International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Bemina JA et al. Int J Reprod Contracept Obstet Gynecol. 2024 Aug;13(8):2016-2023
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20242063

Original Research Article

Premenstrual symptoms analysis: severity and correlations across physiological, behavioural, and psychological domains among working women in selected schools at Kalaburagi

Bemina J. A.*, Thereza Mathias

Department of Mental Health Nursing, Laxmi Memorial College of Nursing, Towers, Balmatta, Mangalore, Karnataka India

Received: 09 July 2024
Revised: 23 July 2024
Accepted: 24 July 2024

***Correspondence:**
Dr. Bemina J. A.,
E-mail: beminaja@gmail.com

ABSTRACT

Background: Working women, especially teachers, face unique challenges in managing health issues that impact their professional lives. Premenstrual symptoms (PMS) significantly affect their physiological, behavioural, and psychological well-being, potentially influencing their classroom performance. This study aimed to assess the severity and correlations of PMS across physiological, behavioural, and psychological domains among 100 working women teachers in Kalaburagi. It also explored associations with socio-demographic variables such as menstrual cycle duration and food cravings.
Methods: Data were collected using a cross-sectional correlation research design. Mean scores and standard deviations were calculated for physiological, behavioural, and psychological symptoms. Chi-square tests analysed associations between symptom domains and socio-demographic variables. Correlation analyses assessed relationships between symptom domains.
Results: Physiological symptoms scored a mean of 55.60 (SD=2.4, 70% of max. score), behavioural symptoms 45.32 (SD=2.5, 78% of max.), and psychological symptoms 46.90 (SD=2.3, 80% of max.). Overall mean score was 150.15 (SD=2.4, 75% of max.). Positive correlations were found between physiological and psychological symptoms ($r=0.810$, $p<0.001$), physiological and behavioural symptoms ($r=0.729$, $p<0.001$), and psychological and behavioural symptoms ($r=0.627$, $p<0.001$).
Conclusions: This study highlights the prevalence of PMS among working women, especially teachers, and their potential impact on professional performance and emotional well-being. The findings underscore the need for effective detection and management strategies to enhance the quality of life and work efficiency of affected women. Targeted interventions and workplace support can improve personal and professional outcomes for women experiencing PMS.

Keywords: Correlation, Working women, Teachers, PMS

INTRODUCTION

Premenstrual symptoms (PMS) are a common and often debilitating experience for many women, manifesting as a complex mix of physical, emotional, and behavioural changes that occur in the luteal phase of the menstrual cycle.[1] These symptoms typically emerge 7-14 days before menstruation and subside with its onset. The prevalence of PMS is significant, affecting up to 75% of menstruating women at some point in their lives, with about 20-30% experiencing symptoms severe enough to interfere with their daily activities.[2] Despite its widespread impact, the effects of PMS on working women, particularly in professional environments, remain underexplored.

The impact of PMS extends beyond individual health to encompass broader societal and economic implications, particularly in the context of professional environments. For women in careers that demand high levels of concentration, emotional stability, and physical endurance such as teaching the challenges posed by PMS can be particularly daunting.[3] Imagine a teacher preparing for a day of lessons, managing a classroom, and engaging with students, all while grappling with intense abdominal cramps, irritability, or debilitating fatigue. These symptoms not only affect personal comfort but can also impair job performance, strain interpersonal relationships with colleagues and students, and lead to increased absenteeism during peak symptom periods.[4]

Moreover, the fluctuating nature of PMS symptoms presents a unique challenge in workplace settings where consistency and reliability are valued. Unlike chronic conditions that may have more predictable patterns, PMS symptoms can vary widely from one cycle to the next, making it difficult for affected individuals to anticipate and manage their impact effectively. This unpredictability can create additional stress and anxiety, compounding the already burdensome effects of the syndrome on professional life.

