Factors influencing premenstrual syndrome and premenstrual dysphoric disorder in different countries

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Abstract

Background: Premenstrual Syndrome (PMS) and Premenstrual Dysphoric Disorder (PMDD) are cyclical conditions affecting a substantial proportion of women of reproductive age, marked by a range of emotional, behavioral, and physical symptoms. While the global prevalence of PMS ranges from 30% to 90%, PMDD affects a smaller yet clinically significant proportion of women. Variations in prevalence and severity across countries suggest that biological, psychological, and sociocultural factors play influential roles. This study explores the multifactorial determinants of PMS and PMDD in different national contexts, focusing on both physiological mechanisms and environmental influences.

Methods and Materials: A narrative review approach was used to synthesize findings from peer-reviewed literature published between 2009 and 2025. Studies included were cross-sectional, systematic reviews, meta-analyses, and public health reports that assessed prevalence, risk factors, and management strategies for PMS and PMDD across countries. Emphasis was placed on hormonal imbalances, neurotransmitter dysregulation, genetic predispositions, stress, lifestyle, and cultural stigma. Comparative data from countries such as Ethiopia, India, Malaysia, Jordan, and the United States were included.

Results: Hormonal fluctuations, particularly in estrogen and progesterone, as well as serotonergic sensitivity, were identified as core biological factors contributing to PMS and PMDD. Lifestyle factors including high stress levels, poor diet, lack of physical activity, and sleep disturbances were found to exacerbate symptoms. Sociocultural influences—such as menstrual stigma, limited mental health literacy, and healthcare access—significantly shaped symptom reporting and treatment-seeking behavior. Countries with stronger public health infrastructure showed better awareness, diagnosis, and support mechanisms.

Conclusion: PMS and PMDD are complex, multifactorial disorders influenced by an interplay of physiological, environmental, and cultural factors. Cross-national differences highlight the need for culturally sensitive diagnostic tools and integrative care models. Future interventions

should focus on improving awareness, reducing stigma, and promoting early screening, particularly in low-resource settings.

Keywords: *Premenstrual Syndrome (PMS), Premenstrual Dysphoric Disorder (PMDD), Hormonal Regulation, Sociocultural Factors, Global Women's Health*

Introduction

Premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD) affect women's physical and mental health worldwide, with prevalence and contributing factors varying across cultures and regions. Factors like Rh-negative blood type, age at menarche, caffeine intake, and depression have been linked to these conditions [1]. Cultural stigma around menstruation and mental health can lead to underreporting [2]. Understanding these differences is essential for creating effective interventions and support systems for women. Premenstrual disorders are psychiatric or somatic symptoms that develop during the luteal phase of the menstrual cycle and disrupt women of reproductive age's normal daily functioning, and will resolve within a brief time period once menstruation occurs [3]. The American Congress of Obstetricians and Gynecologists (ACOG) has included both psychiatric and somatic symptoms while deciding premenstrual syndrome to fall into two categories which include affective symptoms such as angry outbursts, anxiety, confusion, depression, irritability, withdrawal from social interaction and somatic symptoms such as abdominal bloating, breast swelling or tenderness, headache, musculoskeletal pain or joint pain, edema of extremities and weight gain [4].

In contrast, The American Psychiatric Association (APA) was headed psychiatric symptom-oriented when it phrased its criteria for the diagnosis of premenstrual dysphoric disorder such that for eligibility of diagnosis, the patient must have experienced a minimum of five symptoms during the past week before menses, that improvement had started within several days following onset of menses, and few or no symptoms following menses. Such symptoms must consist of one or more of the following as affective lability, namely mood swings, sudden depression, or heightened rejection sensitivity, followed by heightened irritability or anger, depressed mood or hopelessness with marked anxiety or tension. Moreover, one or more of the following must appear to account for five symptoms such as loss of interest in things most liked, difficulty in concentration, tiredness or loss of energy, perceivable change in appetite or food intake, greater or excess appetite, excessive sleeping or insomnia, over- whelming or crushing, or physical discomfort like breast tenderness, bloating, or arthralgia. These symptoms must occur in most menstrual cycles over the past year and result in clinically significant impairment or distress in the workplace, school, social life, or activities. They must exclude the emergence of another

disease like major depression or anxiety, and must exclude being precipitated by alcohol or other illness. Future daily rating on at least

two symptomatic cycles are recommended to provide reassurance, even though early diagnosis can be done [5].

Premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD) are the products of interplay among biological, psychological, and sociocultural variables. The development of symptoms is centred on hormonal alterations, enhanced sensitivity to cyclic estrogen and progesterone changes, influencing neurotransmitters such as serotonin and GABA, which regulate mood and stress responses [7,11]. Psychological stressors like chronic stress, depression, and insomnia complicate the symptoms, and research provided astonishing correlations for stress severity for PMS severity (r = 0.274–0.284) [8]. Lifestyle statuses like smoking, obesity, and malnutrition also complicate the risks, as smoking 2.1-fold increases the risk of PMS and obesity is associated with a high prevalence of PMS [7]. Sociocultural determinants like menstrual stigma and inaccessibility of health care, in low-resource settings, impede proper management [3]. Genetic determinants, such as the heterogeneity of serotonin receptor genes (e.g., 5HT1A) and estrogen receptor alpha (ESR1), also influence susceptibility [7,11]. Environmental stressors like trauma and pandemic-related disruption were found to increase symptom severity by glucocorticoid and sleep pattern disruption [8]. Treatment of choice is often multimodal treatment, which includes SSRIs, hormonal contraceptives, and lifestyle modification such as stress management and dietary change [6,9,10].

Purpose of Study

The purpose of the present study is to identify the most important biological, psychological, and sociocultural determinants of premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD) in Korean, Vietnamese, Ethiopian, Jordanian, Indian, and Malaysian women. These disorders, with episodic symptoms at a physical, emotional, and behavioural level, most affect the productivity and quality of life of women. Still, determinants differ enormously by cultural and socioeconomic context. Synthesizing data across locations, this project aims to map region-specific risk factors and inform culturally targeted interventions. Psychological and lifestyle factors are prominent in Korean studies, and stress, depression, and sleep disturbance are most strongly related to PMS severity.

Findings with college women indicated that 72.7% were PMDD cases, and sleep ($\beta = 0.375$) and unhealthy diet ($\beta = 0.202$) were the most powerful predictors [8]. The COVID-19 pandemic also hastened these problems at a quicker pace,

resulting in glucocorticoid regulation disruption and irregular menstrual cycling, and thus, aggravating symptoms [8]. Similarly, a high rate of PMDD in Ethiopian adolescents (33.03%) is understandable by irregular menstrual cycle (AOR = 4.24), increased bleeding duration (AOR = 2.14), and perceived higher stress (AOR = 3.47). Jordan and India illustrate the impact of lifestyle and sociocultural factors. In Jordan, 94% of women have PMS, and BMI, family history, smoking, and herbal tea consumption are significantly related to symptom severity [14]. Indian research has cited a pooled prevalence of 43% of PMS, based on dietary aspects, socioeconomic level, and cultural resistance to help-seeking behaviour [15]. Malaysian statistics, nevertheless, note ethnic disparities, with Malay women scoring higher on symptoms compared to Chinese or Indian women, perhaps due to diet or genetic influences. The low usage rate of remedies (60% had no intervention) highlights gaps in utilization of healthcare services [16]. Vietnam is a relatively understudied country, with limited data on PMS/PMDD prevalence and risk factors. This scarcity highlights the need for targeted research in low- and middle-income countries (LMICs), where cultural determinants and healthcare disparities uniquely influence symptom manifestation. Biological determinants like hormonal sensitivity and genetic vulnerability intersect with psychosocial stressors, and therefore, holistic management strategies must be applied everywhere on the planet.

For instance, Indian and Ethiopian studies recommend stress-reduction training programs and calcium and vitamin B6 supplements, while Korean studies recommend serotonin-targeted treatment [8,13]. Holding these determinants constant in aggregate, the current study aims to model global health policy and reduce the social burden of PMS/PMDD by instituting intervention.

Materials and Methods

This cross-sectional retrospective study employed a correlational research design to analyze factors influencing premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD) across six countries: South Korea, Vietnam, Ethiopia, Jordan, India, and Malaysia. Participants included university and college students from South Korea (n = 143, ages 21–25), Vietnam (n =

302, ages 18–45), Ethiopia (n = 374, ages 19–25), India (n = 179, ages 19–28), and Malaysia (n = 129, ages 18–35). In Jordan, the study expanded to include 1,580 civilians aged 18–50 to Capture broader demographic variability. Inclusion criteria focused on women of reproductive age experiencing PMS/PMDD symptoms, as defined by the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) criteria for PMDD and validated screening tools such as the Premenstrual Symptoms Screening Tool (PSST). Individuals with pre-existing psychological disorders (e.g., major depression, anxiety disorders) or contraceptive use were excluded, except in Ethiopia, where contraceptive users were included due to local reproductive health practices. Data collection employed self-administered questionnaires adapted from established instruments, including the Menstrual Distress Questionnaire (MDQ) to assess symptom severity and the Perceived Stress Scale (PSS) to evaluate stress levels. Additional variables such as menstrual cycle irregularity, dysmenorrhea severity, lifestyle habits (e.g., exercise, diet), and psychological distress (evaluated via the Patient Health Questionnaire-9 (PHQ-9) were included. Retrospective chart reviews and prospective symptom tracking over two menstrual cycles were conducted to confirm PMDD diagnoses, aligning with DSM-5 requirements.

