

The Effect of Cognitive–Behavioral Group Therapy on Menopausal Symptoms

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ABSTRACT

BACKGROUND AND OBJECTIVE: The common symptoms of menopause are associated with anxiety and discomfort for most women, and this is one of the major healthcare challenges. The aim of this study was to evaluate the effect of cognitive – behavioral group therapy on menopausal symptoms (primary outcome).

METHODS: This randomized controlled clinical trial was conducted among 90 menopausal women with health records at two health centers in Tuyserkan in 2016 and were randomly assigned to two groups of intervention and control (45 patients in each group). To perform cognitive – behavioral group therapy, six 90-minute sessions were held for the intervention group for six consecutive weeks. Menopausal symptoms were discussed in each of these sessions based on cognitive techniques such as identifying negative automatic thoughts and behavioral techniques such as diaphragmatic breathing technique. Menopausal symptoms were assessed in both groups using the Greene Climacteric Scale (0 – 63) before the intervention and at the end of the sixth week. To adhere to ethics, the control group received one session of educational counseling after the assessments were done.

FINDINGS: There was no statistically significant difference in mean total Greene score between the cognitive–behavioral group (22.78±12.22) and control group (24.8±10.25) before intervention. After the intervention, the mean total Greene score decreased significantly in the cognitive – behavioral group (15.75±7.24) compared to the control group (24.97±9.25) ($p < 0.05$).

CONCLUSION: The results showed that cognitive – behavioral group therapy can decrease menopausal symptoms.

KEYWORDS: Group Therapy, Cognitive–Behavioral Therapy, Menopausal Symptoms.

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Introduction

Although menopause is part of the natural process of women's lives, its complications can affect women's health and quality of life, and for many women in different societies it is always accompanied by anxiety and discomfort (1). Changes created during this period are the most important source of distress and physical and psychological complications and may affect physical image, sexual activity, mental well-being, and health-related quality of life (2). In addition to the physical and psychological changes in menopause that affect women's quality of life, their quality of life is also affected by concerns, feelings, attitudes and compatibility (3).

The number of postmenopausal women is increasing worldwide. In 1998, more than 477 million women were in their post-menopausal years, which is projected to reach more than 1.1 billion by 2025 (4). In Iran, as a result of demographic transition and population aging, it is estimated that there will be around five million menopausal women by 2021 (5). There are a variety of treatments available to control and reduce menopausal symptoms. These treatments include: Hormone replacement therapy, Acupuncture, Massage Therapy, Herbal Supplements, Acupressure, Lifestyle change and Yoga (6, 7). Today, the medical professions focus on teaching and counseling methods (8).

One of the counseling approaches used today to help individuals is cognitive – behavioral counseling. In this method, people are trained to think differently, and as a result, this new thinking will lead to better and healthier behaviors in new conditions. The goal of cognitive – behavioral therapy is to educate people that although they cannot control all aspects of the world around them, they can control how they realize, interpret, and address the things that are in their environment (9). People come to know their emotions step-by-step using techniques such as identifying their automatic thoughts and knowing how thoughts generate emotions and their effects on emotions (10).

Automatic thoughts are the ones that flow in our thought parallel to conscious and explicit thoughts. These thoughts are fast, suddenly come to mind, they are short – term and we are hardly aware of them. However, we are well aware of the emotions they create, because after these thoughts come to our minds, they give us good or bad emotions depending on whether they are negative or positive (10). Ayers et al. showed that the use of cognitive – behavioral method is an effective way to reduce the symptoms of hot flashes and night sweats in postmenopausal women (11). Hunter et

al. also concluded that the cognitive – behavioral approach in the intervention group could be a good option to reduce menopausal complications following breast cancer treatment (12).

Mann et al. showed that cognitive – behavioral methods can affect some menopausal symptoms, but they do not affect the frequency of these symptoms and there is no significant difference between the intervention and control groups in this regard (10). Since annoying menopausal symptoms are considered as an important challenge in menopausal women, therefore, it is necessary to find an appropriate method to reduce these symptoms (13). On the other hand, hormonal and pharmacological methods have long-term and short-term side effects, nonpharmacological methods can be used to improve the quality of life in postmenopausal women (14). Since women are the most important pillar of society and family, and health of community depends on meeting the different needs of this segment of society, the efforts to eliminate menopausal complications in this group is one of the major tasks of the health system of any society (15). Therefore, given the contradictory results regarding the impact of cognitive–behavioral counseling on symptoms of menopause and the frequency of these symptoms, this study was conducted to determine the effect of cognitive – behavioral group therapy on menopausal symptoms.

