ENHANCING PSYCHOLOGICAL INTERVENTIONS FOR PREMENSTRUAL SYNDROME: A REVIEW AND PROPOSAL FOR IMPROVEMENT

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Abstract: *Premenstrual syndrome (PMS) involves physical, emotional, and behavioral symptoms in the luteal phase of the menstrual cycle. Psychological treatments (e.g. cognitive-behavioral therapy, relaxation techniques) show promise, but existing studies have limitations.*

Objective: *To review current psychological interventions for PMS, identify gaps, and propose enhancements to treatment methods.*

Methods: Literature on randomized controlled trials (RCTs), meta-analyses, and controlled studies published up to 2025 was analyzed. Key features, effect sizes, and methodological strengths/weaknesses were extracted. Based on gaps identified, improved treatment components are proposed.

Results: Evidence suggests cognitive behavioral therapy (CBT) reduces anxiety, depression, daily functioning impairment, and behavioral symptoms in PMS. Relaxation techniques (e.g. progressive muscle relaxation) also significantly alleviate psychological symptoms. However, many studies are small, short-term, with low methodological quality, limited follow-up, and little personalization. Newer studies explore Internet-based CBT and emotion-focused therapy.

Conclusion: To improve psychological treatment for PMS, interventions should incorporate personalized CBT components, reliable monitoring, digital delivery, emotion regulation training, longer follow-ups, and stronger methodological designs. Future RCTs should test these improvements.

Introduction: Premenstrual syndrome (PMS) affects a substantial proportion of women of reproductive age, causing emotional (e.g., mood swings, anxiety, depression), physical (e.g., bloating, cramps), and behavioral symptoms during the luteal phase of the menstrual cycle. While pharmacological treatments are available, psychological interventions are non-invasive and can address emotional/behavioral symptoms with fewer side effects.

Previous reviews (e.g. meta-analysis of randomized controlled trials) indicate that psychological interventions — especially cognitive behavioral therapy (CBT) — yield moderate effects in reducing anxiety, depression, behavioral disruptions, and impairment

of daily functioning in PMS. Relaxation techniques also show benefit, particularly for anxiety and depressive symptoms.

Nevertheless, there remain gaps: small sample sizes, short intervention duration, lack of personalized components, and limited studies using digital or remote delivery. The purpose of this article is (1) to review the current evidence on psychological treatments for PMS, (2) to analyze methodological limitations, and (3) to propose enhancements to improve effectiveness and applicability of these interventions.

Methods: A literature search was performed using databases including PubMed, BMC Women's Health, BMC Psychiatry, Psychotherapy & Psychosomatics, and other peer reviewed journals, up to mid-2025. Search terms included "premenstrual syndrome," "psychological intervention," "cognitive behavioral therapy," "relaxation," "emotion-focused therapy," "internet-based therapy," etc. Inclusion criteria were: human participants, female, diagnosis or measurement of PMS, psychological treatment (non-pharmacological), randomized controlled trials or controlled trials, meta-analyses or systematic reviews. Exclusion: studies focusing purely on herbal or nutritional supplements (unless combined with psychological), or without psychological measures.

Key data extracted included type of psychological intervention, sample size, duration, outcome measures (anxiety, depression, daily functioning), effect sizes, follow-up periods, delivery mode, and personalization.

Synthesis of Findings

From the above:

- **CBT** (individual and group) is the most robust psychological intervention, showing moderate to large effects on emotional, behavioral, and daily functioning symptoms of PMS.
- **Relaxation techniques** like PMR help especially with anxiety and depressive components.
- **Emotion regulation** emerges as a promising target, though less deeply explored in intervention form.
- **Digital/Internet-based delivery** shows promise for reach, but issues remain with adherence, access, and verifying outcomes.
- **Combined or multimodal interventions** (psychological + supplementary, or mixed psychological techniques) may improve outcomes but often have design confounds.

Discussion

Gaps and Limitations

1. **Methodological quality:** Many studies are small, underpowered, lack blinding, or have short follow-up periods. This limits confidence in long-term effects.
2. **Heterogeneity:** Variation in how PMS is defined, which symptoms measured, scales used. This makes comparison across studies difficult.
3. **Limited personalization:** Many interventions are "one size fits all," without tailoring to individual symptom profiles, severity, or comorbidity.

4. **Delivery mode constraints:** Face-to-face therapy is resource intensive; digital solutions are newer and need more validation.

5. **Inadequate focus on emotion regulation and neurobiological markers:** Although psychology and neural imaging suggest certain emotional regulation and brain activity patterns, interventions rarely target or measure these explicitly.

Proposed Improvements to Treatment Methods

Based on the above, enhancements might include:

- **Personalized treatment plans**: use baseline assessment to identify dominant symptom types (emotional, behavioral, physical) and adapt therapy modules accordingly.
- **Emotion regulation training**: integrate components from dialectical behavior therapy (DBT) or emotion-focused therapy (EFT) aimed at recognizing, tolerating, and modulating difficult emotions.
- **Digital / blended delivery**: combining online CBT or self-help modules with therapist check-ins to improve accessibility and adherence.
- **Longer follow-ups**: include follow-up assessments at 6 and 12 months post-treatment to assess durability.
- **Standardization of measurement**: use consistent diagnostic criteria (e.g. DSM or standardized PMS scales), symptom diaries, and quality of life measures.
- **Incorporation of neurobiological feedback**: use measurement tools (e.g. NIRS, mood monitoring, physiological sensors) to give real-time feedback and adjust therapy.
- **Multimodal interventions**: combining CBT with relaxation, mindfulness, psychoeducation, supplementation if needed, to address multiple domains.

Conclusion: Psychological therapies, especially cognitive behavioral therapy, have demonstrated efficacy in reducing emotional, behavioral, and overall impairment caused by PMS. Relaxation techniques and emotion-focused approaches also contribute. However, for more effective, durable, and scalable treatments, improvements are needed: higher methodological quality, personalized and multimodal interventions, digital delivery, emotion regulation components, and consistent measurement with long-term follow up. Future RCTs should test enhanced treatment packages incorporating these features.

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