

PREVALENCE AND DETERMINANTS OF PREMENSTRUAL DYSPHORIC DISORDER: A CROSS-SECTIONAL STUDY IN WOMEN ATTENDING A TERTIARY CARE HOSPITAL IN INDIA

Gollepally Pragathi¹, Chinta Pavana Sandhya², Geetha Navuduri³

¹Assistant Professor, Department of Psychiatry, Government Medical College and General Hospital, Suryapet, Telangana, India

²Assistant Professor, Department of Psychiatry, Government Medical College and General Hospital, Siddipet, Telangana, India

³Associate Professor, Department of General Medicine, Government Medical College and General Hospital, Siddipet, Telangana, India

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Corresponding Author:

Dr. Gollepally Pragathi,

Email: gollepallypragathi@gmail.com

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Abstract

Background: Premenstrual Dysphoric Disorder (PMDD) is a severe form of premenstrual syndrome affecting women's mental and physical health, with significant impacts on daily functioning. Limited studies are available on PMDD prevalence and associated risk factors in India. The objective is to estimate the prevalence of PMDD and to determine its association with sociodemographic factors, dietary habits, sleep quality, family history of psychiatric illness, and physical comorbidities in women attending a tertiary care hospital. **Materials and Methods:** A cross-sectional study was conducted among 130 females aged 18–40 years who met the inclusion criteria. Participants were evaluated using the Daily Record of Severity of Problems (DRSP), Pittsburgh Sleep Quality Index (PSQI), and DSM-5 diagnostic criteria for PMDD. Data were analyzed using descriptive statistics and chi-square/Fisher's exact tests for associations. **Result:** PMDD prevalence was 3.8% (n = 5). Significant associations were found between PMDD and age group 18–29 years (p = 0.021), overweight BMI (>25 kg/m², p = 0.01), mixed dietary habits (p = 0.003), and poor sleep quality (p = 0.03). No significant association was observed with family history of psychiatric illness (p = 0.33) or physical comorbidities. Among non-PMDD participants, 60% reported poor sleep quality, and 36.9% were overweight. **Conclusion:** The prevalence of PMDD in this study is consistent with global estimates. Younger age, overweight BMI, mixed dietary habits, and poor sleep quality are significant risk factors for PMDD. Awareness and early intervention are essential to mitigate its impact on women's quality of life.

INTRODUCTION

Premenstrual Dysphoric Disorder (PMDD) is a severe form of premenstrual syndrome (PMS) that occurs in the luteal phase of the menstrual cycle and significantly impacts the mental and physical health of affected women.^[1] It is characterized by marked mood swings, irritability, anxiety, and depressive symptoms, alongside physical symptoms like fatigue, bloating, and breast tenderness. PMDD has profound implications on personal, social, and occupational functioning, often leading to a reduced quality of life.^[2]

Globally, PMDD affects approximately 3–8% of women of reproductive age, but its prevalence varies based on diagnostic criteria and sociocultural factors. In India, studies on PMDD are scarce, with limited exploration of associated sociodemographic and

lifestyle factors.^[3,4] Cultural stigma around menstruation and mental health often leads to underdiagnosis and inadequate management of the condition.^[5] Factors such as body mass index (BMI), dietary habits, sleep quality, and family history of psychiatric illness have been suggested as potential contributors to PMDD, but conclusive evidence is lacking in the Indian context.^[6]

The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) formally recognizes PMDD as a depressive disorder, underscoring the need for accurate diagnosis and timely interventions.^[7] Given its treatability and the substantial impact it has on women's lives, understanding PMDD and its associated risk factors is essential for designing effective preventive and therapeutic strategies.

This study aims to estimate the prevalence of PMDD and evaluate its association with sociodemographic

variables, dietary habits, sleep quality, family history of psychiatric illness, and physical comorbidities in women attending a tertiary care hospital. By identifying modifiable risk factors, the study seeks to contribute to improved management and awareness of PMDD in India.

MATERIALS AND METHODS

Study Setting: This was a cross-sectional study conducted at the Chalmeda Anand Rao Institute of Medical Sciences in Karimnagar, Telangana, from January 2021 to June 2022, spanning a period of one and a half years.