Methods

This randomized controlled clinical trial was approved by the Ethics Committee of Kermanshah University of Medical Sciences under the code IRCT20151028024753N3 and registered at the Iranian Clinical Trial Center (IR.KUMS.REC.1395.327), and was performed among postmenopausal women aged 47 to 57 years who had medical record in Hefdah-e-Shahrivar and Shahid Madani Health Centers in Tuyserkan in 2016.

In this study, the initial samples size based on the results of the study by Yasui et al. (16) was calculated to be 76 patients, i.e. 38 patients in each group, and considering a 15% drop chance, the number of samples was calculated to be 90 patients, i.e. 45 patients in each group. Women with normal menopause and not due to medication or ovariectomy, age 47 to 57 years and 1 – 4 years after the onset of menopause, lack of chronic or acute illness in the past 12 months so severe that the patient would be unable to attend sessions, lack of grieving the death of a loved one within the past three

months, lack of a specific stressor such as incurable disease of spouse or child, lack of using hormone therapy to reduce menopausal symptoms, fluency in speaking Persian, lack of severe neurological illnesses or taking neurological drugs, lack of addiction, not using psychotropic drugs, lack of suicidal thoughts, lack of psychosis or suicide experience, not attending relaxation, yoga or similar classes were included, and in case of not attending two or more counseling sessions, use of hormone therapy during the study, the occurrence of an unanticipated stress in the course of counseling and in case of dissatisfaction, patients were excluded. Data were collected using Greene Climacteric Scale and a demographic questionnaire.

Demographic questionnaire included age, menopausal age, marital status, education level, number of children, number of deliveries, physical activity history (on average, 30 minutes of simple exercise or walking five days a week), monthly income (as reported by participants, categorized as less than 1.5 million Tomans and more than 1.5 million Tomans per month), employment status, and body mass index (weight in kilograms divided by the square of the height in meters, and categorized into four groups of underweight: below 18.5, normal: 18.5 – 24.9, overweight: 25 – 29.9, and obese: above 30). This form was designed by a researcher and approved by the faculty members of Kermanshah Nursing and Midwifery School. The primary outcome in this study was menopausal symptoms, which was measured by the Greene Climacteric Scale in two stages before and after the intervention.

The Greene Climacteric Scale was first created in 1975 in Scotland and its validity and reliability have been confirmed (17). In Iran, the validity and reliability of the questionnaire have been verified by Mirghafourvand et al. (18) and Askari et al. (19). This questionnaire is a self-report scale consisting of 21 questions and each symptom is reported by participants according to the severity of the symptoms from Never (0) to Severe (3). Questions 1–11 examine psychological symptoms including anxiety (questions 1 – 6) and depression (questions 7 – 11). Social aspects are examined in questions 12 – 18 and vasomotor symptoms are examined in questions 19 – 20, and question 21 examines sexual dysfunction. The mean score of this questionnaire (0 – 62) is obtained from the sum of these dimensions (20). First, the medical records of all postmenopausal women aged 47 to 57 years in Hefdah-e-Shahrivar and Shahid Madani Health Centers

in Tuyserkan were extracted. Then, after contacting the people by phone call and evaluating the inclusion criteria, qualified people were invited to attend the briefing. At the briefing, after describing the aims of the study and the method of study and obtaining informed consent, the participants completed the Greene Climacteric Scale and a demographic questionnaire. Then, the random distribution of the two groups was done by randomized block design using random block sizes of 4 and 6 with 1:1 assignment ratio. In order to apply blinding in the randomization process, a colleague (one of the midwives of Tuyserkan) was asked to perform sampling and group assignment.

