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Prevalence of premenstrual syndrome and its association with BMI among women of reproductive age group

[1]Ankita Jasraj Oswal, [2]*Rima Musale

[1 2] College of Physiotherapy, [2]Tilak Maharashtra Vidyapeeth, Pune, India

Corresponding author Address: Rima Musale

ABSTRACT: This study was undertaken to find out the prevalence of premenstrual syndrome and its association with BMI among women of reproductive age group. This was an analytical study which included 103 samples between the age group of 18 to 40 years. The prevalence and severity of premenstrual syndrome assessed using the premenstrual syndrome questionnaire concluded that there is prevalence of premenstrual syndrome with mild to moderate level of symptoms. The BMI and severity of premenstrual syndrome showed a positive co-relation.

Keywords: Premenstrual Syndrome, BMI.

INTRODUCTION

Menstruation is a bodily condition encountered by a woman of reproductive age. In the course of menstrual cycle, women may encounter various symptoms repeatedly and periodically that may influence their daily lives. The International Society for Premenstrual Disorders has categorized premenstrual disorders (PMDs), including various symptoms a woman experiences before her menstruation, into two groups: core PMD (typical, pure, or reference disorders associated with spontaneous ovulatory menstrual cycles) and variant PMD (more complex features, including premenstrual exacerbation, PMD with anovulation, PMD with absent menstruation, and progestogen-induced PMD).

Premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD) are distinguished as core Pre-Menstrual Disorders. Premenstrual Syndrome is a kind of Pre-Menstrual Disorder which is marked by numerous physical plus emotional symptoms which come about repetitively in the course of the luteal phase prior to menstruation and settle in a few days into the menses. [2,17,18] Physical, psychological, emotional, behavioral, social and 300 more such symptoms have been shown to be related with Pre-Menstrual Syndrome. [18] PMS can exhibit with a broad spectrum of symptoms, together with depression, mood lability, abdominal pain, breast tenderness, headache, and fatigue. Symptoms usually commence between the ages of 25-35 years. Symptoms diminish rapidly with the onset of menses in both PMS and PMDD. 2-10% of women describe debilitating, indisposing symptoms and up to 85% of menstruating females describe encountering one or more premenstrual symptoms. More than 200 symptoms were related with Pre-Menstrual Syndrome, however tension, irritability, and

dysphoria are the most salient and frequently described. [2]

Common Symptoms of Premenstrual Syndrome

- Behavioral symptoms include fatigue, insomnia, dizziness, changes in sexual interest and food cravings or overeating.
- Psychological symptoms include irritability, anger, depressed mood, crying and tearfulness, anxiety, tension, mood swings, lack of concentration, confusion, forgetfulness, restlessness, loneliness, decreased self-esteem and tension.
- Physical symptoms include headaches, breast tenderness and swelling, back pain, abdominal pain and bloating, weight gain, swelling of extremities, water retention, nausea, muscle and joint pain.[2]

Premenstral Syndrome Scale (PMSS)

Inter-rater reliability between 0.81-0.97. Sensitivity between 83-100%. Specificity between 64-90% [15]. The premenstrual syndrome scale comprises of 40 questions with three sub-scales (Physiological, Psychological and Behavioural symptoms). The scale's lowest score is 40 and highest score is 200. Increases in the scores indicate an increase in PMS severity. [15]

