

Frequency of Premenstrual Syndrome and its Impact on Quality of Life Among Future Healthcare Professionals

Kamilah Qamar, Muhammad Hamza Shoaib, Arshia Kanwal, Zeeshan Hayder, Aqsa Rasool, Sadia Sultana*

Islamic International Medical College Trust, Pakistan Railway Hospital, Rawalpindi Pakistan, *Department of Gynaecology, Islamic International Medical College Trust, Pakistan Railway Hospital, Rawalpindi Pakistan

ABSTRACT

Objective: To assess the frequency of premenstrual syndrome (PMS) among medical students, to explore its correlation with BMI and dietary habits, and to assess its impact on quality of life.

Study Design: Cross-sectional study.

Place and Duration of Study: Riphah International University Rawalpindi, Pakistan, from May to Nov 2023.

Methodology: Six hundred and thirteen female undergraduate students, aged 18-24 years enrolled in various departments of Riphah International University -Bachelor of Medicine, Bachelor of Surgery (MBBS), Psychology, Doctor of Physiotherapy (DPT) . Convenience sampling technique was used to collect the data . Two questionnaires, 36-Item Short Form Survey (SF-36), and the Premenstrual Syndrome Scale (PMSS) were used to assess relationships between variables.

Results: Nearly equal representation from MBBS and Psychology (36.8% and 33.7% respectively) was seen, while the remaining students were pursuing the DPT program. The frequency of PMS was found to be 95.7%. A significant association was found between BMI and severity of symptoms of PMS ($p<0.001$). Daily consumption of soft drinks, tea, coffee and chocolate was also found to be significantly associated with PMS ($p<0.001$). All the nine domains of QoL displayed association with the severity of PMS ($p<0.001$).

Conclusion: We found that PMS affects a large number of population. It is adversely affecting the quality of life in all the psychosocial domains. It is associated with dietary habits, and has a significant impact on the quality of life.

Keywords: Menstruation, Premenstrual Syndrome, Quality of Life.

How to Cite This Article: Qamar K, Shoaib MH, Kanwal A, Hayder Z, Rasool A, Sultana S. Frequency of Premenstrual Syndrome And its Impact on Quality of Life Among Future Healthcare Professionals. *Pak Armed Forces Med J* 2026; 76(Suppl-5): S766-S771.

DOI: <https://doi.org/10.51253/pafmj.v76iSUPPL-5.12602>

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<https://creativecommons.org/licenses/by-nc/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Premenstrual syndrome (PMS) is a condition characterized by distressing physical, behavioral, and psychological symptoms that appear in the second part of the menstrual cycle. Symptoms develop during the menstrual cycle's luteal phase and vanish during menstruation.¹ PMS manifests in a variety of somatic and affective symptoms. The most prevalent and upsetting affective symptoms are agitation, low self-esteem, anxiety, depression, mood swings, poor concentration and social withdrawal. Headaches, dizziness, sleeplessness or hypersomnia, pelvic pain and discomfort, and sexual dysfunction are some of the somatic symptoms.² Thyroid problems and other psychological diseases that can manifest with comparable symptoms should also be ruled out.³

Numerous theories, including elevated adrenal function, lowered serotonin and dopamine levels in the brain, vitamin B6 deficiency, and essential fatty

acid shortfall, have been proposed to explain PMS. Reduced cerebral serotonin and dopamine levels have been the most frequently accepted causes.⁴ It has been reported that 70 to 90% of teenage girls in the US suffer from PMS. In Turkey, the prevalence of PMS in women between the ages of 15 and 25 varied from 17.2% to 67.5%.⁵

"An individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns" is the definition of quality of life (QOL) provided by the World Health Organisation (WHO).⁶ Studies have indicated that premenstrual syndrome symptoms, which are distressing, cyclical, and chronic, negatively impact a person's quality of life.^{7,8}

There are limited trustworthy statistics on how PMS affects health-related quality of life in many underdeveloped countries, including Pakistan. Thus, the aims of this study were to determine the association between PMS and quality of life, assess the prevalence of PMS in medical students, and look into

Correspondence: Dr Kamilah Qamar, Islamic International Medical College Trust, Pakistan Railway Hospital, Rawalpindi Pakistan
Received: 20 Aug 2024; revision received: 01 Feb 2025; accepted: 12 Feb 2025

the relationship between PMS and food habits and BMI.

