

Dysmenorrhea as a Menstrual Disorder

Dysmenorrhea refers to painful menstrual bleeding and often includes symptoms such as cramps in the lower abdominal region, pain radiating down to the thighs, nausea and vomiting, diarrhea, fatigue, and headaches. There are two types of dysmenorrhea, called primary and secondary dysmenorrhea, which develop in different ways. In cases of primary dysmenorrhea, people experience painful cramps before and during most of their menstrual cycles, which does not happen as a result of a different underlying condition and is mostly due to hormone imbalances. On the other hand, secondary dysmenorrhea is a symptom of an underlying condition such as endometriosis that causes problems with the reproductive organs. According to the American College of Obstetricians and Gynecologists, researchers have reported that dysmenorrhea impacts up to fifty to ninety percent of women, remaining one of the most common reasons why women miss days of school and work as of 2021, and contributing to decreased quality of life.

Dysmenorrhea involves pain associated with menstruation, which happens as part of the menstrual cycle. Anyone with ovaries and a uterus can go through the menstrual cycle, which prepares the body for the possibility of pregnancy, and includes menstruation and ovulation. In women of reproductive age who are not pregnant, menstruation occurs when the endometrium, or the tissue that lines the inside of the uterus, is thick and filled with blood. During menstruation, the uterus sheds the thick endometrium, which leaves the body through the vagina. Menstruation occurs after a process called ovulation, during which one of the two ovaries releases an egg cell. The egg cell goes through the fallopian tube where it can meet a sperm cell, which can fertilize the egg cell. A fertilized egg cell can later attach itself to the endometrium inside the uterus, starting pregnancy. However, if a sperm cell does not fertilize the egg cell, then menstruation occurs to shed the endometrium and the menstrual cycle begins again.

Dysmenorrhea is an example of abnormal menstrual bleeding, which occurs when there are issues with the menstrual cycle. The menstrual cycle typically lasts twenty-one to forty days. Most women begin menstruating when they reach puberty, at around twelve to fifteen years old. Different kinds of abnormal menstrual bleeding can affect factors such as the length or frequency of a woman's menstrual cycle, the age when a woman starts menstruating, the amount of bleeding she experiences, or the discomfort she feels around the time of menstruation. Most women occasionally experience some level of discomfort during menstruation, but people with dysmenorrhea frequently have severe cramps or painful periods.

Discussion of abnormal menstrual bleeding, including painful menstruation, dates back millennia. Around 400 BCE, Greek physician Hippocrates provided an early explanation for painful menstruation, stating that an impermeable cervix was the cause of painful menstruation. The cervix is the lower part of the uterus, through which menstrual blood leaves the body. So, Hippocrates posited that if a woman's cervix was obstructed, then menstrual blood was unable to leave the body, causing pain. Hippocrates further believed that women who have been pregnant more often were less likely to experience painful menstruation.

Similar ideas about painful menstruation remained popular over centuries, and it was not until the nineteenth century that physicians began to classify painful menstruation specifically as dysmenorrhea. For example, in 1847, English physician Fleetwood Churchill wrote about dysmenorrhea in his book *The Diseases of Females: Including Those of Pregnancy and Childbed*. In that book, Churchill states that people who have dysmenorrhea tend to experience severe pain persistently rather than just once or twice. He discusses three different types of dysmenorrhea, called neuralgic, inflammatory, and mechanical dysmenorrhea. He refers to neuralgic dysmenorrhea as an attack on the

female body that lasts about one to five days and involves symptoms like severe headaches and back pain before and during menstruation. To treat neuralgic dysmenorrhea, Churchill states that he primarily recommends sedatives, such as opium, to reduce pain. Contrastingly, Churchill writes that women who have inflammatory dysmenorrhea have sudden pain rather than gradual symptoms. They suffer from an inflamed uterus, which causes symptoms that include weakness, back pain, flushed and hot skin, and a quick pulse. Churchill writes that the most obvious treatment for inflammatory dysmenorrhea is to remove twelve to fourteen ounces of blood from the arm prior to menstruation through bloodletting, a process that involves the use of leeches to remove blood from the body, which physicians stopped practicing in the nineteenth century. Finally, Churchill defines mechanical dysmenorrhea as difficulty in menstrual bleeding due to a narrow cervix. To treat mechanical dysmenorrhea, Churchill states that a physician should insert a catheter-like device through the cervix and inject warm water into the woman's uterus.

