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Premenstrual Symptoms-Prevalence, Coping Behaviors and Related Quality of Life

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Abstract

Premenstrual syndrome (PMS) is a collection of physical and mood changes, related to female menstrual cycle. This study was done to assess the prevalence of premenstrual symptoms, their coping behaviors and related Quality of Life (QoL) among female medical/dental undergraduate students.This was a cross sectional study done among female undergraduate medical/dental students of Regional Institute of Medical Sciences, Imphal in the months of September and October, 2014. Modified Abraham's Menstrual Symptom Questionnaire (MSQ), to assess the prevalence and severity of PMS symptoms and Womens' Quality of Life (WOMQoL) questionnaire were employed for data collection. Prevalence of symptoms was expressed in means and percentages. Association between PMS score and other independent variables was seen by t test with P value < 0.05 as significant association.There were (n=240) 204 medical & 36 dental students among the respondents. Overall prevalence of at least one premenstrual symptom was 72.5% for affective and 74.5% for somatic symptoms. PMS symptoms were significantly severe among those with a prior family history (p=0.019) but no such association was found with regularity of menstrual cycles (p=0.572) or BMI (p=0.203) of respondents. Also, females who had a higher PMS score were found to be more prone to have poor quality of life (QoL) as reflected in all the four domains, namely physical, psychological, spiritual and social. (p<0.05) Symptoms of Premenstrual syndrome is present in a vast majority of respondents, so rational approach in dealing with the symptoms is the need of the hour.

Key words: Premenstrual symptoms, Medical students, Quality of life, Coping behaviors.

Introduction

Premenstrual syndrome (PMS) is a collection of physical and mood changes among women during the days prior to menstruation which occur month after month and affect a woman's normal life.[1] Royal College of Obstetricians &Gynaecologists defines PMS as 'a condition which manifests with distressing physical, behavioural and psychological symptoms, in the absence of organic or underlying psychiatric disease, which regularly recurs during the luteal phase of each menstrual (ovarian) cycle and which disappears or significantly regresses by the end of menstruation'.[2] The precise aetiology of PMS remains unknown but cyclical ovarian activity and the effect of estradiol and progesterone on the neurotransmitters serotonin and gamma-aminobutyric acid (GABA) appear to be key factors.[2] Symptoms of PMS are categorized into two domains, namely the affective symptoms, which include depression, angry outbursts, irritability, anxiety, confusion, social withdrawal and the somatic symptoms, namely breast tenderness, abdominal bloating, headache, swelling of extremities.[3] Commonly followed diagnostic criteria for PMS was proposed by the University of California which states that at least one of the affective and somatic symptoms (1) must be present in the 5 days before cycles for at least three menstrual cycles in a row, (2) end within 4 days after period starts, and (3) interfere with some of her normal activities.[3] Recently, with PMS being recognized as a clinical entity under the Diagnostic & Statistical

Manual V (DSM V), there has been a growing awareness among medical fraternity at large regarding the proper care and treatment of women during their premenstrual period.[4]

In India, there have been studies done on the prevalence, management and related aspects of premenstrual syndrome among medical students, nurses and also those attending the outpatient gynaecology clinic.[5-9] Same cannot be said about the country's north east, where there is dearth of knowledge on the subject. Hence, this study was conducted among the female undergraduate medical and dental students of a tertiary medical institution with the following objectives: (i) To determine the prevalence of premenstrual symptoms (PMS) among female medical/dental undergraduate students of Regional Institute of Medical Sciences, Imphal, Manipur. (ii) To assess their coping behaviors against PMS, and (iii) To determine their Quality of Life (QoL) in the week preceding their last menstrual cycle.

Materials and Methods

This was a Cross-sectional study conducted among students of Regional Institute of Medical Sciences, Imphal, Manipur, a state in Northeast India. Regional Institute of Medical Sciences, a premier tertiary medical care institution was until recently the only institution of its stature catering to a major chunk of the population of Northeast India. The study was conducted from September to October, 2014 among female undergraduate medical and dental students. Those who could not be contacted after three consecutive visits and those who refused to participate were excluded from the study.

