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Examination of premenstrual syndrome in patients with polycystic ovary syndrome

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ABSTRACT

Aim: Polycystic ovary syndrome (PCOS) is a common problem with many clinical findings such as anovulation, amenorrhea, menstrual irregularity and hirsutism. This study was aimed to investigate the factors affecting premenstrual syndrome (PMS) in women with PCOS.

Methods: The study included 120 patients diagnosed with PCOS. In data collection, an introductory information form and the premenstrual syndrome scale (PMSS) were used.

Results: It was observed that 55% of the patients were of normal weight, 62.5% did not smoke, and 20% were diagnosed with anemia. It was observed that 43.3% of the patients menstruated every 2-6 months, 93.3% had fatigue, 65% had attention deficit, 76.7% had edema, 52.5% had headache. The mean total PMSS score of the sample group was 140.25 ± 31.59. It was found that as the number of patients' complaints increased, the total and sub-dimension scores of the PMSS also increased ($p < 0.05$). It was found that the bloating and total scores of the smokers were higher than those of the non-smokers. Patients with lower education levels had higher pain and total scores. The total and sub-dimension scores of the PMSS patients treated for anemia were found to decrease. The severity of PMS was less in those with regular menstruation ($p < 0.05$).

Conclusions: This study showed that women with PCOS experience severe PMS. Education, smoking status, and anemia significantly influence PMS, and PCOS was found to have a higher prevalence rate. Investigating the Hb level and applying prompt treatment can reduce the disturbing symptoms of PMS.

Keywords: menstrual irregularity, polycystic ovary syndrome, premenstrual syndrome

INTRODUCTION

Polycystic ovary syndrome (PCOS) is a prevalent hormonal disorder in women presenting with a broad spectrum of clinical symptoms. These may include the absence of anovulation, amenorrhea, menstrual irregularities, and hirsutism. While significant advances have been made in the field of PCOS, debate continues regarding the etiopathogenesis and diagnostic criteria for the disease. PCOS typically presents with menstrual irregularities (oligo-amenorrhea and dysfunctional uterine bleeding), signs of hyperandrogenism (hirsutism, acne, oily skin, and androgenetic alopecia), and infertility, typically beginning in the peripubertal period. It has also been reported that menstrual cycles can be regular in up to 20% of PCOS patients [1]. Premenstrual syndrome (PMS) is a psychoneuroendocrine disease that closely concerns women's health and is frequently seen in primary care but is underdiagnosed [2]. PMS is a condition that occurs in women during the late luteal phase of the menstrual cycle, manifesting itself with physical symptoms such as breast bloating, headache, fatigue, and weight gain, and psychological symptoms such as depressive mood, irritability, and tension. In approximately 5-8% of women, it is severe enough to be clinically significant, disrupting the patient's functionality, and is referred to as premenstrual dysphoric disorder [3]. PMS symptoms can begin at any age after menarche. They are more common in people in their 30s and 40s. The average age of onset is around 26, and symptoms gradually increase with age and decrease as menopause approaches [4]. Many studies have been conducted examining PMS in healthy women. In Türkiye, there are not many studies examining PMS in women with PCOS. This study was conducted to examine the factors affecting PMS in women with PCOS.

METHODOLOGY

For the implementation of the study, the necessary written permissions and approvals were obtained from the Haliç University Non-Interventional Clinical Research Ethics Committee (approval number: 26.02.21/14), and the data collection process began. A convenience sampling method was used in this descriptive study. The study population consisted of 250 patients diagnosed with PCOS from two university hospitals, five training and research hospitals, and four family health centers within the provincial borders of Istanbul. According to the power analysis conducted in the study, the

Table 1. Descriptive characteristics of the sample group

Variable	Category	Frequency (n)	Percentage (%)
BMI	Underweight	3	2.5
	Normal	66	55.0
	Overweight	32	26.7
	Obese	19	15.8
Marital status	Single	64	53.3
	Married	56	46.7
Having children	No	101	84.2
	Yes	19	15.8
Educational status	Primary	15	12.5
	High school	52	43.3
	Graduate	53	44.2
Smoking	No	75	62.5
	Yes	45	37.5
Menstrual frequency	Regular	23	19.2
	Every 2-6 months	52	43.3
	Every 6 months+	45	37.5
PCOS treatment	0-5 years	87	72.5
	Overs 5 years	33	27.5
Anemia diagnosis	No	96	80.0
	Yes	24	20.0
Anemia treatment	No	106	88.3
	Yes	14	11.7

Note. Age (M = 25.38 & SD = 5.48)

target was to reach at least 110 participants with a 95% confidence interval and 80% power. The sample consisted of 120 patients diagnosed with PCOS (6 months or more) who agreed to the study and were 18 years of age or older.

