Original Article

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Effectiveness of Nutritional and Cognitive-Behavioral Training in Anxiety, Anger Premenstrual Syndrome

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ABSTRACT

BACKGROUND AND OBJECTIVE: Premenstrual syndrome (PMS) is a common disorder in women that affects their quality-of-life and performance.The present study was aimed to evaluate the nutrition based on traditional medicine and cognitive behavioral therapy (CBT) on anxiety and anger in this syndrome.

METHODS: This quasi-experimental study was performed on 45 women with premenstrual syndrome who were randomly divided into three groups of CBT recipients alone, CBT with nutrition and control group for two months. The nutrition content was adjusted in a form and the subject started two weeks prior to menstruation and followed it up to the end of the menstrual period. Cognitive-behavioral training was provided over 8 90-minute sessions. Data were recorded before and after training and two months follow-up. Anxiety questionnaires (0 to 63 scores), aggression (0 to 90 scores) were used to evaluate the variables.

RESULTS: There was a significant difference in the anxiety (28% reduction in CBT and 31% in CBT and nutrition) and anger (65% reduction in CBT and 55% in CBT and nutrition) variables in both groups except control ($p < 0.05$). However, the difference between the two groups of CBT alone and the treatment of CBT with nutrition did not significantly reduce anxiety and anger ($p > 0.05$).

CONCLUSION: The results of this study showed that the use of both CBT and nutritional training methods is effective in controlling anxiety and anger.

KEY WORDS: *Premenstrual Syndrome, Cognitive-Behavioral Therapy, Traditional Medicine, Nutrition, Anxiety, Anger & Aggression*.

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Introduction

Premenstrual syndrome (PMS) is one of the most common psychiatric disorders affecting the quality and efficiency of women (1). A combination of hormonal, psychological, environmental and nutritional factors has been reported in its causality and its prevalence in Iran is up to 74.1% (2,3). Diagnostic criteria based on Diagnostic and Statistical Manual of Mental Disorders (DSM-5)=DSMV) are appearance of physical, psychological, emotional and behavioral symptoms in the menstrual period and its recurrence in at least two to three next menstrual period (2-5).

Depressed mood, restlessness, tension and anxiety, severe irritability, apparent anger, and interpersonal conflicts are important psychosomatic symptoms (5). Various therapeutic approaches including the use of analgesics, antidepressants, nutrition supplements, psychology, exercise, massage and yoga are provided for PMS (6-10). Studies show that 80% of women with PMS use complementary and alternative therapies such as herbal remedies, acupressure, acupuncture, exercise, nutrition and psychology, especially cognitive behavioral therapy (CBT) for symptom control (11-19). The results of studies indicate efficacy of CBT in the treatment of depression and anxiety disorders (13, 20). Several studies have been done on the effects of dietary supplements and psychological interventions on the control of PMS symptoms (21,22).

There are no PMS titles in Iranian traditional medicine sources, but the connection between the uterus and the nervous system and nutrition is mentioned. Regarding the health of uterine, nutrition recommendations in two groups of advice and food avoidance include the modulators of the uterine temperament (cold, warm, dry and wet), and the general strengthening of the body. (23, 24). So far, a compilation study using two nutritional and psychological approaches to PMS control has not been done in a survey of databases. Therefore, this study was conducted to evaluate the diet based on traditional medicine and CBT on anxiety and anger in PMS.

Methods

This quasi-experimental study was conducted after obtaining the consent of the research and ethics committee of Azad university of Neishabour. Out of 90 women who referred to the clinic, 45 questionnaires of PMS were completed through clinical interviews. After completing the consent, they were randomly assigned to three groups of 15 individuals randomly (using random numbers table). The study included three stages of pre-test, post-test and follow-up two months later. The sample size was estimated to be 15 in each group using the formula for computing the meanings and similar articles, including Karami et al. (25). Women with moderate to severe PMS who did not have physical and psychological illness (death of relatives, divorce, marriage) and were not pregnant and did not receive any other treatment were included in the study. The diagnosis of moderate to severe PMS was based on the Premenstrual Symptom Screening Tool (PSST) questionnaire. The questionnaire contains 19 questions about mood, physical and behavioral symptoms, and the effects of these symptoms on people's lives, with 4 answers at all, mild, moderate and severe, for each question. In Iran, its Persian version has been prepared, validity and reliability have been confirmed by Siahbazi et al. (26).

