ASSESSING THE PREVALENCE OF PREMENSTRUAL SYNDROME LEVELS AND ITS TREATMENT IN FEMALE STUDENTS OF INDIA

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ABSTRACT

Background: In many females, premenstrual disorder and premenstrual syndrome (PMS) remain undiagnosed and untreated owing to their difficult diagnosis and failure in reporting it to the gynecologist. Due to varied interpretations and the non-existence of universal diagnostic criteria, a high variation in its prevalence is reported. PMS is poorly understood with limited knowledge.

Aim: The present study aimed to assess the prevalence and management of PMS (premenstrual syndrome) in Indian females and its association with stress, anxiety, and depression among students.

Methods: In the present study, a questionnaire following ACOG (American College of Obstetricians and Gynecologists) criteria was made to assess PMS levels in study subjects along with the DASS (depression, anxiety, and stress) scale. The study assessed 828 females of the reproductive age group. The data gathered were assessed statistically to compare various variables. An analysis was done by student's unpaired t-test and Pearson's correlation.

Results: The PMS severity was mild in 32.60% (n=270) study subjects, moderate PMS in 59.42% (n=492) subjects, and severe PMS in 7.97% (n=66) study subjects respectively. In 28.98% (n=240) subjects PMS was due to depression with a correlation of 0.723 which was statistically significant with p<0.001. Concerning anxiety and PMS, it was seen that PMS was due to anxiety in 31.76% (n=263) study subjects and a correlation of 0.763 which was a statistically significant association with p<0.001. The PMS in 39.25% (n=325) subjects was due to stress where the correlation was 0.852 and the results were statistically significant with p<0.001. Alternate therapy, painkillers, and over-the-counter drugs were commonly used by females for PMS.

Conclusion: The present study, considering its limitations, concludes that premenstrual syndrome harms female health and is a highly prevalent concern. A comprehensive study of PMS is needed for adequate management and improvement in female health.

Keywords: PMS, menstrual cycle, premenstrual disorder, premenstrual syndrome, questionnaire

INTRODUCTION

The National Institute of Mental Health had defined PMS (premenstrual syndrome) as the cyclic occurrence of symptoms that are of sufficient severity to interfere with some aspects of life and which appear with a consistent and predictable relationship to menses. It is one of the most common health concerns seen in females of reproductive age. PMS is reported by nearly 70% - 90% of females with varying prevalence globally, and can be recurrent or can be seen at one menstrual cycle and not another in the same female. It has been reported that nearly 2/3rd of females that are referred to specialists for PMS do not have PMS and are misdiagnosed owing to various psychiatric disorders in the function during the premenstrual time of the menstrual cycle.[1]

The premenstrual syndrome presents a combination of behavioral and emotional symptoms including poor concentration, social withdrawal, insomnia, food cravings, appetite alterations, irritability, mood swings, crying episodes, depression, and/or anxiety. Various signs and symptoms include breast tenderness, abdominal bloating, gain in weight, fatigue, headache, and body aches. There are many signs and symptoms associated with PMS.[2] However, most females only experience a few of the symptoms of PMS. These symptoms are presented in a cyclic pattern in the luteal phase of the cycle and tend to decrease with the menstrual start. The females suffering from PMS most commonly present with symptoms as labile mood, tension, and irritability. PMS also affects the quality of life and overall functioning in females secondary to stomach bloating and breast tenderness.[3]

PMS also leads to disrupted work and personal life, daily activities, emotional disruption, physical disturbance, decreased work efficiency, impaired function, increased anxiety, and high-stress levels. Irrespective of the PMS severity, with the onset of the menses, the majority of the females report regression of the PMS symptoms. In females having severe symptoms of PMS, there is a possibility of PMMD (premenstrual dysphoric disorder). Many females with an underlying psychiatric disorder are prone to experience severe PMS symptoms. The etiology of PMS remains poorly understood with limited knowledge. However, various etiologic factors attributed to PMS etiology are hormonal fluctuations, lifestyle, diet, prostaglandins, and/or neurotransmitters.[4]

A variation in different areas and different by different clinicians has been attributed to the management and diagnosis of PMS in females. Various drugs have been assessed for their efficacy in managing PMS. Treatment of PMS is needed by nearly 25% of affected females for disrupted functioning and distress of PMS. PMS can greatly affect the quality of life and functioning in affected females. The management of PMS is attributed to various psychotropic agents, hormonal alternates, drugs, exercise, meditation, yoga, diet modification, and lifestyle modifications.[5]

