

Unbeatable Her!

An insight into the unbelievable part of
society ~ women

**WOMEN'S
MONTH**

**"THOUGH SHE
BE BUT LITTLE,
SHE IS FIERCE!"**

**SHE COULD
SO SHE DID**

RISE

**LET
WOMEN
THRIVE**

**STRONGER
TOGETHER**

**YOU ARE
STRONG**

INTRODUCTION

Every year our society celebrates women's day to highlight the importance of women's contribution to the society and their achievement. Still women have to go through a lot of journey to achieve the equality. We the student of biotechnology of the fergusson college have initiated to publish a magazine on the occasion of women's day to dedicate to celebrate and empower women in their life including pregnancy and motherhood. The magazine will highlight some of the important topics related to pregnancy. They include, Preconception health, Prenatal care, Nutrition and Exercise which plays an important role in the overall health of women.

India is blessed to have the women's who have played a very significant role in women health and care and overall development. Some of them include Dr. Anandi Gopal Joshi (First Indian women doctor), Dr. Rukhmabai (Physician and Social Reformer), Savitribai Phule (Educator), Dr. Indira Hinduja (A gynecologist and Infertility Expert). Overall the magazine help one to understand the journey from conception to child birth which is a very important phase in women life as well as their families.

Once Nelson Mandela said,

"We can change the world and make it a better place,
It is in your hand to make a difference"

It is thus our duty to step forward and contribute towards making this world a better and equal place to live, a world in which women can breathe freely without a fear of anything.



By- Isha Patil



ALL ABOUT PREGNANCY



HORMONAL REGULATION AND NUTRITION

Hormones are the chemical messengers. They travel in your bloodstream to tissues or organs. Endocrine gland makes the hormone. These hormones play an important role in sexual function. They have a key role during pregnancy and also the menstrual cycle of female. Hormonal balance is very much important for female health. If there is imbalance in hormones, it gives rise to health issues for female. Let's explore about the hormones' role during pregnancy, menstrual cycle, hormonal imbalance and related disorder, nutrition and diet which helps to hormonal balance.



ROLE OF HORMONES DURING MENSTRUAL CYCLE AND PREGNANCY

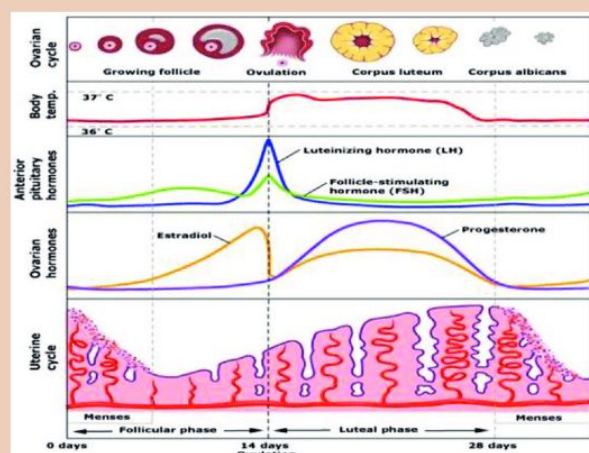
Every phase of menstrual cycle influenced by a female hormone. It includes estrogen, progesterone, FSH (Follicle Stimulating Hormone), LH(Luteinizing Hormone).

ESTROGEN: It helps stimulate the growth of egg follicle. It stimulate the proliferation of endometrium. It also helps to regulate the development and functioning of uterus.

PROGESTERONE: It creates a healthy uterine lining to support a fertilized egg or fetus. It mostly play Important role during pregnancy. If it level is low during pregnancy, then it cause complication or miscarriage.

FSH (Follicle Stimulating Hormone): It helps control the menstrual cycle and stimulates the growth of egg in ovaries it initiates follicular growth. It also stimulate ovary to produce an egg.

LH (Luteinizing Hormone): It also helps to control menstrual cycle. It play key role during ovulation. It subsequently stimulates the corpus luteum to produce progesterone.



HORMONES DURING PREGNANCY

HUMAN CHORIONIC GONADOTROPIN HORMONE: This hormone is only made during pregnancy. It is made exclusively in placenta. They may play a part in Morning sickness during pregnancy.