Despite its prevalence and impact, research on PMS in the context of professional women, especially educators, remains relatively sparse. Much of the existing literature focuses on clinical aspects or general population studies, often overlooking the specific challenges faced by women in high-pressure work environments.

This gap in understanding not only limits our knowledge of how PMS uniquely affects working women but also hinders the development of targeted interventions and support systems that could alleviate these challenges effectively.

This study aims to fill the gap in existing research by assessing the correlation of behavioural, physiological, and psychological PMS among working women, with a focus on teachers. By exploring how these symptoms interrelate and impact professional performance and emotional well-being, this research seeks to highlight the need for more robust support systems and interventions in the workplace.

The significance of this study lies in its potential to inform policy changes and workplace practices that can enhance the quality of life for working women, ensuring they receive the necessary support to manage the PMS effectively.

Statement of the problem

PMS analysis: Severity and correlations across physiological, behavioural, and psychological domains among working women in selected schools at the Kalaburagi.

Objectives

Objectives were to assess the severity of physiological, behavioural, and psychological PMS among working women, to examine correlations between physiological, behavioural, and psychological symptoms of PMS and to explore associations between socio-demographic variables (such as menstrual cycle duration and dietary habits) and the severity of PMS among working women.

Assumption

PMS are prevalent among working women, particularly those in the teaching professions.

PMS significantly impact the professional performance of working women, potentially affecting their effectiveness in the classroom.

METHODS

The study utilized a descriptive cross-sectional research design to explore the correlation among physical, psychological, and behavioural domains of PMS across different government, private and aided schools in Kalaburagi region between June to September 2022. The study protocol was approved by the ethics committee of ESIC medical college and hospital, Kalaburagi. Cluster random sampling was employed to ensure representation and written informed consent was obtained from all participants and were assured that their information would be kept confidential. Inclusion criteria were women aged between 22 to 49 years, regular menstrual cycle, PMSS score of above 40. Exclusion criteria were women who were diagnosed with polycystic ovarian disease, lactation amenorrhea, with oral contraceptives, pelvic inflammatory diseases, and diabetes and hypertensive disorders.

Data was collected using a screening tool for selecting the samples and self-administered questionnaire for information's regarding back ground variables, a standardised premenstrual symptom scale to assess the severity from 100 women working as teachers in selected schools at Kalaburagi.

Development of tool

A screening tool, background variable and a standardized premenstrual symptom scale were considered after a comprehensive review of literature, personal experience, and expert discussions.it has two parts such as:

Part I Background variable

This section gathered information on: age, place of residence, educational status, marital status, type of institution, monthly income, age at menarche, duration of menstrual cycle, family history of PMS, dietary habits and food cravings.

Part II: Standardized PMS scale

It is comprised of 40 questions with three subscales (16 items physiological, 12 items psychological and12 items behavioural symptoms), it is a five-point Likert type scale varying from no symptoms to very severe. Responses were scored as follows: "never" is 1, "rarely" is 2, "sometimes" is 3, "very often" is 4, and "always" is 5. The PMSS scores range from 40 to 200, with 40-80 indicating mild symptoms, 81-120 indicating moderate symptoms, 121-160 indicating severe symptoms, and 161-200 indicating very severe symptoms. PMSS has a validity of the 0.81 and a reliability of the 0.97.

The collected data were coded and entered into the version 21 statistical package for the social sciences. Descriptive statistics were providing for background variables describing frequency and percentage distribution medians/interquartile ranges (IQRs) for continuous variables. Mean and standard deviation were calculated to assess the PMS among working women. The correlation coefficient (r value) was used to determine the relationship between PMS and various factors. Data visualization was employed where appropriate, with results presented in the graphical formats to enhance the clarity and comprehension.

Statistical anlaysis

The Chi-square test was employed to examine the relationship between selected variables of adolescents and their PMS, specifically among working women.

