Associated Factors with Premenstrual Dysphoric Disorder among Undergraduate Medical Students of a Teaching Hospital

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Abstract

Introduction: Premenstrual Dysphoric Disorder (PMDD) is a severe form of premenstrual syndrome in women which adversely affects social, academic, or work performance. The mechanisms underlying PMDD are still insufficiently known, the findings indicate a multifactorial genesis. Prevalence data of PMDD and its potential associated risk factors is sparse in Nepal. This study aimed to determine the associated factors with PMDD among undergraduate medical students of a teaching hospital in Nepal.

Methods: This was a cross sectional study conducted among unmarried female medical students at KIST medical college and teaching hospital from 1st June to 30th July, 2023. Students were assigned from each of the four MBBS years (First, Second, Third, and Final) through random sampling till the desired sample size was achieved. Questionnaires about socio-demographic, menstrual, lifestyle variables and questionnaire for diagnosis of PMDD were administered. PMDD was diagnosed from the Diagnostic and Statistical Manual – fifth edition (DSM-5) of the American Psychiatric Association (APA). Data Analysis was performed using SPSS version 16. Data calculated as frequencies, mean, standard deviation and chi square test, independent t test with p-value of < 0.05 was considered as statistically significant.

Results: The prevalence of PMDD according to DSM-V criteria was 41 (36.28%). PMDD was significantly associated with dysmenorrhea (P=0.030) and with intake of caffeinated beverages (P=0.034).

Conclusion: PMDD is prevalent among medical students in Nepal. The potential associated risk factors are dysmenorrhea and intake of caffeinated beverages.

Keywords: *Associated factors, medical students, premenstrual dysphoric disorder*

Introduction

Premenstrual dysphoric disorder (PMDD) is a severe form of premenstrual syndrome as defined in the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-V) leading to clinically significant distress or interference with work, school, usual social activities, or relationships with others (e.g., avoidance of social activities; decreased productivity and efficiency at work, school, or home).[1]

The prevalence rate of PMDD in reproductive age women ranges between 3% to 8%.[2] A Systematic Review and Meta-analysis among females of reproductive age group in India showed the pooled prevalence of PMDD

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was 8% (95% CI: 0.60-0.10).[3]

The etiology of premenstrual disorder is not yet clearly stated. Several factors including genetic, environmental, psychological, biological, and social factors are documented to play a role in occurrence of PMDD. Some of these factors include history of Premenstrual syndrome (PMS) in the family, BMI, smoking, consumption of coffee, chocolates, salty food and oily food, alcohol consumption, stress events, physical activity and menstrual factors (age at menarche, menstrual cycle duration, number of bleeding days, dysmenorrhea).[4-6]

Prevalence data of PMDD and its potential associated risk factors is sparse in Nepal. This study aimed to determine the associated factors with PMDD among undergraduate medical students of a teaching hospital in Nepal.

Methods

This was a cross sectional study conducted among unmarried female medical students from 1st June to 30th July, 2023 in KIST medical college and teaching hospital, Lalitpur, Nepal. Students were assigned from each of the four MBBS years (First, Second, Third, and Final) through random sampling till the desired sample size was achieved. Questionnaires were administered to the students after ethical approval and informed written consent.

Sample size was calculated as:

$$n = \frac{z^2 \times p(1-p)}{e^2}$$

$$= \frac{(1.96)^2 \times 0.08(1-0.08)}{(0.05)^2}$$

$$= 113.09; n = 113$$

where

n= sample size

z= confidence interval (95% for this study)

p= proportion of condition in population (taken 8.0% according to previous study [3])

e= margin of error (5% for this study)

Exclusion Criteria: Students with irregular menstrual cycle, under hormonal medication, current gynaecological problems like endometriosis, fibroid and with medical history of endocrinal disorders, metabolic disorders, autoimmune diseases, chronic infective diseases, unrelated psychiatric disorders were excluded from the study.

