Original article

Complementary and Alternative Medicine Used by Adolescents in Premenstrual Syndrome. A Cross-Sectional Study

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Abstract. *Study Objectives:* This study was conducted to determine the treatment methods used by adolescents with premenstrual syndrome. Premenstrual syndrome is a common disorder among women of childbearing age. It influences women's quality of life and economic and social performance. In addition to the conventional treatments by modern medicine, women frequently prefer complementary and alternative medicine practices to cope with the problem. *Methods:* Quantitative and descriptive design study and 367 people were icluded in this study. A questionnaire consisting of three parts was used to collect the data. The first part includes sociodemographic characteristics and information about the menstrual cycle, the second part is the "Premenstrual Syndrome Scale", the third part is the "Complementary and Alternative Medicine Scale (CAMS)". *Results:* 43.3% of the participants had a family history of PMS, and 64.9% had regular menstrual cycles. 23.2% consulted a physician for their complaints, 10.9% used medication for their complaints. The most preferred complementary and alternative medicine herbal supplementary was green tea (49.5%), chamomile (32.5%), sage (23.8%), and thyme (18.6%). The most used mind-body practices are prayer (65.5%), exercise (54.4%), and namaz (32.4%). *Conclusion:* It is concluded that 73% of adolescents diagnosed with premenstrual syndrome used complementary and alternative medicine practices, so it is necessary to investigate their effectiveness.

Key words: premenstrual syndrome, complementary therapy, alternative therapy

Introduction

Periodic changes that start on the first day of menstruation and continue until the first day of the next menstruation with the effect of estrogen and progesterone hormones secreted by the maturation of the follicles in the ovaries is called the menstrual cycle (1). Menstruation affects women's lifestyles, daily living activities, sleep quality, and productivity in work-life (2).

Premenstrual syndrome (PMS) is a combination of physical, psychological, and behavioral symptoms that occur in the late luteal phase of the menstrual cycle of women, disappear within a few days after the menstrual period, and recur in each cycle (3). PMS includes psychological symptoms such as anxiety, tension, depression, confusion, irritability/anger, nervousness, fatigue, sleep disorders, and physical symptoms such as breast tenderness, bloating, appetite changes, weight gain, headache, abdominal pain (4).

Despite varying from country to country, the prevalence of premenstrual syndrome has been reported to be 30-50% (5). The lowest and highest

prevalence was reported as 12% in France and 98% in Iran. Approximately 23-31% of women of reproductive age experience premenstrual syndrome that affects their daily lives (6). The prevalence of PMS was found to be 62% among university students and 51% among women aged 15-49 in Turkey (7).

PMS is more common among Caucasians, smokers, obese, and women aged 20-40 (6). The number of births, genetics, alcohol and caffeine consumption, heavy and demanding work period, neurotic personality, susceptibility to psychosomatic disease, age of menarche, dysmenorrhea, menstrual cycle pattern, etc. are risk factors for premenstrual syndrome (8). In a study conducted with university students in Lebanon to explore risk factors of premenstrual syndrome, it was reported that in addition to obesity, and caffeine use, low socioeconomic status, use of painkillers and sleeping pills also significantly lead to PMS (9).

For a woman who menstruates about 12 times a year, PMS, which occurs 7-10 days before menstruation, which is about 3-4 months a year, becomes a serious problem (7). Due to the PMS-related problems, women may experience uneasiness and economic losses at home, at work, and at school, their academic success may decrease, and their emotional well-being and daily life quality may deteriorate (10). Change in body perception, decrease in self-confidence, social isolation, and interpersonal relationships are impaired. It is also emphasized that the tendency towards substance addiction, crime, and accident may increase (11).

There is no definitive treatment for premenstrual syndrome, so symptom-focused treatment plans are applied. Certain medications are prescribed, such as psychotropic medications, hormone treatments, or nonsteroidal anti-inflammatory drugs. Due to the side effects and lack of therapeutic response of the drugs, women tend to use other therapeutic approaches. Complementary and alternative medicine (CAM) is widely used as a safe, low-cost, alternative solution to overcome common health problems such as premenstrual syndrome (3). The ratio of complementary and alternative treatment, used widely among women of reproductive age, 41-48.5% in the world and 12.6-76% in Turkey (12). CAM used for premenstrual symptoms is herbal remedies, aromatherapy, meditation, yoga, reiki, and acupuncture (13). In a study about Chamomile tea, one of the most widely used herbs in the treatment of PMS, it was observed that it relieves pain, reduces depressive symptoms, and is effective in the treatment of PMS with its antispasmodic and relaxing properties (5). Herbal medicines are also preferred by patients with PMS in the form of aromatherapy by inhalation. Essential oils used in aromatherapy stimulate the limbic system, are transmitted to the sensory center of the brain and are effective in symptoms such as pain, anxiety, nervousness, and sleep problems in patients with PMS (3).