METHODOLOGY

This cross-sectional study was carried out from May to November 2023 at Riphah International University Rawalpindi, Pakistan, after approval from the Institutional Review Committee (Ref No. Riphah/IIMC/IRC/23/3066).

Inclusion Criteria: Female undergraduate students, aged 18-24 years, studying in Bachelor of Medicine, Bachelor of Surgery (MBBS), Psychology, or Doctor of Physiotherapy (DPT) were included.

Exclusion Criterion: Students with known psychiatric illnesses were excluded.

WHO Sample Size Calculator was used to determine sample size, based on a total population of 2,229 female students from three departments at Riphah International University. Assuming a 50% prevalence, the minimum required sample size was calculated as 328. To enhance the reliability of the findings, a larger sample of 613 participants was collected.

Data was collected using non-probability consecutive sampling, and informed consent was taken. Students were given physical copies of the questionnaires in their classrooms, and once they were completed, they were collected. The participants completed each questionnaire under supervision. It covered socio-demographic questions about age, marital status, education level, socioeconomic status, weight (kg), and height (cm), along with a few inquiries about menstruation, such as age at menarche, duration of monthly flow, length of menstrual cycle, intermenstrual bleeding, presence of dysmenorrhea, number of pads soaked daily, and family history of PMS. Premenstrual Syndrome Scale (PMSS)⁹ and Short Form-36 (SF-36)¹⁰ health-related QOL questionnaire.

The Diagnostic and Statistical Manual III (DSM-III) and IV (revised) (DSM IV-R) were the basis for the premenstrual syndrome scale, which was used to assess PMS. There are 44 items on the scale, 5 of which are Likert-type items. Those who score 133 or higher – which falls between 44 and 220 – are classified as having PMS. The SF-36 Health-related QOL questionnaire was used to measure quality of life, and it was one of the subscales measuring health-related quality of life in this study. We looked at the

relationship between menstruation's effects on the study environment and quality of life.

In this study, "consuming tea" was defined as 4 cups (75 cc x 4) of tea, "consuming coffee" as 3 cups (150 cc x 3), "consuming soft drinks" as 1 glass (200 cc x 1), and "consuming chocolate" as 2 bars (150 cc x 3) of chocolate or more on the daily basis.

Data was analyzed using Statistical Package for Social Sciences version 26. The individuals' menstrual cycle characteristics and demographic information were described using frequencies and percentages. Chi-square test was used to assess the premenstrual syndrome's relationship to demographic traits, BMI, dietary practices, and menstrual cycle parameters. Multivariate logistic regression was used to check for predictors.

Confounding and interaction adjustments were also made. The Lemeshow Test and Hosmer Test were used to assess the goodness of fit of model. A p -value ≤ 0.05 was considered statistically significant.

RESULTS

We included 613 female students, ranging from 18 to 24 years of age. Most participants were unmarried ($n=572$; 93%), and 77.3% ($n=474$) belonged to middle socioeconomic status. These participants were enrolled across diverse degree programs within the university with nearly equal representation from MBBS and Psychology (36.8% and 33.7% respectively), while the remaining students were pursuing the DPT program. The majority of participants had a normal BMI ($n=409$; 66.7%).

Soft drinks were the most frequently consumed beverage with 32.3% ($n=198$) admitting to consuming more than one glass per day. More than 4 cups of tea were consumed by 14.1% ($n=87$) of participants, while 13% ($n=80$) consumed more than 3 cups of coffee on a daily basis.

The frequency of PMS was found to be 95.8%. Over 21% had mild symptoms, 38.6% had moderate symptoms, while 31% and 4% of females reported severe and very severe symptoms respectively.

Table-I summarizes the menstrual characteristics of participants.

