

A STUDY OF PREMENSTRUAL SYNDROME, PREMENSTRUAL DYSPHORIC DISORDER, AND STRESS AMONG MEDICAL & DENTAL UNDERGRADUATES IN A TERTIARY CARE CENTRE IN NORTH KERALA

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Abstract

Background: Relevant studies on the physical and emotional changes associated with premenstrual disorders are few and hence the disorders are not properly recognized and not managed as well. The stress of the individual increases the burden on the top of it. It is important to assess the level of the stress and the severity of premenstrual disorder for better management, outcome and the quality of life in pre-menopausal females especially in adolescent age group. The aim is to find the prevalence of Pre-Menstrual Syndrome (PMS) & Pre-Menstrual Dysphoric Disorders (PMDD) among the medical and dental undergraduates and to determine the level of stress among them. **Materials and Methods:** A cross sectional study based on perceived stress scale for stress assessment and a structured questionnaire based on DSM 5 criteria for PMDD in google format was conducted among medical and dental undergraduates in a tertiary care centre in Kerala. **Result:** We conducted the study among 499 medical and dental female undergraduates in an age group of 18 and above. Among them 75.3% experience moderate stress and 14.8% experience severe stress. Prevalence of PMDD is 10.90%, while mild and moderate PMS are 31.91% and 36.16 % respectively. **Conclusion:** Stress, Pre-Menstrual Syndrome, and Pre-Menstrual Dysphoric Disorders are prevalent among a significant group of undergraduates, still most of them are unaware about this condition. More awareness and orientation programmes should be implemented to increase their awareness and the management of these issues to increase their physical and mental well being.

INTRODUCTION

During their reproductive life, most of the women may experience a transient physical and emotional change, especially around their periods. Majority may feel it as very mild and hence tolerable. However for a significant number of women it is severe, and it troubles them in their day today activities to a certain extent.

The current awareness of premenstrual syndrome, and premenstrual dysphoric disorder is not sufficient to contribute to any strategies or any methods to decrease the burden. The after effects of physical and mental uneasiness of these disorders are also suffered by the teenagers and adolescent girls during their reproductive phases of life. Some of the meta analysis identified the prevalence of PMS and PMDD as remarkably high. Premenstrual dysphoric disorder can occur at any point after menarche in women. As

they approach menopause symptoms worsen. There won't be any symptoms after menopause.

The impairment and lowered quality of life for PMDD is similar to that of dysthymic disorder, and is not much lower than major depressive disorder, the disability adjusted life year (DALY) lost due to this repeated cyclic disorder is in the same magnitude as major recognised disorders.^[1] The pathophysiology of PMDD is not well understood and described. The aetiology is considered as multi factorial.^[2,3] Some of the studies mention abnormalities in the Hypothalamus -Pituitary- Ovary axis and Brain Serotonergic system.^[4,5]

The prevalence estimates of PMS in India have ranged from 14.3%^[6] to 74.4%.^[7] The prevalence of PMDD in India has varied widely between 3.7% to 65.7%.^[8,9] As per other studies it affects 3–8% of pre menopausal women^[3]. More than 50% of women with PMDD report a lifetime diagnosis of Major

Depressive Disorder.^[10] Some of the studies indicate the importance of stress, and that, PMDD exacerbates with stressful life events.^[11-18]

MATERIALS AND METHODS

It is a cross sectional study among the female undergraduates of a tertiary care centre, doing Medical (MBBS) and Dental courses (BDS) in the age group of 18yrs and above with monthly cycles. They were properly informed about the study, its significance, importance, and about maintaining the confidentiality. Questionnaires were used in the study and they contained a pro forma for socio demographic data, life style details, menstrual history details etc. Family history of psychiatric illness, and the awareness of PMS & PMDD among the students were also collected. We also used a structured questionnaire strictly based on DSM5 criteria for PMDD for assessing premenstrual symptoms, its severity & functional impairment caused by it. The questions in this questionnaire ask about the overall feelings/experiences in the last 12 months. The stress is assessed by the "Perceived Stress Scale", in the last one month.

