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Derleme/Review

Premenstrual Syndrome: Non-pharmacological Management and Recommendations

Premenstrual Sendrom: Farmakolojik Olmayan Yönetim ve Öneriler

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ÖZET

Premenstrual Sendrom (PMS), premenstrual dönemde fiziksel, davranışsal ve psikolojik semptomların görüldüğü bir durumdur. Bu durumla ortaya çıkan semptomlar arasında irritabilite, ruh hali değişiklikleri, kaygı, depresyon, yorgunluk, uyku bozuklukları, konsantrasyon zorluğu, şişkinlik ve baş ağrıları yer almaktadır. Türkiye'de, PMS yaygınlığı %52,2'dir ve küresel olarak yaklaşık her iki kadından biri PMS'den etkilenmektedir. PMS'nin kesin olarak nedenleri bilinmemekle birlikte, hormonal ve nörotransmitter etkileşimlerinin rol oynadığı düşünülmektedir. Eğitim düzeyi, sosyoekonomik durum, beslenme alışkanlıkları, stres düzeyleri ve ailede PMS öyküsünün varlığı gibi faktörler PMS gelişimine katkıda bulunabilmektedir. PMS'nin farmakolojik olmayan yönetimi; yaşam tarzı değişikliklerini, geleneksel ve tamamlayıcı tıp uygulamalarını, psikoterapi, destek sistemlerini ve hasta eğitimlerini içermektedir. Bu derleme, PMS'nin ilaç dışı yönetimi ve önerilerini inceleyerek sağlık profesyonellerinin bu konudaki farkındalığını artırmayı ve etkili müdahale stratejilerinin geliştirilmesine katkıda bulunmayı hedeflemektedir.

Anahtar Kelimeler: Yaşam Tarzı Değişiklikleri, Geleneksel ve Tamamlayıcı Tıp, Hasta Eğitimi, Premenstrual Sendrom.

ABSTRACT

Premenstrual Syndrome (PMS) is a condition of physical, behavioral, and psychological symptoms in the premenstrual period. Symptoms include irritability, mood changes, anxiety, depression, fatigue, sleep disturbances, difficulty concentrating, swelling and headaches. In Türkiye, the prevalence of PMS is 52.2 percent, and globally, approximately one in two women are affected by PMS. Although the exact causes of PMS are unknown, hormonal and neurotransmitter interactions are thought to play a role. Factors such as educational level, socioeconomic status, dietary habits, stress levels, and family history of PMS may contribute to the development of PMS. Non-pharmacological management of PMS includes lifestyle changes, traditional and complementary medicine practices, psychotherapy, support systems, and patient education. This review aims to increase the awareness of health professionals and contribute to developing effective intervention strategies by examining the non-pharmacological management of PMS and its recommendations.

Keywords: Lifestyle Changes, Traditional and Complementary Medicine, Patient Education, Premenstrual Syndrome.

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INTRODUCTION

Premenstrual Syndrome (PMS) is a commonly occurring condition in women characterized by physical, behavioral, and psychological symptoms that impact daily life and intensify approximately five days before menstrual bleeding. Symptoms typically resolve within a few days after the onset of menstrual bleeding (1,2). Common symptoms of PMS include psychological symptoms such as irritability, mood changes, anxiety, depression, loss of control, and fatigue; behavioral symptoms such as sleep disturbances, appetite changes, difficulty concentrating, loss of interest, and social withdrawal; and physical symptoms such as bloating, breast tenderness, acne, headaches, and weight gain (3-6).

The exact causes of PMS still need to be fully understood. However, it is believed that ovarian activity, the hormones estradiol and progesterone, and neurotransmitters such as serotonin and gamma-aminobutyric acid (GABA) play a role. Additionally, the absence of PMS before puberty, during pregnancy, and after menopause supports the theory that ovarian activity is significant in its development (7).

Globally, approximately one in two women are affected by PMS, with 20% experiencing severe symptoms that interfere with daily activities, while the remaining individuals experience mild to moderate symptoms (11). Premenstrual symptoms may lead to an increase in negative health behaviors, impairment in daily life activities, and disruptions in social relations in women. Especially in students, these symptoms may lead to decreased academic performance, decreased class attendance, and lower grades (9,10).

