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## Pre menstrual syndrome among females

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### Abstract

The aim of this study is to describe the premenstrual syndrome, which is a collection of predictable, physical, behavioral, and affective symptoms during the period of the menstrual cycle or before one or two weeks prior to menstruation. A severe form of premenstrual syndrome is called premenstrual dysphoric disorder (PMDD). The common symptoms of the premenstrual syndrome related to mood are mood swings, anxiety, stress, irritability, depression and related to physical health are abdominal cramps, backache, headache, weight gain, breast discomfort. The prevalence of this disorder occurs in adolescent girls. And due to this, it was found that 12.22% with all of them shows work impairment during the affected period, 18.52% of those having PMDD are prone to depression. The causes of premenstrual syndrome remain unknown and may be complex or multifactorial and also hormones, neurotransmitter, and genetics factor plays a major role. The severity of premenstrual syndrome can be managed by certain lifestyle changes, dietary modification, and along with a number of drugs to improve the condition up to a considerable extent.

**Keywords** PMS, PMDD, symptoms, prevalence, management

### Introduction

A premenstrual syndrome is a group of menstrual related chronic, cyclical, physical disorder manifested by emotional and physical symptoms experienced by some women in the second half of the menstrual cycle and if the symptoms are severe enough to disturb the life cycle of women and require medical help called PMS or premenstrual syndrome. The menstrual cycle is the monthly cycle in which uterus bleeds for 3-5 days and the cycle is repeated after every 28 days from puberty till menopause, (Dickerson *et al.*, 2003) <sup>[16]</sup>. The severity of the symptoms could be within a range from minimal to disabling. About 5% of women reports severe symptoms for several days and functional impairment. This group of women with the severest premenstrual symptoms often meets the diagnostic basis for premenstrual dysphoric disorder (PMDD), a severe form of premenstrual syndrome (PMS), (Pearlstein and Steiner, 2008). PMS is one of the factors that make women more receptive than men with depression, mostly during periods of rapid fluctuation of gonadal hormones, such as pre – menstruation and the post-partum period. Symptoms can vary in intensity and duration and may include depression or sadness, anxiety, irritability, loss of energy, change in appetite or sleep, breast tenderness, (Kessler *et al.*, 1984) <sup>[15]</sup>. It is calculated that 20% of women have severe symptoms of PMS. Additionally, 4.6%-6.4% meet the diagnostic basis for PMDD. Many researchers investigate that PMS symptoms arise which is responsible for cramping, breast tenderness, gas, diarrhea, and constipation, (Jarvis *et al.*, 2008) <sup>[14]</sup>.

### Etiology

The etiology of this disorder remains uncertain. But research studies suggest that change occurs in the regulation of neuro-hormone transmitter. Between the ages of 25-35 years, up to 85% of menstruating women have one or more PMS. During the follicular phase, the women are full of symptoms. The follicular phase in which egg follicle on an ovary are ready to release an egg, one egg is released each cycle and the main hormone controlling this stage is estradiol. Dalton says PMS is caused by an imbalance during the luteal phase of menstrual cycle and due to alteration in progesterone hormone. PMS certainly seem to occur during the luteal phase of the menstrual cycle, that is the phase during which progesterone hormone is produced. Studies suggest that progesterone is deficient in PMS patient.

(Obstetrics and Gynecology clinics of North America, 1990)<sup>[18]</sup>. Research studies (2012) also suggest that the disorder is the result of the interaction of cyclic changes in estrogen and progesterone with specific neurotransmitter serotonin and gamma amino butyric acid (GABA) appear to be especially in this regard. Increased understanding of PMS also increases the development of the specific treatment which is not specified in the previous prescription. It is also suggested that imbalance occurs in between estrogen and progesterone hormone have been proposed, (Mortola J.F, 1996)<sup>[17]</sup>.

The current agreement is that PMS is the result of the reaction to normal hormonal, biological, and environmental change incapable women. The pathogenesis is said to involve changes in central neuro-regulation and disorder homeostatic. This viewpoint has supported the investigation of neuro – endocrine modulated central neurotransmitter and the role of hypothalamic –pituitary –gonadal exist in PMDD.

### Symptoms

Due to the absence of various specific test and changes, recognition of over 150 symptoms contributes to the difficulty in diagnosis, which depends on record the timing of symptoms and menstruation. Symptoms occur during the luteal phase of the menstrual cycle, (Gehlert and Change, 1999)<sup>[11]</sup>.

