



**Prevalence of Premenstrual Dysphoric Disorder in College Students of Jamnagar, India- A Prospective Study  
Using Daily Record of Severity of Problems (DRSP)**

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**Type of Publication:** Original Research Paper

**Conflicts of Interest:** Nil

**Introduction**

**Context:** Premenstrual dysphoric disorder (PMDD) is a severe problem and it is associated with marked functional impairment.

**Aims:** To study the prevalence of premenstrual dysphoric disorder and it's demographic and menstrual correlates in college girls

**Settings and Design:** This was a twelve month, prospective, observational study of college girls of Jamnagar.

**Methods and Material:** 180 undergraduate girls of M P Shah Government Medical College and Government Nursing College of Jamnagar were contacted over period of 12 months. Primary screening of premenstrual syndrome and premenstrual dysphoric disorder was done by using Premenstrual Symptoms Screening Tool. Diagnosis of premenstrual dysphoric disorder was confirmed by research diagnostic criteria of Diagnostic Statistical Manual of Mental Disorder-IV-TR and Daily Record of Severity of Problems.

**Statistical analysis:** Descriptive statistics, Analysis of variance and Chi-Square test were used.

**Results:** The prevalence of premenstrual dysphoric disorder was 6.35% using DRSP. 18.49% of girls had moderate to severe premenstrual syndrome and 75.14% had no/mild premenstrual syndrome. Premenstrual dysphoric disorder was significantly present in girls who had menstrual cramps, premenstrual symptoms lasted for more days during cycle, premenstrual symptoms since years, positive family history of premenstrual syndrome in first degree relatives and did not perform regular exercise or sports. Almost more than 90% of participants had functional impairment with moderate severe premenstrual syndrome and premenstrual dysphoric disorder

**Conclusions:** The prevalence of premenstrual dysphoric disorder is consistent with other existing research. Premenstrual dysphoric disorder is significantly associated with functional impairment.

**Keywords:** prevalence, premenstrual dysphoric disorder, daily record of severity of problems.

**Introduction**

Women's health is also affected by occurrence of cyclical changes in the form of emotional behavioral and physical symptoms during their reproductive years. These changes

may initiate several days before menses and subside following the onset of menstruation.<sup>[i]</sup> Many women experience symptoms of Premenstrual syndrome (PMS) at some time, but do not perceive these symptoms as either distressing or debilitating. Premenstrual Dysphoric Disorder (PMDD) is a severe form of premenstrual syndrome (PMS), that causes marked impairment in social and occupational functions.<sup>[ii]</sup> The diagnosis of PMDD is retained in the latest edition of Diagnostic and Statistical Manual of Mental disorder (DSM-5) and it require a prospective daily record of severity of problems (DRSP) for two consecutive cycles to confirm the diagnosis.<sup>[iii]</sup>

Premenstrual syndrome (PMS) can be broadly defined as recurrent, moderate psychological and physical symptoms that occur during the luteal phase of menses and resolve with menstruation.<sup>[iv]</sup> Symptoms of PMS and PMDD fall into three domains: emotional, physical and behavioral. The identified core symptoms are anxiety/tension, mood swings, aches, appetite/food cravings, cramps, and decreased interest in activities. PMDD is significantly related with the poor academic performance, absenteeism, unemployment, acute psychiatric problems and suicide.<sup>[v]</sup> The burden of illness of PMDD is due to severity of symptoms, chronicity of the disorder, and the impairment in work, relationships and activities. It has been estimated that women with PMDD cumulatively endure 3.8 years of disability over their reproductive years.<sup>[vi]</sup> Globally, the literature indicates the prevalence of PMDD is around 3% to 10%.<sup>[vii]</sup> Some Indian studies found the prevalence of PMDD without using daily record of severity of problems (DRSP).<sup>[viii, ix]</sup> Hence; this study would planned to find out the prevalence of PMDD among college girls using DRSP.

## Materials and Methods

### Study Design

This was a 12 month cross-sectional observational study, conducted in the Department of Psychiatry of MPSMC & G.G.H Jamnagar hospital from June 2014 to July 2015. Undergraduates students of MPSGMC and Government nursing college, Jamnagar were screened for PMS and PMDD. Participants were selected through simple convenient sampling in the study. Participants were explained the objectives of study and only those who gave consent were included in study.