For the intervention group, the counseling process was conducted in groups of 10 – 12 with cognitive-behavioral approach in six 90-minute sessions in the counseling room of Tuyserkan Welfare Center. It is an appropriate place in terms of adequate light, it has quiet environment, other people do not refer to this center, and there are sufficient seats and educational equipment (Fig 1). The treatment protocol included addressing the menopausal symptoms and problems and helping to improve and treat them using cognitive and behavioral techniques. The number of sessions was determined based on the opinion of the majority of participants in the intervention group to be six sessions of 90 minutes (Table 1). After six weeks, the assessments were performed by the researcher in the two groups using the Greene Scale. In order to adhere to the ethics, the control group received one counseling session after the second phase. In the intervention group, five people were excluded from the group due to more than two sessions of absence, 1 due to the loss of a close relative and 1 person due to hormone therapy during the intervention, and ultimately, the number of participants in this group decreased to 38.

In the control group, seven patients were excluded from the study due to lack of access to them (even though we referred to their place of residence) to perform the second or third stages of the study, and the number of patients in this group reduced to 38, and ultimately, the study ended with 76 postmenopausal women in two groups of intervention and control (38 patients in each group). Considering the 15% drop chance at the beginning of sampling, this drop had no effect on the study results. Data were analyzed by SPSS software using independent t-test, chi-square, Kolmogorov-Smirnov, Mann-Whitney, Friedman, ANOVA, Tukey, and Kruskal-Wallis tests, while $p < 0.05$ was considered significant.