If behavioral symptoms persist throughout the menstrual cycle than the disorder might be psychological or psychiatric. There are many behavioral and physical symptoms which occur in PMS.

### Psychological and behavioral symptoms

Mood swings and depression, tears or feeling low, tiredness, fatigue, or lethargy, tension or unease, irritability, clumsiness-poor coordination, difficulty in concentrating, altered interest in sex, sleep disorder, food cravings, aggression, loss of self-control.

### Physical symptoms

Breast tenderness, swollen / bloated feelings, puffiness of (face, abdomen or finger), weight gain, headaches, appetite changes, acne or other skin changes, constipation or diarrhea, muscle or joint stiffness, general aches or pains, especially backache, abdominal pain/ cramps, exacerbation of epilepsy, migraine, asthma, rhinitis, or urticaria. (Schmidt *et al.*, 1997)<sup>[1]</sup>.

### Background of study

In USA (1971) a study was conducted by (Silbergeld *et al.*) in which a sample of 8 healthy women (19 -31 years) was taken and the main results were, there was no menstrual cycle (MC) phase associated with depression or anxiety. IN USA (1978) a study was conducted by (Campus and Thurow) in which a sample size of 46 women, 20 on oral contraceptives (OCs). The main results were irritability and tension was associated with MC phase, and was increased during both the Menstrual and Premenstrual phases. (Campus and Thurow, 1978)<sup>[4]</sup>. In USA (1987) a study was conducted by (Woods) in which a sample size of 345 women was taken, community-based, census residential block random sampling, and (18- 45 years). The result was 13% increased symptoms premenstrually and 13% decreased symptoms pre-menstrual and the maximal symptoms were during menses. In Sweden (1974) a study was conducted by (Patakai *et al.*) in which a sample size of 6 healthy women (20-25 years) was taken. The main results were fear, depression, anxiety, restlessness varied with MC phase. Restlessness was more premenstrual; Anxiety was

more postmenstrual. In Australia (1978) a study was conducted by (Beomont *et al.*) in which a sample size of 30 women was taken (20-25 years), none on OCs. The main result was increased psychological symptoms during menses. (Beumont *et al.*, 1978)<sup>[2]</sup>. In Australia (1989) a study was conducted by (Christensen *et al.*) in which a sample size of 43 women was taken (25-45 years), 30 with PMS and 13 without PMS, control group data extracted here. The results were the control group experienced no difference in the dysphoria between MC phases. (Christensen *et al.*, 1989)<sup>[6]</sup>. In England (1985) a study was conducted by (Van den Akker and Steptoe) in which a sample size of 100 women (16-35 years), not OCs user. The results were, more symptoms were found in both premenstrual and menstrual phases compared with the follicular phase (it is the phase during the menstrual cycle in which follicles in the ovary mature). In England (1997) a study was conducted by (Einon) in which a sample size of 40 women was taken, no OCs user (mean age 23 years). The results were, more unsystematic mood swings, most mood dips appeared after pre-menstrual. (Einon, 1997)<sup>[10]</sup>. In Canada (1987) a study was conducted by (Cohen *et al.*) in which a sample size of 32 women was taken, in a study of food cravings. The results were, the symptoms were less positive during the luteal phase (it is a phase of menstrual cycle occurs after ovulation and before the period starts) than during the 10 follicular days. (Cohen *et al.*, 1987)<sup>[7]</sup>. In Canada (1990) a study was conducted by (Cherette *et al.*) in which a sample size of 43 women was taken (25-45 years), no OCs user, using alcohol but without alcohol problems. The results were, negative effects did not differ by MC phase, and neither did alcohol consumption. (Cherette *et al.*, 1990)<sup>[5]</sup>. In U.K (2007) a study was conducted by ( Haywood *et al.*) in which a sample size of 80 women was taken (20-43 years) on OCS user, women with young children recruited through health visitors. The results were, 79% were appeared with fewer symptoms during the luteal phase compared to follicular phase, 21% were appeared with fewer symptoms during the follicular phase compared with luteal phase. (Haywood *et al.*, 2007)<sup>[12]</sup>. Prevalence of premenstrual syndrome and premenstrual dysphoric disorder (PMDD) among college students of Bhavnagar, Gujarat. The prevalence of PMS was 18.4%. Moderate to severe PMS was 14.7% and PMDD was 3.7%. The symptoms commonly reported were “fatigue/ lack of energy”, “decreased interest in work”. (Psychiatric department, 2016). In Ranchi: - a study was conducted a tertiary-level psychiatric hospital with postgraduate teaching facilities in the state of Ranchi, India. A sample of 125 subjects was taken into account for study. The sample consisted of different group ladies like student, nurses, doctors and attendance. The sample was belonging to the age group of 20-45 years and had periods in last 6 months. The sample was inquiring with a general health questionnaire. The premenstrual symptoms were classified into psychological, biological, and somatic ones. Around 50 symptoms were reported. 70% of a female were reported with backaches, 47% were reported with laziness, 38% with fatigability, 26% with a headache, and 24% reported with increased body weight. Psychological symptoms were as, 44% reported with irritability, 36% with anger, 26% with poor efficiency, and 24% with over-sensitiveness, 23% with tense. Biological symptoms were reported least commonly, 29% were reported with increased micturition, 24% with reduced sexual desire, and 21.5% with increased sleep, whereas 23.3% were reported with disturbed sleep, 20.7% were reported with decreased appetite, and 20% were reported with loose motion.

