



ISSN (E): 2320-3862  
ISSN (P): 2394-0530  
<https://www.plantsjournal.com>  
JMPS 2024; 12(1): 70-75  
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Received: 12-11-2023  
Accepted: 13-12-2023

**Aniket Desai**  
Students, Ashokrao Mane  
institute of Pharmacy, Ambap,  
Maharashtra, India

**Abhishek Desai**  
Assistant Professor, Ashokrao  
Mane Institute of Pharmacy,  
Ambap, Maharashtra, India

**Nilesh Chougule**  
Assistant Professor, Ashokrao  
Mane Institute of Pharmacy,  
Ambap, Maharashtra, India

**Corresponding Author:**  
**Aniket Desai**  
Students, Ashokrao Mane  
institute of Pharmacy, Ambap,  
Maharashtra, India

## Understanding Dysmenorrhea: A comprehensive overview

**Aniket Desai, Abhishek Desai and Nilesh Chougule**

### Abstract

Dysmenorrhea, commonly known as painful menstrual cramps, is a prevalent gynecological condition affecting a significant portion of menstruating individuals. This abstract provides an overview of the importance, menstrual problems, causes, treatment, and the role of supplements in managing dysmenorrhea. Those who suffer from dysmenorrhea have a lot to worry about because it affects their productivity and quality of life. As a result, people may withdraw socially and miss days of work or school. For better management and overall health, understanding its relevance is key. Dysmenorrhea is a painful condition that affects the lower abdomen and usually happens either before or during menstruation. Headaches, nausea, vomiting, and diarrhea are all possible side effects of this pain. The symptoms might range from hardly noticeable to completely incapacitating, making it difficult to go about one's everyday life.

**Keywords:** Menstrual pain, primary dysmenorrhea, secondary dysmenorrhea

### Introduction

The painful pelvic cramps that are linked to menstruation are known as dysmenorrhea. Pain in the lower back and thighs, as well as headaches, nausea, diarrhea, and lethargy, are all symptoms of menstrual cramps. Menstrual cramps usually start a few days before your period starts and don't go away until after your period has begun. From sixteen percent to ninety-seven percent of women are thought to be impacted by this disorder <sup>[1, 2]</sup>. Dysmenorrhea is the medical term for chronic, recurrent menstrual cramps. Originating in the suprapubic region, the discomfort is crampy and colicky and usually lasts for at least a day or two. The legs and lower back may also feel the effects <sup>[3]</sup>. The majority of women experience dysmenorrhea, which is defined as pain that occurs just before and during menstruation <sup>[4]</sup>. According to research conducted on non-patient populations, as many as 70% of women report experiencing some degree of menstruation pain. Approximately 5-10% of these women also suffer from severe enough pain to be incapacitating for one to three days every month. Additional frequent problems include menorrhagia (excessive menstrual flow) and amenorrhoea (non-menstrual cycle). If you lose more than 50 milliliters of blood during your period, it is called menorrhagia. Women in the 30-49 age group are at increased risk for anemia due to this level of blood loss, and 5% of these women will seek medical treatment for it. There are several organic causes that might cause menorrhagia, including uterine fibroids, thyroid problems, and intrauterine contraceptive devices. However, no organic cause is known for heavy periods in as many as 50% of women who experience them. According to new studies, some of these ladies might have hereditary blood diseases. The standard course of medical therapy after a D&C is a hormonal treatment or surgical procedure like an endometrial ablation or hysterectomy, however other options are also available. Dysmenorrhea is the medical term for painful periods. Two kinds of dysmenorrhea exist: primary, in which all pelvic organs are functioning normally, and secondary, caused by endometriosis and other pelvic organ illnesses <sup>[5]</sup>.

### Menstrual problems

The uterus, pituitary, hypothalamus, and ovaries are all involved in a revolving door of physiological changes that include the removal of the uterine lining during menstruation. <sup>[2]</sup>. Most women in western societies begin their menstrual cycle between the ages of 10 and 16, and they will have 400 menstrual cycles total before reaching menopause.