Women who needed to take medication for any reason and had specific psychiatric conditions, pregnant women, and were reluctant to participate in the project were excluded. Beck Anxiety Inventory (BAI) was used to assess the variables of the research, whose validity and reliability in Iran was confirmed by Rafiei et al. (2013) (27) and Aggression Questionnaire (AGQ) was also used which its validity and reliability in Iran was confirmed by Zahedifar et al. (28).

The test groups received 8 sessions of 90 minutes and received training for 2 months. In the first group only CBT and in the second group food program along with CBT and in the third group no specific action was followed. Immediately after the end of the sessions and follow up 2 months later, members of all three groups responded to the questionnaires. The content of the CBT eight sessions is presented in Table 1.

The nutrition program was provided in a form in order to subject begins the program two weeks before the menstruation and observes it until the end of the menstrual period and write and mark all used materials. The recommendations include the use of five dried fig daily, daily servings of milk in the evening, egg yolk and carrot jam for breakfast two days in between, rice milk or porridge with almonds, saffron and cinnamon at dinner or breakfast, sweat or dip of Citrus aurantium daily one to two times in the morning and at night, sesame oil as an used oil, avoiding the pumpkin, cucumber, watermelon, thyme, ginger, chicory, sour foods, salty foods, verjuice, lentils, eggplants, fast foods, protein and industrial

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drinks. If they had headache, it was recomended to avoid cinnamon, saffron, walnuts, cumin, garlic, onions and pepper due to its Temperament quality and excessive heat production (29,30). After obtaining results, data were analyzed by using SPSS software version 16 and descriptive statistics, repeated measures variance analysis, Kolmogorov-Smirnov test, and $p<0.05$ was considered significant.

Results

Demographic characteristics of the three groups including age, level of education, marital status were homogeneous according to the t-test and did not have a significant statistical difference (Table 2). Of the 45 people surveyed, 58% were in the age group of 31-40, 80% were married and 60% had undergraduate education.

The mean scores of severity of symptoms of anxiety and anger were not significantly different between the three groups in the pretest, but in posttest and follow up in the two groups, the results show that there is a significant difference in each group, but the difference between the groups is not significant (Table 3).The average percentage of anxiety reduction in the CBT group was 28% and CBT along with nutritin was 31%. The average percentage of anger was 65% in the CBT group and 55% in the CBT along with nutritin group which remained constant during the follow-up of the next two months (Fig 1,2).

Table 1. Content of cognitive-behavioral CBT therapy sessions

Sessions	Content of Sessions
First	Familiarity with each other, explaining the process of work and its components
Second	Natural menstrual cycle training, symptoms of PMS
Third	Introducing CBT, anxiety model and its components
Fourth	Psychological education: the importance of thoughts in creating excitement and cognitive errors (mindfulness, prophecy, disaster, extreme extension)
Fifth	Introducing how to write thoughts and strategies to deal with anxious thoughts
Sixth	Interventional cognitive training (disaster relief, foot, evidence survey ...)
Seventh	Deep cognitions (conditional assumptions and underlying beliefs) and related techniques and problem solving methods
eighth	Anger management training and its components

Table 2. Specifications of the subjects in the studied groups

Varaible	Group	CBTN (%)	CBTalong with nutrition N(%)	Control N(%)
Martial status	Single	3(20)	11(13.3)	4(27)
	Married	12(80)	13(87.6)	11(73)
Education	Associate Degree	2(13.3)	4(27)	4(27)
	bachelor	12(89.1)	8(53)	7(46)
	Master of science	1(6.6)	3(20)	4(27)
Age (year)	20-30	1(6.6)	1(6.6)	3(20)
	31-40	8(53)	11(73.3)	7(470
	41-50	6(40.1)	3(20)	5(33)

Table 3. Comparison of the mean changes in PMS symptoms during the treatment period in the studied groups