Data Collection

The data of the study were collected using demographic characteristics, an introductory information form containing disease-related characteristics, and the premenstrual syndrome scale (PMSS).

Introductory Information Form

The information form consisted of questions about socio-demographic information (age, educational status, marital status, etc.) and complaints about the disease (pain, bloating, nausea-vomiting, edema, etc.).

PMSS

The PMSS scale, developed in 2006 and studied for validity and reliability [5], consists of 44 items on a five-point Likert-type scale. It questions PMS symptoms over the past three months. The scale has nine subscales: depressive mood, anxiety, fatigue, irritability, depressive thoughts, pain, appetite changes, sleep changes, and bloating. The total PMSS score is obtained by summing the scores from these subscales. The lowest possible score is 44, and the highest is 220. A higher score indicates a greater intensity of PMS symptoms. The total score ranges from 44 to 220. Individuals scoring 132 or higher on this scale are considered to have PMS [5].

Statistical Analysis

SPSS 22.0 statistical package program was used for analyses. In addition to descriptive statistical methods (mean [M], standard deviation [SD], etc.), the Kolmogorov-Smirnov distribution test was used to examine normal distribution in the analysis of the study data. The t-test, one-way analysis of variance, and the Tukey test were used to compare data. Pearson correlation analysis was used to determine the relationships between the scale and its subdimensions, age, and number of complaints. Results were evaluated at $p < 0.05$ and $p < 0.01$ levels.

Table 2. Sample group's PMSS and sub-dimensions scores

	M	SD	Minimum	Maximum
PMSS total	140.25	31.59	44	216
Depressive affect	21.88	6.90	7	35
Anxiety	15.99	6.79	7	35
Fatique	22.32	5.89	6	30
Irritability	17.64	4.89	5	25
Depressive thoughts	19.47	7.01	7	35
Pain	10.22	3.16	3	15
Appetiete changes	11.79	3.34	3	15
Sleep changes	9.52	2.82	3	15
Abdominal bloating	11.42	3.60	3	15

Limitations of the Study

The results obtained from the study are limited to the responses given by patients who were in the hospital on the dates when the data were collected.

RESULTS

The age of the sample group was 25.38 ± 5.48, 26.7% were overweight, 53.3% were single, 84.2% had no children, 44.2% had a graduate degree and 62.5% were non-smokers. It was observed that 43.3% of the sample group menstruated every 2-6 months, 72.5% received PCOS treatment for 0-5 years, 20% were diagnosed with anemia, and 11.7% were receiving treatment for anemia (**Table 1**). Among the participants, 20% reported experiencing five different premenstrual symptoms. The most commonly reported complaint was fatigue (93.3%), followed by irritability (90%), breast tenderness (86.7%), and increased appetite (76.7%). Additionally, 76.7% experienced edema, 65% had difficulty concentrating, and 52.5% reported headaches. Nausea was noted in 41.7% of the group, while 30.8% indicated an increase in sexual desire, and 28.3% experienced diarrhea. The PMSS scores of the sample group are given in **Table 2**.

No significant relationship was found between the sample's age and the PMSS total score and its sub-dimensions ($p > 0.05$). A positive relationship was found between the number of complaints in the sample and the PMSS and its sub-dimensional scores ($p \leq 0.001$). It was found that those with primary school degrees had higher pain scores and total scale scores compared to those with bachelor's degrees or higher ($p < 0.05$). It was determined that patients who smoked had higher bloating and total scale scores compared to non-smokers ($p < 0.05$). No significant difference was found between the sample group's marital status, having children, and being diagnosed with anemia and the PMSS total and sub-dimensions ($p > 0.05$). A significant difference was found between PMSS total and sub-dimension scores in all groups, except for the sleep changes and bloating sub-dimensions, according to menstrual frequency. It was observed that those who had menstruated for 6 months or more had the highest PMSS scores ($p < 0.01$). It was determined that those who had been treated for PCOS for 5 years or more had lower PMSS total scores compared to those who had been treated for 0-5 years, and that patients treated for anemia had lower PMSS total scores compared to those who had not ($p < 0.05$) (**Table 3**).

