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Original Article

Investigation of Factors Related to Menstrual and Premenstrual Symptoms

Menstrual ve Premenstrual Semptomlar ile İlişkili Faktörlerin İncelenmesi

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ABSTRACT

Objective: This study aimed to evaluate the premenstrual and menstrual complaints in women of reproductive age and examine the factors that increase the severity of the symptoms.

Material and Methods: This descriptive study was conducted during May-August 2018. The data were collected from 1,105 women (aged 18–49 years) through digital questionnaire, and the Statistical Package for the Social Sciences 20.0 program was used for the analyses.

Results: Premenstrual symptom (PMS) was experienced by 26.2% of the women, whereas 11.5% experienced premenstrual dysphoric disorder. The severity of menstrual symptoms increased in women with premenstrual complaints.

Conclusion: Women with more premenstrual complaints also have more menstrual complaints. Risk factors that can increase the severity of symptoms include the following: having chronic illness or a history of psychiatric treatment, problems with reproductive organs in the previous year, dysmenorrhea and menstrual disorders, having negative thoughts about being menstrual, having never been pregnant, using contraception, consuming alcohol, and/or having a family history of PMS and dysmenorrhea. There is no significant relationship between religious attitudes and premenstrual and menstrual symptoms.

Keywords: Dysmenorrhea, female, menstruation, premenstrual dysphoric disorder, premenstrual syndrome, risk factors

ÖZ

Amaç: Bu araştırmada üreme çağındaki kadınlarda premenstruel ve menstruel yakınmalar değerlendirilerek, semptomların şiddetini artıran faktörlerin belirlenmesi amaçlanmıştır.

Gereç ve Yöntem: Tanımlayıcı ve kesitsel tipteki çalışma Mayıs-Ağustos 2018 tarihleri arasında gerçekleştirilmiştir. Veriler, 18-49 yaşları arasındaki 1105 kadından dijital anket ile toplanmıştır. Analizler için SPSS 20.0 istatistik paket programı kullanılmıştır.

Bulgular: Kadınların %26,2'sinde Premenstruel semptom ve %11,5'inde premenstrüel disforik bozukluk görülmüştür. Premenstruel şikâyetleri olan kadınlarda menstrual semptomların şiddeti artmıştır.

Sonuç: Premenstruel şikâyetleri daha fazla olan kadınlarda menstrual şikayetler de daha fazladır. kronik hastalık varlığı, psikiyatrik tedavi öyküsünün olması, son 1 yılda üreme organlarıyla ilgili sorun yaşama, dismenore ve menstrüel düzensizlik yaşama, adet olmaya ilişkin olumsuz düşüncelerin olması, daha önce gebe kalmamış olma, kontraseptif kullanmama, alkol kullanma, ailede PMS ve dismenore öyküsünün olması, premenstrüel ve menstrüel semptomların şiddetini arttıran ortak risk faktörleridir. Dindar olma ile premenstrüel ve mestrüel semptomlar arasında anlamlı bir ilişki yoktur.

Anahtar kelimeler: Dismenore, kadın, menstrüasyon, premenstrüel disforik bozukluk, premenstruel sendrom, risk faktörleri

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Introduction

Problems regarding menstrual status include dysmenorrhea, premenstrual symptom (PMS), premenstrual dysphoric disorder (PMDD), menstrual bleeding disorders, and irregular menstruation.[1-4] PMS is a psychoneuroendocrine disorder characterized by physical, cognitive, emotional, behavioral, and psychological symptoms that occur in the luteal phase of the menstrual cycle without any underlying psychiatric disease or organic cause that is rapidly recovered from within a few days of the start of menstruation or a few days after the onset. PMDD is defined as PMS symptoms that are exacerbated by interrupting the daily life of the individual and are severe enough to require psychiatric treatment.[4,5] In the literature, in general, the prevalence of PMS is reported as 20%–40% and that of PMDD is 1.2%–10%.[2,4,6] Apart from these problems specific to premenstrual period, another problem related to menstruation is pain (dysmenorrhea) experienced during the menstrual period. It has been reported that 34%-94% of women[3] experience intense symptoms, such as dysmenorrheal; nausea; vomiting; fatigue; head, back, and joint pain; breast tenderness; and diarrhea, during menstruation.[1-3]