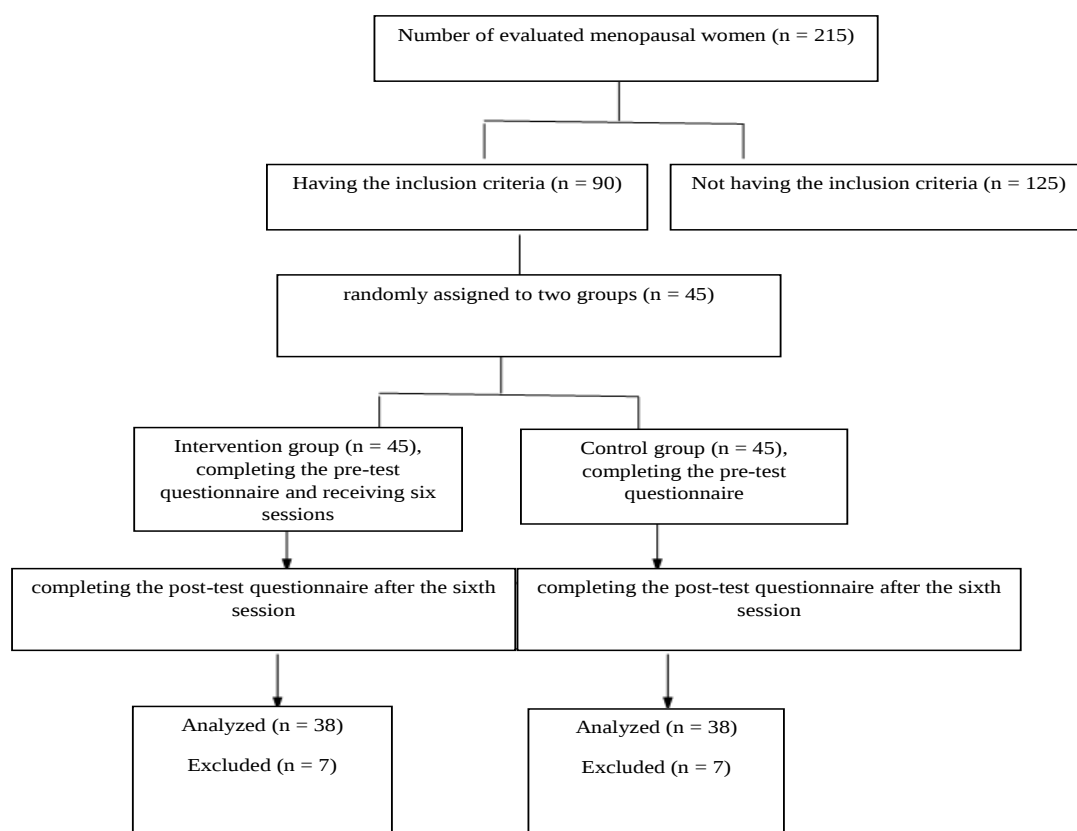


Figure 1. Study participants

Table 1. Content of each session

Session	Content
First	Greetings, introducing group members, emphasizing the confidentiality of counseling issues, getting to know cognitive behavioral therapy using the cognitive triangle and how techniques generate emotions, explaining menopausal physiology
Second	Discussion about the impact of thoughts on emotions, social support and the relationships involved, discussion about the impact of activities on mood, theoretical and practical training of relaxation (gradual relaxation of muscles, breathing techniques, etc.), assigning homework
Third	Review of assignments and group feedback, familiarity with negative thoughts and beliefs and ability to distinguish them from reality, familiarity with the technique of assessing the degree of emotion and belief in negative menopausal thoughts (e.g., menopause is the end of sexual relationship or menopause is the end of a woman's social value since it is the end of reproductive period), doing 10 minutes relaxation, raising positive thoughts, and reducing unhealthy and negative thoughts in self-care, assigning homework
Fourth	Review of assignments and group feedback, familiarity with automatic thoughts by identifying oneself by drawing a similar picture for the group members, for example in a hot flash attack. Familiarity with cognitive errors, such as mind reading (because of vaginal dryness, my husband is unhappy with sexual relationship), Catastrophizing (because of overweight, my appearance has become awful), reducing concerns about lack of support from other people, respiratory relaxation techniques, assigning homework
Fifth	Review of assignments and group feedback, familiarity with the confirmatory and rejecting evidence of negative thoughts about menopause (e.g., whether menopause is the end of youth and joy, or menopause is the beginning of disability), performing 10 minutes relaxation using breathing techniques; assigning homework
Sixth	Review of assignments and group feedback, encouraging participants to express their stress and anxiety-related menopausal symptoms, enhancing positive thoughts, and reducing unhealthy and negative thoughts in physical activity, exercise, and compliance with healthy diets by introducing participants to the benefits of exercise and diet in improving health as well as the effects of unhealthy diets and inactivity, eliminating misperceptions through Socratic dialogue and group discussion, summing up the whole content

Results

The mean age of the women was 53 ± 2.86 years. The mean time elapsed after menopause onset was 2.6 years. The groups were the same in terms of variables of marital status, employment, having a child and childbirth experience. The results showed a significant difference between the two groups in terms of income status ($p < 0.05$). The two groups were similar in terms of education, body mass index and physical activity, age and time elapsed after menopause onset (Table 1).

The distribution of score of the severity of menopausal symptoms and abnormal components ($p < 0.05$) and the score of the severity of menopausal symptoms were normal ($p > 0.05$). Before the intervention, the two groups were similar in terms of components of depression, somatic symptoms, vasomotor symptoms and sexual dysfunction (Table 2). There was a significant difference between the intervention and control groups in the components of

anxiety and severity of menopausal symptoms ($p < 0.05$). Significant differences were observed between the intervention and control groups in the components of depression, somatic symptoms, vasomotor symptoms and sexual dysfunction ($p < 0.05$).

There was a significant difference between the two groups in the mean anxiety level before and after the cognitive – behavioral group therapy ($p < 0.05$). Cognitive-behavioral group therapy was significant in the intervention group in the components of anxiety, depression, somatic symptoms, vasomotor symptoms and sexual dysfunction ($p < 0.05$). There was no significant difference in the mean scores of these components in the control group. The mean score of menopausal symptoms was significantly lower in the intervention group compared to the control group at the end of the intervention and this difference was statistically significant ($P < 0.05$). The effect of income was not significant.

Table 1. Relative and absolute frequency distribution, and mean of demographic variables in intervention and control group