RESULTS

A total of 100 working women were enrolled in the study, achieving a response rate of 100%. The majority of participants were in the age groups of 33-37 years (27%) and 38-45 years (37%). Most participants lived in urban areas (39%). A significant majority were married (75%). An overwhelming 86% reported a family history of PMS, with mothers being the most commonly cited family members (52%). A high percentage (82%) experienced food cravings, predominantly for sweets (54%).

Figure 1 shows the age distribution of the participants, with the largest groups being 38-45 years (37%) and 33-37 years (27%). Figure 2 illustrates that a significant majority (86%) of the participants reported a family history of PMS, with mothers being the most commonly cited family members (52%). As depicted in Figure 3, most participants lived in urban areas (39%), followed by semi-urban (31%) and rural areas (30%). Figure 4 shows that 75% of the participants were married, 25% were unmarried, and none were divorced. Figure 5 details the specific family members with a history of PMS, with mothers being the most frequently cited (52%). Figure 6 reveals that 82% of participants experienced food cravings, while 18% did not. As shown in Figure 7, among those who experienced food cravings, sweets were the most common (54%), followed by dark chocolates (14%), salty foods (12%), and sour foods (12%).

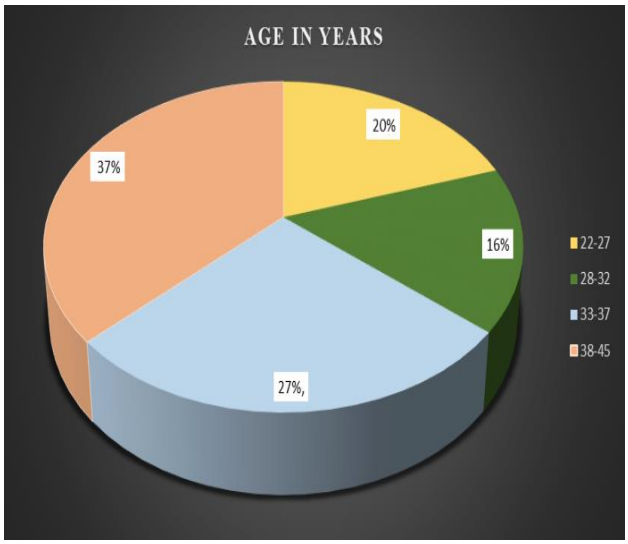

Figure 1: Age distribution.

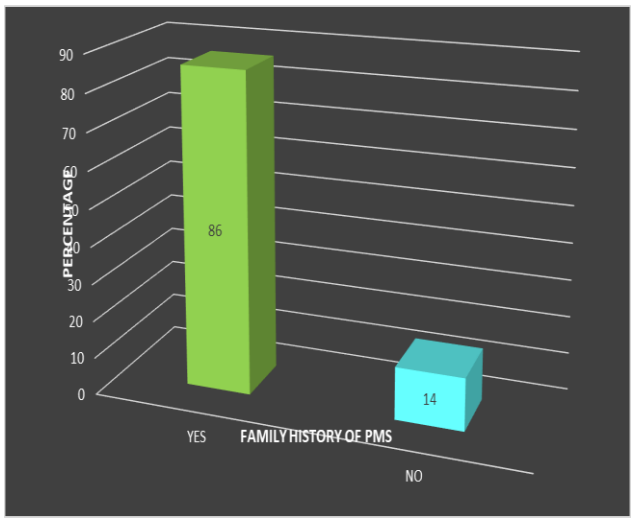

Figure 2: Family history of PMS.