Although a textbook 28-day menstrual cycle is described as a "clockwork" cycle, only one in eight cycles actually lasts for that long. Menstrual cycles actually differ greatly amongst women and over the course of a woman's lifetime, despite the fact that each woman tends to have her own unique menstrual patterns. Cycle length, menstrual period duration, blood volume, and other factors vary from one woman to the next. Because of this variation, menstrual illnesses are hard to describe, which further complicates epidemiological research. On the other hand, menstrual diseases are rather common in primary care. Given that many women avoid doctors, it's safe to assume that many women deal with period problems and figure out how to manage them on their own. Periods include a series of physiological changes that impact the uterus, pituitary, hypothalamus, and ovaries, one of which is the loss of the uterine lining <sup>[4]</sup>. Most women in western societies begin their menstrual cycle between the ages of 10 and 16, and they will have 400 menstrual cycles total before reaching menopause. Although a textbook 28-day menstrual cycle is described as a "clockwork" cycle, only one in eight cycles actually lasts for that long. Although menstrual cycles are typically unique to each woman, there is a wide range of variation among women and even within a single woman's cycles in terms of the length of the cycle, the number of day's menstruation occurs, and the amount of blood and fluid lost during menstruation. Because of this heterogeneity, defining menstrual illnesses is tough, which makes epidemiological research tricky. On the other hand, menstrual diseases are rather common in primary care. Given that many women avoid doctors, it's safe to assume that many women deal with period problems and figure out how to manage them on their own. Anxieties over menstruation is common in women <sup>[6]</sup>. Mood swings (32.8% of women), pain (33%) and increased flow (29.1% of women) during menstruation were the top three reasons women were sent to hospital-based gynecological clinics for menstrual difficulties. Additional issues included premenstrual pain (17.5% of women) and prolonged menstruation (25.3% of women). Period issues are common during adolescence and the reproductive years. It is important to thoroughly assess these concerns since sometimes women, especially teenagers, may come in with them, but in reality, they are there to address other issues, including an undesired pregnancy, STI, or sexual assault. If the patient's medical history is comprehensive, her privacy is protected, and any worries about confidentiality are addressed, the patient will be able to answer honestly and openly about her concerns. Dysmenorrhea, experienced by as many as 60% of menstruating women, can be mildly to highly debilitating. The most severe kind of premenstrual symptoms, premenstrual dysphoric disorder (PMDD), is rare yet affects the majority of women. Approximately 30% of women will receive a diagnosis of premenstrual syndrome (PMS). Asymptomatic uterine hemorrhage is the initial complaint in about a quarter of gynecologic operations and about a twentieth of primary care gynecology visits <sup>[7]</sup>.

## Types of dysmenorrhea

### Primary Dysmenorrhea

Functional pain limited to the lower abdomen, commonly characterized by spasmodic episodes, is known as primary dysmenorrhea (PD). No organic factors are responsible for it. (Pages 8-9) Additional symptoms may include low back discomfort, nausea, vomiting, diarrhoea, weakness, lightheadedness, and headache. Young women are disproportionately hit by this disease. <sup>[10]</sup> Having Parkinson's

disease is incredibly taxing on a woman's mental and emotional health in addition to her body. The eleventh Physical pelvic disorders are not necessarily a symptom of pelvic PD. Dysmenorrhea is more common in older women. Dysmenorrhea is rare in the months immediately following menarche but becomes more prevalent thereafter <sup>[12]</sup>. Ages 16 and 18 account for the most majority (82%).in <sup>[13]</sup> It begins a slow decline around the ages of 35-40. It remains relatively steady at 40% between the ages of 25 and 50 and drops considerably lower after that. The results showed that dysmenorrhea's incidence and severity had decreased from 72% to 67% by the age of 24. Another important consideration is giving delivery. References 14 and 15 Dysmenorrhea is far less common and less severe in women who have given birth before and had a full-term pregnancy compared to those who have never been pregnant. Those who take contraceptives have a much lower risk of dysmenorrhea, while women whose periods start early or have a very long cycle are more likely to suffer from severe dysmenorrhea. It is common for the mothers and sisters of people with dysmenorrhea to also suffer from the disorder <sup>[16]</sup>. Also associated with dysmenorrhea include characteristics such as mood, activity, diet, and environment <sup>[17]</sup>.

### Causes

This is brought on by the body producing an excessive amount of prostaglandins right before menstruation begins. This is because progesterone declines cause the endometrial lining to slough off in preparation for menstruation, which in turn increases the production of prostaglandins. You may be familiar with the hormone prostaglandin from misoprostol in obstetrics. Similar to the adverse effects of misoprostol, dysmenorrhea can cause additional symptoms such as nausea and diarrhea. Ovulatory menstrual cycles are the only ones that seem to allow some women to create more prostaglandin than others; however, the reason behind this is still a mystery. As the endometrium undergoes changes during menstruation, a by-product known as prostaglandin is produced. The fact that a girl's initial menstrual cycles are usually anovulatory explains why primary dysmenorrhea usually doesn't start until a few cycles following menarche. When there is an overabundance of prostaglandins, the uterine blood flow is reduced and painful, irregular contractions occur more frequently. Primary dysmenorrhea is quite unusual and typically only occurs in cases of inherited or acquired anomalies of the female reproductive tract, such as an imperforated hymen or a blockage caused by female genital mutilation. While primary dysmenorrhea is completely safe and does not impact fertility, it is important to be aware that it might induce severe pain <sup>[3, 18, 19]</sup>.

