Original Article

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Effects of Self-directed Learning on the Early Symptoms of Menopause

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ABSTRACT

BACKGROUND AND OBJECTIVE: Menopause is one of the most critical periods in a woman's life. The symptoms that women experience during this stage are among the most important health care challenges. This study aimed to investigate the effect of self-directed learning on the early symptoms of menopause (primary outcome) and the frequency of hot flashes (secondary outcome).

METHODS: In this randomized controlled trial, 124 postmenopausal women, whose medical records were available at Vali-Asr Health Center, were evaluated in Islamshahr city in 2014. The subjects were allocated to intervention (self-directed learning) and control groups (62 subjects per group) via random cluster sampling. For the purpose of training, three booklets, including the symptoms of menopause and methods of prevention, were given to participants on a specific day during three consecutive weeks. Early menopause symptoms were assessed using Greene scale (0-63) before and 4 weeks after the intervention. Data were analyzed using generalized linear model (IRCT code: 201305063027N25).

FINDINGS: There was no significant difference between the two groups in terms of demographic characteristics or the mean Greene score before the intervention. Four weeks after the intervention, the mean Greene score was significantly lower in the intervention group (95% confidence interval: 6.4-8.5, adjusted difference: 7.5), compared to the control group. Four weeks after the intervention, the frequency of hot flashes was significantly lower in the intervention group, compared to the control group (-1.9 to -6.6, -3.9) ($p<0.001$).

CONCLUSION: Self-directed learning could reduce the early symptoms of menopause. Therefore, this method of learning can be considered as a suitable way to enhance women's health and prepare them for dealing with the irritating symptoms of menopause via health interventions.

KEY WORDS: Education, Self-directed Learning, Early Symptoms of Menopause.

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Introduction

Menopause is an important phenomenon in a woman's life. It occurs 12 months after the permanent cessation of menstruation due to lack of ovarian follicular activity (1). The average age of menopause in women is 51 years, although it varies in different regions of the world. The results of a study by Rajaeefard et al. showed that the average age of menopause in Iran (48.2 years)is lower than developed countries and the global average (2). In fact, according to a census in 2012, middle-aged women (45-60 years) account for approximately 5 million of the country's total population. Considering the increase in life expectancy (3), women spend one-third of their life in the postmenopausal state (4, 5); therefore, problems during this period are of high significance. During menopause, decreased ovarian activity is associated with reduced level of hormones and various complications such as hot flashes, sleep disorders, urinary retention, cystitis, and urinary tract infections (6). Vasomotor symptoms are among the most common early symptoms of menopause (6).

The prevalence of these symptoms is variable between 18% and 80% in different studies. This rate has been estimated at 75% In American women over the age of 50 years (7) and 53.1% in Iran (8). Hot flashes and feelings of intense heat occur in the chest, head, and neck and are normally accompanied by night sweats (9). These problems can disrupt one's sense of well-being, physical activities, life satisfaction, and the overall quality of life (10). The standard treatment for the early symptoms of menopause is hormonal treatment. However, considering the associated side-effects such as breast cancer and thromboembolism in estrogen users (10), interventional techniques including health training are preferred (4). In fact, empowering women to comply with menopause requires social interventions (11). The first and most important step in this path is to have the required information about menopausal transition (12). In fact, health education is adventitious and is strengthened by learning (13). Health education is a method with a specific plan and design. Selecting an appropriate educational method by considering the learners' circumstances and social status, along with the effective utilization of training aids, can improve one's use of time and resources (14). In a study by Satoh and colleagues in Japan, 83% of subjects required information about menopause symptoms and coping strategies via various educational techniques. In the mentioned study, a significant association was found between the severity of menopause symptoms and lowering life expectancy (14). Moreover, previous research has revealed that menopausal women mostly suffer from lack of knowledge. Therefore, raising their awareness about problems during menopause and coping strategies is beneficial (15-17). Interventions, which can improve compliance and quality of lifein menopausal women by informing them via effective learning methods (which are in accordance with their needs), are of utmost importance (18). Learner-centered teaching is an individual-based technique, emphasizing self-directed learning. In this method, learning is part of an individual's daily life and the person takes responsibility for moving toward the learning objectives (19). Use of training aids is a practical method in self-directed learning (20). Self-directed learning by using training aids, continuous improvement of teaching and learning practices, and centrality of the individual, leads to the further expansion of knowledge and information in society (21). Therefore, in adult learning, individual-centered teaching is of high significance (22).

A study by Yazdkhasti et al. in Robat Karim city showed that self-directed learning and supportive groups can similarly improve the four dimensions of quality of life in postmenopausal women (vasomotor, psychosocial, physical, and sexual dimensions) (13). Moreover, a study by Valente on the elderly showed that self-directed learning has positive effects on health care. In addition, this method by promoting preventive behaviors could raise awareness in the elderly about their own health condition (23). In a study by Rosatami et al. in Shahre Rey, an educational program including lectures and question-and-answer (Q&A) sessions during 4 weeks (one session per week) improved sexual, physical, and psychological aspects in menopausal women; however, no significant change was observed in the vasomotor dimension (24).