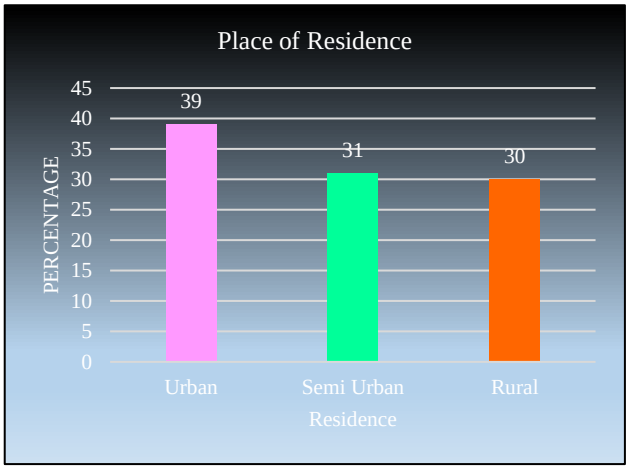

Figure 3: Distribution of residence.

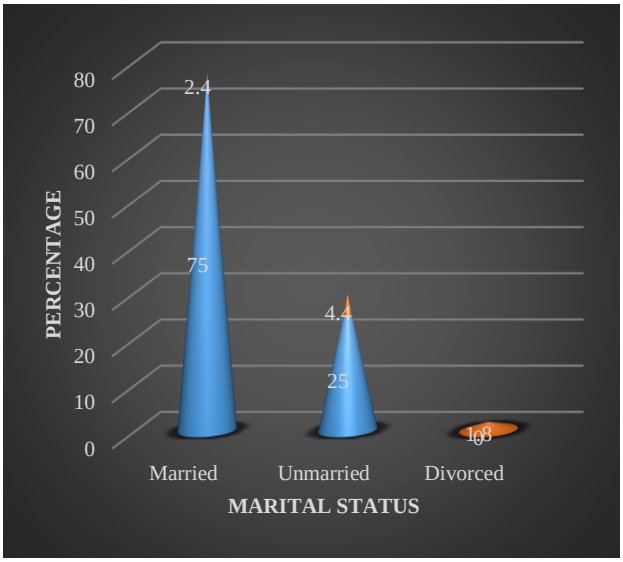

Figure 4: Distribution of marital status.

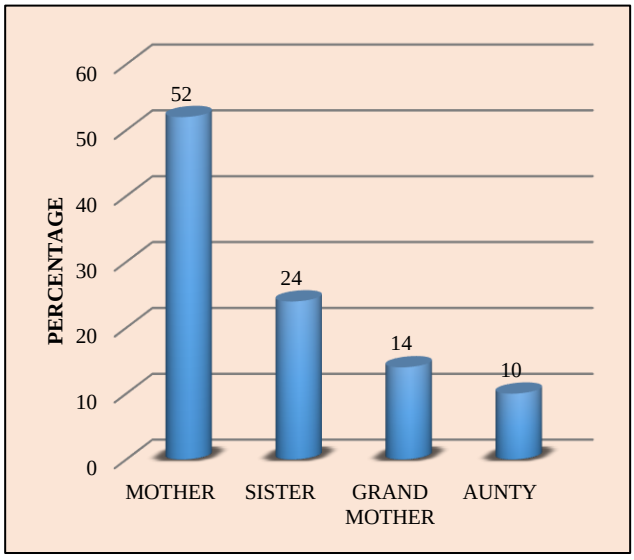

Figure 5: Distribution of specific family members with PMS history.

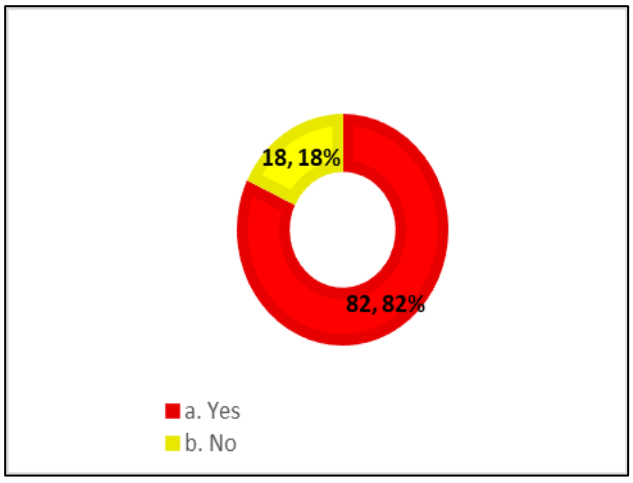

Figure 6: Prevalence of food craving.

