ORIGINAL ARTICLE

Frequency, Intensity and Impact of Premenstrual Syndrome in Medical Students

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ABSTRACT

Objective: To determine the frequency and severity of Premenstrual Syndrome (PMS) in medical college students, evaluate the impact of the condition on the quality of life and find out the associated risk factors.

Study Design: An observational study.

Place and Duration of Study: Isra University Hospital, Hyderabad, Sindh, Pakistan, from August to December 2006.

Methodology: Unmarried medical students aged 18-25 years with regular menstrual period for the last 06 months were recruited by convenience sampling. PMS-related data was collected on daily record of severity of problems (DRSP) for two prospective cycles. Health-related quality of life data was collected on medical outcome study Short Form 36 (Sf – 36) after taking informed consent from participants. Descriptive and inferential analysis was done by two-tailed t-test and multivariate logistic regression analysis.

Results: Study participants (n=172) had mean age of 21.2 $\pm$ 1.9 years. Eighty-nine (51%) girls met the criteria for PMS recording to ICD – 10, among them, 53 (59.5%) had mild PMS, 26 (29.2%) had moderate and 10 (11.2%) had severe PMS. Ten (5.8%) girls were found to have Premenstrual Dysphoric Disorder (PMDD) according to DSM – IV criteria.
The order of frequency of symptoms were anger, irritability, anxiety, tiredness, difficult concentration, mood swings and physical symptoms like breast tenderness and general body discomfort with great impairment in social life / activities and work efficiency/productivity. Dysmenorrhea (p=0.003) and family history of premenstrual syndrome (p <0.001) were significantly associated with premenstrual syndrome on univariate and multivariate analysis. Sf – 36 score on Mental Component Summary (MCS) and Physical Component Summary (PCS) were significantly lower in the affected group.

Conclusion: Premenstrual syndrome is a common problem in young girls which adversely affects their educational performance and emotional well-being. Strategies should be adopted for detection and management of PMS in young girls.

Key words: Menstrual syndrome. Frequency. Intensity. Impact. Young girls.

INTRODUCTION

Premenstrual Syndrome (PMS) is a set of physical, emotional and behavioural symptom that start during the week preceding menstruation and are alleviated when the menstrual flow begins.[1] The symptoms present a cyclic and recurrent character with variable in quality and intensity.

PMS is defined by international statistical classification of diseases and related health problem 10th revision (ICD-10) as occurrence of one premenstrual symptom in a list of symptoms which include mild psychological discomfort, feelings of bloating and weight gain, breast tenderness, swelling of hands and feet, various aches and pains, poor concentration, sleep disturbances and changes in appetite, restricted to the luteal phase of menstrual cycle and cease with commencement of menstrual flow.[3]

Epidemiologic studies have estimated that as many as 80% of women of reproductive age experience some symptoms attributed to premenstrual phase of menstrual cycle.[4] About 24-32% women report moderate to severe PMS and 3-8% have very severe form of PMS that is Premenstrual Dysphoric Disorder (PMDD).[5-7] It is defined as a distinct affective disorder characterized by the presence of at least five symptoms (one of which must be affective) that occur in the late luteal phase, are not a luteal exacerbation of an existing psychiatric condition and that significantly interfere with social activities or relationship with others.[8] PMS is thus prevalent in women of all ages causing substantial morbidity with obvious detriment to interpersonal relationships, social interactions, lifestyle, work performance, emotional well-being and overall health-related quality of life.[9,10]

This disorder is particularly common in the younger age groups and, therefore. represents a significant public health problem in young girls.[11,12]

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Research on PMS and PMDD has scarcely been reported from Pakistan.

This study was conducted to determine the frequency of PMS in young college girls, assess severity of premenstrual symptoms, evaluate the impact of the condition on the quality of life of young girls and ascertain if there are any reproductive characteristics associated with PMS.

METHODOLOGY

An observational study was conducted at Isra University Hospital, Hyderabad, Sindh, Pakistan, from August to December 2006, by convenient sampling on 200 unmarried medical students aged 18-25 years with regular menstrual periods for the last 06 months. Married students, known cases of any psychological or medical disorder and girls with irregular menstrual cycle in the last 06 months were excluded from the study.

Informed consent was taken from the participants. Health-related quality of life data were collected on medical outcome study Short Form 36 (Sf-36) and the daily record of severity of problems was administered to collect data regarding premenstrual symptoms. The daily record of severity of problems (DRSP) includes 21 items grouped into 11 domains and three occupational productivity questions. Each item is rated on a scale of 1 to 6. The participants were asked to maintain symptom dairy for two prospective cycles and on each day rate each symptom on scale 1 to 6. Diagnosis of PMS was made according to ICD-10 symptoms check list and Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) was used to diagnose PMDD. Daily rating of symptom was studied and the week proceeding menstruation was compared with first week of follicular phase. Symptoms severity was categorized according to the criteria given by Sternfeld.[13] Questionnaire also collected data about the age of menarche, number of days bleeding lasts, length of menstrual cycle, dysmenorrhea, family history of PMS and number of years with premenstrual symptoms.

