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The Effect of Positive Psychological Intervention on Health-Promoting Lifestyle in Postmenopausal Women

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ABSTRACT

Background & aim: Menopause is one of the most important situations in which a healthy lifestyle becomes especially important. A health-promoting lifestyle could play a role in the prevention and control of diseases. Therefore, this study was conducted to investigate the effect of positive psychological intervention on health-promoting lifestyle in postmenopausal women.

Methods: This randomized controlled clinical trial was performed on 70 postmenopausal women who were randomly selected from women referred to the comprehensive health centers of Urmia, Iran between 2022 and 2023. The subjects were randomly assigned to two intervention and control groups. The women in the intervention group received positive psychological intervention during six sessions of 90 minutes weekly, and the control group did not receive any intervention. Walker's Health Promotion Lifestyle Questionnaire was used to collect data. Kolmogorov Smirnov, independent t, paired t, Mann-Whitney, and Chi Square tests were used to analyze the data.

Results: The difference in the average score of the total health-promoting lifestyle before and after intervention in the intervention group (11.68 ± 5.02) was significant compared to the control group (-2.25 ± 2.48) (P=0.000).

Conclusion: Based on the findings of the current research, the use of positive psychological intervention is recommended as an effective psychological intervention to improve the lifestyle of postmenopausal women.

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Introduction

Menopause is a stage of women's life that marks the transition from reproductive ability to infertility. Menopause means the permanent cessation of menstruation at the end of the fertile period, which occurs due to the inactivity of ovarian. The average age of menopause is reported to be 51 years old (1). With the increase in life expectancy, more than a third of women's lives pass after menopause (2). The transition from the fertile period to the infertile period is associated with many physical and psychological symptoms (3,4). The connection between body and mind is so great that studies have shown that postmenopausal women have high levels of mental health complaints such as depression, anxiety, stress, fatigue, delays in performing daily activities and sleep disturbance (5). On this basis, mood changes, especially the emergence of anxiety, depression, stress, as well as the decline in the quality of life during the transition of menopause can be one of the most important intervention goals of psychologists and health providers As a result, this phase of women's life is called the "vulnerability window" during which physical and emotional changes can reduce the quality of women's lives (6).

Lifestyle is one of the factors influencing the severity of symptoms and problems related to

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menopause. A health-promoting lifestyle plays a role in disease prevention and control. Health-promoting behaviors include six areas of nutrition, physical activity, stress control, spiritual growth, improving interpersonal relationships, and responsibility for health (7). Modifying the lifestyle is necessary to improve the quality of physical and mental performance in middle-aged women. Balancing the lifestyle is the foundation of health management at this age (8).

Findings show that lifestyle modification reduces stress and anxiety, boosts self-esteem and improves sleep. In addition to improving mood disorders, a healthy lifestyle has other benefits such as lowering blood pressure and protecting against heart disease and cancer (9). Along with all the changes associated with menopause, many middle-aged women often face other challenges such as physical illness, death of spouse, caring for family members, marital problems, and children leaving home. All these cases may cause depression and stress in these women, so that many women consider menopause a stressful process which not only affects on the physical health of menopausal women, but also is effective on people's relationships, work performance, feeling of health and quality of their life (10).

When women are at middle-age they face a series of risk factors that predict a higher probability of depression symptoms in the following years of life, and these risk factors include: negative attitude towards aging, negative attitude towards menopause, negative scores of mood. (11). According to research, 60% of the quality of life is related to lifestyle and health behaviors (12). Studies show that postmenopausal women have limited knowledge about a healthy lifestyle. Also, people do not have enough knowledge and skills in managing menopause symptoms and complications, and their lives are affected by its consequences (3,13). For example, Sehati et al. (2015) in a cross-sectional study of health-promoting behaviors among postmenopausal women in Langrod city found that the scores of women's lifestyle were reported to be average and emphasized the need for planning in this field (14).

In this regard, considering the relationship of various personal and social factors with the quality of life and mental health of postmenopausal women, what seems important to improve their quality of life and mental health is an integrated look at their health issues and problems, including health service providers pay attention to issues related to menopause and holding educational and counseling classes in the field of menopause issues with a health promotion approach (15). Therefore, it seems that menopause care is the key to a healthy life in middle age and later years. These cares include education, lifestyle guidance, and evidence-based information for interventions to lead a healthy life (16). Lifestyle-related diseases are a worldwide health concern, and the underlying causes of unhealthy behavior need to be addressed, which can include negative emotional states that may not meet the criteria for diagnosing mental illness, but can perpetuate unhealthy behavior patterns (17).