Table 3. Distribution of PMSS total score and sub-dimension scores according to the descriptive characteristics of the sample group

Variable	M ± SD									
	Total PMSS	Depressive affect	Anxiety	Fatique	Irritability	Depressive thoughts	Pain	Appetiete changes	Sleep changes	Abdominal bloating
BMI										
Underweight	149.33±38.00	24.33±10.07	17.67±6.11	25.00±5.57	16.33±10.26	24.33±11.59	12.00±3.00	11.33±2.08	12.33±2.31	6.00±5.20
Normal	137.73±32.50	21.47±7.24	15.70±6.61	21.86±6.16	17.35±4.80	19.00±6.69	9.89±3.31	11.64±3.38	9.18±2.91	11.64±3.78
Overweight	143.59±35.39	23.00±7.34	16.66±7.81	22.03±6.55	17.94±5.10	19.81±7.86	11.03±2.80	12.12±3.76	9.56±2.84	11.44±3.23
Obes	141.95±20.21	21.05±4.16	15.63±6.08	23.95±3.21	18.37±4.13	19.79±6.06	9.68±3.11	11.84±2.75	10.16±2.36	11.47±2.85
Educational status										
Primary	145.73±37.86*	22.13±7.27	18.07±7.62	22.80±6.41	17.80±6.39	20.80±7.52	11.47±3.91*	12.20±3.14	9.40±2.61	11.07±3.60
High school	142.65±28.98	22.29±7.12	15.63±6.93	23.42±5.29	17.90±4.79	19.46±7.15	10.62±2.81	11.98±3.39	9.77±2.67	11.58±3.66
Graduate	136.34±32.32	21.42±6.68	15.75±6.45	21.09±6.17	17.34±4.59	19.11±6.81	9.47±3.15	11.49±3.39	9.30±3.06	11.36±3.60
Marital status										
Single	137.59±31.72	21.75±6.59	15.59±6.17	22.00±6.22	17.58±4.70	19.03±6.67	9.75±2.97	11.55±3.42	9.19±2.95	11.16±3.95
Married	143.29±31.46	22.04±7.30	16.45±7.49	22.68±5.53	17.71±5.14	19.98±7.40	10.75±3.32	12.07±3.26	9.89±2.65	11.71±3.17
Having children										
No	141.50±31.65	22.04±7.08	16.24±6.94	22.38±5.90	17.80±4.82	19.81±6.96	10.22±3.08	11.94±3.29	9.58±2.84	11.50±3.62
Yes	133.58±31.30	21.05±5.95	14.68±5.99	22.00±6.00	16.79±5.32	17.68±7.17	10.21±3.69	11.00±3.62	9.16±2.79	11.00±3.54
Smoking										
No	137.72±28.68	22.00±6.71	15.07±6.03	22.24±6.11	17.09±5.43	19.05±6.63	10.27±3.09	11.60±3.35	9.52±2.90	10.88±3.85
Yes	144.47±35.88*	21.69±7.28	17.53±7.74	22.44±5.58	18.56±3.72	20.18±7.61	10.13±3.32	12.11±3.35	9.51±2.73	12.31±2.98*
Menstrual frequency										
Regular	120.22±32.33	17.04±6.88	12.65±5.25	20.74±6.61	15.78±5.04	15.78±6.51	8.35±3.80	10.22±3.78	8.61±2.82	11.04±3.89
Every 2-6 month	140.10±26.91	22.40±6.29	15.50±5.97	21.56±5.49	17.96±4.66	19.83±6.82	10.21±2.80	11.63±3.42	9.63±2.89	11.37±3.37
Every 6 month±	150.67±31.89**	23.76±6.57**	18.27±7.64**	24.00±5.68**	18.22±4.96**	20.96±6.94**	11.18±2.83**	12.78±2.70	9.84±2.71*	11.67±3.77
PCOS treatment										
0-5 years	142.07±31.25	21.97±6.82	16.48±6.76	22.62±5.71	18.17±4.32	19.98±6.85	10.06±3.02	11.82±3.23	9.45±2.77	11.53±3.66
Over 5 years	135.45±32.48*	21.67±7.24	14.70±6.83	21.52±6.37	16.24±6.00	18.15±7.34	10.64±3.53	11.73±3.68	9.70±3.00	11.12±3.48
Anemia diagnosis										
Yes	138.58±28.42	21.37±6.95	15.54±6.21	22.25±5.26	16.50±4.50	19.33±5.90	10.08±3.10	11.70±3.30	9.91±2.55	11.87±3.35
No	140.66±32.46	22.01±6.00	16.10±6.06	22.33±6.06	17.92±4.96	19.51±7.28	10.25±3.19	11.81±3.37	9.41±2.89	11.30±3.66
Anemia treatment										
Yes	131.50±27.83	19.35±7.55	13.35±5.99	22.28±5.16	16.14±5.30	17.78±6.58	9.50±3.13	11.71±3.77	9.50±2.34	11.85±3.20
No	141.40±31.99*	22.21±6.78	16.33±6.84	22.32±6.00	17.83±4.82	19.69±7.06	10.31±3.17	11.80±3.30	9.51±2.89	11.35±3.65

