

"The Premenstrual Syndrome" (1953), by Raymond Greene and Katharina Dalton ^[1]

By: Zietal, Bianca E. Keywords: PMS ^[2] Katharina Dalton ^[3] Raymond Greene ^[4]

In 1953, Raymond Greene and Katharina Dalton, who were doctors in the UK, published "The Premenstrual Syndrome" in the *British Medical Journal*. In their article, Dalton and Greene established the term premenstrual syndrome (PMS). The authors defined PMS as a cluster of symptoms that include bloating, breast pain, migraine-headache, fatigue, anxiety, depression, and irritability. The article states that the symptoms begin one to two weeks before [menstruation](#) ^[5] during the luteal phase of the menstrual cycle, and they disappear upon the onset of the menstrual period. Menstruation is the monthly series of changes a woman's body undergoes in preparation for the possibility of [pregnancy](#) ^[6]. Dalton and Greene described how [progesterone](#) ^[7] affected women during different phases of their menstrual cycles. The paper convinced many about the phenomenon of PMS, and doctors and scientists adopted Dalton's and Greene's term. The paper furthered research about the role of [hormones](#) ^[8] in physiology and of conditions linked to the reproductive system.

Dalton was a general physician in London, UK. Dalton had been investigating the monthly recurring symptoms associated with [menstruation](#) ^[5] by reflecting on her own experiences and on those of her patients. In 1948, Dalton noticed that several of her patients had complained of recurring monthly ailments, such as headaches and asthma attacks that she linked to her own experiences with monthly migraine headaches. Dalton recognized that she experienced headaches more frequently at regular intervals across months, but not when she had been pregnant. She hypothesized that the monthly pattern of her symptoms, and those of her patients, were related to the menstrual cycle.

Dalton contacted her former teacher Greene for help. Greene worked in Hampstead, UK, where he studied human [hormones](#) ^[8]. By the late 1940s, Greene had begun to study human [sex hormones](#) ^[9]. While Dalton had treated close to 70 women with similar symptoms, once she contacted Greene, he studied another 16 women. In all, they studied 84 women. They presented the results of their clinical observations in their 1953 paper, in which they said their concept of PMS was more robust than Robert Frank's 1931 concept of premenstrual tension.

The article has six sections. After a brief introduction, the authors discuss the literature on the subject of pre-menstrual related symptoms. The following section features the study the authors conducted on eighty-four cases of women with premenstrual syndrome, including the authors' methods and findings. Next, the authors discuss the effects [pregnancy](#) ^[6] and childbirth have on PMS. The following section discusses an opposing theory of water retention. Finally, Dalton and Greene conclude with a summary of PMS symptomology and the treatments for the syndrome available at that time.

To begin the paper, Dalton and Greene review the work of Robert T. Frank, who worked as a gynecologist in New York, New York, and studied the effects of [sex hormones](#) ^[9]. In a 1931

paper, Frank provided a description of a cluster of symptoms that occurred before the onset of [menstruation](#) [5]. In his paper, Frank described the symptom cluster as a common endocrine disorder expressed by a general state of tension, and he hypothesized that the symptoms resulted from fluid retention caused by an excess of the female sex [hormone](#) [10], [estrogen](#) [11]. Those symptoms often occurred upon the onset of [menstruation](#) [5] and they included tension, which sometimes resulted in headaches, swelling of the face, hands or feet, asthma, epileptic seizures, and what he called foolish actions. Estrogen functions in the development of primary and secondary female sex characteristics, and it normally rises early in the menstrual cycle and decreases upon [ovulation](#) [12], when a mature [egg](#) [13] is released for potential [fertilization](#) [14]. To remove the adverse effects of fluid retention, Frank prescribed dehydration therapy, in which patients use diuretics such as coffee and tea to induce urination to expel from their bodies excess water and [hormones](#) [8], such as [estrogen](#) [11].

In the next section of their paper, Dalton and Greene detail their experimental use of [progesterone](#) [7] to treat PMS. To test her hypothesis that monthly changes were responsible for her patient's ailments, Dalton studied the charts of patients who visited their doctors on a monthly basis. Dalton and Greene concluded that the recurring symptoms that patients reported could have resulted from low levels of [progesterone](#) [7], a female sex [hormone](#) [10]. Progesterone has several physiologic roles, however its primary role is developing the endometrial tissue lining of the [uterus](#) [15] for a potential [pregnancy](#) [6]. Progesterone levels normally fluctuate throughout the menstrual cycle. The amount of [progesterone](#) [7] decreases days before the onset of the menstrual cycle, and it becomes elevated during [pregnancy](#) [6].

