



## REVIEW ARTICLE

## Effects of Premenstrual Syndrome Related Psychiatric Disorder on Physical and Mental Health Status of Adolescents- A Short Review

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### Abstract

Premenstrual syndrome (PMS) is a common disorder in adolescents in the reproductive age and share features with a number of psychiatric disorders. Moreover, it has a negative impact on emotions and their performances. Since many factors influence the development of this syndrome, we sought to examine and analyze the various social, behavioral, physical and psychological issues associated with PMS in this short review. Moreover, through this study, we recommend the need to have an effective health education program to educate the various clinical and psychological aspects of PMS to help adolescents in higher schools and colleges to deal with the symptoms, and to lead a better energetic life. In this review, we have analyzed various PMS symptoms reported with possible causes and the genetic predisposition and personality traits of individuals with PMS. Finally, we conclude that implementing an awareness program on PMS issues among adolescents in educational institutions with effective counselling for symptomatic students, can guide them to alleviate the psychological stress and improve their productive life.

### Keywords

Premenstrual syndrome, Depressive disorder, Personality, Adolescents, Personality traits, Stress, Puberty

### Introduction

Premenstrual syndrome (PMS) is a combination of many cognitive and emotional symptoms affecting up to approximately 20% of women in menstruating age [1]. PMS start in the luteal phase of the menstrual cycle and

the symptoms are aggravated by increased intensity of cramps, and neurotic personality, which share features with a number of psychiatric disorders [2-4]. The diagnostic and clinical status of PMS and its correlations with psychiatric disorders is still controversial. PMS and its more severe form, premenstrual dysphoric disorder (PMDD) are commonly associated with other mood-related disorders such as major depression, and cause significant life impairment with mood swings, tension and anxiety, but their relationship with personality disorders is less clear [1,5].

Many psychological, physical and social behavioral factors have an impact on occurrences of PMS [6,7]. As a common disorder among reproductive aged adolescent women, PMS is associated with disruption of familial and social relationships, work interference and absenteeism, and increased healthcare costs [8]. Although empirical therapy has proved to be successful for many women, who suffer from moderate to severe PMS, prolonged medications are not always effective or appropriate to achieve a complete cure of symptoms. Personality traits play an important role in self-perceived health, and coping with many health problems in adolescents. Adolescents with low self-esteem expect failure, always be nervous, show less effort towards being successful, ignore important things in life and feel worthless and untalented when they fail [9].

Hence, a thorough symptomatic analysis and



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approach to understand the causes and underlying factors affecting PMS and its severe related forms is mandatory, in view of public health importance. In this short review, we tried to investigate and correlate the various aspects of symptomatic analysis of reported case studies to identify the risk factors and treatment approaches in order to recommend an awareness of these issues among adolescents, and guide them about methods for coping with PMS complaints.

## Symptoms of PMS

Premenstrual symptoms are considered to be affected by increased intensity of cramps, neurotic personality, increased body mass index, general self-perceived health and cultural differences [3,4]. Although more than a hundred premenstrual symptoms are characterized till now, the most commonly reported among them include anger, anxiety, mood swings, depression, fatigue, decreased concentration, breast swelling and tenderness, general aches, and abdominal bloating [10]. For some women the menstrual cycle may have a considerable effect on the course of depression. Vulnerability for onset of a depressive episode is increased during the premenstrual phase, and an ongoing depression may worsen [11].

According to the Diagnostic and Statistical Manual of Mental Disorders, PMS and its more severe form, premenstrual dysphoric disorder (PMDD) is regarded as a type of depressive disorder (DD). The psychiatric markers of PMDD are characterized not only by mood symptoms but also by those for anxiety [12]. Most women with PMS suffer with a lifetime history of anxiety disorder in addition to a prolonged depressive disorder. A previously published epidemiological study reported that, the likelihood of either concurrent or lifetime psychiatric illness, including major DD, panic disorder (PD), generalized anxiety disorder (GAD), agoraphobia, or simple phobia, is much higher for women with premenstrual symptoms [13].

## Possible Causes of PMS

Although PMS is considered as a psychiatric disorder of a non-psychotic nature, periodic psychosis and schizophrenic symptoms accompanied with premenstrual exacerbation (PME) are reported to be associated with phases of the menstrual cycle [14]. These periodic changes seem to be linked to a decrease in estrogen levels [15]. The exact cause of PMS remained unknown, and various research findings indicate multiplicity of its causes [16]. Many factors are reported to exacerbate the development and intensity of the symptoms which include genetic factors, familial inheritance, variations in sex hormones and neurotransmitters, environmental factors, depressive disorders and lack of social and emotional support [17].

