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Original Research Article

Prevalence and determinants of premenstrual syndrome among females of the reproductive age group (15-49 years) in Jammu

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ABSTRACT

Background: Premenstrual syndrome (PMS) is one of the most common gynaecological conditions among females which is characterised by a constellation of behavioural, physical and emotional symptoms occurring during the luteal phase of the menstrual cycle. In developing countries like India PMS remains unrecognised even today. There is very little data available regarding the burden of PMS and determinants among women in Jammu.

Methods: A cross-sectional study among 500 females aged between 15–49 years in both urban and rural settings of Jammu was conducted. Convenience sampling was used to select respondents for the study. Data was collected using a structured pre-tested questionnaire which covered menstrual history, socio-demographic characteristics, lifestyle factors and PMS symptoms based on standardised criteria. Descriptive statistical analysis was conducted to estimate prevalence and chi-square test were applied to assess association. A p value <0.05 was considered statistically significant.

Results: The overall prevalence of PMS was found to be 68.4 (n=342). Among the affected females 42.7% had moderate symptoms, 31.6% severe symptoms and 25.7 mild symptoms. Abdominal cramps were the most commonly reported symptoms among these females which were 72%, fatigue 61.8%, irritability 58.2% and mood swings 65.5%. Premenstrual syndrome prevalence was significantly higher among younger females aged between 15 to 24 years 72.8% (p<0.05). The lifestyle and factors like sedentary life style 76.9% and frequent consumption of junk food 78.5% were highly associated with PMS. A strong association was observed with levels of stress, with prevalence increasing from 51.7% in low stress individuals to 82.6% among females with high stress (p<0.05). Menstrual irregularity 75.8% and dysmenorrhea 81.3% where are also highly associated with premenstrual syndrome.

Conclusion: PMS is highly prevalent among women of reproductive age in Jammu, with a large portion experiencing moderate to severe symptoms. Lifestyle and psychological factors especially physical inactivity, diet and stress play an important role in its occurrence. Targeted interventions focusing on modification of lifestyle, awareness for women and integration of PMS management into primary health care and education are recommended.

Keywords: Premenstrual syndrome, Reproductive health, Women's health, Lifestyle, Jammu

INTRODUCTION

Premenstrual syndrome (PMS) is a prevalent and multifaceted condition affecting women during their reproductive years, this condition is characterised by several behavioural, physical and emotional symptoms that recur cyclically during the luteal phase of menstrual

cycle and resolves with the onset of menstruation.^{1,2} These symptoms commonly include fatigue, headache, anxiety, breast tenderness, bloating of abdomen, mood swings and depressive features, all of these symptoms can affect daily functioning and overall quality of life of women.³ In severe cases of premenstrual syndrome may progress to premenstrual dysphoric disorder (PMDD), a more severe

condition associated with significant psychiatric morbidity and functional impairment.⁴ The etiology of PMS is complex and multifactorial, involving hormonal fluctuations and their interaction with neurotransmitters such as gamma-aminobutyric acid (GABA) and serotonin.⁵ The symptom manifestation and severity of PMS is influenced by factors like genetic predisposition, physiological stressors and environmental influence.⁶ Returns from research suggests that lifestyle factors including sleep patterns, dietary habits and physical activity highly influence in modulating PMS.⁷ Consequently, PMS is increasingly recognised not merely as a gynaecological condition but as psycho social disorder that requires a holistic approach for management and understanding.