Sample size and sampling: Taking the prevalence of at least one symptom of PMS as 84% (based on Bakhshani NM et al[10]), absolute error of 5%, at significance level α of 0.05, final sample size was rounded off to 240 estimating a non response rate of 15%. Convenience sampling method was used to select the study respondents.

Data collection: Two teams consisting of two MBBS students and a postgraduate in each were formed. One undergraduate hostel was assigned to each group for data collection. After explaining the purpose of the study and obtaining informed verbal consent data were collected from the students using two structured validated questionnaires. They were slightly modified to suit the study setting and the study population and the same was pretested prior to administration. Abraham's Menstrual Symptom Questionnaire (MSQ**),** a 3-point likert scale with 5 domains enumerating symptoms of PMS during the last menstrual period, was used to assess the prevalence of premenstrual symptoms among the respondents. Total PMS score was computed from the cumulative likert responses.

Women's Quality of life questionnaire[11] developed by Gehlert S et al is a 40-item scale used to assess respondents' quality of life in the week preceding their last menstrual period under 4 domains, namely physical, psychological, social and spiritual. Each item was given a score of -1 for a negative response and +1 for a positive response. Items that connote a poor quality of life were reverse scored. Under each QoL domain, -10 was the minimum score and +10 was the maximum score to be obtained. Respondents were classified as having good QoL or poor QoL under each domain based on a cut-off score of +5.

Height and weight of the respondents was measured using standard instruments and standard methods.

Operational definitions:

1. Premenstrual syndrome was defined as per the definition of University of California recommended by the American Congress of Obstetricians and Gynecologists[3].
2. Grading of PMS symptoms was done as per the Royal College of Obstetricians & Gynecologists.

Data analysis

Data were checked for consistency and completeness and entered in IBM SPSS V20 software. Descriptive statistics like mean, percentages were used. Chi-square test was used for bivariate analysis between PMS score and selected variables like age, family history, menstrual cycle regularity, and BMI. Multivariate analysis for variables significant at P value < 0.05 in bivariate analysis was done using multiple logistic regression.

Ethical issues

Ethical approval was obtained from Institutional Ethics Sub Committee, RIMS, Imphal. Informed verbal consent obtained from the participants and confidentiality was maintained.

Results

Out of total 240 participants, majority of respondents were from the medical stream (n=206) while rest were from dental stream (n=34). The mean age of the study participants was 20.72 ±1.64 years. The mean height and weight of the study participants were 1.56 ± 0.069 meters and 51 ± 6.51 kilograms respectively. Among the study participants, 106(46.5%) attained menarche at the age of 13 years, and 203 (84.6%) had regular cycles with a mean period of 4-5 days. (Table 1)

An overwhelming majority of respondents (n=227, 94.6%) had some PMS symptoms (at least one affective symptom) during their luteal phase of the cycle, which in some cases extended to the initial 3-4 days of the bleeding phase (data not shown). The most common affective symptoms were irritability (n=174, 72.5%), mood swings (n=172, 71.7%), anxiety (n=138, 57.4%), and depression (n=112, 46.6%), while the most common somatic symptoms were backache (n=178, 74.2%), fatigue (n=170, 70.6%), acne (n=132, 54.6%), breast tenderness (n=131, 54.5%), and abdominal bloating (n=125, 52.1%) (Table 2). Overall, backache (n=46, 19.2%), irritability (n=21, 8.8%), mood swings (n=21, 8.8%) and fatigue (n=20, 8.3%) were the most severe symptoms reported.

More than half of the respondents (n=127) reported history of premenstrual symptoms in a first degree family member. Majority (57.1%) did not have any coping mechanisms for their affective symptoms, while the rest of the respondents reported taking rest, chatting with friends, listening to music and also aerobic exercises, yoga, meditation and medications (Figure 1). Rest (26.1%) was the most common coping mechanism for the somatic symptoms as well, followed by medications, hot water bags and others (Figure 1). Quality of life of the respondents in the week preceding their last menstrual period was affected across all domains, with psychological domain being the most affected(Poor QoL-66.7%;n=160) followed by physical(Poor QoL-55.4%;n=133) and spiritual(Poor QoL-45.4%;n=109) domains, with social quality of life being the least affected. (Table 4)

Bivariate analysis using independent sample t-test showed the total PMS score to be significantly associated with a positive family history of PMS symptoms (p=0.019) and respondents' age above 20 years (p=0.042) (Table 3). Adolescents had fewer symptoms (PMS score=21.55 vs. 18.02) compared to those older than 19 years. There was also an increase in PMS score with corresponding increase in BMI, but it was not significant (p=0.203). PMS score was also found to be significantly high across all domains of quality of life ($p \leq 0.001$) (Table 3).

