STUDY OF PREVALANCE OF PREMENSTURAL SYNDROME (PMS) AMONG HEALTHCARE WORKERS IN A TERITARY CARE HOSPITAL CHENNAI

* SARU SREE MU [1] , PREETHI B [2], MEENA T S [3], JASMINE KAVITHA WASHINGTON [4]

Department of Obstetrics and Gynecology, Sree Balaji Medical College and Hospital , India

musarusree@gmail.com[1], drpreethib@gmail.com[2] meenats@gmail.com[3], drkavithawashington@gmail.com[4]

Abstract

Premenstrual syndrome refers to distressing physical, psychological, and behavioural symptoms that are not caused by organic disease it regularly occurs before the menstrual cycle and subsides after the onset of menses. In developing countries like India, the stigma surrounding menstruation is a big barrier to seeking help for physical and mental discomfort. As healthcare workers live a more hectic life more knowledge and awareness to be given. Hence, this study was conducted to estimate the prevalence of premenstrual syndrome among healthcare workers. A survey was taken with a questionnaire among 390 healthcare workers 18-35 years of age containing signs and symptoms of premenstrual syndrome. Data collected were analysed through tables using proportions and percentages. In this current study, PMS was present among 52.3% of the healthcare workers while 47.7% had no PMS. The mean age of menarche among healthcare workers with PMS was 13. ±3years. The association between physical activity, BMI, Sleep habits, diet, and PMS was found to be highly significant. This study shows the prevalence of PMS among women in healthcare setups. Therefore measures to be taken to reduce the incidence, to conduct awareness programs, improving knowledge about PMS thereby improving quality of life.

*Keyword**:** HealthCare worker, Premenstrual syndrome, BMI*

Introduction

A cyclical phenomenon that manifests in the late luteal phase of the menstrual period is premenstrual syndrome or PMS[1]. A collection of upsetting psychological, emotional, and physical symptoms known as PMS begins one week before the beginning of menstruation and ends a week later.

The American College of Obstetrics and Gynaecology (ACOG) guidelines for PMS include one or more somatic (abdominal bloating, headache, breast tenderness, swelling of extremities), or affective (anger, outburst, depression, anxiety, confusion, irritability, and social withdrawal) symptoms that negatively impact a woman's function and lifestyle and occur five days before menses[2]. When the menses start, the symptoms go away in four days, and they don't come back until the cycle reaches thirteen days.

Premenstrual syndrome is characterized by a range of symptoms, including mood swings, headaches, anxiety, disturbed sleep, general aches, appetite changes, irritability, depression, bloating, cramping, nausea, vomiting, fatigue, and breast tenderness[3]. The social and interpersonal relationships, quality of life, academic achievement, daily activities, and occupational productivity are all impacted by the aforementioned symptoms[4].

Dates still matter in developing nations like India where there are still stigmas associated with menstruation. These stigmas are a major obstacle to women seeking assistance. All women experience PMS, an ordinary menstrual disorder that has an impact on relationships, activities, academic performance, and cognitive function. It also affects healthcare workers[5].

While menstruation and awareness of menstrual hygiene have been the subject of numerous studies, PMS, which is more significant, has received less attention[6].

Given the paucity of research on PMS, more research is required to facilitate a simple diagnosis and raise awareness and knowledge[7]. This will assist in lessening the severity and prevalence of PMS. Thus, the purpose of this study was to determine how common premenstrual syndrome is among healthcare professionals[8].

Materials and Methods:

STUDY DESIGN AND SETTING:

A questionnaire study from 390 healthcare workers aged 18 to 35 years was conducted at Tertiary Care Hospital, Chennai.

INCLUSION CRITERIA:

1. 18–35-year-old female healthcare worker
2. People are willing to join the study.

EXCLUSION CRITERIA:

1. Amenorrhea
2. Irregular menstruation for the previous six months.
3. Known case of any medical disorders Polycystic ovarian disease, thyroid disorder
4. Known case of any psychological illness

STUDY TOOL:

Predesigned, semi-structured self-administered questionnaire.

METHODS OF COLLECTION OF DATA:

Before any data was collected and healthcare professionals gave their informed consent, the purpose of the current study was explained. a self-administered, predesigned questionnaire. Premenstrual syndrome symptoms, lifestyle factors, menstrual cycle characteristics, and sociodemographic details are all covered in the questionnaire. Extensive measures were implemented to preserve the confidentiality and privacy of the research participants.

STATISTICAL METHODS:

The Statistical Package for Social Sciences (SPSS) version 19 was used to analyze the data that had been gathered and entered into an Excel sheet. For quantitative variables, descriptive statistics including mean, standard deviation, as well as proportions (%) were computed. The paired t-test and the independent sample t-test were implemented to evaluate the hypothesis Chi-Square test. A P-value of less than 0.05 was deemed statistically significant.