Studies of premenstrual and menstrual complaints generally include following factors: hormones; genetics; environmental factors; sociodemographic factors; gynecologic, obstetric, metabolic, and anthropometric features; lifestyle, nutrition, and sleep habits; use of caffeine, alcohol, and cigarettes; familial history; and so on.[1,3,5-8]

Although the problems experienced by women during their premenstrual and menstrual periods are not life-threatening, they can disrupt their daily life. Recurring symptoms can negatively affect the academic, economic, and social performances of women; decrease their quality of life; and cause them to experience mental problems.[5,9]

When studies on the subject are examined, it is generally seen that there is a focus on either the premenstrual or menstrual period, and it is ignored that the symptoms experienced in these successive periods may be related to similar etiological factors. In this study, both premenstrual and menstrual symptoms were taken into consideration in women of reproductive age and the factors affecting this were examined. The results obtained from this research are expected to bridge some gaps in the literature and contribute to the health services.

Research questions

1. What is the prevalence of premenstrual symptoms in women aged 18-49 years?

2. What is the intensity of menstrual symptoms in women aged 18-49 years?

3. What factors affect the prevalence of premenstrual symptoms and the severity of menstrual symptoms in women aged 18-49 years? What factors are common?

4. Are the menstrual symptoms greater in women with premenstrual symptoms?

Material and Methods

Study design and sample

This descriptive study was conducted during May-August 2018. A digital questionnaire was delivered to participants through various channels. The minimum sample size required in the study was determined with the help of power analysis. All calculations in the power analysis to determine the *a priori* required minimum sample size G-Power 3.1.9.2 was carried out through the program. In the study, the required minimum sample size was calculated to be at least 1,046 in total with 5% type 1 error, 0.10 Cohen standardized effect size, double-sided hypothesis, and 90% working power. Considering the data loss, 1,105 women were reached. In this research, the sample selection method was not used, and it was aimed to reach the whole universe. The study was carried out with women who fulfilled the inclusion criteria (age of 18-49 years, menstruating, reaching the Internet, and willing to participate in the study). Women who were pregnant or exclusively breastfeeding (and not menstruating) were excluded in this study.

Measures

On the basis of the literature review, the researchers of this study prepared 5 separate forms for data collection. Data were collected with a "Personal Information Form," "International Physical Activity Questionnaire (IPAQ)," "The Ok-Religious Attitude Scale," "Menstrual Symptom Questionnaire (MSQ)," and "Premenstrual Symptoms Screening Tool (PSST)." All forms were created in Turkish and not translated into another language.

Personal Information Form: This form was developed by the researcher team and was designed to evaluate sociodemographic characteristics, health-related characteristics, sexual health, reproductive health, and health-related daily life habits.[1,3-9]

Sociodemographic characteristics: These included age, education, marital status, economic situation, and place of residence. Health-related characteristics included height, weight, perception of health, presence of chronic diseases, psychiatric history, and exposure to violence throughout lifetime and within the last year. Body mass index (BMI) (defined as 18.5–24.99 kg/m^2 as normal, 25–29.99 kg/m^2 as overweight, and ≥30 kg/m^2 as obese) of <18.5 kg/m^2 was calculated based on height and weight.[10]

Sexual and reproductive health (S-RH) characteristics: Menarche age, menstrual features (frequency, bleeding duration, bleeding pattern, and symptoms experienced), sexuality (sexual activity and problems experienced), reproductive health (number of pregnancies and contraceptives), and related characteristics were questioned.[1,6,11]

Health-related daily life habits: Cigarette and alcohol consumption; number of daily meals; consumption of breakfast, salt, vegetables, fruit, sweets, tea and coffee; sleep habits; physical activity; and religiosity were evaluated.[2,4-6,9,12] Cigarette and alcohol consumption were evaluated as yes/no. Fruit and vegetable consumption was assessed with 2 questions: "How many servings of fruits (vegetables) do you eat on a typical

day?" using the 24-h dietary recall data as the gold standard (5 servings of fruit a day). Less than 5 portions of vegetables/fruits per day were considered inadequate.[13] The standard number of daily meals was evaluated as 2 or 3.[10,13] Consumption of chocolate, sweets, tea, and caffeine (1 cup/200 mL per day) were evaluated as below and above the group average.[5,6,9]

