

Prevalence of Premenstrual Syndrome in College Going Girls

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Abstract: ***Background:** Premenstrual syndrome refers to distressing physiological, psychological & behavioral symptoms not caused by organic disease which regularly occur during same phase of menstrual cycle & significantly regress/disappears during remainder of the cycle. **Objectives:** To investigate the prevalence of premenstrual syndrome among the girls between 17-23 years of age group in Ahmedabad. **Method:** Descriptive survey study was carried out in 2021-22 among female students of Ahmedabad aged 17-23 years. Overall 228 participants were included in the study and informed consent was signed, general assessment including anthropometric data was taken and premenstrual syndrome scale was given to participants to fill after explaining them symptoms of PMS. **Result:** 228 students who participated in this study age group of whom ranged from 17 to 23 years, with mean age of 20 years. Total 228 participants all reported experiencing various degrees of at least one symptom of 40 symptoms included in the scale. The most prevalent symptoms were physiological symptoms (33.27%), psychological symptoms (27.18%) and behavioural symptoms (22.38%). 54.39% of participated population was having mild symptoms of PMS, 32.89% of population presented with moderate symptoms, 11.40% of population showed severe symptoms and 1.32% of population presented with very severe symptoms.*

Keywords: Prevalence, premenstrual syndrome, Premenstrual syndrome scale

1. Introduction

Premenstrual syndrome (PMS) is a set of distressing physical and psychological symptoms that begins a few days before menstruation and last for a few days after. [1]

This was first described by Frank and Horney in 1931.¹ Premenstrual dysphoric disorder (PMDD) is a severe form of PMS and reoccurs for at least two menstrual cycles. PMDD has been included as a psychiatric disorder in the Fifth Edition of the Diagnostic and Statistical Manual for Mental Disorders (DSM-5). [2]

Women who have PMS/PMDD impairment in physical functioning, psychological health and also dysfunctions in occupational and social domains.²

Premenstrual syndrome (PMS) is described by the cyclic way of a gathering of mental, physiological, or potentially behavioral side effects showing up amid the late luteal period of the menstrual cycle i.e. 7 to 14 days prior to menstruation and as a rule vanishing not long after the onset of menses. [3]

Premenstrual syndrome (PMS) can be characterized as the event of gently to seriously troublesome physical and additionally mental side effects, intermittent in relationship with the premenstrual period of the menstrual cycle. [4]

Symptoms of PMS fall into three domains: emotional, physical, and behavioral changes that presented premenstrually and resolve gradually following the cessation of menstrual bleeding. Emotional symptoms include depression, irritability, tension, crying, over sensitivity (hypersensitivity) and mood swings with alternating sadness and anger. Physical signs and symptoms may include

headache, fatigue, weight gain, abdominal bloating, and breast tenderness. Behavioral symptoms include food cravings, poor concentration, social withdrawal, forgetfulness and decreased motivation. [5] However some may have pain in abdomen with or without gastrointestinal upsets like anorexia and vomiting. The medical and social consequences of premenstrual symptoms and disorders of menstruation influence not only the individual but also her family and society. [6]

The length of symptom and its expression varies, may lasts for a few days to 2 weeks. Symptoms often worsen substantially 6 days before and peak at about 2 days before the onset of menses and subside at the onset or after several days of menstruation. [7]

The pathophysiology of PMS remains unknown, complex and multifactorial and yet to be fully clarified and may include the effect of progesterone on neurotransmitters such as serotonin, opioids, catecholamine and GABA, increased prolactin level or increased sensitivity to the effect of prolactin, insulin resistance, sensitivity to endogenous hormones, abnormal hypothalamic-pituitary-adrenal axis function, nutritional deficiencies, alteration of glucose metabolism, and fluid and electrolyte imbalance. [8]

Several factors are suggested to be associated with PMS including social factors (ethnicity and culture), socioeconomic status, dietary habits, stress, exercise, smoking, alcohol consumption, and menstrual factors (age at menarche, duration since menarche, and menstrual patterns). [9] One of the common etiologies which are suggested about PMS is endocrinal cause. An abnormal function at any level of hypothalamo-pituitary-adrenal axis may lead to PMS. Environmental factors, defective nutrition, and defective adrenal hormone secretion lead to the development of PMS. [10]

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Previous study done in 2016 have found 20% prevalence of PMS in the general population and among those with PMS 8% had severe symptoms. In Gujarat prevalence of PMS was 18.4% and of PMDD was 3.7%. [11]

Since years it has been taught to girls that premenstrual pain and other symptoms are normal but to what extent it is normal and after what it is not normal is never talked about. The aim of the study is to find out the prevalence of premenstrual syndrome in college going girls and to see the effect of obesity on premenstrual syndrome. Many studies have been done on prevalence of premenstrual syndrome in young female but very less studies have been done on their relation with body weight.

