

Role of Yoga and Meditation in Preventing Premenstrual Syndrome and Hormonal Imbalances

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ABSTRACT

The menstrual cycle is a normal and natural process, but many women present discomfort and problems which disturb their lives and routines. Some of these are breast tenderness, acne, bloating, dysmenorrhea, amenorrhea, tiredness and pre-menstrual syndrome (PMS). The percentage of effected woman ranges from source to source, anywhere from 20% to 80%. This number is probably due to estimations, as it is not likely that all women will seek out a doctor and get a diagnosis of PMS. Though the exact cause of the PMS is unknown, it can be influenced by several factors like hormonal imbalance, improper diet and lifestyle. These abnormal interactions excite the biological humour resulting imbalance in the body. *Yogasanas* have a vital impact on the endocrine glands to reach a state of balance or normalcy. Lifestyle modification is a pro-active approach towards optimum health. Practice of regular *Asanas* like *Makarasana*, *Shavasana*, *Pranayama*, and meditation along with simple healthy life style changes including regular exercise and healthy diet are beneficial in preventing the premenstrual syndrome.

KEYWORDS: *Ayurveda, Menstruation, Pre-Menstrual Syndrome (PMS), Dosha, Lifestyle, yoga*

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INTRODUCTION

PMS is a household name as far as women's health goes. If a woman hasn't experienced PMS herself, it is likely she knows of at least one other woman who has. UpToDate reports that clinically significant PMS only occurs in 20% to 30% of women, and here's why:

Menstruation is a normal physiological process and is evidence of a woman's fertility, which is evidence of her baseline good health¹. Symptoms can be mild but they can be severe enough to affect daily activities². It begins at puberty, ranging from age 10 to 16, and ends at menopause at an average of age 51. The women's reproductive system shows regular cyclic changes that prepare the body for pregnancy and fertilization. If pregnancy does not occur, vaginal bleeding occurs, the shedding of the uterine lining (menstruation)³. The menstrual cycle can be easily

disturbed by environmental factors such as stress, extreme exercise, eating disorders and obesity⁴.

The review explores various aspects of yoga, including asanas (postures), pranayama (breath control), and meditation, and analyses how these elements contribute to physiological changes in the body that can influence hormonal health. Key hormones such as cortisol, insulin, oestrogen, progesterone, and thyroid hormones are scrutinized in the context of their responses to yoga practices, focusing on both quantitative and qualitative research findings. This analysis reveals compelling evidence that regular yoga practice may help mitigate stress-induced hormonal fluctuations, improve insulin sensitivity, and regulate the menstrual cycle in women, as well as enhance overall endocrine function.

Yoga has a local as well as systemic effect on the female reproductive system. It helps through a gradual process of fine tuning the endocrine organs of the body to reach the state of balance or normalcy. There are several *Asanas*; *Sarvangasana*, *Halasana* etc have their specific action on these endocrine glands and regulates the hormonal level. It is best to practice these *Asanas* week before the period begins and during the period. Avoid all inversions during the first few days of the menstrual cycle which includes *Sarvangasana*, *Sirsasana*. Yogic breathing exercises like *Nadishodana Pranayama* (alternate nostril breathing), *Kapalabhati* and meditation are helps to balance a person's physical, emotional and mental stress⁵.

Healthy lifestyle, including regular exercise and a healthy diet are the important step towards managing the premenstrual syndrome. For many women with mild symptoms, lifestyle approaches are sufficient to control symptoms. Along with these vitamin B6, calcium and vitamin D helps in relieving the symptoms⁶.

Diet, Lifestyle modifications and Yogasanas to prevent the PMS

Vata –type PMS

Symptoms – Nervousness, tension, anxiety, depression, mood swings, irritability, crying, insomnia, mild or variable constipation, palpitations, bloating, pains (headache, backache, tender breasts, joint ache), forgetfulness, confusion etc⁷.

Diet – increase warm food and drinks, have regular meals. Avoid - caffeine and other stimulants, refined sugar, cold drinks, salads.

Lifestyle – early bedtime, oil massage using sesame oil, meditation, yoga, regular exercise like walking. Use of Vata decreasing herbs like *Ashwagandha*, *Arjuna*, *Lasuna*, *Yashtimadhu*.

Yogasanas-

AdhomukaSvanasana, *Uttanasana*, *Suptabaddhakonasana*, *Supthabaddhakonasana*, *Shavasana*, *Makarasana*, *Balasana*⁸

Pitta –type PMS

Symptoms - Craving for sweets, increased appetite, heart pounding, dizziness or fainting, fatigue, headache, anger, irritability, feeling hot, acne etc⁷.