It was highly suspected that an etiological pathway is linked to slight irregularities in the normal variation of

ovarian hormones throughout the menstrual cycle, as ovulation suppression is known to avert premenstrual symptoms [18]. However, differences in reproductive hormone levels have not been consistently identified with PMS symptoms. Although not entirely clear, it is assumed that psychosocial stress may impact the severity of perimenstrual symptoms through activation of the hypothalamic pituitary-ovarian (HPO) axis, thus altering ovarian hormone [8].

Gonadal hormones and their fluctuating levels might intensify the symptoms of PMS in hormone-sensitive individuals [8]. This has been proved by alleviating the PMS symptoms after administration of gonadotropin-releasing hormones. Moreover, some studies have indicated that PMS is characterized by abnormal response of hormonal receptors to normal levels of gonadal steroids.

Estrogen may elicit a considerable effect on neurotransmitters such as serotonin, noradrenaline, dopamine and acetylcholine which play a major role in regulating the various cognitive functions, mood and behavioral changes. Therefore, a decrease in estrogen level during luteal phase proliferation may be one of the significant factor in development of PMS symptoms. A research study conducted to evaluate the biological etiology of PMS have demonstrated that, the hormonal fluctuations in estrogen and progesterone, neuroendocrine disorders, diversity of estrogen receptors, and prostaglandin synthesis play a major role in the development of PMS in most of the subjects in their study [19].

## Genetic Predisposition to PMS

Even though, the feminine lifecycle is similar in most women of same reproductive age, not all suffer from PMS during their menstruation events. Genetics affect PMS symptoms, and the severity of these symptoms may be one of the main reasons classifying PMDD as a different clinical entity or distinction of a subgroup of women [20]. Heritance of PMS is now well accepted, and plays an important role in detecting the probability of development or vulnerability to depression. An old study published five decades ago indicated a strong correlation between mothers and daughters suffering from similar PMS symptoms such as anxiety, fatigue and irritability with close to 70% case similarity [21]. PMS disorder and mood disorders are interpreted as related disorders of periodic and seasonal hormonal changes, and family history of depression are risk factors for development of PMDD [22].

A number of studies have been conducted in general population to examine whether premenstrual symptoms have a genetic basis. Even though, most of these study results indicate conflicting outcomes, studies conducted in monozygotic and dizygotic twins of premenstrual symptoms have greatly suggested a

genetic component of susceptibility with heritability of premenstrual symptoms estimated at 56% [23].

Prior studies in twins reported a genetic component to premenstrual mood symptoms, but also suggested that this could be mediated in part by neuroticism, which has been shown to have a genetic component. A large study conducted by performing a factor analysis on retrospectively reported menstrual cycle characteristics in 462 female twin pairs concluded that PMS reporting may be heritable [24].

### Personality Traits and PMS

Personality traits in adolescents are critical for self-perceived health problems as they tend to lower the self-esteem and render them to expect failure, which make them nervous and are unable to put more efforts to succeed [2]. Personality traits can affect the way in which people perceive daily events, and it is well accepted that some stimuli triggered by daily events also trigger PMS in women with more sensitive personalities [25]. Some studies showed that individuals with PMS displayed a strong need for performance but a low need for assistance, and also displayed introversion and low desire for change. On the other hand, individuals without PMS showed strong needs for denial and assistance, along with dominance and persistence [26].

A greater percentages of personality disorders among women with severe PMS was reported than among women without PMS [1]. The findings in the literature have indicated that neuroticism and agreeableness were positively related to PMS, while extroversion, conscientiousness, openness to experience and family communication were negatively related to PMS [27]. Another study reported that approximately one third of the women with PMS presented borderline personality traits, out of which three important traits, neurotic, emotionally stable and introvert showed significant positive correlations [28].

Personality traits play a considerably important role in coping with health problems and the guidance received to overcome such problems may improve their quality of life [2]. Many analytical studies on personality traits and its association with PMS symptoms are carried out in western countries, but such a type of study is not reported in Chinese population.