The most frequently reported age of menarche was 12 years ($n=204$; 33.2%), followed by 13 years (30.8%). A significant portion, 78.4% ($n=481$), displayed a normal duration of the menstrual cycle, coupled with a typical length of the menstruation period ($n=510$; 83.1%). Dysmenorrhea was a prevalent

issue, reported by 59.5% of participants, while a relatively lower number experienced episodes of intermenstrual bleeding (n=105; 17.1%). Family history of premenstrual syndrome (PMS) was observed in only 18.2% of participants (n=112).

Participant age exhibited a significant association with PMS ($p=0.04$). Intriguingly, a significantly higher proportion of MBBS students reported experiencing moderate, severe, and very severe PMS, whereas DPT students recorded the lowest incidence of severe or

Table-I: Menstrual Characteristics of Study Participants (n =613)

Characteristics	Total (n=613) n (%)	No n=26 n (%)	Mild n=133 n (%)	Moderate n=237 n (%)	Severe n=190 n (%)	Very severe n=27 n (%)	p-value
Age of Menarche							
12 years	204 (33.2%)	7 (3.4%)	44 (21.6%)	78 (38.2%)	62 (30.4%)	13 (6.4%)	0.321
13 years	189 (30.8%)	9 (4.8%)	44 (23.3%)	73 (38.6%)	54 (28.6%)	9 (4.8%)	
14 years	160 (26.1%)	10 (6.3%)	34 (21.3%)	60 (37.5%)	55 (34.4%)	1 (0.6%)	
15 years	48 (7.8%)	0	11 (22.9%)	22 (45.8%)	13 (27.1%)	2 (4.2%)	
16 years	12(1.9%)	0	0	4(33.3%)	6 (50%)	2(16.6%)	
Duration of Menstrual Cycle							
Short	80 (13%)	2 (2.5%)	7 (8.8%)	31 (38.8%)	34 (42.5%)	6 (7.5%)	0.018*
Normal	481 (78.4%)	24 (5.0%)	116 (24.1%)	182 (37.8%)	142 (29.5%)	17 (3.5%)	
Long	52 (8.4%)	0	10 (19.2%)	24 (46.2%)	15 (28.8%)	3 (5.8%)	
Duration of Menstruation							
Short	20 (3.2%)	1 (5.0%)	1 (5.0%)	5(25.0%)	11 (55.0%)	2 (10.0%)	0.003*
Normal	510 (83.1%)	25 (4.9%)	123 (24.1%)	196 (38.4%)	148 (29.0%)	18 (3.5%)	
Long	83 (13.5%)	0	9 (10.8%)	36 (43.4%)	32 (38.6%)	6 (7.2%)	
Dysmenorrhoea							
Yes	365 (59.5%)	6 (1.6%)	47 (12.9%)	154 (42.2%)	139 (38.1%)	19 (5.2%)	<0.001*
No	248 (40.4%)	20 (8.1%)	86 (34.7%)	83 (33.5%)	52 (21.0%)	7 (2.8%)	
Intermenstrual Bleeding							
Yes	105 (17.1%)	2 (1.9%)	10 (9.5%)	40 (38.1%)	47 (44.8%)	7 (6.7%)	<0.001*
No	507 (82.7%)	23 (4.5%)	124 (24.5%)	197 (38.9%)	144 (28.4%)	19 (3.7%)	
Family History Of Premenstrual Syndrome							
Yes	112 (18.2%)	3 (2.7%)	10 (8.9%)	48 (42.9%)	46 (41.1%)	5 (4.5%)	0.003*
No	501 (81.7%)	23 (4.6%)	123 (24.6%)	189 (37.7%)	145 (28.9%)	21 (4.2%)	
Number Of Pads Used/Day							
4	417 (68.0%)	18 (4.3%)	89 (21.3%)	164 (39.3%)	131 (31.4%)	15 (3.6%)	0.072
5-7	155 (25.2%)	5 (3.2%)	38 (24.5%)	59 (38.1%)	48 (31.0%)	5 (3.2%)	
8 or more	41 (6.6%)	3 (7.3%)	6 (14.6%)	14 (34.1%)	12 (29.3%)	6 (14.6%)	