The questionnaire for data collection consists of 2 parts. First part of questionnaire includes demographic, menstrual and lifestyle variables of the students. Second part includes PMDD symptoms questionnaire. PMDD was diagnosed from the Diagnostic and Statistical Manual – fifth edition (DSM-5) of the American Psychiatric Association (APA).[1] DSM-V PMDD criteria questionnaire consists of 11 symptoms, participants should have at least five symptoms of this questionnaire and at least one of these symptoms should have been from the 4 first symptoms (core symptom) for at least two menstrual cycle in the final week before the onset of menses, start to improve within few days after the onset of menses, and become minimal or absent in the week post menses. The symptoms are associated with clinically significant distress or interference with work, school, usual social activities, or relationships with others (e.g., avoidance of social activities; decreased productivity and efficiency at work, school, or home) :

1. Marked affective lability (e.g., mood swings; feeling suddenly sad or tearful, or increased sensitivity to rejection).
2. Marked irritability or anger or increased interpersonal conflicts.
3. Marked depressed mood, feelings of hopelessness, or self-deprecating thoughts.
4. Marked anxiety, tension, and/or feelings of being keyed up or on edge.

One (or more) of the following symptoms must additionally be present, to reach a total of five symptoms when combined with symptoms from core symptoms above.

1. Decreased interest in usual activities (e.g., work, school, friends, hobbies).
2. Subjective difficulty in concentration.
3. Lethargy, easy fatigability, or marked lack of energy.
4. Marked change in appetite; overeating; or specific food cravings.
5. Hypersomnia or insomnia.
6. A sense of being overwhelmed or out of control.
7. Physical symptoms such as breast tenderness or swelling, joint or muscle pain, a sensation of "bloating," or weight gain.

Students were also asked: Do most of the symptoms you noted disappear by the end of your period? Are these symptoms present continuously every 2 or more consecutive months? Are the above symptoms present in most menstrual cycles throughout the year? When you are having these symptoms, do they interfered at work, at college, in usual social activities and in relationships with others?

Data was entered in Microsoft Excel. Analysis was performed using SPSS (Statistical Package for Social Sciences) version 16. Data calculated as frequencies, mean and standard deviation. Independent t test to compare the results between the two groups, chi-squared test for categorical variables were used, with p-value of < 0.05 considered as statistically significant.

Results

The prevalence of PMDD according to DSM-V criteria was 41 (36.28%), Table 1.

Table 1: Prevalence of PMDD according to DSM-V criteria.

Category	Frequency (Percent)
No PMDD	72 (63.71%)
PMDD	41 (36.28%)
Total	113 (100%)

Table 2: Associated Factors with PMDD

Variables	With PMDD n= 41 (36.28%) mean ± SD	Without PMDD n= 72 (63.71%) mean ± SD	P value
Age (years)	22.6±1.4	22.9±1.4	0.362
BMI (kg/m2)	22.1±2.9	21.8±2.7	0.621
Age at Menarche (years)	12.9±1.4	12.9±1.1	0.883
Length of menstrual cycle (days)	31.3±5.2	29.6±3.9	0.073
Duration of flow (days)	4.51±1.3	4.6 ± 1.0	0.748
Dysmenorrhoea			
Yes	35 (85.4)	48 (66.7)	0.030
No	6 (14.6)	24 (33.3)	
Intensity of dysmenorrhea *(Multiple response)			
Mild	7 (17.1)	20 (27.8)	
Moderate	18 (43.9)	24 (33.3)	
Severe	10 (24.4)	4 (5.6)	
Self- medication	11 (26.8)	11 (15.3)	
Absenteeism from college	4 (9.8)	0 (0)	
Need to see a doctor	1 (2.4)	0 (0)	
Family history of Premenstrual syndrome (mother or sister)			
Yes	5 (12.2)	3 (4.2)	0.110
No	36 (87.8)	69 (95.8)	
Regular Physical activity			
Present	21 (51.2)	49 (68.1)	0.076
Absent	20 (48.8)	23 (31.9)	
Regular Intake of sweet-tasting food items: chocolates, cakes, sweets, deserts			
Yes	28 (68.3)	48 (66.7)	0.859
No	13 (31.7)	24 (33.3)	
Regular intake of Red meat (mutton/buff/beef)			
Yes	14 (34.1)	30 (41.7)	0.431
No	27 (65.9)	42 (58.3)	
Regular intake of Fiber-rich foods such as fruits, vegetables and whole wheat products			
Yes	40 (97.6)	65 (90.3)	0.147
No	1 (2.4)	7 (9.7)	
Intake of alcohol			
Yes	0 (0)	4 (5.6)	0.314
No	41 (100)	68 (94.4)	
Intake of caffeinated beverages (cola, tea &/ coffee)			
Yes	32 (78.0)	42 (58.3)	0.034
No	9 (22.0)	30 (41.7)	

