



Premenstrual Syndrome in Reproductive Age Females in Muzaffarabad AJK

Attia Ghulam Ghos¹, Aymen Ghulam Ghos²

¹Department of Obstetrics and Gynecology, AIMS Hospital, Muzaffarabad, AJK, Pakistan.

²Department of Radiology, Benazir Bhutto Hospital, Rawalpindi, Punjab, Pakistan.

ARTICLE INFO

Keywords: Anxiety, Bloating, Premenstrual Syndrome, Reproductive Age, Symptoms, Women's Health.

Correspondence to: Attia Ghulam Ghos, Department of Obstetrics and Gynecology, AIMS Hospital, Muzaffarabad, AJK, Pakistan.

Email: attiagg@yahoo.com

Declaration

Authors' Contribution

Both authors equally contributed to the study and approved the final manuscript

Conflict of Interest: No conflict of interest.

Funding: No funding received by the authors.

Article History

Received: 12-06-2025 Revised: 04-07-2025

Accepted: 10-07-2025 Published: 15-07-2025

ABSTRACT

Objective: To determine the frequency and symptoms of premenstrual syndrome among reproductive aged women in Muzaffarabad AJK. **Study Design:** Cross sectional study. **Duration and Place of Study:** This research was conducted from 10th January 2025 to 10th June 2025 at the Obstetrics and Gynecology Department of AIMS Hospital Muzaffarabad AJK. **Methodology:** A total of 356 participants, aged 18–45 years, were selected. The Premenstrual Symptoms Screening Tool was adapted as a tool for screening symptoms of PMS, which comprise psychiatric symptoms such as mood changes, irritability, anxiety, depression, and fatigue, as well as somatic symptoms such as back ache, bloating, headaches, breast tender point, as well as abdominal discomfort. Continuous variables were presented in mean value with standard deviation as well as nominal variables which were presented as the form of frequency percent, as comparisons were conducted through the chi-squared test. **Results:** The prevalence of Premenstrual syndrome in the study group was found to be 46.10% (n=164). Anxiety as a psychological symptom was found in 70.70% (n=116) of the population, and as a somatic symptom, bloating was found in 61.00% (n=100) of the population. There was no association found between the variables of age, body mass index, marital status, or use of contraceptives with the prevalence of PMS ($p > 0.05$). **Conclusion:** The study indicates that PMS is a common condition affecting nearly half of reproductive-aged women.

INTRODUCTION

Premenstrual syndrome (PMS) is a condition that affects many women of childbearing age; it normally occurs in the luteal phase of the menstrual cycle.¹ The symptoms occur just before menstruation; these can range from depression, irritability, and fatigue to physical symptoms such as bloating and breast tenderness.² The exact cause of PMS has not been determined; however, hormone fluctuations, especially those of estrogen and progesterone, are thought to be involved with PMS.³ The brain's neurotransmitters would explain the associated physical and behavioral symptoms associated with PMS because these particular hormones affect neurotransmitters found in the brain.⁴ Besides hormones, stress, lifestyle factors, and genetic predisposition would account for individual differences with which PMS would manifest; more research would explain these particular phenomena associated with PMS.⁵

The prevalence of PMS has been found to be moderate with estimates indicating that between 30% to 80% of females experience either form of symptoms related to PMS during their childbearing age.⁶ Sometimes, the

symptoms associated with PMS can range greatly among different people. While for others, it can only cause little discomfort associated with PMS; others can experience it to the level of affecting their daily life and activities.⁷ Most importantly, PMS can lead to what is referred to as premenstrual dysphoric disorder (PMDD).⁸ PMDD has more serious symptoms that can significantly affect an individual's ability to conduct their daily tasks; these symptoms include sadness or depression and nervousness among others.⁹

Managing PMS mainly concentrates on relieving symptoms because there is no conclusive treatment for this medical problem.¹⁰ There exist diverse ways of managing PMS symptoms like lifestyle alterations, dietary regimens, and medical treatments.¹¹ Exercise programs, stress management tools, and balanced nutrition with adequate vitamins and nutrients can aid in relieving symptoms of PMS.¹² For those experiencing more intense symptoms related to PMS, treatments with nonsteroidal anti-inflammatory drugs (NSAIDs) for relieving joint or muscular pain and antidepressants for those experiencing associated mood disorders would prove helpful.¹³ There's

also incorporation of complementary therapies such as acupuncture or herbal medicine if needed; however, these therapies can prove ineffective at times because of differences within human bodies.¹⁴