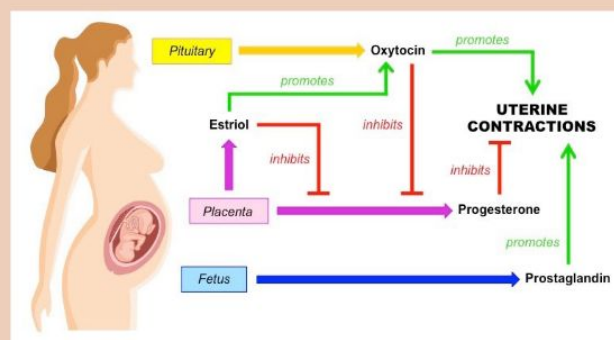
HUMAN PLACENTAL LACTOGEN: It is also made by placenta and also called Human Chorionic Somatomammotropin. It gives nutrition to fetus. It also stimulates milk glands in breast during breastfeeding.

ESTROGEN: It helps for healthy pregnancy. It also helps to improve vascularization. It supports the developing baby.

PROGESTERONE: It helps the uterus grow during pregnancy. It also keeps it from contracting. It also helps breast get ready to make breast milk. Modulation of maternal immune system.

OXYTOCIN: It stimulates uterine contraction in labour. It helps to stimulate contraction of breast tissue to aid in lactation after childbirth.

RELAXIN: It inhibits uterus contraction to prevent premature birth and relaxes the joints of pelvis and softens and lengthens the cervix during birth.



WHAT CAUSES HORMONAL IMBALANCE AFTER BIRTH?

The postpartum hormone drop that occurs in the first 48 hours after birth is the single largest hormonal change over the shortest time period that a woman experiences in her life. During pregnancy, the placenta produces progesterone levels that are 70 fold normal levels. Once the placenta is delivered, these levels fall to a baseline of zero by 2 days postpartum. Estrogen levels also plummet 90-95% after delivery. This sudden hormonal change is one of the reasons for the common “baby blues” that new mothers experience, which manifests as moodiness, depression, anxiety and other psychological issues. If the progesterone and estrogen levels do not normalize and remain imbalanced, it can have a cascading effect on other hormones as well. The following conditions can occur:

Hypothyroidism – Estrogen dominance can interfere with thyroid function by limiting the availability of the thyroid hormone in the blood, which means they can't be used as energy for the body. The thyroid plays a role in metabolism, temperature regulation and weight management. Symptoms include loss of energy, fatigue, difficulty losing weight, cold intolerance, dry skin, hair loss, poor memory, slow wound repair, constipation, loss of libido, and depression.

Adrenal fatigue – Cortisol is produced by the adrenal glands in high numbers during pregnancy and birth which can often deplete the nutrient stores that required to make the hormone. The adrenal glands are unable to keep up with the body's demands and become worn out leading to symptoms including severe fatigue, low blood pressure, lightheadedness, decreased immunity, headaches, mood swings, and irregular cycles.

REGAINING HORMONAL BALANCE

Incorporate healthy fats into your diet- A variety of fats are essential for the production of hormones so eating anti-inflammatory, healthy fats like avocado, fatty fish, coconut oil, extra virgin olive oil, butter, ghee, nuts and seeds can help keep your hormones in check while providing other benefits. You can also take our Omega 3 DHA & EPA that provides 1200 mg of fish oil.

Other beneficial nutrients for hormonal balance include selenium (brazil nuts, tuna, liver), zinc (oysters, liver, nuts, seeds), vitamin A (liver, butter, egg yolk, sweet potatoes, carrots), vitamin D (fatty fish, liver, butter, egg yolk), essential fatty acids (fish oil, flax seeds, walnuts, primrose and borage oil), and protein (cold water fish, grass-fed beef and poultry), B-vitamins (liver, organ meats, nutritional yeast), and probiotic-containing foods (sauerkraut, kimchi, yogurt, kefir, kombucha).

Reduce inflammatory foods- Refined carbohydrates, added sugars, trans fats, casein (dairy), gluten, and vegetable oils.



SYMPTOMS OF HORMONAL IMBALANCE

Depending on which hormones are imbalanced and cause of hormone imbalanced, symptoms can vary.

