

## DIET AS A REMEDY FOR PREMENSTRUAL SYNDROME

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### ABSTRACT

**Background:** Globalization of universe demands the uniform participation of genders as a workforce to accomplish the need of life and development. Women's health issues are dragging forces in the race of life. Premenstrual syndrome (PMS) affects the life periodically in reproductive age group. Globally, the prevalence of this problem is 30-40%, and in Pakistan, up to 55% females suffer from this problem. PMS symptoms include physical, mental and behavioral disturbances. Etiology of the disease is still unclear, but the hormonal impact is formulated. Diagnostic criteria and daily symptoms are used to make the diagnosis. Lifestyle modifications, cognitive behavioral therapy (CBT), medications and dietary role are recommended to alleviate the symptoms.

**Method:** Review of Articles searched from PubMed and google scholar done. Heterogeneity in studies observed due to limited clinical trials on this issue. Studies from 2000 to 2017 published in journals included in it. Findings of the studies gave following conclusive results.

**Results:** An effective quantity of diet is necessary to have exact amount of calcium, pyridoxine (Vit. B<sub>6</sub>) and chasteberry fruit which influence more efficiently and others. Quantity of each ingredient is identified in article. Saffron, ginger and high intake of Vitamin D show little benefits comparative to aforementioned.

**Conclusion:** Appropriate dose/quantity of specific diet play role to ameliorate symptoms. Clinicians should counsel the patients that they can get relieved by the diet too.

**Keywords:** Premenstrual syndrome, Dietary effect, Women's health

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### WHAT IS PREMENSTRUAL SYNDROME?

PMS is a condition that causes distressing physical, behavioral and psychological symptoms during the luteal phase of menstrual cycle<sup>1</sup>. It is experienced by women in the reproductive age late luteal phase of

menses<sup>2</sup>. Its prevalence varies from 30% to 40% in worldwide<sup>3,4</sup>. Results in Pakistan are reported from 33% to 55%, inclined to low socioeconomic status<sup>5,6</sup>. The International Society for Premenstrual Disorders (ISPM) divides the premenstrual disorders into two types; one is core PMD characterize by spontaneous ovulatory cycles, and second is variant PMD, it is different from the first one due to its complex characteristics. Variant PMD symptoms occur in non-ovulatory ovarian phase which becomes difficult to distinguishing<sup>7</sup>.

Etiology of disease is not clear. But symptoms are noted with a change in ovarian hormone levels. It is thought to be the overexpression of normal hormonal changes in

women with PMS. PMS symptoms get relived with hormonal therapy, ovulation inhibition, during pregnancy and menopause, which strongly indicates the hormonal role<sup>4</sup>. Higher risk of developing hypertension is identified with PMS in a study<sup>8</sup>.

Steroid hormones cross the blood-brain barrier with receptors as they are abundant in brain. One of the hypotheses about etiology is progesterone enter into brain and breakdown to allopregnanolone and pregnanolone. Metabolites stimulate the GABA neurotransmitter, which is inhibitory in nature. GABA affects behavioral factors. Sedation, pain relaxation, and anxiolytic effects are seen in a high concentration of metabolites while anxiety, mood swings and stress at low levels. At high level of progesterone, GABA receptors become less sensitive hence symptoms worse in the luteal phase<sup>9</sup>.

Many symptoms disturb the daily life of women which include fatigue, irritability, mood liability, cravings, anxiety, headache, breast tenderness, insomnia, fluid retention and disturbed bowel habits. ICD-10 criteria for PMS and DSM-IV criteria are used to diagnose the premenstrual syndrome. According to ICD-criteria for PMS, minor psychological discomfort, bloating, weight gain, breast tenderness, muscular tension/aches, poor concentration, changes in appetite and pains, one of these symptoms is diagnostic. But symptom must be related to menstrual cycle and stop on initiation of bleeding.

DSM-IV criteria suggest diagnosis by the presence of at least five symptoms from; depressed mood, anxiety, tension, mood swings, anger, irritability, lack of interest, poor concentration, lethargy, fatigue, change in appetite, feeling overwhelmed and out of control, breast tenderness and weight gain, that must occur in the late luteal phase<sup>10</sup>.

Duration of symptoms differ from 5 days to 2 weeks but more on one week before and first two days of the cycle. Recommendations are to advise the patient to record the symptoms for two consecutive months on a diary. It is more feasible at primary level and after that refers to the secondary or tertiary care center. It is quite possible to the occurrence of symptoms regularly but menses are not. In this situation get help from blood progesterone level and the peak of symptoms to diagnose<sup>11</sup>. Women who have more behavioral symptoms advise consulting psychiatrist for any psychiatric illness.

The principle of disease management depends on individual symptoms. The goal of treatment is symptoms free patient. Pharmacological and non-pharmacological measures are recommended to treat severity. Premenstrual syndrome can be inhibited by four main factors, lifestyle modification, cognitive

behavior therapy (CBT), dietary supplementation and medications such as combined contraceptive pills, selective serotonin reuptake inhibitors, and non-steroid anti-inflammatory drugs. Evidence-based doses of the drugs to get the desired effect are given by Appleton SM in a study<sup>12</sup>.

The purpose of the study is to conclude the role of diet at proper dosage for the betterment of premenstrual syndrome symptoms.