Aim & Objectives

1. To assess the prevalence of PMS & PMDD among the undergraduates
2. To assess the level of perceived stress.

Setting & Study Population

Study was conducted at a tertiary care centre with 720 beds. Its catchment area includes most of the northern parts of (state). The study was conducted among the female medical and dental undergraduates who fulfilled the Inclusion and Exclusion criteria. The study was initiated after obtaining the institutional ethical committee approval. The students are from different districts across (the name of State). We have done convenient sampling. The sample size required for our study was 426 (as per prevalence of PMS in our reference study) 8. Sample size $n = (z \alpha^2 pq) / d^2$. We included the students of Age 18 yrs and above, those who gave informed consent to participate in the study and attained Menarche. We excluded those with pregnancy and lactation.

Instrument/Tools

1. Pro forma: For obtaining socio demographic details, PMDD awareness & other informations on exercises, food habits, menstrual details, awareness about their stress and the modes of relieving their stress.
2. Structured questionnaire -based on DSM 5 PMDD guide lines.^[19]

DSM 5 guidelines for PMDD.^[19]

A. In the majority of cycles 5 symptoms must be present in the final week, before the onset of menses, start to improve with in a few days after the onset of menses, and become minimal or absent in the week post menses

B. One (or more) of the following symptoms must be present 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.^[19]

C. one (or more) of the following symptoms must additionally be present to reach a total of 5 from B. 1. Decreased interest in usual activities (e.g., work, school, friends, hobbies). Subjective difficulty in concentration. 2. Lethargy, easy fatigability, or marked lack of energy. 3. Marked change in appetite; overeating; or specific food cravings. 4. Hyper somnia or insomnia. 5. A sense of being overwhelmed or out of control. 6. Physical symptoms such as breast tenderness or swelling, joint or muscle pain, a sensation of "bloating," or weight gain.^[19,20]

For finding the prevalence of Pre Menstrual Syndrome and Pre Menstrual Dysphoric Disorder we used a structured questionnaire For that we have taken all the above mentioned DSM 5 criteria and arranged them in to small separate groups, and for each of them we assessed the level of difficulty as never, mild, moderate and severe. We considered the "severe" forms of these criteria for diagnosing PMDD and mild and moderate as PMS (mild and moderate), after satisfying the basic DSM5 guidelines (which indicates the total number of criteria needed and the group.)

3) Perceived Stress Scale by Sheldon Cohen 1983. PSS 10- Is a 10 question version of the classic stress assessment tool. It mainly focus ed on the feelings and thoughts during the last month, it is a self report instrument.^[21,22]

Sampling Procedure: Collected data in the prescribed format from medical & dental undergraduates, with informed consent, as per convenient sampling.

Methods of data collection: Study conducted during the month of July 2022. Medical (MBBS) and Dental (BDS) under graduates satisfying inclusion and exclusion criteria were included in the study. Informed consent was obtained from them. Datas were recorded on a specially designed google form. The google form was shared among them after a detailed awareness class for them in small groups as per their free time. It needs 10 minutes to complete the questionnaire. Each person filled and submitted the questionnaire only once. Option for obtaining consent was also given in the google form.

Diagnosis was made as per DSM 5 and diagnostic confirmations were made by the consultant psychiatrist independently.

RESULTS

Among 499 undergraduates approached, 1 medical and 1 dental undergraduates didn't give consent for the study, hence excluded them from the study. Out of 497 undergraduates 154 students were dental undergraduates and 343 students were medical

undergraduates. 21 students were married. As per their locality 174 students are from Rural area, 165 students from Semi Urban and 158 students from Urban area. 40 students belong to joint family and 447 students are from nuclear family. 10.1% reported family history of psychiatric illness and 84.5% were not doing any regular exercises. [Table 4]

Majority of students (35.6%) attained menarche at 13 yrs of age. 15.5% undergraduates were doing regular exercise (frequency 77). 78.9% students were on mixed diet. 3.4% on pure veg diet. 10.1% undergraduates have a family history of psychiatric illness. 32.6% undergraduates were not aware about PMS & PMDD. 8.9% of the students themselves reported as they are experiencing severe stress. 9.9% were not doing anything for relieving their stress, most of them are interested in sleeping more than usual while they are in stress (27%). The students practicing yoga and meditations are really less in number (0.4% and 2% respectively).