METHODOLOGY

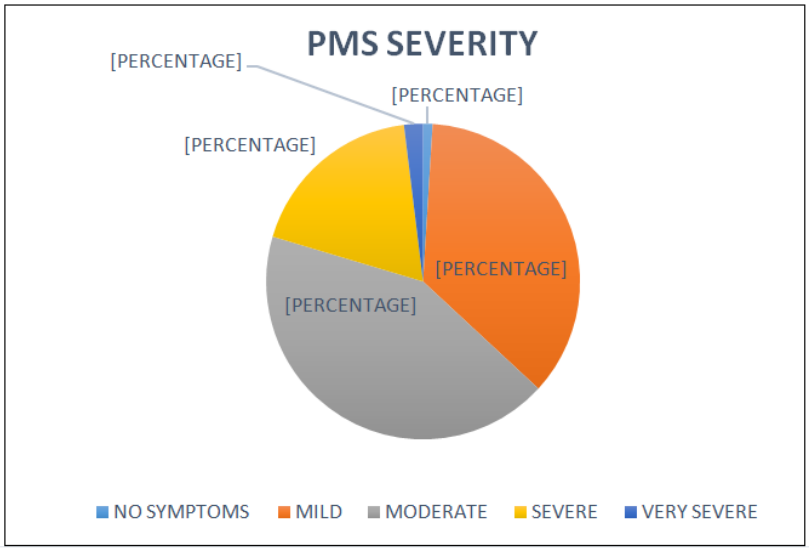
The study was approved by institutional ethical committee of Tilak Maharashtra Vidyapeeth, Department of Physiotherapy. Various women among the age group of 18-40 years (reproductive age group) were approached or sampling. The aim and method of the study was explained to the participants and their informed consent on the consent form was taken.

For assessing the prevalence and severity of premenstrual syndrome, premenstrual syndrome scale was used. The patient was explained about premenstrual syndrome and its symptoms. The participant was asked for basic demographic details and was asked to fill the premenstrual syndrome scale. Statistical analysis was done.

RESULT

Table 1: Distribution of subjects according to severity of symptoms

Level of symptoms	Scores	Number of participants	Percentage
No symptoms	1- 40	1	1%
Mild symptoms	41-80	37	36%
Moderate symptoms	81-120	44	43%
Severe	120-160	19	18%
very severe	>160	2	2%

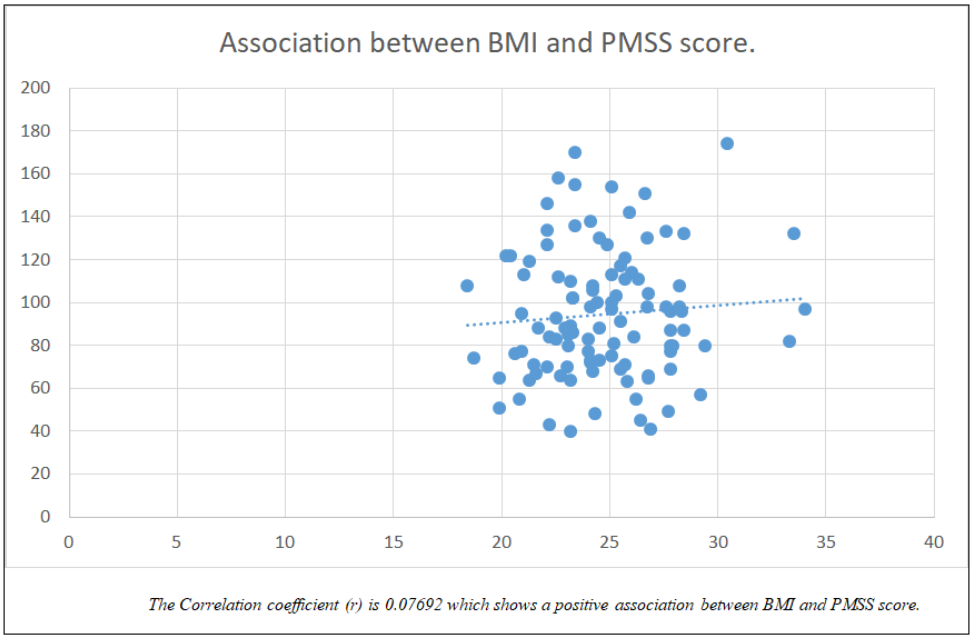


Graph 1: Distribution of subjects according to severity of symptoms

Graph No.1 shows that 1% of the women had no symptoms (scores ranging from 1-40), 36% of the women had mild symptoms (scores ranging from 41-80), 43% of the women experienced moderate symptoms (scores ranging from 81-120), 18% of the women experienced severe symptoms (scores ranging from 120-160) and 2% of the women experienced very severe symptoms (scores >160).