During the nineteenth century, various treatments for dysmenorrhea arose, which largely included plants, herbs, and tonics as pain relievers. For example, in 1844, *The Lancet* published a report that several doctors during the mid-nineteenth century recommended belladonna, an herbaceous plant with dark round berries, as temporary pain relief for women who experienced dysmenorrhea. In particular, *The Lancet* reported that one physician recommended five grains of belladonna extract, mixed with twenty grains of sulphate of zinc and divided into twenty pills, may help relieve painful menstruation. As of 2021, some people still use some forms of belladonna to treat certain types of pain, but most physicians recommend against taking belladonna supplements because it is highly toxic and can be dangerous to humans. Another natural remedy for menstrual pains arose in 1875, when Lydia Pinkham began distributing a tonic that contained alcohol and several herbs. Pinkham marketed the tonic, named Lydia Pinkham's Vegetable Compound to women who experienced menstrual pains such as women with dysmenorrhea, as well as menopause.

Physicians accepted the classification of dysmenorrhea that Churchill discusses, including neuralgic, inflammatory, and mechanical dysmenorrhea, until the twentieth century. In 1910, physician Pascal Brooke Bland published an article called "Dysmenorrhea: Its Significance and Treatment," in *The Journal of the Medical Society of New Jersey*, in which he proposes a new classification of dysmenorrhea. Bland writes about only two types of dysmenorrhea, called organic dysmenorrhea and neurotic, or functional, dysmenorrhea. He defines neurotic dysmenorrhea as the most common type of painful menstruation. On the other hand, Bland stipulates that organic dysmenorrhea happens because of altered reproductive structures. He further states that dysmenorrhea is typically a symptom of an underlying condition and urges doctors not to attempt treating dysmenorrhea until they determine its cause. As of 2021, physicians continue to recognize the types of dysmenorrhea that Bland pointed out, although the types are now named primary and secondary dysmenorrhea, respectively.

As Bland suggests, organic, later called secondary, dysmenorrhea is a symptom of an underlying condition, most commonly endometriosis. Endometriosis is a condition characterized by abnormal growths on the outer surface of reproductive organs. In 1860, physician Karl Freiherr von Rokitsky was one of the first to identify abnormal growths outside of the uterus that closely resembled the endometrium, or the tissue that lines the inside of the uterus. But, it was not until 1927 that physician John Albertson Sampson gave one of the first comprehensive explanations of endometriosis. Sampson explained that endometriosis occurs when endometrial tissue, which normally lines the inside of the uterus, grows outside of the uterus, typically found on the ovaries and fallopian tubes. Also, Sampson proposed the theory of retrograde menstruation as the mechanism by which endometriosis occurs. That theory states that menstrual blood that flows backward through the fallopian tubes and attaches onto the surrounding reproductive organs.

In the following decades, other scientists were also researching what causes neurotic, later called primary, dysmenorrhea, which most women experience. According to researcher Julie-Marie Strange, some twentieth century researchers postulated that women who did not become pregnant experienced dysmenorrhea as a punishment for not conforming to their supposedly natural roles as mothers, a theory that Strange holds up as an example of misogyny in medicine. Meanwhile, other physicians proposed that certain chemicals in the body are responsible for dysmenorrhea. During the 1930s, Swedish researcher Ulf von Euler identified the substance in the body that causes the

uterus to contract, and in 1932, researchers hypothesized that von Euler's substance, later called prostaglandins, caused dysmenorrhea. Prostaglandins are a chemical that causes the muscles of the uterus to contract, or tighten, during menstruation, causing the endometrium to shed through the vagina and often eliciting cramps. In cases of dysmenorrhea, the body may produce more prostaglandins than normal, which causes more contractions and cramps. It was not until 1965 that researcher V.R. Pickles affirmed that women who had a higher level of prostaglandins experienced more painful menstruation compared to those who did not, showing that differences in prostaglandin levels likely played a role in causing the condition.

As of 2021, physicians can detect dysmenorrhea using a variety of imaging techniques, including ultrasound and magnetic resonance imaging, or MRI. An ultrasound uses high frequency sound waves to create an image, or a sonogram, to view the inside of the body. A physician may use an ultrasound to see if the reproductive organs are distorted or if there are endometrial growths that cause dysmenorrhea. Similarly, an MRI uses large magnets, radio frequency energy, and a computer to create detailed images of the inside of the body, which may give a physician a clearer view of the reproductive organs.