Note. *$p < 0.05$ & **$p < 0.01$

DISCUSSION

Data from the World Health Organization show that approximately 116 million women (3.4%) worldwide are affected by PCOS [6]. Fluctuations in hormone levels associated with PCOS and PMS have been shown to exacerbate PMS symptoms and cause temporary mood swings. Additionally, women with PCOS may also experience PMS [7]. In this study, when the PMSS total and subscale M scores of the sample group were examined, it was observed that PMS was present in the sample group. Depressive mood and fatigue scores were particularly high. In our study, the high PMS scores indicate that the presence of PCOS exacerbates PMS (**Table 2**). In the study in [7], the total PMS score among nursing students was 115.21 ± 41.61, while in the study in [8] with university students, the total PMSS score was 118.40 ± 32.40. In both studies in [7, 8], the highest score on the scale was obtained in the depressive affect dimension, and the lowest in the sleep changes dimension. Five of assessed symptoms were present in 20% of the sample group. Furthermore, 93.3% of the patients reported fatigue, 65% experienced distractibility, 90% experienced irritability, 86.7% experienced breast tenderness, 76.7% experienced edema, 52.5% experienced headache, 58.3% experienced nausea, and 76.7% experienced increased appetite, 71.7% experienced diarrhea, and 69.2% experienced no increased sexual desire (**Table 4**).

As the number of symptoms in the sample group increased, so did the total and subscale scores of the PMSS. It is thought that increased symptoms during the premenstrual period in both healthy and sick women triggered PMS and exacerbated the symptoms (**Table 5**).

It was reported irritability, fatigue, changes in appetite, depressed mood, and mood swings were the most common symptoms among the 305 participating females, representing 87.8%, 79.6%, 78.6%, and 76.5%, respectively [9]. The study in [10] reported that all participants (100%) reported experiencing at least one PMS symptom with different levels of severity. In general, the most frequently reported premenstrual psychological symptoms were loss of control (69.6%), affective lability (68.2%), anger feelings (60.4%), anxiety/worry feeling (59.9%), depressed mood (93.2%), (89.2%), anxiety/worry (88.3%), and increased sensitivity toward others (59%) [10].

No significant relationship was found between patient age and PMSS total and subscale scores (**Table 5**). This suggests that women with PCOS experience PMS with the same severity at all ages. It was found that PMS symptoms were most common in the 26-29 age range, while the incidence of symptoms decreased over 41 years of age [11].

No significant relationship was found between body mass index (BMI) and PMSS total and subscale scores in the sample group (**Table 3**). The small number of underweight individuals in our study may have led to a failure to fully capture the difference. Previous studies have also found no effect of BMI on PMS [12, 13].

The pain score and total scale scores of patients with primary school education were found to be higher than those with a bachelor's degree or higher (**Table 3**).

Table 4. Symptoms of premenstrual complaints in the sample group

Syptoms		Frequency (n)	Percentage (%)
Fatigue	No	8	6.7
	Yes	112	93.3
Distraction	No	42	35.0
	Yes	78	65.0
Irritation	No	12	10.0
	Yes	108	90.0
Breast tenderness	No	16	13.3
	Yes	104	86.7
Edema	No	28	23.3
	Yes	92	76.7
Headache	No	57	47.5
	Yes	63	52.5
Nausea	No	70	58.3
	Yes	50	41.7
Diarrhea	No	86	71.7
	Yes	34	28.3
Increased appetite	No	28	23.3
	Yes	92	76.7
Increased sexual desire	No	83	69.2
	Yes	37	30.8
Number of complaints	1	1	0.8
	3	8	6.7
	4	10	8.3
	5	24	20.0
	6	23	19.2
	7	17	14.2
	8	14	11.7
	9	14	11.7
	10	9	7.5

This suggests that women with higher education levels are more likely to implement pain coping strategies and have higher levels of awareness. Another study conducted the level of awareness of PCOS was significantly related to educational level and marital status [14].

