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Original Research Article

Impact of premenstrual syndrome and premenstrual dysphoric disorder on adolescent and young women's quality of life in northern India

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ABSTRACT

Background: Our aim was to study the effect of PMS and PMDD on quality of life in adolescent and young women.
Methods: This was a cross-sectional questionnaire based study was conducted from 2019 to 2020 in Department of Obstetrics and Gynecology, King Georges Medical University, Lucknow. After getting informed consent 358 female participant was enrolment. All participants were screened first according to PMS ACOG guideline then further DSM IV based premenstrual symptom screening tool (PSST) was applied by enquiring detail about last 3 menstrual cycles. The subjects which are diagnosed were given WHO-QOL-BREF scale.
Results: The work efficiency or productivity, relationship with co-workers, relationship with your family, social life activities and home responsibilities were 27.63%, 26.31%, 22.36%, 15.78% and 15.13% in no/mild PMS, 94.73%, 86.84%, 73.68%, 60.52% and 42.10% in moderate to severe PMS and 100.00%, 85.71%, 57.14%, 42.85%, and 2.85% PMDD. The mean percentages of physical health domain were 64.43±8.29, 58.47±6.91, and 52.86±6.20; psychological health domain was 66.39±9.39, 62.47±7.73 and 56.29±4.64; social relationship domain was 62.29±12.45, 60.61±11.67 and 56.00±5.32 and environmental health domain was 64.52±9.64, 61.13±9.39 and 58.86±3.72 in no/mild PMS, moderate to severe PMS and PMDD participants group, respectively.
Conclusions: The changes of physical health domain, psychological health domain were significantly negative correlated with moderate to severe PMS that means participant with moderate and severe PMS have poor quality of physical and psychological health whereas, social relationship domain and environmental health domain were also negative correlated but not significantly associated with moderate to severe PMS.

Keywords: Adolescent, Depression, Premenstrual dysphoric disorder, Premenstrual syndrome, Quality of life

INTRODUCTION

PMS is a recurrent recurrence of painful physical and emotional symptoms during the luteal phase of the menstrual cycle and the first few days (1-3 days) of the following follicular phase. Feeling overwhelmed, food cravings, insomnia or hypersomnia, headache, pelvic pain and discomfort, breast tenderness, joint pain, bloating are the most common and distressing somatic symptom whereas irritability, anxiety, depression, mood swings, hostility poor concentration, confusion, social withdrawal and interpersonal conflicts are the affective symptoms.[1,2] The onset of these symptoms is noticeable as early as adolescence and worsens as one get older or reaches maturity. Up to 40% of women in reproductive age suffer some type of PMS, although only 3-9% have severe phycological symptom- PMDD (premenstrual dysphoric disorder). PMDD is a severe and debilitating type of premenstrual syndromes (PMS) which is caused by fluctuating levels of sex steroids throughout an ovulatory menstrual cycle.[3]

Etiology of PMS is complicated, with hormonal, genetic, environmental, and social variables all playing a role.[4] Other aspects of the menstrual cycle, such as the age of menarche, menstrual flow and other menstrual irregularities, also may have a role in the development of PMS. Apart from these, PMS can have a negative impact on physical and social activities, as well as interpersonal relationships and job productivity, lowering quality of life.[5] Because of the subjectivity of many symptoms, the use of self-reports, and the interference of psychological components, as well as the lack of precise tests that establish its diagnosis, there is no consensus on the diagnostic criteria for PMS. As a result, it has been proposed that the standards of the American College of Obstetricians and Gynecologists can be utilised for diagnosis.[6]

According to World health organization defined health as "a state of complete physical, mental and social well-being not only the absence of disease", health studies shift from an absolute view of disease, disability, risky and threatening behaviors to a more positive and expanded area such as quality of life (QOL).[4,7,8] According to studies women with PMS had worse job productivity, more interference with everyday duties, and a higher number of workdays lost due to illness.[9]

PMS is viewed as a kind of condition with a significant psychological feature that can negatively influence one's quality of life, happiness and contentment, according to studies on depression and anxiety disorder.[8] Because of the complex nature of quality of life, as well as the great frequency of PMS and the diversity of diagnostic criteria, it is critical to investigate the effects of PMS on young women's social and academic lives.

The purpose of the present study was to study the effect of PMS and PMDD on quality of life in adolescent and young women.

