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RESEARCH ARTICLE

Premenstrual Dysphoric Disorder: Prevalence, Predictors and Challenges in Diagnosis

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ABSTRACT

Introduction: Premenstrual syndrome (PMS) is a cluster of mood, behavioral and physical symptoms occurring during the late luteal phase of the menstrual cycle that are all relieved after the onset of menstruation. A severe form of PMS is known as a premenstrual dysphoric disorder (PMDD).

Aim and objectives: The study was aimed to assess the prevalence of PMS and PMDD among young Indian Medical undergraduate students and also to analyze predictors of PMS and PMDD in terms of health status and health-behavioral factors, family history, increased physical and mental stress, body mass index (BMI), age at menarche and duration of menstrual flow

Materials and methods: The study was conducted at Era's Lucknow Medical College between July and September 2011, a total 73 students were analyzed for with the help of premenstrual symptoms screening tool and presence and severity of PMS were assessed the results were analyzed by Chi-square test taking *p* value <0.05 as significant.

Results: The mean age of the students was 21.71 years with a standard deviation (S.D) of ±1.3.Mean age of menarche was 13.16 years with S.D ± 1.21 years. Analysis revealed around 97.2% of students had at least one symptom of PMS (86.3%–mild PMS; 9.6%–moderate-severe PMS). One student qualified for PMDD.

Conclusion: Premenstrual syndrome (PMS) is a common problem with young urban women which may be debilitating both at work and in interpersonal relationships in its severe form.

The premenstrual screening tool is an easy and simple way of diagnosis of clinically significant premenstrual syndrome so that they can be managed appropriately improving their quality of life.

Keywords: Predictors, Premenstrual syndrome, Prevalence.

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INTRODUCTION

Clinically significant premenstrual problems with mood and behavior have been recognized since ancient times.[1] Hippocrates first described the "agitations" in women and how "agitated blood" found its way from the head to the uterus, where it escaped the body a simple tool for diagnosis of the clinically significant premenstrual syndrome.[2] It was in 1931 that Frank first described the hormonal causes of premenstrual tension.[3]

Premenstrual syndrome (PMS) is a cluster of mood, behavioral and physical symptoms occurring during the late luteal phase of the menstrual cycle that are all relieved after the onset of menstruation.[4] A severe form of PMS that interferes with the personal/social relationship at work is classified as PMDD according to the diagnostic and statistical manual of mental disorders, fourth edition (DSM-IV).[5] Since the criteria for PMS are less distinct the rates for PMS are different in different epidemiological studies depending on the study design and the instrument used],[6] and has been seen to vary from anywhere between 30% and 85–90%.[7,8] Whereas, for PMDD which has much stricter criteria, the rates are quite consistent between 3% and 8%.[8] Though a common problem leading to significantly disturbed social life and absenteeism from work, less than 50% of women take medical consultation for it. Also, previous studies have shown that it takes on an average of 5.3 years before a woman is diagnosed with PMS.[9]

The PMS has gained much attention in the West, and it remains a neglected area in Asia with very few studies available in the medical literature from India. This may reflect that even many professionals are still unaware of the impact of PMS.

Diagnosis by DSM IV criteria (the clinical gold standard) is a long drawn process requiring prospective

daily charting completed throughout at least two consecutive cycles followed by a clinical interview to establish a "tentative" diagnosis,[10] and thus cannot be used in a health survey. To circumvent this problem and allow easy diagnosis–we propose to use the PSST tool (premenstrual symptoms screening tool for clinicians)[11] with a simple 4-point rating to identify women who meet DSM IV criteria for PMDD as well as women who experience "clinically significant" PMS. The PSST reflects and 'translates' categorical DSM IV criteria into a rating scale with degrees of severity.

AIM AND OBJECTIVES

The aim of the study was:

- To assess the prevalence of PMS and PMDD among young Indian medical undergraduate students.
- To analyze predictors of PMS and PMDD in terms of health status and health-behavioral factors, family history, increased physical and mental stress, BMI, age at menarche and duration of menstrual flow.

MATERIALS AND METHODS

The study was conducted at Era's Lucknow Medical College for a period of two months. It was a cross-sectional questionnaire-based study.

The questionnaire (Annexure 1) contained 31 responses, to be self-administered. The first 12 responses related to their age. BMI level of physical activity, any addictions and menstrual history. The scoring was done as follows:
The following criteria must be present for a diagnosis of PMDD:

- At least one of #1, #2, #3, #4 is severe
- In addition at least four of #1–#14 are moderate to severe
- At least one of A, B, C, D, E is severe.

