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Original Article

Premenstrual syndrome and premenstrual dysphoric disorder among women aged 15-49 years

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A B S T R A C T

Objective: Approximately 80% of women in reproductive age experience some premenstrual phase-related changes in the menstrual cycle. We aimed to determine the prevalence of premenstrual syndrome (PMS) and premenstrual dysphoric disorder symptom frequency among women aged 15-49 years in a family practice catchment area.

Material and methods: A cross-sectional study was conducted in the women registered to a family practice center in İzmir Bayraklı. Out of 522 women at the age of 15-49 years, 198 participants filled the Premenstrual Assessment Form (PAF) and answered demographic questions. The main outcome measures were the presence of "premenstrual symptoms" and "premenstrual syndrome".

Results: The mean age, waist circumference and BMI of the women were 29.3±9.1 years, 80.4±13.2 cm and 25.2±5.1 kg/m2, respectively. Of the participants, 68.2% (n=131) were single and 60.4% (n=116) were housewives. Premenstrual syndrome (PMS) was present in all the women involved in the study. Of these, 3.6% were evaluated as premenstrual dysphoric disorder (PMDD). None of the independent variables in the study revealed as risk factors for PMDD (p>0.05). Mean PAF scores were 2.22±0.90. There was no correlation between PAF scores and the studied variables except for waist circumference (r = -0.17; p = 0.02). The sociodemographic variables were not related with PMS (p> 0.05).

Conclusion: Training and counseling on the causes and symptoms of PMS should be provided to women, particularly in primary health care facilities, and in-service trainings should be conducted to provide information to the staff working in family practice centers.

Keywords: premenstrual syndrome; premenstrual tension; premenstrual dysphoric disorder; premenstrual dysphoric syndrome

A R T I C L E I N F O

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Introduction

Premenstrual Syndrome (PMS) is a collection of somatic, cognitive, emotional, and behavioral symptoms that occur during the luteal phase of menstrual cycles in women and are common throughout the reproductive period, which rapidly resolve with the onset of menstruation [1–3]. Premenstrual dysphoric disorder (PMDD) is considered as a severe form of PMS [4] Due to its appearance in a large majority of women in the age of sexual maturity, PMDD emerges as a public health problem [5].

Approximately 80% of women in the reproductive age experience some premenstrual phase-related changes in the menstrual cycle [6]. The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) reported the prevalence of mild premenstrual changes in the psychological functions of women as about 75% and the PMS symptoms as 20-30% [7]. The frequency of PMS in Turkey has been reported as between 17.2-62% in different surveys [8–10]. To improve the interventions for women during this period, it is necessary to understand the changes accompanying Premenstrual symptomatology [7]. PMS starts in puberty; symptoms increasingly intensify, and decrease as the woman approaches menopause.

Not all women experience PMS in the same way; the symptoms may vary from mild to debilitating in severity [11].

PMS has been reported to have more than 150 symptoms. The symptoms of PMS can be categorized under pain, edema, psychological, physical, behavioral symptoms, appetite issues, and skin problems [11–14].

Determination of PMS frequency and risk factors is important for a better understanding of its etiology and planning of appropriate treatments. On the other hand, research on the frequency of PMS was mostly conducted among university students. However, PMS can be seen throughout the reproductive period. In addition, there was no previous research about the frequency of PMS and the related factors in the studied population of the family health center (FHC) region.

In this study we aimed to determine the prevalence of premenstrual syndrome (PMS) and premenstrual dysphoric disorder symptom frequency among women aged 15-49 years, and to study the relationship between PMS and metabolic syndrome parameters, chronic diseases, alcohol, and smoking.

Material and methods

The study was conducted in a cross-sectional plan, at the outreach area of the family practice center number 4 in İzmir Bayraklı, between January and May 2013. Study reporting was done in accordance with the STROBE guidelines [15]. The study protocol was approved by the

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Local Ethics Committee of Ege University Medical Faculty. Each participant signed an informed consent form in accordance with the Declaration of Helsinki.

The Family Practice Center (FPC) Number Four in Bayraklı serves a defined population of 11,850 people with three family physicians, three nurses, and one medical secretary. With a population of 350,000 inhabitants, the Bayraklı area is one of the main districts of Izmir.

Table 1. Sociodemographic characteristics of the participants

		Mean / n	SD / %
Age (year)		29.3	9.1
Height (cm)		161.5	6.0
Body weight (kg)		65.7	13.8
Waist circumference (cm)		80.4	13.2
BMI (kg/m^2)		25.2	5.1
Marital Status	Married	61	31.8
	Single	131	68.2
Education	Illiterate	4	2.1
	Elementary	84	43.8
	Secondary school	28	14.6
	High school	52	27.1
	University	24	12.5
Occupation	Housewife	116	60.4
	Student	33	17.2
	Employee	32	16.7
	Officer	7	3.6
	Artisan	4	2.1
Income level	Low	81	42.1
	Middle	108	56.3
	High	3	1.6
Real estate status	Own housing	105	54.7
	Tenant	87	45.3
Number of persons living in the household	1	5	2.6
	2	17	8.9
	3	53	27.6
	4	61	31.8
	5	41	21.4
	6	4	2.1
	7	11	5.6
Smoking	Yes	29	15.1
	No	163	84.9
Chronic Disease	Yes	21	10.9
	No	171	89.1
SD: Standard deviation			

The study was carried out on a representative sample of women aged 15-49 years and registered with the Bayraklı 4thFPC. Randomly selected participants were invited by a phone call and interviewed by the same researcher at the FPC. Patients with diagnosed malignancies, depression, psychotic disorders, using oral contraceptives, having mental retardation, pregnancy, and being at puerperal period or menopause were excluded from the study.