Although in our country, the effects of educational interventions including lectures, Q&A sessions, self-directed learning, and support groups on quality of life have been investigated in menopausal women, so far, no research has been carried out regarding the effects of self-directed learning on the early symptoms of menopause. According to the reports by the Statistical Center of Iran, 31% of the country's total population are in the age group of 15-29 years. Within 20 to 30 years from now, this population will be placed among the middle-aged group; thus, careful planning is necessary to ensure the health of these individuals. The present study was performed to determine the impact of self-directed learning on the early symptoms of menopause (primary outcome) and frequency of hot flashes (secondary outcome).

Methods

This randomized controlled clinical trial (IRCT code: 20130506302725N) was performed on postmenopausal

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women, aged 45-59 years in Islam Shahr city in 2014. The medical records of subjects available at Vali-Asr health database were evaluated. According to a study by Yasui et al. (25), the sample size was calculated at 56 subjects per group; considering a 10% dropout rate, 62 patients were allocated to each group. The inclusion criteria were as follows: 1) minimum educational level (middle school); 2) being married; 3) non use of hookah, alcohol, or cigarettes; 4) non-use of estrogen or herbal medications, containing phytoestrogens over the past three months; 5) non-use of effective drugs for hot flashes such as clonidine and gabapentin; 6) hot flashes at least twice a day; and 7) any severe stressors such as the death of relatives over the last three months.

The exclusion criteria were as follows: 1) use of hormone replacement therapy until the end of the study; 2) unwillingness to continue the study at any stage; 3) continuous absence of participants to receive the booklets; 4) physical or psychological conditions; and 5) surgical interventions during the study.

Data collection tools included a demographic questionnaire, Greene scale, and a checklist for recording the frequency of hot flashes. The demographic questionnaire included items on age, menopausal age, educational level, occupational status, parity, monthly income, number of rooms at home, number of family members, life satisfaction, residence status, previous training about menopause, and prior history of physical activity. Greene scale was developed in 1975 by Professor Greene in Scotland. The reliability and validity of this questionnaire have been previously confirmed (26). Greene scale independently evaluates the physical, psychological, and vasomotor symptoms of menopause. This scale consists of 21 questions related to menopause symptoms and each symptom is scored by the individual. In Greene scale, the severity of problem is scored as follows: no signs (zero), mild (1), moderate (2), and severe (3). Statements 1 to 11 include psychological symptoms, which are divided in two parts of anxiety (statements 1-6) and depression (statements 7-11).

Statements 12 to 18 are related to physical symptoms of menopause, statements 19 and 20 are with regard to vasomotor symptoms, and statement 21 measures sexual dysfunction (27). Also, one item is related to the frequency of hot flashes. The average Greenescore (0-63) is calculated by summing the scores of all dimensions.The checklist, which was used to record the frequency of hot flashes (within 24 hours a day), was completed daily by the participants. In this study, the validity of demographic questionnaire and Greene scale was determined by content validity. Also, reliability, which was measured on 30 individuals using pre-test post-test method, was confirmed by internal consistency (confidence interval= 0.88-0.97), intraclass correlation coefficient (ICC=0.94), and Cronbach's alpha coefficient (α=0.85). For sampling, first, the list of married postmenopausal women, aged 59-45 years, was extracted from Vali-Asr database in Islam Shahr city. Then, by contacting the candidates and considering the inclusion criteria, women were asked to attend the briefing session.

In the briefing session, after explaining the aims and methods of the study, pre-test questionnaires (demographic questionnaire and Greene scale) were completed by the participants and written informed consents were obtained. Then, the subjects were randomly assigned to intervention and control groupsvia block randomization (using block sizes of 4 and 6 with an allocation ratio of 1:1).

After determining the groups, the subjects in the intervention group were contacted and invited to visit the center on a specific day. The first session was held to communicate and interact with the members of the intervention group and provide them with booklet No. 1. In this session, the subjects were asked to carefully read the manual during the week ahead and contact the researcher in case there were any doubts or questions. By the end of this session, the subjects were asked to visit the center during the second and third weeks to receive the second and third booklets on the specified days. The booklets contained practical information and guidelines regarding compliance with the symptoms of menopause. They were presented in a simple understandable language (without any medical terms), aligned with the socio-cultural status of subjects; they provided information on the most evident symptoms of menopause.

