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Exploring the Connection Between Women's Hormonal Imbalances and Mental Health

Important Note: For individuals assigned female at birth (AFAB) and assigned male at birth (AMAB), life stages and hormonal fluctuations discussed in this article may be similar but not identical to those experienced by cis-gendered women. We want to recognize that not all individuals who menstruate identify as female, and their experiences may differ based on their gender identity and hormonal makeup. Similarly, people with medical conditions or undergoing medical transitions may have different experiences than those presented.

Our mental health is an essential aspect of our overall well-being. We are developing a greater awareness that factors beyond our immediate control often influence our ability to maintain it. An increasing amount of research illustrates how women's hormonal fluctuations play a significant role in regulating their moods and emotions, which are, in turn, essential aspects of mental health. However, women also commonly encounter negative social attitudes and beliefs,

gender stereotypes, stigma, and misconceptions related to menstruation, menopause, and other hormonal changes. As a result, women's experiences are often dismissed, trivialized, or invalidated by people who lack an understanding of the biological and physiological processes that contribute to hormonal fluctuations.

Sometimes, this behaviour can also be a way for someone to assert power and control in a woman's interpersonal relationships, social situations, and workplaces. Belittling contributes to feelings of shame, embarrassment, and self-doubt. However, with an increasing number of women struggling with anxiety and depression, perhaps it's time to learn about the links between hormone imbalances and mental health so we can be supportive, assisting with effective management and treatment rather than contributing to challenges.¹

In this article, we'll look at how hormonal fluctuations can affect mental health, particularly the incidence of anxiety and depression, during various stages of a woman's life. We'll also explore different lifestyle interventions that can be helpful strategies for balancing hormones naturally, in addition to seeking professional guidance.

What is the relationship between hormones and mental health?

Our bodies produce various hormones that regulate our bodily functions – everything from determining our sleep-wake cycles and controlling the pace of our heartbeats to influencing our emotional responses and mood fluctuations. Estrogen and progesterone, two of the primary reproductive hormones most associated with women's health, play essential roles in the reproductive system and menstrual cycle. However, it's important to note that the entire group of reproductive hormones, including testosterone, are present in both females and males, although typically in different concentrations and have different functions.

Estrogen and progesterone influence brain chemistry and neurotransmitter activity. In women, the levels of these hormones vary significantly throughout the phases of menstruating people's monthly cycle. Research suggests that fluctuations or imbalances in these hormones can significantly impact mental health.² For example, when estrogen peaks, it can be somewhat protective for mental health, but when it is low, it can have the opposite effect, leaving someone more vulnerable to experiencing mental health challenges.³ Progesterone, too, may be linked as an underlying factor in "menstrual-related mood symptoms."⁴ In fact, "in the presence of stress, progesterone is converted into cortisol, increasing stress responses and impairing emotional processing."⁵

This chart provides a brief overview of some critical hormones to help you understand their effect on women's physical and mental health. Please remember that hormones have diverse functions and interact with each other and other bodily systems in complex ways that are not all captured here.

Hormone	Functions...	Where is it produced...	What does it do in the body?
Estrogen	<ul style="list-style-type: none"> • Reproductive system regulation • Maintaining bone density and cardiovascular health • Promotes development of female physical traits during puberty 	<ul style="list-style-type: none"> • Ovaries (main) • Adrenal glands • Fat cells 	<ul style="list-style-type: none"> • Breast development • Menstrual cycle regulation • Mood regulation • Cognitive function
Progesterone	<ul style="list-style-type: none"> • Prepares the uterus for pregnancy • Supports fetal development • Regulates menstrual cycles • Maintains pregnancy by preventing contractions 	<ul style="list-style-type: none"> • Ovaries (main) • Adrenal glands • During pregnancy, in the placenta 	<ul style="list-style-type: none"> • Menstrual cycle regulation • Pregnancy support • Mood stabilization
Cortisol	<ul style="list-style-type: none"> • Regulates stress responses • Regulates metabolism (including blood sugar levels) • Supports immune function and inflammatory responses in the body 	<ul style="list-style-type: none"> • Adrenal glands (main) • Smaller amounts are produced in other tissues 	<ul style="list-style-type: none"> • Stress response • Metabolic function and regulation • Immune function
Serotonin	<ul style="list-style-type: none"> • Regulates mood and emotions • Regulates sleep • Plays a role in appetite and digestion 	<ul style="list-style-type: none"> • The brain (main) • Also found in the Gastrointestinal (GI) tract 	<ul style="list-style-type: none"> • Mood stabilization • Sleep regulation • Appetite control • Digestion • Plays a role in memory and learning
Testosterone	<ul style="list-style-type: none"> • Supports libido and sexual functioning • Influences bone density • Regulates energy levels • Affects mood and cognition 	<ul style="list-style-type: none"> • The ovaries (small amounts) • The adrenal glands (small amounts) 	<ul style="list-style-type: none"> • Menstrual cycle regulation • Contributes to muscle and bone mass, strength, and health • Cognitive function • Helps with motivation and assertiveness

Fluctuations or imbalances in these hormones can affect both physical and mental health. For example, shifts in estrogen and progesterone levels during the menstrual cycle can influence neurotransmitter activity and contribute to mood swings or irritability. Changes in serotonin, a neurotransmitter affecting mood, can lead to feelings of sadness or anxiety. Imbalances in cortisol can disrupt thyroid function and cause inflammation in the body, which can affect energy levels.

