Alexandria Journal of Medicine

ISSN: 2090-5068 (Print) 2090-5076 (Online) Journal homepage: https://www.tandfonline.com/loi/tajm20

Prevalence of depressive symptoms among Turkish women experiencing premenstrual symptoms and correlated factors

Nülüfer Erbil

To cite this article: Nülüfer Erbil (2018) Prevalence of depressive symptoms among Turkish women experiencing premenstrual symptoms and correlated factors, Alexandria Journal of Medicine, 54:4, 549-553, DOI: 10.1016/j.ajme.2017.10.003

To link to this article: https://doi.org/10.1016/j.ajme.2017.10.003

Alexandria Journal of Medicine 54 (2018) 549–553

HOSTED BY

Contents lists available at ScienceDirect

Alexandria Journal of Medicine

journal homepage: http://www.elsevier.com/locate/ajme

Original Article

Prevalence of depressive symptoms among Turkish women experiencing premenstrual symptoms and correlated factors

Nülüfer Erbil

Department of Nursing, Faculty of Health Sciences, Ordu University, Cumhuriyet Campus, 52200 Ordu, Turkey

ARTICLE INFO

Article history:
Received 12 September 2017
Revised 8 October 2017
Accepted 26 October 2017
Available online 22 November 2017

Keywords:
Premenstrual syndrome
Depressive symptom
Women
Correlated factors

ABSTRACT

Objective: The aim of this study was to investigate prevalence of depressive symptoms among Turkish women experiencing premenstrual symptoms and correlated factors.
Method: This descriptive and cross-sectional study. The data were collected with Beck Depression Inventory (BDI) and Premenstruel Syndrome Scale (PMSS), and questionnaire form. A total of 121 married and literate women who agreed to participate were included in the study.
Results: The proportions depressive symptoms among women with severe premenstrual symptoms and without severe premenstrual symptoms were 51% and 13.5% respectively. Statistically significant positive correlations were found between the BDI score; the total PMSS score (r = 0.403) and its subscales scores including depressive feelings (r = 0.439); anxiety (r = 0.412); fatigue (r = 0.280); irritability (r = 0.253); depressive thoughts (r = 0.456); pain (r = 0.204); and the changes in appetite (r = 0.418). A negative correlation was found in the swelling subscale score of PMSS (r = −0.079), but there was no correlation with the changes in the sleeping habits subscale score (r = 0.024). There was correlation between BDI scores and occupation, education, perception of outcome, domicile, and a history of psychiatric disorders of the women. There was correlation between PMSS scores a history of psychiatric disorders and complaint of dysmenorrhea in the women.
Conclusions: In conclusion, women who experienced premenstrual syndrome had higher depressive symptoms than women without premenstrual syndrome. Women with premenstrual syndrom should be assessed for depression by health professionals.

1. Introduction

Premenstrual syndrome (PMS) is condition that can lead to psychological, physical, and social problems in women.[1] Women with PMS are usually affected during the luteal phase of menstrual cycle.[2] The incidence of PMS is common among women of reproductive ages.[3] Studies have reported that the frequency of PMS frequency of moderate and severe symptoms ranges from 4.1% to 80.2%.[4–7]

The American Psychiatric Association (2000) defines premenstrual dysphoric disorder (PMDD) as a severe form of PMS including irritability, internal tension, anger symptoms.[8] PMDD has been shown to be associated with severe psychological distress, mood disorders, exacerbation of depression and, depressive disorders.[9,10] However, some researchers have reported a controversial and weak relationship between major depression and premenstrual symptoms.[11] Other investigators suggest that severe forms of premenstrual symptoms are "manifestations of an underlying depressive disorder".[12] In previous researches have indicated that women with PMDD and PMS have higher ratio of major depression history than women without PMDD and PMS.[13–15]

Prior to this study, few studies had investigated the relationship between the severity of premenstrual and depressive symptoms among Turkish women. The aims of this study was to answer the following questions:

1. How prevalent are PMS and severe depressive symptoms among Turkish women?
2. What is the relationship between severe PMS and severe depression symptoms?
3. What is the relationship between severe premenstrual symptoms, depressive symptoms, and certain characteristics of Turkish women?

