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Research Article

# Knowledge, Attitudes & Perceptions towards Premenstrual Syndrome among Low Socioeconomic School-Going Adolescent Girls in Karachi, Pakistan

Shaikh Ali Masood[*,1], Shabbir Ahmed Mallick[1], Hamna Jamal[2], Maria Murtaza[1], Manahil Nadeem[1], Ameera Shabbir[3]

[1]*Department of Pediatric Medicine, Liaquat National Hospital & Medical College, Karachi, Pakistan.*

[2]*Department of Pharmacology, Liaquat National Hospital & Medical College, Karachi, Pakistan.*

[3]*Department of Child Health Department, Aga Khan University Hospital, Karachi, Pakistan.*

**Abstract: Background:** A girl's reaction to menstruation is determined by their knowledge and understanding of the process. Education about menstruation and associated changes may influence their experience of menarche.

**Objective:** To assess knowledge, attitudes & perceptions towards premenstrual syndrome (PMS) among adolescent girls in Karachi, Pakistan.

**Materials and Methods:** This is a descriptive cross-sectional study which was conducted by Pediatric Department, Liaquat National Hospital and Medical College, Karachi, from January 2024 to April 2024. Adolescent girls between the age of 12 and 19 years, attending schools in low socioeconomic regions of Karachi, and having undergone menarche were eligible for inclusion in the study. Structured, self-developed questionnaire was employed as the main data collection instrument for this study.

**Result:** A total of 384 school-aged adolescent girls participated in the study (mean age 14.36±1.68 years). Among them, 68.8% were aware of PMS, 35.2% associated symptoms with premenstrual, and 36.4% thought PMS is curable. Almost 45.1% considered it a health issue of serious concern. Around 63% perceived PMS as normal, 53% preferred open talking, 59% agreed on seeking medical attention, and 56% supported menstrual leave in the workplace.

**Conclusion:** The findings of this study identify significant gaps in knowledge and ambivalent opinions regarding PMS among low socioeconomic school-going adolescent girls in Karachi. Although numerous acknowledge PMS as a legitimate health condition, myths and stigmatization persist. Targeted school-based education on menstrual health is vital for enhancing awareness and empowering adolescent girls to better manage symptoms.

**Keywords:** Premenstrual syndrome, Gynecological illness, Breast tenderness, Fatigue, Restlessness, Mood swings, Crying spells.

## INTRODUCTION

Premenstrual syndrome (PMS) is characterized by pronounced physical and emotional symptoms that occur in the luteal phase of the menstrual cycle, producing appreciable distress and impaired functional capacity. Symptoms usually resolve within a few days after onset of menstruation [1]. The pooled prevalence of PMS in reproductive-aged women worldwide has been estimated at 47.8% [2]. About 20% of the affected women have symptoms severe enough to interfere with daily activities, while the rest have mild to moderate symptoms. Common presentations are appetite changes, weight gain, abdominal and back pain, breast tenderness, nausea, constipation, anxiety, irritability, anger, fatigue, restlessness, mood swings, and crying spells [1].

In addition, premenstrual dysphoric disorder (PMDD), a more severe form of PMS, is identified as a gynecological illness within the ICD-11 system and also as a psychiatric illness in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) [3]. This reflects the nature of the complexity of the disorder and the extensive variability of its signs. While the etiology of PMS is still unknown, its simultaneous occurrence with menstrual cycle hormonal fluctuations has provided a basis for hypotheses involving excess estrogen and progesterone deficiency. Moreover, disturbances in serotonin levels have been cited as one of the main causative factors [4].

Knowledge level and understanding of menstruation influence the perception and experience. How one learns about menstruation and its accompanying changes can shape her experience of menarche [5]. Following menarche, adolescent girls tend to experience menstrual problems like dysmenorrhea, irregular menstrual flow, and premenstrual symptoms. More than 75% of adolescent girls have menstrual-related problems that disrupt their life routine and in some instances create a tremendous problem [6].

