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A cross-sectional study to assess the burden of Premenstrual Syndrome in school going adolescent girls of city Faridkot, Punjab

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ABSTRACT

BACKGROUND: Premenstrual syndrome is a cyclic disorder characterized by physical, emotional, and behavioural symptoms that occur during the luteal phase of the menstrual cycle and resolve shortly after the onset of menstruation.

OBJECTIVES: To estimate the proportion of premenstrual syndrome and to study the factors associated with premenstrual syndrome among school-going adolescent girls in city Faridkot, Punjab.

METHODS: A cross-sectional descriptive study was conducted among 380 adolescent girls (aged 10–19 years) from government and private schools in Faridkot. Participants who had attained menarche were included. Premenstrual symptoms were assessed using a pre-tested structured questionnaire based on American College of Obstetricians and Gynaecology criteria. Data was analysed using SPSS version 26.

RESULTS: Among the 380 participants,52.3% reported experiencing physical symptoms. Similarly,51.1% reported experiencing emotional symptoms. Both physical and emotional symptoms were reported by 50.3% of the study participants. 49.5% acknowledged experiencing limitations in day-to-day activities. Sleep duration, recent stressors in life, length of menstrual cycle were the factors significantly associated with premenstrual syndrome.

CONCLUSION: Premenstrual syndrome is highly prevalent among adolescent girls and has a substantial impact on academic performance and psychosocial well-being. Integrating premenstrual syndrome screening and counselling into school health programs and adolescent clinics is crucial.

Keywords: Premenstrual Syndrome, Adolescents, Menstruation, Menarche, School Health.

INTRODUCTION

Adolescence, defined by the WHO, as the age range of 10 to 19 years, is a period of rapid biological, emotional, and psychosocial transformation. During this time, individuals experience growth spurts, hormonal changes, cognitive development, and increasing autonomy. For adolescent girls, menarche marks a significant developmental milestone, signalling the onset of reproductive capability and the beginning of monthly menstrual cycles (1). Menstruation, while a normal physiological process, can be distressing for many adolescents due to lack of awareness, cultural stigmas, and the emergence of menstrual disorders. Among these, premenstrual syndrome (PMS) is frequently reported and is associated with a variety of recurring symptoms that affect the individual's quality of life (2). Premenstrual syndrome (PMS) is a cyclic disorder characterized by physical, emotional, and behavioural symptoms that occur during the luteal phase of the menstrual cycle and resolve shortly after the onset of menstruation. The American College of Obstetricians and Gynaecologists (ACOG) defines PMS as the presence of at least one affective and one somatic symptom occurring during the five days before menses in each of three prior menstrual cycles, which are relieved within four days of onset of menses (3). The exact pathophysiology of PMS is not fully understood. However, the most widely accepted hypothesis

is that fluctuations in ovarian hormones affect neurotransmitter systems in the brain, particularly serotonin and gamma-aminobutyric acid (GABA), leading to the emotional and behavioural symptoms seen in PMS (4). PMS symptoms vary widely among individuals but generally include both physical and psychological complaints. Physical symptoms include breast tenderness, bloating, headaches, fatigue, and weight gain. Psychological and behavioural symptoms consist of mood swings, irritability, anxiety, depression, social withdrawal, and changes in appetite or sleep patterns (5). Globally, PMS prevalence ranges between 47.8% and 91.5%, with adolescent girls being particularly vulnerable. However, in India, PMS is often trivialized as a 'normal part of growing up,' leading to poor recognition and inadequate healthcare-seeking behaviour. Given its profound impact on academic performance, social life, and mental health, PMS deserves greater attention within public health frameworks (6).

Despite its prevalence, PMS is often underdiagnosed or dismissed as a normal part of the menstrual cycle, leading to insufficient clinical attention. International health agencies have increasingly recognized the need to address adolescent menstrual health as part of broader reproductive health programs (7). PMS affects multiple domains of life including academic performance, mental well-being, peer relationships, and extracurricular involvement. Girls may face difficulty concentrating in class, experience fatigue, or be absent from school due to PMS-related symptoms. These disruptions hinder academic success and emotional stability, potentially affecting long-term educational and psychosocial outcomes

(8). This study was conducted to estimate the proportion and factors significant withPMS among adolescent girls in Faridkot, Punjab, and to highlight its implications for adolescent health programs.

