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Determine of the Prevalence of Premenstrual Syndrome and Related Factors

Premenstrüel Sendrom Prevalansı ve İlişkili Faktörlerin Belirlenmesi

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ÖZET

Amaç: Premenstrüel sendrom, adet döngüsü ile ilgili bir grup psikolojik, davranışsal ve fiziksel semptomun periyodik olarak tekrarlamasıdır. Bu belirtiler özellikle adet döngüsünün luteal evresinin ortasında ortaya çıkar ve adet başladığında kaybolur. Bu çalışmanın amacı, 15-49 yaş arası üreme çağındaki kadınlarda premenstrüel sendrom prevalansını belirlemek ve premenstrüel sendrom ile sosyodemografik değişkenler arasındaki ilişkiyi araştırmaktır.

Yöntem: Araştırmada kesitsel tasarım kullanılmıştır. Çalışma 500 kadın üzerinde gerçekleştirilmiştir. Kadınlarla yüz yüze görüşme yoluyla veri toplama amacıyla sosyodemografik veri formu ve Premenstrüel Sendrom Ölçeği uygulanmıştır. Veri analizinde yüzde testleri, ki-kare testi ve lojistik regresyon analizi kullanılmıştır.

Bulgular: Bu çalışmaya dahil edilen kadınların PMS prevalansı % 47 olarak bulunmuştur. Premenstrüel sendrom semptomları şiddet sırasına göre ağrı, şişkinlik, yorgunluk, iştahta değişiklik, sinirlilik ve anksiyetedir. 15-46 yaş grubunda olma, bekar olma, sigara içme, dismenorenin olması ve ailesel premenstrüel sendrom öyküsünün PMS'yi doğrudan etkileyen değişkenler olduğu bulunmuştur.

Sonuç: Kadınlarda PMS prevelansının oldukça yüksek olduğu görülmüştür. PMS prevalansını azaltmak ve kadınların yaşam kalitesini iyileştirmek için konuya daha fazla önem verilmeli ve risk grupları için gerekli önlemler alınmalıdır.

Anahtar Kelimeler: PMS, premenstrüel sendrom, prevalans, kadın

ABSTRACT

Aim: Premenstrual syndrome is the periodic recurrence of a group of psychological, behavioral and physical symptoms related to the menstrual cycle. These symptoms arise especially in the middle of the luteal phase of the menstrual cycle and disappear when menstruation starts. The objective of this study was to determine the prevalence of premenstrual syndrome in women in reproductive age between 15 and 49 years old, and to investigate the relationship between premenstrual syndrome and sociodemographic variables.

Method: A cross-sectional design was employed. The study was carried out on 500 women. The face to face interview, sociodemographic data form and Premenstrual Syndrome Scale were applied to the women for data collection. As for data analysis, percentage tests, chi-square test and logistic regression analysis were utilized.

Results: PMS prevalence of women included in this study was found to be 47%. Premenstrual syndrome symptoms in order of severity are pain, bloating, fatigue, change in appetite, irritability, and anxiety. It was found that being in the age group between 15-46, being single, smoking, having dysmenorrhea, and familial premenstrual syndrome history have direct effect on PMS.

Conclusion: It was observed that the prevalence of PMS in women is quite high. Greater importance should be attached to the issue and necessary precautions should be taken for risk groups in order to decrease PMS prevalence and improve women's quality of life.

Keywords: PMS, premenstrual syndrome, prevalence, women

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INTRODUCTION

Premenstrual syndrome (PMS) is the periodic recurrence of a group of psychological, behavioral and physical symptoms related to the menstrual cycle. These symptoms arise especially in the middle of the luteal phase of the menstrual cycle and disappear when menstruation starts (Hantsoo and Epperson, 2015; Hofmeister and Bodden, 2016). A significant recent development is the recognition of premenstrual dysphoric disorder (PDD) as a distinct disorder in the DSM-V (Hantsoo and Epperson, 2015). Brief definition of PDD could be as a disorder emerging with psychological, behavioral and physical symptoms in the premenstrual period of the menstrual cycle and disappearing with the beginning of menstrual flow. PDD is identified with a more severe condition compared to PMS and considered a more severe type of PMS (American Psychiatric Association, 2013; Del Mar Fernández et al., 2019). Existence of two different definitions as PMS and PDD and lack of consensus on the definition of the syndrome cause difficulties in determining the prevalence of this disorder.