* Address correspondence to this author at the Department of Pediatric Medicine, Liaquat National Hospital & Medical College, Karachi, Pakistan. Email: alimasood146@gmail.com

  

In developing nations, teenagers may have very limited knowledge of menstruation prior to menarche. Premenstrual symptoms, especially in young students, can adversely affect their academic performance, resulting in problems such as poor grades, absenteeism, school dropout, lack of concentration, strained interpersonal relationships, mental health issues, and decreased productivity [7].

Among low socioeconomic communities in Karachi, Pakistan, adolescent girls can encounter special challenges with PMS as a result of restricted access to health care, education, and resources [8]. Knowing the knowledge, attitudes, and perceptions regarding PMS within this target population is essential to design interventions that are specifically tailored and enhance menstrual health in general. Most adolescent girls in these communities may have inaccurate knowledge about PMS and could be perpetuating misconceptions and unhealthy coping mechanisms. Moreover, cultural taboos and stigma related to menstruation can also complicate the situation, and girls may not be able to approach anyone for help or talk about their symptoms freely. The justification for this study is to fill the research gap on PMS awareness among low socioeconomic school-going adolescent girls in Karachi, Pakistan. Through their knowledge, attitudes, and perceptions, this study will determine where education and support are most required and results will help in developing interventions for the support of adolescent girls during this phase.

## MATERIALS AND METHODS

This study used a descriptive cross-sectional design. The study was conducted by Pediatric Department, Liaquat National Hospital and Medical College, Karachi, during a time period running from January 2024 to April, 2024. The protocol for research was obtained in advance from the Institutional Review Board of Liaquat National Hospital (App#0694-2021-LNH-ERC, Dated: November 1, 2021), thus ensuring that ethical practices would be followed at all times throughout the research process. The study was performed in schools located in economically deprived areas in Karachi where underprivileged population resides.

All participants were clearly briefed on the research's objective and procedures, and their voluntary participation was assured by written informed consent obtained prior to commencement of data collection. Because the survey was aimed at school-enrolled female students, formal permission to carry out the research in schools was sought from the pertinent administrative departments and parents of children. The permissions were received after submitting an official request letter drafted in line with the right institutional communication guidelines.

Adolescent girls, as young as 12-19 years, who attended school in low socioeconomic regions of Karachi and had gone through menarche, were eligible for the study. Inclusion was only for those who gave written informed consent, with parental consent if necessary. Excluded from the study were individuals who had not yet reached menarche and individuals with a diagnosed gynecological or hormonal disorder, for example, polycystic ovary syndrome or endometriosis, likely to have an impact on menstrual cycles. Also excluded were students with any long-term physical or psychiatric illness affecting their capacity to respond to the questionnaire consistently, such as cognitive deficits or psychiatric disorders. Sample size was estimated using OpenEpi online calculator assuming that 50% of females would have correct knowledge of PMS at 95% confidence interval and 5% margin of error. Sample size came out to be 384.

Participants were solicited by planned visits to targeted schools following administrative clearance. Female researchers who had been trained explained the study to students in classrooms, maintained confidentiality, and administered consent forms. Interested students, with parental agreement, filled out anonymous self-report questionnaires under researcher supervision, either following regular classes or break time.

Since no validated tool was existing so we designed a questionnaire and employed as the main data-gathering instrument in this research. The questionnaire had a total of 22 items, and these were divided into four categories: two questions collected demographic data (age and level of education); eight items gathered knowledge on premenstrual syndrome (PMS); five items collected participants' views on PMS; and seven items collected their attitudes towards PMS. The knowledge portion comprised multiple-choice and true/false questions, whereas perception and attitude portions comprised Likert-scale and yes/no items.