Ethical approval was obtained from the institutional review boards in each participating country, and written informed consent was secured from all participants. Data were analyzed using SPSS and SAS software, employing multivariable logistic regression to identify associations between PMDD/PMS and factors such as irregular menstrual cycles, high perceived stress, depression, and lifestyle variables. Cross-country comparisons were adjusted for sociocultural differences using stratified analysis.

This methodology builds on prior studies demonstrating the utility of cross-sectional designs in PMS/PMDD research, while addressing gaps in multinational comparative analyses.

Literature Review

Premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD) are multifactorial disorders influenced by biological, psychological, sociocultural, and environmental factors. Recent studies have highlighted regional and methodological disparities in prevalence, risk factors, and geographical distribution, pointing to variations in diagnostic practices, cultural expectations, and lifestyle determinants.

3.1. Regional Prevalence and Methodological Disparities

Globally, the prevalence of PMS and PMDD varies widely, with studies quoting PMDD prevalence between 1.3% in Vietnam and 72.7% in South Korea, and PMS prevalence between 10.3% in Vietnam 94% in Jordan [8]. The variations may be due to differences in research methodologies, such as diagnostic criteria and sampling. For instance, South Korea's high rate of PMDD (72.7%) was reported during the COVID-19 pandemic, as there were stressors such as sleep disruption (19%) and anorexia (7%) that added to enhanced symptoms, as proof of how menstrual health is affected by environmental crises [8]. On the other hand, Jordan's extremely high PMS percentage (94%) was based on large civilian cohort studies, possibly showing increased symptom reporting due to cultural normalization of menstrual pain and analgesic dependence (75%) [17,18].

Diagnostic stringency is also implicated: strictly adhering to the DSM-5 protocol in research has lower PMDD rates (1.6%–3.2%) than those using provisional criteria (7.7%) [19]. In African research, for example, non-standardized measures exaggerated reported PMDD (27.8%), whereas in North American research, rates were lower (2.8%) [17]. Such discrepancies in methodology argue in favour of harmonized diagnostic systems in cross-cultural research.

3.2. Biological and Hormonal Influences

Biological factors, including genetic vulnerability and hormonal sensitivity, are crucial in the etiology of PMS/PMDD. PMDD women are believed to be more sensitive to cyclical fluctuations in progesterone and estrogen levels, particularly allopregnanolone, a progesterone which modulates GABA-A receptor activity and serotonin transmission [7,24]. Polymorphism in estrogen receptor alpha (ESR1) and serotonin transporter genes also makes people vulnerable to PMDD, as seen from twin studies [7,25]. Vietnam, for example, reported a remarkable association between PMS/PMDD and Rh-negative blood group (36.4%), a unique feature in Asian populations, suggesting immunological or genetic vulnerability [8].

Dysmenorrhea, which was strongly correlated with PMDD in Ethiopia (80.5%), underscores the role of chronic pain in mood disorder aggravation. Ethiopian studies were unique in enrolling contraceptive users, with progestin-only contraceptives found to worsen symptoms of PMDD via modulation of serotonin pathways [17,20]. Genetic polymorphisms in serotonin transporters (e.g., 5 5-HTTLPR) and estrogen receptors (ESR1) have also been involved in PMDD susceptibility, with heterogeneous findings across populations [7].

3.3. Lifestyle and Sociocultural Factors

Lifestyle practices and cultural beliefs have a significant influence on PMS/PMDD severity:

• Food Habits: In India, excessive caffeine intake (67.6%) and stress-related eating (89.2%) correlated with PMDD, perhaps due to cortisol dysregulation and serotonin imbalance, which may worsen symptoms like irritability, anxiety, and insomnia [18,21]. Similarly, Malaysian women had sweet food cravings during the luteal phase. Sugar causes a short-term surge in serotonin, and rapid fluctuations in glucose can lead to reactive hypoglycemia, which in turn increases irritability and fatigue. Excessive sugar intake promotes pro-inflammatory cytokines, which can contribute to increased pain sensitivity and mood disturbances in PMS/PMDD [8].

• Physical Activity: Sedentary lifestyle in Jordan (57.3% sedentary) and Ethiopia was linked to higher PMS rates, whereas aerobic exercise has been shown to alleviate symptoms by the mechanisms of reducing inflammation and improving mood [18,22].