METHODS

This cross-sectional questionnaire-based study was approved by Institutional ethical clearance (ref. code: 97th ECM II B- thesis/P24, No. 963/Ethics/19, dated 29.07.2019). The study was conducted from 2019 to 2020, in Department of Obstetrics and Gynecology (QMH), in collaboration with Department of Psychiatry, KGMU, Lucknow. All adolescent and young women (11-24 years) attending QHM, KGMU after getting informed consent were enrolled. Total 410 adolescent and young female participants were invited out of which 20 were unwilling to participate and 32 were excluded on the basis of exclusion criteria. Final enrolment of participant was 358.

All participants were screened first according to PMS ACOG guideline then further DSM IV based premenstrual symptom screening tool (PSST) was applied by enquiring detail about last 3 menstrual cycles. Socio-demographic questionnaire and a daily record of severity of PMS issues scale were used. Further the subjects which are diagnosed were given WHO-QOL-BREF scale. Questionnaires were completed by the participants. After that subject were evaluated and analysed.

Screening and diagnosis

ACOG guidelines for PMS

The key elements of a PMS identified by ACOG include the following: A) Symptoms consistent with PMS- at least one of each of the following affective and somatic symptoms during the 5 days before menses. Affective: depression, anger outbursts, irritability, anxiety, confusion, social withdrawal. Somatic: breast tenderness, abdominal bloating, headache, swelling of extremities. B) Restriction of symptoms to the luteal phase of menstrual cycle. C) Confirmation of symptom pattern by prospective assessment. D) The symptoms cause functional impairment. E) Exclusion of other diagnosis that may better explain the symptoms.[9]

DSM-IV based premenstrual symptom screening tool (PSST) scale for PMDD

Devised by Steiner et al for diagnosis of PMS and PMDD.[10] According to the study conducted by Yen et al Cronbach's alpha of the first and second parts of PSST was 0.96 and 0.61, respectively.[11] The content validity of the first and second parts of this test was 0.93 and 0.8%, respectively. It is a 19-item instrument consisting of two domains: 1) for diagnosis of PMS, women must report at least five symptoms as moderate or severe from first domain where at least one should be from core symptoms (numbers 1-4). Also, they must report if their symptoms interfere moderately or severely with their ability to function in at least one of five items in the second domain. 2) For diagnosis of PMDD, the following criteria must be present: (a) at least one of the core symptoms (1 to 4) as severe, (b) in addition, at least four of the symptoms (1 to 14) as moderate to severe from first domain and (c) at least one of symptom as severe from second domain.

Assessment of QOL

The WHOQOL-BREF is an international cross-culturally comparable quality of life assessment instrument is composed of 26 items. Each item is rated on a 5-point Likert scale. The questionnaire includes four domains: physical health, psychological health, social relations, and environment. Raw domain scores for the WHOQOL were transformed to a 4-20 score according to guidelines. Domain scores are scaled in a positive direction (i.e., higher scores denote higher QOL). The mean score of items within each domain is used to calculate the domain score. After computed the scores, they transformed

linearly to a 0-100-scale with 0 being the least favorable and 100 being the most favorable.

Statistical analysis

The data was expressed as mean and standard deviation (SD) or median, range and percentage as appropriate. All the categorical data were compared by using chi square test. Continuous variables in two groups were compared by t-test. More than two variables were analysed by one way ANOVA followed by Tukey's post hoc test. The p value <0.05 was considered as significant. The statistical analysis was done using SPSS 21.0 version (Chicago, Inc., USA) windows software.

RESULTS

Distribution of participants according to ACOG criteria and PSST scale are shown in Table 1. According to DSM-IV (ACOG criteria) Out of 358, total 197 (55.03%) participants were found to be PMS. On application of PSST, total 152 (77.16%) participants had no/mild PMS, 38 (19.29%) had Moderate to severe PMS and 7 (3.55%) participants had PMDD.

Table 1: Distribution of participants according to ACOG criteria and PSST scale.

Total no. of participants	Criteria		Number	Percentage
n=358	PMS according to DSM IV (ACOG criteria)	Yes	197	55.03
		No	161	44.97
n=197	PMS according to PSST	No/mild PMS	152	77.16
		Moderate to severe PMS	38	19.29
	PMDD according to PSST	Yes	7	3.55

Table 2: Comparison of premenstrual symptoms among participant on the basis of screening tool PSST in between no/mild PMS, moderate to severe PMS and PMDD participants (n=197).