Variables		Intervention N(%)	Control N(%)	Total N(%)	P-value
marital status	Married	31 (45.6)	37 (54.4)	68 (89.5)	0.056
	Single, divorced	7 (87.5)	1 (12.5)	8 (10.5)	
education	Below high school diploma	6 (50)	6 (50)	12 (15.8)	0.623
	Diploma and college	38 (51.4)	32 (50)	64 (84.2)	
Employment status	Housewife	38 (51.4)	36 (48.6)	74 (97.4)	0.493
	Employee and retired	0 (0)	2 (100)	2 (2.6)	
Body Mass Index (Kg / m ²)	18.5 – 24.9	9 (60)	6 (40)	15 (19.7)	0.592
	25 – 29.9	18 (45)	22 (55)	40 (52.6)	
	Above 30	11 (52.4)	10 (47.6)	21 (27.6)	
Children	No	5 (83.3)	1 (16.7)	6 (7.9)	0.200
	Yes	33 (47.1)	37 (52.9)	70 (92.1)	
Delivery	Yes	6 (85.7)	1 (14.3)	7 (9.2)	0.108
	No	(46.4)	53.6 (37)	69 (90.8)	
physical activity	Low	9 (56.3)	7 (43.8)	16 (21.1)	0.843
	Average	21 (47.7)	23 (52.3)	44 (57.9)	
	Intense	8 (50)	8 (50)	16 (21.1)	
Income	Less than 1.5 million Tomans	27 (43.5)	35 (56.5)	62 (81.6)	0.036
	More than 1.5 million Tomans	11 (78.6)	3 (21.4)	14 (18.4)	
Age of women (years)		53.15 (2.78)	52.84 (2.77)	53 (2.76)	0.622
Menopause duration (years)		2.83 (1.55)	2.37 (1.39)	2.6 (1.48)	0.175

Table 2. Comparison of mean score of menopausal symptom severity in intervention and control group before and after cognitive – behavioral group therapy

Dimensions	Group	Intervention Mean±SD	Control Mean±SD	P-value
Anxiety	Before	8.7±3.9	5.9±3.6	0.002
	After	4.5±2.6	5.7±3.3	0.241
	p-value	0.001	0.699	
Depression	Before	7.9 ± 4.4	6.3 ± 3.09	0.214
	After	3.3±2.2	6.2 ± 3.02	0.001
	p-value	0.001	0.967	
Somatic Symptoms	Before	8.4 ± 4.5	7.2 ± 3.7	0.256
	After	5.7 ± 3.08	7.5 ± 3.6	0.045
	p-value	0.001	0.073	
Vasomotor symptoms	Before	3.02 ± 2.09	3.65 ± 2.9	0.624
	After	1.4 ± 1.8	3.8 ± 2.9	0.001
	p-value	0.001	0.107	
Sexual dysfunction	Before	1.7 ± 1.05	1.6 ± 0.99	0.588
	After	0.71 ± 0.61	1.6 ± 1.5	0.001
	p-value	0.001	0.710	
Total score	Before	22.78 ± 12.22	24.8 ± 10.25	0.028
	After	15.75 ± 7.24	24.97 ± 9.25	0.001
	p-value	0.001	0.073	

Discussion

The results of the present study showed that menopausal symptoms decreased in subjects who received cognitive–behavioral group therapy compared to those who did not receive this therapy, indicating the effectiveness of cognitive–behavioral group counseling on the reduction of menopausal symptoms. The results are in line with the findings of Hunter et al. (21), who, while evaluating the impact of cognitive–behavioral counseling on menopausal symptoms in postmenopausal women, concluded that cognitive–behavioral therapy is a non-pharmacological approach to the treatment of hot flashes in this period and it is a good way to deal with the mood swings that occur during this period. The results of the study of Duijts et al. (22), which imply the benefits of methodological-behavioral method and exercise on endocrine symptoms and to a lesser degree on sexual and physical function of postmenopausal women and the reduction of menopausal symptoms, are consistent with this study. The studies of Ayers et al. (11) and Balabanovic et al. (23) also showed that cognitive – behavioral method can reduce menopausal symptoms and is an acceptable method. In explaining the reasons for how cognitive – behavioral counseling can reduce menopausal symptoms, one can say that the steps of this method including slow and step-by-step breathing, behavioral

activation techniques, increased awareness of the problem, training of muscle relaxation skills, identifying supportive sources and positive feedback and cognitive restructuring are among the factors that may reduce menopausal symptoms (17). Different cognitive techniques in this study help patients identify negative automatic thoughts and learn skills to overcome cognitive distortions. The cognitive triangle and the familiarity of patients with the fact that how thoughts create emotions and how these emotions control behavior help them identify and control negative automatic thoughts.