A study showed that premenstrual syndrome had an effect of 52.0% on the participants. Somatic symptoms included: backache of 93.0%, generalized bodily discomfort of 91.2% and headaches of 88.3%. Psychological symptoms included: mood changes of 89.5%, irritations of 71.3% and depressions of 81.3% of the participants. Other symptoms included: fatigue of 69.6%, anxieties of 59.6% and breast sensitivity of 64.9% of the participants. During menstruation 41.5% of participants experienced moderate menstrual cramps and 38.0% reported moderate menstrual back pain.¹⁵

In Kashmir, this topic is very important as many women in this place are also suffering from similar symptoms in PMS, yet little research work has been conducted on it. In Kashmir, the health care system may not be aware of the implications of PMS in the daily life of women, and this research work can play an important role in understanding it better. It can also assist in determining whether any unique factors are contributing to making PMS worse in Kashmir, such as in the Kashmiri or Pakistani cultures and lifestyle. Understanding this point will assist in improving health care in favor of women and helping them better in managing PMS.

METHODOLOGY

This cross-sectional study was conducted from 10th January 2025 to 10th June 2025 at the Obstetrics and Gynecology Department of AIMS Hospital in Muzaffarabad AJK. The study included 356 women aged 18–45 years with the sample size determined based on an assumed prevalence of 38.0% moderate menstrual back pain from previous research,¹⁵ a 5% margin of error, and a 95% confidence level. Inclusion criteria was consisted of women with regular menstrual cycles and with no known psychiatric or endocrine disorders. Exclusion criteria was individual with language barriers, chronic psychological conditions or those unable to communicate effectively.

After obtaining informed consent demographic data such as age, marital status, BMI and contraceptive use was noted. The Premenstrual Symptoms Screening Tool (PSST) was used to assess presence and severity of PMS symptoms. The PSST is a structured questionnaire to evaluate both psychological and somatic symptoms that are usually linked with PMS. Participants in the study were asked to report how often and how intense the symptoms are, such as Mood Swings, which are quick and intense emotional changes, like going from happy to irritated. Irritability is being easy to get angry or upset, especially during the premenstrual time. Anxiety is feeling nervous, worried, or uneasy. Depression is feeling sad, hopeless, or not interested in things you usually do. Fatigue is feeling tired or low on energy, even after enough rest. Back Pain is feeling pain or discomfort in the upper or lower back. Bloating is feeling full or swollen in the stomach area. Headaches is pain in the head that can range from mild to severe and may come with nausea or dizziness. Breast Tenderness is pain or sensitivity in the breasts, often described as soreness. Abdominal Discomfort defined as

cramping or general discomfort in the abdominal area. A positive diagnosis of PMS was made if at least five of these symptoms were present in the week before menstruation and resolved within a few days after its onset with at least one of the symptoms being psychological.

Data were analyzed using SPSS version 26. Continuous variables were expressed as means and standard deviations. Categorical variables were represented as frequencies and percentages. Chi-square tests was applied to assess association between PMS and demographic factors with a p-value ≤ 0.05 considered statistically significant.

RESULTS

The study population comprised 356 reproductive-aged women with mean age of 31.51 ± 8.54 years and mean BMI of 26.82 ± 4.63 kg/m². Regarding marital status, 171 participants (48.0%) was unmarried while 185 participants (52.0%) was married. In terms of contraceptive use, 199 women (55.9%) reported using contraceptives whereas 157 women (44.1%) did not use any contraceptives (as shown in Table-I).

Table I
Study Population Characteristics

Demographics	Mean \pm SD
Age (years)	31.51 \pm 8.54
BMI (kg/m ²)	26.82 \pm 4.63
Marital Status	
Unmarried n (%)	171 (48.0%)
Married n (%)	185 (52.0%)
Contraceptive Use	
Yes n (%)	199 (55.9%)
No n (%)	157 (44.1%)

The prevalence of premenstrual syndrome among reproductive-aged women was found to be 46.10% (n=164), while 192 women (53.90%) did not experience premenstrual syndrome (as shown in Table-II).

