ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 11| Issue: 8| August 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2025: 8.691 || ISI Value: 1.188

PREVALENCE AND SYMPTOM PATTERNS OF PREMENSTRUAL SYNDROME AMONG FEMALE STUDENTS IN MYSURU: A CROSS-SECTIONAL STUDY

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ABSTRACT

Premenstrual Syndrome (PMS) is a cyclical disorder characterized by recurring physical, psychological, and behavioural symptoms in the luteal phase of the menstrual cycle, often severe enough to impair daily functioning and academic performance. This cross-sectional survey, conducted in May 2025 among 277 female undergraduate and postgraduate students aged 16-30 years at GAMC and GNCYC, Mysuru, aimed to assess the prevalence and severity of PMS. Among 277 participants, 198 met diagnostic criteria, with 28.5% reported mild, 44% moderate, 26.4% severe, and 1.1% very severe symptoms. Common physical complaints included abdominal cramps (39.3%), pelvic discomfort (33.9%) and fatigue (25.3%) while mood swings (49.1%), irritability (37.5%) and loss of concentration (35%) were the most frequent psychological symptoms. Behavioural changes such as lack of interest (30.3%), restlessness (24.1%) and social withdrawal (17.3%) were also common. The observed prevalence was higher than national pooled estimates, possibly influenced by academic stress, poor sleep hygiene, and lifestyle factors prevalent among students. The findings highlight the need for awareness programs, menstrual health education, mental health support, and early screening within academic institutions to improve management and quality of life. Limitations include reliance on self-reported data, the use of convenience sampling, and restriction to a study population.

KEYWORDS – *Premenstrual syndrome, Prevalence, College students, Mysuru, Cross-sectional study*

INTRODUCTION

Premenstrual syndrome (PMS) refers to a condition characterized by distressing physical and psychological symptoms that occur cyclically in the late luteal phase and disappear shortly after menstruation begins [1]. Approximately 40% of women report significant problems related to their cycles and about 2-10% report a degree of impact on work or lifestyle [2]. Retrospective community surveys [3,4] indicate that nearly 90% of women experience at least one symptom of PMS as defined by ICD-10 criteria [5].

The global incidence of PMS varies significantly across regions and populations. A systematic review and meta-analysis reported a worldwide pooled prevalence of PMS at 47.8%, with the lowest in France at 12% and the highest in Iran at 98% [6]. The Global Burden of Disease Study 2019 indicated that the number of prevalent PMS cases increased from 652.5 million in 1990 to 956 million in 2019. However, the age-standardized prevalence rate remained relatively stable over this period [7]. A systematic review and meta-analysis by Ashraf Direkvand-Moghadam et al. indicated a pooled PMS prevalence of 47.8% in India, with variations across different regions and populations [8].

PMS is classified in the ICD-10 under code N94.3 as "Premenstrual tension syndrome," recnizing it as a condition involving recurring physical and emotional symptoms linked to the menstrual cycle. Over 160 symptoms have been linked to the menstrual cycle, encompassing physical complaints such as body aches, fluid retention, migraines, and fatigue, as well as psychological symptoms including mood swings, emotional instability, and in severe cases, suicidal or aggressive thoughts and behaviours.

PMS affects society by contributing to significant disruptions in women's daily functioning, including absenteeism from work, decreased productivity, and emotional distress. With its wide-ranging effects, PMS contributes to an economic burden due to healthcare expenses and lost productivity.

A survey study on PMS was conducted among students to assess the severity of symptoms and understand how they impact young women's daily functioning. In the present era, increasing academic demands and mental health challenges make it essential to recognize PMS as a significant concern that can affect students' well-being, concentration, and overall quality of life.

AIM

- To assess the prevalence and severity patterns of PMS among undergraduate and postgraduate female students in Mysuru city.