Discussion

This study was conducted among female medical and dental undergraduate students in the 17-25 years age group, most of them attaining their menarche by 13 years, while 37 had irregular menses. Premenstrual symptoms were present in a vast majority (n=227, 94.6%) and their prevalence ranged from 18.3% (n=44) for swollen extremities to 74.2% (n=178) for backache (Table 2). Most of them reported not finding effective ways to cope with their symptoms (57.1% for affective & 32% for somatic symptoms). There was a significant

reduction in their quality of life as well with at least one-third of the respondents having a poor PMS score across all domains in the WOMQoL scale. (Table 4)

The prevalence of PMS symptoms in studies conducted in similar settings like Thailand[12] (98% with PMS), Iran[10, 13, 15](98.2%, 98.2% and 99.5%), Ethiopia[14] (99.59%) and Nigeria[16] (99.6%) is comparable to the present study. Similar to our study, fatigue, backache and breast tenderness were found to be the most common somatic symptoms in studies conducted in Iran[10, 13], Malaysia[17], Pakistan[19] and Ethiopia[14], while irritability, mood changes and depression were the most common affective symptoms in studies done in Malaysia[17], China[18], Pakistan[20]. Fewer respondents in our study found better ways to cope with their symptoms when compared to studies done in Chandigarh[6], Malaysia.[17]

Studies done in Nigeria[16] (88.4%), Malaysia[17] (>75%), and China[18] (76%) showed a lower prevalence of PMS symptoms compared to our study. In India, studies done in Chandigarh[6] (78.2%), Vadodara[8] (42%), Chennai[9] (67%) have widely varying prevalence. This variation in prevalence can be attributed to the difference in the study questionnaires used in those studies, with age group of study population playing a smaller role.

Contrary to previous knowledge on premenstrual syndrome, where symptoms are believed to begin by 25 to 35 years, we found 3/4th of participants to have significant symptoms below 25 years, while adolescents had much fewer symptoms. This could be due to greater awareness among the medical students in attributing their symptoms to PMS than in the general population, but has to be studied further. Though not statistically significant, our study found an increasing trend of PMS score with increasing BMI, which can be further investigated.Our study had a limitation,which has to be borne in mind while interpreting the results. Our study did not classify participants having PMS, but only assessed its prevalence and severity. This can also include symptoms of some overlapping mental illnesses that might influence the final prevalence.

Conclusion

Premenstrual syndrome knowledge has evolved over the years, but it is a diagnosis of exclusion even in a psychiatric clinic. Symptoms of Premenstrual syndrome present in an overwhelming majority of respondents in the study, so rational approach in dealing with the symptoms is the need of the hour.

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Tables and Figures:

Table 1: Baseline characteristics of respondents (n=240)

Continuous Variable	**Mean**	**S.D**
Age (years)	20.72	1.64
Height (cm)	156	6.89
Weight (kg)	51	6.51
Age at Menarche	12.88	1.07
Categorical Variable	**Frequency**	**Percentage**
BMI		
Underweight	25	10.4
Normal	152	63.3
Overweight	22	9.2
Obese	18	7.5
Stream		
Medical	206	85.8
Dental	34	14.2

Table 2: Prevalence & Severity of Premenstrual symptoms (n=240)