This study aims to determine the CAM methods preferred by women diagnosed with PMS to relieve their complaints.

Materials and Methods

Type of research:

The study is in quantitative, descriptive, and general scanning model design.

Research Universe and Sample

The population of the study includes female students studying at a public university (N=8647). The sample consists of 367 women, calculated based on a 5% deviation at a 95% confidence interval. Inclusion criteria were to be a woman who had PMS complaints at least for the last six months and communicate in Turkish. The sample were those who voluntarily agreed to participate in the study and met the inclusion criteria. Written and/or verbal consent was obtained from those who met the criteria.

Data Collection Tools

A preliminary study was conducted with 15 women for the questionnaire to check the understandability of the questions. During the data collection phase, the purpose of the study was explained to the participants. Verbal or written consent was obtained from those who voluntarily agreed to participate in the study.

The questionnaire consists of three parts. The first part includes socio-demographic characteristics, menstrual cycle, and general health status of the participants. The second part is the Premenstrual Syndrome Scale (PMSS), and the third part is the Complementary and Alternative Medicine Scale (CAMS).

The Premenstrual Syndrome Scale (PMSS): The PMSS, developed and validity and reliability study was performed by Gençdoğan, aimed to measure the premenstrual symptoms, and determine their severity. The scale is in 5-point Likert type and consists of 44 items.

PMSS has 9 sub-dimensions as follows: Depressive sensation (1,2,3,4,5,6,7), Anxiety (8,9,10,11,13,15,16), Fatigue (12,14,17,18,25,37), Irritability (19,20,21,22,23), Depressive thoughts (24,26,27,28,29,30,44), Pain (31,32,33), Appetite changes (34,35,36), Sleep pattern changes (38,39,40) and Bloating (41,42,43). The lowest and the highest scores to be obtained from the scale is 44 and 220. A high score indicates high intensity of PMS symptoms.

The Complementary and Alternative Medicine Scale (CAMS): CAMS was developed by Can et al. (2009). The scale consists of five sub-dimensions of 55 CAM interventions frequently used. The five sub-dimensions comprise the following: the biological practices sub-dimension (3 items), the herbal supplement sub-dimension (29 items), the mind-body practices sub-dimension (5 items), the religious practices sub-dimension (5 items), and the dietary supplement sub-dimension (14 items). CAMS assesses the use of individual CAM methods by dichotomous responses, where 1 means "yes" and 0 means "no". Sub-dimension scores were calculated summing up the scores of individual items, and the total score of the scale is the sum of individual sub-dimension scores. The Kuder-Richardson 20 (KR20) coefficient for the scale was 0.84 (14).

Ethical considerations

Before the research, permission was granted by the scientific research and publication ethics committee of University X with the number 95674917-108.99E.9740. Participants were asked to fill in the informed consent form at the top of the research form within the Helsinki Declaration criteria.

Statistical Analysis

The data were evaluated with the SPSS-22 program, and error checks, tables, and statistical analysis were performed. Number and percentage values were used in statistical evaluations. Conformity to the normal distribution was checked using histogram drawings and skewness and kurtosis values were examined, and Kolmogorov-Smirnov analyzes were made. Chi-square and Duncan tests were used to determine the groups from which the difference originated, and $p<0.05$ was accepted as the statistical significance level.

Results

The mean age of the participants was 19.68±1.04 (min: 18, max: 22). Some socio-demographic characteristics of the participants are given in Table 1.

52% of the mothers and 33.2% of the fathers of the young women in the study were primary school graduates, 18% of the mothers were employed, and 34.6% of the fathers marked 'others' option regarding their occupation, 57.2% of the students stayed in dormitories, and 70.6% had normal weight (Table 1). The average BMI of women is 21.80±3.50 (min:15.63, max:34.38), and 4.6% are employed.

43.3% of the participants had a family history of PMS, and 49.9% of those with a family history of PMS had PMS in their mother or sister 64.9% had regular menstruation, 23.2% consulted a physician for their complaints, and 10.9% used medication for their complaints (Table 2). Most women using medication took analgesics. 9.8% had a chronic disease, and 21.5% had constipation. Among chronic diseases were gastritis, asthma, anemia, bronchitis, migraine, hypothyroidism, and rheumatic diseases.