Women of reproductive age constitute the commonly observed group of PMS symptoms. Its prevalence rate reaches up to20-91.8%when mild symptoms are also included (Acikgoz et al., 2017; Bakhshani et al., 2012; Del Mar Fernández et al. 2019; Isgin-Atici et al., 2018; Saglam and Basar, 2019; Takeda et al., 2010). It is assumed that 40% of women experience severe premenstrual symptoms causing discomfort and disturbance in their daily activities and relationships, 3-8% develop severe disorder köşeli parentez olmaz (Del Mar Fernández et al., 2019; Green et al., 2017; Kamat et al., 2019; Rapkin and Winer, 2009; Takeda et al. 2010).et al., olmalı PMS causes impaired personal responsibilities, work or school life and social relations and various health problems and disturb quality of life (Bahrami et al., 2019; Takeda et al., 2010; Haywood et al., 2007; Liu et al., 2004). It was determined in another study that premenstrual symptoms impaired 'Work efficiency or productivity, home responsibility (48.9%), 'Social life activities' (19.4%), and 'Relationships with coworkers or family' (19.1%) (Takeda et al., 2010). Many risk factors have been defined associated with PMS such as age, stress, genetic vulnerability, and sensitivity to hormonal instabilities (Bahrami et al. 2019; Takeda et al., 2010; Haywood et al., 2007; Liu et al., 2004). According to the definition described by the World Health Organization (WHO), women's quality of life is identified as a women's perception of his/her position in life within his/her cultural characteristics and values (Işık et al., 2016).

PMS has a negative effect on the quality of life of millions of women (Del Mar Fernández et al., 2019; Hantsoo and Epperson, 2015; Isık et al., 2016). The exact etiology of PMS, which has a negative effect on women's health, is unknown (Green et al., 2017; Kamat et al., 2019; Rapkin and Mikacich, 2013); yet it is increasingly believed that the critical balance between sex steroids and central neurotransmitters undergoes a change in women with PMS (Indusekhar et al., 2007; Işık et al., 2016). The change undergone in this balance may lead to observe several symptoms like depression, mood swings, irritability, anxiety, sleep problems, headache, fatigue, increase in appetite, breast swelling and pain, bloating, weight gain, abdominal pain (Hantsoo and Epperson, 2015; Indusekhar et al., 2007; Işık et al., 2016). Severity of these symptoms may be to the extent that spoil personal relationships, social activities, job performance and quality of life (Hantsoo and Epperson, 2015; Kamat et al., 2019).

Although PMS symptoms are usually reported in women at the age of 30 years and over, they may start at any age after the menarche and tend to continue until the menopause. Although PMS is a condition affecting especially women in reproductive period, many prevalence studies have been conducted on high school, university students and adolescents (Acikgoz et al., 2017; Bahrami et al., 2019; Kamat et al., 2019; Rapkin and Mikacich, 2013; Steiner et al., 2011; Takeda et al., 2010). Yet, for the purpose of designing studies on the etiology, diagnosis and treatment, determining the prevalence of PMS and related factors in society is important. In line with this purpose, it is necessary to use standard scales prepared for PMS diagnosis and carry out the studies on all the populations of reproductive age. However, a limited number of studies were conducted with regard to these characteristics. Thus, the study was performed to determine the PMS prevalence in women of reproductive age between 15 and 49 years old, detect the severity of symptoms and investigate the effect of various parameters on the syndrome.

MATERIALS AND METHODS

Study Design

The population of this cross-sectional study consists of menstruating women of 15-49 years in the vicinity of a Primary Health Care Centre in Erzurum. The study sample was calculated using the sampling method whose universe is known, and it was determined that at least 497 women should be included in the sample to represent the population. The sample of the study was completed with 500 women using the simple random sampling method.The purpose and method of the study before the interviews were explained to all patients and written consent was obtained from the women. All participants were informed that all data would be kept confidential. Inclusion criteria for the study were being literate, being aged between 15 and 49 years, having regular menstruation. Exclusion criteria for the study were determined as: 1. becoming pregnant, 2. having undergone over or total hysterectomy operation, 3. being in postmenopausal period, 4. having a physical or mental disorder that may prevent giving healthy answers to questions.

Collection of Data

Before starting to collect study data, forms were primarily applied to 5 women. No need for revision to data collection forms after pre-application. Data were collected in a private

room in the health care centre by face-to-face interviews conducted by researchers using a questionnaire (Hantsoo and Epperson, 2015; Isgin-Atici et al., 2018; Kamat et al., 2019) The data were collected using the "Information Form" and the "Pre-menstrual Syndrome Scale". Completion of questionnaires took approximately 10 minutes.