Data were analyzed using SPSS version 11.0. Impact of PMS on well-being of affected subjects was analyzed by assessing mean of eight components of Sf-36 and then further adding those means into two components that is Physical Component Summary (PCS) and Mental Component Summary (MCS) of Sf-36 questionnaire. Two tailed student's t-test was applied for comparing the results between the two groups. Multivariate analysis was performed using step-wise logistic regression model. For all analysis, a p-value of < 0.05 was considered significant.

RESULTS

Study sample comprised of 200 girls, out of them 172 returned the questionnaires completed in all respects.

Among those 172, PMS was diagnosed in 89 (51%) girls and PMDD in 10 (5.8%) girls according to ICD-10 and DSM-IV criteria respectively.

Among PMS groups, mild PMS was found in 53 (59.5%) girls. Frequency of moderate and severe PMS was 26 (29.2%) and 10 (11.2%) respectively.

Mean age was 21.2 $\pm$ 1.9 years; mean age of menarche was 13.2 $\pm$ 1.1 years. Dysmenorrhea was prevalent with 79 (79.8%), 17 (17.2%) reported mild pain, while 36 (36.4%) and 27 (27.27%) reported moderate to severe dysmenorrhea respectively. Fifty-eight (58.6%) reported positive family history of premenstrual syndrome (Table I).

On univariate analysis, PMS was significantly more frequent in girls with family history of PMS (p <0.001) and dysmenorrhea (p=0.003). There was no significant relationship with present age, age at menarche and number of years with premenstrual symptoms.

Multivariate analysis of the factors that were significantly associated with PMS on univariate analysis is shown in Table II. PMS was positively associated with dysmenorrhea (p=0.029) and family history of PMS (p <0.001).

Table I: Reproductive characteristics of study subjects (n=172).

Variables	With PMS/PMDD (n=99)	Without PMS/PMDD (n=73)	p-value
Present age (in years)	21.2 ± 1.9*	21.6 ± 1.8	NS***
Age at menarche (in years)	13.2 ± 1.1	13.1 ± 1.0	NS
Number of bleeding days	5.4 ± 1.9	4.7 ± 1.4	0.009
Length of cycle (in days)	24.7 ± 9.6	22.2 ± 11.3	NS
Number of years with premenstrual symptoms	3.1 ± 1.1	3.1 ± 1.2	NS
Dysmenorrhea:			
Yes	79 (79.8)**	43 (58.5)	0.003
No	20 (20.2)	30 (41.1)	
Intensity of dysmenorrhea:			
Mild	17 (17.2)	25 (34.2)	
Moderate	36 (36.4)	12 (16.4)	< 0.001
Severe	27 (27.2)	6 (8.2)	
Family history:			
Yes	58 (58.6)	20 (27.4)	< 0.001
No	41 (41.4)	53 (72.6)	

*Mean $\pm$ Standard Deviation, ** Frequency and Percentage, ***Not significant*

Table II: Multivariate analysis of independent variables significantly associated with PMS (dependent variable) on univariate analysis (n = 99).

Variables	Co-efficient	Adjusted odds ratio	95% CI for adjusted odds ratio	p-value
Dysmenorrhea:				
No	0	*		0.029
Yes	0.791	2.2	1.1–4.5	
Intensity of dysmenorrhea:				
Nil	0	*		
Mild	-0.178	0.8	0.3–2.0	0.696
Moderate	1.486	4.4	1.8–10.9	0.001
Severe	1.579	4.8	1.6–14.6	0.005
Family history of premenstrual syndrome:				
No	0	*		
Yes	1.239	3.5	1.7-7.1	0.001

Reference category

Table III shows the prevalence of each premenstrual symptom according to severity. Anger, anxiety, fatigue, difficult concentration, disinterest in normal activities, moodiness and physical symptoms were the common symptoms.

Impairment in social life / activities was rated moderate to severe by 25 (25.3%) and 14 (14.1%) respectively and impairment in work efficiency and productivity was rated moderate 23 (23.2%) and severe by 11 (11.1%) girls. The effect of PMS on quality of life in affected girls is given in Table IV. The mean ± SD of Sf-36 score in PMS / PMDD group is significantly lower than non-affected subjects. All 08 domains were significantly impaired particularly Mental Component Summary (MCS) 53 ± 20.3 vs. 80.8 ± 7.9, p < 0.001).

Table III: Premenstrual symptoms in PMS / PMDD group according to severity (n = 99).

