



**COMPLEMENTARY THERAPIES FOR PREMENSTRUAL SYNDROME: A COMPREHENSIVE REVIEW OF EVIDENCE-BASED INTERVENTIONS**

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Article info	ABSTRACT
<p><b>Corresponding Author:</b></p> <p>Ayuk Naimah  <a href="mailto:ayuknaimah@gmail.com">ayuknaimah@gmail.com</a>                      Universitas Bakti Indonesia                      Banyuwangi</p>	<p>Premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD) are common conditions among adolescent girls, characterized by recurring physical, emotional, and behavioral symptoms that significantly affect quality of life and daily functioning. Conventional treatments, such as hormonal therapy and pharmacological agents, often have limitations in long-term adherence and potential side effects, creating a need for holistic and non-pharmacological alternatives. This review aims to analyze and synthesize evidence on complementary therapies that are effective in managing PMS and PMDD among adolescents. A comprehensive literature review was conducted using databases including PubMed, Scopus, ScienceDirect, ProQuest, and Google Scholar for studies published between 2018 and 2025. Search keywords included “premenstrual syndrome,” “adolescents,” “complementary therapy,” “cognitive behavioral therapy,” “mindfulness,” and “emotional freedom technique.” Inclusion criteria were randomized controlled trials (RCTs) and quasi-experimental studies evaluating non-pharmacological interventions with measurable outcomes related to PMS symptom reduction and psychological well-being. Ten studies met the criteria, highlighting the effectiveness of Cognitive Behavioral Therapy (CBT), Internet-based CBT (ICBT), Emotional Freedom Technique (EFT), mindfulness-based programs, and emotion-focused therapy. These interventions significantly reduced PMS and PMDD symptoms (<math>p &lt; 0.05</math>), improved emotional regulation, resilience, and quality of life, and demonstrated effects that persisted up to 1–1.5 months post-intervention. Complementary therapies offer holistic, safe, and accessible strategies for managing PMS in adolescents, addressing both physical and emotional dimensions. Integrating these evidence-based approaches into adolescent health programs could provide sustainable benefits, reduce the burden of PMS while promoting psychological well-being and adaptive coping skills.</p> <p><b>Keywords:</b> <i>Premenstrual Syndrome (PMS); Adolescents; Complementary Therapy; Cognitive Behavioral Therapy (CBT); Emotional Freedom Technique (EFT); Mindfulness; Emotion-Focused Therapy</i></p>

## INTRODUCTION

Premenstrual syndrome (PMS) is a prevalent condition affecting women of reproductive age, characterized by a combination of physical, emotional, and behavioral symptoms that occur cyclically during the luteal phase and resolve with menstruation (Branecka-Wozniak et al., 2022; Liu et al., 2024). While mild symptoms are common, moderate to severe PMS and premenstrual dysphoric disorder (PMDD) can significantly impair quality of life, academic performance, and social functioning (Liguori et al., 2023; Meng et al., 2022). Conventional management often relies on pharmacological approaches such as hormonal therapy and selective serotonin reuptake inhibitors; however, concerns regarding side effects and limited long-term adherence highlight the need for effective complementary and non-pharmacological strategies (Tiranini, 2022; Ummah & Ismarwati, 2024).

Evidence-based complementary interventions have gained increasing attention in recent years. Cognitive-behavioral therapy (CBT), internet-based CBT (ICBT), and cognitive-behavioral counseling have demonstrated effectiveness in reducing PMS and PMDD symptoms while enhancing emotional regulation and resilience (Başoğul et al., 2020; Borji-Navan et al., 2022; Gilandoust et al., 2023; Khodakarami et al., 2023). Emotional Freedom Technique (EFT) and mindfulness-based interventions have also shown significant benefits in alleviating menstrual pain, psychological distress, and negative emotional responses (Bakir et al., 2022; Mazaheri Asadi et al., 2022; Yazar et al., 2025). Additionally, emotion-focused therapy has been effective for women with PMDD, improving emotion regulation and reducing depressive symptoms (Dehnavi et al., 2024).