Group	Variable	Beginning of the study Mean±SD	End of the study Mean±SD	Folow up after two month Mean±SD	P-value* (Intragroup)	P-value* (Between twe test groups)	P-value* (Between twe test and control groups)
Anxiety	CBT	24.9±7.52	15.7±8.15	15.1±7.16	0.014	0.065	0.018
	CBT and nutrition	25.6±6.84	13.8±6	13.8±6.1	0.022		0.021
	Control	25±7.89	26.2±8.15	25.1±7.59	0.767		
Anger	CBT	51.1±4.8	42.2±3.21	41.8±2.24	0.009	0.068	0.012
	CBT and nutrition	49.7±6.84	41.8±6.68	40.3±6	0.01		0.022
	Control	49.3±6.9	49±5.86	48.9±5.01	0.38		

*: General Linear Model Repeated Measures

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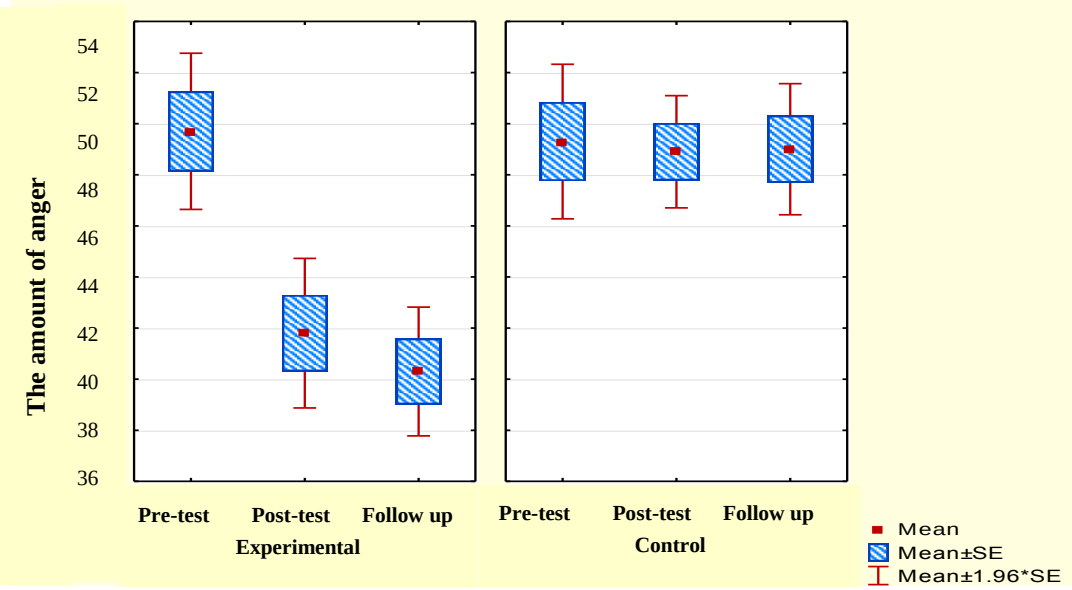

Figure 1. Comparison of changes in the amount of anger in the stages of treatment and by the groups of subjects