The following criteria must be present for a diagnosis of moderate to severe PMS:

- At least one of #1, #2, #3, #4 is moderate to severe
- In addition at least four of #1– #14 are moderate to severe
- At least one of A, B, C, D, E is moderate to severe

The students were interviewed once in each of the two consecutive months. Those whose findings of the second interview confirmed with the first, qualified for PMS/PMDD. Those with inconsistent findings were taken as chance cases. Those who qualified for PMS/PMDD and were willing for treatment were referred to either a gynecologist or a psychiatrist. All data were analyzed on Statistical Package for the Social Sciences (SPSS) 14 version. The prevalence rate of PMS and PMDD was calculated and Chi-square test used to determine significant predictors (p value less than 0.05 was considered significant).

Inclusion Criteria

All female students with regular menstrual cycles.

Exclusion Criteria

- Those not giving consent.
- Those with preexisting psychiatric disorders.
- Those with preexisting medical disease.
- Those on hormonal treatment.

Institutional Ethics Committee approval was taken before conducting the survey. The study was undertaken was an ICMR STS project.

RESULTS

A total of 98 students were interviewed in the first month, there were eight dropouts in the second month, so only 90 students completed the questionnaire twice. Of the 90 who completed the questionnaire, 15 had taken hormonal medication within the last three months, and 2 had been on psychotropic agents and were therefore excluded. Seventy-three questionnaires were finally analyzed.

The mean age of the students was 21.71 years with a standard deviation (SD) of ± 1.3. Mean age of menarche was 13.16 years with SD ± 1.21 years. Fifty-one students (69.9 %) had normal BMI, 8 were overweight, and 2 were obese (Table 1). There were no students who smoked or consumed alcohol.

Lack of energy/fatigue was the most commonly reported symptom both the times (67.1%; 65.8%) followed by anger which was reported by 67.1% and 64.4% students. Feeling overwhelmed or out of control and food cravings/overeating were least reported symptoms. Physical symptoms were reported by approximately 60% of students (n = 42; 44) (Tables 2 and 3).

There were 3 students qualifying for PMDD from the first questionnaire, whilst only two students went into the PMDD category in the second questionnaire. However, there was only one student who qualified for PMDD both the times and therefore, was taken as true-positive case. There were seven students (9.6%) who qualified for moderate and severe PMS and 63(86.3%) with mild PMS (i.e., they reported at least one symptom of PMS).

Two students (2.7%) did not have any symptoms of PMS. Overall, the prevalence of PMS was 97.2% (Graph 1).

Only 5 out of 73 (6.8%) students felt that the symptoms moderately or severely affected relationship with family members, similar number 4/73 (5.4%) felt it affected work efficiency or productivity while 3 students (3.1%) that it affected relationships with co-workers. Only 2 (2.7%)felt that symptoms were severe enough to affect social life and felt that symptoms affected responsibilities at home.

To find predictors for PMDD analysis of various parameters like BMI, the age of menarche, duration of menstruation, etc. was done. It was found that only the age of menarche had some bearing on the presence of PMDD (Fischer's exact test $p = 0.02$) (Table 4).

DISCUSSION

The overall prevalence of PMS in our study was much higher than a similar study from Maulana Azad Medical College[12] (64%), though it was closer to a prevalence rate seen in a much larger study from Sweden (91%),[8] this

Table 1: Characteristics of the students regarding their menstrual cycle, BMI, etc

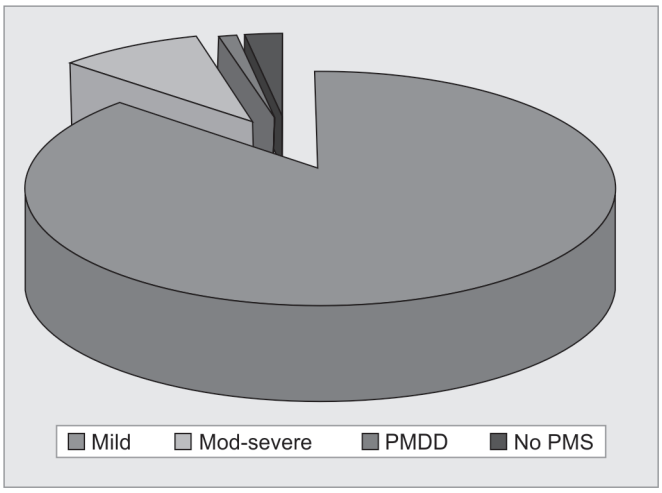
S. No.	*Characteristics*		*Number*	*Percentage*
1.	BMI	Underweight	12	16.4
		Normal	51	69.9
		Overweight	8	11
		Obese	2	2.9
2.	Menstrual cycle	Normal	64	94.4
		Scanty	0	0
		Excessive	9	5.5
		Dysmenorrhea	44	60.3
3.	Physical activity	Active	33	45.2
		Partially active	39	53.4
		Inactive	1	1.4
4.	Positive family history of PMS		7	9.6