METHODOLOGY

A cross-sectional survey study was conducted in May 2025 at Government Ayurveda Medical College (GAMC) Mysuru and Government Nature Cure and Yoga Medical College (GNCYC) Mysuru to assess the presence and severity of PMS among female undergraduate and postgraduate students. The total sample size was 277, selected using a convenience sampling

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method. All students present in class during the data collection period were invited to participate.

Inclusion Criteria

- Female students currently enrolled at GAMC Mysuru and GNCYC Mysuru.
- Participants who were aged between 16 to 30 years.

Exclusion Criteria

- Students on medications that might interfere with the menstrual cycle.
- Students who did not complete the full questionnaire or provided incomplete data.

Data Collection

- Data was collected using a self-administered online questionnaire, distributed via Google forms. The link to the questionnaire was shared with the students in class, and they were instructed to complete it on the spot to ensure maximum participation.

Questionnaire Design

Diagnosis was based on Premenstrual Syndrome scale (PMSS) [9]

- The premenstrual syndrome scale comprised 40 questions with three sub-scales (Physiological, Psychological and Behavioural symptoms).
- This 5-point Likert-type scale consisting of 40 items.
- The measurements on the scale are set according to the following scoring system: the response Never was scored as "1", rarely as "2", sometimes as "3", very often as "4" and always as "5" points.
- Participants marked the number that most closely describes the intensity of their premenstrual symptoms.
- The scale's lowest score is 40 and highest score is 200. If the scale's total score reached 80 points or above, this indicates the occurrence of PMS.

The questionnaire consisted of four sections:

- Demographic Information (age, etc.)
- Physical symptoms
- Psychological symptoms
- Behavioural symptoms

Duration of Symptoms

Participants must have experienced symptoms for at least three consecutive menstrual cycles prior to the study, with symptoms appearing at least 5 days before the onset of menses and resolving within 4 days after onset, in accordance with standard diagnostic criteria for PMS [10].

The responses were used to determine how many participants experienced PMS and to what extent, providing a clear picture of its burden among students.

Ethical Considerations

The study was approved by the Institutional Ethics Committee of GAMC, Mysuru with approval number: GAMC/IEC-PG (19)2023

Study ensured anonymity and confidentiality.

Statistical Analysis

The collected data were entered into Microsoft Excel and analysed using IBM SPSS Statistics version 26. Only descriptive statistics were applied. Categorical variables such as PMS severity and symptom frequency were presented as frequencies and percentages. The results were summarized using tables and charts for clarity. No inferential statistical tests were applied as the study aimed to provide a descriptive overview of PMS prevalence and symptom patterns among the participants.

RESULT

Among 277 participants, 198 were diagnosed with PMS, with symptoms ranging from moderate to very severe. Among them, 79 participants had mild symptoms, 122 with moderate symptoms, 73 with severe symptoms, and 3 with very severe symptoms of PMS, according to the questionnaire criteria.

Details of symptom severity are provided in Figure 1. The age-wise distribution of subjects is shown in Figure 2. Age-wise severity is presented in Figure 3, while symptom-wise severity is detailed in Figure 4, Table 1, 2 and 3.