### Subjects

We have contacted 180 undergraduate girls of MPSGMC and Government nursing college of Jamnagar over a period of 12 months. The participants with irregular menstrual cycles in last 6 months, currently on hormonal therapy, having psychiatric or medical disorder (e.g thyroid disease, major depression) and refuses to participate **were excluded from study**. Study was approved by Institutional Ethical Committee MPSMC & G.G.Hospital, Jamnagar

### Screening tools

Premenstrual Symptom Screening Tool (PSST) is used for screening of PMS and PMDD. It is developed by Steiner et al (2003) which includes 14 items assessing premenstrual symptoms of mood, anxiety, sleep, appetite, and physical symptoms. It also includes functional impairment items of five different domains. Participants rated their experience of each symptom and functional impairment on four-point Likert scale (0=not at all to 4=severe) in last 12 months during most of the cycles. PSST identifies no/mild PMS, moderate to severe PMS and PMDD in screening. PSST was forward translated in the vernacular language (Gujarati) using standard dictionaries. The translation was validated by back translation and comparison with original form by language

experts who were well-versed with both languages. Gujarati version was used for nursing students. Original English version was used for medical students.<sup>[xi]</sup> **DSM-IV-TR diagnostic criterion of PMDD was used for the diagnosis.**<sup>[xii]</sup> Daily Record of severity of problems (DRSP) is used to confirm the diagnosis of PMDD, which required prospective daily charting for period of two consecutive symptomatic cycles. It comprised of 21 items that reflect the 11 symptoms for PMDD according to DSM-5. Each item is scored 1-6 (1, not at all to 6 scored extreme). Diagnosis of PMDD required a minimal average luteal phase score of mild (3 on a 6 point scale) for at least five PMDD symptoms, including at least one mood symptom, during the five most symptomatic of the final luteal phase week and the first two days of menses onset. We required an average follicular phase score be  $<2$  on these same items. DRSP provides sensitive, reliable and valid measures of the symptoms and impairment criteria for PMDD.<sup>[xiii]</sup>

#### **Assessment**

College girls were contacted and asked to fill up a semi-structured proforma. Proforma included information about demographic information of the participants, menstrual characteristics, PSST. We screened girls with premenstrual symptoms using PSST and those girls, who screen positive for PMDD were contacted further and asked to consult the department for clinical assessment of PMDD using DSM-5 diagnostic criteria. DRSP was given to confirm the diagnosis of PMDD. Daily reminder was given to complete prospective daily charting up to two consecutive cycles.

#### **Statistical analysis**

Data collected was subjected to appropriate descriptive statistics using frequencies, mean, standard deviation (SD) and percentages of different variables. Chi square test was used for qualitative data and analysis of variance

(ANOVA) was used for quantitative data. p value of  $<0.05$  was considered statistically significant. Statistical Package for the Social Sciences (SPSS) version 15 was applied to analyze the data.

#### **Results**

Out of 180 college girls, 173 were included for the analysis. The mean age of girls was  $20.69 \pm 2.3$  years. There was no statistically significant relation between three groups with respect to age, education, body mass index (BMI), residence and religion of the participants. (Table 1)

Out of 13 students 11 (6.35%) had PMDD while using prospective daily rating of DRSP. Overall, the prevalence of PMS was 24.85% in college students (18.49% had moderate to severe PMS using DSM-IV-TR research criteria and 6.35% had PMDD using DRSP). 75.14% participants had no/mild PMS. High prevalence of PMS and PMDD was seen in girls who did not perform regular exercise or sports. There was statistical significant association between three groups with respect to girls doing regular exercise or sports (Table 1)

Mean days for premenstrual symptoms during cycle in moderate to severe and PMDD groups were  $2 \pm 1.3$  and  $3.73 \pm 0.9$  respectively. Mean years with premenstrual symptoms in moderate to severe and PMDD groups were  $4.38 \pm 3.1$  and  $4.36 \pm 1.3$  respectively. 90.62% of moderate to severe PMS and 80.8 of PMDD groups had reported menstrual cramps. More than two third girls with positive family history of PMS had moderate to severe PMS and PMDD. High prevalence of moderate to severe PMS and PMDD was seen in girls having menstrual cramps, premenstrual symptoms lasted for more days during cycle, premenstrual symptoms since years and positive family history of PMS in first degree relatives. There was no statistical

significant distribution between three groups with respect to age of menarche, length of cycle, days for menstrual bleeding last, and regularity of cycle at menarche and at present. (Table 2)

Almost more than 90% participants had functional impairment with moderate severe PMS and PMDD. There was a statistically significant distribution between three groups and functional impairment in different areas. (Table 3) Most common symptoms reported in moderate to severe PMS and PMDD groups were fatigue, difficulty in concentrating, decreased interest in work, anxiety/tension, depressed mood, anger/irritability and physical symptoms. (Table 4)