Presently, drug treatment for PMS is done with oral contraceptives working as ovulation suppressants, SSRIs (selective serotonin reuptake inhibitors), and NSAIDs (non-steroidal anti-inflammatory drugs). Symptoms of PMS have been effectively reduced with long-acting analogs of estradiol or gonadotropin-releasing hormone.[6] To relieve symptoms of PMS and for supportive care, spironolactone and anxiolytics have also been used, Calcium carbonate, chaste berry, and cognitive therapy have also been reported to help treat PMS. Many females with significant PMS

undergo undiagnosed owing to a difficult diagnosis of PMS by the treating healthcare personnels or non-reporting of the symptoms by an affected female. The prevalence of PMS has been reported to be varied by various authors which can be attributed to the non-existence of universally accepted criteria for diagnosis of PMS and different interpretations of symptoms associated with PMS. In the Indian scenario, limited knowledge is available concerning PMS, and is a poorly understood topic.[7] Hence, the present study aimed to assess the prevalence and management of PMS (premenstrual syndrome) in Indian females and its association with stress, anxiety, and depression among students.

MATERIAL AND METHODS

The present cross-sectional clinical study aimed to assess the prevalence and management of PMS (premenstrual syndrome) in Indian females and its association with stress, anxiety, and depression among students. The study populations were female students studying in medical colleges and colleges of non-medical backgrounds of reproductive age.

The study assessed females within the reproductive age range of 18 years to 45 years. The inclusion criteria were subjects within the defined reproductive age, had a normal menstrual cycle for the past 2 months, and gave the informed consent for study participation. The exclusion criteria were subjects with an irregular menstrual cycle, having psychosis, pregnant females, gynecological diseases, subjects on oral contraceptives, and systemic diseases, and were not willing to participate in the study.

After final inclusion, all the subjects were given a pre-structured questionnaire survey to record the sociodemographic data, DASS criteria[8] ways of managing PMS, and the ACOG criteria.[9] The survey questionnaire was given to all the participants in both Hindi and English language to meet the preferences of the participating females. For sociodemographic data, the data gathered were height, weight, age, menstruation length and marital status of the females.

ACOG criteria for diagnosis of PMS was used to formulate the questionnaire to include both behavioral and somatic symptoms of PMS. The behavioral symptoms considered were unhappiness, anger, irritability, etc., whereas, the somatic symptoms like breast tenderness and alteration of appetite were considered. The PMS was diagnosed in subjects having a minimum of 1 somatic and 1 behavioral symptom. Four-point Likert scale of 0-3 is utilized in the ACOG criteria to rate each symptom of PMS where 0 signifies did not apply at all to 3 suggested most of the time or applied very much.

The subjects were then classified as mild, moderate, and severe based on the total scores of PMS after the addition of all the scores and dividing it by the total number of symptoms felt by the subjects. The DASS questionnaire consisted of 21 items to assess the negative emotional state of stress, anxiety, and depression on a scale of 0 to 3. The scores of symptoms were added and the subjects were then classified into three categories.

The data gathered were analyzed statistically using the SPSS software version 21.0 (IBM, Armonk, NY) with student's t-test and Pearson's correlation. The results were expressed in frequency and percentage and mean and standard deviations for the outcomes and variables. The statistical significance was taken at a p-value of >0.05

RESULTS

The present cross-sectional clinical study aimed to assess the prevalence and management of PMS (premenstrual syndrome) in Indian females and its association with stress, anxiety, and depression among students. The study assessed 828 female students from medical and non-medical backgrounds within the reproductive age range of 18 years to 45 years.

Concerning stress, stress levels were normal in 88.16% (n=730) females, mild stress was reported by 8.45% (n=70) study subjects, and moderate stress in 3.38% (n=28) study subjects. Normal levels of depression were reported by 74.15% (n=614) study subjects, mild depression by 12.31% (n=102) females, moderate stress in 11.83% (n=98) study subjects, and severe depression in 1.69% (n=14) study subjects. Normal, mild, moderate, severe, and extremely severe anxiety was reported by 80.91% (n=670), 7.72% (n=64), 8.93% (n=74), 1.69% (n=14), and 0.72% (n=6) study female students respectively. The PMS severity was mild in 32.60% (n=270) study subjects, moderate PMS in 59.42% (n=492) subjects, and severe PMS in 7.97% (n=66) study subjects respectively as shown in Table 1.