### Secondary Dysmenorrhea

Secondary dysmenorrhea differs from primary dysmenorrhea in that pelvic pathology is a contributing factor. It often occurs in women in their 30s and 40s and can be accompanied by additional symptoms such as irregular menstrual cycles, painful defecation (dyschezia), and painful sexual relations (dyspareunia). As far as pathophysiological processes go, endometriosis, or ectopic endometrial tissue in the peritoneal cavity, is by far the most prevalent. Menstrual pain can be exacerbated by adenomyosis, which is defined as endometrial cells invading the myometrium. This condition is frequently diagnosed concurrently with endometriosis <sup>[20]</sup>. Hydrosalpinges and dysmenorrhea can also be caused by adhesions that have formed around the ovaries or blocked the

fallopian tubes as a consequence of a past pelvic infection. The uterine growth caused by fibroids is often accompanied by menorrhagia, which in turn can induce dysmenorrhea. Endometrial abnormalities, such as polyps, can disrupt the menstrual cycle and cause pain for certain women. Rarely, dysmenorrhea can be caused by uterine or cervical stenosis [21].

## Causes

### Possible causes of secondary dysmenorrhea

- Endometrial cells spread outside the uterus, a condition known as endometriosis, which can cause adhesions and cysts.
- In adenomyosis, a layer of muscle termed myometrium develops within the uterine wall, including endometrial cells.
- Uterine fibroids (uterine wall benign tumors).
- Peripheral inflammatory illness (PID) and acute sexually transmitted infections.
- Pelvic adhesions, whether they form after an operation or an infection.
- Late-stage malignancies of the reproductive system.

Menstrual pain is associated with impaired tissue pressure (fibroid adenomyosis, cancer), as well as dysrhythmic contractions caused by blood clots being forced out of the uterus. Some may be affected by traction (adhesions, PID), prostaglandin production, or prostaglandin-like factors (endometriosis, acute STI) [3, 18, 19].

## Treatment

### Pharmacological Treatment

Nonsteroidal anti-inflammatory drugs are regarded as the initial course of therapy for dysmenorrhea. NSAIDs are far more successful than placebos or other therapies at treating dysmenorrhea [22]. NSAIDs work to treat dysmenorrhea by preventing cyclooxygenase enzyme from functioning, which prevents the production of prostaglandins. [23] Marjoribanks *et al.* came to the conclusion that no NSAID is safer or more effective than another in a systematic review that compared various NSAIDs to a placebo in the treatment of dysmenorrhea [24]. Nonetheless, data suggests that about 20% of dysmenorrhea patients do not improve when NSAIDs are used as a treatment [25]. Because fenamates (mefenamic acid) have the dual action of inhibiting and blocking PG production, they may be slightly more effective than phenyl propionic acid derivatives (ibuprofen, naproxen) [26-27]. According to a study, ibuprofen and fenamates are safer and more effective than other options [28]. When compared to paracetamol, NSAIDs continue to be more efficacious. However, in situations where taking NSAIDs is not advised, paracetamol remains a viable option. Paracetamol, caffeine, and the short-acting diuretic Pamabrom all worked together to reduce pain. [29-31]. While COX-2 selective NSAIDs can be utilized, it is important to consider their cardiovascular side effects. Additionally, it is worth noting that these drugs are not more effective or tolerated than NSAIDs [32]. Postponed ovulation has been linked to the suppression of PGs by COX-2 selective NSAIDs [33-34].

Reducing discomfort associated with adolescent dysmenorrhea is supposedly easier with oral contraceptive pills (OCPs) than with a placebo. References 35-38 multiple other research cast doubt on OCPs' effectiveness in treating dysmenorrhea, pointing to the lack of comparison data and limited sample sizes as reasons. Numbers 39 and 40 the

endometrial lining cannot develop, which is how OCPs function. It inhibits the production of prostaglandins [22] is a Period fluid from women on oral contraceptives contains very little PGs. Fewer cases of dysmenorrhea and reduced need for supplementary analgesics were observed in women who used oral contraceptives [41].

**Progestin-only pills (POPs):** Is not clear whether they are effective in treating initial dysmenorrhea, but they are more appropriate for patients with endometriosis-related secondary dysmenorrhea. Sections [42-44] POPs mainly cause the uterine lining to atrophy and prevent ovulation.