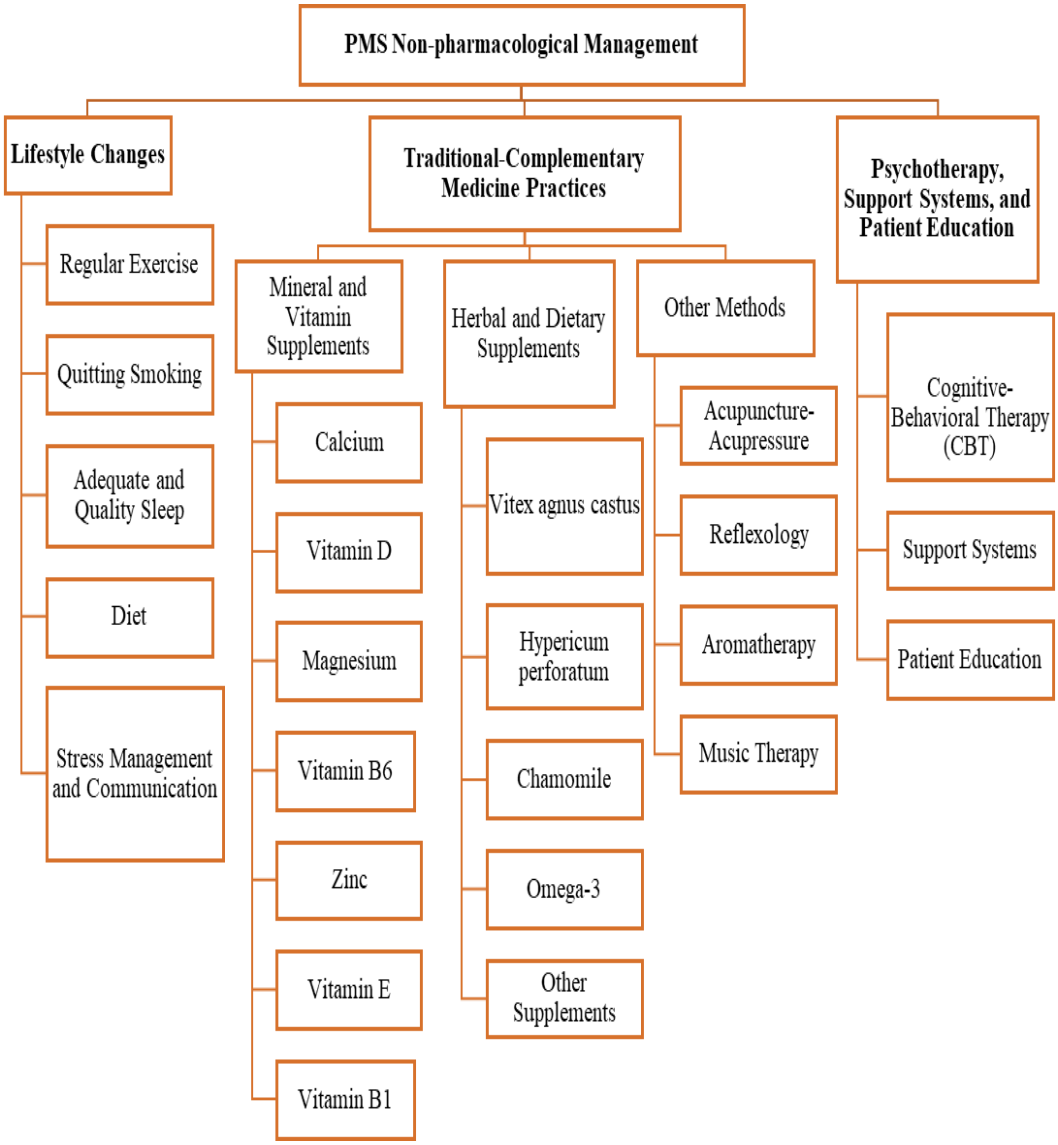
A systematic review examining the results of 18 studies conducted in Türkiye in 2023 reported that the prevalence of PMS among women was 52.2%. In the same study, this rate was reported to be 59% among high school students and 50.3% among university students (10). The prevalence of PMS varies across countries, with rates reported at 12% in France, 19% in Switzerland, 41% in Pakistan, 53% in Saudi Arabia, 85% in Nigeria, and 98.2% in Iran (12). Among university students worldwide, the prevalence of PMS has been reported as 33.8% in China, 37% in Ethiopia, 39.9% in Taiwan, 65% in Egypt, and 79% in Japan (11).