Table 2: Association between BMI and PMSS score

	MEAN±SD	Correlation coefficient (r)
BMI	24.70±2.96	
PMSS SCORE	94.49±29.78	0.07692



The Correlation coefficient (r) is 0.07692 which shows a positive association between BMI and PMSS score.

Graph 2: Association between BMI and PMSS score

Table 3: shows percentage responses to PMS questions.

Physiological symptoms	Never	Rarely	Sometimes	Very often	Always
1 Breast tenderness and swelling	67%	13%	11%	7%	2%
2 Abdominal bloating	32%	25%	22%	10%	11%
3 weight gain	42%	26	15%	8%	9%
4 Headache	45%	25	12%	14%	4%
5 Dizziness/fainting.	60%	16	17%	6%	1%
6 Fatigue	28%	21	30%	13%	8%
7 Palpitations	66%	15	12%	4%	3%
8 Pelvic discomfort and pain	31%	12	16%	18%	23%
9 Abdominal cramps	14%	22	20%	20%	24%
10 Change in bowel habits	36%	23	16%	13%	12%
11 Increased appetite	41%	21	20%	13%	5%
12 Generalized aches and pains	18%	19	29%	20%	14%
13 Food cravings (Sugar/ Salt)	18%	16	30%	17%	19%
14 Skin changes, rashes, pimples	15%	20	32%	12%	21%
15 Nausea/vomiting	63%	16	12%	5%	4%
16 Muscle and Joint pain	24%	18	31%	16%	11%
Psychological symptoms					

17 Irritability	16%	20	19%	21%	24%
18 Anxiety	25%	19	32%	14%	10%
19 Tension	23%	19	24%	21%	13%
20 Mood swings	9%	15%	24%	27%	25%
21 Loss of concentration	25%	20%	24%	18%	13%
22 Depression	50%	16%	18%	11%	5%
23 Forgetfulness	52%	23%	19%	4%	2%
24 Easy crying/ Crying spells	28%	18%	18%	20%	16%
25 Sleep changes (Insomnia/ hypersomnia)	42%	21%	21%	12%	4%
26 Confusion	54%	24%	12%	5%	5%
27 Aggression	23%	20%	27%	22%	8%
28 Hopelessness	50%	12%	19%	11%	8%
Behavioral symptoms					
29 Social withdrawal	42%	21%	15%	16%	6%
30 Restlessness	29%	23%	23%	18%	7%
31 Lack of self-control	49%	16%	18%	13%	4%
32 Feeling guilty	49%	21%	16%	9%	5%
33 Clumsiness	41%	18%	22%	13%	6%
34 Lack of interest in usual activities	30%	24%	19%	19%	8%
35 Poor judgment	60%	20%	14%	4%	2%
36 Impaired work performance	47%	18%	21%	10%	4%
37 Obsessional thoughts	49%	19%	17%	11%	4%
38 Compulsive behavior	51%	20%	15%	11%	3%
39 Irrational thoughts	50%	17%	18%	10%	5%
40 Being over sensitive	29%	14%	22%	19%	16%

DISCUSSION

Premenstrual syndrome is a common cyclic disorder of young and middle-aged women. It is characterized by emotional and physical symptoms that consistently occur during the luteal phase of the menstrual cycle.

The present study was conducted to find out the prevalence and severity of premenstrual syndrome in young women of reproductive age group and to find out the association between severity of premenstrual syndrome and body mass index (BMI). 103 participants were selected depending on the inclusion and exclusion criteria, which included females between the age group of 18 to 40 years. All the subjects were asked to fill the given premenstrual syndrome scale and then the data was analyzed by descriptive analysis.

