



Premenstrual Syndrome in Female Medical Students: Depressive Symptoms, Academic Functioning, and Primary Care Priorities

Marwa Abdelhady Hassan, Nada Samir Ismaiel Ahmed, Rasha Mohammed Bahaa Eldin

Family Medicine Department, Faculty of Medicine, Zagazig University,
Corresponding Author: Nada Samir Ismaiel Ahmed

Received: 28 October 2024, **Accepted:** 17 November 2024, **Published:** 20 November 2024

Abstract

Background: Premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD) can impair emotional well-being, daily function, and educational participation. Female medical students may be vulnerable because menstrual symptoms occur within a setting of schedules, sleep disruption, assessment pressure, and a background burden of psychological distress.

Aim: To synthesize current evidence on PMS among female medical students, with emphasis on depressive symptoms, academic functioning, accurate diagnosis, evidence-based management, and the role of family physicians.

Methods: A focused narrative review was undertaken using the supplied protocol and literature review, supplemented by verified PubMed-indexed studies, systematic reviews, and major clinical guidance available through August 2026. Evidence concerning definitions, epidemiology, biological mechanisms, psychosocial correlates, academic effects, screening, treatment, and primary care delivery was prioritized.

Results: Prevalence estimates vary because studies use different instruments, thresholds, populations, and retrospective versus prospective assessment. Across student cohorts, greater premenstrual symptom burden is consistently associated with stress, sleep disturbance, depressive symptoms, reduced concentration, absenteeism, presenteeism, and poorer quality of life, although objective academic outcomes are not uniformly affected. Prospective daily ratings across at least two cycles remain central to confirming a premenstrual disorder and separating PMDD from premenstrual exacerbation of an underlying mood disorder. Multimodal care may include education, exercise, cognitive-behavioral strategies, selective serotonin reuptake inhibitors, and hormonal treatments.

Conclusion: PMS in female medical students is clinically relevant but frequently overestimated by cross-sectional screening and underestimated in routine care. Family physicians can improve outcomes through cycle-based assessment, depression and suicide-risk screening, shared treatment decisions, longitudinal follow-up, and coordination with mental health, gynecology, and university services.

Keywords: premenstrual syndrome; premenstrual dysphoric disorder; depression; academic performance; family medicine



Introduction

Premenstrual disorders are defined by recurrent affective, behavioral, and physical symptoms that emerge during the luteal phase, improve shortly after menstruation begins, and produce clinically meaningful distress or functional impairment. The category includes PMS and PMDD, but it should not be applied to any unpleasant symptom that happens before menstruation. Timing, cyclicity, symptom-free intervals, and impairment are essential to diagnosis. This distinction is particularly important in student surveys, where a single retrospective questionnaire may identify a high symptom burden without establishing a clinical disorder.^{1,2,3}

Current biological models do not support a simple deficiency or excess of ovarian hormones. Women with PMDD generally have hormone concentrations within expected ranges but appear unusually sensitive to normal cycle-related changes. Altered responses to progesterone-derived neuroactive steroids, particularly allopregnanolone at the gamma-aminobutyric acid A receptor, and interactions with serotonergic systems may help explain why symptoms recur after ovulation and remit when hormonal fluctuation ends.^{4,5}

Reported prevalence differs widely across countries and study settings. Meta-analyses and population studies consistently show that premenstrual symptoms are common, while the proportion meeting criteria for a clinically impairing disorder is substantially smaller. Estimates vary with the diagnostic definition, the language and validation of the instrument, whether symptoms were rated retrospectively or prospectively, and whether functional impairment was required. Comparisons between universities should therefore be made cautiously rather than interpreted as direct evidence of true geographic variation.^{6,7,8}

Female medical students deserve focused attention because the consequences of cyclic symptoms occur within a demanding educational environment. Long teaching days, clinical placements, examinations, night duties, limited recovery time, and reluctance to disclose menstrual difficulties may convert moderate symptoms into meaningful impairment. Studies in medical and university cohorts have documented high symptom frequencies, yet the same literature also reveals inconsistent case definitions and substantial reliance on self-report.^{9,10}

