Premenstrual Dysphoric disorder among Female Students at Buon Ma Thuot Medical University, Vietnam

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Article Info

ISSN (online): 2582-8940
Volume: 06
Issue: 03
July - September 2025
Received: 14-05-2025
Accepted: 15-06-2025
Published: 06-07-2025
Page No: 21-25

Abstract
Premenstrual Dysphoric Disorder (PMDD) is characterized by mood disturbances and functional impairments occurring during the luteal phase of the menstrual cycle. The prevalence and severity of PMDD significantly impact both the physical and mental well-being of young women. This study aimed to determine the prevalence of PMDD among female students at Buon Ma Thuot University of Medicine and Pharmacy and to identify associated factors. A cross-sectional study was conducted among 477 female students using the Vietnamese version of the Premenstrual Symptoms Screening Tool (PSST) for PMDD assessment. The prevalence of PMDD was found to be 4.2%. Statistically significant associations were observed between PMDD and factors such as menstrual cycle length, cycle regularity, electronic device usage time, and alcohol consumption habits ($p < 0.05$). The prevalence of PMDD in this study was higher than that reported in several previous studies in Vietnam. These findings underscore the need for early screening and diagnosis of PMDD, as well as the importance of enhancing health communication and premenstrual counseling for female students.

DOI: https://doi.org/10.54660/IJMBHR.2025.6.3.21-25

Keywords: Premenstrual Dysphoric Disorder (PMDD), Mood Disorders, Menstrual Cycle, Premenstrual Health, Vietnam

Introduction

Premenstrual dysphoric disorder (PMDD) is a condition characterized by significant mood changes and functional impairments that occur before menstruation and affects approximately 3–8% of women of reproductive age. Although symptoms typically resolve soon after menstruation begins, women with PMDD often experience recurring psychological and physical symptoms in line with their menstrual cycles [1]. In severe cases, women may suffer from emotional and behavioral disorders such as depression, severe anxiety, or psychosis [2]. In 2013, the American Psychiatric Association officially recognized PMDD as a mental disorder in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) [3]. The World Health Organization has also classified PMDD as a reproductive system disorder in the International Classification of Diseases (ICD) [4]. The prevalence and severity of PMDD can significantly disrupt the physical and social activities of young women. Particularly, female students in medical and pharmaceutical fields often face high academic pressure and stressful lifestyles, placing them at higher risk for PMDD. Several studies have reported that the prevalence of PMDD among female medical and pharmacy students in Vietnam ranges from 0.7% to 3.3% [5, 6]. However, the issue remains under-addressed, especially in the Central Highlands region, which has unique socio-cultural characteristics and is undergoing rapid urban development. To contribute practical data and raise community awareness about this condition, this study was conducted with the aim of investigating the prevalence of PMDD among female students at Buon Ma Thuot Medical University and identifying associated factors.

Methods

A descriptive cross-sectional study was conducted on 477 full-time female students at Buon Ma Thuot Medical University.

Inclusion Criteria

1. Aged from 18 to 24 years.
2. Had experienced menstruation.
3. Agreed to participate after being informed of the study objectives and content.

Exclusion Criteria:

1. Currently using hormonal medications containing estrogen and progesterone or other drugs that affect the menstrual cycle.
2. Diagnosed with endocrine or chronic diseases within the past 6 months.
3. Currently experiencing and being treated for acute illnesses.

Data Collection Procedure

Data were collected using an anonymous self-administered questionnaire that included three parts: demographic information, the Vietnamese version of the Premenstrual Symptoms Screening Tool (PSST) [5], and factors associated with PMDD.

The PSST Vietnamese version has been standardized in Vietnam and includes 14 symptom items experienced in the days before menstruation and 5 impact items. It allows women to rate the severity of each item (none, mild, moderate, severe) based on their subjective perception.

Evaluation Criteria

Women were diagnosed with PMDD if they met all three criteria of the Vietnamese version of PSST:

1. At least 1 of the following 4 symptoms rated as severe: anger/irritability, anxiety/tension, tearful/increased sensitivity to rejection, depressed mood/hopelessness.
2. At least 4 of the 14 psychological and physical symptoms rated as severe.
3. At least 1 of the 5 impact items rated as severe.

Statistical Analysis

Data were entered and cleaned using Epi Manager and analyzed using IBM SPSS Statistics 20. Results were presented in tables with descriptive statistics (frequency, percentage) and inferential statistics (Chi-square test, Fisher's Exact test) to identify associated factors with PMDD based on a significance level of $p<0.05$.

Results

Table 1: Prevalence of Premenstrual dysphoric disorder (n=477)

	Number (n)	Percentage (%)
Yes	20	4.2
No	457	95.8

According to the assessment using the PSST, 20 female students were diagnosed with PMDD (accounting for 4.2%), while 457 female students did not have PMDD (accounting for 95.8%).