Study Population: Female patients aged 18–40 years attending the outpatient department were recruited. Inclusion criteria included participants with regular menstrual cycles for at least six months, literacy, and willingness to provide informed consent. Exclusion criteria included pregnancy, history of psychiatric illness, illiteracy, and irregular menstrual cycles.

Sample Size: A sample size of 130 was calculated using the formula $N = Z^2PQ/ME^2$ with an assumed prevalence of 80% (P), 95% confidence interval (Z), and 4% margin of error (ME).

Sampling Technique: Participants were selected through convenient sampling.

Data Collection Tools: Daily Record of Severity of Problems (DRSP): Used to assess PMDD symptoms over two symptomatic cycles.

Pittsburgh Sleep Quality Index (PSQI): Evaluated sleep quality over a one-month period.

General Health Questionnaire-12 (GHQ-12): Screened participants for any underlying psychiatric conditions.

Carolina Premenstrual Assessment Scoring System (C-PASS): Assessed PMDD symptom patterns.

Procedure: Participants were divided into groups and provided detailed explanations of the study protocol. They were asked to complete the DRSP and PSQI daily for two months. Data collection was monitored via a digital group, with regular reminders sent to ensure compliance. Diagnoses of PMDD were made using DSM-5 criteria.

Data Analysis: Data were analyzed using Microsoft Excel 2016. Descriptive statistics were used to summarize variables. The association between variables was assessed using the chi-square or Fisher's exact test, with a p-value of <0.05 considered statistically significant.

Study Duration: The study was conducted over a period of 18 months, from January 2021 to June 2022.

Ethical Considerations: Ethical approval was obtained from the Institutional Ethics Committee of Chalmeda Anand Rao Institute of Medical Sciences in Karimnagar, Telangana. Written informed consent was obtained from all participants before enrollment.

RESULTS

A total of 130 female participants were included in the study, and their data was analyzed to determine the prevalence of Premenstrual Dysphoric Disorder (PMDD) and its association with various sociodemographic and clinical factors.