MATERIALS AND METHODS
Study setting: This study was conducted in schools of city Faridkot.
Study period: Study was done for a period of 18 months.
Study design: Descriptive study.
Study population: Adolescent school going girls aged 10-19 years who had attained Menarche.
Sampling:
Sample Size: Sample size was calculated by using single proportion size formula (9):
$X = Z\alpha/2^2 * p * (1-p) / MOE^2$
$Z\alpha/2$ = critical value of the Normal Distribution at $\alpha/2$
MOE = margin of error
p = proportion of interest i.e. (68.8%) of PMS in College students in a study conducted by Karpagavalli G and Raj Rani in year 2020 in a nursing college in Chennai (10).

Margin of error 5% (absolute error) at 95% confidence interval.
The sample size (n) using this formula came out to be 340. After taking 10% non-response rate, total sample size came out to be 374. Therefore, an overall sample size taken was 380.

Sampling frame: Adolescent school going girls aged 10-19 years in city Faridkot who had attained menarche.
Sampling unit: Schools of city Faridkot.
Sampling technique: Required sample size
was taken among the schools of city Faridkot using the list of schools from the District Education Officer (DEO). List of both government and private schools was obtained. 50% of government and 50% of private schools were selected randomly. Out of total 380 sample size (50%) i.e., 190 girls were selected from government school and (50%) i.e., 190 girls were selected from private school using probability proportion to sample size (PSS).

Study tool: A self-structured pre-tested questionnaire was used for collection of relevant information about:

1. Socio-demographic profile
2. Physical activity status and Sleep pattern
3. Premenstrual questionnaire

METHODOLOGY
The proposed descriptive study was conducted in the schools of city Faridkot. Prior to commencement of study, list of all the schools in city Faridkot was obtained from District Education Officer (DEO). Out of total list of government and private schools, 50% of government and 50% of private schools were selected randomly. Out of total 380 sample size (50%) i.e. 190 girls were selected from government school and (50%) i.e. 190 girls were selected from private school using PPS. A self-structured, pre-tested questionnaire covering socio-demographic factors like age, school name, religion, class, type of family, family size, occupation and education of parents, monthly family income was obtained. Premenstrual assessment questionnaire was used to verify PMS. Adolescent school going girls aged 10-19 years who had attained menarche were included. Girls and Parents/Guardians who had refused to give consent/assent were excluded from the study.

DATA ANALYSIS

The collected responses were entered in Microsoft® Excel version 2021 and data were examined in IBM® SPSS version 26 statistical tool. Descriptive statistics such as mean, standard deviation, frequencies and percentages were used to summarize the data. Chi-square test was used to find the association between categorical variables. The results were evaluated to draw conclusions. P value < 0.05 was considered to be statistically significant.

RESULTS

217 students who participated in our study were between 14 to 16 years of age group and majority of them were from classes 9th and 10th. 23.7% of the study participants belonged to lower middle class. Table 1 shows the socio demographic profile of the study participants. Figure 1 shows the distribution of study participants based on presence of premenstrual syndrome symptoms (physical or emotional) and limitations in day-to-day activities. Physical symptoms included headache, nausea and vomiting, cramps, bloating, breast tenderness. Emotional symptoms included anxiety, fatigue, insomnia, depressed mood, anger. Limitations in day-to-day activities included missing daily routine activities like playing, going to school, studying, participation in sports, exercise. About 62.3% of the study participants consumed outside food, 42.1% of the participants consumed caffeine. 63.7% of the adolescent girls engaged in some sort of physical activity and 40.2% of the study participants who slept less than 7-8 hours presented with symptoms of premenstrual syndrome. Table 2 shows the lifestyle factors associated with premenstrual syndrome.

Table 1 SOCIO DEMOGRAPHIC PROFILE OF THE STUDY PARTICIPANTS (n=380)

Age (in years)	Frequency(n)	Percentage (%)
10-≥13 years	85	22.4
14-≥16 years	217	57.1
17-≥19 years	78	20.5
Mean Age ± S.D. 14.48 ± 2.17		
Class	Frequency (n)	Percentage (%)
9th	107	28.2
10th	110	28.9
11th	94	24.7
12th	69	18.2
Religion	Frequency (n)	Percentage (%)
Sikh	169	44.5
Hindu	154	40.5
Muslim	17	4.5
Christian	40	10.5
SES (MKSS* Score)	Frequency	Percentage
26-29 (Upper)	67	17.6
16-25 (Upper middle)	73	19.2
11-15 (Lower middle)	90	23.7
5-10 (Upper lower)	85	22.4
<5 (Lower)	65	17.1