### Non-pharmacological Treatment

An active lifestyle and a healthy, well-balanced diet rich in vitamins and minerals are generally recommended for better health outcomes. If you suffer from dysmenorrhea, you may find relief by adopting this diet and lifestyle. Sections [45-47] although exercise is typically recommended for its numerous health advantages and minimal risk, it can alleviate dysmenorrhea symptoms. Moderate activity is recommended, particularly for obese women, although there is insufficient data to specify a particular kind or duration of exercise [48]. Heat is an easy therapy option that many patients prefer because it is effective and has no side effects when compared to NSAIDs. Still, excellent research is required [49-50]. For the treatment of dysmenorrhea, complementary and alternative medicine, Chinese medicine, and food supplements are utilized. Moreover, the FDA does not regulate them. Overall, the evidence is not strong enough to support the use of any other dietary or herbal therapies [51]. A few studies that lack rigorous methodological techniques and active comparisons support the effectiveness of acupuncture [52-54].

### Supplements

Supplements may help alleviate dysmenorrhea symptoms, but there aren't many extensive, excellent studies in this area. A Cochrane study conducted in 2016 examined the evidence that dietary supplements can be helpful in managing dysmenorrhea [55]. The A few of pilot trials show promise, even if they found no evidence to support their use. A trial may be preferred by many women due to its low risk and infrequent side effects. Three small trials found that magnesium reduces menstrual pain when compared to a placebo. Promote foods high in magnesium, such as leafy greens, nuts, and fish. Try taking a 300-600 mg supplement once a day.

**Magnesium:** gluconate, chloride, or glycinate have a lower propensity to induce loose stools. When using in people with renal illness, exercise caution. Even though magnesium is usually well tolerated, diarrhea can be a sign of toxicity.

**Vitamin B1:** In an Indian study, menstrual pain was alleviated by (thiamine) supplementation, but only after taking 100 mg for at least 30 days. It's unclear if these findings would hold true for different populations. For one to three months, try taking 100 mg of supplements daily and keep an eye out for any improvements. In general, vitamin B1 is well tolerated.

**Vitamin B6:** Based on a small trial, (pyridoxine) may help with dysmenorrhea pain scores. Try 100 mg a day for a while. In general, people tolerate it well. A symptom of toxicity is neuropathy.

**Vitamin E:** offers contradictory evidence in favor of its usage for dysmenorrhea. There was no discernible change in the outcome of a short study that added vitamin E to NSAIDs for the treatment of dysmenorrhea. Page 56-59 However, a handful of controlled studies have shown promise in alleviating period pain, both in terms of severity and length of time it lasts. <sup>[60-61]</sup> Two to ten days before your period begins and three to four days afterward is the usual dosing window of 150 to 500 units daily. Vitamin E is often well-tolerated and safe at these doses <sup>[55]</sup>.

### Conclusion

Dysmenorrhea, or painful menstrual cramps, is a multifaceted gynecological issue with far-reaching implications. Recognizing its significance is crucial, as it profoundly impacts the lives of those affected. Menstrual problems associated with dysmenorrhea, ranging from mild discomfort to debilitating pain, can result in missed school or work days and hinder daily activities. To effectively address dysmenorrhea, it is imperative to understand its underlying causes. Primary dysmenorrhea, characterized by uterine muscle contractions, and secondary dysmenorrhea, often linked to underlying gynecological conditions, require distinct diagnostic and treatment approaches. The treatment of dysmenorrhea encompasses a variety of strategies. Lifestyle modifications, such as regular exercise and stress reduction, can provide relief. Nonsteroidal anti-inflammatory drugs (NSAIDs) are commonly used to alleviate pain, while hormonal therapies, including contraceptives, offer long-term management. Complementary therapies, such as acupuncture and heat therapy, have also shown promise in relieving symptoms. Additionally, the role of supplements in managing dysmenorrhea has gained attention. Supplements like magnesium, omega-3 fatty acids, and vitamin D may help reduce inflammation, muscle contractions, and pain perception. However, it is crucial to approach supplementation with caution, consulting with healthcare professionals to ensure safety and effectiveness. In summary, addressing dysmenorrhea requires a holistic approach, taking into account the importance of recognizing its impact, understanding the range of menstrual problems it causes, identifying its diverse causes, and exploring a variety of treatment options, including the potential benefits of supplements. The management of dysmenorrhea is a collaborative effort between healthcare providers and patients, aimed at improving the overall quality of life for those affected by this common gynecological condition.

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