[Table 1 (1a to 4c)]

[Table 1 to 3] Show results of structured questionnaire for PMS & PMDD (frequency outside & percentage in side the brackets).

In Item no 1 (1a, 1b, 1c), 88.3% experienced mood swings, 76.9% reported "feeling suddenly sad or tearful" and 63.8% mentioned "increased sensitivity to rejection", ranging from mild to severe. Most of them 74 (14.3%) reported that the symptom "feeling suddenly sad or tearful" as severe, while 180 (36.2%) never experienced "increased sensitivity to rejection" during their premenstrual periods.

In Item no 2 (2a, 2b, 2c) "anger" was experienced in its severe forms for 81 (16.31%) students and "anger" was the dominant symptom (mild to severe) in 85.5% of the study group. 64.7% of students had "increased interpersonal conflicts" and 36 (7.2%) students reported it as severe during their premenstrual periods. 82.3% experienced "marked irritability" irrespective of severity.

In Item no 3 (3a, 3b, 3c) a total of 70.6% of the students experienced "marked depressed mood", 55.8% reported "feelings of hopelessness" and only 55.3% felt "self-deprecating thoughts", with different grades of severity.

In Item no 4 (4a, 4b, 4c) "tension" was dominant in 63.7% students, "marked anxiety" in 59.3%, and "feeling of keyed up or on edge" in 47.3%, ranging from mild to severe. Items 1a to 4c depicts psychological aspects of PMS & PMDD.

Table 2 (Item 5 to 10 b)

In Item no 5 & 6, majority of students (73.3%) reported "decreased interest in usual activities", and 70.2% subjects had "difficulty in concentration".

In Item no 7 (7a, 7b, 7c) most (78.6%) reported symptom irrespective of severity was "marked lack

of energy". 67.1% experienced "lethargy" and 74.8% "easy fatigability".

In Item no 8 more than 2/3 rd of our students (65.9%) reported marked change in Appetite, while almost 1/3 rd (39.6%) reported over eating and 62.1% had food craving.

In Item no 9 (9a, 9b) more than 1/2 of them reported "hyper somnia" (52.9%) and almost 1/4 th (24.7%) of them reported "insomnia" in varying severity. These items (5 to 10 b) focused on biological functions. In Item no 10 (10 a, 10 b) 44.5% reported "sense of being overwhelmed" 51.3% reported "sense of being out of control".

[Table 3] (11 a to 14 b) Item no 11 (11a, 11b, 11c, 11d, 11e, 11f) deal mainly with physical symptoms, around 1/2 of them (50.9%) reported "Breast tenderness" and 23.3% reported "Breast swelling" of mild to severe levels. Around 1/2 of them reported "joint pain" (54.0%) and 70.1% reported "muscle pain". 65.8% reported "sensation of bloating" and 31.2% reported "weight gain".

In Item no 12 (12a, 12b, 12c) 58.9% reported interference with work /at school/college, 55.3% reported interferences in social activities 53.7% in relationship with others. This item was included to know about the extent of interferences in their social, occupational and interpersonal aspects.

In Item no 13 only 1/4 th experienced exacerbation of another disorder or illness and only 1.2% experienced it as severe.

In Item no 14 (14 a, 14 b) 92% were not using any sort of substances and 83.9% were not on any medications or other treatment. Item no 13 and 14 were included in order to confirm that the symptoms experienced are not related to their substance /medication use or not merely an exacerbation of their previous symptoms.

Perceived stress levels: 9.9% experienced low stress, 75.3% moderate and 14.8% experienced high perceived stress, majority them experienced moderate to severe stress.

Socio demographic details. [Table 4]

Our study indicates a clear association between the level of stress the students experienced and the PMS and PMDD. Table 5 indicates the Mann Whitney U test, done to assess the significance of stress in PMS & PMDD group and those without PMS & PMDD, its p value is 0.006, it is less than 0.05 hence it is significant.