Table 2: Symptom prevalence according to first questionnaire

S. No.	*Symptom*	*Not at all N (%)*	*Mild N (%)*	*Moderate N (%)*	*Severe N (%)*
1.	Anger/irritability	23 (31.5)	31 (42.5)	16 (21.9)	3 (4.1)
2.	Anxiety/tension	32 (43.8)	26 (35.6)	14 (19.2)	1 (1.4)
3.	Tearful/increased sensitivity	43 (58.9)	17 (23.3)	12 (16.4)	1 (1.4)
4.	Depressed mood/hopelessness	33 (45.2)	28 (38.4)	10 (13.7)	2 (2.7)
5.	Decreased interest in work activities	28 (38.4)	34 (46.6)	11 (15.1)	–
6.	Decreased interest in home activities	39 (53.4)	25 (34.2)	9 (12.3)	–
7.	Decreased interest in social activities	36 (49.3)	25 (34.2)	12 (16.4)	–
8.	Difficult concentrating	35 (47.9)	26 (35.6)	10 (13.7)	2 (2.7)
9.	Fatigue/lack of energy	24 (32.9)	29 (39.7)	15 (20.5)	5 (6.8)
10.	Overeating/food cravings	61 (83.6)	8 (11)	4 (5.5)	–
11.	Insomnia	58 (79.5)	11 (15.1)	4 (5.5)	–
12.	Hypersomnia (needing more sleep)	45 (61.6)	18 (24.7)	8 (11)	2 (2.7)
13.	Feeling overwhelmed or out of control	60 (82.2)	7 (9.6)	5 (6.8)	1 (1.4)
14	Physical symptoms: breast tenderness, headaches. Joint/muscle pain, bloating, weight gain	42 (57.5)	21 (28.8)	8 (11)	2 (2.7)

Table 3: Symptom prevalence according to second questionnaire

S. No.	*Symptom*	*Not at all N (%)*	*Mild N (%)*	*Moderate N (%)*	*Severe N (%)*
1.	Anger/irritability	26 (35.6)	31 (42.5)	14 (19.2)	2 (2.7)
2.	Anxiety/tension	33 (45.2)	25 (34.2)	15 (20.5)	–
3.	Tearful/Increased sensitivity	46 (63)	10 (13.7)	16 (21.9)	1(1.4)
4.	Depressed mood/hopelessness	37 (50.7)	24 (32.9)	11 (15.1)	1(1.4)
5.	Decreased interest in work activities	26 (35.6)	39 (53.4)	7 (9.6)	1(1.4)
6.	Decreased interest in home activities	40 (54.8)	27 (37.0)	5 (6.8)	1(1.4)
7.	Decreased interest in social activities	33 (45.2)	30 (41.1)	18 (11.0)	2(2.7)
8.	Difficult concentrating	40 (54.8)	24 (32.9)	9 (12.3)	–
9.	Fatigue/lack of energy	25 (34.2)	28 (38.4)	16 (26.0)	1(1.4)
10.	Overeating/food cravings	60 (82.2)	7 (9.6)	6 (8.2)	–
11.	Insomnia	58 (79.5)	11 (15.1)	4 (5.5)	–
12.	Hypersomnia (needing more sleep)	40 (54.8)	22 (30.1)	11 (15.1)	–
13.	Feeling overwhelmed or out of control	61 (83.6)	11 (15.1)	1 (1.4)	–
14.	Physical symptoms: breast tenderness, headaches. Joint/muscle pain, bloating, weight gain	44 (60.3)	19 (26.0)	7 (9.6)	3(4.1)