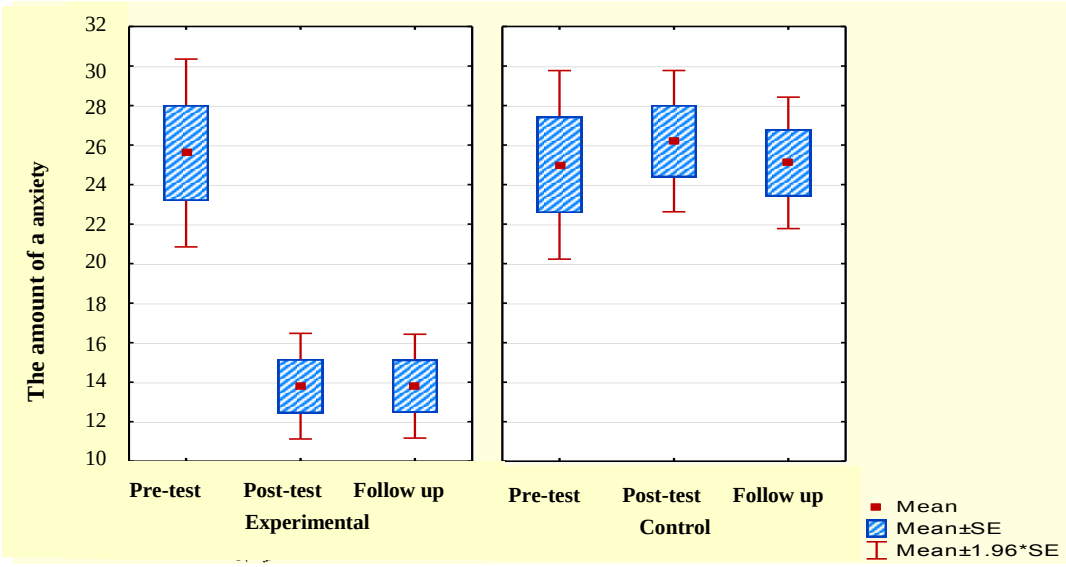

Figure 2. Comparison of changes in the amount of anxiety in the stages of treatment and by the groups of subjects

Discussion

According to the results of this study, CBT and nutrition are effective in controlling anxiety and anger in PMS. The results of this study are consistent with the results of other studies reported that CBT and dietary supplements are effective in reducing PMS symptoms. Armand et al. showed that CBT stress management training in 40 PMS women significantly reduced the total score of premenstrual symptoms, depression and stress (31). In another study, Mirzaei et al. stated that CBT had a positive effect on the depression and irritability of 24 PMS women (32). Bakhshani et al. also reported on 142 PMS that the average monthly consumption of dairy products (milk, yogurt and cheese), fruits and vegetables was significantly higher in the non-symptom group than in the PMS group (33). Shobeiri et al. also reported a significant effect of calcium supplementation on 64 patients with PMS diagnosis for two months, indicating that symptoms of trouble, waist, abdomen, depression, irritability were significantly reduced during the second cycle after calcium intake (19). Whelan et al. and Murakami et al. reported that foods containing calcium and carbohydrates are effective in controlling PMS symptoms. The researchers reported that carbohydrates could have an impact on the management of PMS symptoms (34,35) by affecting neurotransmitters such as serotonin. Seedhom et al., reported a significant relationship between positive

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family history, obesity, fast food consumption and caffeine, and increased symptoms of PMS. (36). Eating carbohydrates increases the amount of serotonin, which is a neurotransmitter that plays an important role in increasing mood of individuals and decreases depression and associated symptoms, as well as the use of wheat, bran, plants of the family of cabbage, and varieties of vegetables is effective in the amount fluctuation of estrogen hormone.

Fat also affects the regulation of the amount of female and male hormones, and these factors reduce the symptoms of the syndrome by feeding, but it seems that the effect of food is in the long term, therefore, has less effect on symptoms such as anger that is immediately followed by environmental stimuli and mostly external stimuli. (24,30,37-39). CBT leads to the reconstruction of thoughts and the recognition of ineffective behaviors in individuals. According to the results, it can be concluded that CBT has a positive effect on the symptoms of this syndrome (10,12,40).

Anger and aggression are also a kind of behavior tha according to Bandura's (41) views, one can be learned through observation and is related to the type of people's thinking and beliefs, so that the type of food, therefore, it is possible that anger management is more responsive to teaching and psychological treatment and more effective selection of food on this variable needs to be further investigated. Multiple treatments appear to have a greater effect on the symptoms (mental, physical). Useful nutrients, rich in micronutrients, minerals, vitamins and proteins, each of which, in their natural proportion, have a significant role in regulating hormones and body functions, while the effectiveness of CBT is also known. It seems reasonable that combined treatment of nutrition and CBT can be effective on PMS (17).

The small number of subjects, the small statistical society, the short duration of treatment, the moral constraints of some subjects in responding to questions regarding work issues were among the limitations of this study. Using the nutritional approach without serious intervention in the diet of the people and paying attention to the psychological aspects of the individuals were the strengths of the study and doing this study in a larger statistical society with this approach is suggested.

According to the results of this study, CBT and nutrition can reduce symptoms of anxiety and anger in PMS, although the effectiveness of CBT and nutrition on reducing anxiety is higher than CBT alone, and CBT is more effective in controlling anger than nutrition.

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