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The potential factors associated with PMDD with respect to sociodemographic, menstrual and lifestyle variables of the participants are shown in Table 2.

Independent t test, chi-square test, p value <0.05 considered as significant.

PMDD was significantly associated with dysmenorrhea (P=0.030) and with intake of caffeinated beverages (P=0.034), Table 2.

Discussion

The prevalence of PMDD according to DSM-V criteria in our study was 41 (36.28%). This is similar to the previous study conducted in Lumbini medical college, Palpa, Nepal in which PMDD was diagnosed in 38.9% of medical students.[7] Similarly, study among students in Ethiopia,[5] India[6] and Nigeria[8] showed the overall magnitude of PMDD was 34.7%, 37% and 36.1% respectively. However, study conducted in Kathmandu University School of Medical Sciences, Dhulikhel, Nepal found low prevalence of premenstrual dysphoric disorder as 3.8%.[9] The prevalence of PMDD was 4.43% in a study done in India[10]. Variation in the prevalence of PMDD is probably due to the difference in diagnostic criteria and the study design.

PMDD was significantly associated with presence of dysmenorrhea (p=0.030 in PMDD group), similar to previous studies.[5,8,11,12] In the current study, we found that intake of caffeinated beverages (cola, tea and / coffee) was significantly higher among PMDD group than the counterpart (P=0.034). Similarly, PMDD was also significantly associated with greater tea/coffee intake in previous study done in India[6] and Vietnam.[13] In contrast, another study done in India showed no significant statistical association of intake of caffeine with PMDD.[4]

This study found no statistically significant association between students with and without PMDD with regards to age, BMI, age at menarche, length of menstrual cycle, duration of flow, and family history of PMS in mother/ sister. Similarly previous studies showed no association with respect to menarche, duration of flow,[11,12] and length of menstrual cycle[11] with PMDD.[8] In contrast, age at menarche was associated with PMS/PMDD in a study conducted in Vietnam. They found that late menarche was a protective factor for PMS/PMDD.[13] In addition, PMDD was significantly associated with family history of PMS in some studies.[10,12]

Moreover, no significant association of PMDD with regards to physical activity, intake of sweet-tasting food items, intake of red meat, intake of fiber-rich foods and intake of alcohol was found in this study. Similarly, doing regular physical exercise,[10] consumption of diet containing high sugar/salt/calories, consumption of poultry items like meat, consumption of fruits and green leafy vegetables was not associated with PMDD in previous studies[4] but there was

significant association of lack of physical activities[6] and alcohol consumption[4] with PMDD. Variation in the findings could be due to differences in the ethnicity and sociocultural background.

The limitation of present study was its cross-sectional design and the use of an instrument with retrospective information. Prospective nationwide studies with larger representative samples are required to further elucidate the associated factors with PMDD.

Conclusion

Prevalence of PMDD among medical students was high. The potential associated risk factors are dysmenorrhea and intake of caffeinated beverages. Alleviating dysmenorrhea and lifestyle modifications such as reduced consumption of caffeine may help in prevention and management of PMDD, thereby promoting social, academic, or work performance of these students.

Acknowledgment

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