a woman has to experience. The duration of this period can range from 8-10 days per month and the severity of symptoms can impact or obstruct a woman's ability to navigate through personal and work life responsibilities.

Despite the symptoms occurring as commonly as in every 3 out of 4 menstruating women, there is a severe lack of awareness even in women, whereby severe symptoms like depression and irritability are often dismissed as “low mood” or “mood swings”. Moreover, the societal stigma around conversations concerning a woman’s menstrual cycle further suppresses discussions surrounding menstrual health, forcing women to endure in silence. Therefore, healthcare providers need to increase awareness about PMS among patients promoting open conversation and effective symptom management through pharmacological or non-pharmacological treatments.

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