Lifestyle and psychosocial factors may modify symptom expression without proving causation. Cross-sectional studies have linked greater PMS burden with perceived stress, short or poor-quality sleep, low physical activity, frequent fast-food intake, high caffeine consumption, and other dietary patterns. Reverse causation remains plausible because severe symptoms can themselves disturb sleep, alter appetite, reduce exercise, and increase distress. These factors are most useful as modifiable clinical targets, not as definitive explanations for the disorder.^{8,11,12}

Medical training also carries a substantial background prevalence of depressive symptoms. Consequently, low mood reported before menstruation may represent PMDD, premenstrual exacerbation of an established depressive disorder, or a noncyclic depressive illness recalled as menstrual. A review centered on students must therefore connect menstrual and mental health while preserving the diagnostic boundary between them.¹³

Aim

This review examines PMS among female medical students, with emphasis on its association with depressive symptoms and academic functioning. It also evaluates diagnostic limitations in the current literature, summarizes evidence-based treatment, and defines a practical role for family physicians and university health services.

Review Methods

The supplied thesis protocol, literature review, and reference files were critically appraised and reorganized into a focused narrative review. Their evidence base was supplemented by verified PubMed-indexed studies, systematic reviews, and major guidance available through August 2026. Priority was given to diagnostic standards, student-specific observational studies, meta-analyses, randomized trials, and publications relevant to primary care. Because the underlying literature is heterogeneous and this was not a registered systematic review, findings are presented as a clinically oriented synthesis rather than a pooled estimate.^{1,2}

Clinical Spectrum and Diagnostic Boundaries

PMS may involve irritability, mood lability, low mood, anxiety, reduced concentration, fatigue, sleep or



appetite change, breast tenderness, bloating, headache, and musculoskeletal discomfort. No single symptom is diagnostic. The clinically important pattern is predictable recurrence before menses, relief after onset, and interference with study, work, relationships, or usual activities. Symptom type and severity may vary between cycles, so assessment should capture both the symptom burden and its functional consequences.^{1,3}

PMDD requires a more specific and predominantly affective syndrome. At least five symptoms are required, including at least one core mood symptom, with marked impairment and a temporal pattern confirmed prospectively when possible. PMDD should not be described merely as very severe PMS because its diagnostic threshold, psychiatric prominence, and treatment implications are distinct. At the same time, both conditions sit within the broader group of premenstrual disorders and may be approached through a shared cycle-based assessment.^{1,2}

Premenstrual exacerbation is a separate clinical problem in which an ongoing disorder, such as major depression, generalized anxiety, migraine, or an eating disorder, worsens before menstruation but remains present at other times. In contrast, core PMS or PMDD includes a relatively symptom-free interval after menstruation. Daily ratings across the whole cycle are therefore more informative than asking only whether symptoms become worse before menses.^{2,4}

The differential diagnosis includes pregnancy, thyroid disease, anemia, endometriosis, polycystic ovary syndrome, primary dysmenorrhea, medication or substance effects, bipolar disorder, major depressive disorder, anxiety disorders, and trauma-related conditions. Tests should be directed by history, examination, and red flags rather than ordered routinely for every patient. Severe pelvic pain, heavy or irregular bleeding, symptoms throughout the cycle, psychosis, mania, or a marked change from the patient's usual pattern requires broader evaluation.^{1,3}

PMS and Depressive Symptoms

The relationship between PMS and depression is clinically important but methodologically difficult. Both disorders can include low mood, reduced motivation, sleep disturbance, appetite change, fatigue, impaired concentration, and social withdrawal. When these symptoms are measured once, a positive association may reflect true premenstrual worsening, a current depressive episode, shared stress exposure, or overlapping questionnaire items. Cross-sectional correlation alone cannot determine which condition began first or whether one caused the other.^{14,15}

Student studies generally report higher depressive symptom scores among participants with greater PMS severity. Research in medical interns has described comorbid depression, while a study of first-year university students found a relationship between PMS and depressive symptoms. These findings justify mental health screening, but they do not establish that PMS produces major depression. The most defensible interpretation is that the conditions frequently coexist and may intensify perceived impairment.^{14,15}