International Physical Activity Questionnaire (IPAQ-S7S): Physical activity was assessed using the self-administered IPAQ short version (for the past 7 days/least 10 min). Individuals classified in the low-activity group were those who did not meet the criteria for moderate and vigorous-intensity categories (<599 [metabolic equivalent] MET-min/week). The moderate-activity group had engaged in moderate- or vigorous-intensity activities achieving a minimum of at least 600 MET-min/week. High-activity individuals had achieved a minimum of at least 3,000 MET-min/week.[14]

The Ok-Religious Attitude Scale: This is an 8-item, 5-point Likert-type scale developed by Ok (2011)[12] to evaluate the religious attitude. The participants are asked to give a score between 1 (I do not agree at all) and 5 (I agree completely) about their religious attitudes. High score indicates high religious attitudes of individuals and low score indicates low religious attitudes.[12] In this study, the above average of the scale was considered to be "much religious" and lower than the average of the scale was considered "less religious." In this study, the Cronbach's alpha reliability coefficient was 0.92.

MSQ: This is a 24-item, 5-point Likert-type scale developed by Chesney and Tasto (1975) and revised by Negriff et al. (2009). There are 3 subdimensions, namely, negative effects/somatic symptoms, menstrual pain, and methods of coping with menstrual pain. Participants were asked to give a number between 1 (never) and 5 (always). Higher MSQ scores indicate an increase in the severity of menstrual symptoms. The scale was adapted to Turkish culture in 2014 by Guvenc et al.[2] with a Cronbach's alpha value of 0.92. In this study, the Cronbach's alpha reliability coefficient was 0.94.

PSST: The 3-part PSST was developed by Ozdel et al.[4] with women with a mean age of 30.19±6.04 years. In the first part of the scale, 14 premenstrual symptoms are examined with participants rating their symptoms as mild, moderate, or severe. The second part deals with work, school, family, social life, and domestic responsibilities, and symptoms are again rated as mild, moderate, and severe. In the last part of the scale, the symptoms are addressed as they have repeated in the past year and whether the individual has a mental illness. PSST can differentiate women into 3 different groups (PMS complaints, subthreshold, and medium-severe symptoms [PMS and PMDD]).[4] The Cronbach's alpha value of PSST is 0.928; in this study, it was 0.94.

Procedure

Participation in the study was provided by a website prepared by the researchers. The participants were recruited through Facebook, Instagram, Twitter, and WhatsApp within groups aimed to be supportive for individuals with PMS/PMDD and completed a digital questionnaire platform (using the Google Forms survey program) incorporating standardized measures of PMS/PMDD and associated factors. The first part of the web page explained the purpose of the study; the participant's name was not requested, but they were required to give information and consent was obtained. The participants were then able to see and answer the questions. A total of 25 people were not included in the study because they did not give their consent. The questionnaire was completed within an average of 10–15 min. All data were stored under the privacy rules of the Istanbul University via researchers' personal email. The collected responses were then transferred to the Statistical Package for the Social Sciences (SPSS) program.

Ethical considerations and participant approval

The ethics committee permit (Permission No: 14.03.2018-E.4646) and the consent of each participant were recorded at the beginning of the web page with a participant attend checkbox. The study was conducted in accordance with the Helsinki Declaration Principles by underlining that participants' personal details would remain confidential and that they might leave the study at any time they liked.

Statistical analysis

Data were evaluated using the IBM SPSS (IBM Statistical Package for Social Sciences Corp.; Armonk, NY, USA) for Windows 20.0 statistical program. First, the distribution of numerical variables to normal distribution was evaluated with a histogram chart and single-sample Kolmogorov-Smirnov tests. Normal distribution of women with and without premenstrual and menstrual symptoms was compared using t-test. The chi-square test was used to compare categorical data. Correlation analysis was used to compare the scores obtained from the MSQ and PSST; $P < .05$ was considered statistically significant.