This review examines the current literature on the non-pharmacological management of PMS, raises awareness among healthcare professionals, and contributes to developing strategies for effectively managing these symptoms. In this context, the effectiveness of various management approaches will be evaluated, and recommendations will be provided to establish their role in clinical practice.

1. Premenstrual Syndrome Non-Pharmacological Management

Various non-pharmacological approaches are employed in the management of PMS. These approaches include Lifestyle Changes, Traditional and Complementary Medicine Practices, Psychotherapy, Support Systems, and Patient Education. The subcategories related to these approaches are detailed in Figure 1.

Figure 1. Premenstrual Syndrome Non-Pharmacological Management
(Created by the authors)



1.1. Lifestyle Changes

Lifestyle change is a critical concept frequently used to describe individuals' lifestyles, encompassing a range of values, beliefs, and social activities that significantly impact health. In the context of PMS, lifestyle factors—such as regular exercise, abstinence from smoking,

adequate and quality sleep, a balanced diet, stress management, and effective communication—play a crucial role in influencing the severity and management of PMS symptoms(13). It examines the effects of regular exercise, smoking cessation, adequate and quality sleep, dietary adjustments, and stress management on PMS and provides recommendations for implementing these lifestyle changes (2,15,16,19,22).

1.1.1. Regular Exercise

Exercise helps elevate the levels of endorphins, known as the "feel-good" hormones, while temporarily reducing the levels of the stress hormone cortisol (14). Exercise significantly reduces stress, anger, depression, pain, and overall severity of PMS while providing benefits such as increased vitality and social interaction (1).

Aerobic exercises, such as brisk walking, running, cycling, and swimming, are widely recognized for their benefits in promoting overall physical health. Regular physical activity is considered essential for maintaining well-being and may indirectly support the management of PMS symptoms (2,15). Studies have reported that aerobic exercise effectively reduces the severity of PMS(1,2,14,15). A study by Dehnavi et al. (2018) investigated the effects of an eight-week aerobic exercise program on PMS symptoms. Participants were instructed to perform regular aerobic exercise thrice weekly, each lasting 30 minutes. The findings indicated significant reductions in physical symptoms such as headaches, nausea, constipation, diarrhea, and bloating in the exercise group. This study highlights the potential efficacy of regular aerobic exercise as a non-pharmacological intervention for alleviating PMS symptoms (15). Exercise should be performed regularly, not just during the premenstrual period. A good target is to exercise for at least 30 minutes on most days of the week (16,17).

When starting an exercise program, selecting activities that align with individual preferences and can be sustained over time is essential. Walking is often recommended as a cost-effective and accessible form of physical activity. For those selecting activities that align with individual preferences and can be sustained over time is essential to seek alternative options, cycling, swimming, or participating in fitness clubs can provide additional motivation. Making exercise a daily priority is crucial; aiming for at least 30 minutes of moderate-intensity physical activity per day is ideal. Time constraints can be managed by dividing the activity into shorter sessions, such as 10-minute intervals. Gradual progression in exercise intensity and duration is important to prevent muscle soreness and injuries. For individuals with no prior exercise experience, starting with short, 10-minute sessions every other day and gradually increasing to at least 30 minutes per day is recommended. Proper warm-up exercises should be performed before any

activity to minimize the risk of injuries, particularly for those unaccustomed to physical exertion. Moreover, excessive exercise performed without proper awareness can pose health risks similar to the effects of physical inactivity. Individuals with chronic conditions should seek medical advice before initiating an exercise regimen, and symptoms such as severe chest pain or shortness of breath during activity should prompt immediate medical evaluation as potential indicators of cardiovascular issues. Finally, outdoor exercises should be conducted in areas with minimal air pollution to ensure safety and health. All the above recommendations are recommended by the General Directorate of Public Health of the Ministry of Health for initiating and maintaining a healthy exercise regime (18). ,

1.1.2. Quitting Smoking

Cigarette smoking is recognized as a significant risk factor that exacerbates the severity of PMS symptoms. A meta-analysis conducted by Choi and Hamidovic (2020) reveals that women who smoke experience more severe PMS symptoms. The study emphasizes that smoking particularly intensifies psychological symptoms such as mood swings, irritability, depression, and anxiety. It also highlights that the prevalence of PMS is higher among smokers, with these symptoms negatively impacting daily life activities (19).

Many women with PMS smoke and smoking can exacerbate PMS symptoms. Therefore, quitting smoking is recommended (19,20).