Studies have implicated the effect of cognitive-behavioral counseling method on some menopausal symptoms. Study of Myra and Associates (24) showed that cognitive-behavioral counseling may be effective on some menopausal symptoms but there is a much more clinical trial to evaluate the effect of this counseling approach on menopausal symptoms. Studies have suggested differences in the effect of cognitive – behavioral counseling on some menopausal symptoms. The study of Myra et al. (24) showed that cognitive – behavioral counseling may be effective on some menopausal symptoms, but more clinical trials are needed to examine the impact of this counseling approach on menopausal symptoms. In a study by Mann et al. (10), it was found that cognitive – behavioral

methods can affect some menopausal symptoms and have no effect on the frequency of these symptoms and there is no significant difference between the intervention and control groups in this regard. The reason for the inconsistency between the results of these two studies and the present study could be because of different study populations, since the studies of Mann and Myra were about the effect of cognitive-behavioral group therapy on menopausal symptoms of women after breast cancer treatment.

This may itself be effective as the present study addresses the symptoms of menopause in healthy women. Peterson et al. (25) found no significant difference in depression score between the intervention and control groups after four sessions of cognitive – behavioral counseling. This inconsistency may be due to the small number of sessions (four 60-minute sessions) in the study of Peterson as the present study included six 90-minute sessions. In addition, a study by de Klerk et al. (26) showed that counseling with infertile couples did not affect their depression. These inconsistencies may also be due to differences in the study population in this study and the present study. The present study has several limitations: First, despite all the benefits of group therapy, it also has the disadvantage of not focusing specifically on the individual aspects of a person's problems, so it is suggested that future studies that focus on group meetings also take into account the problems and issues of the group members separately. Furthermore, as this study is a clinical trial, another limitation is the

implementation of the intervention program by the researcher, which may influence the results bias. It is recommended that in other clinical trials, the intervention be performed by another person and not the researcher to avoid bias. Another limitation of the present study is not using the follow-up step to evaluate the continuing effect of cognitive – behavioral therapy. Therefore, it is suggested that short-term and long-term follow-ups be used in future research to evaluate the continuing effect of cognitive – behavioral group therapy. The strengths of this study were the use of a non-pharmacological method (Cognitive – Behavioral Group Therapy) to improve the psychological characteristics of women in menopause, and the results indicated its effectiveness. Considering the significant results of the present study regarding the positive effect of cognitive – behavioral group therapy on reducing menopausal symptoms, it is suggested that health and community health planners use this method as an effective approach to improve the quality of the life among postmenopausal women and provide a way to complete menopausal services.