Table-II :Body Mass Index and Lifestyle Characteristics of Study Participants (n=613)

Characteristics	Premenstrual Syndrome			
	Mild (n=133) n (%)	Moderate (n=237) n (%)	Severe (n=190) n (%)	Very severe (n=27) n (%)
Body Mass Index				
Normal	111 (27.1%)	155 (37.9%)	105 (25.7%)	15 (3.7%)
Underweight	13 (17.8%)	43 (58.9%)	17 (23.3%)	0
Overweight	8 (6.9%)	33 (28.4%)	63 (54.3%)	10 (8.6%)
Obese	0	4 (36.40%)	5 (45.5%)	1 (9.1%)
Extremely obese	1 (25%)	2 (50%)	1 (25%)	0
Daily Tea Consumption				
<4 cups	39 (20.5%)	80 (42.1%)	60 (31.6%)	9 (4.7%)
>4 cups	7 (8.0%)	37 (42.5%)	36 (41.4%)	6 (6.9%)
not daily	87 (25.9%)	120 (35.7%)	95 (28.3%)	11 (3.3%)
Daily Coffee Consumption				
<3 cups	8 (12.3%)	28 (43.1%)	26 (40%)	2 (3.1%)
>3 cups	8 (10%)	29 (36.3%)	36 (45%)	7 (8.8%)
not daily	117 (25%)	180 (38.5%)	129 (27.6%)	17 (3.6%)
Daily Chocolate Consumption				
<2 bars	14 (18.7%)	22 (29.3%)	35 (46.7%)	3 (4.0%)
>2 bars	10 (12.7%)	26 (32.9%)	37 (46.8%)	5 (6.3%)
not daily	109 (23.7%)	189 (41.2%)	119 (25.9%)	18 (3.9%)
Daily Soft Drink Consumption				
<1 glass	19 (20.2%)	47 (50.0%)	27 (28.7%)	1 (1.1%)
>1 glass	13 (6.6%)	57 (28.8%)	105 (53.0%)	21 (10.6%)
not daily	101 (31.5%)	133 (41.4%)	59 (18.4%)	4 (1.2%)

TABLE-III: Predictors of Premenstrual Syndrome in Study Participants

FACTORS	UNIVARIATE LOGISTIC REGRESSION			MULTIVARIATE LOGISTIC REGRESSION		
	p-value	Unadjusted OR	95% CI for UOR	p-value	No/mild** vs Moderate/Severe/V.severe PMS Adjusted OR	95% CI for AOR
Age	0.400	1.052	0.934 - 1.170	0.221	1.084	0.957 - 1.230
Body Mass Index	<0.001*	2.144	1.858 - 2.430	<0.001*	1.848	1.550 - 2.146
Degree	<0.001*	0.643	0.421 - 0.865	<0.001*	0.637	0.500 - 0.814
Daily Tea Consumption	0.002*	0.717	0.503 - 0.931	0.027*	0.773	0.602 - 0.990
Daily Coffee Consumption	<0.001*	0.467	0.091 - 0.843	0.006*	0.571	0.396 - 0.825
Daily Chocolate Consumption	0.014*	0.687	0.510 - 0.926	0.499	0.896	0.651 - 1.239
Daily Soft Drink Consumption	<0.001*	0.412	0.303 - 0.559	<0.001*	0.501	0.378 - 0.664

*P-value significant at < 0.05.

**The ones with mild PMS symptoms have been included in the category of no PMS

OR = Odds ratio

very severe PMS ($p=0.004$). Furthermore, BMI demonstrated a substantial link to PMS ($p<0.001$). Among overweight females, 58.9% reported moderate PMS, with 54.3% ($n=63$) indicating severe symptoms. Additionally, daily tea and coffee consumption exhibited a noteworthy association with PMS ($p<0.001$). For those consuming over four cups of tea per day, 42.5% and 41.4% reported moderate and severe PMS, respectively. Similarly, among habitual coffee consumers, 36.3% ($n=29$) and 45% ($n=36$) experienced moderate and severe PMS, respectively. Daily consumption of soft drinks and chocolate was also found to be significantly associated with PMS ($p<0.001$). Among students consuming more than one glass of soft drink per day, 53% ($n=105$) reported severe symptoms, with 10.6% experiencing symptoms categorized as very severe.