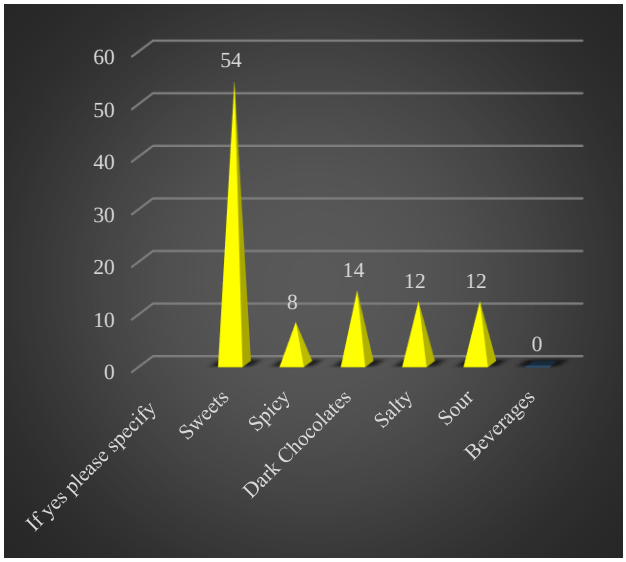

Figure 7: Distribution of specification of food cravings.

Part II: Severity of PMS across different domains

Table 1 illustrates the severity of PMS across physiological, behavioural, and psychological domains among the participants. In the physiological domain, the mean score of 55.60 (SD=2.4) suggests that participants experienced symptoms that accounted for 70% of the maximum possible score of 80. This indicates a moderate level of physiological symptoms. Regarding behavioural symptoms, participants scored an average of 45.32 (SD=2.5), representing 78% of the maximum possible score of 60, suggesting a relatively higher severity compared to physiological symptoms. In the psychological domain, participants scored an average of 46.90 (SD=2.3), representing 80% of the maximum possible score of 60, indicating a significant level of psychological symptom severity. Overall, the total mean score across all domains was 150.15 (SD=2.4), representing 75% of the maximum possible score of 200, reflecting a substantial burden of PMS on the participants.

Correlation analysis between different domains of the PMS

Table 2 depicts the correlations between different domains of PMS. There was a strong positive correlation between the physiological and psychological domains ($r=0.810$, $p<0.001$), with the physiological domain explaining 66% of the variance in the psychological domain ($r^2=0.656$). Similarly, the physiological and behavioural domains showed a strong positive correlation ($r=0.729$, $p<0.001$), with the physiological domain explaining 53% of the variance in the behavioural domain ($r^2=0.531$). The psychological and behavioural domains also had a significant positive correlation ($r=0.627$, $p<0.001$), with the psychological domain explaining 63% of the variance in the behavioural domain ($r^2=0.627$).

Association of PMS with selected demographic variables

Table 3 reveals associations between specific socio-demographic variables and the severity of PMS. Duration of menstrual cycle showed significant association with premenstrual symptom severity (χ^2=44.786, p=0.001). Additionally, food cravings were significantly associated with the severity of PMS (χ^2=13.775, p=0.003). These findings suggest that certain aspects of menstrual health and dietary habits may influence the severity of PMS.

Table 1: Severity of PMS across different domains.

Areas	Max.scores	Mean	SD	Mean (%)
Physiological	80	55.60	2.4	70
Behavioral	60	45.32	2.5	78
Psychological	60	46.90	2.3	80
Total	200	150.15	2.4	75

Table 2: Correlation analysis between different domains of PMS.

Domains		R	P value	R^2	Percentage of domain (1) determined domain (2)
1	**2**				
Physiological	Psychological	0.810	0.001	0.656	66
Physiological	Behavioral	0.729	0.001	0.531	53
Psychological	Behavioral	0.627	0.001	0.627	63

Table 3: Associations between specific socio-demographic variables and the severity of PMS.