Before starting the process of smoking cessation, it is important to prepare for getting rid of the addiction. As a first step, it is necessary to be confident about the decision to quit and to set a definite date. In addition, the reasons for quitting smoking should be clarified and methods for coping with withdrawal symptoms should be developed. Smoking triggers should be identified and living spaces should become ‘smoke-free zones’. The use of scientific methods such as nicotine replacement therapy, prescription drugs, or professional counseling facilitates the quitting process. In addition, it is important to get support from family and friends, spend time in smoke-free environments, and engage in distracting activities during the smoking cessation process. Healthy living habits such as adequate rest, regular nutrition, plenty of water consumption, consuming foods rich in vitamin C, and avoiding caffeine consumption can also contribute to quitting smoking. In case of difficulties during the process, it is recommended to seek professional support from the ‘Stop Smoking Helpline’ or ‘Stop Smoking Clinics’ (20,21).

1.1.3. Adequate and Quality Sleep

Sleep problems such as insomnia, excessive sleepiness, frequent awakenings, and nightmares are common premenstrual symptoms (22–24). A study conducted by Erbil and Yücesoy (2022) demonstrates a close relationship between PMS and sleep quality among nursing and medical students, showing that students experiencing PMS symptoms report lower sleep quality (22). Similarly, research by Conzatti et al. (2021) highlights that women with PMS tend to have poor sleep quality and are more likely to experience excessive daytime sleepiness (23). Additionally, the study by Jehan et al. (2016) reveals that PMS negatively affects sleep, leading to fatigue, difficulty concentrating, and a significant impact on overall quality of life (24). These findings underscore the importance of improving sleep quality in managing PMS. Consequently, to lessen or eliminate these symptoms, it is essential to establish healthy sleep habits, or sleep hygiene. Ensuring that the bedroom is dark (dimly lit) and quiet, setting the room temperature to below 24°C, using the bed exclusively for sleeping, removing electronic devices such as TVs, computers, and smartphones from the bedroom, and avoiding large meals, caffeine, and alcohol before bedtime are among the recommendations for developing "Healthy Sleep Habits" (25–27).

1.1.4. Diet

A strong craving for chocolate, pastries, and sweets is commonly observed 7–10 days before the onset of menstrual bleeding. It has been reported that the consumption of high-calorie, fatty, sugary, and salty foods exacerbates PMS symptoms. Therefore, adopting healthy eating habits, while not eliminating PMS, has been shown to help alleviate its symptoms (28-30). Significant changes in the intake of macro and micronutrients throughout the menstrual cycle have also been reported, which may influence the severity of PMS symptoms (30). High-calorie and fatty food consumption has also been identified as a significant risk factor for PMS (28). Noticeable variations in dietary habits throughout the menstrual cycle have also been documented (29).

For alleviating PMS symptoms, it is recommended to consume calcium-rich foods such as low-fat milk or yogurt, almonds, kale, beans, or soy milk; foods containing vitamin B6, such as pistachios, turkey, chickpeas, bananas, potatoes, and cereals; reduce salt intake to decrease bloating and edema; avoid fast food or processed foods; eat at least two servings of fruit daily; drink at least two liters of water per day; include vitamin D-rich foods in the diet; and snack on nuts rich in omega-3 fatty acids (16,31-33).

1.1.5. Stress Management and Communication

Finding healthy ways to reduce stress during the premenstrual period is essential. Talking to

friends or journaling can help alleviate stress during this time (3). Relaxation techniques such as deep breathing exercises, yoga, meditation, massage, or hypnosis effectively reduce premenstrual stress (16).

Jose et al. (2022) conducted a systematic review encompassing 35 studies examining the effects of relaxation therapies on premenstrual symptoms. In this review, techniques developed by Laura Mitchell, Jacobson, and Benson, along with non-specific relaxation techniques, yoga, aerobic exercise, and massage, were reported to significantly reduce premenstrual symptoms (34) .

1.2. Traditional and Complementary Medicine Practices

Traditional and complementary medicine practices primarily aim to alleviate, treat, and enable individuals to healthily maintain their daily lives using non-pharmacological methods for PMS symptom relief. However, there is limited evidence regarding the use of non-pharmacological methods in the treatment of PMS. Therefore, a holistic approach should be taken by experts in the field to decide on the treatment of PMS (35,36).