Peer review under responsibility of Alexandria University Faculty of Medicine.
E-mail address: nerbil@odu.edu.tr

https://doi.org/10.1016/j.ajme.2017.10.003
2090-5068/

2. Material and methods

2.1. Design and participants

This cross-sectional and descriptive study was conducted women who were patients at gynecology outpatients clinics at a hospital in a northern province of Turkey. A convenience sample of 121 volunteer women was recruited. The inclusion criteria of the study were married and literate, and not pregnant or experiencing menopause.

2.2. Data collection

The data were collected with the Beck Depression Inventory, the Premenstrual Syndrome Scale, and a questionnaire with questions form on socio-demographics and obstetric and gynecologic history between March 2013 and June 2013.16-18.

2.2.1. The questionnaire form

This questionnaire included questions about age, educational level, number of children, menarche age, duration of marriage, occupation, perception of income, family type, domicile, andcigarette smoking status. Additional questions included the presence of anemia, chronic diseases, varicose veins, family and personal history of psychiatric disorders, and dysmenorrhea. The questionnaire form and scales were completed in 15–20 min.

2.2.2. The premenstrual syndrome scale

There are 44 items of the the Premenstrual Syndrome Scale (PMSS) and self-assesment. All items of PMSS scale are scored from 1 to 5 points. The subscales of PMSS are irritability, depressive feelings, depressive thinking, anxiety, fatigue, pain, changed sleep, changed appetite and swelling subscales.[18] The PMSS total score is between 44 points and 220 points. High scores demonstrate that the premenstrual syndrome symptoms are intense. PMS is considered when higher than 50% of the total and subscales scores [6,18]. In Gençdoğan study (2006), Reliability coefficients for internal consistency for total PMSS was 0.75, and its subscales were between 0.75 and 0.91. In this study, reliability coefficients for internal consistency of PMSS was 0.94, and its subscales were between 0.74 and 0.89.[18]

2.2.3. Beck depression inventory

Beck Depression Inventory (BDI) was developed by Beck (1961), it was adapted into Turkish by Hisli (1989).[16,17] BDI is a self-assessment inventory using to determine the risk of depression and to measure the level and changes in the severity of depressive symptoms. Quartet statement which consists of 21 likert-type measurement. BDI can be applied to healthy and sick person. Each item is scored between 0 and 3. The collection consists of a total of points for each item, and ranges from 0 to 63. Description considered as cut-off score of 17 on the validity and reliability in Turkish. In this study, Cronbach's alpha coefficient of BDI was 0.85.

2.3. Ethical considerations

All of the women who participated in the research were informed by the researcher of the study's purpose and aims. Written permission to conduct the research was obtained from the Institutional Review Board. Verbal informed consent was obtained from all of the women before their participation. The study complied to the principles of the Declaration of Helsinki.

2.4. Data analysis

Mean, standard deviation, frequency, percentage and range from descriptive statistics were used to analyze the data. In addition, Chi-square test, the Spearman Correlation test, the Pearson Correlation test were used to investigate the relationship among variables. Statistically significant level was considered $p < .05$.

3. Results

The women's average age was 30.95 ± 5.86 (range 20–45 years). Their average age at menarche was 13.51 ± 1.47 years (range 9–18 years), number of children was 2.02 ± 1.02 (range 0–6) and duration of marriage was 11.10 ± 6.15 years (range 1–26 years). Additional findings were that77.6% (n = 94) of the participants were housewives, 43.8% (n = 53) of them graduated from primary school, and about 63% of the women (n = 76, 62.8%) stated their perception of income as "middle level". It was determined that the majority of women lived in the city (n = 95, 78.5%), 78.5% of the participants had nuclear family and 27.3% (n = 33) of the women smoked cigarettes. It was also found that 33.9% of the women (n = 31) had anemia; 8.3% had chronic diseases such as cardiovascular, diabetes, hypertension; 27.3% had varicose veins; 24.8% had a history of psychiatric disorders in their family; 56.2% had complaints of dysmenorrhea; 24% had a psychiatric disorder; and 25.6% had a mother with a PMS history (see Table 1).