Table 2: Menstrual characteristics among three groups

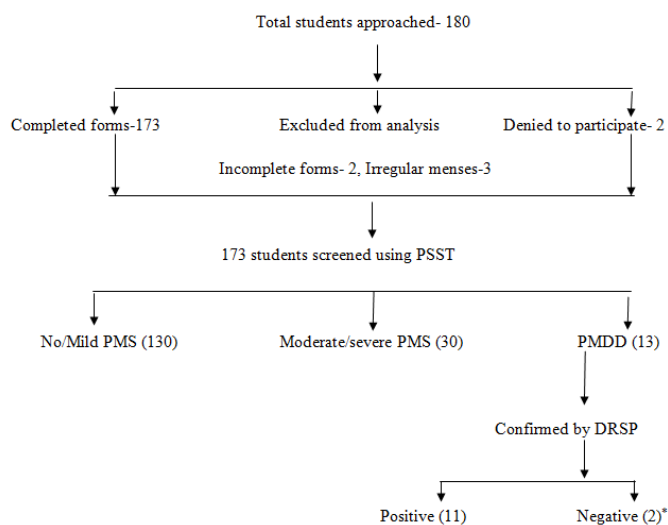
Variables	No/mild PMS n=130 (%)	Moderate to severe PMS n=32 (%)	PMDD n=11 (%)	p value	
Age of menarche	13.91±1	13.81±0.8	14.36±1.0	0.272	
Length of cycle	29.38±3.9	29.94±5.5	27.82±1.6	0.349	
Days for menstrual bleeding last	4.53±1	4.22±1.1	4.09±1	0.198	
Days for premenstrual symptoms last	1.22±1.1	2±1.3	3.73±0.9	0.003	
No years with premenstrual symptoms	2.22±2.7	4.38±3.1	4.36±1.3	<0.001	
cycle at menarche	Regular	77(59.23)	16(50)	4(36.36)	0.588
	Not regular	53(40.76)	16(50)	7(63.63)	
Current cycle	Regular	111(85.38)	24(75)	8(72.72)	0.254
	Not regular	19(14.61)	8(25)	3(27.27)	
Menstrual cramps	Yes	76(58.46)	29(90.62)	9(81.8)	0.001
	No	54(41.53)	3(9.3)	2(18.18)	
Family history of PMS	Present	26(20)	23(71.87)	8(72.72)	<0.001
	Absent	104(80)	9(28.12)	3(27.27)	

Table 3: Frequency and relation of functional impairment with the three groups

Functional impairment	No/mild PMS n=130 (%)	Moderate to severe PMS n=32 (%)	PMDD n=11 (%)	p value
School/work efficiency of productivity	30(23.07)	31(96.87)	11(100)	<0.001
Relationship with friends, classmates/ co workers	11(8.5)	32(100)	10(90.9)	<0.001
Relationship with Family	13(10)	30(93.75)	10(90.9)	0.023
Social Life Activities	25(19.2)	28(87.5)	11(100)	0.01
Home Responsibilities	11(8.4)	31(96.87)	10(90.9)	<0.001

Table 4: Frequency of premenstrual symptoms among three groups

Symptoms	No/mild PMS n=130 (%)	Moderate to severe PMS n=32 (%)	PMDD n=11 (%)
Anger/ irritability	63(48.46)	25(78.12)	10(90.9)
Anxiety/ tension	61(46.92)	28(87.5)	11(100)
Tearfulness	30(23.07)	29(90.62)	9(81.81)
Depressed mood	39(30)	27(84.37)	10(90.9)
Decrease interest in work	60(46.15)	31(96.87)	11(100)
Decrease interest in home	58(46.61)	26(81.25)	9(81.81)
Decrease interest in social activities	57(43.84)	29(90.62)	10(90.9)
Difficulty in concentrating	55(42.30)	30(93.75)	11(100)
Fatigue/ lack of energy	67(51.53)	31(96.87)	11(100)
Overeating/food craving	22(16.92)	21(65.62)	6(54.54)
Insomnia	27(20.76)	27(84.37)	8(72.72)
Hypersomnia	23(17.69)	23(71.87)	4(36.36)
Feeling overwhelmed	18(13.84)	28(87.5)	9(81.8)
Physical symptoms	47(36.15)	30(93.75)	10(90.9)



(\* 2 participants were added to moderate to severe PMS group in final analysis)

Table 1: Socio-demographic details of participants

Variables	No/mild PMS n=130 (%)	Moderate to severe PMS n=32 (%)	PMDD n=11 (%)	p value	
Age (years)	20.74±2.2	20.84±2.2	19.64±3.7	0.288	
Residency	Rural	36(27.6)	10(31.2)	5(45.4)	0.450
	Urban	94(72.3)	22(68.75)	6(54.5)	
Education	MBBS	59(45.3)	16(50)	2(18.1)	0.172
	Nursing	71(54.6)	16(50)	9(81.8)	
Exercise/ outdoor sports	Not doing	109(83.8)	20(62.5)	10(90.9)	0.016
	Doing	21(16.1)	12(37.5)	1(9)	
Religion	Hindu	123(94.6)	30(93.75)	10(90.9)	0.873
	Muslim and other	7(5.3)	2(1.5)	1(9)	
Body mass index (BMI)	19.93±3	19.48±2.4	20.10±2.6	0.699	