Results

The mean age of the group was 26.99 (standard deviation, SD = 7.29) years. When the BMI of the participants was examined, it was determined that 9.0% were weak, 63.9% were normal, 19.4% were overweight, and 7.8% were obese. Of the women surveyed, 62.4% (n = 689) had no PMS, 26.2% (n = 289) experienced PMS, and only 11.5% (n = 127) experienced premenstrual PMDD. The mean score of MSQ was 67.35 (SD = 20.47), and the mean score of the negative group was higher.

Some sociodemographic characteristics, general health, and MSQ and PSST score comparisons are presented in Table 1. S-RH and MSQ and PSST score comparisons are reported in Table 2. The mean duration of menstruation was 28.31 days (SD = 8.80). Daily life habits related to health and MSQ and PSST score comparisons are reported in Table 3. MSQ and its relationship to PSST is reported in Table 4. Menstrual complaints of women with premenstrual complaints were more intense.

Discussion

Sociodemographic characteristics

In particular, it is emphasized that being young and single is a risk for premenstrual and menstrual symptoms; therefore, early screening is important.[1,4,8,15] In a recent systematic re-

Table 1. Sociodemographic and General Health Characteristics and MSQ and PSST Score

		PSST*					MSQ**			
Characteristics		**Subthreshold**	**PMS**	**PMDD**	***x***	***P***	**Mean**	**SD**	**t**	***P***
Socio-Demographic Characteristics	Age***									
	26 and below	350	176	66	8.50	**0.014**	68.79	20.12	2.50	**0.012**
	26 and above	339	113	61			65.70	20.70		
	Marital status									
	Married	258	86	35	8.40	**0.015**	63.79	20.52	4.23	**0.001**
	Single	424	202	90			69.27	20.25		
	Education									
	High School and below	372	145	57	4.05	0.132	65.92	20.36	2.42	0.015
	University	317	144	70			68.91	20.50		
	Income status (self-perceived income status)									
	Good	26	25	11	11.66	**0.003**	71.90	19.69	1.10	0.072
	Bad	663	264	116			67.08	20.50		
	Social security**									
	Yes	596	251	112	0.267	0.875	67.90	20.33	2.28	**0.022**
	No	93	38	15			63.75	21.14		
	BMI***									
	Weak and normal	486	225	94	5.61	0.060	68.26	20.22	2.41	**0.016**
	Overweight and obese	203	64	33			64.93	20.98		
	Health identification (self-perceived health)									
	Good	524	205	87	4.88	0.087	66.29	20.44	2.90	**0.004**
	Bad	165	84	40			70.35	20.32		
	Chronic disease									
	Yes	220	111	54	7.49	**0.024**	69.97	19.57	3.12	**0.002**
	No	469	178	73			65.95	20.82		
General Health Characteristics EALTH	**Psychiatric treatment**									
	Yes	119	77	40	19.42	**0.001**	71.00	20.60	3.099	**0.002**
	No	570	212	87			66.36	20.34		
	Exposure to violence throughout lifetime									
	Yes	297	168	83	32.64	**0.001**	69.75	20.71	3.882	**0.001**
	No	392	121	44			65.00	19.98		
	Exposure to violence within the last year									
	Yes	192	117	59	25.77	**0.001**	65.60	20.27	4.067	**0.001**
	No	497	172	57			70.88	20.45		

*$P < .001$ Symptoms of premenstrual syndrome (PMS)/premenstrual dysphoric disorder (PMDD) begin at any age after menarche (average 26 years).4,6
Bold values symbolize significance $P < .05$
Abbreviations: MSQ, menstrual symptom questionnaire; PSST, premenstrual symptoms screening tool; PMS, premenstrual symptom; PMDD, premenstrual dysphoric disorder; BMI, body mass index.

view, it has been reported that almost all women who have premenstrual symptoms are single, and women of high school and university age experience more problems than the general population.[16] Similarly, our study found that being young and single increased premenstrual and menstrual problems.

One of the interesting results of our study is the finding that women with social security and good incomes have more premenstrual and menstrual complaints. In addition, it was found that the severity of menstrual symptoms increased significantly in women with university and higher education levels. These findings suggest that the knowledge of higher socioeconomic women on the subject may sometimes lead to more intense perceptions of symptoms. However, the available data are not sufficient to interpret this finding.