1.2.1. Mineral and Vitamin Supplements

Vitamins are a group of natural organic compounds required in small amounts that play a crucial role in regulating various metabolic processes by functioning as coenzymes or precursors to coenzymes. Conversely, minerals are essential nutrients, defined as chemical elements necessary for sustaining bodily functions. Vitamins and minerals such as vitamin B6, vitamin D, calcium, zinc, and magnesium are potentially significant in the pathogenesis of PMS. These nutrients are critical for neurotransmitter synthesis and hormonal balance. Supplementation with vitamins and minerals may be effectively alleviate PMS symptoms, and diets rich in these nutrients are associated with a lower incidence of PMS (37).

This section discusses the effects of various supplements and vitamins on alleviating PMS symptoms. It examines the roles of calcium, vitamin D, magnesium, vitamin B6, zinc, vitamin E, and vitamin B1 in PMS management, along with recommended dosages and findings from relevant studies.

1.2.1.1. Calcium

Low calcium levels in the blood during the premenstrual period can cause or exacerbate PMS symptoms (35,38). Therefore, a calcium-rich diet or supplements can help reduce or eliminate

premenstrual pain and other symptoms. Women experiencing PMS are recommended to take daily calcium supplements of 1000-1200 mg (35,36).

1.2.1.2. Vitamin D

Vitamin D is crucial in aiding calcium absorption and utilization in the body, which is directly associated with calcium levels. Low vitamin D levels during the premenstrual period have been linked to exacerbating PMS symptoms (38). Supplementation with vitamin D has been shown to reduce symptoms such as anxiety, irritability, and withdrawal associated with PMS (39). A systematic review by Arab et al. (2019) analyzed various studies on optimal dosage, revealing a wide range of 200 IU to 50.000 IU daily, underscoring the importance of tailoring supplementation plans to individual vitamin D levels for maximum effectiveness (40). Therefore, a diet rich in vitamin D or appropriate supplementation, guided by blood levels, is recommended to alleviate PMS symptoms (35,40).

1.2.1.3. Magnesium

Magnesium (Mg) is a crucial cofactor for over 300 enzyme systems involved in critical biochemical processes, such as protein synthesis, muscle and nerve function, blood glucose regulation, and blood pressure control. Abnormal magnesium metabolism has been implicated in various neuropsychiatric disorders, including migraines, epilepsy, and chronic pain, which are characterized by significant mood and physical symptoms. Due to the overlap in symptoms, such as mood instability and fatigue, between PMS and magnesium deficiency, it has been hypothesized that there may be a link between magnesium levels and the severity of PMS symptoms (41). A review examining the effects of magnesium supplementation on women's health and well-being reported that a daily dose of 250 mg of magnesium effectively alleviates PMS symptoms. Furthermore, when magnesium is combined with vitamin B6, its efficacy is enhanced. The review also suggests that for optimal results, the supplementation should be continued for at least two months (42).

1.2.1.4. Vitamin B6

Vitamin B6 is commonly used to treat PMS. Initially thought to be effective by regulating estrogen metabolism, it has since been proposed that vitamin B6 may alleviate PMS symptoms through its role in modulating brain monoamine production. As a precursor to serotonin and dopamine, vitamin B6 is reported to reduce PMS symptoms by producing prostaglandins and fatty acids(43). When used in high doses, side effects such as weakness, numbness, and pain in the hands and feet can occur. Therefore, the daily dose that can be taken is limited to 10 mg

(17).

1.2.1.5. Zinc

Zinc is an essential nutrient for living organisms, playing a crucial role in the function of over 300 enzymes. Low zinc levels have been reported to lead to learning, behavioral, and mood disorders. Additionally, zinc plays a significant role in progesterone binding, prolactin secretion, the action of opiates, gonadal secretions, and menstrual cycle regulation (44,45). It has been reported that serum zinc levels are lower during the luteal phase in women with PMS (44).

In a study where women received 30 mg of elemental zinc supplementation for 12 weeks, a decrease in physical and psychological symptoms was observed during the premenstrual period (45). Another study conducted with female university students who received 50 mg of elemental zinc supplementation for three months found that zinc supplementation significantly reduced physical and psychological symptoms and improved social relationships (46).