Figure 1: Severity wise distribution of the participants

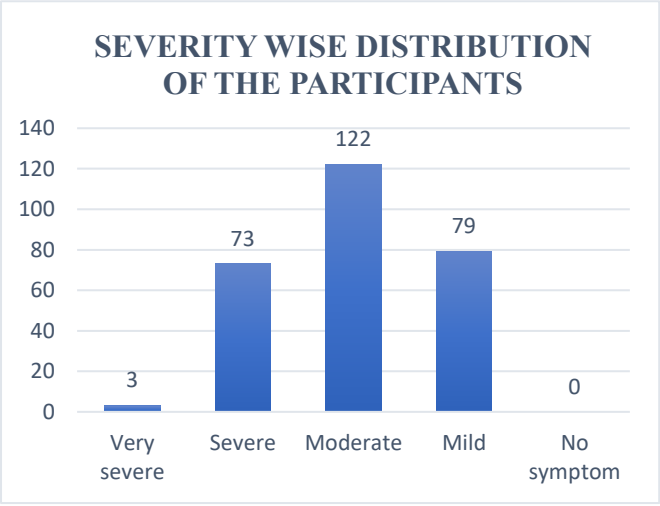
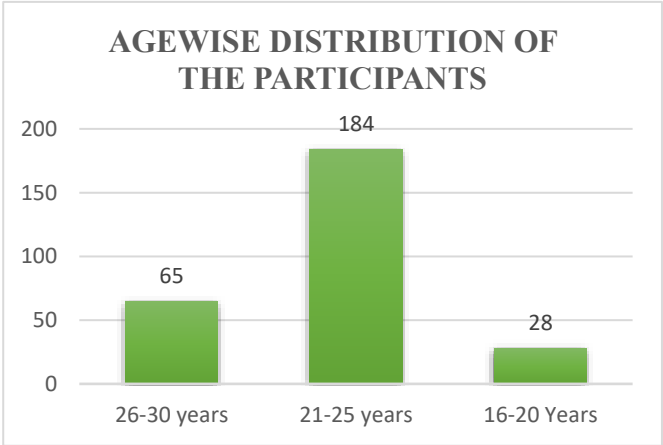


Figure 2: Age wise distribution of the participants



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Figure 3: Age wise severity of the symptoms

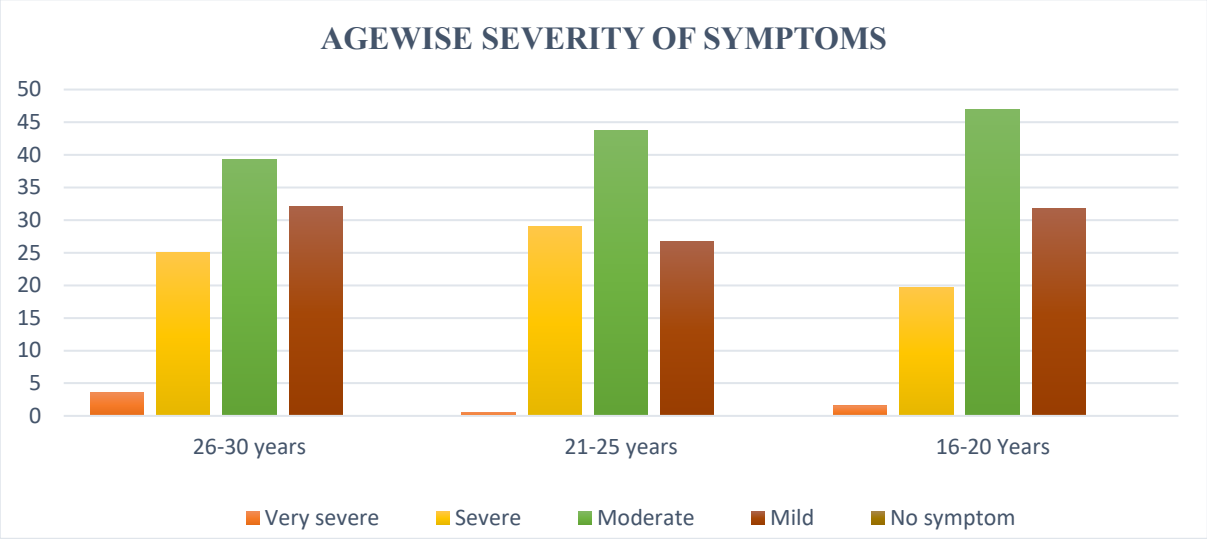


Figure 4: Pattern of physical, emotional and behavioural symptoms among participants