The questionnaire was content validated by a panel of three experts in the fields of public health and adolescent gynecology, who examined the items for relevance, clarity, and cultural appropriateness. Minor changes were made following their feedback to enhance wording and understanding. In addition, a pilot study was performed using a sample of 30 adolescent girls (not part of the final analysis) to check for clarity and feasibility. Internal consistency reliability of the questionnaire was evaluated through Cronbach's alpha, and the result was 0.78, reflecting acceptable reliability.

## STATISTICAL ANALYSIS

Data was analyzed using SPSS version 27. Descriptive analysis was performed. Frequencies and percentages were computed for categorical variables. Mean ± standard deviation was computed for continuous variables.

## RESULT

A total of 384 adolescent school-age girls participated in the study. The average age of participants was 14.36 years (±1.68). Over half of the respondents (53.9%, n=207) were less than 15 years of age, while 46.1% (n=177) were aged 15 and above. According to educational level, most of the participants (83.3%, n=320) were at the secondary school level. A lower percentage were at the Matriculation or O-level (9.6%, n=37), then those at the Intermediate or A-level (7.0%, n=27) (Table **1**).

*Continue*

**Table 1.** Sociodemographic Characteristics of the Study Participants.

| Variables | n (%) |
|---|---|
| **Age Group** | |
| <15 years | 207(53.9) |
| ≥15 years | 177(46.1) |
| **Educational Level** | |
| Secondary | 320(83.3) |
| Matric/ O levels | 37(9.6) |
| Inter/ A levels | 27(7) |

Table **2** shows the distribution of participants' responses for various knowledge items. As many as 264 (68.8%) of the participants were familiar with the term (PMS). Most of these respondents (73.5%) learned about PMS first from their family, followed by fewer from friends, media, or awareness projects.

The majority of the participants (81.8%) were introduced to information regarding PMS between 10 and 15 years of age, respectively. The most frequently cited symptoms were cramps (64.2%), body pains (65.2%), and irritability (51.1%). Other symptoms like tiredness (50.4%) and mood changes (25%) were also reported, while less frequent symptoms like anorexia (33.7%) and gastrointestinal issues (9.1%) were mentioned less often.

In terms of the timing of PMS symptoms, 35.6% of the sample reported that symptoms happen at menstruation, 35.2% said they happen prior to menstruation, and a lesser percentage (14.4%) reported that symptoms may happen at any time during the menstrual cycle. Most (51.9%) indicated that the symptoms of PMS lasted 5 to 7 days, and a minority (25%) indicated that the symptoms took 4 days or less.

With regard to treatment, only 36.4% of respondents felt that PMS is treatable, whereas another 36.4% were uncertain and 27.3% believed it is not treatable.

**Table 2.** Knowledge of Premenstrual Syndrome in Our Study Participants.

| Knowledge Items | n (%) |
|---|---|
| **Heard the term premenstrual syndrome (PMS)** | |
| Yes | 264(68.8) |
| No | 120(31.3) |
| **Where did first learn about PMS from (n=264)** | |
| Family | 194(73.5) |
| Friends/Colleagues | 54(20.5) |
| Media | 8(3) |
| Awareness projects | 8(3) |
| **At what age first learn about PMS (n=264)** | |
| Less than 10 years old | 36(13.6) |
| 10–15 years old | 216(81.8) |
| 15-20 years old | 12(4.5) |
| **Know about PMS symptoms** | |
| Yes | 264(100) |
| No | 0(0) |
| **Symptom(s) heard about (n=264)** | |
| Bloating | 34(12.9) |
| Cramps | 170(64.2) |
| Irritability | 135(51.1) |
| Mood swings | 66(25) |
| Body pains | 172(65.2) |
| Depression | 32(12.1) |
| Fatigue | 133(50.4) |
| Gastrointestinal problems | 24(9.1) |
| Anorexia | 89(33.7) |
| Effect on studies | 71(26.9) |
| **When do the symptoms of PMS occur (n=264)** | |
| Before menstruation | 93(35.2) |
| During menstruation | 94(35.6) |
| After menstruation | 4(1.5) |
| At any time during the menstrual cycle | 38(14.4) |
| Don't know | 35(13.3) |
| **Duration of PMS symptoms (n=264)** | |
| ≤ 4 days | 66(25.0) |
| 5–7 days | 137(51.9) |
| ≥ 7 days | 38(14.4) |
| Don't know | 23(8.7) |
| **Think PMS is a treatable disease (n=264)** | |
| Yes | 96(36.4) |
| No | 72(27.3) |
| Don’t know | 96(36.4) |