How does someone recognize or find out about hormonal imbalances?

Since hormones are the messengers within our bodies that help keep them well-functioning, when someone starts to feel off, even small changes where there is “too much or too little of a certain hormone...can have serious effects” throughout their body.⁶

Some common signs and symptoms include:

- Noticeable shifts in weight (loss or gain)
- Fatigue
- Muscle weakness and aches
- Pain, stiffness or swelling in joints
- Increases or decreases in heart rate
- Sensitivity to cold or heat
- Dry skin
- Blurred vision
- Increased thirst and hunger
- Frequent urination
- Changes in regular bowel elimination
- Decreased libido
- Infertility
- Nervousness, anxiety, irritability, depression
- Changes in hair on the face, chin, or other parts of the body (loss or gain)

- Hyperpigmentation and other skin changes
- Loss of muscle and bone mass

Testing completed under your doctor's or an endocrinologist's supervision through a professional lab setting "will give you a more accurate read on your results."⁷ Women should always consult their doctors first to determine if testing is appropriate based on needs and symptoms and for interpretation of results.

What are some unique symptoms of anxiety and depression in women?

Women can experience symptoms of anxiety and depression that are unique to their hormonal makeup. Fluctuating estrogen and progesterone levels during monthly cycles can have a significant effect on daily functioning and make them more prone to experiencing:

- Mood swings, heightened irritability, anger and emotional sensitivity
- Tearfulness, sadness or despair
- Tension
- Headaches
- Gastrointestinal distress
- Fatigue and sleep disturbances such as insomnia
- Changes in appetite (increased cravings)
- Low self-esteem, self-criticism and perfectionism (feeling inadequate based on societal expectations)
- Rumination of negative thoughts and feelings (worry and distress)
- Feelings of loneliness or isolation

How does the menstrual cycle (at different life stages) overlap with women's mental health?

Each life stage presents unique challenges and considerations for physical and psychological well-being. The following chart outlines some of the points where they intersect, including the influence that hormone replacement or re-balancing therapy may have.

Life Stage	Menstrual Cycle Characteristics	Mental Health Considerations	Hormonal Considerations
Childhood	<ul style="list-style-type: none"> Absence of menstrual cycle 	<ul style="list-style-type: none"> Sets the foundation for future well-being in future life cycles 	<ul style="list-style-type: none"> Not generally applicable, but may be introduced because of medical conditions to help with development and metabolism
Puberty	<ul style="list-style-type: none"> Onset of menstruation Irregularity in cycles 	<ul style="list-style-type: none"> There may be emotional and psychological changes experienced as development continues 	<ul style="list-style-type: none"> Symptoms of Pre-Menstrual Syndrome (PMS)* may begin Hormone therapy may begin to be used for transgender individuals
Reproductive years	<ul style="list-style-type: none"> Most experience regular menstrual cycles Some unique medical conditions such as Polycystic Ovary Syndrome (PCOS) and Premenstrual dysphoric disorder (PMDD)** may affect regularity, fertility, as well as aspects of physical health 	<ul style="list-style-type: none"> Hormone fluctuations affect mood and well-being throughout each menstrual cycle With PMDD, mood swings are more severe 	<ul style="list-style-type: none"> Hormone assessments and therapy may be used to manage medical conditions, as a form of birth control, or for transgender individuals PMS and PMDD symptoms can continue/occur in some individuals
Pregnancy	<ul style="list-style-type: none"> Menstrual cycle stops 	<ul style="list-style-type: none"> Hormone levels adjust to prioritize support for fetal development Pregnancy hormones can influence mood and emotions 	<ul style="list-style-type: none"> Symptoms of PMS/PMDD may be alleviated during pregnancy Healthcare providers will offer guidance related to hormone shifts and symptoms
Postpartum	<ul style="list-style-type: none"> Menstruation resumes after childbirth Regularity can be influenced by hormone fluctuations during breastfeeding 	<ul style="list-style-type: none"> Postpartum depression*** and heightened anxiety are common concerns Difficulty bonding with the baby 	<ul style="list-style-type: none"> Hormones shift away from pregnancy and move into postpartum levels PMS/PMDD symptoms can return or increase in intensity in some people Hormone therapy (birth control) may resume
Perimenopause	<ul style="list-style-type: none"> Cycles become irregular and vary in length Ovulation may cease or become irregular 	<ul style="list-style-type: none"> Hormone fluctuations can contribute to mood swings, emotional changes and depression Physical symptoms (insomnia, night sweats, headaches) can contribute to mental well-being challenges 	<ul style="list-style-type: none"> PMS/PMDD symptoms can worsen Some people who had never previously experienced PMDD can develop the condition Hormone replacement therapy (HRT) may be prescribed to alleviate symptoms and stabilize hormone levels
Menopause	<ul style="list-style-type: none"> Menstrual cycles have ceased for at least 12 months 	<ul style="list-style-type: none"> Hormonal changes can impact mood and well-being Physical symptoms (insomnia, hot flashes, headaches) can continue to contribute to mental well-being challenges 	<ul style="list-style-type: none"> Menstrual-related mood symptoms cease (PMS/PMDD) HRT may be used to help manage symptoms of menopause and maintain hormonal balance Risks and benefits need to be assessed by healthcare providers
Postmenopause	<ul style="list-style-type: none"> Absence of menstrual cycles for more than 12 months 	<ul style="list-style-type: none"> Hormones stabilize at lower levels Emotional adjustments can occur as women adapt to life without menstruation 	<ul style="list-style-type: none"> HRT may be adjusted or continued, depending on individual needs and physician guidance