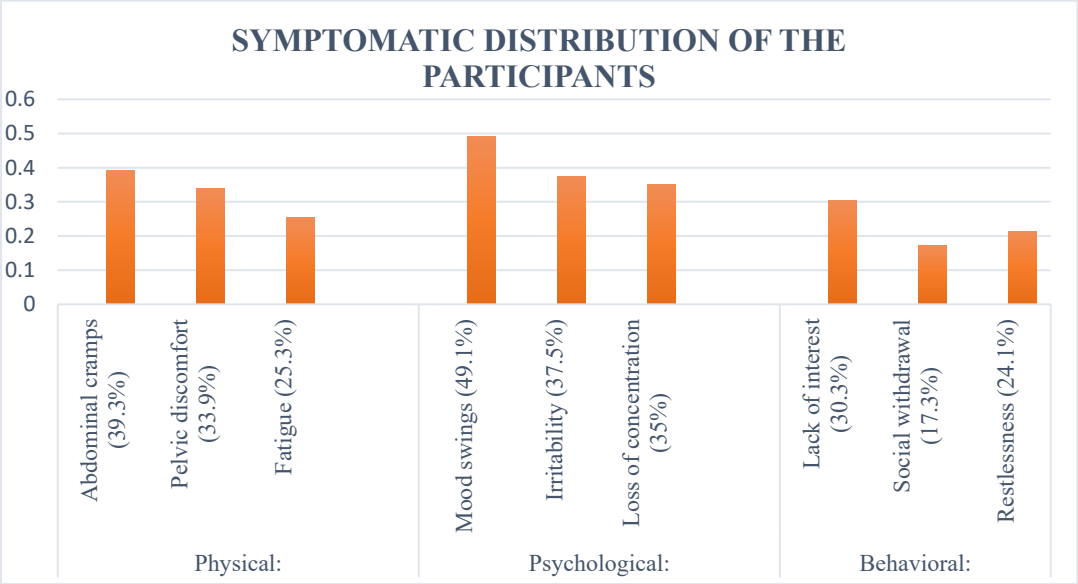


Table 1: Frequency distribution of physical symptoms among study participants (in %)

Sl. No.	Physical symptoms	Never	Rarely	Sometimes	Very often	Always
1	Breast tenderness and swelling	59.56	16.60	17.32	5.41	2.88
2	Abdominal bloating	27.07	25.63	32.85	9.38	7.22
3	Weight gain	61.73	15.52	14.80	3.97	4.33
4	Headache	36.82	27.79	24.54	7.94	3.97
5	Dizziness/fainting	48.37	19.49	20.93	7.58	4.33
6	Fatigue	22.74	24.18	30.32	13.35	11.91
7	Palpitations	58.84	19.49	16.60	4.33	1.44
8	Pelvic discomfort and pain	19.49	16.96	31.04	15.88	18.05
9	Abdominal cramps	13.71	20.57	28.15	15.88	23.46
10	Change in bowel habits	27.07	16.24	31.40	14.44	11.91
11	Increased appetite	31.04	20.93	31.04	11.55	5.77
12	Generalized aches and pains	14.07	21.29	27.79	23.46	14.07
13	Food cravings (sugar/salt)	21.66	14.44	27.07	22.02	16.60
14	Skin changes, rashes, pimples	16.24	18.05	28.15	20.93	18.41
15	Nausea/vomiting	64.25	17.68	10.46	6.13	2.16
16	Muscle and joint pain	22.74	21.66	31.04	10.46	12.27

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Table 2: Frequency distribution of psychological symptoms among study participants (in %)