Table II
Prevalence of Premenstrual Syndrome Among Reproductive-Aged Women

Premenstrual Syndrome	Frequency	%age
Yes	164	46.10%
No	192	53.90%
Total	356	100%

Psychological symptoms included mood swings in 88 women (53.70%), irritability in 81 women (49.40%), anxiety in 116 women (70.70%), depression in 82 women (50.00%), and fatigue in 84 women (51.20%). Somatic symptoms was also prevalent, with back pain reported by 87 women (53.00%), bloating by 100 women (61.00%), headaches by 88 women (53.70%), breast tenderness by 86 women (52.40%), and abdominal discomfort by 90 women (54.90%) (as shown in Table-III).

Table III
Frequency of Premenstrual Syndrome Symptoms Among Affected Women

Symptoms	Frequency	%age
Psychological Symptoms		
Mood Swings	88	53.70%
Irritability	81	49.40%
Anxiety	116	70.70%
Depression	82	50.00%
Fatigue	84	51.20%

Somatic Symptoms		
Back Pain	87	53.00%
Bloating	100	61.00%
Headaches	88	53.70%
Breast Tenderness	86	52.40%
Abdominal Discomfort	90	54.90%

For age groups, women aged ≤ 30 years showed 47.7% prevalence (n=84) compared to 52.3% (n=92) without syndrome, while women aged >30 years had 44.4% prevalence (n=80) versus 55.6% (n=100) without syndrome, with p-value of 0.534 indicating no significant association. Categories of BMI identified that in women with BMI $\leq 25\text{kg/m}^2$, prevalence was 46.8% (n=73) with syndrome compared with 53.2% (n=83) without syndrome, and in women with BMI $>25\text{kg/m}^2$, the prevalence was 45.5% (n=91) with syndrome compared with 54.5% (n=109) without syndrome, with a p-value of 0.808, concluding that there was no significant association. Marital status identified that in unmarried women, the prevalence was 43.9% (n=75) with syndrome compared with 56.1% (n=96) without syndrome, and in married women, the prevalence was 48.1% (n=89) with syndrome compared with 51.9% (n=96) without syndrome, with a p-value of 0.422, concluding that there was no significant association. Contraceptive use identified that in women taking contraceptives, the prevalence was 42.7% (n=85) with syndrome compared with 57.3% (n=114) without syndrome (as shown in Table-IV).

Table IV

Association of Premenstrual Syndrome with Demographic Factors

Demographic Factors	Premenstrual Syndrome		p-value	
	Yes n(%)	No n(%)		
Age (years)	≤ 30	84 (47.7%)	92 (52.3%)	0.534
	>30	80 (44.4%)	100 (55.6%)	
BMI (Kg/m ²)	≤ 25	73 (46.8%)	83 (53.2%)	0.808
	>25	91 (45.5%)	109 (54.5%)	
Marital Status	Unmarried	75 (43.9%)	96 (56.1%)	0.422
	Married	89 (48.1%)	96 (51.9%)	
Contraceptive Use	Yes	85 (42.7%)	114 (57.3%)	0.153
	No	79 (50.3%)	78 (49.7%)	

DISCUSSION

Results show that 46.10% (n=164) of women suffered from premenstrual syndrome, which reflects a marked prevalence of this syndrome in the reproductive group. Such a rate of prevalence is high and indicates that premenstrual syndrome occurs in almost every second female in her reproductive years. During the monthly cycles, hormonal changes, particularly the level changes of estrogen and progesterone in the luteal phase, give rise to the symptoms. Reduction in the level of both progesterone and estrogen before menstruation gives rise to imbalances in neurotransmitter, particularly serotonin, resulting in symptoms of psychological as well as physiological nature. Anxiety was the most prevalent psychological symptoms, as shown in statistics, as 70.70% (n=116) of such females were found to be anxious. Such high rate of anxiety may be due to the fact that the imbalances in hormone levels give rise to imbalances in the neurotransmitter system of the brain, particularly that of serotonin and gamma-amino butyric acid. Reduction in the activity of serotonin, particularly in the luteal phase, gives rise to anxiety as well as changes in mood. Bloating was the most common

somatic symptom, reported by 61.00% (n=100) of women with premenstrual syndrome. This symptom occur due to fluid retention caused by hormonal changes, particularly increased aldosterone secretion and sodium retention in response to progesterone withdrawal. Mood swings was experienced by 53.70% (n=88) and depression by 50.00% (n=82) of affected women. These psychological symptoms is directly linked to the withdrawal of progesterone, which have calming effects on central nervous system through its metabolite allopregnanolone. When progesterone levels drop, this protective effect is lost, leading to mood instability and depressive symptoms.