Table 2: Association between general characteristics and Premenstrual dysphoric disorder (n = 477)

Characteristic		PMDD		p
		Yes	No	
		n (%)	n (%)	
Academic Year	First year	10 (4.4%)	216 (95.6%)	1 *
	Intermediate years	9 (4.3%)	201 (95.7%)	
	Final year	1 (2.4%)	40 (97.6%)	
Field of study	Medical	11 (3.3%)	326 (96.7%)	0 .103*
	Nursing	5 (5.2%)	92 (94.8%)	
	Pharmacy	4 (9.3%)	39 (90.7%)	
Residential Area	Area 1	8 (3.5%)	222 (96.5%)	0 .728*
	Area 2	6 (4.3%)	132 (95.7%)	
	Rural Area 2	3 (5.0%)	57 (95.0%)	
	Area 3	3 (6.1%)	46 (93.9%)	
Family history	Yes	1 (5.9%)	16 (94.1%)	0.353*
	No	12 (3.5%)	328 (96.5%)	
	Don't know	7 (5.8%)	113 (94.2%)	
BMI	< 18.5 kg/m2 (underweight)	6 (4.5%)	127 (95.5%)	0.847*
	18.5 – 24.9 kg/m2 (normal weight)	11 (3.9%)	270 (96.1%)	
	≥ 25 kg/m2 (overweight)	3 (4.8%)	60 (95.2%)	

(*) Fisher's Exact Test

With a statistical significance level set at $\alpha=0.05$, the results showed no association between certain general characteristics of female students and PMDD ($p>0.05$).

Table 3: Association between menstrual characteristics and Premenstrual dysphoric disorder (n = 477)

Characteristic		PMDD		p
		Yes	No	
		n (%)	n (%)	
Age of onset of menstruation	<13	6 (4.5%)	128 (95.5%)	0.804* *
	≥13	14 (4.1%)	329 (95.9%)	
Duration of menstruation	Normal	16 (4.2%)	368 (95.8%)	1* *
	Long	4 (4.3%)	89 (95.7%)	
Length of a menstrual cycle	Short	3 (13.6%)	19 (86.4%)	0.003* *
	Normal	14 (3.2%)	425 (96.8%)	
	Long	3 (18.8%)	13 (81.2%)	
Menstrual regularity	Regular	5 (1.9%)	254 (98.1%)	0.007 *
	Irregular	15 (6.9%)	203 (93.1%)	
Menstrual cramps	Yes	16 (4.4%)	349 (95.6%)	1* *
	No	4 (3.6%)	108 (96.4%)	

(*)Chi-square test
(**) Fisher's Exact Test

The analysis showed that among the menstrual characteristics surveyed, the length of the menstrual cycle (p=0.003) and menstrual regularity (p=0.007) had statistically significant associations with PMDD. In contrast, the other factors did not show similar associations (p>0.05).

Table 4: Association between lifestyle habits and premenstrual dysphoric disorder (n = 477)

Habit		PMDD		p
		Yes	No	
		n (%)	n (%)	
Average daily sleep duration	< 7 hours/day	8 (6%)	125 (94.0%)	0.217*
	≥ 7 hours/day	12 (3.5%)	332 (96.5%)	
Average daily study time	< 8 hours/day	9 (3.1%)	277 (96.9%)	0.163*
	≥ 8 hours/day	11 (5.8%)	180 (94.2%)	
Time spent using electronic devices	< 5 hours/day	9 (2.7%)	320 (97.3%)	0.018 *
	≥ 5 hours/day	11 (7.4%)	137 (92.6%)	
Exercise	<20 minutes/day	16 (4.2%)	366 (95.8%)	1* *
	≥20 minutes/day	4 (4.2%)	91 (95.8%)	

(*) Chi-square test=
(**) Fisher's Exact Test

Among the four lifestyle factors examined, only time spent using electronic devices showed a statistically significant association with PMDD (p=0.018). This study found no statistically significant association between sleep duration or study time and PMDD (p>0.05).

Table 5: Association between dietary habits and premenstrual dysphoric disorder (n = 477)

Habit		PMDD		p
		Yes	No	
		n (%)	n (%)	
Drink tea	< 3 times/week	15 (3.7%)	386 (96.3%)	0.345**
	≥ 3 times/week	5 (6.6%)	71 (93.4%)	
Drink coffee	< 3 times/week	17 (4.4%)	373 (95.6%)	1**
	≥ 3 times/week	3 (3.4%)	84 (96.6%)	
Drink carbonated soft drinks	< 3 times/week	14 (3.5%)	387 (96.5%)	0.110**
	≥ 3 times/week	6 (7.9%)	70 ((92.1%)	
Drink alcohol/beer weekly	Yes	6 (9.7%)	56 (90.3%)	0.034**
	No	14 (3.4%)	401 (96.6%)	
Eat chocolate	< 3 times/week	17 (3.9%)	424 (96.1%)	0.185**
	≥ 3 times/week	3 (8.3%)	33 (91.7%)	
Eat fruits/vegetables	< 5 times/week	7 (4.4%)	151 (95.6%)	0.855*
	≥ 5 times/week	13 (4.1%)	306 (95.9%)	

(*) Chi-square test
(**) Fisher's Exact Test

The results revealed a statistically significant association between drink alcohol/beer weekly and PMDD (p=0.034), while no such association was found with the other dietary habits surveyed.