Diet – Increase cooling foods, water intake, sweet juicy fruits (grapes, pears, plums, mango, melons, apples) cucumber, organic foods. Avoid-Hot spicy foods, hot drinks and alcohol, eating late at night.

Life style –Go to bed early, oil massage using coconut and sesame oil. Use meditation and other techniques to reduce anger, hatred and resentment. Exercise and exposure to sun are limited. Use of *Pitta* decreasing herbs, *Aloevera*, *Arjuna*, *Kumkuma*, *Chandana*, *Shatavari*, *Sariva*, *Murva*.

Yogasana-

Adhomukasvanasana, *Dhanurasana*, *Pavanamuktasana*, *Sarvangasana*, *Halasana*⁸

Kapha- type PMS

Symptoms – weight gain, swelling of extremities, sluggishness, lethargy, fluid retention, lazy, lacking motivation, slow digestion, breast tenderness, abdominal bloating etc⁷.

Diet – prefer light, dry and warm food, consume fruits, whole grains, legumes, vegetables. Use spices such as black pepper, turmeric and ginger. Avoid - Meat, cheese, sugar, cold foods and drinks.

Weekly fasting is helpful.

Lifestyle – get up early, mustard oil is recommended for oil massage. Use of Kapha decreasing herbs like cinnamon, *Guggulu*, honey, *Lasuna*, *Kushta*, *Pippali*, *Guda*, *Ardra*.

Yogasana- Upavishtakonasana, *Halasana*, *Suptapadangushtasana*, *Viparitarani*, *Upavishtakonasana*, *Halasana*, *Sarvangasana*⁸

Genetics, metabolites and psychological and social factors⁸, serotonin levels and biochemical changes producing hypoglycaemic effects are also considered important in the aetiology of PMS⁹.

Role of hormones: Researchers have indicated that PMS is characterized by abnormal response of hormonal receptors to normal levels of gonadal steroids. Hormonal fluctuations in oestrogen and progesterone, neuroendocrine disorders, diversity of oestrogen receptors and prostaglandin synthesis play a role in biological aetiology of PMS

Role of genetics: Heritance of PMS is now well accepted and plays an important role in the expression of PMS symptoms. When mothers had symptoms such as anxiousness, fatigue and irritability 69.8% of the daughters had similar symptoms, and 62.5% of the daughters of asymptomatic mothers had no symptoms.

Role of body metabolites: In premenstrual period, glucose induced by metabolism of food deviates from the brain to the reproductive system and its surrounding including an increase in the level of blood in uterus vessels. This causes impulsive symptoms characteristic of PMS. It is also stated that

the immune system is suppressed in the luteal phase, so pathogens increase their activities, which in turn leads to PMS symptoms¹⁰.

Mechanisms of Hormonal Regulation

Hormonal regulation is a complex interplay of various biochemical pathways that orchestrate the physiological functions of the body. The importance of understanding these pathways becomes particularly evident when examining how lifestyle factors, including exercise modalities such as yoga, can influence hormonal balance.

A. Understanding Hormonal Pathways and Feedback Loops

1. Overview of Key Hormones Affected by Lifestyle Factors

Hormonal balance is critical for maintaining homeostasis within the body and is influenced by various lifestyle factors, including diet, exercise, and stress levels. Common hormones that are notably affected by lifestyle choices include cortisol, insulin, and sex hormones such as oestrogen and testosterone. Research indicates that chronic stress can lead to prolonged elevation of cortisol, a hormone secreted by the adrenal glands in response to stress⁶ (Sapolsky, 2004). Elevated cortisol levels can disrupt the delicate feedback loops that regulate these hormones⁷, leading to conditions such as insulin resistance and reproductive issues (Joseph JJ, et al., 2017).

2. Role of Stress and Cortisol in Hormonal Balance

The relationship between stress and hormonal balance is intricately linked. Cortisol, often referred to as the "stress hormone," plays a pivotal role in the body's stress response⁸. When faced with chronic stress, the overproduction of cortisol can lead to various metabolic disorders, including obesity and diabetes, by impairing insulin sensitivity and promoting fat accumulation (Herman & Cullinan, 1997). Understanding the cyclical nature of hormonal feedback mechanisms is essential; for instance, elevated cortisol levels can suppress gonadal function, leading to decreased levels of reproductive⁹ hormones (Breen KM, et al., 2005). Therefore, addressing stress through lifestyle modifications such as yoga practice can be a vital strategy for restoring hormonal balance.