## Treatment

The main treatment goals for women who are suffering from PMS or PMDD are used to improve symptoms and require the different combination of treatment like lifestyle modification, dietary management, drug therapy. Women who want treatment should consult a skilled and empathetic clinician with whom they can easily share their problem. And with the help of a doctor, they can formulate a management plan that focuses on relieving the specific symptoms that make severe problem to the patient. While a number of different treatments are put forward to relief from the PMS symptoms. Few are backed by clinical proof. Importantly, even effective treatments do not reduce all the symptoms equally. Instead of this the result which comes out are presented in the forms of “responder” versus “non-responder” status, and the use of summary symptoms –change scales obscures the effect of treatment on specific symptoms. None of the treatment should be used against the individual symptom profile. (Daugherty *et al.*, 1998) [9].

A good starting point to reduce the symptoms of PMS is to eat healthily. Regular balanced meal pattern, the variety of food is included in the meals with an adequate amount and also check that do not consume more salt, alcohol, caffeine, saturated and trans fats all lead to a healthy diet.

### Low Glycemic Index diet (GI) diet

Glycemic index is defined as a food which easily absorbed into the bloodstream and raises the blood glucose level rapidly, those food have high (GI) can increase blood glucose rapidly as compared to low (GI) food. So before period starting women are more sensitive to rises or fall in the blood glucose that can happen after consuming the high (GI) food such as (bread, sugar, drinks, juice). And consuming the meals or snacks with low GI food such as (pasta and granary bread, fruits, high fiber) may help in PMS by maintaining the blood sugar level. Where both a number of carbohydrates or GI are taken in a suitable consideration has been shown to lessen the symptoms by decreasing in inflammation markers.

### Vitamins and Minerals

Calcium and Vitamin –D are proven to improve the severity of the symptoms of PMS. A diet which contains adequate amount of calcium and Vitamin D are associated with the lower rate of PMS. There is also some evidence that calcium supplements (1000mg/day) along with 10microgram/day of vitamin-D can help to relieve from premenstrual pain and migraine. It is always good to take calcium in the good amount from the diet by consuming low-fat milk/calcium – enriched milk substitutes such as soy milk. If enough vitamin-D (10microgram) is taken in the diet, it will help to reduce PMS symptoms. Studies have shown that diet rich in food which contains thiamine and riboflavin (vit-B1 and B2) may help reduce the incidence of PMS by 35%. However taking the supplement of vitamin B1 and B2 has no effects on PMS. Therefore consuming natural food and food products containing this B vitamin, for example- wholegrain cereals, milk, and beans. Low intake of iron and zinc may also be responsible for increasing the rate of PMS. Fish oil supplement may help with dysmenorrhea (period pain) possibly as they may be anti-inflammatory. Currently, there is little evidence of other vitamin, minerals, herbal for controlling the symptoms of PMS.

### Alcohol

Drinking too much alcohol can make the symptoms more severe and make the PMS worse. Alcohol can also decrease

the body’s store of many essential nutrients, including vitamin B12. Avoiding alcohol is best, but keep low as possible if can’t avoid altogether. (Gaynor Bussell, 2014) [3].

### Drug therapy or Medications

If the symptoms of PMS change from moderate to severe premenstrual syndrome even after tried home treatment and other lifestyle modification than drug therapy are used to treat the symptoms, but the medication also has some side effect so be safe with medicines and read all the instruction given on the label.