The content of these booklets is described below: Booklet No. 1: Definition of menopause, the importance of this period, physical symptoms, and methods of preventing these symptoms. Booklet No. 2: Vasomotor symptoms, decreased libido, and practical strategies for dealing with these problems. Booklet No. 3: Psychological symptoms and practical preventive solutions.The control group received no interventions. To comply with ethical considerations, at the end of the study, the booklets, containing information about menopause symptoms and methods of prevention, were distributed among control subjects. Data were analyzed by SPSS version 13. Normalization of quantitative data was analyzed by Kolmogorov-Smirnovtest. Quantitative demographic variables were normally distributed. Moreover, the total score of Greene scale (and its sub-scales) and the checklist of hot flashes were normally distributed. Before the intervention, for the comparison of the score of Greene scale and its sub-scales between the groups, independent t-test was

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applied. Four weeks after the intervention, ANCOVA test was used by controlling the effect of pre-intervention scores. $p<0.05$ was considered statistically significant.

Results

In this study, in each group, 62 married postmenopausal women, aged 45-59 years, were examined. However, after a dropout in the number of participants including 4 subjects in the intervention group (2 due to not receiving the booklets, 1 due to hormone therapy, and 1 due to the death of the spouse) and 2 subjects in the control group (one due to hysterectomy and 1 due to hormone therapy), the number of participants reduced to 58 in the intervention group and 60 in the control group.

In terms of demographic characteristics, the two groups were not significantly different before the intervention (table 1).

Table 1: The socio-demographic characteristics of postmenopausal women in the intervention and control groups

Socio-demographic characteristics	Interventiongroup (n=58) N(%)	Control Group (N=60) N(%)	Statistical results
Age (years)	52.06(4.6)	52.8(4.2)	0.391§
Age at menopause(years)	48.3(3.6)	48.1(4)	0.658§
Level of education			۰.۴۵۵††
Less thanhigh school diploma	33(52.4)	30(47/6)	
Higher than diploma	25(45.5)	30(54.5)	
Parity			0.804††
Less than2	19(52.8)	17(47.2)	
2-5	33(44.6)	41(55.4)	
5and above	6(75)	2(25)	
Occupational status			‡0.446
Housewife	47(50)	47(50)	
Employee	11(45.8)	13(54.2)	
Body massindex (BMI) (kg/m^2)♦			0.243§
18.5-24.99	18(51.4)	17(48.6)	0.181††
25-29.99	29(59.2)	20(40.8)	
≥ 30	11(34.4)	21(65.6)	
Life satisfaction			0.159††
Completelysatisfied	23(52.3)	21(47.7)	
Somewhatsatisfied	33(52.4)	30(47.6)	
Dissatisfied	2(18.2)	9(81.8)	
* Congestionindex			0.897††
Uncongested	50(51.5)	47(48.5)	
Average	3(23.1)	10(76.9)	
Congested	5(71.4)	2(28.6)	
Training aboutmenopause	20(60.6)	13(39.4)	0.089‡
Physicalactivity⅄	39(61.3)	37(48.7)	0.330‡

§t-test, ††Chi-square process, ‡ Chi-square

♦In terms of BMI, none of the samples were less than 18.5 kg/m^2.

BMI was calculated by dividing weight in kilograms by the square of height in meters and was categorized as follows: underweight (Less than 18.5 kg/m^2), normal (18.5-24.9 kg/m^2), overweight (25-29.9 kg/m^2), and obese (>30 kg/m^2).

*Congestion index was classified in three groups of uncongested (less than 2 people per room in the house), average (between 2-3 people per room in the house), and congested (more than one person per room in the house).

⅄Physical activity included simple regular exercises or walking every day for 30 minutes.

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The mean age of participants was about 52 years. About half of participants (50%) had less than high school diploma. Almost half of women (50%) had experienced 2-5 childbirths. Moreover, 50% of subjects were housewives. As the results indicated, about half of subjects (50%) were somehow satisfied with their living conditions. Additionally, almost 50% of subjects had already received menopausal training. Also, about half of subjects (50%) were physically active before the intervention (table 1).

Before the intervention, there was no significant difference in the mean score of Greene scale and its sub-scales between the two groups. However, there was a statistically significant difference between the two groups in terms of gender before the intervention ($p<0.05$).

Four weeks after the intervention, the mean Greene score was significantly lower in the intervention group, compared to the control group (adjusted difference= -7.5, 95% CI= -8.5 to -6.4). Moreover, the intervention group improved in all aspects of Greene scale (psychological, physical, sexual, and vasomotor domains), compared to the control group ($p<0.001$) (table 2).