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References

1. Khavandizadeh Aghdam S, Kazemzadeh R, Mahfouzi Y. Effectiveness of Education on Life Style in Menopausal Women. *J Ilam Univ Med Sci.* 2018; 26(1) :43-51. [In Persian]
2. Avis NE, Crawford S, Manuel J. Psychosocial problems among younger women with breast cancer. *Psycho-Oncology.* 2004;13(5):295-308.
3. Hakimi S, Nazarpour S, Ramezani Tehrani F, Simbar M, Zaiery F. Women's Experiences about Menopause and Related Factors. *Iran J Endocrinol Metab.* 2017; 19(3):185-93. [In Persian]
4. Theroux R. Women's decision making during the menopausal transition. *J Am Acad Nurse Pract.* 2010;22(11):612-21.
5. Peyrovi H, Jouybary L, Jamshidi Manesh M, Sanagoo A. Women's experience of menopause. *J Sabzevar Univ Med Sci.* 2010; 16(4): 196-205.[In Persian]
6. Aemmi SZ, Dadgar S, Pourtaghi F, Askari Hoseini Z, Emami Moghadam Z. The effect of exercise program using elastic band in improving the old women's health. *Iran J Obstet Gynecol Infertil.* 2015;18(177):20-5.
7. Abernethy K. Managing short-term menopausal symptoms (Section 8). *Post Reprod Health.* 2016;;22(2):63-6.
8. Lazarus JV, Rasch V, Liljestrand J. Midwifery at the crossroads in Estonia: attitudes of midwives and other key stakeholders. *Acta Obstet Gynecol Scand.* 2005;84(4):339-48.
9. Khodayarifard M, Shahabi R, Akbari Zardkhaneh S. Religiosity and marital satisfaction. *Procedia Soc Behav Sci.* 2013;82:307-11.
10. Mann E, Smith MJ, Hellier J, Balabanovic JA, Hamed H, Grunfeld EA, et al. Cognitive behavioural treatment for women who havemenopausal symptoms after breast cancer treatment(MENOS 1): a randomised controlled trial. *Lancet Oncol.* 2012;13(3):309-18.
11. Ayers B, Smith M, Hellier J, Mann E, Hunter MS. Effectiveness of group and self-help cognitive behavior therapy in reducing problematic menopausal hot flushes and night sweats (MENOS 2): a randomized controlled trial. *Menopause.* 2012;19(7):749-59.
12. Hunter MS, Coventry S, Hamed H, Fentiman I, Grunfeld EA. Evaluation of a group cognitive behavioural intervention for women suffering from menopausal symptoms following breast cancer treatment. *Psycho-Oncology.* 2009;18(5):560-3.
13. Bahri N, Pourali L, Esmaeeli H. Application of various menopausal symptoms treatment options and its related factors. *Iranina Journal of Obstetrics Gynecology and Infertility.* 2016; 26(19):1-8
14. Taechakraichana N, Jaisamrarn U, Panyakhamlerd K, Chaikittisilpa S, Limpaphayom KK. Climacteric: concept, consequence and care. *J Med Assoc Thai.* . 2002;85:S1-15.
15. Rossouw JE, Anderson GL, Prentice RL, LaCroix AZ, Kooperberg C, Stefanick ML. Risks and benefits of estrogen plus progestin in healthy postmenopausal women: principal results From the Women's Health Initiative randomized controlled trial. *JAMA.* 2002;288(3):321-33.
16. Yasui T, Yamada M, Uemura H, Ueno S, Numata S, Ohmori T, et al. Changes in circulating cytokine levels in midlife women with psychological symptoms with selective serotonin reuptake inhibitor and Japanes traditional medicine. *Maturitas.* 2009;62(2):146-52.
17. Daley A, Mac Arthur C, Mutrie N,Stokes-Lampard H. Exercise for vasomotor menopausal symptoms. *Cochrane Databace Syst Rev.*2011; (5)CD006108.
18. Mirghafourvand M, Sehhatie Shafaie F, Jafari M. Effects of Self-directed Learning on the Early Symptoms of Early menopause symptoms. *J Babol Univ Med Sci.* 2015;17(3):68-75.
19. Askari F, Basiri moghadam K, Basiri moghadam M, Torabi S, Gholamfarkhani S, Mohareri M, et al. Age of natural menopause and compare the incidence of its early complications in menopause transition stages in women from Gonabad city. *Horizon Med Sci.* 2012; 17(4):42-8.[In Persian]
20. Barentsen R, van de Weijer PH, van Gend S, Foekema H. Climacteric symptoms in a representative Dutch population sample as measured with the Greene Climacteric Scale. *Maturitas.* 2001;38(2):123-8.
21. Hunter MS, Mann E. A cognitive model of menopausal hot flushes and night sweats. *J Psychosom Res.* 2010;69(5):491-501.
22. Duijts SF, van Beurden M, Oldenburg HS, Hunter MS, Kieffer JM, Stuiver MM, et al. Efficacy of cognitive behavioral therapy and physical exercise in alleviating treatment-induced menopausal symptoms in patients with breast cancer: results of a randomized, controlled, multicenter trial. *J Clin Oncol.* 2012;30(33):4124-33.
23. Balabanovic J, Ayers B, Hunter MS. Women's experiences of Group Cognitive Behaviour Therapy for hot flushes and night sweats following breast cancer treatment: An interpretative phenomenological analysis. *Maturitas.* 2012;72(3):236-42.
24. Hunter MS1, Coventry S, Hamed H, Fentiman I, Grunfeld EA. Evaluation of a group cognitive behavioural intervention for women suffering from menopausal symptoms following breast cancer treatment. *Psychooncology.* 2009; 18(5):560-3.
25. Peterson AL, Scott Halstead T. Group cognitive behavior therapy for depression in a community setting: a clinical replication series. *Behav Ther J.* 1998; 29(1):3-18.
26. de Klerk C, Hunfeld J, Duivenvoorden H, Den Outer M, Fauser B, Passchier J, et al. Effectiveness of a psychosocial counselling intervention for first-time IVF couples: a randomized controlled trial. *Hum Reprod.* 2005;20(5):1333-8.