In this study, PMSS score mean of 38.8% of the women had 111 and higher. The PMSS average score of these women was 120.82 ± 33 (see Table 2), and their BDI mean score was 13.26 ± 8.63 (range 1–43 points). It was determined that 28.1% of the women had a BDI score of 17 points and higher (see Table 3).

The BDI of 51% of the women with premenstrual syndrome and 13.5% of women without PMS were found to be17 points and higher. Thus, the incidence of severe depressive symptoms among women with severe PMS symptoms was three times more likely than women without PMS. There was a significant relation between women afflicted with both PMS and depression ($\chi 2$ = 20.061, p = .000) (see Table 4).

Percentages and numbers of women who received a score of over 50% from subscales and total PMSS are in Table 5. It was found that 54.5% (n = 66) of women had changes in appetite; 66.9% (n = 81) had irritability; 56.2% (n = 68) had fatigue; 62% (n = 75) had swelling; and 51.2% (n = 62) had pain. Depressive feelings were experienced by 34.7% (n = 42) of women; 36.4% (n = 44) had changes in sleeping pattern; 19% (n = 23) had depressive thoughts; and 23.1% (n = 28) had anxiety. The PMSS average score for all of the women was 104.33 ± 29.75 (range 44–188). PMSS subscales mean scores: the depressive feelings subscale mean was 15.95 ± 6.57 (range 7–35); anxiety subscale mean was 13.57 ± 5.81 (range 7–34); fatigue subscale mean was 16.19 ± 4.91 (range 6–27); irritability subscale mean was 13.96 ± 4.42 (range 5–25); depressive thoughts subscale was 12.96 ± 5.68 (range 7–31); pain subscale was 7.83 ± 3.02 (range 3–15); appetite subscale was 8.16 ± 3.74 (range 3–15); sleeping subscale was 6.88 ± 3.33 (range 3–15); and swelling subscale was 8.79 ± 3.81 (range 3–15) (see Table 5).

Correlations between BDI scores and total PMSS and its subscales scores of women are in Table 6. Statistically significant positive correlations were found between the BDI score; the total PMS score (r = 0.403, p = .000) and depressive feelings subscale score (r = 0.439, p = .000); anxiety subscale score (r = 0.412, p = .000); fatigue subscale score (r = 0.280, p = .002); irritability subscale score (r = 0.253, p = .005); depressive thoughts subscale score (r = 0.456, p = .000); pain subscale score (r = 0.204, p = .025); and the changes in appetite subscale score (r = 0.418, p = .000). A negative

Table 1
The distribution according to socio-demographic characteristics of women (n = 121).

Socio-demographic characteristics	Mean ± SD	Range
Age (years)	30.95 ± 5.86	20–45
Number of children	2.02 ± 1.02	0–6
Duration of marriage (years)	11.10 ± 6.15	1–26
Menarcheage (years)	13.51 ± 1.47	9–18
Occupation	n	%
Housewife	94	77.6
Government employee	14	11.5
Self-employment	13	10.9
Educationlevel		
Primary school	53	43.8
Secondary school	16	13.2
High school	37	30.6
University	15	12.4
Perception of outcome		
Good	39	32.2
Middle	76	62.8
Low	6	5.0
Living region		
Village	19	15.7
Town	7	5.8
City	95	78.5
Family type		
Nuclear family	95	78.5
Large family	26	21.5
Cigarette smoking		
Yes	33	27.3
No	88	72.7
Anemia		
Yes	41	33.9
No	80	66.1
Having chronic diseases (cardio-vascular, diabetes, hypertension)		
Yes	10	8.3
No	111	91.7
Varicosis vein		
Yes	33	27.3
No	88	72.7
History of psychiatric disorders in their family		
Yes	30	24.8
No	91	75.2
History of psychiatric disorders in herself		
Yes	29	24.0
No	92	76.0
Complaint of dysmenorrhoea		
Yes	68	56.2
No	53	43.8
PMS history of mother		
Yes	31	25.6
No	90	74.4

Table 2
Distribution of women according to intensity of premenstrual symtomps.

