A DESCRIPTIVE STUDY TO ASSESS THE PREVALENCE, SYMPTOM PROFILE, AND PERCEIVED IMPACT OF PREMENSTRUAL SYNDROME AMONG ADOLESCENT GIRLS STUDYING IN SELECTED SECONDARY SCHOOLS OF VADODARA CITY, GUJARAT

Author's Name: Arpita Patel[1], Dr. (Prof) Vijay Singh Rawat[2]

Affiliation:

1. Ph.D Scholar, Venkteshwar College of Nursing, Sai Tirupati University, Udaipur, Rajasthan, India
2. Research Supervisor/ Principal, Venkteshwar College of Nursing, Sai Tirupati University, Udaipur, Rajasthan, India

Corresponding Author Name & Email Id: ap20patel@gmail.com

ABSTRACT

Background: Premenstrual syndrome (PMS) is a common health concern among adolescent girls, characterized by recurrent physical, emotional, and behavioral symptoms that can impair daily functioning. Understanding its prevalence, symptom profile, and perceived impact is essential for planning targeted interventions.

Objectives: To determine the prevalence of PMS, describe its symptom profile, and assess its perceived impact on daily activities, academic performance, and psychosocial well-being among adolescent girls in selected secondary schools of Vadodara City, Gujarat.

Methods: A descriptive, cross-sectional study was conducted among 300 adolescent girls aged 13–18 years, selected through stratified random sampling from four secondary schools. Data were collected using a pre-validated PMS Symptom Checklist and a Perceived Impact Rating Scale. Descriptive statistics were used to summarize findings; chi-square tests explored associations between PMS severity and selected demographic variables.

Results: The prevalence of PMS was 68.3% (n = 205). The most frequently reported symptoms were abdominal cramps (82.9%), irritability (76.1%), breast tenderness (69.8%), mood swings (66.3%), and fatigue (64.4%). Emotional symptoms were reported by 71.2% of participants, physical symptoms by 85.4%, and behavioral symptoms by 58.0%. Among those with PMS, 62.4% reported moderate severity and 14.6% severe symptoms. Perceived impact included reduced concentration in class (59.5%), absenteeism from school (27.8%), withdrawal from social activities (33.2%), and strained peer/family relationships (21.0%). Severe PMS was significantly associated with higher absenteeism ($p = 0.004$) and lower academic performance ($p = 0.012$).

Conclusion: PMS is highly prevalent among adolescent girls in Vadodara City, with a substantial proportion experiencing moderate to severe symptoms that negatively affect academic and social functioning. School-based awareness programs and culturally sensitive interventions are warranted.

Keywords: Premenstrual Syndrome, Adolescents, Symptom Profile, Perceived Impact, Vadodara, Gujarat

Introduction

Premenstrual syndrome (PMS) is a cyclical disorder characterized by a constellation of recurrent physical, emotional, and behavioral symptoms that occur during the luteal phase of the menstrual cycle and resolve with the onset of menstruation. These symptoms are believed to result from the complex interplay of hormonal fluctuations, neurotransmitter changes, and individual psychosocial factors. Common manifestations include abdominal bloating, breast tenderness, headaches, irritability, mood swings, anxiety, fatigue, and changes in appetite or sleep patterns. Although these symptoms are transient, their cumulative impact can be substantial, particularly among adolescents who are simultaneously navigating academic demands, evolving social relationships, and critical physical and psychological developmental transitions.

Globally, the prevalence of PMS among adolescents is estimated to range from 30% to 80%], reflecting variations in diagnostic criteria, cultural perceptions, and reporting practices. In India, community-based studies have reported prevalence rates as high as 72%, with a significant proportion of cases classified as moderate to severe. Such symptom severity has been linked to reduced school attendance, impaired academic performance, diminished participation in extracurricular activities, and strained interpersonal relationships.In the Indian context, the burden of PMS is compounded by sociocultural factors such as menstrual stigma, restrictive social norms, and persistent myths surrounding menstruation. These factors often discourage open discussion, delay help-seeking, and perpetuate misinformation. Limited access to adolescent-friendly health services, inadequate reproductive health education in school curricula, and a shortage of trained health professionals further exacerbate the problem. Consequently, many adolescent girls either normalize their distress or resort to ineffective coping strategies, leaving PMS under-recognized and undertreated in school health programs.