Due to its high prevalence and impact on productivity and health of women, PMS is considered as a global public health concern. Epidemiological studies indicate considerable variations in prevalence rates largely attributed to differences in diagnostic criteria, study methodologies and cultural context. Research studies estimate that the 47.8% of women throughout the world experience PMS, with reported prevalence is ranging from 98% to 12%.⁸ Furthermore nearly 20% of females experience moderate to severe symptoms that affect their occupational, social and interpersonal functioning.⁹ Research studies conducted across diverse populations including Middle East, Africa and Asia have demonstrated high prevalence rates, underscoring premenstrual syndrome as a global yet context sensitive health problem.^{10,11}

The PMS has been increasingly acknowledged as a significant but under reported health concern among females in India. A recent systematic review and meta-analysis reported a pooled prevalence of approximately 43% Indian women, with higher prevalence observed among adolescent 49.6% compare to adult women.¹¹ However, several individual research studies conducted across various regions of India have reported prevalence rates ranging widely from 14.3% to 74.4% which reflects heterogenous influenced by lifestyle factors, social and cultural demographics.¹² Research studies have also observed that key determinants of PMS among Indian women include educational status, physical activity, body mass index, age, dietary pattern, stress level and menstrual characteristics such as cycles.^{12,13} Adolescent girls and young women in India often reported higher prevalence possibly because of hormonal instability and increase psychosocial stress.¹⁴

Socio-cultural factors in India also influence the reporting, management and perception of the premenstrual syndrome. Menstruation is associated with restrictive practice, taboo and stigma which leads to under reporting of symptoms and delayed health care seeking behaviour among women in India.¹¹ Several factors have been implicated as emerging contributors to menstrual health disorders including PMS these include rapid urbanisation,

dietary habits, consumption of processed foods, rising psychological stress levels and sedentary life style. These factors not only affect the prevalence but also exacerbate the impact and severity of PMS on women's psychological and physical well-being.

Despite a growing body of international and national literature, very limited region-specific studies have been conducted in Northern India especially in Jammu. Jammu represents a unique lifestyle, social and cultural characteristics that may affect the manifestation and determinants of premenstrual syndrome differently as compare to rest of India. Variations in physical activity, access to healthcare, dietary practises and cultural perceptions of menstruation and PMS can contribute to different patterns of severity and prevalence of PMS among women in Jammu. More over most of the studies conducted till date have predominantly focused on specific occupational groups, college students or adolescent girls thereby limiting the generalisability of the findings to the broader reproductive age group of 15 to 49 years.¹⁵ All these gaps Press for a need to generate localised, evidence-based community research on premenstrual syndrome among females in Jammu. Understanding the prevalence and identity find key determinants among the female population is essential for informing public health designers and strategists for targeted intervention. Efforts like these are important for promoting menstrual health awareness, enhancing quality of life and integrating PMS management into basic healthcare systems. Therefore, the current study aims to assess the prevalence and determinants of premenstrual syndrome among females aged between 15 to 49 years in Jammu, thereby contributing to existing body of knowledge and addressing an important gap in the region of reproductive health care research.

METHODS

Study design and setting

A community-based cross-sectional study was conducted to assess the determinants and prevalence of PMS and women of reproductive age between 15 to 49. The study was carried out in both urban and rural settings of Jammu region to ensure adequate representation of diverse socio-demographic and cultural backgrounds. Data was collected directly from participants in their natural living environment through household visits and field surveys, allowing assessment of real-world conditions and practices at the community level.

Study population and eligibility criteria

Women aged between 15 to 49 years of age were considered as study population. Respondents who are pregnant or had reached menopause at that time of data collection which excluded from the current study to avoid physiological variations that could influence menstrual

patterns and PMS symptoms. Only those women who provided informed consent were included in the study.

Sample size and sampling technique

A total sample size of 500 respondents was included in the current study. The sample size was determined based on previous prevalence estimates reported in similar studies and feasibility of the researchers. The convenience sampling method was used to recruit eligible respondents from the community. Efforts were made to include respondents from varied socio-economic and residential backgrounds to improve the diversity of the sample.

Data collection tool and procedure

Data was collected using a self-devised structured questionnaire and administered through face-to-face interviews. The questionnaire was designed to capture information regarding several domains such as socio-demographic characteristics: age, place of residence education, and occupation, menstrual history: age at menarche, cycle regularity, duration of menstrual flow, and presence of dysmenorrhea, lifestyle factors: level of physical activity, dietary habits, and perceived stress levels and assessment of PMS symptoms: Participants were assessed for PMS based on standardized diagnostic criteria, such as those outlined by the American College of Obstetricians and Gynecologists (ACOG). Symptoms were recorded across physical, emotional, and behavioural domains occurring during the luteal phase of the menstrual cycle. The questionnaire was pre-tested through a pilot group to ensure reliability validity of the instrument and clarity. Some changes were made before to final data collection after pre-testing the questionnaire.