The multifaceted nature of premenstrual syndrome (PMS) encompasses physical, emotional, and psychological aspects that manifest differently among adolescents. Due to this complexity, there is an increasing focus on holistic and non-pharmacological interventions that can support or reduce the dependence on conventional medical treatments. Consequently, this review examines complementary approaches such as Cognitive Behavioral Therapy (CBT), Emotional Freedom Technique (EFT), mindfulness practices, and emotion-focused therapy, which have demonstrated potential in alleviating both the physical and emotional manifestations of PMS. By reviewing evidence from randomized controlled trials (RCTs) and quasi-experimental research, this study seeks to identify and assess the most effective complementary therapies for adolescents, a group particularly susceptible to the adverse effects of PMS on daily life and overall well-being.

## METHODS

This study employed a literature review design to synthesize evidence on the effectiveness of complementary therapies for managing premenstrual syndrome (PMS) in adolescents. Relevant studies were identified through a systematic search of electronic databases including PubMed, Scopus, ScienceDirect, ProQuest, and Google Scholar. The

search covered publications from 2020 to 2025 and was conducted using combinations of Medical Subject Headings (MeSH) and keywords such as “premenstrual syndrome,” “premenstrual dysphoric disorder,” “adolescents,” “complementary therapy,” “cognitive behavioral therapy,” “emotional freedom technique,” “mindfulness,” and “emotion-focused therapy.”

Inclusion criteria encompassed peer-reviewed articles that: 1) Involved female adolescents aged 12–19 diagnosed with moderate to severe PMS or PMDD; 2) Evaluated complementary or non-pharmacological interventions; 3) Employed experimental or quasi-experimental designs, including randomized controlled trials (RCTs); 4) Reported measurable outcomes related to PMS symptom reduction, emotional regulation, or quality of life. Exclusion criteria included studies that: 1) Focused solely on pharmacological treatments; 2) Involved adult participants only; 3) Lacked full-text access or sufficient methodological detail.

The initial search yielded a set of eligible studies, which were further screened based on titles, abstracts, and full texts. Data were systematically extracted, including author and year, study objectives, design, sample characteristics, intervention details, statistical methods, and key outcomes. The synthesis of findings emphasized the comparative effectiveness of complementary therapies, particularly CBT, EFT, mindfulness-based interventions, and emotion-focused therapy, in improving PMS-related symptoms among adolescents.

## RESULTS

**Table 1 Article Review**

<b>Authors (Years)</b>	<b>Aimed</b>	<b>Method</b>	<b>Results</b>	<b>Outcomes</b>
Yazar et al (2025)	To examine the effectiveness of Emotional Freedom Technique (EFT) in reducing symptoms of premenstrual syndrome (PMS) and premenstrual pain in university students.	The study employed a Randomized Controlled Trial (RCT) with female university students experiencing PMS symptoms, where the intervention group received regular Emotional Freedom Technique (EFT) sessions prior to menstruation, and the control group received no treatment. Data were analyzed by comparing pre- and post-intervention PMS symptom and pain scores, demonstrating the effectiveness of EFT in reducing menstrual discomfort.	The group receiving EFT showed a statistically significant reduction in PMS symptom severity and pain scores compared to the control group.	EFT was found to be an effective complementary therapy in managing PMS symptoms and menstrual pain among young women.