	Mild	Moderate	Severe	Total
Depressed, sad, "down" or "blue" feeling of worthless or guilty	31 (31.3%)	23 (23.2%)	18 (18.2%)	52 (52.52%)
Anxious, tense, "keyed up" or on edge	36 (36.4%)	30 (30.3%)	15 (15.2%)	81 (81.81%)
Mood swings/sensitive to rejection	26 (26.3%)	19 (19.2%)	13 (13.1%)	58 (58.58%)
Anger, or irritable	41 (41.4%)	31 (31.3%)	11 (11.1%)	83 (83.83%)
Less interest in usual activities	30 (30.3%)	36 (36.4%)	11 (11.1%)	77 (77.7%)
Lack of concentration	29 (29.3%)	32 (32.3%)	12 (12.1%)	73 (73.7%)
Lethargic, tired, fatigued or of energy	27 (27.3%)	31 (31.3%)	20 (20.2%)	78 (78.78%)
Increased appetite or food cravings	15 (15.2%)	9 (9.1%)	5 (5.1%)	29 (29.29%)
Insomnia/hypersomnia	22 (22.2%)	15 (15.2%)	10 (10.1%)	47 (47.47%)
Overwhelmed, unable to cope	21 (21.2%)	14 (14.1%)	5 (5.1%)	40 (40.40%)
Breast tenderness, breast swelling, bloated sensation, weight gain, headache, joint or muscle pain, or other physical symptoms	26 (26.3%)	29 (29.3%)	13 (13.1%)	68 (68.68%)
Reduction of productivity or inefficiency at work, school, home or in daily routine	21 (21.2%)	23 (23.2%)	11 (11.1%)	55 (55.55%)
Less participation in hobbies or social activities	35 (35.4%)	25 (25.3%)	14 (14.1%)	74 (74.74%)
Interference in relationships with others	34 (34.3%)	18 (18.2%)	12 (12.1%)	64 (64.64%)

Results are presented as numbers (percentages)

Table IV: Association of PMS and Sf – 36 outcome measures.

Outcome measures	With PMS/PMDD (n=99)	Without PMS (n=73)	p-value
General health (GH)	46.8 ± 18.7	77.5 ± 11.9	< 0.001
Physical functioning (PF)	72.3 ± 13.4	89.2 ± 5.8	< 0.001
Role limitation due to PF (RP)	50.0 ± 27.2	81.8 ± 16.8	< 0.001
Role limitation due to emotional health (RE)	51.5 ± 35.7	85.8 ± 16.6	< 0.001
Social functioning (SF)	52.7 ± 18.9	80.5 ± 14.3	< 0.001
Body pain (BP)	55.9 ± 19.3	83.3 ± 9.7	< 0.001
Vitality (VT)	49.4 ± 18.7	77.3 ± 6.4	< 0.001
Mental health (MH)	59.4 ± 15.4	79.6 ± 5.0	< 0.001
Physical Component Summary (PCS)	56.3 ± 16.8	83.0 ± 8.5	< 0.001
Mental Component Summary (MCS)	53.2 ± 20.3	80.8 ± 7.9	< 0.001

Results are presented as mean ± standard deviation

DISCUSSION

In this study, frequency of PMS was high in young girls as found in another study from Pakistan.[14] It was even higher than the community-based survey of Pakistani women.[15] This difference could be due to the difference in general community and the present highly selective group of population or may be that medical students had more stressful life. Other available results from UAE, USA, France report incidence of PMS between 16.4% to 35%, while Cleckner Smith and Johnson reported very high prevalent figures of 75% and 88% respectively.[2,16-19]

The variations of results from various studies are due to limitations and differences in the definition of PMS, standards and methods of data collection, sampling technique and type of patient population studied.

The frequency of PMDD in these subjects was 5.8%, which was lower than reported frequency by Tabassum[14] and by Perkonigg[21] that is 18.2% and 20.4% respectively. It is similar to the frequency reported by Duester.[7]

The relationship between PMS and reproductive factors were addressed in this study. Dysmenorrhea was extensive among the study subjects and had a significant and independent association with PMS in the adjusted analysis, 122 (70.9%) of participants reported some degree of dysmenorrhea and majority of those with dysmenorrhea were in PMS group. Other significantly associated risk factor was family history of PMS.

A significant relationship of PMS with dysmenorrhea and family history of PMS was found similar to studies from UAE[16] and USA.[17] In contrast to the earlier studies, there was no significant relationship between PMS, age of menarche and number of years with premenstrual symptoms.[21-23]

The symptom and their severity in this study subjects are in accordance with those reported in earlier studies.[13, 14]

PMS decreases educational productivity, disrupts social activities and impairs family relations.

The present results showed consistent and strong relationship between PMS symptoms and level of interference in all domain of woman's quality of life as reported in previous Western studies.[10,16, 23-24]

An important limitation of this study was that Sf-36 was used for assessment of health-related quality of life in the subjects. It is a widely used and validated questionnaire but local general population norm based

score to interpret the difference across the scales are not available. However, there is significant difference in between PMS positive and PMS negative subjects. Another limitation of this study was a highly selective sample, the population comprising of medical students which were small in number.

CONCLUSION

The findings of this study suggest that frequency and morbidity of PMS / PMDD is relatively common in young girls. As it adversely affects the educational, social and emotional well-being, means should be adopted to reduce the incidence of this disorder. Further studies on large sample of population should be conducted to confirm these results and to plan out strategies for better detection and management of PMS in young girls.

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