• Cultural Stigma: Within conservative cultures of Jordan and Ethiopia, menstrual stigma leads to underreporting of psychological symptoms like depression and irritability. Women may only seek help for physical complaints (e.g., cramps, bloating), as these are more socially acceptable. This stigma prevents proper diagnosis of PMDD, leaving many women untreated. [2,23]. South Korea's exceptionally advanced healthcare infrastructure, however, is marred by modern stressors such as workplace stressors and social factors that increase symptom severity, especially during the period of the pandemic. Increased psychological stress has been linked to the worsening of PMDD cases, which makes it imperative to have integrated mental health support [8].

3.4. Mental Health and Comorbidities

PMDD has a robust association with psychiatric comorbidities like depression, anxiety, and suicidality. PMDD increases suicide attempt risk sevenfold and suicidal ideation fourfold, as per a meta-analysis [20]. Suicidal ideation in Bangladesh was noted in 38.8% of PMDD patients, which was mediated through co-morbid depression and stress [20]. Similarly, South Korean studies during the
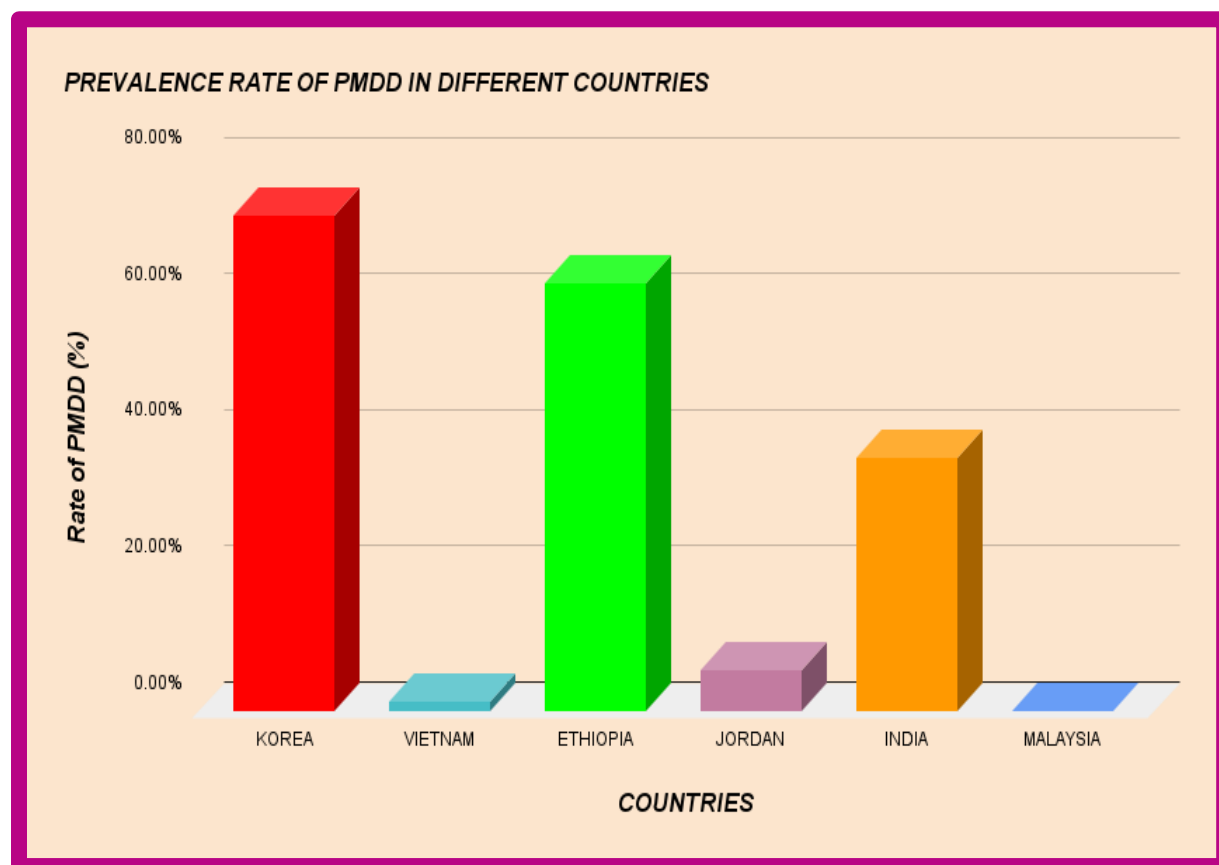
The COVID-19 pandemic highlighted the double role of the pandemic in worsening sleep quality and eating disorders, both of which augmented PMDD severity [8].
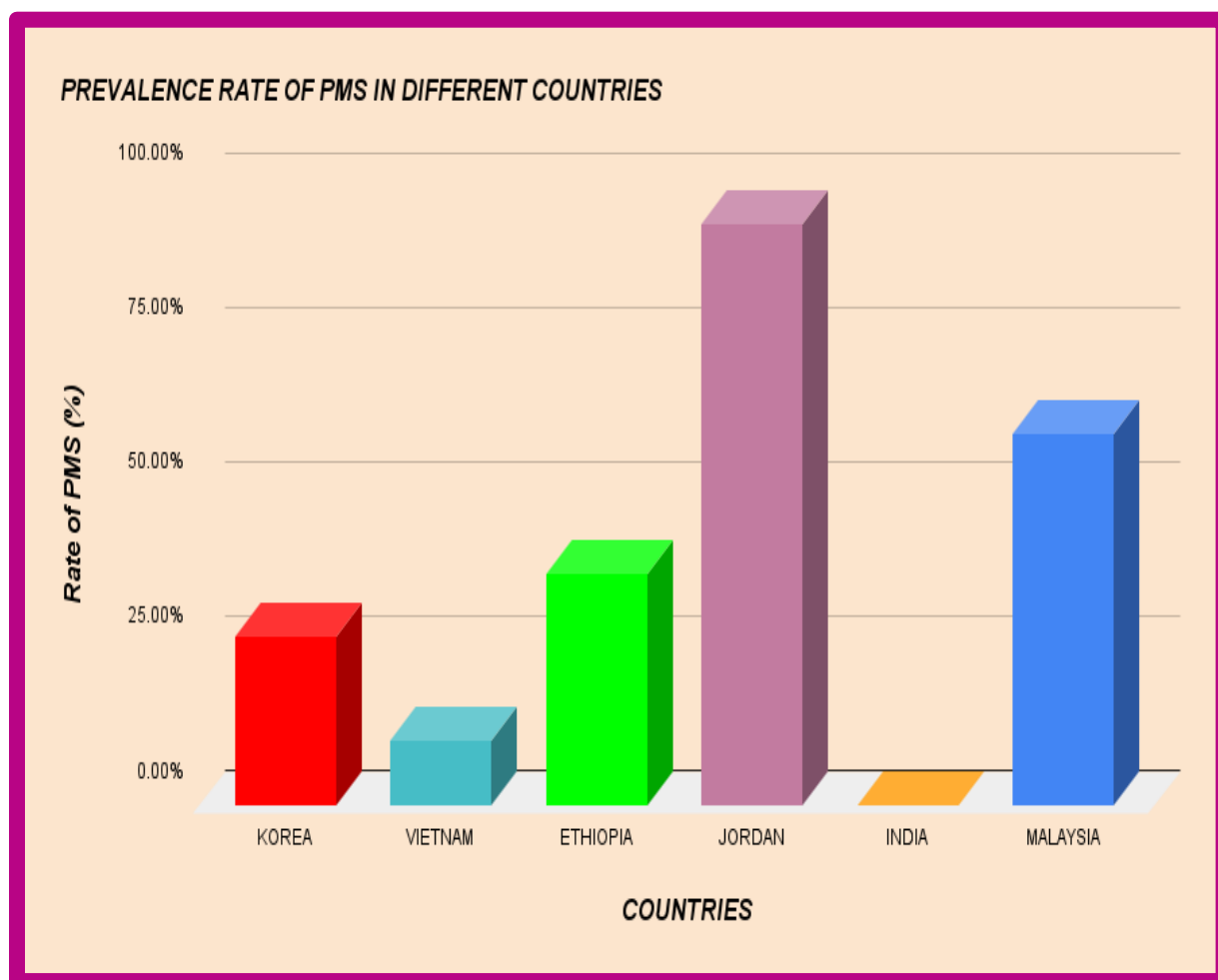
Cultural stressors such as academic stress and social isolation also exacerbate symptoms. For example, PMS (33.8%) increased among international students in China due to language and food changes and stress scores (PSS > 20) were highly related to menstrual disturbances [22].

