

# Impact of Hormonal Imbalance during Menstrual Cycle: A Review

Beena Darjee<sup>1</sup>, Srijana Sharma<sup>1</sup>, Sarita Rai<sup>1</sup>, Biswash Chettri<sup>1</sup>, Yugraj Chettri<sup>1</sup>, Shelly H Tuccu<sup>1</sup>, Anupama Moirangthem<sup>1</sup>, Ayan Chatterjee<sup>2\*</sup>

<sup>1</sup>Department of Medical Laboratory Technology, School of Health Science and Technology, Medhavi Skills University, Sikkim, India.

<sup>2</sup>School of Health Science and Technology, Medhavi Skills University. Sikkim, India.

**\*Correspondence Author:** Ayan Chatterjee, Associate Professor and Associate Dean School of Health Science and Technology Medhavi Skills University, Sikkim, India.

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## Abstract

Hormonal imbalance during the menstrual cycle is a common yet often overlooked issue that affects the physical and emotional well-being of many women. This review explores how fluctuations in hormones like estrogen and progesterone throughout the menstrual phases can lead to symptoms such as irregular periods, mood swings, acne, fatigue, and more serious conditions like Polycystic Ovary Syndrome (PCOS) and (Premenstrual syndrome) PMS. These imbalances can be triggered by stress, poor lifestyle habits, or underlying health conditions. By understanding how these hormonal changes work and impact the body, women can take better control of their health. The review also emphasizes the importance of awareness, early detection, and lifestyle adjustments to help manage and reduce the negative effects of hormonal imbalance during the menstrual cycle.

**Key words:** menstrual cycle; hormonal changes; estrogen; progesterone

## Introduction

According to census report (Govt. of India, 2011) India has the total population of 1210.2 million in which 5.865 million population are females. Likewise in Sikkim has the total population of 6 lakhs among which 321,661 are females. The population of female in rural areas is more than in urban areas. Rural area has the population of 213,840 and urban area has the population of 72,187[1]. According to World Health Organization [WHO] 6-13% of reproductive aged women are estimated to affected with Polycystic ovary symptoms [PCOS] and 70% of affected women remain undiagnosed moreover some local studies which were held in India suggest that PCOS ranges widely affecting between 3.7% to 22.5% of women. Likewise polycystic ovarian disease (PCOD) was found 22.5% in menstruating women in a study conducted in southern India and Maharashtra. The prevalence number of premenstrual syndrome (PMS) is about 14.3% to 74.4% whereas premenstrual Dysphoric disorder (PMDD) which is a severe form of PMS, affects around 3.7% of women in India [2].

Menstrual cycle is a biological process in women body in adolescent starting (menarche) from approx.: 11 years to 14 years and ends at (menopause) approx. at the age of 45 to 50 years. It is a part of a women life in which in every month they release the infertile egg which has partly blood and tissue from the inside of the women's body that flows through cervix and get out from the body through vagina. It usually lasts around 27-28 days, though it can slightly vary from each girl or women and the bleeding occurs for 4-7 days in a month and can vary according to hormonal factor, age etc. This cycle is mainly controlled by the hormones like estrogen and progesterone, which helps a woman to prepare their body for pregnancy to be possible. The

age of menarche can vary in different factors like nutrition, genetics, overall health and regional area. It can lead to various conditions like mood swings, cravings and health issues like dizziness, nausea, back pain, pale skin, weakness etc [3]. The menstrual cycle is mainly divided in four phases in which each phases has its specific hormonal and physical changes and the phases are:

1. Menstrual Phase
2. Follicular Phase
3. Ovulation Phase
4. Luteal Phase

**1)Menstrual phase:** This phase can also be called as period days as it's the beginning of the menstrual cycle (days 1-4) when the bleeding occurs. It happens because the inner lining of the uterus called as endometrium sheds its lining from the body because it doesn't need that month as pregnancy doesn't occur and that is the reason why bleeding happens. In this phase many women, girls feel cramps, mood swings, tiredness, and sometimes headache. The hormone level like estrogen and progesterone are low which makes women feel low in energy and emotional too.

**2)Follicular phase:** This phase can also be called as the refresh phase (days 4-14) because it's the time right after the periods ends, and the body starts building up energy again and the estrogen hormone starts to rise, which helps to rebuild the lining of the uterus and at this time only ovaries start preparing to release an egg. Women are more active, positive and focused at this phase.

**3) Ovulation phase:** This phase can also be called as the peak point phase (days 14-17) because in this day's women body releases an egg from the ovary and this egg travels down to the fallopian tube and if sperms meet it, pregnancy can occur. At this time estrogen level is at its highest so, many women and girls feel more confident, social, and energetic.