Sl. No.	Psychological symptoms	Never	Rarely	Sometimes	Very often	Always
1	Irritability	12.27	14.80	35.74	22.02	15.52
2	Anxiety	22.74	22.38	31.76	15.16	8.66
3	Tension	22.74	20.57	32.12	16.96	7.94
4	Mood swings	9.38	15.88	26.71	25.27	23.82
5	Loss of concentration	17.68	18.05	31.40	25.63	9.38
6	Depression	40.43	20.93	23.82	10.83	4.69
7	Forgetfulness	41.87	25.99	23.46	7.94	2.16
8	Easy crying/crying spells	23.46	14.80	24.18	22.02	16.96
9	Sleep Changes (Insomnia/ Hypersomnia)	32.85	22.02	24.18	12.27	9.74
10	Confusion	42.23	18.41	26.35	10.10	3.97
11	Aggression	24.18	21.66	26.35	19.49	9.74
12	Hopelessness	40.07	22.02	22.74	10.10	5.77

Table 3: Frequency distribution of behavioural symptoms among study participants (in %)

Sl. No.	Behavioural symptoms	Never	Rarely	Sometimes	Very often	Always
1	Social Withdrawal	36.46	21.66	25.27	12.99	4.33
2	Restlessness	19.49	24.90	32.12	18.41	5.77
3	Lack Of Self-Control	40.07	20.93	24.54	11.19	4.33
4	Feeling Guilty	40.43	20.93	23.10	10.10	6.49
5	Clumsiness	34.29	21.29	25.63	12.63	6.85
6	Lack Of Interest in Usual Activities	14.80	23.82	33.21	21.29	9.02
7	Poor Judgement	25.99	25.27	33.21	11.55	4.69
8	Impaired Work Performance	25.99	25.27	33.21	11.55	4.69
9	Obsessional Thoughts	40.07	20.93	23.10	11.91	3.97
10	Compulsive Behaviour	49.09	18.77	24.90	6.13	2.16
11	Irrational Thoughts	32.85	24.18	24.18	12.63	6.13
12	Being Over Sensitive	19.85	21.66	26.35	16.96	17.68

DISCUSSION

This study aimed to assess the prevalence and severity patterns of Premenstrual Syndrome among undergraduate and postgraduate female students in Mysuru city. The findings indicate a high prevalence of PMS symptoms in this population, consistent with both global and national estimates. Notably, 71.48% of participants reported moderate to very severe PMS symptoms, severe enough to meet the study's diagnostic criteria, which is higher than the pooled Indian prevalence of 47.8% reported in previous meta-analyses.

The majority of participants were classified as having moderate PMS (44%), followed by mild (29%), severe (26%), and very severe (1%). This distribution highlights the considerable burden of PMS in academic environments, where even moderate symptoms can interfere with cognitive and social functioning. Such high prevalence among students could be attributed to academic stress, poor sleep hygiene, and lifestyle habits.

The symptomatology observed is consistent with previous studies. In 2023 Manisha Upadhyay et al. conducted a study at Delhi among 130 female students and found that 86% experienced PMS symptoms. The most common physical symptoms included back pain (77.8%), general body pain (71.9%), abdominal cramps (68.3%), fatigue (55.2%), and headache (53.8%). Psychological symptoms such as irritability (76.9%), mood swings (75.9%), and anger (73%) were also prevalent [11]. In the present study, physical symptoms such as abdominal cramps, pelvic discomfort, fatigue, and bloating were commonly reported, while psychological symptoms like mood swings, irritability and loss of concentration were also prominent. These symptoms mirror findings from Upadhyay et al., where mood swings and back pain were the most reported symptoms among college students. Behavioural symptoms such as restlessness, social withdrawal, and impaired work performance were also frequently observed. These symptoms are significant as they reflect how PMS impacts not only personal well-being but also academic performance and interpersonal relationships. The presence of such symptoms validates the need to include behavioural indicators in the diagnostic criteria and management plans for PMS.