*Premenstrual Syndrome (PMS)

Many people are aware of premenstrual syndrome but may not realize that “it’s estimated that as many 3 of every 4 menstruating” people experience it.⁸ Symptoms can affect someone’s physical and emotional health and range from “slightly noticeable all the way to intense.”⁹

**Premenstrual Dysphoric Disorder (PMDD)

A small number (5-15%) of menstruating people experience “disabling symptoms” that affect them physically and emotionally every month.¹⁰ With PMDD, mood disturbances are more intense. They can “seriously impact relationships and impair functioning” to the point where “clinical levels of depression or anxiety” are experienced before each menstrual cycle.¹¹ If someone experiences significant PMDD that brings up suicidal ideation, they should discuss this with their medical professional to see what treatment options may be available to them (medication, psychotherapy, a combination, etc.).

***Postpartum Depression (PPD)

It’s estimated that up to 20% of women experience PPD after giving birth as the body goes through significant changes physically and hormonally. Emotional and social stress also contribute to the severe nature of this condition. While sudden drops in estrogen and progesterone can be the catalyst for depression to set in, other post-partum hormonal messaging chemicals such as oxytocin and prolactin can play a role. Disrupted sleep cycles, along with changing social roles and responsibilities and difficulty bonding with the infant, create stress and anxiety, or even psychotic symptoms.¹² Poor nutrition during the early weeks postpartum can also be traced to incidences of PPD because neurotransmitters like serotonin can be low as the brain “struggle[s]” to make enough.¹³ Scientists emphasize that “proper nutrition is essential for the production of neurotransmitters,” which, in turn, help stabilize our moods.

What kinds of practical strategies can be used to help support hormonal balance naturally?

While hormonal fluctuations are a natural part of life, there are lifestyle interventions that can help support better hormone regulation.

1. **A healthy diet** rich in fruits, vegetables, lean proteins, and healthy fats can help support hormone production. People should also strive to increase their hydration levels.
2. **Regular exercise** involving cardio-style movement and strength training to build muscle and maintain bone is essential. Strive for at least 30 minutes daily, five days a

week, with two days focused on building strength. Exercise reduces stress, improves mood and sleep, and regulates hormone levels.

3. **Stress reduction** through meditation, relaxation, yoga, and breathwork will reduce cortisol levels and help improve health and well-being. Over time, you may recognize that your response to stressful situations is within your control.
4. **High-quality sleep** is crucial to hormone regulation and overall mental well-being. Most adults need at least 7 hours per night to start to see the benefits.

What treatment options are available to help?

Professional support from medical practitioners is critical. It can be incredibly challenging to determine what kinds of personalized treatment plans may be most effective.

Always work with accredited and licenced professionals

A multi-disciplinary health team approach should include primary care physicians, gynecologists, endocrinologists, naturopaths, psychologists, pharmacists, and registered dietitians. Their collective expertise can help evaluate symptoms, review medical history, and consider overall health. Professional diagnostic testing of blood, saliva and urine is essential. They can arrange for comprehensive panels that examine reproductive, adrenal, and metabolic hormone levels.

Hormone replacement therapies may be an alternative


In consultation with your care team, you may explore whether hormone replacement therapy (HRT), which uses synthetic or animal-derived hormones to supplement your body’s levels and alleviate symptoms of imbalance is a good option for you. Another alternative may be to use bio-identical hormones from plant sources that are chemically identical to those naturally produced by the body. Individual medical risks and benefits need careful evaluation so that you can determine the duration and whether this kind of treatment may help.

Women’s health is often overlooked and underemphasized, which has led to disparities in healthcare access, research funding, and awareness of issues specific to women’s bodies, mental health challenges, and experiences. By destigmatizing views of women’s hormonal health and appreciating and understanding the documented links to mental well-being, we can create a more supportive environment for women experiencing the effects of hormonal fluctuations. Encouraging women to seek professional help and guidance is vital in optimizing resources and addressing unique needs and concerns. Together, we can cultivate empathy and inclusivity to focus on women's overall health across all stages of life.

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