1.2.1.6. Vitamin E

Vitamin E contains various lipid-soluble compounds, including tocopherols and tocotrienols, with potent antioxidant properties. Excessive and inappropriate prostaglandin production has been identified as a contributing factor in the pathogenesis of PMS (47). In a randomized controlled trial conducted by Omidali (2016), the effects of vitamin E and Pilates on PMS were investigated. Participants were administered 100 mg of vitamin E tablets daily and engaged in three sessions of Pilates per week for four weeks. The study found a significant reduction in the severity of mood and physical symptoms and the impact of these symptoms on individuals' lives in the Pilates and vitamin E groups compared to pre-intervention data and the control group (48).

In the study conducted by Dadkhan et al. (2016) examining the effects of vitamin D and E on premenstrual symptoms, eighty-six women were randomly assigned to two intervention groups and one control group. Participants were instructed to complete the PMS Daily Symptom Diary for two months and were subsequently randomized into one of the three study groups. Each group received 200 mg of vitamin D, 100 mg of vitamin E, or a daily placebo tablet and was monitored for two months. Following the intervention, a significant reduction in the average premenstrual symptom scores was observed in all three groups (49).

1.2.1.7. Vitamin B1

Vitamin B1 acts as a coenzyme that affects the metabolism of lipids, carbohydrates, and proteins, thereby helping to reduce PMS symptoms. It has been reported that Vitamin B1 increases endorphin release, enhances brain and liver functions, and supports ATP production, which allows relaxation and promotes sleep. Additionally, it positively affects the cardiovascular, urinary, and neurological systems. Vitamin B1 also stimulates the central nervous system, elevates mood, and induces deep relaxation (50).

In the randomized controlled trial conducted by Samieipour et al. (2016) on 210 female students residing in the dormitories of Ilam University of Medical Sciences who had PMS, participants were divided into three groups: the first group received 100 milligrams of vitamin B1 daily, the second group received calcium supplements, and the third group received a placebo. After two months of treatment, it was found that vitamin B1 and calcium were equally effective in improving the physical symptoms of PMS. However, calcium was more effective than vitamin B1 in alleviating psychological symptoms (51).

1.2.2. Herbal and Dietary Supplements

Herbal products contain various inorganic and organic components, including resins, flavonoids, steroids, tannins, and proteins, which have been proven to exhibit smooth muscle relaxant, tranquilizing, dopaminergic CNS depressant, analgesic, immune-modulating, antioxidant, and anti-inflammatory effects. These components are thought to play a significant role in alleviating PMS symptoms, as their antioxidant and anti-inflammatory properties may reduce the oxidative stress and inflammation associated with PMS, thereby mitigating the severity of the symptoms (50).

This section examines various alternative methods for alleviating premenstrual PMS symptoms in detail. It discusses the effectiveness of Vitex agnus-castus (VAC), St. John's Wort (Hypericum perforatum), chamomile, omega-3 fatty acids, and other supplements in PMS management. Additionally, it highlights the potential benefits and usage recommendations for each method.

1.2.2.1. Vitex agnus castus

Vitex agnus-castus (VAC) is a shrub with pale pink or blue flowers commonly found in the Mediterranean and Central Asia, with its fruits used for medicinal purposes (52,53). Although the pharmacology of VAC has been extensively studied, the active components have yet to be definitively identified. However, it is widely accepted that its primary effect involves the reduction of prolactin secretion through dopamine receptor agonism, which is linked to the

alleviation of mastalgia. Additionally, VAC's activity on opioid receptors may contribute to the relief of PMS symptoms. The clinical efficacy of various VAC products has been studied and approved in several European countries. In 2011, the European Medicines Agency published a monograph endorsing VAC for PMS treatment (52). In the systematic review conducted by Verkaik et al. (2017), which evaluated the treatment of PMS using VAC preparations, it was reported that 13 out of 17 studies demonstrated a positive effect of VAC on the overall symptoms of PMS. Additionally, the review suggests that future studies use standardized commercial extracts of Vitex agnus-castus (VAC) at doses of 20-40 mg/day, with sufficient sample sizes and a minimum duration of three months, to assess their efficacy compared to a placebo more accurately (53).

1.2.2.2. Hypericum perforatum

Hypericum perforatum (Hypericaceae), commonly known as perforan, is utilized in various traditional medicine systems, including Traditional Chinese Medicine, Ancient Greek Medicine, and Islamic Medicine. The plant, along with its active components such as hyperforin and hypericin, is reported to have a wide range of applications, mainly as an antidepressant, wound-healing, and antibacterial agent (54). It has been reported that the Hypericum perforatum extract effectively alleviates PMS symptoms through experimental research and clinical studies (55,56).