- Data Collection Instruments:

Information Form: This is a questionnaire covering ten questions, which are prepared to determine the women's demographic characteristics (7 questionnaire), familial history of PMS, dysmenorrhoea history and perception of menstruation (3 questionnaire).

Pre-menstrual syndrome scale (PMSS):Pre-menstrual syndrome scale (PMSS) was developed by Gencdogan (2006) who established its validity and reliability. The scale's Chronbach's alpha coefficient was found to be 0.75 in Gencdogan's (2006) study and 0.94 in this study. PMSS comprised 44 items with nine sub-scales "Depressive affect, Anxiety, Fatigue, Irritation, Depressive thoughts, Pain, Appetitive changes, Sleep changes, Bloating". The total score of the scale is between 44 and 220. The scale is 5 likert type. In case the obtained total score and subscales' score reach beyond 50% of the highest score possible during the PMSS result evaluation, it is then determined whether PMS occurs or not. If the scale's total score is 88 points or above for this sample, this indicates the existence of PMS. Higher scores indicate an increase in PMS severity.

Analysis of Data

Data analyses were performed on computer using SPSS 22.0 statistics software. Percentage and average tests were used in the assessment; and chi-square test was used in the analysis of categorical data. Moreover, logistic regression analysis was applied to distinguish the co-effects of 5 variables in significant association with premenstrual syndrome. The results were evaluated at a confidence interval of 95% and a significance level of $p < 0.05$.

The Ethical Principles of the Study

Before commencing the study, written and verbal permission was obtained from the family health center where the study was to be conducted. The purpose of the study and its duration were explained to the participants before the study data was collected to protect the rights of the individuals participating in the study. The participants were told that they could withdraw from the study at any time they wished and they were assured that after careful sharing of personal data with the investigator, their identities would be protected and their personal data would be kept confidential in strict adherence to ethical principles. The participants in the study were informed about the study and their informed consents were received before data collection commenced.

Limitations of the Research

Participants were not questioned about the presence of chronic diseases that could affect PMS. This is also among the limitations of our research

RESULTS

Table 1. Identifying characteristics of women (n=500)

Socio-demographic characteristics			
	Min-Max	**X±SD**	
Age	15-46	24.91±**11.73**	
		N	**%**
Age	15-24	292	58.4
	25-35	149	29.8
	36-46	59	11.8
Education status	Literate	19	3.8
	Elementary	113	22.6
	High school	138	27.6
	University and higher degree	230	46.0
Marital status	Married	212	42.3
	Single	288	57.7
Working state	Employed	106	21.2
	Unemployed	394	78.8
Income status	Income lower than expenses	37	7.4
	Income equal to expenses	299	59.8
	Income higher than expenses	164	32.8
Status of smoking cigarettes	Yes	140	28.0
	No	360	72.0
Status of alcohol intake	Yes	27	5.4
	No	473	94.6

	Yes	196	39.2
Familial history of PMS	No	304	60.8
	Yes	380	76.0
Dysmenorrhoea history	No	120	24.0
	Maternal role	86	17.2
Perception of menstruation	Punishment	45	9.0
	Indication of Health	331	66.2
	Any condition restricting social life	38	7.6

It was determined that 58.4% of women constituting the sampling of the study were 15-24 years old, 46.0% were university and higher degree, 57.7% were single, 78.8 % were unemployed, 59.8% had an income level equal to their expenses, 28% smoked, 5.4% used alcohol, 39.2% had a PMS history in their family, 76% had dysmenorrhea and 9% perceived menstruation as a punishment (Table 1).

Table 2. PMS Prevalence of women in the sampling group according to PMSS

PMS History	**N**	**%**	**X±SD**
Present	235	47	124.98± 14.45
Absent	265	53	86.19±16.64
Total	500	100	108.7±23.33

PMS prevalence of women in the sample group was found to be 47% according to PMSS. It was observed that the mean scores of women with PMS were 124.98 ± 14.42 and the mean scores of women without PMS were 86 .19 ± 16.64 (Table 2).