These include-

- Irregular, heavy periods
- Hair loss
- Vaginal dryness
- Weight gain
- Growth of facial hairs



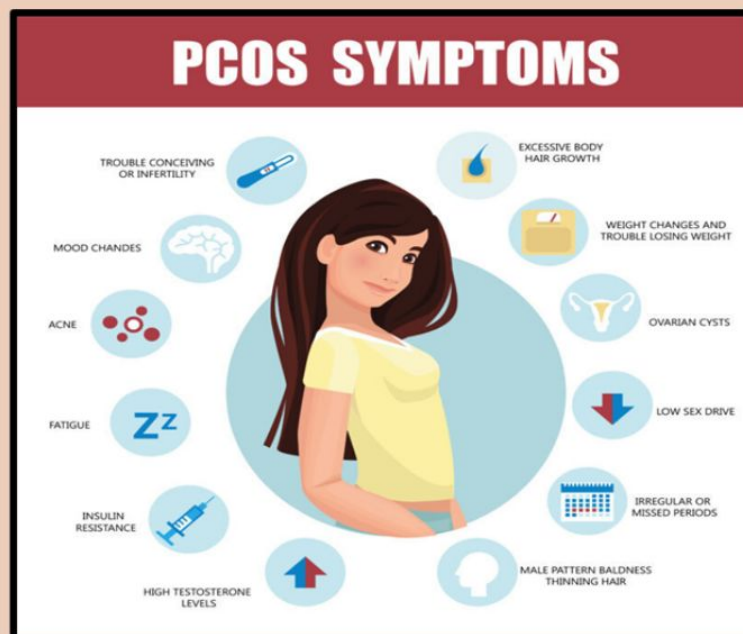
CONDITIONS CAUSED BY HORMONAL IMBALANCE

Irregular menstruation –

Several hormones are involved in the menstrual cycle, so imbalance in any hormone can cause irregular periods. Specific hormone related conditions that causes irregular periods include Polycystic Ovary Syndrome (PCOS).

PCOS –

Polycystic Ovary Syndrome is a hormonal imbalance that occurs when ovaries produces excess hormones. This causes hormones to become imbalanced. As a result, females with PCOS often have irregular menstrual cycles, missed periods and unpredictable ovulation.



Infertility –

Hormonal imbalances may cause infertility. Hormonal related conditions such as PCOS and anovulation can cause infertility.

HOW TO BALANCE HORMONES?

Getting regular, moderate intensity exercise

Regular exercise has so many benefits such as reducing stress, reducing high estrogen levels, etc.

Developing healthy sleep habits

Decreased quality of sleep may also cause hormonal imbalance.

Get enough vitamin D-

There may be an association between low vitamin D levels and poor quality of sleep. So, you can get vitamin D from the sunlight.



ESSENTIAL NUTRIENTS

FIBER- High fiber intake combined with plenty of fluid is encouraged to help prevent constipation wholegrain breads and cereal products, legumes, nuts, vegetables and fruit.

WATER- Drink eight to twelve glasses of fluid a day.

OMEGA-3- Development of the central nervous system, brain growth and eye development in your baby before and after he or she is born. Oily fish like Rohu, Hilsa, Bangda are rich source of Omega-3 and you can also take flaxseed oil.

IODINE- Required for healthy thyroid function in both the mother and unborn baby. Insufficient iodine can lead to brain development and neurological issues problems in the baby.



FOODS TO AVOID

SOFT SERVE ICE-CREAM- Avoid all soft serve ice creams and yoghurts as there is a risk of listeria.

EGG AND MAYONNAISE- Raw egg can contain salmonella, so make sure all your eggs are cooked thoroughly. Commercial mayonnaise sold in jars is fine as it contains egg that has been pasteurized. Avoid fresh mayonnaise as it could contain raw eggs.

READY TO EAT FOODS- They are high risk for listeria, has the ability to cross the placenta and may infect the baby leading to infection or blood poisoning, which may be life-threatening include all processed and sliced meats, and any foods served from open containers.

FRUIT AND VEGETABLES- Wash thoroughly before eating, do not use any that have gone moldy and don't just cut off the bad area but throw the item out all together.



FOODS TO AVOID

FOOD ADDITIVES- Saccharin (artificial sweeteners), MSG can cause headaches and stomach upsets.

WATER- Drink purified, filtered or bottled water only as they are least likely to contain contaminants and can reduce birth defects.