The prevalence of premenstrual syndrome in the present study was 46.10% (n=164), which is comparable to the findings reported by Andualem F *et al.* in their systematic review and meta-analysis of African studies, where pooled prevalence was 46.98%¹⁶. This similarity suggest that premenstrual syndrome affect nearly half of reproductive-aged women across different geographical regions. However, this prevalence is lower than several other studies conducted in South Asia and Middle East. Manjrekar S *et al.* reported much higher prevalence of 90% among rural women in Karnataka¹⁷, while Zarfishan A *et al.* found 72.9% prevalence in Saudi Arabia¹⁸ and Yar HM *et al.* reported 83.7% in Pakistan¹⁹. These differences may be attributed to variations in study populations, diagnostic criteria used, and cultural factors affecting symptom reporting. In contrast, some studies showed similar or slightly higher rates, such as Jabeen M *et al.* who reported 53% in working women²⁰, Nisar N *et al.* who found 51% among medical students²¹, and Mansoor A *et al.* who reported 50.6% in medical students²². These comparable rates suggest that when similar population characteristics and methodology is used, the prevalence remain consistent around 50%.

Regarding symptom profile, anxiety was the most frequent psychological symptom in the present study affecting 70.70% (n=116) of women with premenstrual syndrome. This finding is substantially higher than what was reported in other studies where anxiety rates was generally lower. Jabeen M *et al.* found anxiety in only 36% of housewives²⁰, and Perveen S *et al.* reported 26%²³. However, the high anxiety prevalence in current study align with findings of Manjrekar S *et al.* who reported that 82.7% experienced difficulty concentrating, which is related to anxiety symptoms¹⁷. The variation in anxiety reporting may reflect differences in study populations, with students and working women potentially experiencing more stress-related symptoms. Bloating was the most common somatic symptom in present study with 61.00% (n=100), which is consistent with the pattern observed by Perveen S *et al.* who reported water retention in 53%²³. However, other studies reported different dominant somatic symptoms. Altamimi LA *et al.* found abdominal pain as most common physical symptom in 84.1% of Saudi women²⁴, while Yar HM *et al.* reported pain as most frequent symptom in 86.7%¹⁹. These differences may be due to cultural variations in symptom perception and reporting, as well as differences in questionnaire design that emphasize certain symptoms over others.

Mood swings was experienced by 53.70% (n=88) in current study, which is lower than the findings of Yar HM

et al. who reported mood swings in 71.3%¹⁹ and Zarfishan A et al. who found mood changes in 79.1%¹⁸. Depression affected 50.00% (n=82) in present study, which is comparable to Jabeen M et al. who reported depression in 52% of housewives and 39.6% of working women²⁰, and Perveen S et al. who found 50% prevalence of depression²³. Fatigue was present in 51.20% (n=84) of affected women in current study, which is considerably lower than Manjrekar S et al. who reported fatigue in 98.4%¹⁷ and Yar HM et al. who found 79.7%¹⁹. The wide variation in fatigue reporting may reflect differences in daily workload, occupational stress, and lifestyle factors among different populations.

The present study found no significant association between premenstrual syndrome and demographic factors including age (p=0.534), BMI (p=0.808), marital status (p=0.422), and contraceptive use (p=0.153). This finding is consistent with several studies that also reported no significant associations with these variables. Mansoor A et al. found no significant differences by age, BMI, or academic year (all p>0.05)²², and Lakshmi PV et al. reported no significant association between premenstrual syndrome severity and age, menarche age, cycle pattern, or family history (all p>0.05)²⁵. However, the aforementioned results differed from other studies, which established some important links. Manjrekar S et al. established that frequent cycles (AOR: 4.87), family history (AOR: 12.7), early menarche (AOR: 1.33), low physical activity (AOR: 3.92), and sweets (AOR: 2.1) were significant predictors, though use of oral contraceptives

was a protector (AOR: 0.02).¹⁷ Likewise, Altamimi LA et al. established that odds were higher for participants with postgraduate education (AOR:2.26) and low monthly income (AOR:2.66),²⁴ whereas Nisar N et al. declared that dysmenorrhoea and family history were some significant predictors.²¹ Indeed, the difference in the results of the use of contraceptives was remarkable, as Zarfishan A et al. established that use was significantly associated with higher reporting (p=0.007) of symptoms,¹⁸ though Manjrekar S et al. declared that use was a protector.¹⁷

There are some limitations in the present study, which must be considered. Firstly, this is a single-center study. Due to this, the results may not be considered entirely valid for the entire population. Also, the size of this study is relatively small, so this may affect its statistical strength. Another aspect that must be noted is that this type of cross-sectional design study doesn't permit the establishment of any causal relationship between variables. Also, the symptoms of the concerned condition that were studied may, in fact, be kept in memory.