Outcome measures

The primary outcome of the current study was to understand the prevalence of PMS among the respondents of the study. PMS was identified based on the presence of one or more than one characteristic symptom occurring cyclically in the pre-menstrual phase. Secondary outcomes of the study included the association of PMS with lifestyle, socio-demographic and menstrual factors.

Statistical analysis

After collection of data the data was entered and analysed using appropriate statistical tools. Descriptive statistics, including frequencies and percentage were used to summarise the characteristics of the current study respondents and estimate the prevalence of PMS and independent variables. The Chi-square test was used to determine statistical significance for categorical variables. P value of less than 0.05 was considered statistically significant.

Ethical considerations

The current study was conducted in accordance with the ethical principles of human research. Proper informed consent was obtained from all the respondents before the collection of data. Confidentiality and anonymity of the respondents was strictly maintained while carrying out this research study. Respondents were informed about the purpose of the study and their right to withdraw at any stage without consequences.

RESULTS

The socio-demographic distribution of the respondents of the study shown in Table 1. Most of the participants were in younger age group of between 15 to 24 years (42%) which indicates a youth centric study population. In the education component most of the participants had completed secondary level of education 36%, while considerable proportion had either primary education or were illiterate, while 28% were either graduates or had which reflects varied educational backgrounds. The study included a balanced representation from urban settings 52% and 48% rural settings, enhancing the generalisation of the findings across different localities. More than two-third of the participants 68.4% were affected by PMS Highlighting its prevalence in among the respondents as shown in Table 2. Majority of the respondents experienced moderate symptoms 42.7% followed by severe symptoms 31.6% and mild symptoms 25.7%. The data suggests that a large population of the respondents experience clinically significant symptoms which affect their daily activity and overall health.

Table 1: Socio-demographic characteristics of the respondents (n=500).

Variable	Category	Frequency (N)	Percentage (%)
Age group (years)	15–24	210	42.0
	25–34	160	32.0
	35–49	130	26.0
Education	Illiterate	70	14.0
	Primary	110	22.0
	Secondary	180	36.0
	Graduate and above	140	28.0
Residence	Urban	260	52.0
	Rural	240	48.0

Table 2: Prevalence and severity of PMS among respondents (n=500).

Variable	Category	Frequency (N)	Percentage (%)
PMS status	Present	342	68.4
	Absent	158	31.6
Severity of PMS (n=342)	Mild	88	25.7
	Moderate	146	42.7
	Severe	108	31.6

The distribution of commonly reported PMS symptoms among affected respondents are presented in Table 3. Abdominal cramps 72% were reported as the most common symptoms, followed by mood swings 65.5% and fatigue 61.8%. Emotional symptoms such as irritability 58.2% were also highly prevalent among the respondents. Almost half of the respondents reported breast tenderness 49.4% and headaches 44.7%. The results demonstrate that PMS manifests as a combination of psychological and physical symptoms which indicates its multidimensional impact on the health of respondents.

Table 3: Distribution of common PMS (n=342).

Symptom	Frequency (%)
Abdominal cramps	72.0
Mood swings	65.5
Fatigue	61.8
Irritability	58.2
Breast tenderness	49.4
Headache	44.7

The association between various determinants and PMS is presented in Table 4. A significantly high prevalence of

Table 4: Association of selected determinants with PMS.