The duration of the menstrual cycle and menstruation itself displayed association with PMS ($p=0.018$ and 0.003 respectively (Table-II). A significant link was observed between dysmenorrhea and PMS frequency ($p<0.001$). Inter-menstrual bleeding also exhibited a significant connection to PMS ($p<0.001$). Participants with a family history of PMS indicated significantly higher occurrences of PMS compared to those without such a history ($p=0.003$).

All nine domains of QoL displayed association with severity of PMS ($p<0.001$). Substantially poorer functioning was reported in individuals experiencing moderate to severe PMS.

Independent predictors for PMS were identified using multivariate logistic regression. Adjusted Odds Ratio (AOR) values greater than one indicate heightened odds of experiencing PMS. Psychology students exhibited significantly lower odds of experiencing PMS compared to MBBS students (AOR 0.405; 95% CI 0.23-0.68). Furthermore, the consumption of more than 4 cups of tea daily was notably associated with an elevated likelihood of PMS in contrast to non-tea consumers (AOR 2.98; 95% CI 1.20-7.41). Participants consuming over one glass of soft drinks per day faced an increased likelihood of suffering from PMS, amounting to six-fold higher odds compared to non-habitual consumers (AOR 6.03; 95% CI 3.14-11.56). A normal duration of menstrual bleeding was a predictor for reduced PMS (AOR 0.42; 95% CI 0.18-0.94). The presence of dysmenorrhea emerged as a positive predictor of PMS, indicating 2.92 times higher odds of experiencing PMS (AOR 2.92; 95% CI 1.85-4.61).

DISCUSSION

PMS affects women in their reproductive years in psychological, behavioral, and physical domains. According to the findings, 95.8% of the group under study had PMS. This result is in line with the studies among Iranian female university students, Ethiopia, and Saudi Arabian population which reported prevalence of 78-98%.¹¹⁻¹⁴ However, the frequency is relatively high compared to Chinese female undergraduates studies with the prevalence of 25-50%.^{15,16} Among a sample of adolescents in Sri Lanka, those with PMS reported 65.7%.¹⁷ This study highlights the increasing trends of PMS among the young population.

According to this study, 38.6% of people with PMS have a moderate form, 31.1% have a severe form, and 4.2% have a very severe type. This outcome is comparable to that of Iranian teenage girls, where 8.8% of the participants experienced severe PMS and 62.2% of the study subjects had mild PMS.¹⁸ However, the majority from Pakistani and Turkish studies had, respectively, 59.5% and 49.5% of cases of mild PMS.^{19,20} This discrepancy could be caused by individual variances and individual differences in pain threshold.

This study shows that a substantial number of overweight individuals are exhibiting severe symptoms that require immediate attention. These findings are consistent with a findings of a study done by Thakur *et al.*, in 2022 which reported a significant correlation between PMS severity and BMI.²¹ A recent study in the US found that there is a higher risk of premenstrual syndrome (PMS) in women with an increase in basal metabolic rate (BMR). Research conducted in Pakistan, Iran, and Korea has similarly corroborated these results.^{21,22} According to these results, preserving a healthy body weight may be essential to halt the onset of PMS.

In this study, findings suggest a link between the daily consumption of tea and coffee and PMS. This is in line with previous studies.^{22,23}

The quality of life related to health was lower for students who had PMS, which indicates PMS was more detrimental to the aspects of quality of life related to mental and emotional health than to those connected to physical health. These findings align with those of a cross-sectional study conducted among Iranian high school students.²⁴

A significant and independent relationship between PMS and dysmenorrhea which was prevalent among study participants was found by the multivariate analysis. Strongly correlated risk factors include intermenstrual bleeding, dysmenorrhea, longer menstrual cycles, and a family history of PMS. Similar researches conducted in Pakistan,¹⁹ has shown a significant association between premenstrual syndrome (PMS) and dysmenorrhea, with a notable finding that a family history of PMS was identified.