ALCOHOL- Even one glass a day can have detrimental effects on the unborn baby, especially in the first trimester, so it is recommended that you avoid all alcohol during pregnancy. Low IQ in babies, low birth weight and birth defects occurs. It prevents the absorption of folic acid and iron, and pulls calcium out of your bones. Your baby is so small compared to you if you are tipsy, your baby has probably passed out "Fetal Alcohol Syndrome"



DO'S AND DON'TS DURING PREGNANCY



SMOKING AND PREGNANCY - UNDERSTANDING THE CONSEQUENCES

Smoking during pregnancy can have significant negative effects on the health of both the mother and the developing embryo. The effects of smoking on the developing embryo can be particularly severe, impacting the growth and development of different cells and organs in the body.

Firstly, smoking during pregnancy can have detrimental effects on the development of the embryo's cells. The chemicals in cigarettes can cause DNA damage, which can result in mutations in the developing cells. This can lead to abnormalities in the formation of organs, tissues and other vital structures. Studies have shown that smoking during pregnancy can increase the risk of birth defects, including cleft lip, heart defects, and limb abnormalities.

Furthermore, smoking during pregnancy can also affect the development of the embryo's brain cells. Nicotine, a chemical present in cigarettes, can cross the placenta and enter the foetal bloodstream. This can affect the growth and development of the brain, leading to behavioural and cognitive problems later in life. Children of mothers who smoked during pregnancy are at a higher risk of attention deficit hyperactivity disorder (ADHD), learning disabilities, and behavioural problems.

In addition to the negative effects on the developing embryo, smoking during pregnancy can also affect the mother's cells and hormones. Smoking during pregnancy can increase the risk of miscarriage, premature birth, and low birth weight. It can also increase the risk of placental problems, such as placenta previa and placental abruption, which can cause severe bleeding and endanger the life of both the mother and the baby. Nicotine can interfere with the production and regulation of hormones, such as estrogen and progesterone, which are essential for a healthy pregnancy. This can lead to hormonal imbalances, which can cause complications such as preeclampsia, gestational diabetes, and postpartum depression.

INTAKING FOLIC ACID DURING PREGNANCY

Folic acid, also known as Folate or Vitamin B9, is an essential nutrient that plays a crucial role in many bodily functions. Here are some of the important functions of folic acid:

DNA Synthesis: Folic acid is required for the production and repair of dna, which is the genetic material in our cells.

Cell Growth and Division: Folic acid is important for the proper growth and division of cells, including red blood cells.

Brain Function: Folate is needed for the production of neurotransmitters, which are chemicals that transmit signals in the brain.

Pregnancy: Folic acid is particularly important for pregnant women, as it helps to prevent birth defects of the brain and spine (neural tube defects) in the developing foetus.

Cardiovascular Health: Folic acid may also help to lower the levels of homocysteine, an amino acid that has been linked to an increased risk of heart disease.

Folic acid is found naturally in many foods, including leafy green vegetables, fruits, nuts, beans, and fortified grains. however, many people do not get enough folic acid from their diets alone, which is why it is often recommended to take a folic acid supplement, especially for pregnant women. the recommended daily intake of folic acid for adults is 400-600 micrograms, and pregnant women are advised to take 400-800 micrograms daily.

PETS AND PREGNANCY

Most of us love our pets. we handle them every day as our companions of life. However pregnant women are advised to take precaution while handling their pets even though it reduces their pregnancy induced stresses. Here is why they are advised so. *Toxoplasma gondii* is a parasite that can cause toxoplasmosis, an infection that can be transmitted from animals to humans, usually through contaminated food or water or contact with infected animal faeces. Pregnant women who contract toxoplasmosis can transmit the infection to their foetus, which can lead to serious complications. The effects of *Toxoplasma gondii* on pregnancy can vary depending on the stage of pregnancy and the severity of the infection. In some cases, the infection may go unnoticed, while in others it can cause miscarriage, stillbirth or severe birth defects.

If a pregnant woman is infected with *Toxoplasma gondii* during the first trimester of pregnancy, there is a higher risk of transmission to the foetus, which can lead to serious complications, such as blindness, deafness, mental retardation, or seizures. if the infection occurs later in pregnancy, the risk of transmission to the foetus is lower, but the severity of the complications may still be significant. To prevent infection during pregnancy, pregnant women should avoid handling cat litter boxes, wear gloves when gardening, and avoid eating undercooked or raw meat. If a pregnant woman is infected, she should be treated with antibiotics to reduce the risk of transmission to the foetus. In summary, *Toxoplasma gondii* can have serious effects on pregnancy, and pregnant women should take precautions to avoid infection and seek prompt treatment if infected.