In comparing the outcome variables in the medical and non-medical students, the results are summarized in Table 2. It was seen that mean values of depression were significantly higher in non-medical females with 7.258 compared to medical females where it was 5.663 with p=0.03. Higher levels of anxiety were reported in non-medical students with 4.201 compared to 3.742 in medical students. The difference was statistically non-significant with p=0.452. Stress levels were also higher in non-medical students with a mean value of 8.470 compared to medical females where mean stress levels were 6.726. Unpaired t test revealed a difference which was statistically significant with p=0.01. The mean PMS scores were comparable in non-medical and medical students with values of 28.61 and 28.22 respectively and a p-value of 0.457 (Table 2).

The study results also showed that on comparison of depression to PMS it was seen that in 28.98% (n=240) subjects PMS was due to depression with a correlation of 0.723 which was statistically significant with p<0.001. Concerning anxiety and PMS, it was seen that PMS was due to anxiety in 31.76% (n=263) study subjects and a correlation of 0.763 which was a statistically significant association with p<0.001. The PMS in 39.25% (n=325) subjects was due to stress where the correlation was 0.852 and the results were statistically significant with p<0.001 as shown in Table 3.

For the management strategies adopted by the study subjects from PMS, it was seen that alternate therapy for PMS was the most common treatment strategy adopted by 74.07% (n=200) non-medical students and 78.49% (n=438) medical students, and in total by 77.05% (n=638) study subjects. Painkillers were chosen for treating PMS by 45.18% (n=122) non-medical females and 55.19% (n=308) medical students, and 51.93% (n=430) total study females. This was followed by the over-the-counter drugs used by 48.14$ (n=130) non-medical and 55.91% (n=312) medical students and by 53.38% (n=442) total study females. Contraceptive pills for PMS were used by no non-medical students and by 0.71% (n=4) of medical students. 14.81% (n=40) non-medical students and 16.12% (n=90) medical students visited the gynecologists for their PMS with an overall 15.70% (n=130) total females. Psychotherapy was adopted by 0.74% (n=2) of study

females from a non-medical background. Antidepressants were taken by 0.24% (n=2) of study subjects for PMS who were medical students. Psychiatric treatment was taken by 0.48% (n=4) of study subjects where 0.74% (n=2) subjects were from a non-medical background and 0.34% (n=2) subjects were medical students. Other treatments were used by the study participants by 1.44% (n=12) study subjects as depicted in Table 4.

DISCUSSION

The present study assessed 828 female students from a medical and non-medical backgrounds within the reproductive age range of 18 years to 45 years. The subjects were assessed using a questionnaire. Concerning stress, stress levels were normal in 88.16% (n=730) females, mild stress was reported by 8.45% (n=70) study subjects, and moderate stress in 3.38% (n=28) study subjects. Normal levels of depression were reported by 74.15% (n=614) study subjects, mild depression by 12.31% (n=102) females, moderate stress in 11.83% (n=98) study subjects, and severe depression in 1.69% (n=14) study subjects. Normal, mild, moderate, severe, and extremely severe anxiety was reported by 80.91% (n=670), 7.72% (n=64), 8.93% (n=74), 1.69% (n=14), and 0.72% (n=6) study female students respectively. The PMS severity was mild in 32.60% (n=270) study subjects, moderate PMS in 59.42% (n=492) subjects, and severe PMS in 7.97% (n=66) study subjects respectively. These results were consistent with the studies of Balaha MH et al[10] in 2010 and Asci O et al[11] in 2015 where authors reported comparable prevalence of mild, moderate, and severe PMS, depression, anxiety, and stress in their study subjects.

The study results showed that for the outcome variables in the medical and non-medical students, it was seen that mean values of depression were significantly higher in non-medical females with 7.258 compared to medical females where it was 5.663 with p=0.03. Higher levels of anxiety were reported in non-medical students with 4.201 compared to 3.742 in medical students. The difference was statistically non-significant with p=0.452. Stress levels were also higher in non-medical students with a mean value of 8.470 compared to medical females where mean stress levels were 6.726. The difference was statistically significant with p=0.01. The mean PMS scores were comparable in non-medical and medical students with values of 28.61 and 28.22 respectively and a p-value of 0.457. These findings were in agreement with the studies of Forrestor-Knauss C et al[12] in 2011 and Buddhabunyakan N et al[13] in 2017 where the authors a significant correlation of PMS to depression, anxiety, and stress in their study subjects as in the present study.