Borji-Navan et al (2022)	To evaluate whether internet-based cognitive-behavioral therapy (ICBT) can reduce PMS symptoms and improve quality of life.	The study utilized a Randomized Controlled Trial (RCT) involving 92 university students aged 18–35 with moderate to severe PMS, divided equally into intervention and control groups (n=46 each). Participants in the intervention group completed an 8-week Internet-based Cognitive Behavioral Therapy (ICBT) program, and outcomes were evaluated using generalized linear models and group comparisons to assess changes in PMS symptoms.	Significant reduction in PMS symptom severity (p-value <0.04); significant improvement in quality of life (p-value <0.01); no significant effect in late follicular phase (p-value = 0.19).	ICBT effectively reduced PMS symptom severity and improved quality of life during the premenstrual phase, but not in the late follicular phase.
Bakir et al (2022)	To evaluate the efficacy of Emotional Freedom Techniques (EFT), or “tapping,” for reducing PMS symptoms.	This Randomized Controlled Trial (RCT) involved 50 nursing students with PMSS scores $\geq 111$ , where the experimental group received Emotional Freedom Technique (EFT) sessions. Pre–post analyses of PMSS total and subscale scores demonstrated the intervention’s effectiveness in reducing premenstrual symptoms.	Statistically significant reduction in depressive affect, fatigue, nervousness, sleep issues, swelling, and total PMS score (p-value <0.05).	EFT significantly reduced PMS symptoms and proved to be a fast, self-administered, nonpharmacologic complementary therapy.
Mazahe ri Asadi et al (2022)	To examine the effect of smartphone-based mindfulness training on PMS symptoms and quality of life in women.	This Randomized Controlled Trial (RCT) included 80 Iranian women aged 25–45, randomly assigned to intervention (n=40) and control (n=40) groups. The intervention group received two introductory sessions followed by 8 weeks of mobile-based mindfulness training, and outcomes were analyzed using ANCOVA on PMS and SF-12 questionnaire scores.	PMS symptom scores are significantly lower in the intervention group than in the control group (p-value <0.001; $\eta^2 = 0.18$ ). Quality of life scores also improved significantly (p-value <0.001; $\eta^2 = 0.14$ ).	Mobile-based mindfulness training was effective in reducing PMS symptoms and improving quality of life.

Baçoğul et al (2020)	To investigate the effects of psychoeducation based on the cognitive-behavioral approach on premenstrual syndrome (PMS) symptoms in young adult women	This single-blind randomized controlled trial (pretest–posttest) involved 90 first-year nursing and midwifery students, with 45 in the intervention group and 45 in the control group. The intervention consisted of five psychoeducation sessions over four weeks using cognitive-behavioral techniques, and data were analyzed with SPSS 21 using descriptive statistics, paired t-tests, and independent t-tests.	Significant reduction in PMS total scores in intervention group (p-value <0.05). Significant improvements in fatigue (p-value = 0.001), anger (p-value = 0.024), and depressive thoughts (p-value = 0.052). No significant effects on physical symptoms (pain, appetite, sleep, bloating)	Psychoeducation based on CBT effectively reduced PMS total scores and improved fatigue, anger, and depressive thoughts in young adult women
Khodakarami et al (2023)	To examine the effect of cognitive-behavioral counseling on resilience in female adolescents with moderate to severe PMS	This single-blind randomized clinical trial included 120 female adolescents aged 15–17 years with moderate to severe PMS, divided into intervention (n=60) and control (n=60) groups. The intervention group attended eight 60-minute cognitive-behavioral counseling sessions over four weeks (two per week) with a 3-month follow-up, and outcomes were analyzed using SPSS v16 with Chi-square tests, paired and independent t-tests, and ANCOVA.	Mean total resilience and all subscales (except spiritual influences) significantly increased in the intervention group (p-value <0.001). Between-group posttest differences were significant for all subscales except spiritual influences (p-value <0.05).	Cognitive-behavioral counseling significantly improved resilience in adolescent girls with PMS, enhancing emotional regulation, self-efficacy, and adaptation.
Mirhoseyni et al (2025)	To evaluate the effectiveness of Emotional Freedom Technique (EFT) on reducing menstrual pain and improving emotional regulation in	This quasi-experimental pre-test–post-test with control group study involved 30 adolescent girls aged 12–18 in Yazd, Iran, with 15 in the experimental group and 15 in the control group. The intervention consisted of six 45-minute weekly Emotional Freedom Technique (EFT) sessions following Church’s protocol, and data were	Significant reduction in menstrual pain (p-value <0.002) Significant improvements in emotional regulation: Cognitive reappraisal (F=24.142, p-value <0.01) and Suppression	EFT effectively reduced menstrual pain and enhanced emotional regulation in adolescent girls by decreasing negative emotions and unconscious beliefs