No significant relationship was found between the sample group's marital status, having children, and the total and subscale scores of the PMSS (**Table 3**). The study in [15] also found no significant relationship between marital status and PMS severity. However, another study examining the relationship between lifestyle and PMS in Jordanian women found that marital status had a relationship with PMS, with psychological symptoms being higher and behavioral symptoms being lower in marital status [16]. In this study, it was seen that women with PCOS who had regular menstrual periods experienced PMS more severely than others (**Table 3**).

A study showed significant differences between PCOS and non-PCOS groups in terms of menstrual cycle length, menstrual irregularity, skipped menstrual cycles, menstrual cycle length and bleeding duration. Since irregular menstruation negatively affects patients psychologically and physiologically, it can be considered normal for their complaints to increase during the premenstrual period [17]. The study in [17] revealed that relationship between smoking use and the presence of PMS. In this study, bloating and total scale scores were found to be higher in smokers than in non-smokers (**Table 3**). Literature indicates that smoking is a risk factor for PMS. It was revealed a statistically significant relationship between smoking and PMS [18]. Smoking raises blood pressure and can increase swelling by causing edema.

It is observed that women who have been treated for PCOS for 5 years or more experience less PMS symptoms (**Table 3**).

Table 5. Relationship between age, number of complaints, and PMSS subscale and total score

PMSS	Age		Number of complaints	
	r	p	r	p
PMSS total	-0.100	0.24	0.62	0.000**
Depressive affect	-0.050	0.55	0.41	0.000**
Anxiety	-0.100	0.24	0.36	0.000**
Fatique	-0.060	0.51	0.50	0.000**
Irritability	-0.140	0.10	0.42	0.000**
Depressive thoughts	-0.120	0.18	0.58	0.000**
Pain	0.033	0.72	0.46	0.000**
Appetiete changes	-0.140	0.11	0.30	0.001**
Sleep changes	-0.019	0.83	0.38	0.000**
Abdominal bloating	0.030	0.74	0.41	0.000**

Note. **$p < 0.01$

Although this study found no significant relationship between anemia and PMS, it was observed that patients treated for anemia experienced a decrease in the total and subscale scores of the PMSS. One study found that the emergence of PMS symptoms was correlated with a decrease in hemoglobin levels [19].

CONCLUSION

This study demonstrates that women with PCOS experience severe PMS symptoms. To improve the lifestyles of women with PCOS, it is recommended that awareness training be increased regarding the detection and treatment of anemia and PCOS, if present, raising awareness about the effects of smoking on PMS, and mitigating and minimizing the effects of PMS symptoms.

Author contributions: HY, SDY, FYD, & CES: data acquisition, analysis, interpretation; **HY:** study conceptualization and design. All authors have agreed with the results and conclusions.

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AI statement: The authors stated that generative AI or AI-based tools were not used.

Declaration of interest: No conflict of interest is declared by the authors.

Data sharing statement: Data supporting the findings and conclusions are available upon request from the corresponding author.

REFERENCES

1. Meier RK. Polycystic ovary syndrome. Nurs Clin North Am. 2018;53(3):407-20. https://doi.org/10.1016/j.cnur.2018.04.008 PMid:30100006
2. Park YJ, Shin H, Jeon S, Cho I, Kim YJ. Menstrual cycle patterns and the prevalence of premenstrual syndrome and polycystic ovary syndrome in Korean young adult women. Healthcare (Basel). 2021;9(1):56. https://doi.org/10.3390/healthcare9010056 PMid:33430265 PMCid: PMC7825721