2. Methodology

Design: Descriptive Survey Study

Setting: College going girls of Ahmedabad city

Sampling method: convenient sampling

Sample size: 228

Inclusion criteria:

Age: 17 to 23 years

Marital status: single and willing to participate

Exclusion criteria:

Married women

Irregular menstrual cycle

Current major medical and psychological problem

Receiving any hormonal therapy

Data collection tools

Premenstrual syndrome scale (PMSS)

Stadiometer

OMRON Digital Weighing scale

Calculator

Measure tape

Pen

Procedure

The students were recruited through personal contact for initial response. An explanatory discussion about the disorder was given using a power point presentation in order to make them aware about the syndrome so that the questions could be accurately understood later on informed consent and premenstrual syndrome scale was asked to be filled up.

Participants were not given any incentives to get involved in the study and those who participated were assured about the confidentiality of their response. They were given freedom to express their symptoms by allowing them to mention personal comments.

Subjects and methods

This study was conducted between October 2021 and February 2022 on female students of Ahmedabad after obtaining approval from them. Overall, 228 female students age group 17 to 23 years were conveniently recruited. Participation in study was voluntary and if a student refused to participate, no objection was taken. Questionnaires and

consent form were handed out to the students in class room and collected after being filled.

The Premenstrual syndrome scale (PMSS) is one of the most extensively studied symptoms assessment instruments, although the majority of studies focused on validity rather than reliability.

The assessment scales were designed to support practitioners in identifying adolescents at premenstrual syndrome risk.

The patients were evaluated according to various inclusion criteria like age, body mass index, waist hip ratio etc.

The assessment sheet consists of some demographic details like name, age, gender, body mass index, waist hip ratio, history, age of menarche, duration of menstrual cycle, dietary habits, etc.

We used weighing scale to measure the weight of subjects, stadiometer to measure the height of person, and to calculate BMI ($BMI = \text{weight}/\text{height}^2$), obtained height and weight was used.

The Waist hip ratio of the subjects was taken. It was measured using measure tape. For that we took person's waist circumference around the umbilicus and hip circumference covering bilateral hip joint or buttocks level. For female this ratio is <0.8 which is considered as a normal.

History of subjects past medical or surgical condition was taken.

3. Result

Descriptive analysis using mean and percentage values to determine the average age of the participants along with the total percentage of female with PMS symptoms was done. The age of 228 students who participated in this study age group of whom ranged from 17 to 23 years, with mean age of 20 years.

In total 228 participants all reported experiencing various degrees of at least one symptom of 40 symptoms included in the scale. The most prevalent symptoms were physiological symptoms (33.27%), psychological symptoms (27.18%) and behavioural symptoms (22.38%). The percentage of premenstrual syndrome symptoms are shown in table 1.

Table 1: Percentage of premenstrual syndrome symptoms

Physiological symptoms	33.28%
Psychological symptoms	27.18%
Behavioral symptoms	22.38%

Symptoms severity of premenstrual syndrome are shown in table 2 in that 54.39% of participated population was having mild symptoms of PMS, 32.89% of population presented with moderate symptoms, 11.40% of population showed severe symptoms and 1.32% of population presented with very severe symptoms.

Table 2: Symptoms severity of premenstrual syndrome

Variable	Range (score)	Total no.	Percentage
Mild	41-80	124	54.39%
Moderate	81-120	75	32.89%
Severe	121-160	26	11.40%
Very severe	161-200	3	1.32%

All the participants were assessed for their Waist hip ratio through which their health risk level was assessed. In which 32.89% of participants were under excellent category, 33.77% of participants were under good category, 26.75% of participants were under average category and 6.58% of participants were at risk.

Table 3: % of population in various categories of Waist hip ratio

Excellent	<0.75	32.89%
Good	0.75 - 0.79	33.77%
Fair	0.80 - 0.86	26.75%
Poor	≥0.86	6.58%

Weight categories of population was assessed using BMI In that 27.63% of population was underweight, 46.93% of population was of normal weight, 10.53% of population was of overweight and 14.91% of population was obese.