SLEEP DURING PREGNANCY

Sleeping during pregnancy can be challenging due to the physical changes that occur in a woman's body. The ideal sleeping position for pregnant women depends on which trimester they are in. During the first trimester, pregnant women can sleep in any position that feels comfortable. However, as pregnancy progresses it becomes increasingly difficult to find the right sleeping position.

The best sleeping position for pregnant women is on their left side. This is because sleeping on the left side helps to improve blood flow and nutrient delivery to the placenta, which is essential for the growing foetus. Sleeping on the left side also helps to reduce the risk of developing common pregnancy related conditions such as back pain, heartburn, and haemorrhoids. It can also help to alleviate pressure on the uterus and reduce the likelihood of snoring, which can be a common problem during pregnancy.

avoid sleeping on your back. Sleeping on your back during pregnancy can put pressure on the vena cava, a major blood vessel that can reduce blood flow to your uterus and foetus. This can also cause backaches, breathing difficulties, and digestive problems. Regardless of what we say, it is not always easy to maintain the left-side sleeping position throughout the night. Placing a pillow between the legs or behind the back can help to provide support and make it more comfortable to sleep on the left side. It is also important to listen to your body and adjust your sleeping position as needed to ensure maximum comfort and safety for you and your baby.



EFFECT OF PROCESSED CHEESE AND MEAT ON PREGNANCY

The CDC says listeriosis, a food-borne illness with mild flu-like symptoms that can be overlooked, can result in premature delivery, miscarriage, severe illness or death of the baby. The US Department of Agriculture cautions that you not eat unpasteurized soft cheeses. Reducing meat consumption is often advised, however inadvertent nutritional deficiencies during pregnancy may result in residual neurodevelopmental harms to offspring. Pregnant women and their 13 year old offspring taking part in a prospective birth cohort study, the avon longitudinal study of parents and children (alspac), provided food frequency questionnaire data from which dietary patterns were derived using principal components analysis. Lower maternal meat consumption was associated with greater problematic substance use among 15 year old offspring in dose response patterns. Comparing never to daily meat consumption after adjustment risks were greater for all categories of problem substance use, such as - alcohol, tobacco use and cannabis. Therefore lower prenatal meat consumption was associated with increased risks of adolescent substance misuse. interactions between tcn2 variant status and meat intake implicate cobalamin deficiencies.



POSTPARTUM DEPRESSION

Postpartum depression is a common mental health condition that affects women after giving birth. It is estimated that up to 1 in 7 women experience postpartum depression, although the actual number may be higher due to underreporting.

Symptoms of postpartum depression can vary but typically include feelings of sadness, anxiety, irritability and guilt. Other common symptoms include difficulty sleeping, loss of appetite, lack of energy, and a loss of interest in activities that were once enjoyable. In severe cases, women may experience thoughts of self-harm or harming their baby.

There is no single cause of postpartum depression, but it is believed to be the result of a combination of biological, psychological, and social factors. For Example, hormonal changes, lack of sleep, and a history of depression or anxiety can all increase the risk of developing postpartum depression.

Fortunately, postpartum depression can be treated with a combination of therapy and medication. Therapy can help women to develop coping strategies and manage their symptoms, while medication can help to balance brain chemicals that are disrupted by depression.

In addition to professional treatment, there are also several self-care practices that women can use to manage their symptoms. These include getting enough rest, eating a healthy diet, getting regular exercise, and reaching out to friends and family for support.

If you or someone you know is experiencing symptoms of postpartum depression, it is important to seek help as soon as possible. With the right treatment, most women are able to recover from postpartum depression and enjoy a happy and healthy life with their new baby.

EXERCISES

When it comes to looking and feeling great through the seasons of life, the closest thing to a one size fits all solution may be the most obvious: Exercise.