Research Results

Globally, the prevalence of premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD) varies significantly across countries, with distinct sociocultural, lifestyle, and biological factors playing critical roles. A comparative analysis of studies reveals stark differences in prevalence rates. For instance, South Korea reports the highest prevalence of PMDD at 72.7%, followed by Ethiopia (62.6%), India (37%), Jordan (6%), and Vietnam (1.3%). Conversely, Jordan has the highest PMS prevalence at 94%, trailed by Malaysia (60%), Ethiopia (37.4%), South Korea (27.3%), and Vietnam (10.3%). These disparities highlight the influence of regional methodologies, sample demographics, and cultural contexts.

Table 1: Prevalence rate of PMDD in different countries

Table 2: Prevalence rate of PMS in different countries

South Korea boasts the global leading prevalence rate of PMDD of 72.7%, according to a 2021 study conducted during the COVID-19 pandemic. Data collection was conducted between September 1–9, 2021, when there were severe lockdowns and social distancing measures in place that exacerbated psychological distress. Key findings linked PMDD severity with sleep disorders (19%) and anorexia-driven eating disorders (7%), both exacerbated by disruption of daily routines during the pandemic and heightened anxiety. Sleep loss has been revealed to dysregulate activity in the hypothalamic-pituitary-adrenal (HPA) axis, which fuels mood disorders like PMDD. In addition to this, societal stressors in South Korea, including extremely high academic and work pressures, may exacerbate tension; however, the current study alone identifies the transient role of the pandemic in deepening symptoms.

Jordan's reported 94% PMS is the highest the world has yet seen, based on a major civilian population investigation. The research involved over 2,000 women, which is significantly greater than that of other studies worldwide, and this may explain the high detection rate. To our surprise, 57.3% of the women respondents had inadequate physical exercise, and 75% relied on regular intake of painkillers to ease menstrual pain. The findings suggest cultural normalization of menstrual pain and low access to non-pharmacological interventions such as cognitive-behavioural therapy or dietary modification. Furthermore, conservative cultural norms of Jordan may undermine open discussion regarding menstrual health and hinder diagnosis, as well as encourage self-medication.

Of the 62.6% Ethiopian women who exhibited PMDD criteria, 80.5% of these had a strong association with dysmenorrhea (painful menses). Compared with studies that have been performed elsewhere, in Ethiopian research, participants using contraceptives were enrolled, and it was revealed that hormonal contraceptives, particularly progestin-only injectables, were associated with higher symptom scores for PMDD. This is in line with research findings that synthetic hormones can alter serotonin neurotransmission and compound mood disturbance. In addition, insufficiencies in proper healthcare infrastructure in rural Ethiopia can compound the delay of dysmenorrhea treatment and indirectly increase PMDD through chronic pain and stress.

India's 37% prevalence of PMDD was directly related to dietary patterns, with 67.6% of the subjects having consumed excessive amounts of coffee or tea and 89.2% having eaten due to stress (Patil et al., 2019). Caffeine's stimulant action can interfere with sleep and elevate cortisol levels, exacerbating irritability and anxiety. Stress eating, which can include high-fat or high-sugar foods, can temporarily improve mood symptoms but exacerbate inflammation and hormonal dysregulation. Sociocultural influences, including mental illness stigma and lack of familiarity with PMDD as a clinical illness, further exacerbate management in India.

Vietnam's low rate of PMDD (1.3%) is juxtaposed with its 10.3% rate of PMS; however, a new finding is that 36.4% of PMS/PMDD cases occurred in women with Rh-negative blood type. Rh-negative blood is rare in Asian populations (<0.3%), and this suggests a potential genetic or immunological relationship. Rh incompatibility during pregnancy is known to lead to inflammatory responses, which by extension might have a theoretical impact on neuroendocrine

processes involved in PMDD. However, this relationship is speculative and would require genetic studies to explore polymorphisms in Rh factor-related genes.

60% of Malaysian women had reported PMS, and 45.7% cited sweet cravings as the most problematic symptom. High-carbohydrate foods temporarily increase serotonin levels, providing a mood boost for a short period of time. However, overconsumption of sugar leads to insulin resistance, which disrupts ovarian hormone production and exacerbates mood swings. Urbanization and food processing in Malaysia may exacerbate these food patterns, highlighting the role of socioeconomic development in PMS risk.

The differences in PMS and PMDD prevalence observed between nations are not solely a result of biological variation but are also influenced by research design and cultural context. South Korea's exceptionally high prevalence of PMDD, for instance, was found in a pandemic-era study of 2021 that focused on acute stressors like social isolation. In contrast, Jordan's exceptionally high prevalence of PMS was discovered in an extensive civilian cohort study with more liberal symptom reporting. These methodological variations in timing, sample selection, or focus will have significant implications. Ethiopia's inclusion of users of contraceptives, who are often excluded in other regions of the globe, introduced new variables that focused on hormonal influences on PMDD.

In contrast, Vietnam's focus on Rh-negative blood type, a rare subpopulation in Asia, can skew prevalence data toward a biologically disparate population. Cultural beliefs contribute to the difficulties of comparisons: in conservative cultures like Jordan and Ethiopia, menstruation stigma is likely to lead to underreporting of emotional symptoms, such as mood swings, but not physical complaints like pain. In contrast, in South Korea, greater healthcare infrastructure and greater knowledge about mental illness most likely increase recognition and diagnosis of PMDD. These methodological and sociocultural nuances highlight the challenges of cross-national comparison, with a focus on ensuring standardized diagnostic criteria and culturally sensitive assessment instruments in future studies.