## DIET AND PREMENSTRUAL SYNDROME

Dietary habits affect the whole-body system including physical and mental wellbeing. Treatment of women reproductive system health problems have been treated with natural products from the ancient era. Various products are in the pipeline to resolve these problems naturally. Women's dieting practices in adolescence age affect the reproductive system<sup>13,14</sup>. It has been a great debate either dietary requirement increased by menstrual cycle or not. Previous studies supported this argument. Elliott SA et al. in a cohort, studied two menstrual cycles and stated that there is no difference in energy requirement during the menstrual cycle in normal as well as premenstrual syndrome women. The intake of macronutrient including carbohydrate, protein, and fats were also not changed significantly<sup>15,16</sup>. Increase intake of fat was considered as a risk for PMS, however, another study found no association between fat intake and higher PMS risk<sup>17</sup>.

Micronutrients have the macro role in our body. Potential benefits of supplements have always been questioned in term of efficacy and safety in allopathic medicine. Role of functional food is not denial in routine daily life. Supplements are recognized to relieve the symptoms at a specific dosage. Out of 10 RCT discussed products, calcium is most efficacious. Calcium is effective to decrease the symptoms of PMS at 1000-1200 mg/day<sup>18-20</sup>. A glass of milk twice daily (250ml each), 175g yogurt and 50g cheese contain an equivalent amount of calcium.

Vitamin B<sub>6</sub> at a daily dose of 50-100mg decreases the depressive symptoms in premenstrual syndrome. But dose should not exceed 100mg/day to avoid the neurological side effects of it. Pyridoxine (Vit. B<sub>6</sub>) rich sources are meat and fish products. Keep in mind the daily requirement of pyridoxine is 1-2mg/day. Fish consumption is recommended to reduce the symptoms<sup>21,22</sup>.

Chasteberry fruit (*Vitexagnuscastus*) 20-40mg/day for eight weeks is found effective to improve PMS symptoms in a systematic review covering January 1980 to September 2010. This fruit is native in Mediterranean region and used by the pharmaceutical companies as nutraceuticals. It is considered unsafe for women who become pregnant but more evidence is required<sup>18,23,24</sup>.

Saffron (*Crocus sativus*) 30mg/day, 15mg twice a day for two menstrual cycles improves the disease symptoms, which were measured by daily symptoms report and Hamilton depression scale. It also has a positive role in male infertility as it improves the sperm motility and morphology.<sup>25-26</sup>

Ginger capsules (*Zingiber officinale*) 250mg/twice daily for seven days before the start of bleeding and three days after the start of bleeding found to be effective in ameliorating physical and mental symptoms of PMS.<sup>27</sup> High intake of vitamin D daily is associated with decrease PMS symptoms.<sup>28</sup> Little or no benefits are found in the literature for magnesium oxide, primrose oil and vitamin E<sup>19</sup>.

Literature indicates that diet therapy has some role in treating PMS. Therefore, it should be taken into consideration while treating such females. However, more longitudinal trials are needed to confirm the exact role of diet therapy in alleviating PMS symptoms.

Table: Dietary role in PMS, findings and recommendations of worldwide studies

<i>Authors</i>	<i>Country</i>	<i>Investigated Dietary role</i>	<i>Findings</i>	<i>Recommendations</i>
<i>Bendich.(2000)</i>	<i>America</i>	<i>calcium, magnesium, manganese, vitamin B6, vitamin E, gamma-linolenic acid</i>	<i>Calcium most effective</i>	<i>Efficacy of most products is uncertain.</i>
<i>Whelan AM et al. (2009)</i>	<i>Canada</i>	<i>Sixty-two herbs, vitamins and mineral</i>	<i>Calcium, chasteberry and vitamin B<sub>6</sub> are effective.</i>	<i>Evidence suggests use of calcium.</i>
<i>Thys-Jacobs S. (2000)</i>	<i>America</i>	<i>Calcium, Vit. D, magnesium</i>	<i>Calcium and Vit. D affected during mensis.</i>	<i>Calcium supplementation to overcome deficiency.</i>
<i>Takeda T et al. (2016)</i>	<i>Japan</i>	<i>Fish</i>	<i>Omega-3 and fatty acids reduce symptoms.</i>	<i>More studies needed.</i>
<i>Bertone J et al. (2010)</i>	<i>America</i>	<i>Vitamin D</i>	<i>There is possible relationship</i>	<i>More studies required.</i>
<i>Dante G. et al. (2011)</i>	<i>Italy</i>	<i>Chasteberry, primrose oil, Vitexagnuscastus</i>	<i>Vitexagnuscastus ameliorate symptoms.</i>	<i>Primrose oil does not affect.</i>
<i>Schellenberg R. et .al (2016)</i>	<i>Germany</i>	<i>Chasteberry</i>	<i>Dose depend effect.</i>	<i>Significant effect at 20mg/day.</i>
<i>Agha-Hosseini M. et. al (2008)</i>	<i>Iran</i>	<i>Saffron</i>	<i>Effective in treatment of PMS.</i>	<i>Further study adverse effect.</i>
<i>Birjandi M. et. al. (2016)</i>	<i>Iran</i>	<i>Saffron</i>	<i>Reduces severity of PMS.</i>	<i>Further study is needed to use as treatment.</i>
<i>Khayat S. et. al. (2014)</i>	<i>Iran</i>	<i>Ginger</i>	<i>Effective in PMS.</i>	<i>Suggest ginger as treatment.</i>

**CONFLICT OF INTEREST**

The authors declare no conflict of interest.

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#### AUTHOR'S CONTRIBUTIONS

- KS:** Manuscript writing,  
**AB:** Literature review  
**MZ:** Study design  
**ZA:** Finalization, drafting