Variable	Category	PMS prevalence (%)	P value
Age group (years)	15–24	72.8	<0.05
	25–34	67.5	
	35–49	61.5	
Education	Lower education	74.3	<0.05
	Graduate and above	61.2	
Dietary habits	Frequent junk food	78.5	<0.05
	Occasional	66.2	
	Rare	54.8	
Physical activity	Sedentary	76.9	<0.05
	Active	58.3	
Stress levels	High	82.6	<0.001
	Moderate	69.4	
	Low	51.7	
Menstrual cycle	Irregular	75.8	<0.05
	Regular	64.2	
Dysmenorrhea	Present	81.3	<0.001

DISCUSSION

The current study provides important insights into the determinants and burden of PMS among females of

Jammu region who are of the age 15 to 24 years 72.8% as compare to older age respondents (p<0.05). A significant association between educational qualification and the symptoms, with higher prevalence among women with lower education level 74.3% as compare to women with high levels of education showing 61.2%.

A crucial role was also played by life style factors. Sedentary lifestyle 76.9% and consumption of junk food 78.5% were highly associated with higher PMS prevalence. Stress among respondents also emerged as a strong determinant, with prevalence increasing markedly from 51.7% among respondents with no stress to 82.6% among those respondent’s experience in high stress (p<0.001). Menstrual characteristics also influence PMS symptoms. Respondents with irregular menstrual cycles had a higher prevalence 75.8% as compared to those respondents with regular cycle 64.2%. Moreover, dysmenorrhea also showed a strong association with PMS the 81.3% of affected respondents reporting PMS symptoms. The results from the study highlights the multifactorial nature of PMS influence by biological factors, behaviour and demographic characteristics.

Jammu region who are of the age 15 to 49, reporting a high prevalence of 68.4%. This prevalence among the female of Jammu is notably higher than national estimate of 43% which has been reported in the recent meta-analysis from

India.¹¹ The prevalence also exceeds the global prevalence of approximately 47.8%.⁸ These variations may be attributed to differences in study population, sociocultural context and diagnostic criteria. The study suggests that PMS may be a particularly significant yet under recognised public health concern in Jammu region.

The severity distribution also shows that a substantial proportion of affected respondents experienced moderate to severe symptoms 74.3%, which has implications for women's productivity and quality of life. The current study aligns with the findings from research studies who emphasise that a considerable subset of females experiences severe symptoms in impaired occupational, social and interpersonal functioning.⁹ The high burden of moderate to severe PMS observed in the current study underscores the need for public health prioritisation and enhanced critical attention.

The symptom profile identified in the current study dominated by mood swings, irritability, abdominal cramps and fatigue was consistent with the current literature available describing PMS as a condition affecting both psychological and physical domains.³ The prominence of emotional symptoms such as irritability and mood swings are because of the neuro endocrine basis of PMS, particularly the role of serotonin this regulation and hormonal fluctuations.¹⁶ This multidimensional symptomatology highlights the need for an integrated management approach for addressing both mental health aspects and physical discomfort caused because of the PMS.

Age has emerged as a significant factor, with the younger women is between 15 to 24 years demonstrating highest prevalence of PMS. The findings of the current study were consistent with the studies conducted by other researchers, indicating that adolescent and young women are more susceptible PMS because of hormonal instability lifestyle transition, and psychological stress.¹⁴ Some research studies also suggest instances that association between PMS and age, suggesting that contextual factors like stress exposure and coping mechanism may mediate this relationship.¹⁶ The higher prevalence among younger females in the current study may also reflect increased emotional, social and educational pressures.

Educational status showed a higher inverse association with PMS, respondents with higher education had lower prevalence is the respondents with lower education level with higher prevalence. Recent studies in India and abroad have observed that education is considered as a protective factor because of improved awareness, has literacy and access to better health resources.^{13,17} Lack of education may also limited understanding of menstrual health and reduce the likelihood of adapting preventive strategies.