LIMITATIONS OF STUDY

The main limitation of our study was it being limited to a single centre, a university which enrolled more students from a higher socioeconomic class, thus making results less generalizable.

CONCLUSION

The study concludes that premenstrual syndrome (PMS) is remarkably common among female undergraduate students at Riphah International University. Correlations between body mass index, dietary practices, and the severity of PMS have also been found.

ACKNOWLEDGEMENTS

The authors express their gratitude to every student who took part in this research.

Conflict of Interest: None.

Funding Source: None.

Authors' Contribution

Following authors have made substantial contributions to the manuscript as under:

KQ & MHS: Data acquisition, data analysis, critical review, approval of the final version to be published.

AK & ZH: Study design, data interpretation, drafting the manuscript, critical review, approval of the final version to be published.

AR & SS: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

REFERENCES

1. Dilbaz B, Aksan A. Premenstrual syndrome, a common but underrated entity: review of the clinical literature. *J Turkish Ger Gynecol Assoc* 2021; 22(2): 139. <https://doi.org/10.4274/jtgga.galenos.2021.2020.0133>
2. Zehravi M, Maqbool M, Ara I. Unfolding the mystery of premenstrual syndrome (PMS): an overview. *Int J Adolesc Med Health* 2023; 35(1): 9-13. <https://doi.org/10.1515/ijamh-2022-0023>
3. Itriyeva K. Premenstrual syndrome and premenstrual dysphoric disorder in adolescents. *Curr Probl Pediatr Adolesc Health Care* 2022; 52(5): 101187. <https://doi.org/10.1016/j.cppeds.2022.101187>

4. İşik H, Ergöl Ş, Aynioğlu Ö, Şahbaz A, Kuzu A, Uzun M. Premenstrual syndrome and life quality in Turkish health science students. *Turkish J Med Sci* 2016; 46(3): 695-701. <https://doi.org/10.3906/sag-1504-140>
5. Derman O, Kanbur NO, Tokur TE, Kutluk T. Premenstrual syndrome and associated symptoms in adolescent girls. *Eur J Obstet Gynecol Reprod Biol* 2004; 116(2): 201-206. <https://doi.org/10.1016/j.ejogrb.2004.04.021>
6. Farrokh-Eslamlou H, Oshnouei S, Heshmatian B, Akbari E. Premenstrual syndrome and quality of life in Iranian medical students. *Sex Reprod Healthc* 2015; 6(1): 23-27. <https://doi.org/10.1016/j.srhc.2014.06.009>
7. Chekol AT, Reta Y, Ayinewa F, Hailu L, Tesema M, Wale MA. Determinants of premenstrual dysphoric disorder and associated factors among regular undergraduate students at Hawassa University Southern, Ethiopia, 2023: institution-based cross-sectional study. *BMC Public Health* 2024; 24(1): 1390. <https://doi.org/10.1186/s12889-024-18798-y>
8. Al-Shahrani AM, Miskeen E, Shroff F, Elnour S, Algahtani R, Youssry I, et al. Premenstrual syndrome and its impact on the quality of life of female medical students at Bisha University, Saudi Arabia. *J Multidiscip Healthc* 2021; 2373-2379. <https://doi.org/10.2147/JMDH.S327893>
9. Eshetu N, Abebe H, Fikadu E, Getaye S, Jemal S, Geze S, et al. Premenstrual syndrome, coping mechanisms and associated factors among Wolkite university female regular students, Ethiopia, 2021. *BMC Womens Health* 2022; 22(1): 88. <https://doi.org/10.1186/s12905-022-01658-5>
10. Patel AA, Donegan D, Albert T. The 36-item short form. *JAAOS-Journal Am Acad Orthop Surg* 2007; 15(2): 126-134. <https://doi.org/10.5435/00124635-200702000-00007>
11. Shahbazi F, Eslampanah Z, Niaparast M. Prevalence of symptoms and medication use among female medical students and pharmacy clients with premenstrual syndrome: a cross-sectional study in Iran. *J Pharm Pract Res* 2020; 50(1): 55-60. <https://doi.org/10.1002/jppr.1609>
12. Babapour F, Elyasi F, Shahhosseini Z, Hosseini Tabaghdehi M. The prevalence of moderate-severe premenstrual syndrome and premenstrual dysphoric disorder and the related factors in high school students: A cross-sectional study. *Neuropsychopharmacol Rep* 2023; 43(2): 249-254. <https://doi.org/10.1002/npr2.12338>
13. Erbil N, Yücesoy H. Premenstrual syndrome prevalence in Turkey: a systematic review and meta-analysis. *Psychol Health Med* 2023; 28(5): 1347-1357. <https://doi.org/10.1080/13548506.2021.2013509>
14. Bakhsh H, Alghamdi AM, Alyahya MA, Alghamdi SJ, Alonazi A, Algomaishy R, et al. Prevalence of premenstrual syndrome and its impact on life among women in Princess Nourah Bint Abdul Rahman University in Riyadh, Saudi Arabia. *Age* 2020; 20(91): 32-33. <https://doi.org/10.24911/IJMDC.51-1578236787>
15. Gao M, Zhang H, Gao Z, Cheng X, Sun Y, Qiao M, et al. Global and regional prevalence and burden for premenstrual syndrome and premenstrual dysphoric disorder: A study protocol for systematic review and meta-analysis. *Medicine* 2022; 101(1): e28528. <https://doi.org/10.1097/MD.00000000000028528>
16. Liu X, Liu Z-Z, Yang Y, Jia C-X. Prevalence and Associated Factors of Premenstrual Syndrome in Chinese Adolescent Girls. *Child Psychiatry Hum Dev* 2023; 1-10. <https://doi.org/10.1007/s10578-023-01624-8>
17. Dutta A, Sharma A. Prevalence of premenstrual syndrome and premenstrual dysphoric disorder in India: A systematic review and meta-analysis. *Heal Promot Perspect* 2021; 11(2): 161. <https://doi.org/10.34172/hpp.2021.20>