Recent work also suggests that depression and anxiety may partly mediate the relationship between retrospectively reported premenstrual symptoms and adverse psychological outcomes. This supports a biopsychosocial formulation in which cycle sensitivity, stress, cognitive appraisal, and underlying psychiatric vulnerability interact. It also argues against treating every affective complaint as a purely hormonal problem.¹⁶

Suicide risk must not be overlooked in severe premenstrual disorders. A systematic review and meta-analysis found substantially greater odds of suicidal ideation and attempts among women with PMDD, although the included studies differed in design and adjustment for psychiatric comorbidity. In practice, any patient reporting severe cyclic depression, hopelessness, self-harm thoughts, or loss of control should receive direct suicide-risk assessment and urgent intervention when indicated.¹⁷

A useful consultation therefore separates three questions: whether symptoms are cyclic, whether a depressive or anxiety disorder is present throughout the month, and whether risk escalates premenstrually. This structure avoids the false choice between a gynecologic and psychiatric explanation. It also permits combined care when PMDD and another mood disorder coexist.^{1,2,17}

Academic Functioning and Educational Participation

PMS can affect education through several pathways. Pain, fatigue, sleep disturbance, and gastrointestinal symptoms may reduce attendance, while irritability, low mood, and anxiety may impair participation and peer



relationships. Difficulty concentrating and feeling overwhelmed can lower study efficiency even when the student remains present. Presenteeism may therefore be more common than complete absence and may not be captured by grade-point average alone.^{18,19}

A cross-sectional study of 251 female university students in the United Arab Emirates reported premenstrual tension symptoms in 78.9%, PMDD-level symptoms in 16.3%, and a perceived negative academic effect in 90%. The magnitude highlights a substantial self-reported burden, but the symptom-rating method and study design limit causal inference and may inflate clinical prevalence. The findings are best understood as evidence of educational disruption requiring assessment rather than as proof that nine of ten students have objectively reduced academic achievement.¹⁸

Other studies show the same general signal with different effect sizes. One college study reported lower perceived academic performance during menstruation and limited help-seeking, while research among medical and health-science students linked PMDD with academic impairment. These observations support attention to attendance, concentration, examination performance, and participation as separate outcomes rather than a single global measure.^{19,20}

Not all findings are concordant. A 2025 study of female medical students found clear emotional and behavioral consequences but no measurable effect on academic performance. Such disagreement may reflect different instruments, local curricula, coping resources, grading systems, symptom severity, or the use of retrospective rather than prospective assessment. It also shows why nonsignificant academic findings should not be interpreted as proof that students are unaffected.²¹

Objective and subjective outcomes should be distinguished in future research. Grade-point average, examination scores, attendance records, clinical performance, and delayed progression are objective but may miss short-term impairment; self-rated concentration and engagement are sensitive to lived experience but vulnerable to recall and common-method bias. Longitudinal designs that pair daily symptom ratings with time-stamped educational outcomes would provide stronger evidence than one-time surveys.^{18,20,21}

Assessment in Family Medicine

The family physician should begin with an open menstrual and mental health history: cycle length and regularity, timing of symptoms, symptom-free days, functional effects, contraception, pregnancy possibility, medication use, sleep, caffeine and substance use, eating patterns, stressors, and previous psychiatric illness. The consultation should explicitly ask about class absence, reduced concentration, conflict, self-medication, and suicidal thoughts. A nonjudgmental approach is essential because students may normalize severe symptoms or fear that disclosure will be dismissed.^{1,3}

Retrospective tools such as the Premenstrual Symptoms Screening Tool can identify patients who need further evaluation, but they should not be treated as a definitive diagnosis. In a comparative study, the screening tool showed high sensitivity but low specificity relative to the Daily Record of Severity of Problems and markedly overclassified PMDD. Positive screening should therefore be followed by prospective daily ratings across at least two symptomatic cycles whenever feasible.²²

Daily monitoring should record symptom severity and interference throughout the entire cycle, not only during the week before menstruation. This makes the postmenstrual symptom-free interval visible and allows the clinician to distinguish core PMDD from premenstrual exacerbation. Digital diaries may improve adherence, but the clinical interpretation still requires attention to cycle dates, missing entries, baseline symptoms, and meaningful functional change.^{1,2,22}