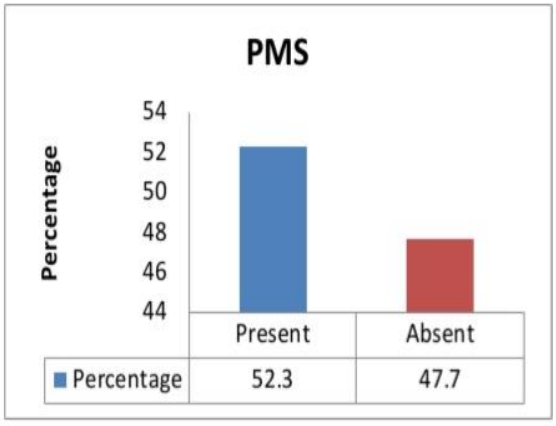
Results

In the present investigation, premenstrual syndrome was present among 52.3% of the healthcare workers while 47.7% of the women had no PMS. [Figure 1] [Table 1]

Table 1: PMS among the study participants

PMS	Frequency	Percentage
Present	204	52.3
Absent	186	47.7
Total	390	100.0

Figure 1: PMS among the study participan

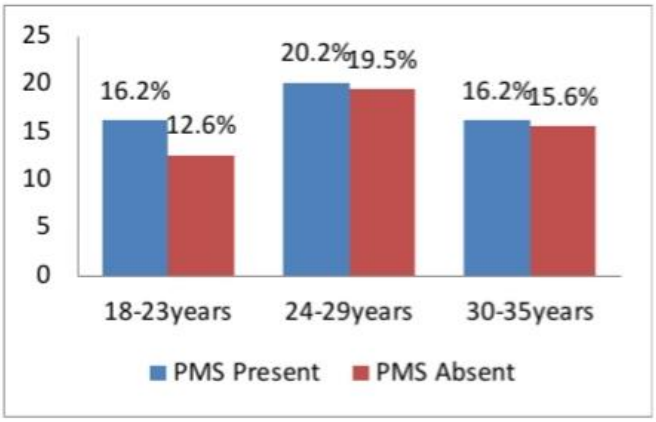


Of the 112 people participating in the 18–23 age groups, 63 had PMS, and of the 154 participants in the 24-29 age group, 78 had PMS. In the 30-to 35-year-old age range, 63 out of 124 participants experienced PMS [Table 2] .There was no statistical association recorded for PMS based on the age group in our study (p-value =0.8472). [Figure 2]

Table 2: Age group vs PMS

Age group	PMS Present	%	PMS Absent	%	Total	p-value
18-23years	63	16.2	49	12.6	112	0.8472
24-29 years	78	20.0	76	19.5	154	
30-35 years	63	16.2	61	15.6	124	
Total	204	52.3	186	47.7	390	

Figure 2: Age group vs PM



The mean duration of sleep among participants with PMS was 6.7±1.8 hours while among participants without PMS was 8.2±1.2 hours, with a highly significant difference in the mean duration of sleep and PMS (p-value =0<0.0001) [Figure 3] [Table 3]

Table 3: Mean duration of sleep vs. PMS

Parameter	PMS Present	PMS Absent	p-value
The mean duration of sleep (in hours)	6.7±1.8	8.2±1.2	<0.0001*