Symptoms	No/mild PMS (n=152)		Moderate to severe PMS (n=38)		PMDD (n=7)		Total		P value
	N	%	N	%	N	%	N	%	
Anger/irritability									
Not at all	32	21.05	0	0.00	0	0.00	32	16.24	<0.001*
Mild	93	61.18	18	47.37	0	0.00	111	56.35	
Moderate	26	17.11	19	50.00	3	42.86	48	24.37	
Severe	1	0.66	1	2.63	4	57.14	6	3.05	
Anxiety/tension									
Not at all	26	17.11	0	0.00	0	0.00	26	13.20	<0.001*
Mild	107	70.39	13	34.21	0	0.00	120	60.91	
Moderate	19	12.50	25	65.79	4	57.14	48	24.37	
Severe	0	0.00	0	0.00	3	42.86	3	1.52	
Tearful/increase sensitivity to rejection									
Not at all	52	34.21	3	7.89	0	0.00	55	27.92	<0.001*
Mild	68	44.74	13	34.21	0	0.00	81	41.12	
Moderate	32	21.05	22	57.89	1	14.29	55	27.92	
Severe	0	0.00	0	0.00	6	85.71	6	3.05	
Depressed mood/hopelessness									
Not at all	57	37.50	2	5.26	0	0.00	59	29.95	<0.001*
Mild	57	37.50	10	26.32	0	0.00	67	34.01	
Moderate	38	25.00	26	68.42	3	42.86	67	34.01	
Severe	0	0.00	0	0.00	4	57.14	4	2.03	
Decreased interest in work activities									
Not at all	40	26.32	3	7.89	0	0.00	43	21.83	<0.001*
Mild	66	43.42	14	36.84	2	28.57	82	41.62	
Moderate	46	30.26	21	55.26	1	14.29	68	34.52	
Severe	0	0.00	0	0.00	4	57.14	4	2.03	
Decreased interest in home activities									
Not at all	37	24.34	3	7.89	0	0.00	40	20.30	<0.001*
Mild	77	50.66	17	44.74	5	71.43	99	50.25	
Moderate	38	25.00	15	39.47	0	0.00	53	26.90	
Severe	0	0.00	3	7.89	2	28.57	5	2.54	
Decreased interest in social activities									
Not at all	37	24.34	3	7.89	0	0.00	40	20.30	<0.001*

Continued.

Symptoms	No/mild PMS (n=152)		Moderate to severe PMS (n=38)		PMDD (n=7)		Total		P value
	N	%	N	%	N	%	N	%	
Mild	87	57.24	13	34.21	3	42.86	103	52.28	
Moderate	28	18.42	20	52.63	2	28.57	50	25.38	
Severe	0	0.00	2	5.26	2	28.57	4	2.03	
Difficulty in concentrating									
Not at all	42	27.63	3	7.89	0	0.00	45	22.84	<0.001*
Mild	66	43.42	18	47.37		0.00	84	42.64	
Moderate	43	28.29	16	42.11	4	57.14	63	31.98	
Severe	1	0.66	1	2.63	3	42.86	5	2.54	
Fatigue/lack of energy									
Not at all	30	19.74	3	7.89	0	0.00	33	16.75	<0.001*
Mild	65	42.76	13	34.21	2	28.57	80	40.61	
Moderate	52	34.21	18	47.37	1	14.29	71	36.04	
Severe	5	3.29	4	10.53	4	57.14	13	6.60	
Overeating/food cravings									
Not at all	35	23.03	4	10.53	1	14.29	40	20.30	0.003*
Mild	77	50.66	13	34.21	1	14.29	91	46.19	
Moderate	36	23.68	17	44.74	5	71.43	58	29.44	
Severe	4	2.63	4	10.53	0	0.00	8	4.06	
Insomnia									
Not at all	49	32.24	6	15.79	2	28.57	57	28.93	0.065
Mild	69	45.39	14	36.84	4	57.14	87	44.16	
Moderate	30	19.74	17	44.74	1	14.29	48	24.37	
Severe	3	1.97	1	2.63	0	0.00	4	2.03	
Hypersomnia needing more sleep									
Not at all	57	37.50	3	7.89	2	28.57	62	31.47	<0.001*
Mild	66	43.42	12	31.58	4	57.14	82	41.62	
Moderate	27	17.76	21	55.26	0	0.00	48	24.37	
Severe	2	1.32	2	5.26	1	14.29	5	2.54	
Feeling overwhelmed or out of control									
Not at all	50	32.89	4	10.53	2	28.57	56	28.43	<0.001*
Mild	69	45.39	13	34.21	0	0.00	82	41.62	
Moderate	33	21.71	19	50.00	1	14.29	53	26.90	
Severe	0	0.00	2	5.26	4	57.14	6	3.05	
Physical symptoms: breast tenderness, headaches, joint/muscle pain, weight gain, bloating									
Not at all	6	3.95	1	2.63	1	14.29	8	4.06	<0.001*
Mild	102	67.11	15	39.47	2	28.57	119	60.41	
Moderate	44	28.95	22	57.89	3	42.86	69	35.03	
Severe	0	0.00	0	0.00	1	14.29	1	0.51	