The authors detail the study they conducted on 16 patients they had previously met in the hospital and 68 patients that Dalton had followed in her clinic. The study aimed to test the hypothesis that low levels of [progesterone](#) [7] caused PMS symptoms a week before [menstruation](#) [5]. In the study, patients tracked their symptoms on a calendar. To diagnose patients with PMS, recurring monthly symptoms must have occurred at least three months in a row. Dalton and Greene would treat women who reported more symptoms during the same phase of their menstrual cycles. Dalton and Greene treated mild to moderate PMS with oral doses of a synthetic [progesterone](#) [7] called ethisterone for twelve days after the fourteenth day of the menstrual cycle, about one week before PMS symptoms usually begin. Dalton and Greene considered a patient improved if after treatment she had a [reduction](#) [16] in symptoms, and they continued treating the patient until she became symptom-free.

Of the 84 patients who received treatment, 22 were completely relieved of their symptoms, with 8 individuals experiencing only mild success. In cases in which the patients didn't respond to oral treatment, the patients would instead receive intramuscular injections of natural [progesterone](#) [7]. Fourteen women received an injection of [progesterone](#) [7], and 9 of them reported relief. Some patients who had received either the oral treatment or the [progesterone](#) [7] injection saw their PMS symptoms reoccur after [menstruation](#) [5]. Those patients later received implants. An implant was a thin plastic object that a practitioner implants under a patient's skin and it releases sexual [hormones](#) [8].

In the paper, the authors argue against Frank's [estrogen](#) [11]-centered theory of the premenstrual condition. Dalton says that the symptoms of PMS include more than just the tension and migraine headaches Frank had documented, but it also includes asthma, irritability, fatigue, and depression. After identifying the increased number of possible symptoms, the authors propose to use the term syndrome rather than the term tension to describe the condition, and they coin the term premenstrual syndrome.

Dalton and Greene also inquire about the effect [pregnancy](#) [6] had on the syndrome. Most of the women studied who suffered from PMS had ceased experiencing symptoms after the third month of [pregnancy](#) [6], and most of the women reported having no symptoms after the [pregnancy](#) [6], although symptoms reoccurred upon the first [menstruation](#) [5] after delivery. Dalton and Greene speculate that stable levels of [progesterone](#) [7] during [pregnancy](#) [6] explain why pregnant women ceased having recurring monthly symptoms.

The authors aimed to identify a comprehensive body of symptoms associated with PMS. All the patients reported the onset of a variety of symptoms that occurred during [ovulation](#) [12], the luteal phase, during [menstruation](#) [5], or at the time of a missed period. Some of the symptoms that regularly occurred in a premenstrual attack included headache, nausea, irritability, depression, fatigue, vertigo, arthritis flare-ups, skin and mucosal lesions such as mouth sores, general swelling or oedema, runny nose or rhinorrhea, asthma, recurring seizures or epilepsy, and breast pain. Dalton and Green further discuss the listed symptoms, and they report the sites of headache and rheumatism in addition to the types of skin lesions that appeared on patients. Dalton and Greene report that 40 percent of otherwise healthy women experienced cyclical symptoms. Additionally, the authors report that although these symptoms occurred most commonly during the premenstrual phase, they could also occur at the time of [ovulation](#) [12], or even during the menstrual phase.

Dalton and Greene then discuss how premenstrual-related symptoms were treated in the past. They first refer to dehydration therapy, which relied on the assumption that water retention caused the syndrome. They note that other researchers had found the method successful, but they caution that the method is hard on patients and should only be recommended for extreme cases of PMS. Another therapeutic method Dalton and Greene address is the use of [androgens](#) [17], specifically the male sex [hormone](#) [10] testosterone, as a treatment. The authors mention how testosterone treatments have proved to be only mildly helpful in relieving breast pain or mastalgia, but those treatments carry dangerous and masculinizing side effects.

Additionally, Dalton and Green discuss treatments including vitamin therapy. Dalton and Green refer to studies that show that a deficiency in vitamin B can exacerbate PMS symptoms, since a deficiency can impair the liver's ability to inactivate estrogens and enable them to accumulate in the body. Another vitamin is vitamin A, which Dalton and Greene hypothesize to have potential as a treatment. Finally, Dalton and Greene discuss the procedure of [x-ray](#) [18] [radiation](#) [19] of the ovaries, or the complete removal of the ovaries to cease the production of [estrogen](#) [11], which Robert T. Frank had used. The authors acknowledge that Frank's method proved successful at decreasing symptoms, although they emphasize that it is an extreme option.

After the publication of the paper, many scientists and doctors accepted premenstrual syndrome as a legitimate phenomenon, with hundreds of further studies citing the paper.

Furthermore, most people adopted and used the term premenstrual syndrom, which replaced earlier conceptions of premenstrual tension in medical and in more general contexts. While Greene pursued other interests, Dalton published dozens of further papers about PMS.

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Subject

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Hormones, Sex

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Format

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Last Modified

Wednesday, July 4, 2018 - 04:40

DC Date

2017-06-23

DC Date Accessioned

Friday, June 23, 2017 - 15:34

DC Date Available

Friday, June 23, 2017 - 15:34

DC Date Created

2017-06-23

DC Date Created Standard

Friday, June 23, 2017 - 07:00

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