18. Arbabi M, Shirmohammadi M, Taghizadeh Z, Mehran A. The effect of premenstrual syndrome on quality of life in adolescent girls. *Iran J Psychiatry* 2008; 3(3): 105-109. <https://doi.org/10.22037/IJPS.2008.3.3.105>
 19. Nisar N, Zehra N, Haider G, Munir AA, Sohoo NA. Frequency, intensity and impact of premenstrual syndrome in medical students. *J Coll Physicians Surg Pak* 2008; 18(8): 481-484.
 20. Derman O, Kanbur NÖ, Tokur TE, Kutluk T. Premenstrual syndrome and associated symptoms in adolescent girls. *Eur J Obstet Gynecol Reprod Biol* 2004; 116(2): 201-206. <https://doi.org/10.1016/j.ejogrb.2004.04.021>
 21. Thakur H, Pareek P, Sayyad MG, Otiv S. Association of Premenstrual Syndrome with adiposity and nutrient intake among young Indian women. *Int J Womens Health* 2022; 665-675. <https://doi.org/10.2147/IJWH.S359458>
 22. Ashfaq R, Jabeen S. Association between the prevalence of premenstrual syndrome and weight status of adolescent girls (11-21years). *Adv Obes Weight Manag Control* 2017; 6(1): 1-4. <https://doi.org/10.15406/aowmc.2017.06.00140>
 23. Zhang X, Huang X, Xiao Y, Jing D, Huang Y, Chen L, et al. Daily intake of soft drinks is associated with symptoms of anxiety and depression in Chinese adolescents. *Public Health Nutr* 2019; 22(14): 2553-2560. <https://doi.org/10.1017/S1368980019001009>
 24. Delara M, Ghofranipour F, Azadfallah P, Tavafian SS, Kazemnejad A, Montazeri A. Health related quality of life among adolescents with premenstrual disorders: a cross sectional study. *Health Qual Life Outcomes* 2012; 10: 1-5. <https://doi.org/10.1186/1477-7525-10-1>
-