General health-related features

Studies aiming to determine the prevalence of PMS and PMDD have differing results depending on the difference in sampling, methodology, and measurement tools.[6,8] Generally, PMS prevalence is reported to be 20%–40% and that of PMDD is reported as 5%–10%.[2,6] Our study found that 26.2% of women had PMS and 11.5% had PMDD; the severity of menstrual symptoms was found to be moderate and was related to BMI. The presence

Table 2. Sexual and Reproductive Health Characteristics and MSQ and PSST Score

Characteristics	PSST*					MSQ**			
	Subthreshold	PMS	PMDD	x	*P*	Mean	SD	t	*P*
Menarche age									
12-13 age and below	216	111	50	6.27	**0.043**	68.82	19.18	1.710	0.087
13 and above	473	178	77			66.60	21.09		
Thoughts about menstruation									
Positive	307	128	56	0.013	0.994	66.89	20.45	0.678	0.498
Negative	382	161	71			67.73	20.50		
Menstruation days***									
28 day	416	152	70	5.45	0.065	66.78	20.71	1.095	0.274
Lower or longer than 28 days	273	137	57			68.14	20.14		
Duration of menstruation									
3 days or less	53	15	9	1.96	0.374	66.68	22.16	0.298	0.766
More than 3 days	636	274	118			67.40	20.35		
Menstruation regularity									
Yes	344	116	60	7.83	**0.020**	65.60	20.90	2.69	**0.007**
No	345	173	67			68.91	19.98		
General thoughts about menstruation									
Positive	633	257	101	17.90	**0.001**	66.51	20.38	4.08	**0.001**
Negative	56	32	26			74.72	19.93		
Dysmenorrhea									
Yes	346	193	101	50.41	**0.001**	74.72	18.01	15.45	**0.001**
No	343	96	26			57.22	19.32		
Duration of pain (dysmenorrhea)									
1 day	156	70	40	4.22	0.121	70.86	17.91	4.70	**0.001**
More than 1 day	192	124	63			77.17	17.57		
Doctor visits for complaints about menstruation									
Yes	417	145	52	21.49	**0.001**	72.39	19.40	7.527	**0.001**
No	271	144	75			63.29	20.41		
Family history of dysmenorrhea									
Yes	355	178	80	11.63	**0.003**	71.31	19.92	7.52	**0.001**
No	334	111	47			62.43	20.10		
Family history of premenstrual tension									
Yes	407	204	87	13.36	**0.001**	70.40	19.40	6.608	**0.001**
No	282	85	40			62.12	21.22		
Sexually active									
Yes	238	97	56	4.84	0.089	66.49	20.97	1.037	0.300
No	451	192	71			67.83	20.20		
Problem related to sexuality									
Yes	260	94	45	5.49	0.064	65.60	20.84	1.108	0.269
No	30	18	12			68.78	21.06		
Problem with reproductive organs in the previous year									
Yes	108	67	28	14.13	**0.001**	70.66	20.84	2.71	**0.007**
No	560	197	76			66.51	20.31		
Experience of pregnancy									
Yes	219	67	21	9.91	**0.007**	62.23	20.66	5.423	**0.001**
No	449	197	83			69.48	20.03		
Use of contraception									
Yes	184	56	22	6.11	0.047	63.20	20.06	3.69	0.001
No	100	44	24			70	21.34		

*$P < .001$. Bold values symbolize significance $P < .05$

*Menstruation days: The average of menstruation day was taken as 28 days.4,6,33

Abbreviations: MSQ, menstrual symptom questionnaire; PSST, premenstrual symptoms screening tool; PMS, premenstrual symptom; PMDD, premenstrual dysphoric disorder.