Intensity of premenstrual symtomps	n	%	PMSS mean ± SD
≤110 points and lower	74	61.2	97.88 ± 25.84
≥111 and higher	47	38.8	120.82 ± 33.00
Total	121	100.0	104.33 ± 29.75

SD: Standard deviation.

Table 3
Distribution of women according to intensity of depressive symtomps.

BDI scores of women	n	%	BDE mean ± SD
16 points and lower	87	71.9	8.90 ± 4.43
17 points ve higher	34	28.1	24.41 ± 6.45
Total	121	100.0	13.26 ± 8.63

SD: Standard deviation

correlation was found in the swelling subscale score (r = −0.079 p = .000), but there was no correlation with the changes in the sleeping habits subscale score (r = 0.024, p = .798).

Correlations between BDI and total PMSS scores according to some characteristics of women are in Table 6. Significant correlations were determined between the BDI scores and occupation (r = −0.222, p = .014); education (r = −0.266, p = .003); perception of outcome (r = 0.200, p = .028); domicile (r = −0.245, p = .007) and history of psychiatric disorders in themselves (r = −0.366, p = .000) (see Table 7). In addition, there were statistically significant correlations between the total PMSS scores and history of psychiatric disorders (r = −0.252, p = .005) and complaints of dysmenorrhea (r = −0.211, p = .020), (see Table 7).

4. Discussion

In this study, the prevalence of PMS in a sample of Turkish women was determined to be 38.8%, and women with PMS had 111 points and higher PMSS scores (see Table 2). Forrester-Knaus et al. reported that 24.6% of women with severe PMS and 11.3% of women with moderate PMS had depression.[9]

Özeren et al. found that 30% of 350 hospital employees had moderate or severe PMS, and 10.9% of them had PMDD.[19] The current study also shows that 54.5% of women had changes in appetite; 66.9% had irritability; 62% had swelling; 56.2% had fatigue; 51.2% had pain; 34.7% had depressive feelings; 36.4% had changes in sleeping habits; 19% had depressive thoughts; and 23.1% had anxiety during the premenstrual period (see Table 5). Öztürk et al. indicated that the average scores of the subscales were highest in relation to sleep changes, pain, irritation, fatigue and the lowest ratio of depressive thoughts.[20]

Hamaideh et al. reported lower back pain (61.4%); abdominal cramps/pain (52.4%); irritability (49.2%); breast pain/tenderness (49.6%); sadness and depression (45.3%); water retention (32.4%); feeling overwhelmed (46.9%); weight gain (33.9%); oedema and swelling (26.8%).[7] Schmelzer et al. indicated significant positive correlations between the premenstrual psychological symptoms and impairment with work, social activities and social relationships.[21] In addition, irritability, tension and depressed mood were the most-frequently reported symptoms related to the premenstrual phase by Schmelzer et al.[21] In a prospective cohort study of women between 18 and 37 years old, PMS symptoms were observed in 67%, depressive symptoms in 28%, and a diagnosis of PMDD was determinedin 10% of the sample.[22] Major depression was reported in 46.4% of those with depressive symptoms. The major depression was associated with the presence of PMDD and the severity of PMS symptoms.[22] Wittchen at al. found a significant association between major depression and severe PMS.[23] The results in this study regarding PMS and its symptoms correspond to the literature.[21–23]

In this current study, it was determined that 28.1% of women had a BDI score of 17 points and higher (see Table 3). This study's results showed that the BDI scores of 24 out of 47 women with severe PMSS scores (111 points and higher) were 17 points and higher (see Table 4). In women who experience intense PMS symptoms, depression symptoms are more prevalent. There were statistically significant positive correlations between the BDI scores with total PMSS score and PMSS subscales scores (see Table 6). Özeren et al. found that the depression prevalence was 18.3%.[19] The depression prevalence of women with PMDD was 42.5% and 51.1% for women with PMS. In a research consisting of 3518 women, Forrester-Knauss et al. found major depression was in 24.6% of women who had severe PMS and 11.3% of women who had moderate PMS.[9] Wittchen et al. indicated that women who suffer from severe PMS reported the highest ratio of major depression.[23] Kepple et al. found that 43.3% women with PMDD had a past history of a mood disorder in a clinic-based sample of women meeting criteria for PMDD.[10] The present study results suggest that the intensity of

Table 4
Comparison of intensity of premenstrual and depressive symptoms of women.