Depression screening instruments can support assessment, but a score is not a substitute for diagnostic interviewing. Positive findings should lead to evaluation of symptom duration, pervasiveness, anhedonia, neurovegetative change, bipolar symptoms, substance use, trauma, and risk. The same principle applies to academic scales: they quantify impairment but do not establish that PMS caused it.^{13,17}

Evidence-Based Management

Treatment should be individualized according to symptom profile, severity, reproductive goals, comorbidity, previous response, contraindications, and patient preference. Current guidance favors a multimodal plan rather than a rigid sequence for every patient. Mild symptoms may respond to education and behavioral measures, whereas marked affective symptoms, functional impairment, or PMDD usually require evidence-based



psychological or pharmacologic treatment.^{1,23,24}

Education is therapeutic when it explains the cycle-related pattern without minimizing the patient's experience. A practical plan includes prospective tracking, regular sleep, structured physical activity, stress-management strategies, balanced meals, and moderation of caffeine when it aggravates anxiety, insomnia, or palpitations. Lifestyle changes should be framed as supportive measures with broader health benefits, because observational associations do not prove that a specific diet or habit caused PMS.^{1,8,11}

Selective serotonin reuptake inhibitors have the strongest medication evidence for prominent affective symptoms and PMDD. A 2024 Cochrane review of 34 randomized trials found that SSRIs probably reduce overall self-rated symptoms; continuous treatment appeared more effective than luteal-phase treatment in subgroup analysis. Nausea, sleep disturbance, fatigue, sexual dysfunction, and other adverse effects require discussion. Continuous, luteal-phase, and symptom-onset strategies should be selected with attention to comorbid depression, cycle predictability, patient preference, and response.²⁵

Combined oral contraceptives can be useful when ovulation suppression and contraception are both desired. Evidence is strongest for formulations containing drospirenone with a shortened hormone-free interval, but benefits are not universal and adverse effects may lead to discontinuation. Before prescribing, clinicians should assess thromboembolic risk, migraine with aura, smoking, hypertension, drug interactions, and other contraindications, then review both mood and physical symptoms after initiation.^{1,26}

Cognitive-behavioral therapy can target catastrophic interpretation, stress reactivity, avoidance, interpersonal conflict, and maladaptive coping. Earlier systematic reviews found potential benefits but also noted small samples and variable methods. It is particularly attractive for students who prefer nonpharmacologic care, have prominent stress-related worsening, or need treatment for concurrent anxiety or depression, and it may be combined with medication.^{24,27}

Exercise is widely recommended because it is low cost and benefits mood, sleep, and general health, although the PMS-specific evidence remains less certain than the evidence for SSRIs. A systematic review found symptom improvement across exercise studies, and an Egyptian randomized trial of swimming reported reductions in several psychological and physical symptoms. Differences in exercise type, intensity, diagnostic criteria, and outcome measurement limit precise prescriptions; a sustainable program is preferable to an unsupported claim that one modality is uniquely effective.^{28,29}

Nutritional supplements require a similarly cautious approach. A 2025 systematic review of 31 randomized trials found recurring positive signals for vitamin B6, calcium, and zinc, but only one included study was judged at low risk of bias and evidence was insufficient for several other supplements. Clinicians should avoid excessive dosing, review interactions and pregnancy plans, and prioritize correction of documented deficiency rather than presenting supplements as uniformly effective.³⁰

Herbal products are not interchangeable. A systematic review of *Vitex agnus-castus* reported possible benefit, yet studies varied in preparations, comparators, and quality. Product standardization, adverse effects, and interactions with hormonal or psychotropic treatment remain relevant. Patients should be asked directly about over-the-counter remedies because they may not volunteer this information.³¹

Refractory PMDD warrants specialist review rather than repeated empirical prescribing. Options may include different SSRI strategies, selected combined hormonal regimens, or specialist-directed ovarian suppression. Ulipristal acetate and neurosteroid-targeted treatments have shown research signals, but safety, regulatory restrictions, and limited evidence prevent routine primary care use. Surgery is irreversible and should be considered only in exceptional, carefully confirmed, treatment-resistant cases after specialist assessment and a successful trial of reversible ovarian suppression.^{23,24,32}