While pharmacological treatments are available, non-pharmacological approaches — including lifestyle modification, stress management, and psychosocial support — are increasingly recognized as essential components of PMS management, especially for adolescents. However, the effectiveness of such interventions depends on a clear understanding of the local prevalence, symptom patterns, and the perceived impact of PMS on daily life. Without this foundational knowledge, school-based health initiatives risk being generic and culturally misaligned, limiting their uptake and effectiveness.

Significance of the Study

Premenstrual syndrome (PMS) is not only a clinical concern but also a public health and educational issue, particularly in adolescent populations where its impact extends beyond physical discomfort to academic performance, social participation, and emotional well-being. Despite its high prevalence in India, PMS remains under-recognized in school health agendas, and culturally relevant data from urban and semi-urban contexts such as Vadodara City are scarce.

This study is significant for several reasons:

1. **Evidence Generation for Local Context:**
By documenting the prevalence, symptom profile, and perceived impact of PMS among adolescent girls in Vadodara City, the study provides context-specific data that can inform targeted interventions. Such localized evidence is essential for tailoring health programs to the unique sociocultural and educational environment of the community.

2. **Foundation for School-Based Interventions:**
The findings will serve as a baseline for designing and implementing school-based menstrual health initiatives, including awareness campaigns, coping skills training, and early identification protocols. This aligns with the objectives of the Rashtriya Kishor Swasthya Karyakram (RKSK) and other adolescent health frameworks.

3. **Contribution to Adolescent Reproductive Health Literature:**
By focusing on both the symptomatology and the functional impact of PMS, the study adds depth to the existing body of literature, which often emphasizes prevalence without exploring its broader psychosocial consequences.

4. **Policy and Programmatic Relevance:**
The results can guide policymakers in allocating resources for adolescent menstrual health, integrating PMS screening into routine school health check-ups, and training teachers and school nurses in culturally sensitive menstrual health education.

5. **Empowerment and Stigma Reduction:**
By openly addressing PMS in a school setting, the study contributes to breaking menstrual taboos, empowering adolescent girls to seek help, and fostering a supportive environment that normalizes conversations about menstrual health.

Recent literature review

Adolescent premenstrual experiences span physical, emotional, and behavioral symptoms that can disrupt school functioning and social participation. Although reported prevalence varies widely across settings and definitions, consistent patterns emerge: somatic complaints (e.g., cramps, fatigue), mood lability, irritability, cognitive difficulties, and sleep disturbance, with a substantial subgroup reporting moderate to severe interference with daily activities. Urban Indian school studies repeatedly note impacts on concentration, attendance, and extracurricular engagement, underscoring the need for school-anchored responses.

Over the past five years, psychotherapy research has converged on cognitive-behavioral approaches as the most consistently effective modality for premenstrual change across populations, including adolescents. A 2025 systematic review synthesizing 34 studies reported CBT as the dominant and most effective modality among psychotherapy options, while highlighting persistent gaps in acceptability data and youth-specific trials. Complementing this, a UK-focused 2022 review on PMDD in young people concluded CBT demonstrates small-to-medium effects in adult samples and emphasized the dearth of trials under 18, calling for developmentally tailored psychoeducation and interventions.

Emerging adolescent-focused trials from low- and middle-income settings strengthen the case for contextually attuned CBT packages. In Iran, a 2025 quasi-experimental study integrating CBT, narrative therapy, and a gender-sensitive lens with 10 group sessions significantly reduced rumination and pain catastrophizing, with effects sustained at follow-up. Another Iranian quasi-experimental study (2023) found eight weekly CBT sessions significantly reduced PMS and PMDD symptoms at post-test and 6-week follow-up, reinforcing durability of benefits. Together, these studies indicate that structured cognitive-behavioral content can shift maladaptive cognitions and symptom burden in adolescents.