Table **3** illustrates perception of premenstrual syndrome among study participants. Generally, the findings show that the majority of participants identify PMS as an important problem and favor school-based education regarding it. Almost half (45%) perceive PMS as a serious health issue, and the same percentage (50%) feel that it affects concentration and performance at school. On the other hand, the overwhelming majority (77%) disapprove of the notion that all girls have PMS in the same way. Around one of eight (13%) said that PMS affects mood, although a majority are undecided. Lastly, well over three-fifths (63%) support including education about PMS in school health curriculum.

**Table 3.** Perception towards Premenstrual Syndrome among Study Participants.

| Perception items | Yes n(%) | No n(%) | Not sure n(%) |
|---|---|---|---|
| Do you think PMS is a serious health problem? | 173(45.1) | 139(36.2) | 72(18.8) |
| Do you think all girls experience PMS in the same way? | 48(12.5) | 296(77.1) | 40(10.4) |
| Do you believe PMS can affect mood, such as causing irritability or sadness? | 51(13.3) | 289(75.3) | 44(11.5) |
| PMS affects girls' ability to study and concentrate in school. | 191(49.7) | 153(39.8) | 40(10.4) |
| Do you think education about PMS should be included in school health programs? | 240(62.5) | 37(9.6) | 107(27.9) |
| Should PMS / menstrual leave be an option at the workplace | 215(56) | 127(33.1) | 42(10.9) |
| Using medicines to relieve PMS symptoms is acceptable. | 50(13) | 273(71.1) | 61(15.9) |
| believe healthy eating and exercise can reduce PMS problems. | 119(31) | 202(52.6) | 63(16.4) |

Table **4** illustrates study participants' attitude towards premenstrual syndrome. The data on attitudes express generally positive yet ambivalent views towards PMS. Almost two thirds of girls (63%) view PMS as a part of womanhood, and the narrow majority affirm discussing PMS openly with relatives or friends (53%) and going to a doctor when necessary (59%). Over half (56%) also agreed for menstrual leave at the workplace. But there is significant hesitation about pharmaceutical management just 13% accept medication and limited faith in lifestyle approaches, with only 31% having confidence that diet and exercise can help to treat PMS. Attitudes regarding shamefulness of PMS were split, with a high percentage unsure, pointing to continued stigma and lack of knowledge.

**Table 4.** Attitude towards Premenstrual Syndrome among Study Participants.

| ATTITUDE | Yes n(%) | No n(%) | Not sure n(%) |
|---|---|---|---|
| PMS is a normal part of being a girl. | 242(63) | 74(19.2) | 68(17.7) |
| Girls should talk openly about PMS with family and friends. | 204(53.1) | 128(33.3) | 52(13.5) |
| Having PMS is something to be ashamed of. | 173(45) | 130(33.9) | 81(21.1) |
| Girls who experience PMS should seek medical help if needed. | 227(59.1) | 90(23.4) | 67(17.4) |

## DISCUSSION

This research evaluated knowledge, attitudes, and perceptions of PMS among low socioeconomic school-going adolescent girls in Karachi, Pakistan. Results indicated significant gaps in awareness and knowledge about PMS despite having a positive attitude towards talking about and dealing with it. The participants' mean age was 14.36 years, indicating a critical stage of development where menstrual health education can significantly influence lifelong attitudes and practices. The majority of the respondents were in secondary school, which emphasizes that health education efforts should be aimed at this level of education. While a high percentage of girls (68.8%) were aware of PMS, mostly through relatives, complete and correct knowledge about symptoms, causes, and management was still limited.