Primary Care and University-Level Priorities

Menstrual health includes physical, mental, and social well-being in relation to the menstrual cycle. This definition fits family medicine because the relevant outcomes extend beyond symptom counts to education, relationships, participation, autonomy, and access to care. A student-centered consultation should therefore address what the symptoms prevent the patient from doing and what outcome she most wants treatment to improve.³³

The burden of menstruation-related symptoms is often expressed through reduced productivity while



remaining at work or study. In a nationwide survey of 32,748 women, presenteeism contributed more lost productivity than absenteeism. Although the survey was not limited to PMS or medical students, it illustrates why attendance alone underestimates impairment and why clinicians should ask about efficiency, concentration, and participation.³⁴

Family physicians are well positioned to provide longitudinal menstrual care, but training and confidence are inconsistent. A 2024 analysis of family physicians identified variation in menstrual-care provision and emphasized the need for better education. Structured prompts in routine history taking, familiarity with prospective symptom tools, and clear referral pathways can reduce underrecognition without medicalizing normal cycle changes.³⁵

University services can complement individual care through confidential screening, reliable education, easy access to primary and mental healthcare, and reasonable academic support for documented impairment. Checklist-based education has been associated with greater awareness and changes in help-seeking and symptom-related productivity, although uncontrolled designs cannot isolate the intervention effect. Programs should therefore be evaluated with prospective outcomes and should avoid implying that students are responsible for solving a medical disorder solely through self-management.³⁶

Continuity matters because many patients with PMDD report delayed recognition, invalidating encounters, and difficulty reaching appropriate care. One clinician should coordinate cycle tracking, mental health assessment, medication review, and referrals. Joint management with gynecology or psychiatry is appropriate when the diagnosis is uncertain, symptoms are severe, bipolar disorder is possible, suicide risk is present, first-line treatment fails, or complex hormonal decisions are required.^{35,37}

The evidence in medical students is dominated by single-center cross-sectional studies using retrospective questionnaires. Convenience sampling, cultural differences in symptom reporting, inconsistent thresholds, failure to confirm symptoms prospectively, and overlap with dysmenorrhea or depression limit comparability. Many studies measure perceived academic impairment but not grades, attendance records, or clinical competency, and most cannot establish temporal or causal relationships.^{6,8,18,21}

Future work should use validated prospective daily ratings, prespecified diagnostic criteria, transparent reporting of missing data, and separate analyses for PMS, PMDD, and premenstrual exacerbation. Multicenter cohorts should pair symptom trajectories with objective and patient-reported educational outcomes, examine potential confounding, and evaluate interventions that can be delivered through primary care and university health systems. Research should also include qualitative work on stigma, help-seeking, and treatment preferences.^{1,2,33,35}

Conclusion

Premenstrual disorders in female medical students sit at the intersection of reproductive health, mental health, and educational functioning. The literature consistently identifies distress, depressive symptoms, concentration difficulty, and reduced participation, but prevalence and academic effect are easily distorted by retrospective screening and cross-sectional design. Diagnosis should rest on cyclicity, impairment, and prospective daily ratings, with explicit distinction from noncyclic depression and premenstrual exacerbation. Family physicians can provide the continuity needed to integrate menstrual history, mental health assessment, suicide-risk evaluation, lifestyle counseling, evidence-based treatment, and referral. A patient-centered, multimodal plan is more defensible than attributing symptoms to a single hormone, lifestyle factor, or psychological cause.

References

1. American College of Obstetricians and Gynecologists. Management of premenstrual disorders: ACOG Clinical Practice Guideline No. 7. *Obstet Gynecol*. 2023;142(6):1516-1533.
2. O'Brien PMS, Backstrom T, Brown C, Dennerstein L, Endicott J, Epperson CN, et al. Towards a consensus on diagnostic criteria, measurement and trial design of the premenstrual disorders: the ISPMDD Montreal consensus. *Arch Womens Ment Health*. 2011;14(1):13-21.
3. Dilbaz B, Aksan A. Premenstrual syndrome, a common but underrated entity: review of the clinical literature. *J Turk Ger Gynecol Assoc*. 2021;22(2):139-148.
4. Hantsoo L, Epperson CN. Allopregnanolone in premenstrual dysphoric disorder: evidence for dysregulated sensitivity to GABA-A receptor modulating neuroactive steroids across the menstrual cycle. *Neurobiol Stress*. 2020;12:100213.
5. Schmidt PJ, Martinez PE, Nieman LK, Koziol DE, Thompson KD, Schenkel L, et al. Premenstrual dysphoric disorder symptoms following ovarian suppression: triggered by change in ovarian steroid levels but not continuous stable levels. *Am J Psychiatry*.