B. Physiological Effects of Yoga on the Body

1. Stress Reduction and Its Impact on Hormonal Balance

Yoga has been widely recognized for its ability to reduce stress and promote relaxation. Various studies have demonstrated that regular yoga practice can lower cortisol levels, thereby counterbalancing the adverse effects of stress on hormonal regulation¹⁰ (Li

AW, Goldsmith CA., 2012). The practice of yoga encourages mindfulness and controlled breathing, which are essential for activating the parasympathetic nervous system—often termed the "rest and digest" system. This activation leads to a decrease in sympathetic nervous system activity, resulting in lower cortisol levels and an overall enhancement of well-being¹¹ (Brown RP. et al., 2009). The consequent reduction in stress leads to improved metabolic functions and the potential normalization of insulin levels, emphasizing the role of yoga in managing the hormonal landscape.

2. Enhancements in Metabolism and Energy Expenditure

Beyond stress reduction, yoga has been shown to positively influence metabolism and energy expenditure. Engaging in regular physical activity, including yoga, can enhance metabolic rates and stimulate the secretion of hormones involved in energy regulation, such as leptin and ghrelin¹² (Cramer H et al., 2016). Leptin, produced by adipose tissues, is crucial for appetite regulation and energy balance, while ghrelin, often called the "hunger hormone," signals hunger to the brain. Yoga's combination of physical postures, breathing exercises, and meditation fosters a holistic approach, which can mitigate hormonal imbalances associated with obesity and metabolic syndromes.

Overview of Yoga Practices

Yoga, an ancient discipline that originated in India, encompasses a range of practices aimed at promoting physical, mental, and spiritual well-being. In recent years, yoga has gained popularity in Western cultures not only for its physical benefits but also for its role in stress management and hormonal balance. This section provides an overview of various yoga practices, outlining their characteristics, common techniques, and the connection between these practices and stress management, particularly in the context of hormonal regulation.

DISCUSSION-

Premenstrual symptoms including moods swings tender breasts, food craving, fatigue, irritability and depression. It's estimated that as many as three of every four menstruating women have experience some form of premenstrual syndromes.

Specific Hormones Affected by Yoga

Hormonal balance is critical to maintaining overall health and well-being. An increasing body of research has identified the profound impact that lifestyle practices, particularly yoga, can have on hormone regulation. This essay explores the specific hormones influenced by yoga, including cortisol, reproductive hormones, thyroid hormones, and insulin, shedding

light on the implications for stress management, reproductive health, and metabolic processes.

A. Cortisol

Cortisol, commonly referred to as the "stress hormone," is pivotal in the body's stress response. Numerous studies have demonstrated a strong relationship between yoga practices and the reduction of cortisol levels. A systematic review by Pascoe et al. (2017) found that yoga can significantly lower cortisol in individuals experiencing chronic stress. This reduction is crucial for stress management, as elevated cortisol is linked to various health issues including anxiety, depression, obesity, and cardiovascular disease. By fostering relaxation and mindfulness through controlled breathing and meditative techniques, yoga not only alleviates stress but also contributes to enhanced overall health.

B. Reproductive Hormones (Estrogen, Progesterone, and Testosterone)

Yoga's influence extends to reproductive hormones, including estrogen, progesterone, and testosterone, which play essential roles in menstrual cycle regulation and fertility. Research indicates that the regular practice of yoga can lead to improvements in menstrual cycle regularity and alleviate symptoms of menstrual disorders²⁷ (Tsai SY et al., 2016). Furthermore, studies have shown that specific yoga postures and relaxation techniques can enhance blood flow and hormone production, potentially improving reproductive health and fertility outcomes (Darbandi S et al., 2018). This is particularly relevant for women undergoing fertility treatments, as complementary practices like yoga may enhance treatment efficacy and emotional well-being.

C. Thyroid Hormones

Thyroid hormones, responsible for regulating metabolism and energy levels, can be impacted significantly by yoga. A study by Baishya A, et al. (2024) highlighted yoga's role in managing both hypothyroidism and hyperthyroidism. Practicing yoga postures, combined with breathing exercises, was found to result in improved thyroid function and hormone levels among participants with thyroid disorders. Additionally, the relaxation response elicited by yoga practices can reduce stress, which is a known contributor to thyroid dysfunction. The insights gained from clinical studies suggest that incorporating yoga into treatment plans for thyroid disorders may bolster traditional medical approaches.

CONCLUSION-

The health of the female reproductive organs is essential for a woman's healthy life. Any disturbance in the menstrual cycle led to disturbances in her daily

activities. Classical texts show a deep understanding of the menstrual cycle in relation to the doshas, thus giving women a profound natural and individualized way to treat various female health issues and avoid side effects of western medications. Ayurveda does not view premenstrual syndrome as a disease but rather as an imbalance in the *Doshas* that can be corrected. In addition to balancing the *Doshas* practicing the *Yogasanas*, *pranayama*, *meditation*, diet and healthy life style modification helps in the prevention of premenstrual symptoms. The combination of yoga and conventional medical treatments for hormonal disorders has shown promising results.

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