In the study by Khademi et al. (2020), the effects of Hypericum perforatum (Perforan) on the severity of physical and behavioral symptoms were evaluated among students residing in university dormitories at Isfahan University. Participants were randomly assigned to two groups of 50 individuals each: one group received Perforan (280 mg/day), while the other group received a placebo. Participants used the medications across three menstrual cycles. During the first cycle, medications were taken daily throughout the cycle. In the second and third cycles, the drugs were administered daily, starting eight days before menstruation and continuing until two days after. Participants recorded all symptoms experienced throughout the study using a daily symptom form. The study reported that Perforan significantly reduced the severity of physical and behavioral symptoms of PMS (55).

In the study conducted by Atefipour et al. (2023), the effect of Hypericum perforatum (Perforan) on managing PMS symptoms was investigated. During the initial cycle, participants were administered Perforan capsules at a daily dosage of 280 mg. In the subsequent cycles, the capsules were given starting eight days before menstruation and continued until two days after menstruation. The placebo group received capsules containing paraffin, administered orally,

which resembled Perforan. The study reported that Perforan significantly reduced the severity of PMS symptoms compared to the placebo. However, due to the limited number of clinical trials in this area, the study highlights the need for further research and more extensive investigations (56).

1.2.2.3. Chamomile

Chamomile is available in capsule, herbal tea, and liquid extract forms. It has pain-relieving and muscle-relaxing effects, primarily on organs with smooth muscle structures (such as the uterus, stomach, and intestines) (57). A systematic review and meta-analysis reported that drinking two cups of chamomile tea, consuming chamomile capsules ranging from 100 to 400 mg, or taking 20-30 drops of chamomile liquid extract is effective for the management of PMS (57).

1.2.2.4. Omega-3

Omega-3, an essential polyunsaturated fatty acid, cannot be produced in the human body. Seafood sources such as fish are rich in omega-3 fatty acids, which have many health benefits (58,59). Supplementation with omega-3 fatty acids ranging from 500 to 2000 mg is recommended to manage PMS. Additionally, it is stated that the longer the duration of supplementation, the more effective it is in reducing PMS (59).

1.2.2.5. Other Supplements

According to systematic reviews, herbal remedies and dietary supplements such as Ginkgo biloba, Zingiber officinale (ginger), Melissa officinalis (lemon balm), wheat germ, curcumin, Nardostachys jatamansi, Echium amoenum, anise, garlic, saffron, Zataria multiflora, Echinophora platyloba, Foeniculum vulgare (fennel), valerian root extract, Citrus sinensis (orange peel), and flaxseed are effective in alleviating PMS symptoms. However, it has been reported that more research is needed regarding their frequency of use, dosage, and concurrent use with other medications (50,60).

1.2.3. Other Methods

This section thoroughly examines the effectiveness of various alternative methods in alleviating PMS symptoms. It details the potential benefits of acupuncture, acupressure techniques, reflexology, aromatherapy, and music therapy in managing PMS.

1.2.3.1. Acupuncture-Acupressure

Acupuncture involves the insertion of thin metal needles into sensitive points on the body's skin and underlying tissues. Acupressure typically involves applying manual pressure to these points with the thumb instead of inserting needles. While acupressure can be self-administered, acupuncture is usually performed by a trained practitioner. It is hypothesized that acupuncture regulates the endogenous opioid system, modulates prostaglandin levels, and alters uterine blood flow through needling specific acupuncture points such as SP6(61). The most frequently used acupuncture points in treating PMS are SP6, LR3, and RN4(62). In contrast, the most commonly used acupressure points for PMS management are SP6, LI4, and HT7 (63). The existing limited number of studies report that acupuncture and acupressure are effective in reducing the physical and psychological symptoms of PMS (61,63).

1.2.3.2. Reflexology

In the systematic review and meta-analysis conducted by Hasanpur et al., which examined the effects of reflexology on PMS across nine studies, the average treatment duration was 40.55 minutes per session, and 66.67% of the studies involved six to ten treatment sessions.

The results of this study demonstrated the potential of reflexology to alleviate PMS symptoms, showing a reduction in overall PMS scores as well as in somatic and psychological symptoms following the application of reflexology interventions. Moreover, it was noted that increasing the duration of each reflexology session enhanced its effectiveness. Reflexology was reported to be a potentially effective intervention that healthcare professionals can integrate into patient care programs, with its efficacy further increasing as the intervention duration is extended in each session (64).