The findings of these international investigations have both significant research and clinical implications. Public health programs in high-prevalence locations, such as Jordan and Ethiopia, need to prioritize education on non-pharmacological methods of pain management, including physical exercise and mindfulness practices, to reduce the consumption of painkillers and

address systemic gaps in menstrual literacy. Genetic research is urgently needed to explore the role of Rh-negative blood types in PMS/PMDD, as in Vietnam, and to study the interaction of hormonal contraceptives, particularly in Ethiopia, with neuroendocrine processes in deteriorating mood disorders. Nutritional interventions, tailored to local customs, can prevent risks in India and Malaysia, where symptoms are compounded by caffeine overuse, stress eating, and sugar craving. Furthermore, the pandemic's impact on PMDD severity in South Korea highlights the importance of integrating mental health support into emergency planning. Future research should utilize longitudinal designs to track symptom emergence and conduct cross-cultural collaborations to distinguish between universal biological processes and context-specific variables. By attending to these imperatives, researchers and clinicians can develop culturally informed interventions that respect cultural diversity while contributing to the global understanding of PMS and PMDD.

5. CONCLUSION

The global prevalence of premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD) reveals significant regional disparities, shaped by a complex interplay of biological, sociocultural, and environmental factors. This study underscores that South Korea reports the highest PMDD prevalence at 72.7%, a phenomenon linked to heightened psychological stressors during the COVID-19 pandemic, including sleep disturbances (19%) and anorexia-related eating disorders (7%). In contrast, Jordan exhibits the highest PMS rate globally at 94%, driven by sedentary lifestyles (57.3% lack physical exercise) and overreliance on painkillers (75%), reflecting cultural norms that normalize menstrual pain and limit access to non-pharmacological interventions.

Vietnam presents a unique biological association, with 36.4% of PMS/PMDD cases occurring in individuals with Rh-negative blood types—a rare trait in Asian populations—suggesting potential genetic or immunological vulnerabilities. In Ethiopia, dysmenorrhea (severe menstrual pain) is strongly correlated with PMDD (80.5%), compounded by hormonal contraceptive use, which may exacerbate neuroendocrine imbalances. This contrasts with studies from other

regions, where contraceptive users are often excluded, highlighting the need for context-specific research frameworks.

Dietary and behavioural factors further illustrate regional variations. In India, high caffeine consumption (67.6%) and stress-related eating (89.2%) are linked to elevated PMDD risk, likely due to cortisol dysregulation and serotonin fluctuations. Similarly, Malaysia identifies cravings for sweet foods (45.7%) as a key driver of PMS, possibly tied to transient mood enhancement from glucose spikes, which is exacerbated by urbanization and increased accessibility of processed foods.

Methodological differences, such as South Korea's pandemic-era focus on acute stressors versus Jordan's large-scale civilian cohort sampling, also influence prevalence rates, underscoring the need for standardized diagnostic criteria. Cultural stigma in conservative societies like Jordan and Ethiopia often leads to underreporting of psychological symptoms, whereas physical symptoms are more readily acknowledged.

These findings collectively underscore the necessity for culturally tailored interventions, such as public health campaigns promoting non-pharmacological pain management in high-prevalence regions, genetic studies exploring Rh-factor mechanisms, and dietary guidelines addressing caffeine and sugar intake. Future research should prioritize longitudinal and cross-cultural designs to disentangle universal biological mechanisms from context-specific influences, ultimately improving global strategies for managing PMS and PMDD.

References

1. Dinh Trieu Ngo, V., Bui, L. P., Hoang, L. B., et al. (2023). Associated factors with premenstrual syndrome and premenstrual dysphoric disorder among female medical students: A cross-sectional study. *PLOS ONE.* https://doi.org/10.1371/journal.pone.0278702

2. Islas-Preciado, D., et al. (2025). Unveiling the burden of premenstrual dysphoric disorder: A narrative review to call for gender perspective and intersectional approaches. *Frontiers in Psychiatry.* https://doi.org/10.3389/fpsyt.2024.1458114

3. Hofmeister, S., & Bodden, S. (2016). Premenstrual syndrome and premenstrual dysphoric disorder. *American Family Physician, 94*(3), 236–240.

4. American College of Obstetricians and Gynecologists. (2014). *Guidelines for women's health care: A resource manual* (4th ed., pp. 607–613). Washington, DC.