CONCLUSION

Concluding, the current study has found that the prevalence of premenstrual syndrome is a common condition that affects almost half of the reproductive-aged group. Anxiety, and then bloating, were found as dominant symptoms of the psychological, and somatic types, respectively. By the results, this condition brings a substantial health burden.

REFERENCES

- Howard, L. M., Wilson, C. A., Reilly, T. J., Moss, K. M., Mishra, G. D., Coupland-Smith, E., ... & Oram, S. (2025). Women's reproductive mental health: currently available evidence and future directions for research, clinical practice and health policy. *World Psychiatry*, 24(2), 196-215. <https://doi.org/10.1002/wps.21305>
- Hantsoo, L., Rangaswamy, S., Voegtline, K., Salimgaraev, R., Zhaunova, L., & Payne, J. L. (2022). Premenstrual symptoms across the lifespan in an international sample: data from a mobile application. *Archives of Women's Mental Health*, 25(5), 903-910. <https://doi.org/10.1007/s00737-022-01261-5>
- Kundakovic M, Rocks D. Sex hormone fluctuation and increased female risk for depression and anxiety disorders: from clinical evidence to molecular mechanisms. *Front Neuroendocrinol*. 2022;66:101010. doi: <https://doi.org/10.1016/j.yfrne.2022.101010>
- Le, J., Thomas, N., & Gurvich, C. (2020). Cognition, The Menstrual Cycle, and Premenstrual Disorders: A Review. *Brain Sciences*, 10(4), 198. <https://doi.org/10.3390/brainsci10040198>
- Mazza, M., & Marano, G. (2025). Unmasking the cycle: Premenstrual and menstrual exacerbation of psychiatric disorders and impact on female mental health. *World Journal of Psychiatry*, 15(8). <https://doi.org/10.5498/wjp.v15.i8.107132>
- Nzambimana, M., Okurut, E., Ishimwe, M. P., Cedeno, C. B., Niyubahwe, R. M., Odongo, A., Sleyoum, S. A., Kato, C., Kazigo, A. K., Mkojera, J. J., & Hakizimana, T. (2025). Premenstrual disorders, their severity patterns, and predictors among female University students in western Uganda: A cross-sectional study. *Health Science Reports*, 8(11). <https://doi.org/10.1002/hsr.271538>
- Brown, D., Smith, D. M., Osborn, E., & Wittkowski, A. (2024). The experiences and psychological impact of living with premenstrual disorders: A systematic review and thematic synthesis. *Frontiers in Psychiatry*, 15. <https://doi.org/10.3389/fpsy.2024.1440690>
- Brown, R. D., Bondy, E., Prim, J., Dichter, G., & Schiller, C. E. (2024). The behavioral and physiological correlates of affective mood switching in premenstrual dysphoric disorder. *Frontiers in Psychiatry*, 15. <https://doi.org/10.3389/fpsy.2024.1448914>
- Babour, R. R., Alharbi, S. A., Alzahrani, S. M., Alshareef, A. A., Bazeed, L. S., Zahid, R., El Amin, N., Alalshaikh, N. K., & Ahmad, R. (2025). Premenstrual Dysphoric Disorder: A Cross-Sectional Study on Prevalence and Awareness Among Medical Students. *Cureus*, 17(3), e80917. <https://doi.org/10.7759/cureus.80917>
- Funnell, E. L., Martin-Key, N. A., & Bahn, S. (2025). Improving care experiences for premenstrual symptoms and disorders in the United Kingdom (UK): A mixed-methods approach. *BMC Health Services Research*, 25(1). <https://doi.org/10.1186/s12913-024-12140-3>
- Modzelewski, S., Oracz, A., Żukow, X., Hendo, K., Śledzikowka, Z., & Waszkiewicz, N. (2024). Premenstrual syndrome: New insights into etiology and review of treatment methods. *Frontiers in Psychiatry*, 15. <https://doi.org/10.3389/fpsy.2024.1363875>
- Ayyub, S., Agrawal, M., Sharma, V., & Aravind, A. (2024). The effect of physical activity on premenstrual syndrome: A systematic review. *Annals of Neurosciences*, 32(4), 315-320. <https://doi.org/10.1177/09727531241297012>
- Barone, J. C., Ho, A., Osborne, L. M., Eisenlohr-Moul, T. A., Morrow, A. L., Payne, J. L., Epperson, C. N., & Hantsoo, L. (2024). Luteal phase sertraline treatment of premenstrual