73.02% of women suffering from PMS used any CAM practice. Herbal supplements most used by women for PMS complaints in the study were green tea (49.5), chamomile (32.5), sage (23.8), thyme (18.6), rosehip (15.4), and ginger (11.9). The most used dietary supplements were sweets (54.2), fruit and vegetables (54.9), honey (31.4%), milk and dairy products (30.4%), yogurt (24.8%), bread (24.5%). The most used mind-body practices were exercise (54.4%)

Table 1. Some of the socio-demographic characteristics of women

Education status of the mother	**n**	**%**	**Education status of the father**	**n**	**%**
Literate	53	14.4	Literate	14	3.9
Primary school	191	52.0	Primary school	122	33.2
Secondary school	58	15.8	Secondary school	81	22.1
High school	53	14.4	High school	96	26.2
Bachelor's degree and above	12	3.4	Bachelor's degree and above	54	14.6
Total	367	100.0	Total	367	100.0
Employment status of the mother	**n**	**%**	**Employment status of the father**	**n**	**%**
Yes	66	18.0	Civil servant/worker	113	30.8
No	301	82.0	Self-employed	109	29.7
Total	367	100.0	Others	127	34.6
			Unemployed	18	4.9
			Total	367	100.0
Place of residence	**n**	**%**	**BMI**	**n**	**%**
With family	77	21.0	Underweight	47	13.4
Apart house	53	14.4	Normal	247	70.6
With friends	27	7.4	Overweight/obese	56	16.0
Dormitory	210	57.2	Total	351	100.0
Total	367	100.0			

Table 2. PMS characteristics of the participants

The yearly average of PMS complaints (min-max): 3.68±2.68 (1-9)					
Average menstrual cycle frequency (min-max): 28.62±6.88 (10-90)					
Days of menstruation (min-max): 5.92±1.40 (3-15)					
Family history of PMS	**n**	**%**	**The family member with PMS**	**n**	**%**
Yes	159	43.3	Mother	54	14.7
No	208	56.7	Sister	96	26.2
Total	367	100.0	Aunt	20	5.4
			Others	197	53.7
			Total	367	100.0
Menstrual cycle regulation			**Consulting a physician for the complaints**	**n**	**%**
Yes	238	64.9	Yes	85	23.2
No	129	35.1	No	282	76.8
Total	367	100.0	Total	367	100.0
Receiving treatment					
Yes	40	10.9			
No	327	89.1			
Total	367	100.0			

Table 3. Mean scores of the PMS Scale

PMSS Sub-dimensions	n	mean±sd	min	max
Depressive sensation	367	21.59±7.31	7	35
Anxiety	367	16.17±7.50	7	40
Fatigue	367	19.17±6.05	6	30
Irritability	367	15.96±6.05	5	25
Depressive thoughts	367	18.08±8.48	7	35
Pain	367	9.09±3.64	3	15
Appetite changes	367	9.47±3.69	3	15
Sleep pattern changes	367	8.27±3.82	3	15
Bloating	367	9.29±3.91	3	15
Total PMSS	367	127.14±42.70	44	220

and meditation (18.4%), and religious approaches were praying (65.5%) and namaz (32.4%). There were no biological practices applied by women (Table 4).

As a result of evaluating some variables with the PMS scale sub-dimensions, it was seen that patients with a family history of PMS, those with persistent constipation complaints, those who consulted a physician for their complaints, and those who were overweight were found to have more complaints ($p<0.05$). No statistically significant difference was found between the educational status of the mothers and fathers, the place where they lived, their chronic illness, regular menstruation, and treatment for their complaints, and PMS complaints (Table 5).

Table 4. Use of CAM Practices[a] (N:268)

Herbal supplements	n	%	Dietary supplements	n	%
Dead nettle	9	2.9	Yoghurt	76	24.8
Rosehip	48	15.4	Milk and milk products	76	30.4
Linden tea	112	36	Honey	96	31.4
Bee milk	2	0.6	Carob syrup	39	12.7
Chamomile	101	32.5	Anzer honey	3	1
Green tea	154	49.5	Mulberry syrup	29	9.5
Sage tea	74	23.8	Chestnut honey	4	1.3
Nigella sativa	21	6.8	Pomegranate-	39	12.7
Blueberries	2	0.6	Grapefruit	17	5.6
Mallow	2	0.6	Garlic-	13	4.2
Ginger	37	11.9	Carrot-	31	10.1
Sweet almond	4	1.3	Other fruits and vegetables	168	54.9
Curcuma	12	3.9	Red meat	55	18
Flax seed	5	1.6	Fish	30	9.8
Vitamin	18	5.8	Chicken	63	20.6
Centaury	7	2.3	Bread/pastry	75	24.5
Thyme	58	18.6	Sweets-	166	54.2
Mistletoe	2	0.6	Other	34	11.1
Yarrow	6	1.9	**Religious practices**	**n**	**%**
French lavender	2	0.6	Namaz[b]	77	32.4
Juniper	2	0.6	Pray	156	65.5
Grape seed	2	0.6	Carry written amulet	7	2.9
Omega 3	6	1.9	Visiting turbe[c]	2	0.8
Horsetail	2	0.6	Being prayed by hodja	5	2.1
Other	72	23.2	Other	79	33.2