Back ground variables	Premenstrual symptom scale			Percentage (%)	X^2	P value
	Moderate	Severe	Very severe			
Age (in years)						
22-27	2	14	4	20	2.59, df=6	0.858
28-32	0	12	4	16		
33-37	2	18	7	27		
38-45	4	20	13	37		
Place of residence						
Rural	4	18	08	30	1.40, df=4	0.843
Semi urban	1	20	10	31		
Urban	2	28	09	39		
Educational status						
BSc/B. Ed	4	12	10	26	5.47, df=8	0.705
MSc/M. Ed	0	18	6	24		
BA/B. Ed	2	16	4	22		
MA/M. Ed	2	14	6	22		
Others	0	6	0	6		
Marital status						
Married	4	50	21	75	2.01, df=2	0.336
Unmarried	4	16	6	25		
Divorced	0	0	0	0		
Name of the institution						
Government	4	22	10	36	2.52, df=4	0.641
Private	4	22	06	32		
Aided	0	22	10	32		
Monthly income (INR)						
≤15000	0	4	4	8	5.28, df=8	0.727
15001-25000	4	20	2	26		
25001-35000	2	24	10	36		
35001-40000	2	12	6	20		
≥40001	0	6	4	10		
Age at menarche (in years)						
≤3	2	8	6	16	3.015, df=4	0.555
13-16	6	38	16	60		
≥16	0	20	4	24		

Continued.

Back ground variables	Premenstrual symptom scale			Percentage (%)	X^2	P value
	Moderate	Severe	Very severe			
Duration of menstrual cycle (in days)						
23	10	0	2	12	44.78, df=6	0.001
24	4	2	14	20		
28	0	50	10	60		
35	0	10	4	8		
Family history of PMS						
Yes	14	34	38	86	5.85, df=2	0.053
No	2	12	0	14		
If yes please specify						
Mother	2	28	22	52	13.32, df=8	0.101
Sister	2	14	8	24		
Grandmother	0	10	4	14		
Aunty	0	10	0	10		
Dietary habits						
Vegetarian	2	12	8	22	1.73, df=4	0.785
Non vegetarian	0	10	2	12		
Mixed	6	44	16	66		
Food cravings						
Yes	4	38	20	82	13.77, df=2	0.003
No	4	8	6	18		
If yes please specify						
Sweets	0	44	10	54	13.99, df=10	0.173
Spicy	0	4	12	8		
Dark chocolates	0	8	6	14		
Salty	0	8	4	12		
Sour	4	8	0	12		
Beverages	0	0	0	0		

DISCUSSION

Working women face significant challenges due to the prevalence of PMS, which can severely impact their work productivity and functioning. This study specifically examines the impact of PMS on these aspects and provides compelling evidence of its disruptive effects on daily work routines and activities of daily living (ADLs).

The aim of the present study was to assess the severity of physiological, behavioural, and psychological PMS in working women, to examine correlations between these symptoms, and to explore associations between socio demographic variables and symptom severity. The results provide valuable insights into the multifaceted impact of PMS on working women, particularly women in teaching occupations.

The results show that PMS significantly affect working women, with the overall mean reflecting considerable distress. Physiological symptoms accounted for 70% of the maximum possible score, behavioural symptoms for 78% and psychological symptoms for 80%. These results are consistent with previous research indicating a high prevalence and severity of PMS in women. One study found that mean scores on psychiatric symptoms such as aggression, sadness, anxiety and interpersonal sensitivity were significantly higher in women with PMS compared to healthy women. These symptoms increased in severity from mild to severe PMS, emphasizing the need for healthcare professionals to closely monitor the mental health of women with PMS. This pattern is consistent with our findings, in which mental health problems were most pronounced among participants.[5] In addition, another study showed that the severity of PMS symptoms significantly affected the daily activities and quality of life of women of childbearing age.[6]

The strong positive correlations between physiological and psychological symptoms (r=0.810), physiological and behavioural symptoms (r=0.729), and psychological and behavioural symptoms (r=0.627) indicate that PMS are interrelated. This is supported by a study which found that physiological symptoms often exacerbate psychological and behavioural symptoms, creating a cycle of distress that interferes with women's daily lives.[7] As these women rarely seek the necessary medical help for their menstrual symptoms, their daily lives are disrupted, leading to physical and psychological discomfort.