Graph 1: Prevalence of PMS and PMDD

difference in our study and that from Maulana Azad Medical College could be due to the method adopted for diagnosis. The Maulana Azad study was a much broader study taking into account all the aspects of menstruation while our study was designed specifically to identify students with PMS. Another very important difference in the results of the two studies could be because of the difference in the socioeconomic class from which the two groups hail. Ours being a private Medical College, students from higher socioeconomic class can afford to come whilst students at Maulana Azad belong to varied socioeconomic backgrounds, and it is seen that the level of perception is more in women of higher socioeconomic class. In a study from Brazil, 60.3% of women thought that they had PMS at the time of interview and 65.4% considered that all or almost all women experienced the condition.[13]

Prevalence of PMS in a study on Japanese high school students that analyzed the data of 618 girls showed a prevalence of 85.6% of no/mild PMS and prevalence of PMDD at 2.6%.[14]

The prevalence of PMDD was much lower in comparison to other studies from Africa (36.1%)[15] and Saudi Arabia (22.4%).[7] A study published in 2008 from Pakistan showed the frequency of PMS in Medical students to be 51% and that of PMDD to be 18.2%.[16]

This difference could be because of the method adopted for diagnosis. In our study, the PSST tool was used twice, and therefore the criteria for the diagnosis of PMDD was very strict. It has also been seen that the incidence of prospective studies is lower as compared to retrospective studies. The presence of physical symptoms was lower than in the Swedish[8] study, whilst the most commonly reported symptoms were similar to a study from Pakistan.[16]

It has been seen that women who start menstruating at a younger age are more prone to developing PMS as corroborated by a Nigerian study[17] but our findings reveal the opposite, i.e., those students who attained menarche late were more likely to suffer from severe PMS/PMDD. This difference could be because of cultural diversity and difference in study population characteristics. We could not find any other predictors for PMS; this could be because of the small size of the population studied, and the strict criteria followed to find clinically significant PMS.

Table 4: Predictors of clinically significant PMS

S. No	*Predictors*	*p value*
1.	Age of menarche	0.027
2.	BMI	1.000
3.	Length of menstrual cycle	0.116
4.	History of dysmenorrhea	0.507
5.	Level of physical activity	0.356
6.	Positive family history of PMS	0.351

Our study is different from any previous study which has used the PSST tool for diagnosis of clinically significant PMS, as we used it twice on the same population thereby confirming the findings of the first questionnaire with a second questionnaire and were able to pick up true-positive cases of PMS. The most important impact of PMS is its effect on quality of life, and it is the second part of the PSST tool which deals with quality of life. It is seen that 6.8% of students reported symptoms to be affecting their relationship with family members and therefore probably had an impact on quality of life. This probably could be one the limitations of the study as the quality of life was not directly measured and therefore adding short form health survey (SF-36) may also detect its impact on quality of life.[18]

CONCLUSION

Though 86% of students were diagnosed to have mild PMS, 8.6% suffered from moderate to severe and only 1.2% had PMDD and therefore these were seriously affected needing treatment. The PSST tool is simple and effective in diagnosing these moderate to severe cases who would benefit from therapy. PSST tool can be used as a part health education/sex education classes and therefore helping those with mild symptoms cope with PMS while serious ones being referred for psychiatric evaluation and pharmacotherapy.

Premenstrual disorders affect the social, occupational, academic, and psychological lives of millions of women and their families. However, little is known about what causes premenstrual syndrome. There are a number of treatment options and over the counter medications as well as herbal preparations which claim

to provide benefit. But the best strategy would be psychological support helping women and their partners understand their bodies. But, before any treatment can be instituted it is imperative to the extent of the problem, which from the present pilot study seems to be quite widespread.

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Annexure -1					
S. no.	*Symptom*	*Not at all N (%)*	*Mild N (%)*	*Moderate N (%)*	*Severe N (%)*
1.	Anger/irritability				
2.	Anxiety/tension				
3.	Tearful/Increased sensitivity				
4.	Depressed mood/hopelessness				
5.	Decreased interest in work activities				
6.	Decreased interest in home activities				
7.	Decreased interest in social activities				
8.	Difficult concentrating				
9.	Fatigue / lack of energy				
10.	Overeating / food cravings				
11.	Insomnia				
12.	Hypersomnia (needing more sleep)				
13.	Feeling overwhelmed or out of control				
14.	Physical symptoms: breast tenderness, headaches. Joint/muscle pain, bloating, weight gain				
Have your symptoms, as listed above, interfered with					
		Not at all	*Mild*	*Moderate*	*Severe*
A. Your work efficiency or productivity					
B. Your relationships with coworkers					
C. Your relationships with your family					
D. Your social life activities					
E. Your home responsibilities					