

NUTRITION AND MENSTRUATION

The menstrual cycle is regulated by a complex interplay of hormones produced by the ovaries and the pituitary gland.¹ Over the course of the cycle, hormone levels and metabolism change, meaning that energy and nutrient requirements can vary throughout. Supporting women to better understand their nutrition needs can help them manage and even reduce PMS symptoms.

The menstrual cycle is a series of changes that occur in the female reproductive system over approximately 28 days. There are four phases of the menstrual cycle:

- 1 **The menstrual phase**, or menstruation, is the first phase of the menstrual cycle. It begins on the first day of menstrual bleeding and typically lasts for three to seven days. During this phase, the uterus sheds its lining (endometrium) in the form of blood and tissue, which is expelled from the body through the vagina. Hormone levels, including oestrogen and progesterone, are low during this phase.
- 2 **The follicular phase** begins after menstruation ends and lasts for approximately 10-14 days. During this phase, the pituitary gland secretes follicle-stimulating hormone (FSH), which stimulates the growth of several follicles in the ovaries. Each follicle contains an immature egg (oocyte) that has the potential to be fertilised. As the follicles grow, they secrete oestrogen, which causes the lining of the uterus to thicken in preparation for pregnancy.

- 3 **The ovulatory phase** is a brief period of time, typically lasting 24 to 48 hours, when one mature follicle releases an egg from the ovary. This process is called ovulation and is triggered by a surge in luteinising hormone (LH) that is produced by the pituitary gland. The released egg travels down the fallopian tube towards the uterus, where it may be fertilised by sperm. The ovulatory phase is when it is most likely for a woman to fall pregnant, although it is possible for this to happen for some days either side of this time too.
- 4 **The luteal phase** begins after ovulation and lasts for approximately 14 days. After the egg is released, the empty follicle in the ovary transforms into a structure called the corpus luteum, which produces progesterone. Progesterone prepares the lining of the uterus for potential implantation of a fertilised egg. If the egg is not fertilised, the corpus luteum breaks down and hormone levels drop, causing the lining of the uterus to shed and the start of a



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new menstrual cycle. If the egg is fertilised, the developing embryo will implant in the uterine lining and hormone levels will continue to rise to support the pregnancy. The luteal phase is typically when women experience PMS symptoms such as cramping, changes in mood, bloating, headaches, fatigue and acne.

COMMON MENSTRUAL-RELATED DISORDERS

Premenstrual syndrome (PMS) and dysmenorrhea are two common menstrual-related disorders which can have a significant impact on a woman's quality of life.

1 PMS is a collection of symptoms that occur in the days or weeks before a woman's period. These symptoms can vary widely from individual to individual and may include mood swings, irritability, fatigue, bloating and breast tenderness. Research suggests that certain dietary interventions may help alleviate PMS symptoms. For example, increasing the intake of calcium, magnesium and vitamin B6 may help reduce symptoms such as mood swings and bloating. Additionally, reducing intake of caffeine, alcohol and salt may also help reduce PMS symptoms.²

2 Dysmenorrhea is a medical term used to describe painful periods. The pain associated with dysmenorrhea can range from mild to severe and can be accompanied by other symptoms such as nausea, vomiting and headaches. Dietary interventions that may help alleviate dysmenorrhea symptoms include increasing the intake of omega-3 fatty acids, vitamin E and magnesium. Reducing the intake of caffeine, alcohol and processed foods may also be helpful in reducing dysmenorrhea symptoms.

It's worth noting that while dietary interventions may be helpful in reducing symptoms of PMS and dysmenorrhea, they should not be used as a substitute for medical treatment. Women who experience severe or persistent symptoms of these disorders should seek medical attention to rule out underlying medical conditions and to receive appropriate treatment.³

THE IMPORTANCE OF A HEALTHY DIET

A healthy diet should consist of a variety of foods such as vegetables (three servings daily), fruit (two servings per day), nuts, seeds, fish (up to three servings per week), and other sources of omega-3 foods. Additionally, it should include low-fat dairy products, proteins such as legumes and eggs, and a variety of wholegrains.