3. Miyaoka Y, Akimoto Y, Ueda K, et al. Fulfillment of the premenstrual dysphoric disorder criteria confirmed using a self-rating questionnaire among Japanese women with depressive disorders. Biopsychosoc Med. 2011;5:5. https://doi.org/10.1186/1751-0759-5-5 PMid:21535889 PMCid:PMC3110105
4. Takeda T. Premenstrual disorders: Premenstrual syndrome and premenstrual dysphoric disorder. J Obstet Gynaecol Res. 2023;49(2):510-8. https://doi.org/10.1111/jog.15484 PMid:36317488
5. Gençdoğan B. Premenstrual sendrom için yeni bir ölçek [A new scale for premenstrual syndrome.]. Türkiye'de Psikiyatri Derg. 2006;8(2):81-7.
6. Bulsara J, Patel P, Soni A, Acharya S. A review: Brief insight into polycystic ovarian syndrome. Endocr Metab Sci. 2021; 3:100085. https://doi.org/10.1016/j.endmts.2021.100085
7. Gürkan DY, Bilgili N. Prevalence of premenstrual syndrome among university students: Associated factors and comfort level. Bezmialem Sci. 2022;10(1):44-52. https://doi.org/10.14235/bas.galenos.2020.5441
8. Topatan S, Kahraman Ş. The methods they applied for coping and the quality of life of university students living the premenstrual syndrome. J Anatolia Nurs Health Sci. 2020;23:35-44. https://doi.org/10.17049/ataunihem.481238
9. Chumpalova P, Iakimova R, Stoimenova-Popova M, et al. Prevalence and clinical picture of premenstrual syndrome in females from Bulgaria. Ann Gen Psychiatry. 2020;19:3. https://doi.org/10.1186/s12991-019-0255-1 PMid:31969927 PMCid:PMC6964059
10. Al Sabbah H, Al Mutawa N, Assaf EA. Prevalence of premenstrual syndrome and its associations with dietary and other lifestyle factors among university female students in Dubai: A cross-sectional study. Womens Health (Lond). 2024;20:17455057241260026. https://doi.org/10.1177/17455057241260026 PMid:38819884 PMCid:PMC11143812
11. Koca ZK, Çabuk Aİ, Yayla ME. Investigation of the frequency of premenstrual syndrome and its effect on quality of life in women aged 18-45 years working in Adana City Training and Research Hospital. J Eur Med Sci. 2024;5(1):14-22. https://doi.org/10.4274/jeurmed.galenos.2024.58066
12. Aba YA, Ataman H, Dişsiz M, Sevimli S. Premenstrual Syndrome, physical activity and quality of life in young women. JAREN. 2018;4:75-82. https://doi.org/10.5222/jaren.2018.075
13. Tolossa FW, Bekele ML. Prevalence, impacts and medical managements of premenstrual syndrome among female students: Cross-sectional study in college of health sciences, Mekelle University, Mekelle, Northern Ethiopia. BMC Womens Health. 2014;14:52. https://doi.org/10.1186/1472-6874-14-52 PMid:24678964 PMCid:PMC3994244
14. Alruwaili GA, Mohammad SM, Almoaibed FM, et al. General public awareness toward polycystic ovarian syndrome among females in Saudi Arabia. Int J Med Dev Ctries. 2020;4(11):1847-53. https://doi.org/10.24911/IJMDC.51-1601060234
15. Saraei M, Shahrbabak ZM, Khalafi F, Aminian O, Eftekhari S, Izadi N. Prevalence of premenstrual syndrome and related factors among nurses. J Turk Ger Gynecol Assoc. 2024;25(2):74-80. https://doi.org/10.4274/jtgga.galenos.2024.2023-3-1 PMid:38867710 PMCid:PMC11576631
16. Ababneh MA, Alkhalil M, Rababa'h A. The prevalence, risk factors and lifestyle patterns of Jordanian females with premenstrual syndrome: A cross-sectional study. Future Sci OA. 2023;9:FSO889. https://doi.org/10.2144/fsoa-2023-0056 PMid:37752914 PMCid:PMC10518813
17. Mittiku YM, Mekonen H, Wogie G, Tizazu MA, Wake GE. Menstrual irregularity and its associated factors among college students in Ethiopia, 2021. Front Glob Womens Health. 2022;3:917643. https://doi.org/10.3389/fgwh.2022.917643 PMid:36081684 PMCid:PMC9445616
18. Çelik MY, Polat Y, Yıldırım AD. Premenstrual syndrome prevalence in students and comparison of life satisfaction scale scores and premenstrual syndrome scale scores of students. Health Soc. 2019;29:50-7.
19. Mamatha SD, Priya SA, Smitha MC. Association of hemoglobin levels with symptoms of premenstrual syndrome in adults. Med J Dr DY Patil Vidyapeeth. 2023;16(Suppl 1):S51-4. https://doi.org/10.4103/mjdrdypu.mjdrdypu_898_21