Concerning the comparison of depression to PMS, it was seen that in 28.98% (n=240) subjects PMS was due to depression with a correlation of 0.723 which was statistically significant with p<0.001. Concerning anxiety and PMS, it was seen that PMS was due to anxiety in 31.76% (n=263) study subjects and a correlation of 0.763 which was a statistically significant association with p<0.001. The PMS in 39.25% (n=325) subjects was due to stress where the correlation was 0.852 and the results were statistically significant with p<0.001. These results were in line with the results of Farrookh-Eslamlou H et al[14] in 2015 and Nazish Rafique[15] in 2018 where authors reported that the etiology of PMS can be attributed to stress, anxiety, and depression as seen in the present study.

Concerning the management strategies adopted by the study subjects from PMS, it was seen that alternate therapy for PMS was the most common treatment strategy adopted by 74.07% (n=200) non-medical students and 78.49% (n=438) medical students, and in total by 77.05% (n=638) study subjects. Painkillers were chosen for treating PMS by 45.18% (n=122) non-medical females and 55.19% (n=308) medical students, and 51.93% (n=430) total study females. This was followed by the over-the-counter drugs used by 48.14$ (n=130) non-medical and 55.91% (n=312) medical students and by 53.38% (n=442) total study females. Contraceptive pills for PMS were used by no non-medical students and by 0.71% (n=4) of medical students. 14.81% (n=40) non-medical students and 16.12% (n=90) medical students visited the gynecologists for their PMS with an overall 15.70% (n=130) total females. Psychotherapy was adopted by 0.74% (n=2) of study females from a non-medical background. Antidepressants were taken by 0.24% (n=2) of study subjects for PMS who were medical students. Psychiatric treatment was taken by 0.48% (n=4) of study subjects where 0.74% (n=2) subjects were from a non-medical background and 0.34% (n=2) subjects were medical students. Other treatments were used by the study participants by 1.44% (n=12) of study subjects. These management strategies were similar to the findings of Tolossa FW et al[16] in 2014 and Jarvis CI et al[17] in 2008 where alternate therapy, painkillers, and over-the-counter drugs were commonly used by the females for PMS.

CONCLUSION

Considering its limitations, the present study concludes that premenstrual syndrome harms female health and is a highly prevalent concern. A comprehensive study of PMS is needed to get adequate management and improve female health. Most females manage their PMS by themselves and proper gynecologic guidance can help females manage their PMS. Further comprehensive studies are needed on PMS and its management to get regulations and guidelines concerning PMS.

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TABLES

PMS features	Frequency (n=828)	%
Stress		
Normal	730	88.16
Mild	70	8.45
Moderate	28	3.38
Depression		
Normal	614	74.15
Mild	102	12.31
Moderate	98	11.83
Severe	14	1.69
Anxiety		
Normal	670	80.91

Mild	64	7.72
Moderate	74	8.93
Severe	14	1.69
Extremely severe	6	0.72
PMS severity		
Mild	270	32.60
Moderate	492	59.42
Severe	66	7.97

Table 1: Prevalence of depression, anxiety, and stress and PMS severity in study subjects

Outcomes	Non-medical students	Medical students	p-value
Depression	7.258	5.663	0.03
Anxiety	4.201	3.742	0.452
Stress	8.470	6.726	0.01
PMS scores	28.61	28.22	0.457

Table 2: Comparison of depression, anxiety, stress, and PMS scores in medical and non-medical students in the study

Outcomes	PMS	% [n]	p-value
Depression	0.723	28.98 (240)	<0.001
Anxiety	0.763	31.76 (263)	<0.001
Stress	0.852	39.25 (325)	<0.001

Table 3: Correlation of PMS to Depression, anxiety, and stress in the study subjects

Management	Non-medical students		Medical students		Total	
	n=270	%	n=558	%	n=828	%
Alternative therapy	200	74.07	438	78.49	638	77.05
Painkillers	122	45.18	308	55.19	430	51.93
Over-the-counter drugs	130	48.14	312	55.91	442	53.38
Contraceptive pills	0	0	4	0.71	4	0.48
Gynecologist visit	40	14.81	90	16.12	130	15.70
Psychotherapy	2	0.74	0	0	2	0.24
Antidepressants	0	0	2	0.34	2	0.24
Psychiatric	2	0.74	2	0.34	4	0.48
Others	8	2.96	4	0.71	12	1.44

Table 4: Management strategies by medical and non-medical students for PMS