- dysphoric disorder (PMDD): Effects on markers of hypothalamic pituitary adrenal (HPA) axis activation and inflammation. *Psychoneuroendocrinology*, 169, 107145. <https://doi.org/10.1016/j.psychneuen.2024.107145>
14. Sultana, A., Heyat, M. B., Rahman, K., Kunnavil, R., Fazmiya, M. J., Akhtar, F., Sumbul, Vidal Mazón, J. L., Rodríguez, C. L., & De La Torre Díez, I. (2022). A systematic review and meta-analysis of premenstrual syndrome with special emphasis on herbal medicine and nutritional supplements. *Pharmaceuticals*, 15(11), 1371. <https://doi.org/10.3390/ph15111371>
 15. Shoeb, S., Maira, Naila, Bai, R., Yahya, W., & Shoeb, S. (2025). Premenstrual syndrome among reproductive-aged women in urban Pakistan: A cross-sectional study. *Journal of Health, Wellness and Community Research*, e307. <https://doi.org/10.61919/jzs48940>
 16. Anduaem, F., Melkam, M., Takelle, G. M., Nakie, G., Tinsae, T., Fentahun, S., Rtbey, G., Seid, J., Gedef, G. M., Bitew, D. A., & Godana, T. N. (2024). Prevalence of premenstrual syndrome and its associated factors in Africa: A systematic review and meta-analysis. *Frontiers in Psychiatry*, 15. <https://doi.org/10.3389/fpsy.2024.1338304>
 17. Manjrekar, S., & Patil, S. (2025). Prevalence, severity, and functional impairment of premenstrual syndrome among late reproductive-age women in rural Karnataka: A cross-sectional study. *National Journal of Community Medicine*, 16(12), 1237-1242. <https://doi.org/10.55489/njcm.161220255868>
 18. Zarfshan, A., Saeed Alqahtani, S. A., Alasmre, F. A., Alasmre, H. A., Alasmre, L. A., Alarim, R. A., Almuntashiri, A. A., Al Shahrani, A. M., & Alqahtani, R. S. (2024). Prevalence, pattern, and predictors of premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD) in Asir region, Saudi Arabia. *Cureus*. <https://doi.org/10.7759/cureus.65723>
 19. Hafiz, M. Y., Hafiz Umar, F., Muhammad, A., & Umme, K. (2015). Prevalence and risk factors of premenstrual syndrome among female population of Rahim Yar Khan.
 20. Jabeen, M., & Gul, F. (2007). Frequency of premenstrual syndrome in working women vs housewives in Peshawar. *Journal of Postgraduate Medical Institute*, 21(2).
 21. Nisar, N. (2008). Frequency, intensity and impact of premenstrual syndrome in medical students. *PubMed*.
 22. Mansoor A, Javed H, Muneer M, Noureen S, Ahmed MW, Amal. Frequency of premenstrual syndrome & premenstrual dysphoric disorders among medical students. *J Pak Soc Intern Med*. 2023;4(4):317-320.
 23. Perveen, S., Mairaj, N., Maqbool, M., Bilal, A., & Munir, S. (2022). Prevalence the premenstrual syndrome (PMS) in Pakistani women. *Pakistan Journal of Medical and Health Sciences*, 16(9), 433-434. <https://doi.org/10.53350/pjmhs22169433>
 24. Altamimi, L. A., Aseeri, A. S., Kamran, Z., Kazi, A., & AlQuaiz, A. M. (2022). Prevalence of premenstrual syndrome and associated factors amongst women belonging to King Saud University in Riyadh, Saudi Arabia: A cross-sectional study. *International Journal of Women's Health and Reproduction Sciences*, 10(4), 194-201. <https://doi.org/10.15296/ijwhr.2022.33>
 25. Lakshmi, P. V., Vasundhara, R., & Miryani, J. (2019). Prevalence of premenstrual syndrome among the females in reproductive age group. *International Journal of Obstetrics and Gynaecological Nursing*, 1(2), 06-09. <https://doi.org/10.33545/26642298.2019.v1.i2a.10>