The most commonly used medicines used for PMS are as follow:-

- Nonsteroidal anti-inflammatory drugs (NSAIDs) for pain.
- Selective serotonin reuptake inhibitors (SSRIs) for mood-related symptoms.
- Hormonal birth control, which may help relieve premenstrual dysphoric disorder (PMDD)

### Nonsteroidal anti-inflammatory drugs (NSAIDs)

- NSAIDs such as ibuprofen and naproxen relieve premenstrual pain and cramps and reduce menstrual bleeding. Taking a NSAIDs 1 or 2 days before expectancy that pain has to start. So NSAIDs work best when taken before and at regular interval during the premenstrual pain period.
- Selective serotonin reuptake inhibitors (SSRIs)
- SSRIs such as citalopram, fluoxetine, and paroxetine may help relieve physical and emotional symptoms of PMS. They are effective either when taken during the premenstrual week only or when taken continuously.

### Hormonal birth control

- A low –estrogen birth control pill such as YAZ (YAZ tablets contain combination of drospirenone and Ethinyl estradiol used as contraception to prevent pregnancy, it is also used to treat acne in women who are at least 14 years old and have started menstrual periods) or Yasmin may help relieve symptoms of severe PMS or PMDD.
- Other types of birth control pills (estrogen-progestin) are widely used for PMS. They may improve bloating, headache, belly pain, and breast tenderness in some women, but other women may have worse symptoms or develop a mold problem.
- Estrogen may also be used alone and provide some benefit for some women. But when estrogen is taken without progestin, it increases the risk of uterine (endometrial) cancer.
- Progestin (progesterone) may also use in past for PMS. But for some women, it may make physical and emotional symptoms worse.

### Diuretics

- Spironolactone is a water pill. It is used to reduce bloating and breast tenderness if it was taken during the premenstrual week.
- Drospirenone, which is in the certain low –estrogen birth control pills, acts as a diuretic to relieve bloating and breast tenderness. This medicine may also help in reducing symptoms of PMS and PMDD.

Other types of medicines also used like propranolol, a beta-blocker medicine may be used to treat migraines or headaches.

Alprazolam, an anti-anxiety medicine, is only recommended for a few days and it is only used if other medicines or other

treatment has not worked. So it can make a person sleeps, loses effectiveness over time, but they can be addictive. So long term used may be proven to withdrawal or life-threatening symptoms.

Some medicines are beneficial for curing symptoms, but some also produce any side effect such as birth control pills used as medicines in PMS cause birth defect if taken them during pregnancy. (J Reprod, 1983) [13].

Exercise effect on PMS: -A number of researchers believe that exercise plays a vital role in improving the symptoms of PMS. Increase in aerobic exercise (when there is sufficient amount of oxygen during exercise) for 20-30 minutes 3 times per day, and exercise such as stress reduction techniques can reduce the symptoms of PMS. Aerobic activities helpful in maintenance of a cardiovascular system. Investigation showed that daily exercise results in the alteration in this syndrome. Exercise reduces PMS symptoms in athletic women. Some study showed that exercise can be helpful in reducing the symptoms and some showed that following moderate exercise patterns are beneficial for protecting this syndrome. And some showed that there is no relationship between the exercise and PMS. But compared exercise with medical therapy or drug therapy has no side effects and risk or any other problem. It was shown that regular aerobic exercise in patients with PMS decreases the severity of the syndrome and improve their work and social problem. However, some studies have shown that aerobic exercise (walking, swimming) comparison with anaerobic exercise or strength training has a greater effect on the reduction of psychiatric symptoms such as depression of this PMS. So there is a negative correlation between two variables (exercise and PMS) with an increase in aerobic exercise PMS symptoms decrease or with a decrease in the exercise PMS symptoms increase. (Crescent and Biolsci, 2015) [8].

### Conclusion

Although PMS and PMDD are a complex disorder. Taking into account it was shown that the prevalence of PMS is highest and due to these many women face the problem, but treatment, which is investigated are helpful for reducing the symptoms of PMS. Treatment included dietary modification, lifestyle changes, drug therapy responsible for controlling the severity of the symptoms. Recent studies showed that exercise is very important in relieving the symptoms of PMS. It is necessary for the people who are in women's health services to provide knowledge and counsel those who are suffering from PMS and PMDD because this syndrome affected the women work or social functioning. So Gynecologist and psychiatrists both can work together to reduce the morbidity related to PMS.

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