Regular exercise provides a great array of health benefits, including lowering blood pressure, reducing cholesterol and cardiovascular disease, preventing diabetes, improving mood and cognitive function, and reducing mortality. Studies have shown that engaging in yogic exercises and mediation has significant improvements in maintenance and balance in cellular oxidative stress due to Reactive Oxygen Species (ROS). These ROS levels increase due to psychological stress, exposure to electromagnetic radiations and several other external and internal factors. Increased ROS causes damage to all the molecules in the body including damage to DNA and Telomeres. Yoga and meditation prove to be significant in improving telomere metabolism which reduces cellular ageing hence making you look and feel young.



YOGA POSES



WARRIOR POSE (Virabhadrasana)
Stretches chest and lungs, front torso, muscles of the spine and backs. Stimulates the muscle of the belly.



BUTTERFLY POSE (Bhadrasana)
Strengthens glutes and inner thighs, improves reproductive health, lowers stress level, Loosening up body.



SEATED HALF TWISTED POSE (Ardha Matsyendrasana) Stretches shoulders and hips, tones liver, pancreas, kidneys and adrenal glands. Expels toxins.



BRIDGE POSE (Setu Bandasana)
Promotes relaxation and reduce stress. Opens the chest, lumbar spine and fronts of the thighs.



ITREE POSE (Vrikshasana)
Helps strengthen back muscles, glutes and hamstrings.



WIDE LEGGED FORWARD BENT POSE (Prasaritha Padottanasana)
Stretches back and inside of the leg. Opens the hip, eases tension in the upper back.

YOGA POSES



COBRA POSE (Bhujangasana)

Strengthens spine, stretches chest, lungs and abdomen. Improves digestion, stimulates abdominal organs.



BOAT POSE (Paripurna Navasana)

Tones and strengthens abdominal muscles. Improves balance and digestion.



GODDESS POSE (Utkata Konasana)

Tones the lower body, stimulates the urogenital, respiratory and cardiovascular systems.



HORMONAL IMBALANCE AND MENTAL HEALTH

Women usually face hormonal imbalance on a greater extent as compared to men. It is very critical to study these dysregulations as they control metabolism, mood swings, sexual health and reproductive function. What are these hormonal dysregulations, any kind of fluctuations in the release of hormones secreted by the endocrine glands. Some common symptoms of these hormonal imbalances are irregular periods, mood swings, fluctuation in weight, muscle ache, weakness, memory loss etc. which clearly shows women with pcos have more of these hormonal imbalances than others. Also, a very common problem with women is PMS, the pre menstrual syndrome which occurs 4 to 5 days before your periods, you start feeling cramps and mood swings because of the same reason as your hormones go to highs and lows during this time.

And it is pretty much clear that this dysregulation results in a very bad mental health because of social and physical obstacles caused. What could be these social barriers, as we know that there are a lot of changes in physical appearance that come along with pcos like acne, weight gain or loss, hair loss and growth of facial hair, which make a lot of women socially self-conscious and hence this also hinders with their physical health as they go out less, start cutting out meals and even harm themselves out of frustration which brings it all back to a bad mental state.

To sum we can only say that these ups and downs in hormones stay there right from the menarche to menopause and even after that and as there is no cure for it but it can still be managed by some lifestyle changes like exercising and having a nice healthy diet along with giving yourself some mental peace too in any way if you want dance your heart out or go on a vacation, just remember to keep your health first. And as these issues are not curable try to manage them but never let them stop you from reaching your goals, do not let it become your weakness.

REFERENCES

<https://www.mothernutrient.com/blogs/mother-nutrient-blog/8-tips-to-restore-postpartum-hormonal-balance>

<https://www.betterhealth.vic.gov.au/health/healthyliving/physical-activity-for-women>

<https://www.sutterhealth.org/health/womens-health/health-benefits-of-exercise-for-women>

[https://www.hopkinsmedicine.org/health/conditions-and-diseases/staying-healthy-during-pregnancy/hormones-during-pregnancy#:~:text=Human%20chorionic%20gonadotropin%20hormone%20\(hCG,vomiting%20often%20linked%20to%20pregnancy](https://www.hopkinsmedicine.org/health/conditions-and-diseases/staying-healthy-during-pregnancy/hormones-during-pregnancy#:~:text=Human%20chorionic%20gonadotropin%20hormone%20(hCG,vomiting%20often%20linked%20to%20pregnancy)

<https://byjus.com/biology/menstrual-cycle/>

<https://www.wikipedia.org/>

<https://www.canva.com/>

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