*Significant

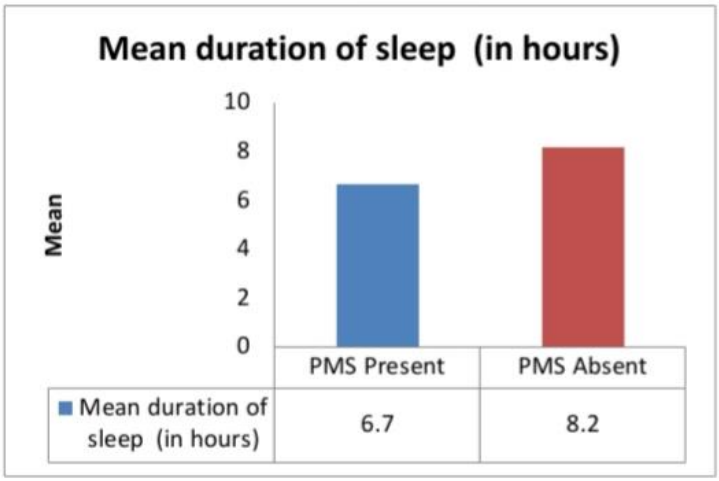


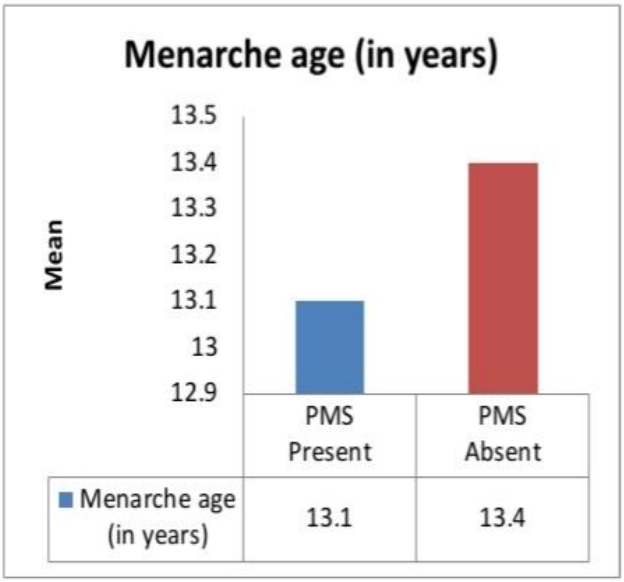
Figure 3: Mean duration of sleep vs PMS

The mean age of menarche among healthcare women with PMS was 13.1±1.2 years while among healthcare women without PMS was 13.4±1.3 years with hardly any major distinction between menarche age and PMS (p-value =0.7341). [Figure 4] [Table 4]

Table 4: Menarche age vs. PMS

Parameter	PMS Present	PMS Absent	p-value
Menarche age (in years)	13.1±1.2	13.4±1.3	0.7341

Figure 4: Menarche age vs. PMS



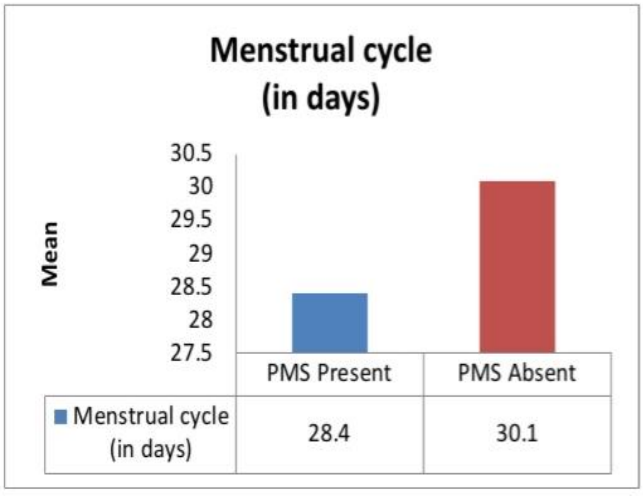
On assessing the mean menstrual cycle, among participants with PMS, the menstrual cycle was noted as 28.4±1.8 days whereas among participants without PMS, the menstrual cycle was 30.1±4.1 days [Table 5]. The difference in mean menstrual cycle among healthcare workers with and without PMS was statistically significant (p-value =0.003). [Figure 5]

Table 5: Menstrual cycle vs. PMS

Parameter	PMS Present	PMS Absent	p-value
Menstrual cycle (in days)	28.4±1.8	30.1±4.1	0.003*

*Significant

Figure 5: Menstrual cycle vs PMS



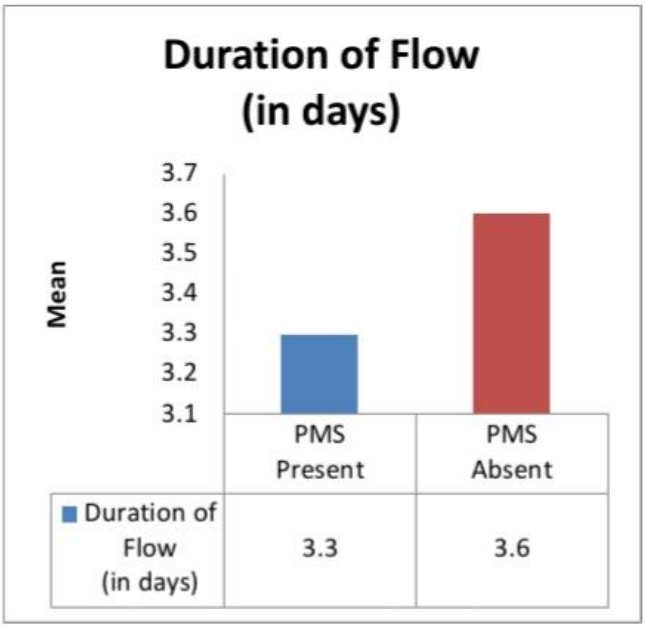
Based on the duration of flow among participants with PMS, the mean duration of flow was 3.3±1.1 days while among participants without PMS was 3.6±1.2 days, with a significant difference in the mean duration of flow based on PMS (p-value =0.0104). [Table 6] [Figure 6]