Body mass index or BMI is a statistical index using a person's weight and height to provide an estimate of body fat in males and females of any age. It is calculated by taking a person's weight, in kilograms, divided by their height, in meters squared, or BMI = weight (in kg)/ height^2 (in m^2). [26]

In a study conducted in Sharjah (2019) with the average BMI of participating women in the normal range, no significant associations were found between anthropometric factors and PMS prevalence and symptoms.[5] In our study with the mean BMI ranging in the normal value (24.70485437), we found a positive association between the BMI and premenstrual syndrome scale score. Like our study, some studies from Pakistan, Korea and Iran concluded that high BMI, body fat and visceral fat were risk factors for reporting the prevalence and severity of PMS. [19-21]

In a study conducted in Sharjah, 95% of the participating young women experienced at least one PMS symptom, with varying degrees of severity. [5] Similarly, another study stated that 91% of participants reported at least one PMS symptom.[9] This present study shows that 1% of the women have no symptoms (scores ranging from 1-40), 36% of the women have mild symptoms (scores ranging from 41-80), 43% of the women experience moderate symptoms (scores

ranging from 81-120), 18% of the women experience severe symptoms (scores ranging from 120-160) and 2% of the women experience very severe symptoms (scores >160).

Abdominal pain/discomfort is one of the most frequently reported physical symptoms among surveyed females in the current work and goes in line with the vast majority of surveyed females in many other works. [5, 11, 24] In this present study majority of the participants most complained of physiological symptoms such as abdominal cramps (24%), pelvic discomfort and pain (23%) and skin changes, rashes, pimples (21%). Most participants least complained of Breast tenderness and swelling (67%), Palpitations (66%) and Nausea/vomiting (63%). Breast tenderness/pain was among the least common physical symptoms. These findings support other studies that found breast pain/tenderness was the least common symptom [5, 23] while contradicting reports that breast tenderness/pain was among the most frequently reported symptom for women with PMS. [24] The low reporting of the somatic symptom of breast tenderness/pain in the present study may be explained by the fact that somatic symptoms tend to be associated with increased levels of inflammation. [25] In another cross-sectional study, it was found that elevated hs-CRP (>3 mg/L), an acute phase biomarker of inflammation, were significantly related to increased odds of reporting of premenstrual mood symptoms, abdominal cramps/back pain, appetite cravings/weight gain/bloating, and breast pain, but not headache. [25] Interactions of sex hormones with the neural mediators are the mechanisms proposed for PMS. The increase of body fat levels may alter neurotransmitter function through its effect on estrogen and progesterone. The increase of adiposity may also interfere in PMS symptoms by disrupting the regulation of the renin-angiotensinaldosterone system. Moreover, it is documented that females with obesity have more hormonal abnormalities, insomnia, and stress that all of them are the common PMS symptoms. [22]

In our study, majority of the participants most complained of Psychological symptoms such as mood swings (25%), irritability (24%) and easy crying/ crying spells (16%). Most participants least complained of confusion (54%), forgetfulness (52%) and depression (50%). According to a study from Northern Ethiopia, the most commonly reported psycho-behavioral symptoms experienced by the participants were loss of interest in doing things which was followed by depressed mood, anger feeling, and difficulty concentrating. [24] Another study from Brazil stated nervousness/anxiety; mood swings/crying were the most common symptoms experienced by the women. In the present study too, majority of the participants most complained of Behavioral symptoms such as being over sensitive (16%), lack of interest in usual activities (8%) and restlessness (7%). Most participants least complained of poor judgment (60%), Compulsive behavior (51%) and Irrational thoughts (50%).

In a study conducted in Jordan, the most severe PMS symptoms were: lower back pain, abdominal cramp/pain, breast pain/tenderness, irritability, feeling overwhelmed and sadness and depression. It is obvious that severe symptoms of PMS were those related to pain (breast, abdomen, back) and negative affect (depression, irritability, sadness), and the least severe symptoms were those related to water retention (bloating, oedema and swelling). [11] Our study too gives similar results about severe and least severe symptoms.

In the study conducted in Jordan, the prevalence of PMS among a sample of Jordanian women was found to be 80.2%. [11] This prevalence rate was congruent with the results of most studies. Among the participants from a study in Northern Ethiopia, 83.2%. [24] According to the results we can say that there is a high prevalence of premenstrual syndrome with mild to moderate symptoms among women of reproductive age group.

CONCLUSION

The study, based on the premenstrual syndrome scale results showed that there is prevalence of premenstrual syndrome with mild to moderate level of symptoms.

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