Table 3. Daily Life Habits Related to Health Characteristics and MSQ and PSST Score

	Characteristics	PSST*					MSQ**			
		Subthreshold	PMS	PMDD	x	*P*	Mean	SD	t	*P*
Health-Related Daily Life Habits	**Cigarette usage**									
	Yes	136	65	31	5.63	0.060	69.42	20.49	1.807	0.071
	No	532	199	73			66.75	20.44		
	Alcohol usage									
	Yes	98	47	31	14.78	**0.001**	70.52	19.92	2.332	**0.020**
	No	570	217	73			66.70	20.54		
	Number of daily meals									
	2 or 3 standard meals	575	212	87	4.82	0.089	66.99	20.49	1.358	**0.017**
	Single or more than 3 meals	93	52	17			69.29	20.36		
	Breakfast									
	Regular	253	88	35	2.03	0.361	66.21	21.43	1.383	0.167
	Irregular	415	176	69			67.99	19.91		
	Fruit and vegetable consumption									
	Adequate (five or more servings of fruit and vegetables in a day)	77	39	16	2.52	0.284	70.02	20.59	1.647	0.100
	Inadequate (less than five servings of fruit and vegetables in a day)	591	225	88			66.97	20.44		
	Adding salt without first tasting food									
	Yes	129	55	19	0.40	0.816	20.72	1.43	0.341	0.733
	No	539	209	85			20.43	0.68		
	Consuming chocolate and sweets									
	Less (3 bar or less serving per week)	273	68	23	28.50	**0.001**	62.90	20.52	5.351	**0.001**
	Much (more than 3 bar serving per week)	393	196	81			69.74	20.06		
	Consuming tea									
	3 cups/600 ml or below per day	331	130	58	1.49	0.473	67.68	20.19	0.536	0.592
	3 cups/600 ml or above per day	337	46	134			67.02	20.78		
	Consuming caffeine									
	1 cups/200 ml or above per day	288	121	49	0.96	0.618	69.17	20.16	2.671	**0.008**
	1 cup/200 ml or below per day	380	143	55			65.87	20.62		
	Sleep problem (self-perceived of sleep problem experience)									
	Yes	544	240	114	9.04	**0.011**	68.68	20.43	4.509	**0.001**
	No	145	49	13			61.62	19.71		
	Physical activity									
	Inactive	469	182	64	15.26	**0.004**	74.40	20.24	4.194	**0.015**
	Moderate activity	198	96	56			68.75	19.94		
	Active	22	11	7			66.28	20.65		
	Religious attitude									
	Less religious	77	33	23	5.01	0.082	66.75	21.29	0.360	0.719
	Much religious	592	256	104			67.44	20.37		
	PSST									
	Subthreshold						60.27	19.61	125.5	**0.001**
	PMS						84.85	14.64		
	PMDD						75.90	16.04		

*$P < .001$; Bold values symbolize significance $P < .05$

Abbreviations: MSQ, Menstrual symptom questionnaire; PSST, Premenstrual symptoms screening tool; PMS, Premenstrual symptom; PMDD, Premenstrual dysphoric disorder

of chronic disease, mental illness, and a history of violence increased the prevalence of both premenstrual and menstrual symptoms. In addition, women with severe menstrual symptoms were identified as having higher rates of general health.

The results of a study that examined the relationship between BMI and premenstrual and menstrual symptoms were different. For example, in a 13-year follow-up study that investigated the relationship between BMI and menstrual symptoms

Table 4. The Correlation with MSQ and Subscales and PSST

	MSQ							
	Total MSQ		Negative effects		Menstrual pain		Methods of coping with menstrual pain	
	R	*P*	*R*	*P*	*R*	*P*	*R*	*P*
PSST	0.657	**0.001**	0.683	**0.001**	0.518	0.001	0.387	**0.001**

Bold values symbolize significance $P < .05$

Abbreviations: MSQ, Menstrual symptom questionnaire; PSST, Premenstrual symptoms screening tool

found that both underweight and obese women carry more risk than do women of normal weight.[17] Some studies found that underweight women have more risk than overweight and obese women.[5,7,9] In contrast, some studies found no relationship between PMS, PMDD, and BMI.[6,18] In this study, menstrual symptoms were found to be more severe in women with low BMI than women who were overweight and obese. In addition, it was determined that the incidence of PMS and PMDD increased in women who were underweight and overweight, but this increase was not statistically significant.