Table 6: Duration of Flow vs. PMS

Parameter	PMS Present	PMS Absent	p-value
Duration of Flow (in days)	3.3±1.1	3.6±1.2	0.0104*

*Significant

Figure 6: Duration of Flow vs PMS



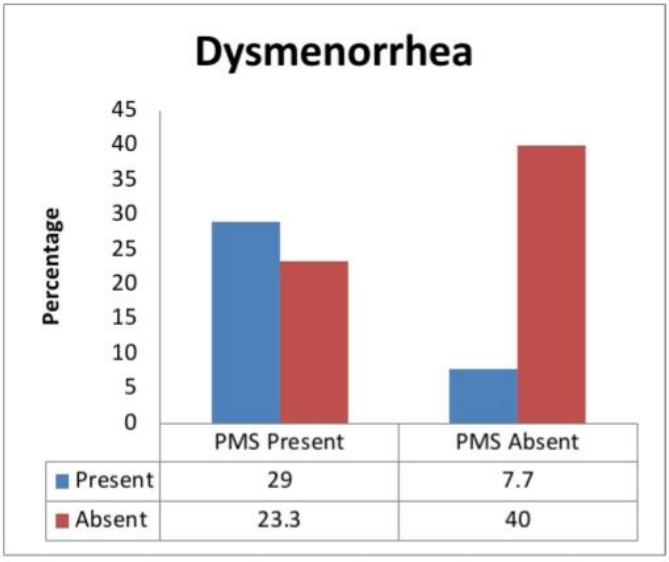
Among 143 healthcare women with dysmenorrhea 113 of them had PMS while among 247 participants without PMS 91 of them had PMS [Table 7]. The association between dysmenorrhea and PMS was highly significant in this study (p-value =<0.0001). [Figure 7]

Table 7: Dysmenorrhea vs PMS

Dysmenorrhea	PMS Present	%	PMS Absent	%	Total	p-value
Present	113	29.0	30	7.7	143	<0.0001*
Absent	91	23.3	156	40.0	247	
Total	204	52.3	186	47.7	390	

*Significant

Figure 7: Dysmenorrhea vs PMS`1



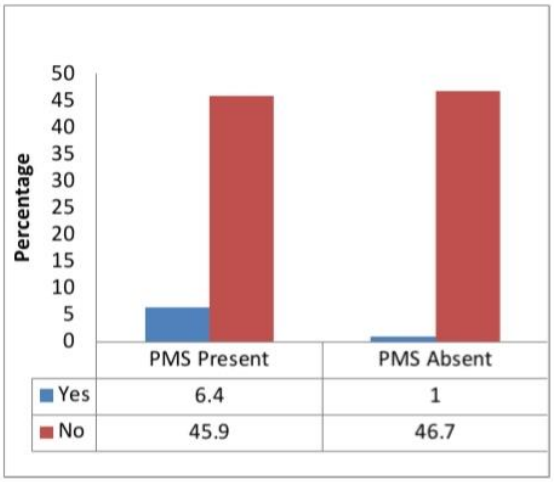
Among participants who took absence from college or work due to menstrual symptoms 25 of them had PMS while among participants who do not take absence 179 of them had PMS, with significant association between absence from work or school and PMS (p-value =<0.0001). [Figure 8] [Table 8]

Table 8: Absence from college or work vs. PMS

Absence from school or work	PMS Present	%	PMS Absent	%	Total	p-value
Yes	25	6.4	4	1.0	29	<0.0001*
No	179	45.9	182	46.7	361	
Total	204	52.3	186	47.7	390	

*Significant

Figure 8: Absence from college or work vs. PMS

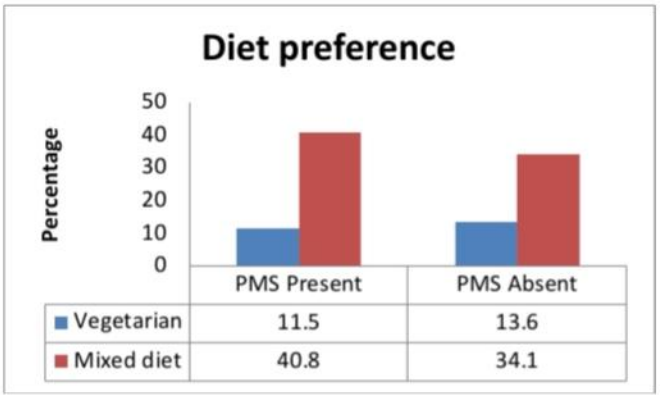


In this current study among 98 participants who were vegetarians 45 of them had PMS whereas among 292 participants who had mixed diet pattern 159 of them had PMS but there was no association recorded between diet preference and PMS (p value =0.2356). [Figure 9] [Table 9]