**4) Luteal Phase:** Before period phase or the wind down phase is the last phase of the menstrual cycle (days 18-28). This phase is after the ovulation, when progesterone hormone rises it's getting the body ready in case of pregnancy occur but if pregnancy doesn't occur then both estrogen and progesterone hormones levels starts to drop. The drop in these hormones can cause PMS (Premenstrual syndrome). Some women and girls can feel a bit anxious or sad during this phase.

Hormonal imbalance means the body has too much or too little of certain hormones and if hormones are not balanced in women body than they might have irregular periods like too early, too late, or skipped. The women may feel moody, sad or angry often also may get tired all the time and some changes can occur like pimples or acne even they can gain or lose weight just in few days some other changes like hair fall so on they might feel hard to spend their time. All these happens during menstrual cycle cause of stress, poor eating or sleeping habit in some girl's puberty or changes in age or can be because of condition like PCOS [4].

## Methodology

An online search has been conducted using Google, Google scholar, and Pub Med to study the effects of the menstrual cycle on hormonal imbalance. The search focused on articles published between 2010 to 2025. Keywords like menstrual cycle, hormonal changes, estrogen, progesterone and PMS were used. Duplicate studies were excluded to ensure only original research were considered.

## Findings and Discussion

The menstrual cycle is vital biological process in a woman's body. The findings suggests that hormonal imbalances are common among women and can lead to a variety of symptoms such as irregular menstrual cycles, mood swings, fatigue, acne, hair fall, and weight loss or gain. These changes often reflect deeper issues, such as stress, poor diet or sleep habits, and medical conditions like polycystic ovary syndrome (PCOS). Findings from various studies show that conditions like PCOS and PMS (Premenstrual Syndrome) are prevalent among Indian women. For example, PCOS affects around 6–13% of women of reproductive age globally, and in India, its prevalence varies from 3.7% to as high as 22.5% depending on the region. Similarly, PMS affects between 14.3% and 74.4% of women, with a smaller but significant portion experiencing the more severe form known as PMDD (Premenstrual Dysphoric Disorder) [1]. Each phase of the menstrual cycle shows distinct hormonal and emotional patterns. During the menstrual phase, low levels of estrogen and progesterone lead to fatigue and mood swings. The follicular phase sees a rise in estrogen, which boosts energy and positivity. In the ovulation phase, women often feel more confident and energetic due to peak estrogen levels. Finally, the luteal phase is marked by a rise in progesterone followed by a drop, which can lead to symptoms of PMS. Women in rural areas, like many parts of Sikkim, face additional challenges due to a lack of awareness, limited healthcare access, and societal stigma, making it difficult to manage or even recognize these hormonal imbalances. There's a clear need for improved public health education, better access to gynecological care, and community-based screening and awareness programs. Integrating menstrual health into primary healthcare services would help identify hormonal issues early and support women's health more effectively.

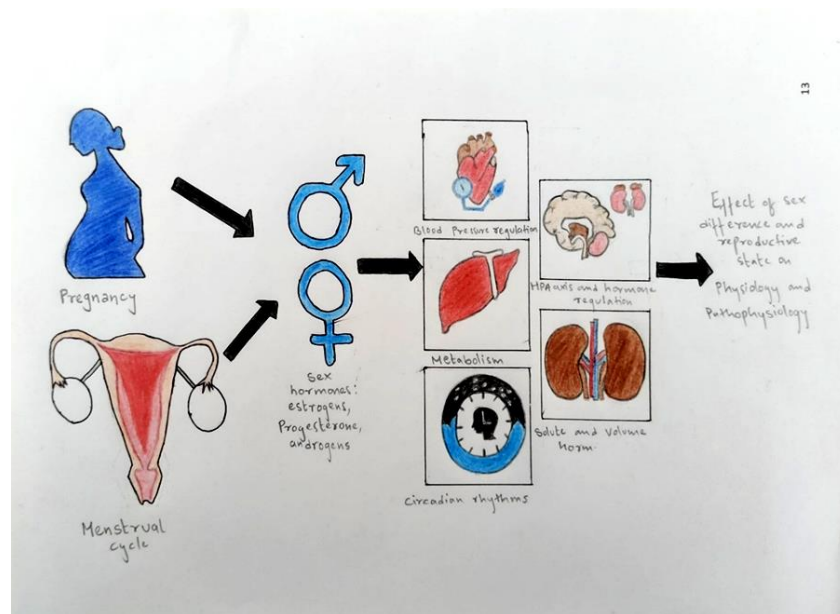


Figure 1: Impact of hormonal imbalance during menstrual cycle [5].

## Conclusion

This review highlights the significant impact of hormonal imbalance on the menstrual cycle and overall well-being of women. The menstrual cycle is a natural process regulated by key hormones like estrogen and progesterone. When these hormones are not in proper balance, it can lead to various health issues including irregular periods, mood disorders, fatigue, acne, weight fluctuations, and conditions like Polycystic Ovary Syndrome (PCOS) and Premenstrual Syndrome (PMS).

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