The study variables were as follows: Dependent variables were the presence of "premenstrual symptoms" and "premenstrual syndrome". Independent variables were age, marital status, occupation, educational status, educational level of the spouse, body mass index, smoking status, chronic illness, number of people living in the same housing, working status, and total monthly income.

The data collection form consisted of two parts. In the first part, there were 16 items on sociodemographic characteristics. In the second part was the 95-items Premenstrual Assessment Form (PAF) developed by Halbreich et al. [16] and adapted to Turkish by Dereboy et al. [8]. The data collection form was finalized and applied after piloting on 30 women.

Before the data collection forms were applied, the researcher introduced himself and gave information about the purpose and duration of the research. Participants were assured that they would be volunteers and they would not be required to write their names in the questionnaires, they would be able to reject the study, and that the collected information would be securely stored and used solely for research purposes. The questionnaire was applied by face-to-face interview in a convenient and silent room in the PHC.

The sample size was calculated as 168 participants for a finite population of 522 women at 15-49 years of age with an expected prevalence of the outcome variable as 80%, margin of error of 5%, and a confidence interval of 95% using Russ Lenth's application [17]. Taking non-respondents into account, we aimed for 200 participants. Of the invited women, 198 (99%) agreed to participate. Two women were excluded (one having depression and the other one using oral contraceptives).

Height, weight and waist circumference measurements were done with standard instruments used in the FHC. BMI was calculated by dividing weight (kg) by the square of height (m2). Waist circumference was measured at the midpoint between the lower margin of the least palpable rib and the top of the iliac crest, using a stretch-resistant measuring tape that was wrapped snugly around the patient. Measurement was done while the patient was standing upright and the tape was placed parallel to the floor.

Premenstrual Assessment Form (PAF) is a self-report scale with 95 questions and 18 subscales that measure retrospectively the changes observed by women in the premenstrual period. The questions are answered on a six-point Likert scale. The option "1" means "no change" while the option "6" means "extreme change".

In order to group participants, the K-means cluster analysis for grouping was utilized using the 95 items of the PAF and adopting a triple cluster analysis. As a result of these analyzes, the mean score of each cluster was determined as the threshold value. Cluster cutoff values of 1-2.49, 2.49-4, and 4-6 were categorized as mild, moderate, and severe PMS, respectively. Severe PMS was regarded as PMDD.

In the calculation of the presence of Premenstrual Syndrome in women, the values between the mean scores of the clusters and the maximum value limits were found and their shares on the total were calculated. Scores at and above the mean value were defined the presence of PMS.

Statistical methods

Data was entered into the computer and analyzed using the SPSS 20.0 software. The results were presented as frequencies, percentages, means, and standard deviations (SD). For the comparison of the sociodemographic data, the Chi-Square (or Fisher's exact) test was used for categorical variables. Associations between various numerical variables

were investigated using the Pearson's correlation analysis. A p value of <0.05 was considered as statistically significant.

Results

The present study comprised 192 women of reproductive age. The mean age, waist circumference and BMI of the women were29.3±9.1 years, 80.4±13.2 cm and 25.2±5.1 kg/m2, respectively. Of the participants, 68.2% (n=131) were single,60.4% (n=116) were housewives, 42.1% (n=81) had low income, and 15.2% (n=29) were smoking. Sociodemographic characteristics of the study participants are given Table 1.

From the PAF subscale scores, the lowest score was for "atypical depressive features" (2.02 ± 1.10) and "miscellaneous mood/behavior" while the highest scores were with "fatigue" (2.86 ± 1.28) and "general physical discomfort" 2.03 ± 0.89) (Table 2).

Table 2. Mean score of participants from PAF subscales

Subscale	Number of questions	Mean±SD
1. Low mood/Loss of pleasures	10	2.23±1.15
2. Endogenous depressive features	5	2.11±0.99
3. Instability	3	2.27±1.26
4. Hysteroid features	6	2.54±1.13
5. Atypical depressive features	5	2.02±1.10
6. Hostility/anger	6	2.06±1.15
7. Social withdrawal	4	2.11±1.16
8. Anxiety	4	2.55±1.23
9. Increased well-being	4	2.06±1.02
10. Impulsiveness	4	2.11±1.19
11. Organic mental discomfort	6	2.22±1.10
12. Sign of water retention	6	2.20±1.02
13. General physical discomfort	3	2.56±1.35
14. Autonomic physical changes	7	2.16±1.02
15. Fatigue	4	2.86±1.28
16. Impaired social functioning	11	2.16±1.02
17. Miscellaneous mood/behavior	14	2.03±0.89
18. Miscellaneous physical changes	6	2.08±0.92
PAF	95	2.22±0.90

SD: Standard deviation

According to the cluster cutoff values, 66.1% of the women (n=127) were in the mild, 30.2% (n=58) in the medium, and 3.6% (n=7) in the severe cluster.