The most common physical symptoms included abdominal cramps, pelvic discomfort, fatigue, and bloating. Abdominal cramps and pelvic pain were reported “very often” or “always” by over 39% of students. The high incidence of such symptoms could be due to lifestyle factors such as irregular diet, poor hydration, sedentary routines, and high caffeine intake, commonly seen in student populations. Additionally, the young age group (mostly 16–25 years) is often associated with heightened menstrual discomfort due to more pronounced hormonal fluctuations. Fatigue was another frequently reported

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symptom, with over 25% of participants experiencing it "very often" or "always." This may be attributed to long academic hours, poor sleep hygiene, and excessive screen time, all of which are known to disrupt circadian rhythms and contribute to tiredness.

In the domain of psychological symptoms, mood swings, irritability, anxiety, and loss of concentration were the most prominent. For instance, nearly 50% of respondents experienced mood swings "very often" or "always." These symptoms may be exacerbated by academic stress, lack of mental health support, and hormonal sensitivity typical during the luteal phase of the menstrual cycle. The high occurrence of irritability and anxiety is also consistent with previous findings, suggesting that emotional dysregulation during PMS is a major concern among young women.

The frequency of behavioural symptoms such as restlessness, social withdrawal, and lack of interest in usual activities further emphasizes the psychological aspect of PMS. Behavioural changes may result from the interplay between physical discomfort and mental stress, resulting in reduced motivation and impaired social functioning. A substantial number of students also reported poor judgment and impaired work performance, underscoring the syndrome's academic impact.

Food cravings, another commonly reported symptom, could be due to fluctuations in serotonin and blood sugar levels during the luteal phase. Cravings for sugar and salt are thought to serve as temporary coping mechanisms to improve mood or energy, though they often result in postprandial fatigue or bloating, compounding the physical discomfort.

Skin changes like acne and rashes were also noted in a considerable portion of students. These are likely linked to increased androgen activity, which stimulates sebaceous glands and leads to acne outbreaks.

Age-wise distribution revealed no statistically significant association between age and symptom severity. However, younger participants (16–20 years) tended to report slightly higher instances of mood-related symptoms, suggesting possible age-related hormonal fluctuations or coping differences that warrant further exploration.

Overall, the findings of this study reinforce PMS as a multidimensional syndrome influenced by hormonal, psychological, and environmental factors. The high symptom burden observed among students highlights an urgent need for increased awareness, early screening, and support systems within academic institutions. Counselling services, menstrual health education, lifestyle modifications, and accessible medical care can play vital roles in managing PMS and mitigating its impact on student well-being and academic performance.

LIMITATIONS

The use of convenience sampling and self-reported data may introduce selection and reporting bias. Additionally, the study was confined to students in specific institutions in Mysuru, which may limit the generalizability of the findings. Future research with a more diverse and larger population sample and longitudinal design would help provide deeper insights into the cyclic nature and long-term effects of PMS.

CONCLUSION

This study highlights the high prevalence and significant burden of Premenstrual Syndrome (PMS) among undergraduate and postgraduate female students in Mysuru, with 71.48% of participants reporting symptoms ranging from moderate to very severe. The most common symptoms included mood swings, abdominal cramps, irritability, loss of concentration, pelvic discomfort, each of which can substantially impair academic performance, emotional well-being, and daily functioning. The high rate of psychological and behavioural symptoms, alongside physical discomfort, indicates the multifactorial nature of PMS, influenced by hormonal fluctuations, academic stress, and lifestyle habits typical of student populations. Given its widespread impact, PMS should be recognized as a critical public health and academic concern. Institutions must implement awareness programs, offer mental health support, and provide educational resources to help young women manage PMS effectively. Early identification and holistic management strategies including lifestyle modification, counselling and medical intervention can significantly improve quality of life and academic outcomes for affected students.

ACKOWLEDGEMENT

The authors express their heartfelt gratitude HOD and Professors, Department of Swasthavritta and Yoga, Government Ayurveda Medical College, Mysuru, and Principal of Government Nature Cure and Yoga Medical College, Mysuru, for their continuous support and encouragement during the course of this study. We extend our sincere thanks to all the participants for their valuable time and honest responses, without which this research would not have been possible.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this study.

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