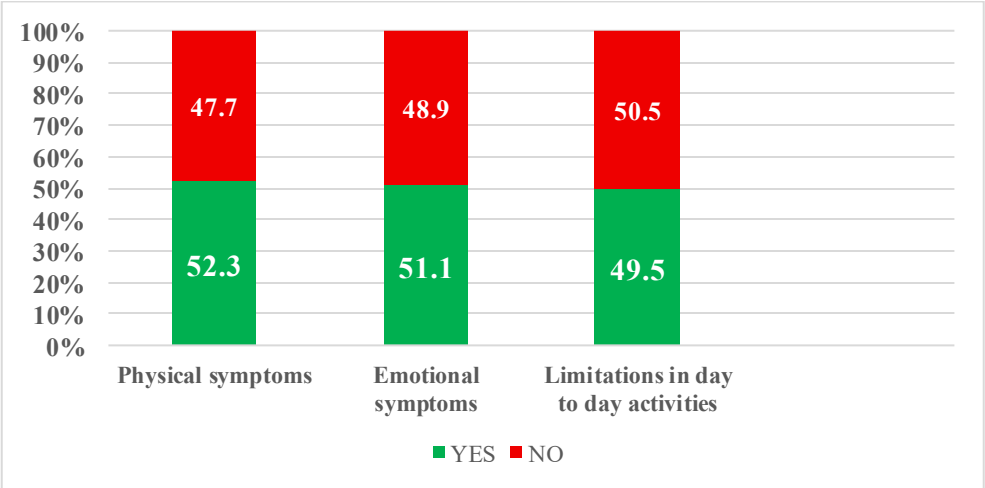

Figure 1 Distribution of the Study Participants According to Their Premenstrual Symptoms and Functional Limitations

Table 2 Association Between Lifestyle Factors and Premenstrual Syndrome

Lifestyle Factors	PMS Present n (%)	PMS Absent n (%)	χ^2 value	p-value
Sleep duration (< 7–8 hrs)	153 (40.2%)	80 (21.1%)	xx	<0.05*
Recent stressors in life (Yes)	120 (31.6%)	60 (15.8%)	xx	<0.05*
Length of menstrual cycle (Irregular)	95 (25.0%)	38 (10.0%)	xx	<0.05*
Consumption of outside food (Yes)	237 (62.3%)	143 (37.6%)	–	NS
Caffeine consumption (Yes)	160 (42.1%)	95 (25.0%)	–	NS

*NS = Not Significant; *$p < 0.05$ = Statistically significant*

DISCUSSION

The present cross-sectional study was conducted among 380 school going adolescent girls in the urban area of Faridkot to assess the proportion of premenstrual syndrome (PMS) and its associated factors. This study aimed to better understand the burden of PMS in adolescence, a vulnerable period marked by significant hormonal and psychological changes. The findings provide valuable insights into the prevalence and symptoms of PMS in an urban school going adolescent population. The proportion of PMS in our study, defined by the presence of physical (52.3%) and emotional (51.1%) symptoms before menstruation, aligns with global and regional estimates. This study highlights PMS as a significant yet underrecognized adolescent health issue in Faridkot. Our findings indicate that over half of the participants experienced PMS symptoms, with 49.5% reporting limitations in daily activities, consistent with Surbhi eotia et al. (2020), who noted that 53.8% of Indian university students reported reduced work efficiency due to PMS (11). The high proportion of Sikh (44.5%) and Hindu (40.5%) participants suggest a representative urban sample, yet these factors did not influence symptom prevalence. The significant impact of PMS on daily activities (49.5% reported limitations) underscores its burden on adolescent well-being, aligning with Karpagavalli and Raj Rani (2020), who reported poorer quality of life among 68.8% of PMS-affected students (12). This study's findings underscore the multifactorial nature of PMS, involving biological, psychological, and social domains. Given the high burden and its impact on quality of life and academic performance, there is a need for school-based health programs focused on menstrual education, nutritional counselling, and stress management. Teachers and parents should also be sensitized to support adolescent girls during their premenstrual phase.

CONCLUSION

The present study was conducted to assess the proportion of premenstrual syndrome and its correlates. The study concluded that PMS is affecting over half with physical and emotional symptoms and significantly impacting daily functioning, emphasizing the need for targeted interventions. Integrating menstrual health education, stress management, and sleep hygiene programs into school curriculum mitigate PMS severity. Community medicine initiatives should promote adolescent-friendly health services to address cultural barriers and improve help-seeking behaviour, enhancing the well-being of school-going girls.

LIMITATIONS

The cross-sectional design of the study cannot establish the effect cause relationship and Premenstrual syndrome was assessed using questionnaires without clinical confirmation, potentially affecting prevalence accuracy.

Conflict of Interest: None
Ethical Approval: Ethical clearance was taken from the institutional ethics committee.

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