As with earlier research from comparable sociocultural contexts, the most frequently recognized symptoms were cramps (64.2%), pains in the body (65.2%), and irritability (51.1%) symptoms commonly reported in international literature as classic presentations of PMS [9-13]. Nevertheless, recognition of psychological and less conspicuous symptoms was relatively low, such as mood swings (25%) and gastrointestinal issues (9.1%). Insufficient symptom recognition may cause delayed help-seeking and successful symptom management. In addition, almost identical percentages of girls erroneously linked PMS symptoms with either the menstrual phase itself (35.6%) or the premenstrual phase (35.2%), suggesting misinformation regarding when symptoms occur. Only a small majority of just over one-third (36.4%) thought PMS is treatable, while an equally large percentage were uncertain, indicating skepticism regarding available treatment options. These results highlight the need for well-organized, evidence-based menstrual health education programs explaining both physiological mechanisms and practical coping techniques concerning PMS. Consistent with this, earlier studies have proven educational interventions to increase knowledge and improve management of PMS symptoms among adolescent girls, as indicated by school-based health education programs and well-organized teaching interventions implemented in Ilam, Ratia, and other areas through health belief model frameworks [14-16].

Encouragingly, the percept data highlighted broad recognition among participants of PMS as a serious health problem. Almost half (45%) regarded PMS as a serious health problem, and half (50%) accepted that it had potential effects on concentration

and work (academic) ability. Significantly, the largest majority (77%) denied the myth that all girls suffer PMS in an identical way, indicating knowledge of individual difference in symptoms. In addition, almost two-thirds (63%) supported integrating PMS education into school health programs, revealing openness to institutional learning interventions. This is especially true in settings such as Pakistan, where cultural taboos normally constrain public discussion of menstruation and related health concerns. Previous studies in South Asia have also found that adolescent girls tend to possess fragmented knowledge regarding menstruation and PMS, influenced by informal, inconstant sources such as family stories and peer conversations [17-19].

The attitudes data also highlighted a cautiously progressive orientation among participants. Most girls (63%) embraced PMS as a natural aspect of womanhood, and over half reported being willing to talk about PMS openly with family or friends (53%) and go to the doctor if necessary (59%). Support for menstrual leave in the workplace (56%) also indicates a growing awareness of the need to accommodate women's reproductive health needs. But reluctance to accept pharmaceutical management (just 13% agreement) and low levels of confidence in lifestyle changes such as diet and exercise (31%) indicate continued ignorance regarding evidence-based management techniques. Interestingly, opinions on the shamefulness of PMS were split, with 45% agreeing, 34% disagreeing, and a large proportion unsure, reflecting continued stigma and cultural sensitivities that make open discussion difficult. These trends are in line with pre-existing literature [20-22]. Research undertaken in urban India [20], Nepal [21], and Saudi Arabia [22] has likewise indicated that though most adolescent girls recognize PMS as a common occurrence and report being receptive to talking about it, there remains considerable misconceptions regarding management options and cultural taboos that still prevent open discussion. For example, the Indian urban study documented conflicting attitudes with lack of inclination towards treatment-seeking behaviors [20]; the Nepalese study documented broken knowledge and reluctance to manage symptoms in an appropriate way [21]; and the Saudi Arabian study identified stigma and a lack of enough awareness, even when educational institutions offered some exposure [22].

Our results are consistent with literature in low- and middle-income countries, where research has found poor awareness and significant sociocultural barriers to menstrual health including considering menstrual process discussion as a taboo, upholding restriction on girls during menstruation from cooking and relying on false cultural beliefs [23-25]. For example, studies from India and Bangladesh have also found high rates of misinformation, stigma, and secrecy about PMS, resulting in poor symptom management and avoidable academic or psychosocial interference [23-25]. The high level of preference for family-based information among our cohort is consistent with South Asian cultural values placing emphasis on familial authority in reproductive health issues. Nonetheless, dependence on unstructured family knowledge alone risks perpetuating misinformation. Thus, combining formal, school-based menstrual health education with community and parental involvement may provide a balanced and culturally appropriate method for enhancing adolescent girls' knowledge about PMS.