*=Significant (p<0.05).

Table 3: Analysis of pattern of functional impairment among participants.

Functional impairment	No/mild PMS (n=152)		Moderate to severe PMS (n=38)		PMDD (n=7)		P value[1]
	N	%	N	%	N	%	
Decrease in work efficiency or productivity	42	27.63	36	94.73	7	100.00	<0.001*
Hampering of relationship with co workers	40	26.31	33	86.84	6	85.71	<0.001*
Hampering of relationship with your family	34	22.36	28	73.68	4	57.14	<0.001*
Hampering of social life activities	24	15.78	23	60.52	3	42.85	<0.001*
Hampering of home responsibilities	23	15.13	16	42.10	3	42.85	<0.001*

*=significant (p<0.05), 1=chi- square test.

Analyses of pattern of functional impairment among participants of all the three group are shown in Table 3. The Work efficiency or productivity, Relationship with co-workers, relationship with your family, social life activities and home responsibilities were 27.63%, 26.31%, 22.36%, 15.78% and 15.13 % in no/mild PMS, 94.73%, 86.84%, 73.68%, 60.52% and 42.10% in moderate to severe PMS and 100.00%, 85.71%, 57.14%, 42.85%, and 2.85% PMDD. Moreover, the pattern of functional impairment among participants were greater in moderate to severe PMS and PMDD group as compared to no/mild PMS group.

Table 4: Physical health domain, psychological health domain, social relationship domain and environmental health domain among the participant (n=197).

	No/mild PMS (n=152)	Moderate to severe PMS (n=38)	PMDD (n=7)	Total	P value
	Mean±SD	Mean±SD	Mean±SD	Mean±SD	
Physical health domain	64.43±8.29	58.47±6.91	52.86±6.20	62.87±8.51	<0.001*
Psychological health domain	66.39±9.39	62.47±7.73	56.29±4.64	65.28±9.23	0.002*
Social relationship domain	62.29±12.45	60.61±11.67	56.00±5.32	61.74±12.15	0.334
Environmental health domain	64.52±9.64	61.13±9.39	58.86±3.72	63.67±9.55	0.058

*=Significant (<0.05)

Table 5: Correlations of physical health domain, psychological health domain, social relationship domain and environmental health domain with moderate to severe PMS and PMDD.

Parameters	Karl-Pearson's correlation coefficient Moderate to severe PMS and PMDD			
	PMS		PMDD	
		P value		P value
Physical health domain	-0.286	<0.001*	-0.279	<0.001*
Psychological health domain	-0.171	0.018*	-0.220	0.005*
Social relationship domain	-0.055	0.451	-0.105	0.186
Environmental health domain	-0.141	0.053	-0.122	0.124

*=Significant (<0.05)

Quality of life among the group is shown in Table 4. The mean percentages of physical health domain were 64.43±8.29, 58.47±6.91, and 52.86±6.20; psychological health domain was 66.39±9.39, 62.47±7.73 and 56.29±4.64; social relationship domain was 62.29±12.45, 60.61±11.67 and 56.00±5.32 and environmental health domain was 64.52±9.64, 61.13±9.39 and 58.86±3.72 in no/mild PMS, moderate to severe PMS and PMDD participants group, respectively. The physical health domain and psychological health domain were significantly lower in PMDD and moderate to severe PMS as compared to no/mild PMS which means that physical health and psychological health is mostly affected in moderate and severe PMS and PMDD. Moreover, social relationship domain and environmental health domain were also lower in PMDD and moderate to severe PMS as compared to no/mild PMS but not significantly different.