Physicians may also diagnose dysmenorrhea using two different types of endoscopy, or surgical procedures that allow the physician to view the inside of the body. Those procedures are called laparoscopy and hysteroscopy. Laparoscopy is a procedure in which a physician makes small incisions on the lower abdominal region and uses a thin tool called a laparoscope. The laparoscope has a small camera on the end of it that allows the physician to see endometrial lesions inside of the body. Physicians typically perform laparoscopies to diagnose and treat endometriosis, searching for and removing endometrial tissue from places it does not usually grow, such as the ovaries and the fallopian tubes. Similarly, hysteroscopy is a procedure in which a physician inserts a tool, called a hysteroscope, through the vagina to view the inside of the body. During the procedure, a physician dilates, or widens, the cervix to insert the hysteroscope. After the physician inserts the hysteroscope through the vagina, carbon dioxide gas or a liquid solution fills the uterus to expand it. Lastly, the physician looks through the lit hysteroscope, allowing her to see inside of the uterus.

There are also several different ways to treat dysmenorrhea, depending on the severity of pain and whether there is an underlying condition. Typically, the first line of treatment against dysmenorrhea are nonsteroidal anti-inflammatory drugs, or NSAIDs, which are common medications such as ibuprofen or aspirin that reduce the level of prostaglandins in the body. Oral birth control pills are commonly recommended as a second line of treatment when NSAIDs are ineffective. Birth control pills prevent ovulation, which typically signals the body to produce more prostaglandins. Therefore, by preventing ovulation, birth control pills also decrease the level of prostaglandins in the body. Still, NSAIDs and birth control may not be effective for all people with dysmenorrhea. Those who experience secondary dysmenorrhea due to underlying conditions may receive surgical treatments. For example, laparoscopy treats secondary dysmenorrhea in cases of endometriosis by removing the endometrial lesions that swell and bleed during menstruation and cause pain.

As understanding of menstrual disorders like dysmenorrhea increased, researchers used that understanding to campaign for religious organizations that had historically opposed the use of birth control to approve its use as a treatment for painful conditions. For example, during the 1950s, physician John Rock was an advocate for and helped develop one of the first birth control pills, called Enovid. Rock campaigned for the Roman Catholic Church, which opposes the use of contraceptives, to approve the use of Enovid. In 1958, Pope Pius XII approved the use of Enovid specifically for treating menstrual disorders, including dysmenorrhea. But, in 1963, following the papacy of Pius XII, Pope Paul VI called a meeting to reevaluate the Church's position on the use of birth control pills, and in 1968, he wrote an encyclical letter, called *Humanae vitae* (Of Human Life), in which he stated the Church's updated stance on birth control. In the letter, Pope Paul VI stated that the Church generally opposes the use of birth control but maintained that they accept the use of birth control pills to treat diseases like menstrual disorders that cause bodily harm. However, according to the St. Louis Guild of the Catholic Medical Association, which is a group of Catholic physicians in St. Louis, Missouri, the use of birth control pills to treat dysmenorrhea is, what they refer to as, suboptimal medicine. Despite that, in 2011, Rachel K. Jones, who researches topics such as abortion and contraceptive use, found that thirty-one percent of women who use birth control pills

reported dysmenorrhea, and four percent reported endometriosis. Those statistics demonstrate that many women do use birth control pills specifically to treat menstrual disorders.

As of 2021, dysmenorrhea is one of the most common disorders that affects female reproductive health. According to the Maryland Department of Health, dysmenorrhea is the primary reason why women miss school or work. In 2018, the American College of Obstetricians and Gynecologists reported that approximately twelve percent of girls reported missing school or work days each month due to painful menstruation. However, because many cultures normalize menstrual pain, many people who experience dysmenorrhea do not seek out treatment because they do not realize that their pain could be a serious problem. Because dysmenorrhea may also be a symptom of an underlying condition such as endometriosis, it is important for girls to seek health care assistance as early as possible. That way, they can prevent any underlying conditions from worsening and treat their pain sooner. As of 2021, a variety of methods to diagnose and treat dysmenorrhea are available that have the potential to improve a woman's quality of life.

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