Many studies have been conducted to determine the comorbidity of premenstrual and menstrual symptoms with mental disorders and the relationship between them.[15,19] Some studies have shown that the rate of PMS and PMDD increased significantly in women with a history of depression and postpartum depression.[19] PMDD has also been reported to be comorbid with mood, anxiety, and suicide risk.[15] Our study determined that 1 in 5 women (21.4%) received psychiatric treatment related to depression, anxiety, bipolar disorder, and so on. Women who reported receiving psychiatric treatment had more menstrual symptoms, PMS, and PMDD.

In addition to hormonal, neural, and behavioral factors, violence and childhood trauma also affect the development of premenstrual and menstrual symptoms.[20] Violence, a universal problem, adversely affects the health of women. Some studies have found that reproductive health problems and gynecological problems (bleeding disorders, PMS, dysmenorrhea, chronic pelvic pain, sexual problems, infertility, and so on) increase in women who are exposed to violence.[21,22] Segebladh et al.[23] have found that 21.3% of healthy women and 31% of women who experienced PMDD were exposed to violence at some time in their lives. Crowley et al.[24] have reported that in women exposed to sexual abuse at an early age, the level of oxytocin in the blood decreased, resulting in increased PMS severity and menstruation-related mood disorders. Soydas Akyol et al.[25] have conducted a study of physical, psychological, or sexual neglect or abuse in childhood and found an increase in the prevalence of PMDD among that population. Bertone-Johnson et al.[20], in a prospective case control study, have found that experiencing emotional violence at an early age increased the PMS risk by 2.6 times and experiencing physical violence increased it by 2.1. In our study, it was determined that the prevalence of PMS, PMDD, and menstrual symptoms increased significantly in women who had experienced violence in the previous year and/or at some time in their lives.

Characteristics related to sex and reproductive health

This study found a relationship between premenstrual and menstrual complaints with early menarche (age <13 years), presence of negative thoughts about menstruation, irregular menstruation, dysmenorrhea (duration of pain >1 day), having problems with reproductive organs in the previous year, doctor visits for complaints about menstruation, no experience of pregnancy, no use of contraception, and a family history of dysmenorrhea and/or premenstrual tension.

There is no clear information about the relationship between premenstrual and menstrual symptoms and menstruation characteristics (onset, frequency, duration, and so on) in the literature.[6] In some studies, there is a difference in menstruation characteristics[8,26], and in some studies, the relationship is not supported.[6,27] In our study as well as in the literature, women who have not experienced pregnancy, women with gynecological diseases[8], women with irregular menstruation and dysmenorrhea.[3,19,28], and women who do not use contraceptives[19,29] are at a greater risk for PMS and PMDD.

In our study, premenstrual and menstrual complaints increased significantly in women who were not sexually active and had no experience of pregnancy. This finding is consistent with the results of the study by Dasikan et al.[1]. In the literature, it has been reported that sexual complaints (sexual interest and desire, dysfunction, dyspareunia, and so on) also increase in women with premenstrual complaints.[30] In this study, no significant relationship was found between problems related to sexuality and premenstrual and menstrual complaints.

In the literature, there are studies that have reported that the presence of premenstrual and menstrual symptoms in the family history increases individual risk.[6,9,19] Our study found that the rates of PMS and PMDD and menstrual symptoms were significantly increased in women who reported having premenstrual tension and family history of menstrual symptoms.

Daily life habits related to health

Hormonal fluctuations owing to menstrual cycle can affect appetite control and eating behavior. During this period, the consumption of coffee (caffeine), chocolate, and sweets can increase.[6,7] Although the chocolate and sweets cravings of women in the perimenstrual period have been reported to be related to the need for some elements in chocolate (magnesium and serotonin)[7], there are many studies that suggest that overconsumption of chocolate and sweets increases the problems experienced during these sensitive periods.[9,15] Similarly, our study determined that more than 2 or 3 servings of chocolate or sweets per week significantly increased the rate of PMS and PMDD and the severity of menstrual symptoms.

It is widely reported that caffeine, a stimulant, triggers emotional fluctuations and increases PMS symptoms, stress, and

irritability.[9,15] Some studies have found that PMS symptoms were exacerbated as caffeine intake increased.[5,7] This study determined that the severity of menstrual symptoms increased, and the rate of PMS and PMDD was higher in those consuming more than 1 cup of a caffeinated beverage (caffeinated acidic drink, coffee, tea, and so on), but the difference was not statistically significant.