2017;174(10):980-989.

6. Dutta A, Sharma A. Prevalence of premenstrual syndrome and premenstrual dysphoric disorder in India: a systematic review and meta-analysis. *Health Promot Perspect*. 2021;11(2):161-170.
7. Geta TG, Woldeamanuel GG, Dassa TT. Prevalence and associated factors of premenstrual syndrome among women of the reproductive age group in Ethiopia: systematic review and meta-analysis. *PLoS One*. 2020;15(11):e0241702.
8. Mitsunashi R, Sawai A, Kiyohara K, Shiraki H, Nakata Y. Factors associated with the prevalence and severity of menstrual-related symptoms: a systematic review and meta-analysis. *Int J Environ Res Public Health*. 2023;20(1):569.
9. Goker A, Artunc-Ulkumen B, Aktenk F, Ikiz N. Premenstrual syndrome in Turkish medical students and their quality of life. *J Obstet Gynaecol*. 2015;35(3):275-278.
10. Ngo VDT, Bui LP, Hoang LB, Tran MTT, Nguyen HVQ, Tran LM, et al. Associated factors with premenstrual syndrome and premenstrual dysphoric disorder among female medical students: a cross-sectional study. *PLoS One*. 2023;18(1):e0278702.
11. Hashim MS, Obaideen AA, Jahrami HA, Radwan H, Hamad HJ, Owais AA, et al. Premenstrual syndrome is associated with dietary and lifestyle behaviors among university students: a cross-sectional study from Sharjah, UAE. *Nutrients*. 2019;11(8):1939.
12. Abu Alwafa R, Badrasawi M, Haj Hamad R. Prevalence of premenstrual syndrome and its association with psychosocial and lifestyle variables: a cross-sectional study from Palestine. *BMC Womens Health*. 2021;21(1):233.
13. Zatt WB, Lo K, Tam W. Pooled prevalence of depressive symptoms among medical students: an individual participant data meta-analysis. *BMC Psychiatry*. 2023;23(1):251.
14. Sadr SS, Samimi Ardestani SM, Razjouyan K, Daneshvari M, Zahed G. Premenstrual syndrome and comorbid depression among medical students in the internship stage: a descriptive study. *Iran J Psychiatry Behav Sci*. 2014;8(4):74-79.
15. Acikgoz A, Dayi A, Binbay T. Prevalence of premenstrual syndrome and its relationship to depressive symptoms in first-year university students. *Saudi Med J*. 2017;38(11):1125-1131.
16. Antosz-Rekucka R, Prochwicz K. Depression and anxiety mediate the relationship between the retrospectively measured symptoms of premenstrual disorders and negative but not positive psychotic-like experiences. *Sci Rep*. 2023;13(1):17711.
17. Prasad D, Wollenhaupt-Aguir B, Kidd KN, de Azevedo Cardoso T, Frey BN. Suicidal risk in women with premenstrual syndrome and premenstrual dysphoric disorder: a systematic review and meta-analysis. *J Womens Health (Larchmt)*. 2021;30(12):1693-1707.
18. Omara EIM, Salama RAA, Tadross TM, Ahmed SK, Mohamed MG, Dewan SMR, et al. Impact of premenstrual tension syndrome on academic performance among female university students from the United Arab Emirates: a cross-sectional study. *Health Sci Rep*. 2024;7(10):e70124.
19. Bilir E, Yildiz S, Yakin K, Ata B. The impact of dysmenorrhea and premenstrual syndrome on academic performance of college students, and their willingness to seek help. *Turk J Obstet Gynecol*. 2020;17(3):196-201.
20. Minichil W, Eskindir E, Demilew D, Mirkena Y. Magnitude of premenstrual dysphoric disorder and its correlation with academic performance among female medical and health science students at University of Gondar, Ethiopia, 2019: a cross-sectional study. *BMJ Open*. 2020;10(7):e034166.