	female students	analyzed using SPSS v24 with Multivariate Analysis of Covariance (MANCOVA).	( $F=21.272$ , $p$ -value $<0.01$ )	
Dehnavi et al (2024)	To evaluate the effectiveness of emotion-focused therapy (EFT) in reducing PMDD symptoms, emotion regulation difficulties, and psychological distress	This single-blind randomized clinical controlled trial involved 48 women aged 18–44 diagnosed with PMDD, divided into intervention ( $n=24$ ) and control ( $n=24$ ) groups. The intervention consisted of 16 weekly individualized Emotion-Focused Therapy (EFT) sessions based on Greenberg’s protocol, and data were analyzed using SPSS v18 with repeated measures ANOVA, ANCOVA, and Bonferroni post-hoc tests.	Significant reduction in PMDD severity (PSST) and emotion regulation difficulties (DERS) in intervention group ( $p$ -value $<0.05$ ) Significant decrease in depression and stress ( $p$ -value $<0.05$ ) No significant change in anxiety ( $p$ -value $>0.05$ )	EFT effectively reduced PMDD symptoms, improved emotion regulation, and lowered depression and stress levels, but did not significantly reduce anxiety
Gilando ust et al (2023)	To determine the effect of cognitive behavioral therapy (CBT) on premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD) symptoms	This quasi-experimental study with pre-test, post-test, and follow-up control groups involved 40 women aged 18–45 with PMS or PMDD, divided into four groups (10 PMS experimental, 10 PMS control, 10 PMDD experimental, 10 PMDD control). The intervention included eight 60-minute weekly cognitive behavioral therapy (CBT) sessions with a 1.5-month follow-up, and data were analyzed using SPSS v24 with descriptive statistics and univariate ANCOVA.	The analysis showed that cognitive behavioral therapy (CBT) significantly reduced symptoms of both premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD). PMS symptoms declined at post-test ( $p$ -value $<0.01$ ) and remained significant at 1.5-month follow-up ( $p$ -value $<0.000$ ). PMDD symptoms were also significantly reduced at post-test ( $p$ -value $<0.007$ ) and sustained at follow-up ( $p$ -value $<0.000$ ), confirming CBT’s lasting effectiveness on	CBT significantly reduced PMS and PMDD symptoms, with effects persisting for 1.5 months post-intervention

				menstrual-related symptoms.	
Azam & Shoaib (2024)	To examine the effectiveness of cognitive behavioral therapy (CBT) on reducing symptoms of premenstrual dysphoric disorder (PMDD) in Pakistani female adolescents	This quasi-experimental pre-test–post-test study with a control group involved 16 female adolescents aged 13–18 years (8 experimental, 8 control) from Hayatul Islam School. The intervention consisted of seven weekly 45–60-minute individual CBT sessions covering psychoeducation, cognitive restructuring, relaxation, problem-solving, and thought diary exercises.	The experimental group showed a significant reduction in PMDD symptoms (CTDP) from pre-test (M=20.25) to post-test (M=5.75), $t = 11.98$ , $p$ -value $<0.05$ ; post-test difference between experimental and control groups also significant, $t = -10.36$ , $p$ -value $<0.002$	CBT significantly reduced PMDD symptoms and improved adolescents’ attitudes and experiences related to menstruation, enhancing coping skills and emotional regulation	

A total of ten studies met the inclusion criteria, consisting of randomized controlled trials (RCTs) and quasi-experimental designs evaluating the effectiveness of complementary therapies for premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD) in adolescents. The interventions primarily included Cognitive Behavioral Therapy (CBT), Emotional Freedom Technique (EFT), mindfulness-based training, internet-based CBT (ICBT), psychoeducational programs, and emotion-focused therapy.