Tablo 3. PMS total and sub-scales' item score means of symptoms in PMSS

Sub-scales	**Mean**	**SD**
PMS total	108.7	23.33
Depressive affect	2.40	0.74
Anxiety	2.47	0.74
Fatigue	2.72	0.78
Irritation	2.50	0.79
Depressive thoughts	2.02	0.69
Pain	2.84	0.90
Appetite changes	2.70	1.01
Sleep changes	2.42	0.92
Bloating	2.75	1.05

The mean severity scores of symptoms that are most frequently observed in the evaluation of symptoms in PMSS are presented in Table 3. The symptoms in order of severity are pain, bloating, fatigue, change in appetite, irritability, anxiety, changes in sleep order, depressive mood and depressive thoughts (Table 3).

Table 4. The comparison of PMS in terms of socio-demographic characteristics

	PMS – Present		PMS – Absent		p-Value
	N	%	N	%	
Age					
15-24	165	70.2	127	47.9	χ^2=38. 820
25-35	62	26.4	87	32.8	sd=3 p<0.001
36-46	8	3.4	51	19.3	
Marital Status					
Married	75	31.9	137	51.7	χ^2=19.959
Single	160	68.1	128	48.3	sd=1 p<0.001
Working State					
Employed	52	22.1	54	20.4	χ^2= 0.228 sd=1
Unemployed	183	77.9	211	79.6	p> 0.05
Status of smoking cigarettes					
Yes	85	36.2	55	20.8	χ^2=14.681
No	150	63.8	210	69.2	sd=1 p<0.001
Status of Alcohol Use					
Yes	16	6.8	11	4.2	χ^2=1.722
No	219	93.2	254	95.8	sd=1 p>0.05
Familial History of PMS					
Yes	111	47.2	85	39.2	χ^2=12.008
No	124	52.8	180	60.8	sd=1 p<0.001
Dysmenorrhoea History					
Yes	210	89.4	170	64.2	χ^2=43.400
No	25	10.6	95	35.8	sd=1 p<0.001
Perception of Menstruation					
Maternal role	33	14.0	53	20.0	
Punishment	27	11.5	18	6.8	χ^2=8.569 sd=3
Indication of health	152	64.7	179	67.5	p>0.05
Any condition restricting social life	23	9.8	15	5.7	

Upon examination of data in terms of age, it was found that PMS scores were significantly higher in the younger women (15-24 years) compared to other groups (p<0.001). PMS was also significantly higher in married women compared to single ones (p<0.001). Currently, PMS is observed more in smoking women. Inter-group differences are significant (p<0.001). PMS was observed to be higher among women with a PMS history in their family. The difference between the groups is significant (p<0.001). It was detected that PMS level was statistically higher among women experiencing dysmenorrhea (p<0.001). There was no significant difference in the presence of prementrual syndrome according to women's employment status, alcohol use status and perception of menstruation (p>0.05) (Table 4).

Tablo 5. Risk factors of PMS

Variable	Regression coefficient (B)	D.Error	P	Odds Ratio	Confidence Interval (%95)
Age Group (15-24 years)	1.906	0.372	0.000	6.728	3.274-13.942
Being single	0.826	0.186	0.000	2.283	1.585-3.289
Smoking (Yes)	0.725	0.218	0.001	2.066	1.349-3.164
Dysmenorrhea history (Yes)	1.287	0.258	0.000	3.622	2.186-6.000
PMS history in the family (Yes)	0.640	0.185	0.001	1.896	1-318-2.727

Accordingly, it was observed that being in the age group of 15-24 years (OR=6.7), being single (OR=2.2), smoking (OR=2), experiencing dysmenorrhea (OR=3.6) and having PMS history in the family had a direct effect on PMS in women participating in the study (Table 5).

DISCUSSION

PMS is a state which is commonly seen in women of reproductive age and has a significant effect on women's psychological status, behaviors and functionality. This study aimed to detect PMS prevalence and determine related risk factors.

PMS prevalence of women in the study was found to be 47% according to PMSS. In the study of Acıkgoz et al.,

(2017) the prevalence of PMS was 51.7% according to PMSS. In the study carried out by Adıguzel et al. (2007) 40.3% of women had moderate or severe PMS complaints. In addition, in the study conducted by Kamat et al., (2019) the prevalence of PMS was 19.3% and PMDD was 4.6%. 94% of girls had at least one PMS symptom (Kamat et al. 2019). Steiner et al., (2011) adolescent girls in their research 21.3% of adolescents in severe PMS and 70.4% found a slight PMS (Steiner et al., 2011). A general evaluation on the prevalence of PMS has revealed that prevalence rates ranged between %5 and %76 (Kamat et al., 2019). Evidently, the assessment of the prevalence of premenstrual symptoms reveals different results in different studies. This difference may be associated with the non-standard scales used in researches, as well as the differences in age, marital status, occupation, education, different sociocultural and race of women in the research groups.