Indian school-based evidence, though still limited for adolescents, points in the same direction. A 2025 quasi-experimental study in Coimbatore implemented a six-week multicomponent behavioral program (psychoeducation, relaxation, CBT elements) among schoolgirls, demonstrating significant improvements in perceived stress and anxiety linked to premenstrual symptoms, with meaningful mean differences on standardized scales. While not exclusively CBT, the study supports the feasibility of delivering structured behavioral content in school settings and illustrates proximal benefits that relate directly to classroom functioning and well-being.

Across these strands, three converging insights are relevant for Vadodara City: (1) cognitive-behavioral approaches reliably reduce symptom severity and maladaptive cognitions in adolescents; (2) cultural tailoring and gender-sensitive framing enhance acceptability and sustain effects; and (3) school-based delivery is practical and impactful but under-studied in Indian urban and semi-urban contexts. These observations justify the present descriptive focus on prevalence, symptom profiles, and perceived impacts as a foundational evidence base to inform locally adapted, school-anchored interventions in Vadodara.

OBJECTIVES

To determine the prevalence of PMS, describe its symptom profile, and assess its perceived impact on daily activities, academic performance, and psychosocial well- being among adolescent girls in selected secondary schools of Vadodara City, Gujarat.

ASSUMPTIONS

1. Adolescent girls may experience premenstrual symptoms of varying premenstrual symptoms of varying severity.
2. Premenstrual symptoms can influence academic performance, daily activities, and social relationships.
3. The self-reported responses of adolescent girls will reflect their true experience of PMS.

Methodology

A descriptive cross-sectional research design was adopted to assess the prevalence, symptom profile, and perceived impact of premenstrual syndrome (PMS) among adolescent girls. This design was chosen because it allows for data collection at a single point in time, facilitating estimation of prevalence and identification of symptom patterns without manipulating study variables. The study was conducted in four secondary schools—two government-run and two privately managed—within Vadodara City, Gujarat. These schools were selected to ensure representation from diverse management types, socioeconomic backgrounds, and academic environments, thereby providing a comprehensive understanding of PMS among adolescents in the region.

The study population comprised adolescent girls aged 13 to 18 years who had experienced regular menstrual cycles for at least the preceding six months. This inclusion criterion ensured that participants were in the post-menarcheal phase with established menstrual patterns, thereby improving the reliability of self-reported PMS symptoms. The sample size was determined using the formula for estimating a single population proportion, assuming a PMS prevalence of 70% based on previous Indian studies, with a 95% confidence level and a 5% margin of error. The minimum required sample size was calculated as 288, which was rounded up to 300 to compensate for potential non-response or incomplete data.

A stratified random sampling technique was employed, with strata defined according to school type (government vs. private) and grade level (8th to 12th standard). Within each stratum, participants were randomly selected from class attendance registers, ensuring proportional representation of each subgroup. Data were collected using two standardized instruments. The **PMS Symptom Checklist**, a validated tool with Cronbach's $\alpha = 0.86$, included items assessing physical (e.g., abdominal cramps, breast tenderness), emotional (e.g., irritability, mood swings), and behavioral (e.g., social withdrawal, sleep disturbance) symptoms. Participants rated the presence and severity of each symptom experienced during the luteal phase of their most recent menstrual cycle. The **Perceived Impact**

Rating Scale, a structured Likert-type instrument, assessed the self-reported impact of PMS on academic performance, daily activities, and social relationships, with responses scored from 1 ("no impact") to 5 ("severe impact"). Prior to data collection, ethical clearance was obtained, and permission was secured from the school authorities. Written informed consent was obtained from parents or guardians, and assent was obtained from the participating students. Data collection took place in classroom settings during school hours. The researcher explained the purpose of the study, ensured confidentiality and anonymity, and provided standardized instructions for completing the questionnaires. The self-administered tools were completed under supervision to clarify doubts and ensure completeness of responses. Data were entered and analyzed using IBM SPSS Statistics version 26. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize demographic characteristics, prevalence rates, and symptom profiles. The Chi-square test was applied to examine associations between PMS severity categories (mild, moderate, and severe) and selected demographic or impact variables such as age, age at menarche, absenteeism, and academic performance. Statistical significance was established at $p < 0.05$.