Women with heavy periods need to consume lean meat (red meat or chicken) as an essential source of iron and protein. It is recommended to avoid saturated fats and to limit salt and caffeine. Drinking more water and herbal teas like chamomile can also be helpful. Increasing intake of calcium-rich foods such as nuts, low-fat dairy products, fish with bones like salmon and sardines, can be beneficial.⁸

Some women may crave simple carbohydrates over more complex carbohydrates during menstruation, potentially because they provide fast acting energy when there is increased hunger or fatigue. Carbohydrates can affect mood too, as they are associated with serotonin release.⁴ Choosing high-fibre and starchy carbohydrates can help prevent cravings, as they keep blood sugar levels stable and, therefore, mood and energy levels more stable too. Complex carbohydrates, like wholegrains, oats and root vegetables, can support regular bowel habits, which can be impacted by the hormone changes in the lead-up to menstruation.⁵⁻⁷

OVERVIEW OF THE KEY NUTRIENTS

Iron: It is an essential mineral for the production of haemoglobin, which carries oxygen throughout the body. Women who menstruate are at a higher risk of iron deficiency anaemia because they lose iron-rich blood during menstruation. Symptoms of iron deficiency anaemia include fatigue, weakness and shortness of breath. Iron deficiency can also lead to irregular periods or heavier bleeding. To maintain adequate iron levels, women and girls over 11 years old who menstruate should aim to consume 14.8 milligrams of iron per day. Good dietary sources of iron include red meat, poultry, fish, beans, lentils, tofu and fortified cereals.⁹

Healthcare professionals should advise their patients on the importance of good nutrition and encourage them to consume a balanced diet along with regular physical activity to ensure optimal menstrual health.



Calcium: Calcium is a mineral important for bone health and muscle function. During menstruation, levels of the hormone oestrogen decrease, which can lead to bone loss if calcium levels are not maintained. Women who are low in calcium may experience cramps, backaches and other PMS symptoms. To maintain adequate calcium levels, women who menstruate should aim to consume 500-1000 milligrams of calcium per day. Good dietary sources of calcium include dairy products, leafy green vegetables, fortified orange juice and calcium-fortified tofu.¹⁰

Magnesium: Magnesium is a mineral involved in over 300 biochemical reactions in the body, including muscle and nerve function, blood sugar control, and energy metabolism. Adequate levels of magnesium have been linked to a significant reduction in all dysmenorrhea symptoms such as cramps, headaches, foot pain, irritability and depression.¹¹ Magnesium is also thought to help alleviate bloating and water retention associated with menstruation. To maintain adequate magnesium levels, women who menstruate should aim to consume 300 milligrams of magnesium per day. Good dietary sources of magnesium include nuts, seeds, wholegrains, legumes and leafy green vegetables.¹²

Vitamin B6: Vitamin B6 is a water-soluble vitamin involved in the production of neurotransmitters, such as serotonin and dopamine, which regulate mood and behaviour. Low levels of vitamin B6 have been linked to PMS symptoms such as mood swings, irritability and depression. Vitamin B6 is also thought to help alleviate menstrual cramps. To maintain adequate vitamin B6 levels,

women who menstruate should aim to consume 1.3-1.5 milligrams of vitamin B6 per day. Good dietary sources of vitamin B6 include poultry, fish, wholegrains, nuts and bananas. Studies have shown a positive association between magnesium and vitamin B6 intake and PMS severity.¹³

Vitamin D: The role of vitamin D in female reproduction is of paramount importance, and it is believed to exert its influence through various mechanisms such as regulation of calcium homeostasis, modulation of cyclic sex steroid hormone fluctuations and modulation of neurotransmitter function. Low levels of vitamin D have been linked to irregular periods and heavy bleeding. To maintain adequate vitamin D levels, women who menstruate should aim to consume 600-800 international units (IU) of vitamin D per day. Good dietary sources of vitamin D include fatty fish, egg yolks and fortified dairy products. A study found a reduction in symptoms and severity of PMS and dysmenorrhoea in adolescent girls with high-dose vitamin D supplementation. It had positive effects on both the physical and psychological symptoms of PMS.¹⁴

Omega-3 fatty acids: Premenstrual symptoms are common among women and can cause physical and psychological distress. Omega-3 supplementation has been shown to be an effective treatment for reducing the severity of symptoms, such as bloating, breast tenderness and mood changes. Omega-3 fatty acids have anti-inflammatory properties that can alleviate these symptoms, and recent studies have reported significant improvements in physical

and psychological symptoms with omega-3 supplementation. Omega-3 supplements are safe and well-tolerated and provide an effective treatment option for women who experience premenstrual symptoms. Good dietary sources of omega-3 fatty acids include fatty fish, flaxseeds, chia seeds and walnuts.¹⁵

Zinc: According to a recent study, zinc supplementation can improve PMS symptoms¹⁶ and has been associated with improved health-related quality of life in a multitude of other studies. One study found that the use of zinc supplementation in combination with a painkiller was superior in reducing period pain in comparison with the painkiller alone.¹⁷ These studies exploring the effects of zinc on PMS used dosages from 30mg to 220mg. The dietary reference value for zinc in the UK is only 7mg per day for women, which is not enough to optimise the effects seen in these studies. However, as it is a recent area of research, more evidence is required to give an exact recommendation regarding the amount of supplementation.