Table 4 (*Continued*)

Mind-body practices	n	%	Biological practices	-	-
Exercise	131	54.4			
Meditation	45	18.4			
Reiki	1	0.4			
Acupuncture	2	0.8			
Arm band	4	1.7			
Others	96	39.8			

[a] Some patients used more than one CAM therapy, so the percentages of CAM use are given according to the related item.
[b]Namaz: Prayer performed by Muslims five times a day. [c]Visiting a place where holy man is buried.

Table 5. Comparison of PMSS sub-dimension and some variables in women

	Depressive sensation	Anxiety	Fatigue	Irritability	Depressive Thoughts	Pain
	Mean Rank	Mean Rank	Mean Rank	Mean Rank	Mean Rank	Mean Rank
Family history of PMS						
Yes	200.11	193.98	202.32	193.80	197.35	200.97
No	171.69	176.37	170.00	176.51	173.80	171.03
Test value	U: 13975.00	U: 14959.00	U: 13623.00	U: 14978.00	U: 14960.00	U: 14414.00
	p: 0.011	**p: 0.114**	**p: 0.004**	p: 0.121	p: 0.117	p: 0.117
Constipation						
Yes	216.65	217.77	221.85	196.88	214.94	214.21
No	175.04	174.74	173.62	180.47	175.51	175.71
Test value	U: 8796.50	U: 8708.00	U: 8385.50	U: 10358.50	U: 8932.00	U: 8989.50
	p: 0.002	**p: 0.001**	**p: 0.00**	p: 0.222	**p: 0.003**	**p: 0.004**
Consulting a physician						
Yes	196.31	199.69	218.87	205.72	207.39	230.87
No	180.29	179.27	173.49	177.45	176.95	169.87
Test value	U: 10939.00	U: 10651.00	U: 9021.00	U: 10139.00	U: 9996.50	U: 8001.00
	p: 0.222	p: 0.119	**p: 0.001**	**p: 0.031**	**p: 0.020**	**p: 0.00**
BMI						
Underweight	177.54	176.24	178.00	176.06	168.87	176.43
Normal	171.69	170.96	172.88	173.57	174.73	173.06
Overweight/obese	190.61	194.91	184.97	183.54	184.44	185.46
Test value	KW: 1.622	KW: 2.570	KW: 0.687	KW: 0.446	KW: 0.655	KW: 0.696
	p: 0.444	p: 0.277	p: 0.709	p: 0.800	p: 0.721	p: 0.706

Discussion and Conclusion

Mood and physical symptoms that occur during the luteal phase of the menstrual cycle can cause discomfort for some women and reduce their quality of life. PMS experienced during adolescence affects young women's self-confidence, attendance to school, academic achievement, and quality of life (15). This study on adolescents can be considered valuable exemplary research in Turkey.

It is not known exactly how age affects PMS because although it is known that the symptom severity peaks in the thirties, some studies suggest that the number and severity of symptoms increase in the adolescent period (16). The mean age of adolescents in our study was 19.68±1.04. In a study conducted on female

students at a university in Pakistan, the average age of individuals with PMS was found to be 21.52 (17).

The mean BMI of the participants with PMS in the study by Yen et al. was determined to be 21.90±3.50 (18). Consistent with the literature, in our research, it was found that 70.6% of the participants were at a normal weight and their mean BMI was 21.80±3.50. Kırcan et al. explained that 61.8% of women had irregular cycles in the PMS prevalence study (19). Unlike the literature, 64% of the participants had regular menstrual cycles in our study. That is, the menstrual cycle patterns of women with PMS differ.

In our study, 23.2% of the participants consulted a physician for their complaints, 10.9% of them used medication for their complaints, and analgesics were the most used medication. Like our study, in the study conducted by Keskin et al., students most frequently used analgesics for PMS, got information about the period mostly from mother or sister (52.4%), and consulted healthcare personnel (56.5%) for symptoms (20). It is concluded that women with PMS complaints generally prefer analgesics as medical treatment to cope with the symptoms.