Diet preference	PMS Present	%	PMS Absent	%	Total	p-value
Vegetarian	45	11.5	53	13.6	98	0.2365
Mixed diet	159	40.8	133	34.1	292	
Total	204	52.3	186	47.7	390	

Table 9: Diet preference vs. PMS

Figure 9: Diet Preference vs PMS



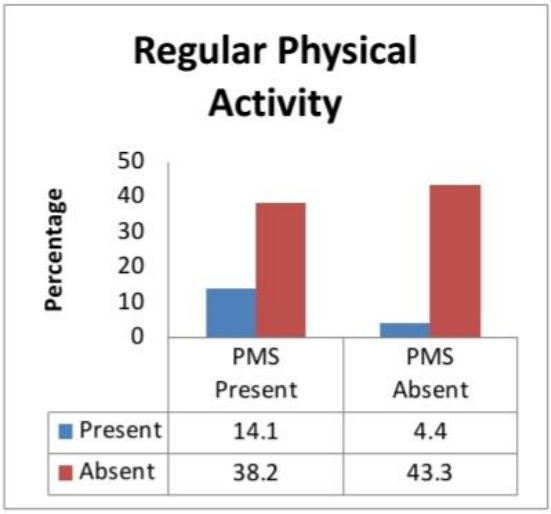
Among study population who had regular physical activity 55 healthcare worker had PMS whereas 149 healthcare women who do not follow regular physical activity had PMS [Table 10]. Physical activity & PMS were discovered to be highly significantly correlated (p-value =<0.0001). [Figure 10]

Table 10: Regular Physical Activity vs. PMS

Regular Physical Activity	PMS Present	%	PMS Absent	%	Total	p-value
Present	55	14.1	17	4.4	72	<0.0001*
Absent	149	38.2	169	43.3	318	
total	204	52.3	186	47.7	390	

*Significant

Figure 10: Regular Physical Activity vs PMS



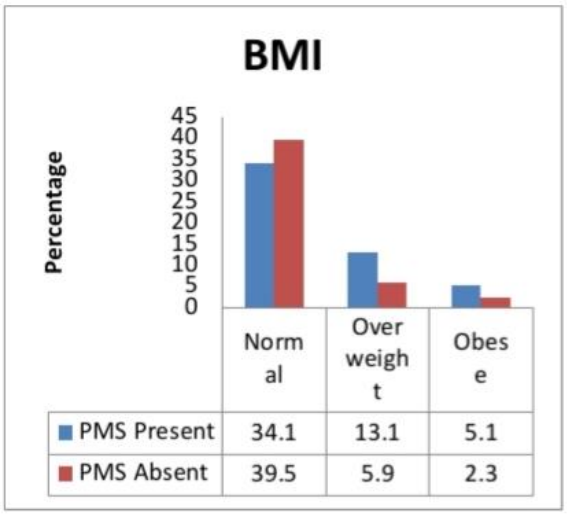
In this present study among 287 participants with normal BMI 133 had PMS, among 74 healthcare workers who were overweight 51 had PMS however among 29 participants who were obese 20 of them had PMS. The association between BMI and PMS was noted to be noteworthy (p-value =0.0145) [Figur11] .

Table 11: BMI vs. PMS

BMI	PMS Present	%	PMS Absent	%	Total	p-value
Normal	133	34.1	154	39.5	287	0.0145*
Overweight	51	13.1	23	5.9	74	
Obese	20	5.1	9	2.3	29	
Total	204	52.3	186	47.7	390	

The mean BMI among young participants with PMS was recorded as 28.5±3.6 while among these women without PMS the mean BMI was 26.5±2.5, with statistically significant difference between BMI and PMS which shows healthcare workers who had normal BMI has lesser or no PMS (p-value =<0.0001) [Table 11].

Figure 11: BMI vs PMS



Discussion

In this study among healthcare workers 28.7% of the population was between the age ranges of 18-23 years while 39.5% of the population was between 24-29 years while 31.8% of the study population was in the age group of 30-35years.[9]Among the study participants the duration of sleep was noted to be <8 hours among 29% of the healthcare workers and ≥ 8 hours among 71% of the healthcare women. In our study, the average age at menarche was 13.3± 1.2 years. [10] The mean days of menstrual cycle was noted as 29.3 ± 3.5 days cycle among the study participants. On assessing the mean duration of flow, it was found to be 3.5± 1.1 days among the study participants. In this present study Dysmenorrhea was recorded among 36.7% of the participants while it was absent among 63.3% of the participants.[11] Among them 7.4% of them took absence from college or work due to the symptoms whereas 92.6% of them gave no history of absence from school or work.