1.2.3.3. Aromatherapy

Aromatherapy is a component of Complementary and Alternative Medicine (CAM) that involves the inhalation of plant extracts in the form of essential oils. It is hypothesized that critical or volatile oils stimulate olfactory receptor cells, thereby sending messages to the brain’s limbic system, which is the emotional center (65) In the management of PMS, essential oils such as rose (rosa damascena), orange (citrus aurantium), lavender (lavender), evening primrose oil (evening primrose oil), and clary sage (clary sage) are frequently used (65–67). Studies have reported that aromatherapy reduces both the physical and psychological symptoms of PMS (65–67). It is recommended that a pre-test be performed to ensure that users have a healthy sense of smell and to prevent any adverse reactions to the selected oils before using aromatherapy (65).

1.2.3.4. Music Therapy

Music Therapy is a clinical and evidence-based practice implemented in a therapeutic relationship by a certified professional who has completed a music therapy program. Music therapy treats various conditions, including PMS (68).

Instrumental music is particularly preferred for the treatment of PMS with music therapy. Music therapy has been reported to reduce the severity of PMS (69,70), alleviate the stress often experienced during the premenstrual period (71), and decrease depression and anxiety (72), based on studies conducted.

1.3. Psychotherapy, Support Systems, and Patient Education

This section examines the effects of Cognitive-Behavioral Therapy (CBT) techniques, social support systems, and patient education on alleviating PMS symptoms.

1.3.1. Cognitive- Behavioral Therapy (CBT)

Cognitive-behavioral therapy (CBT) is a psychological tool designed to address negative attitudes, perceptions, and thoughts. CBT is based on two fundamental concepts: first, our cognition influences and generates our emotions, which affect our behavior, and second, it is not the events themselves but our interpretation and thinking about these significant events. It has been reported that a critical examination of how women perceive and relate to premenstrual symptoms, along with the development of behavioral coping strategies and self-monitoring techniques, can be effective in reducing negative symptoms associated with PMS (73,74). Within the framework of Cognitive-Behavioral Therapy (CBT), techniques such as Individual Cognitive-Behavioral Therapy, Virtual Cognitive-Behavioral Therapy, Group Cognitive-Behavioral Therapy, Partner and Couple Cognitive-Behavioral Therapy and Coping Mechanisms are employed to alleviate PMS symptoms (73).

1.3.2. Support Systems

Social support, an emotion-focused coping method, is known to prevent the emergence of stressful situations and help develop positive coping strategies in the face of stressful events. Social support includes positive aspects such as listening, empathy, and comforting words. Social support provides benefits such as providing information and awareness, teaching coping skills, and increasing self-confidence while reducing feelings of inadequacy and negative

emotions (75). Studies on web-based social support (76), spousal/partner support (75) , and peer support (77) used in the management of PMS report positive results in alleviating PMS symptoms.

1.3.3. Patient Education

Effective management of PMS requires lifestyle changes, education, and awareness strategies (63,78,79). In Şimşek Küçükkelepçe's (2018) study, health belief model-based education and acupressure interventions were implemented for managing PMS in women. The study reported that education alone and combined with acupressure effectively reduced symptoms and improved quality of life (63). Similarly, Ayaz-Alkaya et al. (2020) found that health belief model-based education effectively managed PMS among university students (78). In another study by Abay & Kaplan (2019), an education program based on the information-motivation-behavioral skills (IMB) model was found to be effective in enhancing coping behaviors related to premenstrual symptoms among university students (79).

CONCLUSION

PMS is a prevalent issue that considerably impacts women's daily lives. PMS symptoms can adversely affect women's physical, behavioral, and psychological health, thereby restricting their daily activities. Thus, understanding and effectively managing the effects of PMS is highly significant. The management of PMS requires a multidisciplinary approach. Lifestyle changes, healthy eating, regular exercise, proper sleep schedule, and stress management can help alleviate symptoms. Traditional and complementary medicine practices can also effectively relieve symptoms, although further evidence-based research is needed. Psychotherapy, support systems, and patient education can assist women in coping with symptoms and improving their quality of life.

In conclusion, individual approaches and treatment methods should be employed to alleviate the effects of PMS and improve quality of life. Women should monitor their symptoms, identify the most suitable methods, and seek professional help. Enhancing the understanding and effective management of PMS is a significant step towards supporting women's health.

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