Lifestyle factors also played an important role in the occurrence of PMS in the current study. Frequent consumption of junk food is significantly associated with

higher PMS prevalence corroborating with findings of studies conducted by other researchers, who linked unhealthy dietary patterns to increased severity of PMS symptoms.⁷ Likewise sedentary lifestyle was also associated with higher prevalence, while physically active respondents reported lower PMS. This is consistent with studies from researchers that suggest regular physical activity improves levels of endorphins, stabilize hormonal functions and reduces over all stress.¹⁸

Among all the determinants, stress among the women demonstrated the strong association with PMS, with prevalence increasing sharply across stress category. The stressed determinant is highly consistent with the studies which have been conducted previously highlighting stress as a key modifiable risk factor for PMS.¹³

Chronic stress may alter hypothalamic-pituitary-adrenal (HPA) axis functioning and exacerbate hormonal imbalances, thereby intensifying PMS symptoms. The strong statistical significance observed ($p < 0.001$) highlights importance of incorporating stress management interventions into PMS prevention strategies.

Menstrual characteristics, especially irregular cycles and dysmenorrhea where also highly associated with PMS. The higher prevalence among women with irregular cycles aligns with studies suggesting that menstrual irregularities reflect underlying hormonal dysregulation, which may contribute to.¹⁹ The present study observed a significant association with dysmenorrhea, similar to previous studies which suggest that existence of some common physiological mechanisms such as prostaglandin-mediated uterine activity and hormonal changes.

The results of this study are consistent with the multifactorial nature of PMS including biological, psychological, and socio-environmental factors. The relatively higher prevalence in this population than in previous studies may be due to a combination of factors including lifestyle transitions, dietary patterns, and psychosocial stressors specific to the region. Cultural beliefs and attitudes toward menstruation may also play a role in symptom perception and reporting, thus contributing to variability in prevalence estimates.

There are some limitations of the study in spite of its strengths such as relatively large sample size and inclusion of urban and rural populations. The use of convenience sampling may influence the generalizability of the findings and the use of self-reported data may introduce the risk of reporting bias. Moreover, the cross-sectional design does not allow causal inferences. Future studies with longitudinal designs and probabilistic sampling methods are suggested to validate and extend these findings.

In conclusion, the present study adds to the growing literature on PMS by reporting its high prevalence, and identifying key modifiable determinants. The findings highlight the importance of multi-pronged community-

based interventions aimed at lifestyle modification, stress management and menstrual health education. Incorporation of PMS screening and management in the primary health care services may go a long way to improve the quality of life of women in Jammu region and elsewhere.

CONCLUSION

The present study highlights the fact that PMS is a highly prevalent condition among females in the age group 15–49 years in the Jammu region affecting more than two-thirds of the study population. Many women affected suffer from moderate to severe symptoms indicating a major burden which may adversely affect daily functioning, productivity and overall quality of life. The findings indicate that PMS is a major but often neglected public health problem in the field of women's reproductive health.

The study also demonstrates that PMS is not only a biological phenomenon but a multifactorial disorder influenced by a complex interaction of socio demographic, lifestyle and psychosocial factors. Younger age, poor educational status, unhealthy dietary habits, physical inactivity, high stress levels and adverse menstrual characteristics (irregular cycles and dysmenorrhea) were significant determinants of increased prevalence of PMS.

Recommendations

Based on the findings of the study, the following recommendations are proposed.

Awareness and education

There is the need for comprehensive implementation of awareness programme focusing on menstrual health and, which aims at reducing, and hence in knowledge and encouraging timely health care seeking behaviour among women.

Promotion of healthy lifestyle

Encouraging taking of balanced diet and enhancing physical activity among women as it plays a crucial role in protection against PMS.

Stress management strategies

As the study observed strong association between stress and PMS, incorporating stress reduction interventions such as counselling services, meditation and yoga can significantly help in managing PMS symptoms.

School and community-based awareness programmes

Reproductive health education should be a part of school education curriculum and community outreach programmes should be organised to target adolescent girls

and young women who are particularly vulnerable to PMS symptoms.

Integration into primary health care

Routine screening and management of PMS symptoms should be incorporated into healthcare services throughout India to ensure that vulnerable groups get some relief and identification and appropriate interventions, especially in resource limited regions.

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