Table 4: % of population in various categories of Body Mass Index

Underweight	<18.5	27.63%
Normal weight	18.5 – 22.9	46.93%
Overweight	23 – 24.9	10.53%
Obese	≥25	14.91%

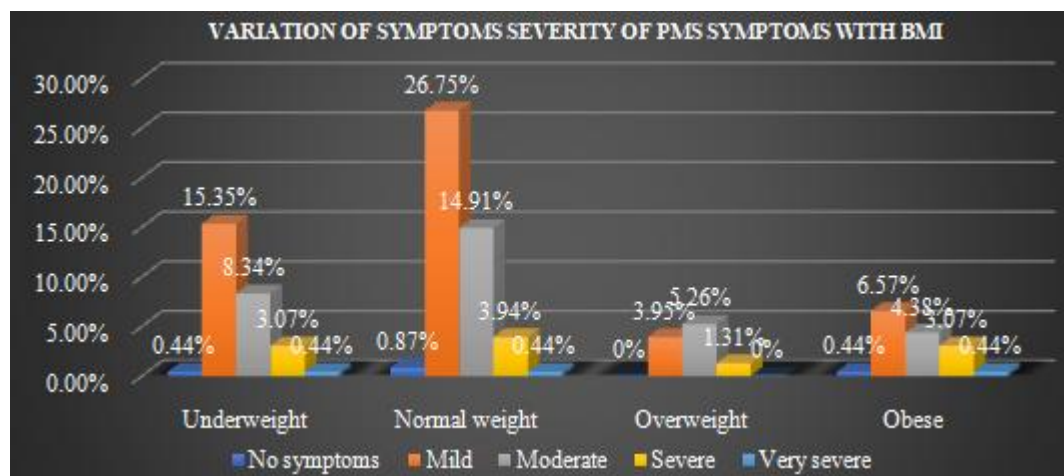
Severity of premenstrual symptoms differs according to BMI range 15.35 % of Underweight population presented with mild symptoms of PMS, 8.3 % of underweight population presented with moderate symptoms of PMS, 3.07 % of underweight Population presented with severe symptoms of PMS and 0.44% of underweight population presented with very severe symptoms of PMS.

26.75% of normal weight population showed mild symptoms of PMS, 14.91% of normal weight population showed moderate symptoms of PMS, 3.94% of normal weight population showed severe symptoms of PMS and 0.44% of normal weight population showed very severe symptoms of PMS.

3.94% of overweight population had mild symptoms of PMS, 5.26% of overweight population had moderate symptoms of PMS, 1.31% of overweight population had severe symptoms of PMS and 0% of overweight population had very severe symptoms of PMS.

6.57% of obese population had mild symptoms of PMS, 4.38% of obese population had moderate symptoms, 3.07% of obese population had severe symptoms and 0.44% of obese population presented with very severe symptoms of PMS.

According to result we can state that overweight population had moderate PMS symptoms.



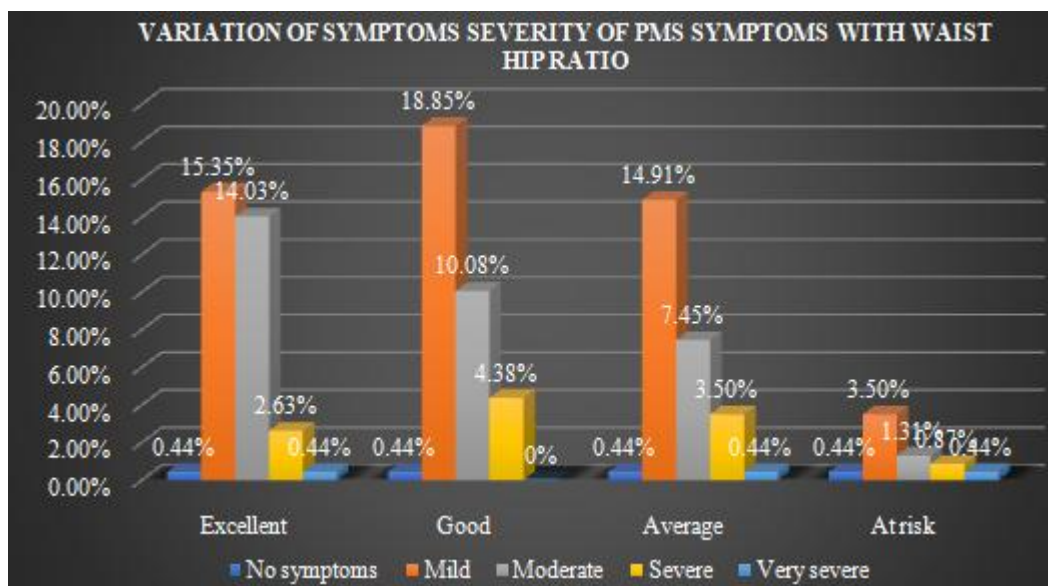
Graph 1: Variation of symptoms severity of PMS symptoms with BMI

15.35% of excellent group waist hip ratio population had mild symptoms of PMS, 14.03% of population had moderate symptoms, 2.63% of population had severe symptoms and 0.44% of excellent group waist hip ratio population had very severe symptoms of PMS.