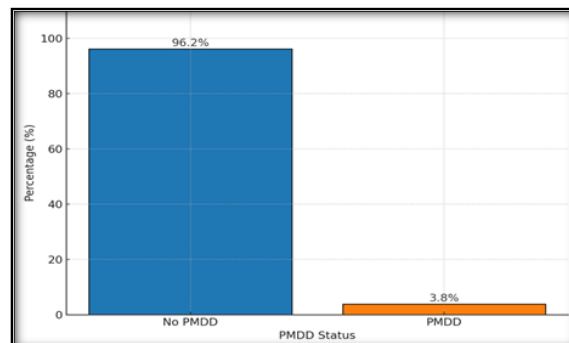


Figure 1: Distribution of PMDD Among Study Population

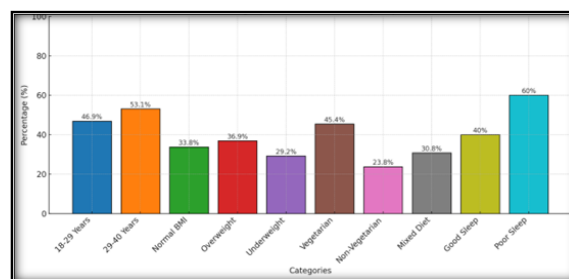


Figure 2: Sociodemographic Data of the Study Population

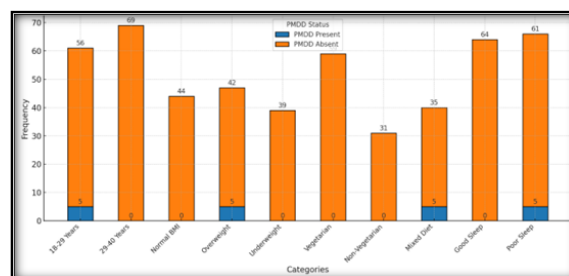


Figure 3: Association Between Risk Factors and PMDD

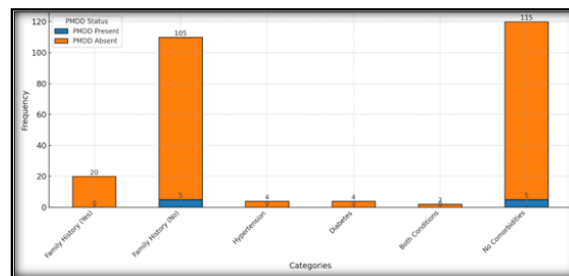


Figure 4: Association Between Family History/Comorbidities and PMDD

Prevalence of PMDD: Among the 130 participants, 5 females (3.8%) were diagnosed with PMDD, while the remaining 125 females (96.2%) did not meet the diagnostic criteria for PMDD [Table 1].

Sociodemographic Data: Age Group: A higher proportion of participants (53.1%) belonged to the 29–40 years age group, while the remaining 46.9% were in the 18–29 years age group.

Body Mass Index (BMI): The majority of participants (36.9%) were overweight (BMI > 25), followed by 33.8% in the normal BMI range (18–24.9) and 29.2% who were underweight (BMI < 18).

Dietary Habits: Most participants (45.4%) were vegetarian, while 30.8% consumed a mixed diet, and 23.8% were non-vegetarian.

Quality of Sleep: Poor sleep quality was reported by 60% of participants, whereas 40% had good sleep quality [Table 2].

Associations Between Risk Factors and PMDD:

Age Group: All 5 participants with PMDD belonged to the 18–29 years age group, showing a statistically significant association (p = 0.021).

Body Mass Index (BMI): PMDD was observed exclusively among overweight participants (BMI > 25), which was statistically significant (p = 0.01).

Dietary Habits: Participants with PMDD were all consuming a mixed diet, and the association was significant (p = 0.003).

Quality of Sleep: PMDD was significantly associated with poor sleep quality (p = 0.03) [Table 3].

Association with Family History and Comorbidities:

Family History of Psychiatric Illness: None of the participants with PMDD reported a family history of psychiatric illness, and no significant association was observed (p = 0.33).

Comorbid Conditions: Participants with PMDD did not have any physical comorbidities such as hypertension or diabetes. Among those without PMDD, 4 had hypertension, 4 had diabetes, and 2 had both conditions [Table 4].

Table 1: Distribution of PMDD Among Study Population.

PMDD Variable	Frequency	Percentage
No PMDD	125	96.2%
PMDD	5	3.8%
Total	130	100%

Table 2: Sociodemographic Data of the Study Population

Variable	Categories	Frequency	Percentage
Age Group	18-29 Years	61	46.9%
	29-40 Years	69	53.1%
Body Mass Index	Normal (18-24.9)	44	33.8%
	Overweight (>25)	48	36.9%
	Underweight (<18)	38	29.2%
Dietary Habits	Vegetarian	59	45.4%
	Non-Vegetarian	31	23.8%
	Mixed	40	30.8%
Quality of Sleep	Good	52	40%
	Poor	78	60%

Table 3: Associations Between Risk Factors and PMDD

Risk Factor	PMDD Present	PMDD Absent	Total	P-value
Age Group	18-29 Years	5	56	61
	29-40 Years	0	69	69
BMI	Normal	0	44	44
	Overweight	5	42	47
	Underweight	0	39	39
Dietary Habits	Vegetarian	0	59	59
	Non-Vegetarian	0	31	31
	Mixed	5	35	40
Quality of Sleep	Good	0	64	64
	Poor	5	61	66

Table 4: Association Between Family History/Comorbidities and PMDD

Factor	PMDD Present	PMDD Absent	Total	P-value
Family History of Psych Illness	Yes	0	20	20
	No	5	105	110
Comorbid Conditions	Hypertension	0	4	4
	Diabetes	0	4	4
	Both	0	2	2
	None	5	115	120

DISCUSSION

This study aimed to estimate the prevalence of Premenstrual Dysphoric Disorder (PMDD) among women attending a tertiary care hospital in India and explore its association with sociodemographic

variables, dietary habits, sleep quality, family history of psychiatric illness, and physical comorbidities.