## Discussion

In the present study, 6.35% college girls suffered from PMDD. Raval et al. reported 3.7% prevalence of PMDD among college girls.<sup>[9]</sup> Another Indian study reported 20.5% prevalence of PMDD among college students.<sup>[8]</sup> Steiner et al. reported 8.3% prevalence of PMDD among adolescents.<sup>[xiii]</sup> Hussein Shehadeh found 7.7% prevalence of PMDD using DRSP among female university students.<sup>[xiv]</sup> Tschudin S et al. found 3.1% prevalence of PMDD. <sup>[xv]</sup> Pal et al. in Pakistan and Omu et al. in Kuwait

reported 5.5% and 5.6% prevalence of PMDD respectively.<sup>[xvi, xvii]</sup> The differences in rates of prevalence may due to their differences in study design, study population and rating scales.

In the present study, significantly high prevalence of PMDD and PMS was seen in girls who did not perform regular exercise or sports. Sachin et al. found that regular aerobic exercise as a part of life style modification decreases the premenstrual symptoms.<sup>[xviii]</sup> Samadi et al. showed that 8 weeks of aerobic exercise is effective in reducing the symptoms of PMS.<sup>[xix]</sup> Kroll-Desrosiers et al. found no association between physical activity and either premenstrual symptom scores or the prevalence of premenstrual syndrome.<sup>[xx]</sup> In this study, high prevalence of PMDD and moderate to severe PMS was seen in girls having menstrual cramps. Delara et al. found that prevalence of PMDD was 4 times higher in girls who experienced dysmenorrhea.<sup>[xxi]</sup> This finding is consistent with the Nisar et al., Issa et al., Kamat et al., Steiner et al.<sup>[13, xxii, xxiii, xxiv]</sup> In the present study, PMDD was significantly high in participants who had premenstrual symptoms for more number of days during cycle and since many years. Steiner et al. found that “moderate to severe PMS” group and “PMDD” group experienced more number of days of PMS per cycle as compared to “no/mild PMS” group. This finding is consistent with the Raval et al.<sup>[13, 9]</sup>

In this study, PMDD and moderate to severe PMS were more common in girls who had positive family history of PMS in first degree relatives. which is similar to Balaha et al. finding that PMS was significantly associated with family history of PMS.<sup>[xxv]</sup> Nisar et al. also found positive family history of PMS in medical students.<sup>[22]</sup> Which suggests that there is a role genetic factors in etiology of PMS and PMDD.

In the present study, most common symptoms reported in moderate to severe PMS and PMDD groups were fatigue, difficulty in concentrating, decreased interest in work, anxiety/tension, followed by depressed mood, anger/irritability and physical symptoms. Which is similar to some other studies among college students in India and other region of world.<sup>[8, 9, xxvi, xxvii, xxviii]</sup> Another Indian study found that irritability was the most common symptom in subjects who did not have any functional impairment and tiredness and lack of energy was the most common symptom in those having functional impairment.<sup>[xxix]</sup> This finding is also consistent with the core criteria of DSM-5.<sup>[DSM-5]</sup> More than 90% participants had significant functional impairment with PMDD compared to no/mild PMS in the present study. This finding is consistent with the qualitative study of exploring PMDD in the work context.<sup>[xxx]</sup> Hussein et al. found that PMDD had a negative impact on academic performance of students.<sup>[14]</sup>

**Strength of study:** Diagnosis of PMDD was confirmed with the use of DRSP.

**Limitation of study:** It include sample of medical and nursing students only, results can't be generalized

**Future implication:** Large sample, multicenter, prospective study will require to find out magnitude of PMDD among college students. Further research of treatment of PMDD will reduce the functional impairment among them.

### **Conclusion**

Prevalence of PMDD is consistent with the other prospective studies among college students. It is more common in girls who had premenstrual symptoms for more days during cycle and since many years, menstrual cramps, history of PMS in family, didn't perform regular daily exercise. Participants reported fatigue, difficulty in concentrating, decreased interest in work, and

anxiety/tension as most common symptoms of PMDD. Significant number of college girls had functional impairment with the PMDD.

**Financial support and sponsorship:** Nil

**Conflict of interest:** Nil

**Acknowledgement:** We are thankful to college students for their cooperation during study. Also, thankful to Community Medicine Department for their suggestions in analysis of data.

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