On assessing the diet preference 25.1% of the participants were vegetarian while 74.9% of the women followed mixed diet.[12] In this study 18.5% of the participants had regular physical activity while regular physical activity was absent among 81.5% of the cases. BMI was recorded to be normal, overweight and obese among 73.6%, 19% and 7.4% of the participants in our study. In this current study PMS was present among 52.3% of the women while 47.7% off the women had no PMS.[13] Among the 112 women between the ages of 18 and 23, 63 had PMS. Among the 154 women between the ages of 24 and 29, 78 had the condition. Among 124 participants in the age group of 17-19 years 63 had PMS. There was no statistical association recorded for PMS based on the age group in our study.

The mean duration of sleep among participants with PMS was 6.7±1.8 hours while among participants without PMS was 8.2±1.2 hours, with highly significant difference in mean duration of sleep and PMS.[14] The mean age of menarche among women with PMS was 13.1±1.2 years while among healthcare workers without PMS was 13.4±1.3 years with no important distinction between menarche age and PMS. Findings showed that the average menstrual cycle for those who had PMS was 28.4±1.8 days, while the average menstrual cycle for those who did not have PMS was 30.1±4.1 days. The difference between the average menstrual cycle of people who had and did not have PMS was large enough to be statistically significant. Based on the duration of flow among participants with PMS the mean duration of flow was 3.3±1.1 days while among participants without PMS was 3.6±1.2 days, with significant difference in mean duration of flow based on PMS. Among 143 women with dysmenorrhea 113 of them had PMS while among 247 women without PMS 91 of them had PMS. The association between dysmenorrhea and PMS was highly significant in this study.

Among participants took absence from college or work due to menstrual symptoms 25 of them had PMS while among healthcare workers who do not take absence 179 of them had PMS, with significant association between absence from

work or school and PMS.[15] In this current study among 98 participants who were vegetarians 45 of them had PMS whereas among 292 participants who had mixed diet pattern 159 of them had PMS but there was no association recorded between diet preference and PMS.

Among study population who had regular physical activity 55 healthcare workers had PMS whereas 149 women who do not follow regular physical activity had PMS. Physical activity was found to have a highly significant correlation with PMS. Of the 287 participants in the current study with a normal BMI, 133 had PMS; of the 74 women who were overweight, 51 had PMS; and of the 29 participants who were obese, 20 had PMS. It was found that there was a strong correlation between BMI and PMS. The mean BMI among participants with PMS was recorded as 28.5±3.6 while among participants without PMS the mean BMI was 26.5±2.5, with statistically significant difference between BMI and PMS which shows female who had normal BMI has lesser or no PMS. [16]

The current study's findings were consistent with those of the subsequent investigations. Rasheed P et al65 investigated the relationship between the frequency of PMS and other risk factors for the illness. 96% of respondents said they experienced more than one premenstrual symptom, while 35% scored highly for symptom severity. [17]] Similarly, Balaha MH et al67 calculated the frequency, intensity, causes, and consequences of PMS in female medical students. 35.6% of cases had a diagnosis of PMS, which was broken down into cases that are 45% mild in nature, 32.6% moderately difficult, and 22.4% serious. Badkur D et al75 reported that 39.6% of people had PMS. In decreasing order of frequency, swelling extremities, rage, social withdrawal, and headache were the most severe symptoms. The most often reported symptoms were social withdrawal (77.5%) and headache (77.5%). [18] Additionally, Kamat SV et al84 reported that 19.3% of people were diagnosed with mild to severe PMS, whereas 4.6% had PMDD. With 65.7% reporting moderate to severe symptoms, nearly all females (94.8%) experienced at least one PMS symptom. Menorrhagia was observed in 15.2% of females and dysmenorrhea in 71.2% of them. 53.5% of respondents experienced physical discomfort, 41.7% reported disruptions in daily activities, and 25.1% reported missing work or school. Nandhakumar H et al[95] (2023**)** found the predominance of PMS in medical students and potential risk factors.[19] 76% of the students had PMS. The study found that those in the 18–21 age group, those who indicated irregular physical activity, those who were hostellers, and those with high-stress levels had a considerably greater prevalence of PMS. Aches and pains, particularly those related to the muscles and the stomach, were the most frequently reported physical symptoms of PMS, whereas decreased social contact and irritation were the most frequently reported psychological symptoms. PSS levels were significantly higher in girls with PMS than in Non-PMS Females. The study's results imply that stress may be an element of risk for young girls' increased PMS incidence. Students' quality of life may suffer and their academic performance may suffer as a result of PMS.[20]

Conclusion

In this current study PMS was present among 52.3% of the healthcare workers while 47.7% off them had no PMS. Creating awareness and educating everyone about PMS empowers their knowledge about their bodies, fostering a sense of control and reducing anxiety related to menstrual cycle. Proper management on PMS can minimize their impact on academic performance. Promoting healthy lifestyle choices such as regular exercise, balanced

nutrition, stress management techniques which can reduce the symptoms of PMS. Notably, there was an association between duration of sleep, duration of menstrual cycle, duration of flow, dysmenorrhea, absence from college or work, regular physical activity and BMI and the presence of PMS; however, factors like age, education and age at menarche, diet preference were not associated with the presence of PMS.It can be deduced that a significant number of healthcare workers, aged 18 to 35, suffer from PMS and that each factor linked to the condition's occurrence needs to be addressed separately. actions to lessen the load and enhance life quality as a result.