18.85% of good waist hip ratio population presented with mild symptoms of PMS, 10.08% of population presented with moderate symptoms, 4.38% of population presented with severe symptoms and 0% of good waist hip ratio population presented with very severe symptoms of PMS.

14.91% of average waist hip ratio population presented with mild symptoms of PMS, 7.45% of population presented with moderate symptoms, 3.50% of population presented with severe symptoms and 0.44% of average waist hip ratio population presented with very severe symptoms of PMS.

3.50% of at risk population had mild symptoms of PMS, 1.31% of population had moderate symptoms, 0.87% of population had severe symptoms and 0.44% of at risk population had very severe symptoms of PMS.



Graph 2: Variation of symptoms severity of PMS symptoms with Waist Hip Ratio

4. Discussion

PMS is among the commonest gynecologic complaints in young women present to doctors (Banikarim et al., 2000). PMS might cause several difficulties for women including impairment in physical functioning, psychological health and severe dysfunction in social or occupational realms according to Al-Batanony and AL-Nohair, 2014. [12]

A Lot of studies have been done in the past on the prevalence of menstrual problems in young females, yet much research was not done on their relation with body weight. Based on the previous idea in this study we attempted to find a change in various PMS symptoms according to body mass index and waist hip ratio experienced by the young females as this is the risk factor which is modifiable and intervention at this stage might result in healthier adults.

The present study conducted on 228 college going female students showed that all the participants had at least one premenstrual syndrome of minimal severity. The total symptoms scoring of the study is 40 accordingly the score is divided in following range and variable set as follow- mild 41-80 score , moderate 81-120 score , severe 121-160 score , very severe 161-200 score were grouped. According to study, we can state that overweight population had moderate PMS symptoms which is modifiable with proper intervention like aerobics or other endurance training.

This results are in line with (Jena et al., 2018) [13] who stated that abnormal BMI was observed in 10.52% of population and moderate symptoms of PMS were present in overweight population. Also, this result can be confirmed by (Bertone-Johnson et al., 2010) [14] who observed a strong positive relationship between BMI and the development of PMS and women who were obese at baseline had significantly higher risks of developing PMS over 10 years of follow-up compared with lean women. But in contrast, in our study, age group of 17-23 years of girls did not have much significant PMS symptoms who were obese. But mild

symptoms of PMS were present in almost 54.39% of population regardless of BMI and weight hip ratio.

Also, This study confirmed by study done by K.Bhuvanewari, Porkodi Rabindran et al (2019)² to find Prevalence of premenstrual syndrome and its impact on quality of life among selected college students in Puducherry. In this study, Three hundred students above 18 to 22 years of age were selected from different sections of science streams. A high prevalence of PMS (62.7%) among college students was found. The most common premenstrual symptoms were back, joint and muscle aches in this study similar to our study in which 33.27% physiological symptoms were most prevalent.

Our study is supported by Tolossa and Bekele, (2014) [15] who showed that there was no significant relationship between PMS and BMI, waist to hip ratio (WHR), and waist to height ratio (WHTR).

Expression of PMS can be affected by culture, ethnicity, health status and age. This can cause a bias in the results of various studies. Raja et al (2014) [16] were of the opinion that the experience of PMS in adolescents can be influenced by perceived health status. In addition, he reported that symptoms may vary according to the variables included and excluded in the questionnaire. As we have included all the physiological, psychological and behavioural symptoms.

5. Conclusion

The age of 228 students who participated in this study ranged from 17 to 23 years, with mean age of 20 years. In total 228 participants all reported experiencing various degrees of at least one symptom of 40 symptoms included in the scale. The most prevalent symptoms were physiological symptoms (33.27%), psychological symptoms (27.18%) and behavioural symptoms (22.38%). 54.39% of participated population was having mild symptoms of PMS, 32.89% of population presented with moderate symptoms, 11.40% of population showed severe symptoms and 1.32% of population presented with very severe symptoms. This study

concludes that there is no relation between obesity and premenstrual syndrome.

6. Limitations and Future Scope

6.1 Limitations

The limitations of our study are, effect of exercise and physical work is not considered, second limitation is effect of PMS on quality of life has not been assessed, third one is the study is only limited to finding the prevalence of PMS and it is not centered towards management of females having disabling PMS and effect of weight and BMI status on PMS symptoms are not shown.

6.2 Future Scope

- Effect of PMS on quality of life using health related quality of life questionnaire and SF 36.
- Effect of various exercise protocols and aerobic training on PMS needs to be investigated in the female.

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