Results

Table 1: Prevalence of Premenstrual Syndrome among Adolescent Girls (n = 300)

PMS Status	Frequency (n)	Percentage (%)
Present	205	68.3
Absent	95	31.7

Interpretation:

Out of the total 300 adolescent girls surveyed, 205 participants (68.3%) met the diagnostic criteria for premenstrual syndrome (PMS) based on the PMS Symptom Checklist, while 95 participants (31.7%) reported no PMS symptoms of clinical significance. This indicates that more than two-thirds of the study population experienced PMS, highlighting a substantial burden of the condition in this age group.

The observed prevalence aligns closely with previous Indian studies reporting rates between 60% and 75% among school-going adolescents, suggesting that PMS is a common and persistent health concern in this demographic. The high proportion of affected students underscores the need for systematic screening within school health programs and the integration of menstrual health education into the curriculum.

From a public health perspective, the finding that nearly seven out of every ten adolescent girls experience PMS symptoms — many of which can interfere with academic performance, attendance, and psychosocial well-being — reinforces the urgency of developing targeted, culturally sensitive interventions. This prevalence figure also provides a baseline for future interventional studies in Vadodara City and comparable urban settings.

Table 2: Symptom Profile among Participants with PMS (n = 205)

Symptom Category	Common Symptoms	Frequency (%)
Physical	Abdominal cramps	82.9

Symptom Category	Common Symptoms	Frequency (%)
	Breast tenderness	69.8
	Fatigue	64.4
Emotional	Irritability	76.1
	Mood swings	66.3
Behavioral	Sleep disturbance	41.5
	Social withdrawal	33.2

Interpretation:

Among the 205 participants identified with PMS, physical symptoms were the most frequently reported, with abdominal cramps affecting the largest proportion (82.9%), followed by breast tenderness (69.8%) and fatigue (64.4%). These findings are consistent with the somatic symptom patterns documented in both Indian and global adolescent PMS studies, where dysmenorrhea-type discomfort and fatigue are dominant complaints.

Emotional symptoms were also highly prevalent, with irritability reported by 76.1% of participants and mood swings by 66.3%. The high frequency of emotional disturbances underscores the psychosocial dimension of PMS, which can influence peer relationships, family interactions, and classroom behavior. These emotional symptoms often co-occur with physical discomfort, potentially compounding the perceived severity of PMS.

Behavioral symptoms were less frequently reported but still notable: sleep disturbance was experienced by 41.5% of participants, and social withdrawal by 33.2%. While these percentages are lower than those for physical and emotional symptoms, they represent important functional impacts, as disrupted sleep can exacerbate fatigue and concentration difficulties, and social withdrawal may limit participation in academic and extracurricular activities.

Overall, the symptom profile reveals that PMS in this cohort is multidimensional, with a predominance of physical and emotional symptoms but also meaningful behavioral manifestations. The high prevalence of abdominal cramps and irritability suggests that interventions should address both pain management and emotional regulation. Furthermore, the presence of behavioral symptoms highlights the need for holistic school-based strategies that incorporate lifestyle guidance, stress management, and peer support mechanisms.

Table 3: Perceived Impact of PMS among Participants (n = 205)

Impact Domain	Frequency (%)
Reduced concentration in class	59.5
Absenteeism from school	27.8
Withdrawal from social activities	33.2
Strained peer/family relationships	21.0

Interpretation: The data in Table 3 indicate that PMS has a **multifaceted impact** on the daily lives of affected adolescent girls, influencing academic performance, social engagement, and interpersonal relationships.

The most frequently reported consequence was **reduced concentration in class** (59.5%), suggesting that PMS symptoms — particularly pain, fatigue, and emotional disturbances — may impair cognitive focus and learning efficiency. This finding is consistent with prior research linking PMS to diminished academic productivity and lower classroom participation among adolescents.

Absenteeism from school was reported by 27.8% of participants, reflecting the extent to which PMS can disrupt regular attendance. Even occasional absences can have cumulative effects on academic achievement, especially in competitive educational environments. This absenteeism may be driven by severe physical discomfort, embarrassment due to menstrual stigma, or lack of access to adequate menstrual hygiene facilities in schools.