Prevalence of PMDD and PMS -After applying the DSM 5 guidelines, the prevalence of PMDD in our study group is 10.90% & that of Moderate PMS is 36.16% & Mild PMS is 31.91%.

Table 1: PMDD SYMPTOMS AS PER DSM 5 (625.4 B)

Items	PMDD symptoms as per DSM 5	Never	Mild	Moderate	Severe
1a	Mood swings	58(11.7%)	187(37.6%)	185(37.2%)	67(13.5%)
1b	Feeling suddenly sad or tearful	115(23.1%)	160(32.2%)	151(30.4%)	71(14.3%)
1c	Increased sensitivity to rejection	180(36.2%)	146(29.4%)	134(27.0%)	37(7.4%)

2a	Marked irritability	88(17.7%)	172(34.6%)	168(33.8%)	69(13.9%)
2b	Anger	72(14.5%)	171(34.4%)	173(34.8%)	81(16.3%)
2c	Increased interpersonal conflicts	175(35.2%)	166(33.4%)	120(24.1%)	36(7.2%)
3a	Marked depressed mood	146(29.4%)	183(36.8%)	128(25.8%)	40(8.0%)
3b	feelings of hopelessness	220(44.3%)	138(27.8%)	96(19.3%)	43(8.7%)
3c	Self deprecating thoughts	222(44.7%)	152(30.6%)	96(19.3%)	27(5.4)
4a	Marked anxiety	202(40.6%)	170(34.2%)	101(20.3%)	24(4.8%)
4b	Tension	180(36.2%)	175(35.2%)	105(21.1%)	37(7.4%)
4c	Feeling of keyed up or on edge	262(52.7%)	144(29%)	76(15.3%)	15(3.0%)

Table 2: PMDD SYMPTOMS AS PER DSM 5 (625.4 C)

Items	PMDD Symptoms as per DSM 5	Never	Mild	Moderate	Severe
5	Decreased interest in usual activities (work, college, friends hobbies)	133(26.8%)	214(43.1%)	105(21.1%)	45(9.1%)
6	Subjective difficulty in concentration	148(29.8%)	192(38.6%)	113(22.7%)	44(8.9%)
7a	Lethargy	163(32.8%)	195(39.2%)	110(22.1%)	29(5.8%)
7b	Easy fatigability	125(25.2%)	207(41.6%)	131(26.4%)	34(6.8%)
7c	Marked lack of energy	107(21.5%)	216(43.5%)	132(26.6%)	42(8.5%)
8a	Marked change in appetite	169(34%)	178(35.8%)	121(24.3%)	29(5.8%)
8b	Over eating	300(60.4%)	111(22.3%)	69(13.9%)	17(3.4%)
8c	Food craving	188(37.8%)	156(31.4%)	112(22.5%)	41(8.2%)
9a	Hypersomnia	234(47.1%)	145(29.2%)	88(17.7%)	30(6.0%)
9b	Insomnia	374(75.3%)	81(16.3%)	37(7.4)	5(1.0%)
10 a	Sense of being overwhelmed	276(55.5%)	141(28.4%)	67(13.5%)	13(2.6%)
10 b	Sense of being out of control	242 (48.7%)	147(29.6%)	73(14.7%)	35(7.0%)

Table 3: PMDD SYMPTOMS AS PER DSM 5 (625.4 C ,D,E&G)

Items	PMDD Symptoms as per DSM 5	Never	Mild	Moderate	Severe
11 a	Physical symptoms Breast tenderness	244 (49.1%)	168 (33.8%)	67 (13.5%)	18 (3.6%)
11 b	Breast swelling	381 (76.7%)	81 (16.3%)	31 (6.2%)	4 (0.8%)
11 c	Joint pain	228 (45.8.%)	147 (29.5%)	91 (18.3%)	31 (6.2%)
11d	Muscle pain	149 (29.9%)	167 (33.6%)	133 (26.8%)	48 (9.7%)
11 e	Sensation of bloating	170 (34.2%)	164 (33.0%)	121 (24.3%)	42 (8.5%)
11 f	Weight gain	342 (68.8%)	102 (20.5%)	42 (8.5%)	11 (2.2%)
12 a	Clinically significant distress/interference with work/at school/college	204(41.0%)	200(40.2%)	70(14.1%)	23(4.6%)
12 b	In social activities	222(44.7%)	185(37.2%)	73(14.7%)	17(3.4%)
12 c	In relationship with others	230(46.3%)	168(33.8%)	78(15.7%)	21(4.2%)
13	Exacerbation of previous symptoms of another disorder/illness	376(75.5%)	83(16.7%)	32(6.4%)	6(1.2%)
14 a	Using a substance	457(92%)	26(5.2%)	13(2.6%)	1(0.2%)
14 b	Medications /other treatment	417(83.9%)	53(10.7%)	26(5.2%)	1(0.2%)