Symptom	**Frequency (%)**	**Mild (%)**	**Moderate (%)**	**Severe (%)**
PMS-A				
Anxiety	138 (57.5)	113 (47.0)	19 (7.9)	6 (2.5)
Irritability	174 (72.5)	73 (30.4)	81 (33.8)	20 (8.3)
Mood swings	172 (71.7)	91 (37.9)	60 (25.0)	21 (8.8)
Nervous tension	111 (46.3)	75 (31.3)	27 (11.3)	9 (3.8)
PMS-C				
Appetite increase	100 (41.7)	50 (20.8)	38 (15.8)	12 (5.0)
Headache	96 (40)	69 (28.8)	23 (9.6)	4 (1.7)
Fatigue	168 (70)	64 (26.7)	84 (35)	20 (8.3)
Dizziness	80 (33.3)	51 (21.3)	21 (8.8)	8 (3.3)
Palpitation	57 (23.8)	49 (20.4)	6 (2.4)	2 (0.8)
PMS-D				
Depression	112 (46.7)	73 (30.4)	31 (12.9)	8 (3.3)
Crying	67 (27.9)	45 (18.8)	15 (6.2)	7 (2.9)
Forgetfulness	67 (27.9)	40 (16.7)	21 (8.8)	6 (2.5)
Confusion	63 (26.3)	46 (19.2)	11 (4.6)	6 (2.5)
Insomnia	66 (27.5)	41 (17.1)	15 (6.3)	10 (4.2)
PMS-H				
Fluid retention	58 (24.2)	41 (17.1)	15 (6.3)	2 (0.8)
Weight gain	59 (24.6)	47 (19.6)	9 (3.8)	3 (1.3)
Swollen extremities	44 (18.3)	40 (16.7)	2 (0.8)	2 (0.8)
Breast tenderness	131 (54.6)	86 (35.8)	38 (15.8)	7 (2.9)
Abdominal bloating	125 (52.1)	65 (27.1)	52 (21.7)	8 (3.3)
PMS-O				
Oily skin	103 (42.9)	72 (30)	27 (11.3)	4 (1.7)
Acne	131 (54.6)	90 (37.5)	30 (12.5)	11 (4.6)
Constipation	79 (32.9)	51 (21.3)	25 (10.4)	3 (1.3)
Diarrhoea	96 (40)	67 (27.9)	26 (10.8)	3 (1.3)

Backache	178 (74.2)	67 (27.9)	65 (27.1)	46 (19.2)
Weakness around thigh	117 (48.8)	64 (26.7)	37 (15.4)	16 (6.7)
Hives	41 (17.1)	32 (13.3)	7 (2.9)	2 (0.8)

Table 3: Association between PMS score and other dependent variables (n=240)

Variable	PMS Score	Mean	S.D.	p-value
Age group	Up to 19 yrs	18.02	11.4	0.042
	20 & above	21.55	11.8	
FamilyHistory	Present	21.7	12.1	0.019
	Absent	19.1	11.6	
Menstrual cycle	Regular	20.5	11.4	0.572
	Irregular	21.8	14.0	
BMI grade	Underweight	17.9	9.1	0.203
	Normal	18.0	12.2	
	Overweight	18.2	9.6	
	Obese	20.7	12.0	

Table 4: Association between QoL& total PMS score (n=240)

Variables		PMS Score		p-value
		Frequency (%)	Mean (S.D)	
PhysicalQoL	Good	107	16.5 (9.6)	0.000
	Poor	133	23.9 (12.3)	
Psychological QoL	Good	80	14.4 (8.4)	0.000
	Poor	160	23.8 (12.0)	
SocialQoL	Good	164	18.9 (11.1)	0.001
	Poor	76	24.6 (12.3)	
SpiritualQoL	Good	131	18.9 (11.0)	0.000
	Poor	109	22.8 (12.3)	

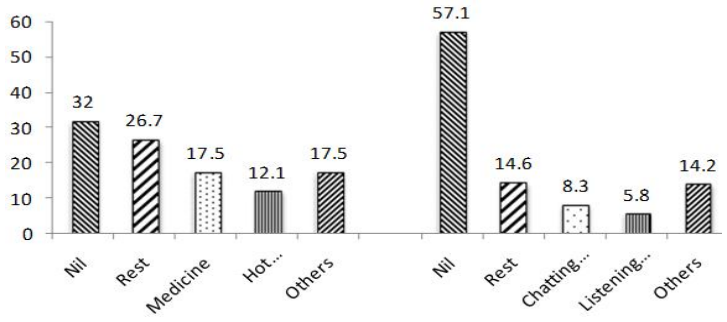

Figure 1: Coping behaviors for affective symptoms and somatic symptoms (%) (n=240)