Conflict of interest: no declared

Funding: No funding source

Ethical approval: The study was approved by the institutional ethics committee

Acknowledgement

We would like to express our sincere gratitude to the healthcare workers at Sree Balaji Medical College and Hospital in Chennai for their participation and cooperation in this study. Their willingness to share their experiences and provide valuable data made this research possible.

We also extend our appreciation to Prof Dr Meena Ts, Head of the department, department of obstetrics and Gynaecology, Sree Balaji Medical College and Hospital for their guidance, support, and constructive feedback throughout the research process. Special thanks to the administrative and technical support provided by the staff of Department of Obstetrics and Gynaecology at Sree Balaji Medical College and Hospital for their assistance with data analysis and support for successful completion of this study.

Finally, we acknowledge our families and colleagues for their continuous encouragement and support during the process which greatly facilitated the execution of this research.

References

1. Shruti V , Archana Nimbalkar, Ajay G Phatak, Somashekhar M Nimbalkar ,2019, Premenstural syndrome in Anand District, Gujarat:A cross-sectional survey,Journal of family medicine and primary care ,8(2):640 8(2):640,IP:85.218.198.23, https://www.researchgate.net/publication/331381816_Premenstrual_syndrome_in_Anand_District_Gujarat_A_cross-sectional_surve (2019)

2. Bhuvaneswari K, Rabindran P, Bharadwaj B, 2019, Prevalence of premenstrual syndrome and its impact on quality of life among selected college students in Puducherry ,The National Medical Journal of India, Natl Med J India 2019;32:17-19, Prevalence of premenstrual syndrome and its impact on quality of life among selected college students in Puducherry - The National Medical Journal of India (nmji.in) (2019)

3. Priyanka Malhotra*, Suresh Kumar Sharma, Ravinder Kaur, Urvashi, Vanshika, Rakhi Gaur and ShivK Mudgal,2020,Pre menstrual syndrome and health related quality of life among young adult females at Northern India: A cross-sectional study. Clin Psychiatry Journal. 2019, Vol.6 No.1:65 Pre menstrual syndrome and health related quality of life among young adult females at Northern India: A cross-sectional study (researchgate.net) (2020)

4. Madhu Gupta, Devakshi Dua, Harsheen Kaur, and Sandeep Grover ,2019 Prevalence of premenstrual dysphoric disorder among school-going adolescent girls. Industrial Psychiatry Journal. 2019 Jul 1;28(2):198-202.Prevalence of premenstrual dysphoric

disorder among school-going adolescent girls - PubMed (nih.gov) (2019)