### Cognitive Behavioral Therapy (CBT) and Variants

Multiple studies demonstrated that CBT and its adaptations significantly reduce PMS and PMDD symptoms, as well as improve emotional regulation and quality of life in adolescents. Traditional CBT interventions, typically delivered in 7–8 weekly sessions, effectively alleviated both physical and psychological symptoms, with effects persisting for 1 to 1.5 months post-intervention (Azam & Shoaib, 2024; Gilandoust et al., 2023). Internet-based CBT (ICBT) also yielded significant improvements in symptom severity and quality of life (Borji-Navan et al., 2022). Furthermore, cognitive-behavioral counseling enhanced resilience and self-efficacy among adolescent girls with PMS (Khodakarami et al., 2023).

### Emotional Freedom Technique (EFT)

Three studies highlighted the efficacy of EFT, or “tapping,” in managing PMS and menstrual pain. EFT interventions delivered in 6–7 weekly sessions led to significant reductions in total PMS scores, menstrual pain, fatigue, depressive affect, and nervousness, while also improving emotional regulation (Bakir et al., 2022; Mirhoseyni et al., 2025; Yazar et al., 2025)

## **Mindfulness-Based and Emotion-Focused Interventions**

Mobile-based mindfulness training for 8 weeks demonstrated significant improvements in PMS symptom severity and health-related quality of life in young women (Mirhoseyni et al., 2025). Additionally, emotion-focused therapy (EFT) based on Greenberg's protocol reduced PMDD severity, emotional regulation difficulties, and psychological distress, though its effect on anxiety was limited (Dehnavi et al., 2024).

## **DISCUSSION**

### **Cognitive Behavioral Therapy (CBT) and Variants**

Cognitive Behavioral Therapy (CBT) and its variants have emerged as highly effective complementary approaches for managing premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD) in adolescents. These interventions target the cognitive and behavioral components of PMS by helping individuals identify and modify maladaptive thought patterns, improve emotion regulation, and develop adaptive coping strategies (Başoğul et al., 2020; Borji-Navan et al., 2022). Evidence from multiple randomized controlled trials (RCTs) and quasi-experimental studies demonstrates that CBT consistently reduces both physical and emotional symptoms of PMS. al. (2023) reported significant decreases in PMS and PMDD symptom scores, with benefits persisting for up to 1.5 months post-intervention, indicating not only short-term effectiveness but also sustained effects. Similarly, Azam & Shoaib (2024) observed that individualized CBT sessions for adolescent girls led to a marked reduction in PMDD symptoms, along with improved coping skills and emotional regulation.

Variants of CBT, such as Internet-based Cognitive Behavioral Therapy (ICBT) and cognitive-behavioral counseling, have broadened accessibility while maintaining clinical efficacy. Borji-Navan et al (2022) demonstrated that an 8-week ICBT program significantly reduced PMS severity and improved quality of life, providing an effective option for adolescents who face barriers to in-person therapy. Meanwhile, cognitive-behavioral counseling has been shown to enhance resilience and self-efficacy, key psychological factors that help adolescents better manage the recurring stressors of PMS (Khodakarami et al., 2023). CBT and its adaptations provide a multifaceted therapeutic benefit by addressing the psychological, emotional, and behavioral dimensions of PMS. Their integration into adolescent health programs could offer sustainable, non-pharmacological strategies that empower young women to manage PMS with minimal side effects.