21. Chouhan A, Choudhary R, Choudhary K, Khan I, Saiyad SS, Chaudhary R. Prevalence of premenstrual symptoms and their consequences on academic engagement in female students. *Cureus*. 2025;17(5):e84367.
22. Henz A, Ferreira CF, Oderich CL, Gallon CW, de Castro JRS, Conzatti M, et al. Premenstrual syndrome diagnosis: a comparative study between the Daily Record of Severity of Problems and the Premenstrual Symptoms Screening Tool. *Rev Bras Ginecol Obstet*. 2018;40(1):20-25.
23. Takeda T. Premenstrual disorders: premenstrual syndrome and premenstrual dysphoric disorder. *J Obstet Gynaecol Res*. 2023;49(2):510-518.
24. Carlini SV, Lanza di Scalea T, McNally ST, Lester J, Deligiannidis KM. Management of premenstrual dysphoric disorder: a scoping review. *Int J Womens Health*. 2022;14:1783-1801.
25. Jespersen C, Lauritsen MP, Frokjaer VG, Schroll JB. Selective serotonin reuptake inhibitors for premenstrual syndrome and premenstrual dysphoric disorder. *Cochrane Database Syst Rev*. 2024;8(8):CD001396.
26. Ma S, Song SJ. Oral contraceptives containing drospirenone for premenstrual syndrome. *Cochrane Database Syst Rev*. 2023;6(6):CD006586.
27. Lustyk MKB, Gerrish WG, Shaver S, Keys SL. Cognitive-behavioral therapy for premenstrual syndrome and premenstrual dysphoric disorder: a systematic review. *Arch Womens Ment Health*. 2009;12(2):85-96.
28. Saglam HY, Orsal O. Effect of exercise on premenstrual symptoms: a systematic review. *Complement Ther Med*. 2020;48:102272.
29. Maged AM, Abbassy AH, Sakr HRS, Elsayah H, Wagih H, Ogila AI, et al. Effect of swimming exercise on premenstrual syndrome. *Arch Gynecol Obstet*. 2018;297(4):951-959.
30. Robinson J, Ferreira A, Iacovou M, Kellow NJ. Effect of nutritional interventions on the psychological symptoms of premenstrual syndrome in women of reproductive age: a systematic review of randomized controlled trials. *Nutr Rev*. 2025;83(2):280-306.
31. Verkaik S, Kamperman AM, van Westrhenen R, Schulte PFJ. The treatment of premenstrual syndrome with preparations of *Vitex agnus-castus*: a systematic review and meta-analysis. *Am J Obstet Gynecol*. 2017;217(2):150-166.
32. Comasco E, Kopp Kallner H, Bixo M, Hirschberg AL, Nyback S, de Grauw H, et al. Ulipristal acetate for treatment of premenstrual dysphoric disorder: a proof-of-concept randomized controlled trial. *Am J Psychiatry*. 2021;178(3):256-265.
33. Hennegan J, Winkler IT, Bobel C, Keiser D, Hampton J, Larsson G, et al. Menstrual health: a definition for policy, practice, and research. *Sex Reprod Health Matters*. 2021;29(1):1911618.



34. Schoep ME, Adang EMM, Maas JWM, De Bie B, Aarts JWM, Nieboer TE. Productivity loss due to menstruation-related symptoms: a nationwide cross-sectional survey among 32,748 women. *BMJ Open*. 2019;9(6):e026186.
35. Casola AR, Rea O, Ho T. Family physicians and menstrual care: an analysis of CERA 2023. *Womens Health (Lond)*. 2024;20:17455057241247799.
36. Ozeki C, Maeda E, Hiraike O, Nomura K, Osuga Y. Changes in menstrual symptoms and work productivity after checklist-based education for premenstrual syndrome: an 8-month follow-up of a single-arm study in Japan. *BMC Womens Health*. 2024;24(1):242.
37. Hantsoo L, Sajid H, Murphy L, Buchert B, Barone J, Raja S, et al. Patient experiences of health care providers in premenstrual dysphoric disorder: examining the role of provider specialty. *J Womens Health (Larchmt)*. 2022;31(1):100-109.