Another variable thought to be associated with menstrual and premenstrual complaints is sleep. It has been reported that women with PMS sleep more, but their sleep quality is poor and that there is a relationship between PMS and sleep problems.[6,31] Our study also found that women who had sleep problems had more menstrual complaints and higher rates of PMS and PMDD.

This study determined that premenstrual and menstrual symptoms increased in women who were inactive, symptoms decreased as the activity level increased, and there is a negative relationship between PMS and physical activity.[32] Many other studies have found that regular physical activity may decrease menstrual symptoms.[32,33]

Our study found no significant difference between premenstrual and menstrual complaints in terms of smoking habits; consumption of a regular breakfast, vegetables, and fruits; salt intake; and tea without caffeine. It was determined that the PMDD ratio was higher in women who consumed alcohol, and menstrual symptoms were more intense. Many studies in the literature have reported a relationship between premenstrual and menstrual symptoms and cigarette smoking or exposure to cigarette smoke[1,26], alcohol consumption[34], consuming breakfast irregularly[3], inadequate consumption of vegetables and fruits[8,9], adding salt without first tasting the food[19], and tea consumption.[1,5] However, in the literature, there are studies that did not find a significant relationship between premenstrual and menstrual symptoms and tobacco smoking[6,27], alcohol consumption[1,19], adding salt without first tasting the food[6], and tea consumption.[9] These differences are thought to be related to how the consumption habits were questioned.

It is known that religious attitudes, which are important determinants of life perspectives, can affect many symptoms and problem perceptions. However, we found no relationship between premenstrual and menstrual symptoms and religious attitudes, which can be confirmed from the literature.[28,35]

Conclusion

Premenstrual and menstrual complaints are important in women's lives. Women with more premenstrual complaints also have more menstrual complaints. The severity of premenstrual and menstrual symptoms increased according to some sociodemographic characteristics, features related to general health, S-RH, and some characteristics related to daily life. Risk factors that can increase the severity of symptoms include being of the age of 26 years or younger, having chronic illness or a history of psychiatric treatment, problems with reproductive organs in the previous year, dysmenorrhea and menstrual disorders, seeking medical attention regarding menstruation, having negative thoughts about being menstrual, having never been pregnant, using contraception, using alcohol, consuming chocolate or sweets more than 2 to 3 times a week, and/or having a family history of PMS and dysmenorrhea. These factors should be considered in routine medical examinations.

Strengths and suggestions

For researchers interested in the subject, there seems to be no single group of factors that pose a risk for PMS and PMDD and that many factors have a cumulative effect. The results of this study also support this claim. The strength of this study is that it meticulously examined many different factors affecting both premenstrual and menstrual symptoms. It is noteworthy that the literature generally focused only on premenstrual or menstrual symptoms. However, in this study, both the cases were evaluated with standardized and current scales, a large number of related factors were questioned, and common factors were highlighted. In subsequent studies, it may be advisable to evaluate the premenstrual and menstrual symptoms together in similar samples and investigate interventions that might improve each condition.

Implications for nursing practices

Nurses working in the field of mental health can overlook other problems that patients have from dealing with psychiatric illness itself. However, considering the integrity of the soul and body, it should be taken into consideration that psychiatric patients may have problems specific to being women. Premenstrual and menstrual complaints are some of them. Premenstrual and menstrual complaints are known to be common in psychiatric patients. Midwife, Mental health and psychiatric nurses should help women with premenstrual and menstrual problems by providing health education and counseling on initiatives that encourage healthy lifestyle behaviors and alleviate premenstrual symptoms.

Study limitations

The data of this research are based on the personal statements of the participants, and the sample was limited to voluntary online participants. The online nature of this survey may have been a limitation as only women with Internet access were able to participate. Premenstrual and menstrual complaints were evaluated retrospectively.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Artvin Coruh University (14/03/2018 No: E.4646).

Informed Consent: The consent of each participant were recorded at the beginning of the web page with a participant attend checkbox.

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