5. Sonal Kulshrestha,Anisa M. Durrani, 2019 ,Prevalence of menstrual disorders and their association with physical activety in adolescent girls of aligarh city. International Journal of Health Sciences and Research,Vol.9;Issue:8; 384-93. 53.pdf (ijhsr.org) (2019)
6. Iman Mohmad Wahby Salem1,2, Mashael Yahya Alsamti3, Manal Abdulaziz Murad,2020, Predictors of premenstrual syndrome among female students at governmental secondary schools in Jeddah, Saudi Arabia: A cross-sectional study. The Egyptian Journal of Hospital Medicine,Vol.78(2):337-47. article_76614_b50693256fe1bf6cdb1ad8cf3da9752a.pdf (ekb.eg) (2020)
7. Indira Shresthaa, Rita Giri, 2021, Knowledge and prevalence regarding premenstrual syndrome among adolescents in Morang District, Nepal. Current Women's Health Reviews. vol 1;16(3):214-9. (PDF) Knowledge and Prevalence Regarding Premenstrual Syndrome among Adolescents in Morang District, Nepal (researchgate.net) (2012)
8. Riya S. Shah and Donald S. Christian, 2020, Association of socio-demographic, dietary and lifestyle factors with Premenstrual Syndrome (PMS) among undergraduate medical students of a tertiary care institute in Ahmedabad, Gujarat. Journal of Family Medicine and Primary Care. Vol 1;9(11):5719-24. Association of socio-demographic, dietary and lifestyle factors with Premenstrual Syndrome (PMS) among undergraduate medical students of a tertiary care institute in Ahmedabad, Gujarat - PMC (nih.gov) (2020)
9. Abhijit Dutta, Avinash Sharma,2021, Prevalence of premenstrual syndrome and premenstrual dysphonic disorder in India: A systematic review and meta-analysis, Health promotion perspectives. Vol 11(2):161. Prevalence of premenstrual syndrome and premenstrual dysphoric disorder in India: A systematic review and meta-analysis - PMC (nih.gov) (2021)
10. Riddhi Sahu1*, Suresh Lal Barnwal1, Santosh Vishvakarma, 2022, Prevalence and severity of premenstrual syndrome among young females in Chhattisgarh, India. Asian Pacific Journal of Health Sciences. Vol 9(1):120-5, (PDF) Prevalence and Severity of Premenstrual Syndrome among Young Females in Chhattisgarh, India (researchgate.net) (2022)
11. Siham Lghoul, Mohamed Loukid, Abdelhafid Benksim and Mohamed Kamal Hilali,2022,Factors Associated with Premenstrual Syndrome: A Cross-Sectional Study of Female Adolescents (Morocco), European Journal of Medical and Health Sciences, Vol4(6):1-5, (PDF) Factors Associated with Premenstrual Syndrome: A Cross-Sectional Study of Female Adolescents (Morocco) (researchgate.net) (2022)
12. HimaliniNandakumar,,MaheshKumar Kuppusamy ,Lavanya Sekhar ,Padmavathi Ramaswamy,2023,Prevalence of premenstrual syndrome among students–Stress a potential risk factor.,Clinical Epidemiology and Global Health, Vol23:101368, Prevalence of premenstrual syndrome among students – Stress a potential risk factor - ScienceDirect (2023)
13. Farzaneh Babapour, Forouzan Elyasi, Zohreh Shahhosseini, Monirolsadate Hosseini Tabaghdehi,2023,The prevalence of moderate–severe premenstrual syndrome and premenstrual dysphoric disorder and the related factors in high school students, A cross-sectionalstudy,Neuropsychopharmacol

Reports,Vol 43(2):249-54, The prevalence of moderate-severe premenstrual syndrome and premenstrual dysphoric disorder and the related factors in high school students: A cross-sectional study - PubMed (nih.gov) (2023)

14. MichelleProctor, CynthiaFarquhar, 2006, Premenstrual syndrome. BMJ Clinical Evidence,Vol 332(7550): 1134–1138, Diagnosis and management of dysmenorrhoea - PMC (nih.gov) (2006)
15. Kimberly Ann Yonkers, Shaughn O'Brien P M, Elias Eriksson, 2008, Premenstrual syndrome. The Lancet,Vol 371(9619), 1200-1210. doi:10.1016/S0140-6736(08)60527-9, Premenstrual syndrome - PMC (nih.gov) (2008)
16. Abhijit Dutta , Avinash Sharma , 2021, Prevalence of premenstrual syndrome and premenstrual dysphoric disorder in India: A systematic review and meta-analysis,Health promot perspect, 11(2):161-170, Prevalence of premenstrual syndrome and premenstrual dysphoric disorder in India: A systematic review and meta-analysis - PubMed (nih.gov) (2021)
17. Mohan, M. P, Mohan P, 2017, Prevalence and severity of premenstrual syndrome in medical students of a tertiary care hospital in India, Journal of Clinical and Diagnostic Research,Vol11(7),OC25-OC28. doi:10.7860/JCDR/2017/25768.10246 (2017)
18. Shana Parveen Janu M. Kanthi, Renjitha Bhaskaran,2024, Premenstrual syndrome, coping mechanisms and associated factors among female students of a health sciences campus in South India, International Journal of Reproduction, Vol. 13 No. 7, Premenstrual syndrome, coping mechanisms and associated factors among female students of a health sciences campus in South India | International Journal of Reproduction, Contraception, Obstetrics and Gynecology (ijrcog.org) (2024)
19. K Bhuvaneswari 1, Porkodi Rabindran 1, Balaji Bharadwaj ,2019, Prevalence of premenstrual syndrome and its impact on quality of life among selected college students in Puducherry, Natl Med J India,Vol 32:17-19, Prevalence of premenstrual syndrome and its impact on quality of life among selected college students in Puducherry - The National Medical Journal of India (nmji.in) (2019)
20. Fatimah Alkhamis, Layla Abd Alaziz Almzraq, Zahraa Khaled Alshayeb, Zainab Yaseen AL-Jaziri, 2021, Prevalence of premenstrual syndrome among medical students in King Faisal University in Alahssa-Saudi Arabia,Medical Science,Vol 25(114), (PDF) Prevalence of premenstrual syndrome among medical students in King Faisal University in Alahssa-Saudi Arabia (researchgate.net) (2021)