According to PMSS results, PMS symptoms in order of severity are pain, bloating, fatigue, change in appetite, irritability, anxiety, changes in sleep order, depressive mood, and depressive thoughts. In a study carried out by Takeda et al., (2010) to determine the prevalence of PMS symptoms in Japanese high school students, it was determined that more than half reported 'anxiety or tension', 'anger or irritability', 'concentration problem', 'fatigue or lack of energy' (Takeda et al., 2010). In the study conducted by Işık et al., (2016) were found that women with moderate PMS experience depressive mood (89.1%), anxiety (39.6%), fatigue (96.0%), anger reactions (93.1%), depressive thought (66.3%), pain (77.7%), appetite changes (81.2%), sleep disturbances (69.8%), abdominal bloating (83.2%). It was also determined that anger reactions were the most frequent (Isık et al. 2016). The most common symptoms reported in another study were irritability/anger, fatigue, bloating and weight gain (Steiner et al., 2011). The most common physical symptoms of PMS are reported as fatigue, abdominal pain, breast swelling, headache, edema in extremities, joint and muscle pain, acne and increase in appetite (Hantsoo and Epperson, 2015; Isık et al., 2016; Kamat et al., 2019; Steiner et al., 2011). In the light of the above mentioned findings, although the order of the prevalence of symptoms is different, the experienced symptoms are generally similar.

When the relationship between PMS and socio-demographic variables were evaluated, PMS was found to be significantly higher in younger women (15-24 years old) compared to other groups. PMS is 6.7 times more common in women aged 15-24. As a result of studies carried out by Işık et al. (2016) and Takeda et al. (2010) it was concluded that younger women experienced more PMS symptoms. In addition, the study carried out by Demir et al., (2006) revealed no statistically significant difference, although PMS was observed to be more common in women aged 30 years and below (Demir et al., 2006).

It was also reported that PMS was significantly more common in single women compared to married ones. PMS is 2.2 times more common in women who are single. The study results of Işık et al. (2016), Al-Hamzawian and Mohammed (2019) and Chayachinda et al.,(2008) support these findings, concluding that single women were at more risk in terms of PMS. In the study by Demir et al. (2006) PMS was observed to be more common in married women, although no difference was found among the groups.

PMS is currently observed 2.2 times more frequently in smoking women. In the study by Demir et al. (2006) and Isık et al., (2016), it was found that PMS increased significantly with the increase in the number of cigarettes smoked Bertone-Johnson et al., (2008) concluded that smoking in woman may increase the risk of PMS.

The PMS prevalence was showed to be 1.8 times higher in women with PMS history in the family. Although the exact effect of genetic on etiology is unknown, it has been reported in some studies that is effective on PMS (Demir et al., 2006; Isık et al., 2016; Shiferaw et al., 2014). Depending on these results, it may be concluded that women with PMS history in the family are within the risk group.

PMS was observed to be 3.6 times higher in women who experienced dysmenorrhea. The results obtained in several studies support this finding (Isık et al., 2016; Shiferaw et al., 2014). The anxiety of experiencing dysmenorrhea again may contribute to the tension arising in premenstrual period.

The rates of positive perception of menstruation (indication of health, maternal role, etc.) among women with PMS were lower compared to women without PMS, while negative perception (punishment, a state restricting social life, etc.) was found to be higher. However, the difference between the groups was not significant. In another study, a significant relationship was found between PMS and having negative opinions about menstruation by (Shiferaw et al., 2014). Positive or negative opinions of women about menstruation may affect PMS symptoms.

CONCLUSSION

PMS prevalence of women in this study was found to be 47%. This result indicates that PMS prevalence among women is quite high. PMS symptoms in order of severity are pain, bloating, fatigue, changes in appetite, irritability, anxiety, changes in sleep order, depressive mood and depressive thoughts. Furthermore, being in the age group between 15-24, being single, smoking, having dysmenorrhea and PMS history in the family have a direct effect on PMS. It can be said that women with these characteristics constitute the risk group in terms of pms. Thus, greater importance should be attached to the issue and necessary precautions should be taken for women in risk groups in order to decrease PMS prevalence and improve women's quality of life.

CONFLICTS OF INTEREST

There is no conflict of interest between the authors.

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