In this study, the mean score adolescents obtained from the PMSS was 127.14±42.70, and they experienced moderate severity of PMS. Similarly, Çitil and Kaya noted that in their study with midwifery students that the mean PMSS score was 119.45 (21). In our study, the most common PMS symptoms were found to be depressive sensation, fatigue, depressive thoughts, anxiety, and irritability, which are consistent with the results of previous studies (22-24). In a study conducted in Japan, anxiety, or nervousness; cry; anger or irritability; decreased interest in work, home, or social activities; difficulty in concentrating; fatigue or lack of energy, desire to eat; insomnia or hypersomnia; feeling uncomfortable, and physical symptoms such as tender breasts, feeling bloated, headache, joint or muscle pain, or weight gain was found to be among the main symptoms of PMS (15). Additionally, some studies report that appetite changes, bloating and pain are among the most common complaints in young women in the premenstrual period (21, 25). Since these complaints seriously affect the quality of life of young women, their family relationships, and academic performance, they are health problems that should be addressed in the early period (26). Identifying the most common premenstrual symptoms experienced by young women will be a guide for planning interventions to relieve these symptoms.

Those with a family history of PMS, those who had continuous constipation complaints, those who consulted a physician for their complaints, and those who were overweight in the study were more likely to have complaints. Selçuk et al. stated that PMS is significantly higher in students who stay in the dormitory, whose menstruation period lasts seven days or longer, who have gynecological diseases, and who frequently consume fast-food food, smoke, and drink alcohol (23). Caffeine, sweets, and fast-food consumption (27), sleep problems, physical activity, and the amount of tea and coffee consumed triggered PMS symptoms (28). Based on the study results, it is seen that PMS can be coped with a lifestyle change. PMS symptoms can be controlled by preventing constipation, weight control, diet, limiting coffee and tea consumption, and appropriate exercises. Therefore, it is essential to focus on the lifestyle factors of people with PMS complaints.

Women prefer many CAM methods for the PMS they experience. In our study, the most preferred CAM practices for PMS by women were herbal supplements such as green tea (49.5), chamomile (32.5), sage (23.8), thyme (18.6), rosehip (15.4), and ginger (11.9). In addition, the most used dietary supplements were sweets (54.2), fruits and vegetables (54.9), honey (31.4%), milk and dairy products (30.4%), the most used mind-body practices were exercise (54.4%) and meditation (18.4%), and religious approaches were praying (65.5%) and namaz (32.4%). In a study on 7427 women suffering from premenstrual pain by Fisher et al., it was determined that women with endometriosis visited a massage therapist or used acupuncture, vitamins/minerals, yoga/meditation, or Chinese herbal remedies while patients with PMS visited an osteopath, massage therapist, naturopathy/herbalist, or alternative health practitioner that (29). In randomized controlled trials, Khayat et al. found that curcumin had an advantageous effect in alleviating the severity of PMS symptoms thanks to its anti-inflammatory effects (30). Keskin et al. listed the methods used in the menstrual periods by students experiencing premenstrual pain as massage, hot water bag, physical

exercise, herbal supplements, vegetable-based diet, vitamin therapy, reflexology, chiropractic, meditation/yoga, visiting turbe/prayer, acupuncture, and hypnosis (20). In a study conducted in Iran, yoga was reported to have positive effects on PMS and depression in women with PMS (31). Our study, parallel with the literature, revealed that women prefer herbal, dietary, mind-body, and religious practices to relieve PMS. Considering that the majority of women use CAMS for therapeutic purposes to alleviate PMS (73.02%), it is important to evaluate the effectiveness and effects of the methods used.

Our study demonstrated that the most common complaints in the premenstrual period were appetite changes, irritability, bloating, pain, fatigue, and depressive sensation, respectively. PMS is most seen in those with a family history of PMS, those with persistent constipation, those who consult a doctor for their complaints, and those who are overweight. Approximately two-thirds of women use CAM for PMS complaints, including herbal supplements like green tea, chamomile, sage, thyme, rosehip, dietary supplements like sweets, fruit, vegetable, honey, milk, dairy products; mind-body practices as exercise and meditation; and religious approaches like prayer and namaz. In light of these results, it is recommended to conduct further comprehensive studies with larger samples, to examine the effectiveness and effects of CAM practices, to increase the awareness of young women about PMS complaints, to plan interventions to teach methods that can be used in coping and to improve dietary and living conditions.

Conflict of interest: The authors declare there are no conflicts of interest.

Ethical considerations: This study has the ethical approval of the Ethical and Research Committee of Gumushane University of Medical Sciences, Turkey (approval code: 95674917-108.99-E.9740).

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