Table 4: SOCIO DEMOGRAPHIC RESULTS

Variables	Frequency (percentage)
Christian	59(11.9%)
Hindu	355(71.4%)
Muslim	81(16.3%)
Medical	343(69%)
Dental	154(31%)
Married	21(4.2%)
Unmarried	476(95.8%)
Joint family	40(8%)
Nuclear family	447(89.9%)
Pure veg(diet)	17(3.4%)
Mixed diet	392(78.9%)
With family history of psychiatric illness.	50(10.1%)
With out regular exercise	420(84.5%)

Table 5: STATISTICAL ANALYSIS

MANN -WHITNEY U TEST	
	level of stress
Mann-Whitney U	17639.000
Wilcoxon W	23525.000
Z	-2.752
Asymp. Sig. (2-tailed)	.006

a. Grouping Variable: PMS_PMDD and others.

DISCUSSION

The studies in PMS & PMDD are comparatively less in- (the name of state). Some of those studies were focused only on PMS.^[23] We obtained the Prevalence of PMDD as 10.90%, which is more than twice the prevalence of other recent Indian study.^[8] Some studies reported a prevalence nearly thrice of our PMDD prevalence.^[24] Irritability was the most common reported problem in that study.²⁴ In our study 88.3% reported mood swings, 85.5% anger and 82.3% irritability. In our study a total of 78.9% participants reported pre menstrual symptoms (mild, moderate and severe). It is comparable with other studies.^[25-27]

Almost 8.5% among them reported that they had diagnosed with PMDD in the past. All of them satisfied the DSM 5 guidelines for PMDD & were diagnosed with PMDD in our study also.

The awareness about PMDD and PMS is low among the undergraduates. 1/3 rd of them are still unaware. Even though most of them experience stress in varying degrees only 1/10th of them consulted a mental health professional for support. It could be due to the existing stigma regarding the mental health issues. All of the students participated in the study reported various level of stress. Even before applying perceived stress scale 8.9% self-reported their level of stress as severe. As per our study using Perceived Stress Scale 14.8% among them has high level of perceived stress. Most of them have un healthy and non productive habits to deal with stress. Those who practices yoga and meditation are really less in number. Some of the previous studies mention the impact of stress in PMS & PMDD^[3] and some other studies mentioned the importance of stress reduction strategies.^[28] Almost 78.99% students not having regular exercises reported PMS & PMDD in varying degrees of severity. Some of the meta analyses^[29] suggested that regular exercise will decrease the symptoms of PMS and its further complications.

Limitations and future directions

Our study population is medical and dental undergraduates and are expected to be more aware about health related issues hence we need more studies focusing the common public in order to generalise the results more precisely. Our study is in google format, it has its own limitations. Face to face interviews outweigh all other methods. Social desirability bias and lack of randomisation in sampling are some other shortcomings.

CONCLUSION

A large number of our Adolescent girls suffers physical and mental issues during their monthly cycles. Even among medical and dental undergraduates, a significant number of adolescent girls are not aware about these disorders. This highlights the need for more awareness programs among adolescent age groups regarding PMS and

PMDD. As stress -a modern buzzword -is also a contributing factor for PMS and PMDD^[3], adequate stress management strategies and relaxation techniques are more useful and hence should be implemented. More researches should be done in the coming future ,focusing the direct relation ship between exercise ,stress management, PMS&PMDD and there by we can increase the quality of life meanwhile decrease the physical ,mental and social burden.

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