## STRENGTH

The study was performed in school in underprivileged areas of Karachi, where students belong to low-socioeconomic backgrounds. People from such backgrounds often lack knowledge because of low education, and hence the sample selected for this study is a well-suited population, and results are expected to give an accurate picture regarding the PMS syndrome in our targeted population. The study was performed in school settings and resulted in a good response rate and reliable data. The data was directly collected from females not in the presence of their mothers, so they were more comfortable responding, as discussion of such topics is considered taboo among low-educated people. So, the responses may be expected to be unbiased. This study provides a closer picture of understanding of PMS syndrome and their false belief, and hence the data is useful for planning educational interventions.

## LIMITATIONS

This research is subject to multiple limitations that ought to be acknowledged. Firstly, its descriptive cross-sectional nature only samples knowledge, attitude, and perceptions at a unique point in time, which allows for no cause-and-effect implications. Secondly, the sample had been restricted to adolescent girls belonging to low socioeconomic schools in Karachi, which would potentially restrict its generalizability to other settings, socioeconomic communities, or non-school adolescents. Third, self-reported data can be prone to recall bias and social desirability bias, particularly on sensitive issues such as menstruation, which could result in underreporting of misconceptions or stigmatized views. Fourth, although the questionnaire was inclusive, it did not delve into the finer aspects of symptom severity or actual coping practices, which may provide deeper insight. Fifth, however the study was descriptive in nature but there might be clustering as participants were enrolled from different centers. Last, cultural sensitivities may have biased participants to want to report their personal opinions even though confidentiality had been promised. Longitudinal studies in the future with more diverse and larger samples and qualitative elements may offer a more detailed, richer picture of adolescent girls' experiences with PMS in comparable settings.

## RECOMMENDATIONS

An awareness campaign should be initiated in schools for educational purpose. Easily understandable and cultural based educational materials should be prepared targeting the management and coping with PMS symptoms, timelines and physical changes so the girls should identify the changes timely and react sensibly to those changes. Educational sessions should be organized inviting mothers and distributing education booklets to provide accurate information. Even the female teachers and health care

workers should play their role in guiding female students and eliminating misinformation and stigma associated with PMS.

## CONCLUSION

This study highlights substantial knowledge gaps and mixed attitudes towards PMS among low socioeconomic, school-going adolescent girls in Karachi. While many recognize PMS as a legitimate health issue, misconceptions and stigma persist. Targeted, school-based menstrual health education is crucial to improve awareness and empower adolescent girls for better symptom management.

## AUTHORS' CONTRIBUTION

**Shaikh Ali Masood**: Conceptualization, Study Design, Writing Draft, Final approval, final proof to be published.

**Shabbir Ahmed Mallick** and **Hamna Jamal**: Study Design, Critical review and revision the manuscript.

**Maria Murtaza** and **Manahil Nadeem**: Writing Draft.

**Ameera Shabbir**: Methodology, Data analysis and interpretation.

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Declared none.

## ETHICAL DECLARATIONS

### Data Availability Statement

All data collected and analyzed is presented within the manuscript

### Ethical Approval

The study was approved from Liaquat National Hospital Ethics Committee (App#0694-2021-LNH-ERC, Dated: November 1, 2021).

### Consent to Participate

A consent was taken children and from their parents as well.

### Consent for Publication

All author take responsibility for publication of this work

### Conflict of Interest

Declared none.

### Competing Interest/Funding

Declared none.

### Use of AI-Assisted Technologies

The authors declare that no generative artificial intelligence (AI) or AI-assisted technologies were utilized in the writing of this manuscript, in the creation of images/graphics/tables/captions, or in any other aspect of its preparation.

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