Prevalence of PMDD: The prevalence of PMDD in the study population was 3.8%, consistent with global estimates ranging between 3% and 8% (Raval et al., 2016; Vineeta et al., 2024). Similarly, Raval et al.

reported a prevalence of 3.7% among college students in Gujarat, and Vineeta et al. observed a prevalence of 4.4% in young women in Eastern India. This aligns with studies conducted in other countries, such as Chekol et al,^[10] (2023) in Ethiopia, which reported similar prevalence rates. These findings highlight the underdiagnosed burden of PMDD in India, often exacerbated by sociocultural taboos surrounding menstruation and mental health.

Association with Risk Factors: Age: PMDD was significantly associated with the 18–29 years age group ($p = 0.021$). This aligns with findings by Jha et al,^[11] (2022) and Vineeta et al (2024),^[9] who observed that younger women in their reproductive years are more vulnerable due to hormonal fluctuations and psychological stressors. Chekol et al,^[10] (2023) also highlighted the heightened prevalence of PMDD in younger age groups.

Body Mass Index (BMI): A significant association was observed between PMDD and overweight participants ($BMI > 25$, $p = 0.01$). Mishra et al,^[12] (2015) and Kavitha et al,^[7] (2015) reported similar findings, suggesting that higher BMI contributes to hormonal imbalances and inflammation, exacerbating PMDD symptoms.

Dietary Habits: Participants consuming a mixed diet were significantly more likely to have PMDD ($p = 0.003$). Mishra et al,^[12] (2015) and Kavitha et al,^[7] (2015) noted similar associations, highlighting the potential influence of dietary patterns and nutritional deficiencies on PMDD pathogenesis.

Sleep Quality: Poor sleep quality was significantly associated with PMDD ($p = 0.03$). Wu et al,^[13] (2024) and Abdeta et al,^[14] (2024) demonstrated that sleep disturbances exacerbate mood dysregulation and amplify premenstrual symptoms.

Family History and Comorbidities: No significant associations were found between PMDD and family history of psychiatric illness ($p = 0.33$) or physical comorbidities. Chekol et al,^[10] (2023) and Mishra et al,^[12] (2015) similarly reported that PMDD is more strongly influenced by modifiable lifestyle factors than hereditary or physical conditions.

Comparison with Other Studies: Global studies have reported higher prevalence rates of PMDD, especially in Western populations, ranging from 5% to 8% (Wu et al,^[13] 2024; Chekol et al,^[10] 2023). The relatively lower prevalence in this study may reflect underreporting due to stigma, lack of awareness, or differences in diagnostic criteria. The association of PMDD with modifiable factors like BMI, diet, and sleep quality is consistent across studies, including those by Mishra et al,^[12] (2015) and Raval et al,^[8] (2016).

Implications for Public Health: This study underscores the need for early identification and management of PMDD, particularly among younger women with modifiable risk factors. Public health initiatives should focus on creating awareness about PMDD, promoting healthy lifestyles, and reducing stigma around menstruation and mental health. Screening for PMDD in clinical settings, along with

dietary counseling and sleep hygiene education, could improve outcomes for affected individuals.

Limitations: The study was conducted in a single-center, which may limit the generalizability of the findings. The small sample size of participants with PMDD ($n = 5$) may affect the robustness of statistical analyses. The use of self-reported questionnaires may introduce recall bias.

CONCLUSION

This study highlights a 3.8% prevalence of Premenstrual Dysphoric Disorder (PMDD) among women aged 18–40 years in a tertiary care hospital in India. Younger age (18–29 years), overweight BMI (>25 kg/m²), mixed dietary habits, and poor sleep quality were identified as significant risk factors for PMDD, emphasizing the role of modifiable lifestyle factors. No significant association was found with family history of psychiatric illness or physical comorbidities. The findings underscore the need for early screening, lifestyle interventions, and awareness programs to address PMDD and improve women's quality of life. Further multi-center studies with larger samples are recommended to better understand the disorder's burden and guide public health initiatives.

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