5. American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: American Psychiatric Association.

6. Johns Hopkins Medicine. (n.d.). *Premenstrual dysphoric disorder (PMDD).* https://www.hopkinsmedicine.org/health/conditions-and-diseases/premenstrual-dysphoric-disorder-pmdd

7. Mishra, S., & Marwaha, R. (n.d.). *Premenstrual dysphoric disorder.* NIH.gov. https://www.ncbi.nlm.nih.gov/books/NBK532307/

8. Yi, S. J., Kim, M., & Park, I. (2023). Investigating influencing factors on premenstrual syndrome (PMS) among female college students. *BMC Women's Health, 23*(1). https://doi.org/10.1186/s12905-023-02579-9

9. Burnett, T. (n.d.). Premenstrual dysphoric disorder (PMDD): A severe form of PMS. *Mayo Clinic.* https://www.mayoclinic.org/diseases-conditions/premenstrual-syndrome/expert-answers/pmdd/faq-20058315

10. Cleveland Clinic. (n.d.). *Premenstrual dysphoric disorder (PMDD).* https://my.clevelandclinic.org/health/diseases/9132-premenstrual-dysphoric-disorder-pmdd

11. Consensus AI. (n.d.). What causes premenstrual dysphoric disorder (PMDD)? *Consensus AI Blog.* https://consensus.app/home/blog/what-causes-premenstrual-dysphoric-disorder-pmdd/

12. Alemu, S. M., Habtewold, T. D., & Haile, Y. G. (2017). Mental and reproductive health correlates of academic performance among Debre Berhan University female students, Ethiopia: The case of premenstrual dysphoric disorder. *BioMed Research International, 2017*, 1–8. https://doi.org/10.1155/2017/4383725

13. Chekol, A. T., et al. (2024). Determinants of premenstrual dysphoric disorder and associated factors among regular undergraduate students at Hawassa University Southern, Ethiopia: Institution-based cross-sectional study. *BMC Public Health, 24*(1). https://doi.org/10.1186/s12889-024-18066-z

14. Ababneh, M. A., Alkhalil, M., & Rababa'h, A. (2023). The prevalence, risk factors and lifestyle patterns of Jordanian females with premenstrual syndrome: A cross-sectional study. *Future Science OA, 9*(9). https://doi.org/10.2144/fsoa-2023-0027

15. Dutta, A., & Sharma, A. (2021). Prevalence of premenstrual syndrome and premenstrual dysphoric disorder in India: A systematic review and meta-analysis. *Health Promotion Perspectives, 11*(2), 161–170. https://doi.org/10.34172/hpp.2021.20

16. Omar, K., et al. (2009). Premenstrual symptoms and remedies practiced by Malaysian women attending a rural primary care clinic. *African Journal of Primary Health Care & Family Medicine, 1*(1). https://doi.org/10.4102/phcfm.v1i1.28

17. Christy, C., et al. (2018). Factors associated with premenstrual syndrome and its different symptom domains among university students in Lebanon. *International Journal of Women's Health and Wellness, 4*(1).

18. Gudipally, P. R., & Sharma, G. K. (n.d.). *Premenstrual syndrome.* PubMed. https://www.ncbi.nlm.nih.gov/books/NBK560698/

19. University of Oxford. (2024). New data shows prevalence of premenstrual dysphoric disorder. https://www.ox.ac.uk/news/2024-01-30-new-data-shows-prevalence-premenstrual-dysphoric-disorder

20. Roy, N., et al. (2025). Premenstrual dysphoric disorder and its co-existence with depression, anxiety, and stress as risk factors for suicidal ideation and suicide attempts among university students in Bangladesh: A single-site survey. *PLOS ONE, 20*(4), e0321097. https://doi.org/10.1371/journal.pone.0321097

21. Dhar, S., Mondal, K. K., & Bhattacharjee, P. (2023). Influence of lifestyle factors with the outcome of menstrual disorders among adolescents and young women in West Bengal, India. *Scientific Reports, 13*(1). https://doi.org/10.1038/s41598-023-35799-5

22. Ansong, E., et al. (2019). Menstrual characteristics, disorders and associated risk factors among female international students in Zhejiang Province, China: A cross-sectional survey. *BMC Women's Health, 19*(1). https://doi.org/10.1186/s12905-019-0756-2

23. Attia, G. M., Alharbi, O. A., & Aljohani, R. M. (2023). The impact of irregular menstruation on health: A review of the literature. *Cureus, 15*(11). https://doi.org/10.7759/cureus.50193

24. Modzelewski, S., et al. (2024). Premenstrual syndrome: New insights into etiology and review of treatment methods. *Frontiers in Psychiatry, 15.* https://doi.org/10.3389/fpsyt.2024.1245767

25. Tiranini, L., & Nappi, R. E. (2022). Recent advances in understanding/management of premenstrual dysphoric disorder/premenstrual syndrome. *Faculty Reviews, 11*(11). https://doi.org/10.12703/r/11-1396