There was no correlation between PAF scores and the studied variables except for waist circumference (r = -0.17; p = 0.02). As can be seen in Table 3, the sociodemographic variables were not related with PMS (p> 0.05).

Table 3. The relationship between sociodemographic variables and PMS

		PMS				
		Mild/Medium		Severe		
		n	%	n	%	*p**
Marital Status	Married	59	96.7	2	3.3	1.0
	Single	126	96.2	5	3.8	
Education	Illiterate	4	100.0	0	0.0	0.427
	Elementary	81	96.4	3	3.6	
	Secondary school	28	100.0	0	0.0	
	High school	48	92.3	4	7.7	
	University	24	100.0	0	0.0	
Occupation	Housewife	112	96.6	4	3.4	0.319
	Student	32	97.0	1	3.0	
	Employee	31	96.9	1	3.1	
	Officer	7	100.0	0	0.0	
	Artisan	3	75.0	1	25.0	
Income level	Low	80	98.8	1	1.2	0.242
	Middle/High	105	94.6	6	5.4	
Real estate status	Tenant	84	96.6	3	3.4	1.0
	Landlord	101	96.2	4	3.8	
Smoking	No	157	96.3	6	3.7	1.0
	Yes	28	96.6	1	3.4	
Chronic Disease	No	166	97.1	5	2.9	0.171
	Yes	19	90.5	2	9.5	

Discussion

Premenstrual syndrome (PMS) was present in all the women involved in the study. Of these, 3.6% were evaluated as premenstrual dysphoric disorder (PMDD). None of the independent variables in the study revealed as risk factors for PMDD.

This study bore some limitations. There might be some recall bias in remembering the experienced symptoms retrospectively. It was not required that women were in the premenstrual period during the study. The high number of items in the data collection form can be mentioned as another limitation.

Although not very clear, many women indicate that the symptoms of PMS increase in relation to the number of pregnancies and age [18]. However, the etiology and pathophysiology of premenstrual syndrome is still not fully elucidated [2,14]. Hypotheses explaining the etiology of PMS are based on psychological, social, and biological principles [19].

This study demonstrated that PMS is very high in the study population. Using the PAF scale, PMS prevalence was reported as 62.5% in another study conducted with 331 adolescent girls in İzmir [20]. A study of 600 women in

Antalya found that 43% of women had mild and moderate PMS, while 4.7% had severe PMS [21]. In another epidemiological study of 541 women investigating premenstrual syndrome frequency in the 15-49 age group of women in the reproductive age group in the Manisa province revealed that 6.1% of the participants had severe PMS symptoms, of which about 72% met the DSM-IV criteria on premenstrual dysphoric disorder (PMDB) [22].

When the relationship between sociodemographic variables and PMS risk was evaluated, it was seen that the average age of the women in the risk group was lower and the ratio of single and working women was higher in terms of PMS diagnosis. Although there are reports that PMS symptoms generally increase with age [23], there are also studies reporting that PMS does not correlate with age [24]. There was no correlation between age and PMS in our study.

We could not demonstrate a relationship between PMS and marital status, education, or income. It was reported that in general there is no relationship between PMS and marital status or occupation among Turkish women [25]. In a study conducted in Ordu, it was found that there was a slight link between PMS and marriage, educational status, and the level of income [26].

PMS was found in 62.0% of the teachers vs. 38.1% of the housewives, and the rate of PMS among working women was higher than that of housewives. Compared with respect to the job stress level, compared to the teachers, the job stress score was higher among nurses. The study indicated that work stress was related with PMS, and there were more related problems among working women[10].

Although no direct link between the BMI and PMS could be shown, a linear relationship was found between the waist circumference and PMS. A study investigating the relationship between body mass index and PMS demonstrated a strong linear connection of the two. An increase of each 1 kg/m2 BMI was found to cause a 3% increase in the PMS risk [27]. According to another study, there was no significant relationship between BMI and premenstrual syndrome [28]. However, one study of 874 women with a BMI greater than 30 kg/m2 found a strong association between obesity and premenstrual syndrome[29].

Our study did not find a link between smoking status or having a chronic illness and PMS. However, most of the previous studies have demonstrated that smoking increases the risk of PMS [16,22,30–32]. A Previous study in adolescents has shown that PMS is more common among people with chronic illnesses [33].

As a conclusion, due to the high prevalence, training and counseling on the causes and symptoms of PMS should be provided to women, particularly in primary health care facilities, and home visits should be conducted if necessary. In addition, in-service trainings should be conducted to provide information to the staff working in family practice centers.

Disclosure

The authors report no conflict of interest

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