Fibre: Appropriate treatment for IBS and constipation premenstrually can help alleviate symptoms of PMS. Increasing fibre intake with plenty of fluids might be helpful.²³

HERBAL SUPPLEMENTS

Research has been exploring the benefits of chasteberry, which is the fruit from the chaste tree native to the Mediterranean region and Asia. It is supposed to reduce inflammation and balance hormones. A number of studies have demonstrated that chasteberry can reduce symptoms of PMS by stimulating the production of more progesterone¹⁸ whilst decreasing prolactin release.¹⁹ However, because of its effects on hormones, it could reduce the effectiveness of hormonal contraceptives, so care is needed when taking chasteberry as a herbal supplement.

Overall, maintaining a balanced and varied diet that includes a variety of nutrient-rich foods is important for supporting menstrual health. Women who experience severe or debilitating PMS symptoms may also benefit from working with a healthcare provider or registered dietitian to develop an individualised nutrition plan.

FOODS THAT CAN NEGATIVELY AFFECT MENSTRUATION

There are certain foods that may negatively affect the menstrual cycle by disrupting hormone balance, reducing nutrient absorption and increasing inflammation.

Caffeine: Caffeine is a stimulant that can affect the nervous system and increase levels of the stress hormone cortisol. High cortisol levels can disrupt the delicate balance of hormones in the menstrual cycle, leading to irregular periods, PMS symptoms and an increased risk of fertility problems. In addition, caffeine can reduce the absorption of certain nutrients such as iron and calcium, which are important for menstrual health. The impact of coffee and caffeinated beverages on fertility remains inconclusive, with varying results across different studies. Some studies have suggested negative effects on fertility, while others have found no association or even potential benefits, although some studies have only shown an association at very high levels of intake.²⁰

Salt: Bloating and fluid retention are common symptoms of PMS. In order to maintain a balance between fluid and electrolytes, more water may be retained when there is a higher consumption of salt than normal. It is important that salt intake in general is limited to less than 6g per day.²¹

Alcohol: Alcohol can disrupt hormone balance and reduce nutrient absorption, particularly B vitamins and magnesium. Chronic alcohol consumption has been linked to irregular periods, infertility and early menopause. In addition, alcohol can increase inflammation in the body, which may exacerbate PMS symptoms and contribute to menstrual pain. Women who menstruate may want to limit their alcohol intake to one drink per day or less to avoid these negative effects. PMS sufferers may have alcohol cravings premenstrually and alcohol metabolism may be impaired.²²

OTHER CONSIDERATIONS

Dietary needs related to menstruation can vary depending on age and other factors, such

as physical activity, weight and health status. During puberty, for example, girls experience significant physical changes, so adequate nutrition is essential for supporting the growth and development of the body during this time. It is recommended that adolescent girls consume a balanced diet that includes a variety of nutrient-dense foods.

Women who engage in regular physical activity may have increased needs for certain nutrients such as protein and electrolytes. Women who are overweight or obese may have increased nutrient needs due to the increased metabolic demands of their bodies.²⁴

CONCLUSION

Good nutrition plays a critical role in menstrual health. Adequate intake of essential nutrients can ensure menstrual regularity. However, certain factors such as stress, weight changes and medical conditions can also impact menstrual regularity. Healthcare professionals should advise their patients on the importance of good nutrition and encourage them to consume a balanced diet along with regular physical activity to ensure optimal menstrual health. By making small dietary changes and being mindful of their nutrient intake, women can support healthy menstrual cycles and improve their overall health and wellbeing.

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Q.1 What are the four phases of the menstrual cycle?

A

Q.2 Explain in more detail the phase when women typically experience PMS symptoms.

A

Q.3 What is dysmenorrhea?

A

Q.4 Provide details of dietary advice for women with heavy periods.

A

Q.5 Why is calcium important for women during menstruation?

A

Q.6 How does zinc improve PMS symptoms?

A

Q.7 Explain the role of caffeine in exacerbating symptoms of PMS.

A

Q.8 How does alcohol affect PMS sufferers?

A

Please type additional notes here.