BDI scores	PMSS scores ≤ 110 points		PMSS scores ≥ 111 points		Test and P value
	n	%	n	%	
≤ 16 points	64	86.5	23	49.0	$\chi^2 = 20.061$
≥ 17 points	10	13.5	24	51.0	P = .000
Total	74	61.2	47	38.8	

Table 5
Percentages and numbers of women receiving over 50% from subscales and mean scores received from its subscales and total PMSS.

PMSS subscales	Cronbach Alpha	Min-max points	Markedmin-max points	Mean ± SD	Percentage and number of women receiving over 50% from subscales
Depressive feelings	0.89	7–35	7–35	15.95 ± 6.57	42 (34.7)
Anxiety	0.83	7–35	7–34	13.57 ± 5.81	28 (23.1)
Fatigue	0.77	6–30	6–27	16.19 ± 4.91	68 (56.2)
Irritability	0.83	5–25	5–25	13.96 ± 4.42	81 (66.9)
Depressive thoughts	0.85	7–35	7–31	12.96 ± 5.68	23 (19.0)
Pain	0.74	3–15	3–15	7.83 ± 3.02	62 (51.2)
Changes in appetite	0.84	3–15	3–15	8.16 ± 3.74	66 (54.5)
Changes in sleeping habits	0.76	3–15	3–15	6.88 ± 3.33	44 (36.4)
Swelling	0.82	3–15	3–15	8.79 ± 3.81	75 (62.0)
Total PMSS	0.94	44–220	44–188	104.33 ± 29.75	47 (38.8)

Table 6
Correlations between BDI scores and total PMSS and its subscales scores of women.

PMSS Subscales	BDI scores	
	Correlation coefficient	P-value
Depressive feelings	0.439	.000**
Anxiety	0.412	.000**
Fatigue	0.280	.002**
Irritability	0.253	.005**
Depressive thoughts	0.456	.000**
Pain	0.204	.025*
Changes in appetite	0.418	.000**
Changes in sleeping habits	0.024	.798
Swelling	−0.079	.000**
Total PMSS	0.403	.000**

* Significant correlation at <.05.
** Significant correlation at <.001.

depression symptoms is relatively high among women with PMS (p = .000) (see Table 4). In the study, findings are consistent with results of previous studies. The wide range of prevalence rates is the result of different study methods and different samples.

The current study revealed a correlation between BDI scores and occupation, education, perception of outcome, domicile, and history of psychiatric disorders of the women (see Table 7). In addition, there were statistically significant correlations between the total PMSS scores and a history of psychiatric disorders and complaints of dysmenorrhea (see Table 7). In a previous study, the PMDD frequency was found to be higher among women who were single or divorced, consumed toomuch salt in their diet, smoked cigarettes, had a diagnosis of depression, postpartum depression, dysmenorrhea, epilepsy and migraine or a family history of depression.[19] Factors affecting the prevalence and severity of both PMS and PMDD are perceived stress level, education level, age,

Table 7
Correlations between BDI and total PMSS scores according to some characteristics of women.

Variables	BDI		PMSS	
	Correlation coefficient	P-value	Correlation coefficient	P-value
Age (years)	0.012	.897	−0.049	.590
Number of children	−0.137	.135	0.020	.828
Duration of marriage (years)	0.054	.556	−0.069	.455
Menarche age (years)	−0.137	.135	0.020	.828
Occupation	−0.222	.014*	−0.097	.288
Education	−0.266	.003**	−0.102	.268
Perception of outcome	0.200	.028*	0.133	.146
Family type	0.099	.282	−0.038	.679
Living region	−0.245	.007**	0.017	.849
Cigarette smoking	−0.077	.402	0.037	.683
Anemia	−0.034	.711	−0.179	.050
Having chronic diseases	−0.074	.417	0.080	.383
Varicosis vein	0.009	.922	−0.015	.867
History of psychiatric disorders in their family	−0.094	.303	−0.121	.188
History of psychiatric disorders in herself	−0.366	.000**	−0.252	.005**
Complaint of dysmenorrhoea	−0.133	.147	−0.211	.020*
PMS history of mother	−0.100	.273	0.078	.398