Correlations of physical health domain, psychological health domain, social relationship domain and environmental health domain with moderate to severe PMS and PMDD are shown in Table 5. The changes of physical health domain, psychological health domain were significantly negative correlated with moderate to severe PMS and PMDD that means participant with moderate and severe PMS have poor quality of physical and psychological health. Whereas, Social relationship domain and environmental health domain were also negative correlated but not significantly associated with moderate to severe PMS and PMDD.

DISCUSSION

According to the PSST, a total of 152 participants had no or mild PMS, 38 had moderate to severe PMS, and 7 experienced PMDD. The prevalence of PMDD was estimated to range between 3 and 9 percent in global cross-sectional studies.[12-15]

Several studies conducted in India indicated a prevalence that was similar to that obtained in our research like the investigation done by Rapkin et al.[16] According to Kamat et al, 4.6 percent of adolescent females in Gujarat have PMDD.[17] A frequency of 3.7% was found in college students from Bhavnagar, according to Raval et al.[6] In another research, PMDD was discovered in 37% of medical students at an Indian medical college and its associated teaching facility, according to Mishra et al study. It was discovered that senior and graduate students were more likely to experience it.[18] 10% of the participants in another prospective cohort study by Padhy et al, which comprised 118 students and employees from a nursing college in Wardha, Maharashtra, were reported to have PMDD.[19]

The work efficiency or productivity, relationships with co-workers, family, friends, and social activities were all shown to be significantly different across the groups in this study. It also revealed a pattern of functional impairment comparable to that seen by Durairaj et al.[20] As per Steiner et al, nearly 75 percent of those with PMDD and nearly 50 percent of those with severe PMS reported that their symptoms interfered with their

relationships with friends, classmates, and/or co-workers, as well as their productivity at work and in school.[10] Women with premenstrual dysphoric disorder are more likely to report missing work hours, decreased productivity, job constraints, and lower functionality, according to research by Chawla et al.[21]

In this study, WHOQOL-BREF score were comparable in between no/mild PMS, moderate to severe PMS and PMDD participant group. In PMDD participants, the mean percentages for the four domains of social relationships, psychological health, physical health, and environmental health were 52.86, 56.29 and 58.86 respectively. As compared to participants with no/mild PMS with moderate to severe PMS and PMDD, the physical health domain (p=0.001) and psychological health domain (p=0.002) were considerably lower, revealing that participants with moderate and severe PMS have poorer physical and psychological health. Additionally, PMDD and moderate to severe PMS had lower scores in the social relationship and environmental health domains compared to no/mild PMS, but these differences were not statistically significant.

Students with premenstrual dysphoric disorder (PMDD) reported having a low health-related quality of life, as measured by the SF-36, according to a study by Delara et al. Additionally, they emphasised the worsening conditions for social interaction, physical function, emotional function, and discomfort in the body.[22] In a study, Dennerstein et al found that premenstrual symptoms, both physical and mental, have a similar significant impact on quality of life as judged by daily activities.[23] A study by Yang et al, the burden of premenstrual dysphoric disorder (PMDD) on health-related quality of life found that the burden of PMDD was greater on mental and emotional health-related quality of life domains than on physical health-related quality of life domains.[24]

According to a recent study by Thakrar et al, social connections have a detrimental impact on the mental health of women with PMDD and have a statistically significant impact on their quality of life. This conclusion is consistent with the findings of other investigations.[25] Women with proven PMS and PMDD reported significantly lower quality of life, higher absenteeism from work, decreased job productivity, harmed relationships with others, and more visits to healthcare providers, according to Dean et al and Steiner et al.[10,26] In a study Delara et al observed that, with the exception of physical functioning, persons with PMDD have significantly inferior quality of life in all categories, including role emotional, role physical, social functioning, bodily pain, and mental health.[22] This disparity might be explained by the fact that Indian ladies underreport worse psychological health and other aspects of quality of life as a result of their education and the shame associated with menstruation difficulties.[22]

We omitted older age groups from this study and only included younger women, which restricted the generalizability of the findings. This study should also be contrasted with women who are healthy and do not have PMS or PMDD.

CONCLUSION

From the findings of this study confirmed that adolescents with PMS/PMDD suffer from a poor QOL, the negative effects on the QOL in adolescents were more significant in those with and moderate to severe PMS and PMDD. The changes of physical health domain, psychological health domain were significantly negative correlated with moderate to severe PMS that means participant with moderate and severe PMS have poor quality of physical and psychological health. Whereas, social relationship domain and environmental health domain were also negative correlated but not significantly associated with moderate to severe PMS.

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