Table 2. Comparison of the early symptoms of menopause (and its sub-domains) and thefrequency of hot flashes in the control and intervention groups

Indicator / Group	Intervention (n=60) Mean±SD†	Control (n=60) Mean±SD†	Comparison between the intervention and control groups MD(CI-95%)*	P-value
Greene scale(0-63)				
Before theintervention	23.08±12.3	25.5±12.7	-2.4(-7.04_ 2.1)	0.913
Four weeks after the intervention	20.6±10.5	30.3±12.1	-7.5(-8.5_ -6.4)	<0.001
Vasomotor symptoms (0-6)				
Before theintervention	2.5±1.5	2.6±1.8	-0.08(-0.7 _ 0.5)	0.103
Four weeks after the intervention	2.1±1.2	3.2±1.7	-0.9(-1.1 _ -0.7)	<0.001
Psychosocial symptoms (anxiety) (0-13)				
Before theintervention	6.3±4.05	7.7±4.9	-1.3(-0.03 _ 0.2)	0.090
Four weeks after the intervention	5.8±3.5	8.7±4.9	-1.6(-1.9_ -1.2)	<0.001
Psychosocialsymptoms(depression) (0-18)				
Before theintervention	5.2±3.6	6.2±3.7	-0.4(-0.23_ 0.4)	0.976
Four weeks after the intervention	4.6±3.01	7.6±3.5	-2.2(-2.6_ -1.8)	<0.001
Physical symptoms (0-21)				
Before theintervention	7.5±5	7.2±4.8	0.2(-1.5_ 2.07)	0.585
Four weeks after the intervention	6.7±4.2	8.9±4.3	-2.3(-2.1 _ -1.9)	<0.001
Sexual symptoms (0-3)				
Before theintervention	1.3±1.1	1.7±1.3	0.2(-0.7_0.1)	0.04
Four weeks after the intervention	1.3±1.1	1.8±1.2	-0.2(-0.3 _ -0.1)	<0.001
Frequency of hot flashes				
Before theintervention	22.08±9.4	20.6±11.4	1.4(-2.4 _ 5.2)	0.179
Four weeks after the intervention	19.4±7.7	22.4±12.4	-4.1(-5.8_ -2.4)	<0.001

Pre-intervention results wereobtained using t-test and post-intervention results were obtained by ANCONA test by controlling the scores before the intervention.

†Standard deviation, * Mean difference

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Discussion

The present study showed that self-directed learning can reduce the early symptoms of menopause. This reduction was evident in the mean total score of Greene scale (and its subscales) and the frequency of hot flashes in the intervention group, compared to the control group. The present research is the first study on the impact of self-directed learning on the early symptoms of menopause. In addition, in the present study, frequency of hot flashes was evaluated before and after the intervention.

In a study by Forouhari and colleagues the effects of education on quality of life in postmenopausal women was evaluated in Shiraz city. The mean score of quality of life (physical, psychosocial, vasomotor, and sexual dimensions) in the intervention group decreased, while the control group experienced a slight increase in the mean score of quality of life (7). It should be mentioned that in the present study, self-directed learning was employed, while in Forouhari's study, group training was examined. In addition, in the study by Forouhari et al., the mean score of quality of life was evaluated in the two groups three months after the intervention. However, in this study, the results were evaluated one month after the intervention.

The findings of the present study are comparable with the findings by Yazdkhasti and colleagues (13). Yazdkhasti investigated the effect of training via support groups and individual-oriented training on the quality of life of 165 postmenopausal women in Robat-Karim City. This learning style had positive impacts on physical, psychosocial, vasomotor, and sexual dimensions. Valente in a qualitative study on 15 elderly individuals, aged 65-89 years, investigated the attitudes of the elderly toward the impact of self-oriented learning on health care. The results showed that self-oriented learning had positive impacts on the health care of the elderly and increased their awareness about their own health through the promotion of preventive behaviors (23).

In 2001, a study by Rostami et al., which evaluated the impact of education on quality of life in postmenopausal women in Tehran, revealed the positive impact of lectures on sexual, physical, and psychosocial aspects, while no significant effect was observed on the vasomotor dimension (24). The results showed that the early symptoms of menopause in the intervention group decreased after the end of 4 weeks, while in the control group, early symptoms of menopause increased, which could be due to the progressive nature of menopausal symptoms in this group. There was a possibility that relaxation techniques and exercises or treatment strategies mentioned in the booklets were misapplied by the participants. This problem was resolved by the exact assessment of women by the researcher and performing follow-ups via phone calls.

Most societies focus on the problems of women during their reproductive years and pay less attention to the menopausal period. Considering the increasing population of postmenopausal women and lack of research on educational practices in accordance with the country's social and cultural context, it is suggested that further research be conducted on women's training (especially inexpensive and available methods such as pamphlets) in order to prepare them for dealing with the symptoms of menopause.

The results of the present study suggest that a self-oriented approach can reduce the irritating symptoms of menopause. Given the fact that women spend one-third of their life in the postmenopausal period and considering the importance of associated problems, applying this learning method is recommended as a suitable way to improve the health of women and their compliance with the symptoms of menopause.

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