* Significant correlation at <.05.
** Significant correlation at <.001.

socioeconomic and marital status, menstrual history, body mass index, physical activity and nutritional status.[24] Potter et al. reported that there were no statistically significant relationships between whether women have PMS and menarche age, parity, age, living situation, employment status, educational success, pattern of menses of women.[25] Work dissatisfaction of woman was a risk for PMS.[25] There was a higher relative risk for women to report both major depression and PMS compared to women without major depression or PMS, and this was related to factors such as psychotropic drug consumption, psychological distress, low self-rated health and low mastery.[9] The results of this study are similar to some research findings,[19,24] but these results are different from some study findings.[25]

5. Conclusions

In conclusion, more than one in three women in the study suffered from PMS. Half of women with PMS had depressive symptoms that should be clinically examined and followed up. Furthermore, women who experienced intense symptoms of depression had PMS symptoms. There was a correlation between BDI scores and occupation, education, perception of outcome, domicile, and a history of psychiatric disorders in the women. In addition, there were statistically significant correlations between the total PMSS scores, a history of psychiatric disorders and complaints of dysmenorrhea. Depressed women with PMDD may have a more serious disease process. Furthermore, major depressive disorders may potentially increase the likelihood of suicide attempts and the severity of suicidal symptoms.[26] Women with PMS should be assessed for depression by health professionals. Therefore, gynecologic and mental health professionals should be aware of this problem.

6. Limitations of the study

Firstly, this study was carried out with women who agreed to participate. These participants were not pregnant or menopausal. The results of this study are thus limited to these women. The results cannot be generalized to all Turkish women. Secondly, data for this study were collected via self-reported questionnaire, BDI and PMSS. It may lead to bias.

Conflict of interest

The author declares that there is no conflict of interest.

Acknowledgements

The author to thank all women who so willingly participated in this study and the English specialist PM Knauer. This study was submitted as oral presentation in 22nd World Congress on Controversies in Obstetrics, Gynecology&Infertility (COGI), 17–20 September 2015, Budapest, Hungary.

Author contributions

Study design, data collection, data analysis and manuscript preparation was done by NE.