Discussion

In this study, the Vietnamese version of the PSST was used to diagnose PMDD among 477 participating female students. The prevalence of PMDD was 4.2%, which is higher than the rates reported in studies by Ngo Dinh Trieu Vy (2020) [5] and Trieu Le Phong (2022) [6] at Hue University of Medicine and

Pharmacy, which were 1.3% and 3.3%, respectively. However, this prevalence is lower than in several international studies. Specifically, Miraj S. and Mohammadbeigi A. (2023) used the PSST to diagnose PMDD in 8.0% of Iranian female medical students [7], while Bhandari S. and Tuladhar H. (2024) found a prevalence of 36.3% among female medical students at a university hospital in Nepal [8]. These differences may be attributed to variations in sample size, data collection methods, and study inclusion criteria. Notably, the prevalence of PMDD in Vietnamese studies remains significantly lower than in many international reports. This stark contrast may result from complex interactions between socio-cultural factors and health awareness. Additionally, differences in health-seeking behavior may influence symptom reporting and diagnosis rates. Biological, genetic, or environmental stressors unique to the study population could also contribute to the observed differences. This prevalence highlights the need for more in-depth research in Vietnam to accurately assess the burden of PMDD and to develop context-appropriate intervention and support strategies.

The study found no statistically significant associations between academic year, field of study, or residential area and PMDD, which aligns with the findings of Bhandari S. and Tuladhar H. (2024) [8]. Similarly, family history was not associated with PMDD in this study. However, Eldeeb S. M. *et al*. (2021) reported a significant association between family history and PMDD (p = 0.003) [9]. This discrepancy may be due to the high proportion of participants in our study who either had no known family history or were unaware of it, which could limit the ability to detect associations. This suggests that premenstrual health remains an underrecognized issue among Vietnamese women. Another factor not significantly associated with PMDD in our study was BMI (p>0.05). This contrasts with findings by Mohamed H. (2022), who reported a strong association between high BMI and increased PMDD risk [10]. Several factors could explain this difference. First, the BMI distribution in our sample may differ from that in Mohamed H.'s study. Second, potential confounding variables such as diet, exercise level, or hormonal status may not have been fully controlled in either study, potentially influencing PMDD risk. Lastly, ethnic and genetic differences between populations may contribute to these inconsistencies. Although our study did not identify BMI as a direct risk factor, the role of body weight and composition in the pathophysiology of PMDD should be further examined in future studies with more rigorous designs and diverse populations.

Regarding menstrual characteristics, both the length of the menstrual cycle (p=0.003) and cycle regularity (p=0.007) were statistically associated with PMDD. This finding suggests that women with irregular or abnormal cycle lengths are more likely to experience PMDD. Such patterns may reflect instability in the hypothalamic–pituitary–ovarian axis, a key mechanism implicated in the pathophysiology of PMDD. Fluctuations in sex steroids (estrogen and progesterone) during these cycles may lead to hypersensitivity of central neurotransmitter systems (e.g., serotonin), resulting in severe mood and physical symptoms. In contrast, age at menarche, menstruation duration, and dysmenorrhea were not significantly associated with PMDD (p>0.05). These findings are consistent with studies by Eldeeb S. M. *et al*. (2021) [9] and Getasew Kibralew (2024) [11]. However, other studies have found different associations, such as late menarche in Ngo Dinh Trieu Vy's study [5] and dysmenorrhea in the study by Bhandari S. and Tuladhar H. [8]. These inconsistencies may stem from variations in population characteristics that influence menstrual physiology and hormonal sensitivity thresholds. Additionally, differences in how variables like 'dysmenorrhea' or 'cycle regularity' are defined and measured may account for variations between studies.

Among lifestyle factors, only time spent using electronic devices was significantly associated with PMDD (p=0.018). This relationship may be explained by two primary mechanisms: biological disruption caused by blue light suppressing melatonin and disturbing circadian rhythms, and psychological effects from social media use, which can increase stress and anxiety. One notable finding was the lack of a statistically significant association between physical exercise and PMDD (p>0.05), which contradicts findings from Veerti Gada (2020) [12] and Mohamed H. (2022) [10], both of whom reported exercise as a protective factor. A small sample size may have limited our study's ability to detect a true association.

Furthermore, this study found a statistically significant association between PMDD and weekly alcohol consumption (p=0.034), which aligns with findings by Kiesner J. (2012) [13]. The relationship between alcohol use and PMDD may stem from disruptions in sex hormone balance (estrogen and progesterone) and its impact on mood-regulating neurotransmitters (such as serotonin and GABA). Conversely, some women may use alcohol as a coping mechanism for distressing premenstrual symptoms, creating a self-perpetuating cycle. Regardless of the directionality, this finding underscores the importance of screening and counseling on alcohol use as an essential component in managing and treating PMDD.

Conclusion

Using the PSST, the study identified a 4.2% prevalence of PMDD among 477 female students at Buon Ma Thuot Medicine University. Factors statistically associated with PMDD included menstrual cycle length, cycle regularity, screen time, and alcohol consumption (p<0.05). Early diagnosis, enhanced communication, and proactive counseling on premenstrual health are essential for female students.

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