Withdrawal from social activities was noted by 33.2% of respondents, highlighting the social isolation that can accompany PMS. Such withdrawal may stem from mood changes, irritability, or self-consciousness about menstrual symptoms, and can limit opportunities for peer bonding and extracurricular participation — both important for adolescent psychosocial development.

Finally, **strained peer/family relationships** were reported by 21.0% of participants. This suggests that PMS-related irritability, mood swings, and emotional sensitivity can affect interpersonal dynamics, potentially leading to misunderstandings or conflict within the family and peer groups.

Taken together, these findings underscore that PMS is not merely a physiological condition but a **holistic adolescent health concern** with academic, social, and relational dimensions. Addressing these impacts requires a **multi-pronged approach** — combining symptom management, menstrual health education, emotional coping strategies, and stigma reduction — ideally delivered through school-based health programs and supported by family awareness initiatives.

Association Analysis: Severe PMS was significantly associated with higher absenteeism ($p = 0.004$) and lower self-reported academic performance ($p = 0.012$). No significant association was found between PMS severity and age at menarche ($p = 0.21$).

Discussion

The present study revealed a high prevalence of premenstrual syndrome (PMS) — **68.3%** — among adolescent girls in Vadodara City. This figure is consistent with previous Indian studies reporting prevalence rates between 60% and 75% [2,3], confirming that PMS is a common and persistent health concern in this demographic. The predominance of **physical symptoms** such as abdominal cramps (82.9%) and breast tenderness (69.8%), alongside **emotional symptoms** like irritability (76.1%) and mood swings (66.3%), mirrors global symptom patterns reported in adolescent populations [4]. These findings reinforce the multidimensional nature of PMS, where somatic discomfort is often compounded by emotional and behavioral changes, amplifying its overall impact.

The substantial proportion of participants reporting **moderate to severe symptoms** underscores the clinical and functional significance of PMS in this age group. Such severity levels are not merely a matter of discomfort; they can impair daily functioning, limit participation in academic and extracurricular activities, and negatively influence psychosocial well-being. This aligns with international evidence suggesting that adolescents with moderate to severe PMS are at greater risk of absenteeism, reduced academic performance, and strained interpersonal relationships [6,7].

The **perceived impact findings** in this study — particularly reduced concentration in class (59.5%), absenteeism from school (27.8%), and withdrawal from social activities (33.2%) — highlight the

broader educational and psychosocial consequences of PMS. These results are consistent with studies from other urban Indian settings [5,8], which have similarly documented the disruptive influence of PMS on learning outcomes and social engagement. Reduced concentration may be linked to the combined effects of pain, fatigue, and emotional distress, while absenteeism may be exacerbated by menstrual stigma, inadequate school sanitation facilities, and lack of supportive policies. Social withdrawal, in turn, may reflect both physical discomfort and the internalization of cultural taboos surrounding menstruation.

From a **public health perspective**, these findings point to the urgent need for **school-based screening, education, and support mechanisms**. Integrating menstrual health education into the school curriculum can normalize conversations about menstruation, reduce stigma, and empower girls with knowledge about symptom management. Coping skills training — including relaxation techniques, time management strategies, and emotional regulation — can help mitigate the functional impact of PMS. Culturally sensitive counseling, delivered by trained school nurses or health educators, can address both the physical and emotional dimensions of PMS while respecting local beliefs and practices.

Teachers and school nurses are well-placed to play a **pivotal role** in early identification and referral. By being sensitized to the signs of PMS and its potential impact on academic performance, they can provide timely support and connect students to appropriate health services. This aligns with the objectives of the **Rashtriya Kishor Swasthya Karyakram (RKSK)**, which emphasizes adolescent-friendly health services and school-based health promotion.

In summary, this study contributes to the growing body of evidence that PMS is a prevalent and impactful condition among adolescent girls in India. By documenting both the symptom profile and the perceived impacts, it provides a strong foundation for the development of targeted, school-based interventions that address the physical, emotional, and social dimensions of PMS, ultimately aiming to improve adolescent health, educational attainment, and quality of life.

Conclusion

PMS is highly prevalent among adolescent girls in Vadodara City, with significant physical, emotional, and behavioral symptom burdens that adversely affect academic and social functioning. School-based interventions, integrated into existing adolescent health programs, are recommended to address this unmet need.

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