A study of women with PMS and PMDD who had significantly higher levels of stress, anxiety, and depression and lower sleep quality than the control group underscores the impact of physical symptoms on psychological well-being, noting that physical discomfort can significantly affect mood and behaviour, leading to

increased distress during the premenstrual phase.[8] Similarly, one study showed that women with severe physical symptoms were more likely to report increased emotional and behavioural problems, reinforcing the associations observed in our study.[9]

The significant association between menstrual cycle length and premenstrual symptom severity (χ^2=44.786, p=0.001) emphasizes the influence of menstrual health on symptom severity. This finding is consistent with Sternfeld et al who reported that differences in menstrual cycle characteristics can significantly influence the severity of PMS.[10] The significant association between food cravings and symptom severity (χ^2=13.775, p=0.003) is also consistent with Dye and Blundell, who found that dietary habits and cravings can exacerbate PMS.[11]

A study has shown that women with PMS problems are more likely to consume foods high in simple sugars, which increases the risk of PMS. Therefore, a healthy diet rich in complex carbohydrates and low in simple sugars has been recommended to prevent PMS.[12] In another study, poor dietary habits were associated with more severe PMS, suggesting that dietary interventions may be beneficial for women with PMS.[13] A high prevalence of PMS was found among university students, with smoking and high consumption of foods high in calories, fat, sugar and salt identified as strong risk factors for PMS.[14]

The high prevalence of PMS in teachers suggests a potential impact on their job performance. Previous studies have found that PMS significantly impairs attention and concentration (Digit span forward test p=0.023). Therefore, PMS may affect cognitive functioning, mood, and energy levels, which are critical for effective teaching.[15] Our findings emphasise the need for workplace interventions and support systems to mitigate the effects of PMS on job performance.

This is also confirmed by Woods et al who found that severe PMS in working women can lead to increased absenteeism and lower productivity, which affects overall work performance and satisfaction.[16] In addition, Bertone-Johnson et al. found that emotional symptoms such as irritability and depression can significantly affect workplace interactions and efficiency.[17]

Limitations

This study's limitations include its cross-sectional design which restricts the conclusions that can be drawn about causal relationships, and the use of self-reported data which is prone to biases one of its weaknesses. To gain a deeper understanding of the temporal links between symptoms and their influence on professional performance, longitudinal designs should be taken into account in future study. Furthermore, investigating the effectiveness of different interventions like dietary changes and stress-reduction strategies may offer practical advice for reducing PMS in working women.