### **Emotional Freedom Technique (EFT)**

Emotional Freedom Technique (EFT), commonly known as "tapping," has gained attention as a non-pharmacological complementary therapy for managing premenstrual syndrome (PMS) and related menstrual discomfort. EFT combines elements of cognitive therapy, exposure techniques, and acupuncture, wherein participants tap on specific meridian points while focusing on distressing thoughts or emotions. This mind-body approach is theorized to regulate the autonomic nervous system, reduce psychological stress, and alleviate somatic symptoms associated with PMS (Bakır et al., 2022; Yazar et al.,

2025). Evidence from randomized controlled trials (RCTs) and quasi-experimental studies supports the efficacy of EFT in reducing both physical and emotional manifestations of PMS. Bakır et al (2022) demonstrated that EFT significantly decreased depressive affect, fatigue, nervousness, sleep disturbances, and total PMS scores, suggesting a broad therapeutic effect on premenstrual symptoms. Similarly, Yazar et al (2025) reported a statistically significant reduction in PMS symptom severity and menstrual pain among university students receiving regular EFT sessions prior to menstruation. Furthermore, Mirhoseyni et al (2025) highlighted EFT's benefit in enhancing emotional regulation, particularly in improving cognitive reappraisal and reducing suppression of negative emotions.

A notable strength of EFT lies in its accessibility and self-administered nature, making it especially suitable for adolescents. The technique requires minimal resources, poses no pharmacological side effects, and empowers individuals to actively participate in their symptom management. This aligns with the broader shift toward holistic, patient-centered approaches for adolescent reproductive health. The findings suggest that EFT is an effective and practical complementary therapy for alleviating PMS symptoms, reducing menstrual pain, and improving emotional well-being. Its integration into school health programs or community-based interventions may provide a cost-effective and sustainable strategy for managing PMS in adolescents.

### **Mindfulness-Based and Emotion-Focused Interventions**

Mindfulness-based and emotion-focused interventions have emerged as promising complementary approaches for managing premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD), particularly among adolescents. Mindfulness practices emphasize present-moment awareness and non-judgmental acceptance of emotional and physical experiences, which can reduce stress reactivity and improve coping with cyclic hormonal fluctuations. Emotion-focused therapy (EFT), on the other hand, targets emotional processing and regulation, helping individuals identify, experience, and transform maladaptive emotional responses related to PMS symptoms (Dehnavi et al., 2024; Mazaheri Asadi et al., 2022).

Empirical evidence supports the efficacy of these interventions in alleviating PMS-related physical and psychological symptoms. Mazaheri Asadi et al (2022) demonstrated that an 8-week mobile-based mindfulness program significantly reduced PMS severity and improved health-related quality of life in women, indicating that digital mindfulness interventions can be both effective and accessible. Emotion-focused therapy has also shown notable benefits in women with PMDD, including reduced symptom severity, improved emotional regulation, and lower levels of stress and depression, although its impact on anxiety symptoms was less pronounced (Dehnavi et al., 2024). These findings suggest that interventions targeting emotional awareness and regulation can be particularly effective for adolescents, who may be more sensitive to mood fluctuations and psychosocial stressors associated with PMS.

A key advantage of mindfulness and emotion-focused interventions lies in their holistic and sustainable approach. Unlike pharmacological treatments, these therapies focus on building long-term self-regulation skills that enhance resilience, reduce emotional reactivity, and improve overall well-being. Additionally, the adaptability of mindfulness programs through mobile applications or group-based sessions offers practical solutions for adolescent populations, particularly in school and community settings. Mindfulness-based and emotion-focused interventions represent valuable complementary strategies for managing PMS and PMDD. By enhancing emotional regulation and promoting psychological well-being, these approaches provide adolescents with effective, non-invasive tools to mitigate the burden of premenstrual symptoms and improve quality of life.

## CONCLUSION

Complementary therapies, including Cognitive Behavioral Therapy (CBT), Emotional Freedom Technique (EFT), mindfulness-based practices, and emotion-focused interventions, demonstrate significant effectiveness in reducing both physical and emotional symptoms of premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD) in adolescents. These non-pharmacological approaches not only alleviate symptom severity but also enhance emotional regulation, resilience, and quality of life. Integrating these evidence-based interventions into adolescent health programs offers a holistic, sustainable, and accessible strategy for managing PMS and improving overall well-being.

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