References

1. Marjoribanks J, Brown J, O'Brien PMS, Wyatt K. Selective serotonin reuptake inhibitors for premenstrual syndrome. *Cochrane Database Syst Rev*. 2013(7). CD001396.
2. Cheng SH, Shih CC, Yang YK, Chen KT, Chang YH, Yang YC. Factors associated with premenstrual syndrome - a survey of new female university students. *Kaohsiung J Med Sci*. 2013;29(2):100–105.
3. Johnson SR. The epidemiology ana social impact of premenstruel symptoms. *Clin Obstet Gynecol*. 1987;30(2):367–376.
4. Demir B, Algül LY, Güvendağ Güven ES. Sağlık çalışanlarında premenstruel sendrom insidansı ve etkileyen faktörlerin araştırılması [The incidence and contributing factors of premenstrual syndrome in health working women]. *Turk J Obstet Gynecol*. 2006;3(4):262–270.
5. Adıgüzel H, Taşkın O, Danacı AE. Manisa ilinde premenstruel sendrom belirti örüntüsü ve belirti yaygınlığının araştırılması [The Symptomatology and Prevalence of Symptoms of Premenstrual Syndrome in Manisa]. *Turk Psikiyatri Derg*. 2007;18(2):215–222.
6. Erbil N, Karaca A, Kırış T. Investigation of premenstrual syndrome and contributing factors among university students. *Turk J Med Sci*. 2010;40 (4):565–573.
7. Hamaideh SH, Al-Ashram SA, Al-Modallal H. Premenstrual syndrome and premenstrual dysphoric disorder among Jordanian women. *J Psyhiatr Ment Health Nurs*. 2014;21(1):60–68.
8. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders. 4*. Washington, DC: American Psychiatric Association; 2000 [text revision].
9. Forrester-Knauss C, Zemp Stutz E, Weiss C, Tschudin S. The interrelation between premenstrual syndrome and major depression: Results from a population-based sample. *BMC Public Health*. 2011;11:795.
10. Kepple AL, Lee EE, Haq N, Rubinow DR, Schmidt PJ. History of postpartum depression in a clinic-based sample of women with premenstrual dysphoric disorder. *J Clin Psychiatry*. 2016;77(4):415–420.
11. Hunt SW, Schnurr PP, Severino SK, et al.. Late luteal phase dysphoric disorders in 670 women evaluated for premenstrual complaints. *Am J Psychiatry*. 1992;149(4):525–530.
12. Hallman J. The premenstrual syndrome-a equivalent of depression? *Acta Psychiatr Scand*. 1986;73(4):403–411.
13. Cohen LS, Soares CN, Otto MW, Sweeney BH, Liberman RF, Harlow BL. Prevalence and predictors of premenstrual dysphoric disorder (PMDD) in older premenopausal women - The Harvard Study of Moods and Cycles. *J Affect Disord*. 2002;70(2):125–132.
14. Angst J, Sellaro R, Stolar M, Merikangas KR, Endicott J. The epidemiology of perimenstrual psychological symptoms. *Acta Psychiatr Scand*. 2001;104 (2):110–116.
15. Critchlow DG, Bond AJ, Wingrove J. Mood disorder history and personality assessment in premenstrual dysphoric disorder. *J Clin Psychiatry*. 2001;62 (9):688–693.
16. Beck AT. An inventory for measuring depression. *Arch Gen Psychiatry*. 1961;4 (6):561–571.
17. Hisli N. Validity and reliability of the Beck Depression Inventory among university students. *J Psychol*. 1989;7(23):3–13.
18. Gençdoğan B. A new instrument for premenstrual syndrome. *Psychiatry Turkiye*. 2006;8(2):81–87.
19. Özeren A, Atila D, Helvacı M. Hastane çalışanlarında premenstruel sendrom ve depresyon ile ilişkisi [Premenstrual syndrome and its relationship with depression by the health care employees] *Tepecik Eğit Hast Derg*. 2013;23 (1):25–33.
20. Öztürk S, Tanrıverdi D, Erci B. Premenstrual syndrome and management behaviours in Turkey. *Aust J Adv Nurs*. 2011;28(3):54–60.
21. Schmelzer K, Ditzen B, Weise C, Andersson G, Hiller W, Kleinstauber M. Clinical profiles of premenstrual experiences among women having premenstrual syndrome (PMS): affective changes perdominate and relate to social and occupational functioning. *Health Care Women Int*. 2015;36(10):1104–1123.
22. Padhy SK, Sarkar S, Beherre PB, Rathi R, Panigrahi M, Patil PS. Relationship of premenstrual syndrome and premenstrual dysphoric disorder with major depression: prelevance to clinical practice. *Indian J Psychol Med*. 2015;37 (2):159–164.
23. Wittchen HU, Becker E, Lieb R, Krause P. Prevalence, incidence and stability of premenstrual dysphoric disorder in the community. *Psychol Med*. 2002;32 (1):119–132.
24. Deuster P, Adera T, South-Paul J. Biological, social and behavioral factors associated with premenstrual syndrome. *Arch Fam Med*. 1999;8(2):122–128.
25. Potter J, Bouyer J, Trussell J, Moreau C. Premenstrual syndrome prevalence and fluctuation over time: results from a French population- based survey. *J Womens Health*. 2009;18(1):31–39.
26. Accortt EE, Kogan AV, Allen JJ. Personal history of major depression may put women at risk for premenstrual dysphoric symptomatology. *J Affect Disord*. 2013;150(3):1234–1237.