A study conducted on personality disorders in women with severe premenstrual syndrome have reported that women with severe PMS had a higher prevalence of personality disorders than asymptomatic women (27% versus 0%), and were more likely to have odd-eccentric, dramatic-erratic, and anxious-fearful personality disorder traits [1]. Moreover, they have indicated that the comorbidity of a personality disorder and severe PMS places an additive burden on general life functioning and may have implications for psychiatric treatment or medication given to those with

severe premenstrual symptoms.

### Screening and Diagnosis of PMS

As the presentation of symptoms vary greatly, there are no objective diagnostic tests for PMS and PMDD; therefore, a complete medical and psychiatric history must be elicited. Screening should also include a complete review of physical systems and medical disorders, and a detailed review of heritable disorders, including psychiatric disorders, in the patient's family. Before making a diagnosis of PMS or PMDD, concurrent major mental disorders, personality disorders and medical conditions must be excluded [29].

Prospective daily charting of symptoms for at least 2 consecutive symptomatic menstrual cycles, and analyzing them with the help of diagnostic criteria for PMDD (Table 1) and the psychiatric, medical and psychosocial screens, together with verification of the timing of symptoms, may enable the clinician to make a diagnosis. To meet the criteria for PMDD, women must not only show symptoms by charting daily for a minimum of 2 consecutive, symptomatic menstrual cycles, but their chief complaints must also include 1 of the 4 core symptoms (irritability, tension, dysphoria, lability of mood) and at least 5 of the 11 total symptoms (Table 1).

### Recommended Treatment Strategy

As indicated by most of the studies that severity of PMS is mainly stress-related, we emphasize practice of stress reduction programs for reducing psychosocial stress among all such cases. However, many clinicians prefer and practice pharmaceutical treatment strategy on their patients, which usually are unsatisfactory [30]

**Table 1:** Criteria for PMDD (Modified from Diagnostic and Statistical Manual of Mental Disorders, 4<sup>th</sup> Edition).

A	1. Depressed mood or dysphoria 2. Anxiety or tension 3. Affective lability 4. Irritability 5. Decreased interest in usual activities 6. Concentration difficulties 7. Marked lack of energy 8. Marked change in appetite, overeating, or food cravings 9. Hypersomnia or insomnia 10. Feeling overwhelmed 11. Other physical symptoms, e.g., breast tenderness, bloating
B	Symptoms must interfere with work, school, usual activities or relationships
C	Symptoms must not merely be an exacerbation of another disorder
D	Criteria A, B, and C must be confirmed by prospective daily ratings for at least 2 consecutive symptomatic menstrual cycles.

and associated with more side effects, and are not cost-effective [31]. Hence stress-reduction programs should be highly recommended as it may be a potentially noninvasive and cost-effective method for PMS relief compared with pharmaceutical treatments [8].

The expression of experiences during menstrual cycle is unique among individuals. In order to understand the individual cases, clinicians need to ask the patients about their menstrual experience and PMS, and pay attention to all individual aspects to use them for treatment. It is seen that most of the clinicians do not enquire the patients about their premenstrual symptoms or experience, and based only on the symptoms that is evident during PMS days, characterize the patients as suffering with mental or personality disorders [32].

In many such cases, girls are often willing to talk to their mothers; however, most mothers do not have enough information. Most physicians are unaware of abnormal patterns of bleeding which is caused by underlying medical issues with a prolonged potential. In examining post pubertal girls, doctors should pay special attention to physical changes in puberty and the importance of training, following up, and supervising the menstrual cycle. The parents should be informed about the normal state of their child's puberty and introduce menstrual cycle as a sign of feminine power, health, and a sensitive, essential, and powerful tool to evaluate the natural hormonal development [33]. It is recommended that comprehensive instructions should be given to girls and women of reproductive age to help them deal with PMS appropriately and decline its symptoms. Moreover, during PMS, girls with full awareness of their menstrual cycle may experience less stress than those who are unaware of it [33,34].

## Conclusion

It is suggested that increasing the level of awareness among adolescents about PMS complaints and its relation with basic personality traits may support them to overcome the challenges faced, and help them to cope up with PMS symptoms. We highly recommend that every educational institution should have a counselling team of experts, who should identify the adolescents with such problems and guide them by educating about coping methods. In order to minimize the negative experiences of PMS, it is recommended that girls studying in middle and high schools should be educated with more scientific information on puberty and premenstrual health.

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