CONCLUSION

Understanding the complexities of PMS and its impact on working women is not just a matter of health but also a critical aspect of promoting gender equity and workplace well-being. By illuminating these issues through rigorous research and advocacy. This study emphasizes the prevalent nature of PMS among working women and how it affects their ability to function in the workplace. The necessity for all-encompassing methods to address PMS is highlighted by significant links observed among several symptom domains. Relationships with socio demographic factors imply that personalized interventions taking food and menstrual health into account could be advantageous. These findings contribute to the to a more comprehensive approach to women's health in professional settings, ultimately striving for a workplace environment where every individual can perform at their best, free from the undue burdens of menstrual-related health challenges and growing body of literature on PMS and provide a foundation for future research and workplace policies aimed at supporting women in their professional roles.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Freeman EW, Sammel MD, Lin H, Gracia CR. Duration of menstrual cycle irregularity during the menopausal transition. Arch Sexual Behavior. 2020;49(2):649-55.
2. Shahhosseini Z, Pourasghar M, Khalilian A, Salehi F. The effect of massage therapy on premenstrual syndrome: A systematic review and meta-analysis of randomized controlled trials. Complementary Therapies Clin Pract. 2021;43:101340.
3. Reed SC, Levin FR, Evans SM. Changes in mood, cognitive performance, and appetite in the late luteal and follicular phases of the menstrual cycle in women with and without PMDD (premenstrual dysphoric disorder). Hormones Behavior. 2020;119:104634.
4. Shin JH, Kim JY, Yi KW. Effects of premenstrual syndrome on work productivity and quality of life among Korean women: A nationwide cross-sectional study. J Obstetr Gynaecol Res. 2023;49(1):237-44.
5. Firoozi R, Kafi M, Salehi I, Shirmohammadi M. The relationship between severity of premenstrual syndrome and psychiatric symptoms. Iran J Psychiatry. 2012;7(1):36-40.
6. Dennerstein L, Lehert P, Bäckström TC, Heinemann K. The effect of premenstrual symptoms on activities of daily life. Fertil Steril. 2010;94(3):1059-64.
7. Lanza di Scalea T, Pearlstein T. Premenstrual Dysphoric Disorder. Med Clin North Am. 2019;103(4):613-28.
8. Jadhav A, Chaudhury S, Saldanha D. A study of prevalence and psychological correlates of

premenstrual syndrome and premenstrual dysphoric disorder. Med J DY Patil Vidyapeeth. 2022;15(6):895-905.
9. Borenstein JE, Dean BB, Endicott J, Wong J, Brown C, Dickerson V, Yonkers KA. Health and economic impact of the premenstrual syndrome. J Reprod Med. 2003;48(7):515-24.
10. Sternfeld B, Swindle R, Chawla A, Long S, Kennedy S. Severity of premenstrual symptoms in a health maintenance organization population. Obstet Gynecol. 2002;99(6):1014-24.
11. Dye L, Blundell JE. Menstrual cycle and appetite control: implications for weight regulation. Hum Reprod. 1997;12(6):1142-51.
12. Yılmaz M, Mucuk S, Atuk-Kahraman T. Dietary factors associated with premenstrual syndrome: A cross-sectional study of Turkish university students. Prog Nutr. 2021;23(4):e2021174.
13. Raval CM, Panchal BN, Tiwari DS, Vala AU, Bhatt RB. Prevalence of premenstrual syndrome and premenstrual dysphoric disorder among college students of Bhavnagar, Gujarat. Indian J Psychiatry. 2016;58(2):164-70.
14. Hashim MS, Obaideen AA, Jahrami HA, Hadia R, Hani JH, Alaa AO, et al. Premenstrual syndrome is associated with dietary and lifestyle behaviors among university students: A cross-sectional study from Sharjah, UAE. Nutrients. 2019;11(8):1939.
15. Kavaklı Z, Gür Özmen S. Effects of premenstrual syndrome and giving birth on women's cognitive abilities. BAU Health Innov. 2023;1(2):65-71.
16. Woods NF, Lentz MJ, Mitchell ES, Heitkemper M, Shaver J, Henker R. Perceived stress, physiologic stress arousal, and premenstrual symptoms: group differences and intra-individual patterns. Res Nurs Health. 1998;21(6):511-23.
17. Bertone-Johnson ER, Hankinson SE, Willett WC, Johnson SR, Manson JE. Adiposity and the development of premenstrual syndrome. J Womens Health (Larchmt). 2010;19(11):1955-62.

Cite this article as: Bemina JA, Mathias T. Premenstrual symptoms analysis: severity and correlations across physiological, behavioural, and psychological domains among working women in selected schools at Kalaburagi. Int J Reprod Contracept Obstet Gynecol 2024;13:2016-23.