Positive psychology examines strengths that enable individuals and societies to progress and can play an important role in dealing with diseases related to lifestyle (17). Positive health is one of the methods of positive psychology that brings a longer and healthier life and reduces the risk of disease and related costs. Spreading and implementing positive psychological strategies directly promotes health (18-20).

The theory of positivism in positive psychotherapy was first founded by Dr. Seligman regarding well-being. Dr. Seligman categorized happiness and well-being into five scientifically measurable areas of learning: Positive emotions; Engagement; Relationships; Meaning; and Accomplishment. By joining the first letter of each of these five parts, the word (PERMA) is obtained (21). The previous researc showe that the accomplishment of the three dimensions of PERMA (positive emotions, engagement and meaning) has a high correlation with reducing the rate of depression and increasing satisfaction (22-24). Positive psychology focuses on the main clinical issues such as depression, anxiety, eating disorders, suicidal thoughts, and behavioral problems (21). These independent lines of research clearly show the effect of positive psychological therapeutic interventions in reducing symptoms. With the use of focused

structures (such as gratitude, hope, kindness, forgiveness), positive psychological therapeutic interventions can be used in active treatment or adjuvant treatment used in a wide range of physical problems such as cardiovascular problems, brain damage, type 2 diabetes and breast cancer (21).

Based on this approach, the strategies that help clients to build a pleasant, attractive and meaningful life are called positive interventions (25). Positive psychotherapy exercises will help to achieve individual abilities from multiple perspectives, and then a set of these exercises will help to create something in the individual which is called " practical knowledge"; The purpose of practical knowledge is to help a person deal with challenging situations more efficiently; In other words, when there are different ways to deal with an important challenge, the best way should be chosen (21).

Many research have been done in support of this psychological approach to improve the quality of life, including the effect of positive psychology on positive relationships and increasing success and well-being and improving depression symptoms (26), control of anger and rumination in married women with marital dissatisfaction (27), its effect on the lifestyle that develops health and self-regulation (28), and reducing depression, stress and increasing happiness in infertile women (29). Positive psychotherapy improves well-being and lifestyle (30). It can also have significant benefits, including emotional well-being and improved quality of life (31). The goal of positive psychology is to increase positive emotions, cognitions and behaviors and empower a person to become better and makes a person able to navigate the inevitable challenges and negative emotions which occur in life (31,32).

The link between lifestyle and positive psychology can improve all the main elements of a healthy lifestyle, including a complete diet, appropriate physical activity levels, adequate and quality sleep, and emotional and overall well-being (33,34). Along with a healthy lifestyle, positive psychology interventions can cause mental and psychological well-being (35).

Women form half of the population of any society and with the increase in life expectancy, more than a third of women's lives pass after menopause. The physical and mental health of women has a direct relationship with functioning of the family, and considering the importance of the role of women in the family and their central emotional and psychological role, reducing the complications and problems of menopause is important for them and has a direct effect on the family and, in turn, on the society. Women's health is an important factor in ensuring the health of the family and society, therefore, efforts to improve their physical and mental health at the level of society can be effective in improving the quality of society's health. Therefore, the present study was conducted with aim to determine the effect of psychological intervention with a positive approach on the health-promoting lifestyle of postmenopausal women, so that its findings can be used to design positive psychological interventions to improve the lifestyle of postmenopausal women.

Materials and Methods

This randomized controlled clinical trial was conducted between 2022 and 2023 on 70 postmenopausal women referred to the comprehensive health centers of Urmia city, Iran, who were eligible for the research and consented to participate in the study. This study was registered in the IRCT system with the code IRCT20220710055428N1.

The sample size was calculated as 70 samples based on the study of Ensan et al. (2019) with 95% confidence and considering z1-α/2=1.96, z1-ß =0.85 (36).

$$n = \frac{\left(z_{1-\frac{\alpha}{2}} + z_{1-\beta}\right)^2 (\delta_1^2 + \delta_2^2)}{(\mu_{1-} \mu_2)^2}$$

$$= \frac{(1.96 + 0.85)^2 (18.9^2 + 24.6^2)}{(166 - 150.7)^2} = 32.43$$

$$\sim 32 \times 10\% = 35$$

In order to carry out the sampling, first, a list of all comprehensive health centers in Urmia city was prepared from the city health center, and then it was divided into three levels: rich, partly rich and poor. A comprehensive health center was selected from all three levels using a cluster method. In the next step, from each selected center, eligible postmenopausal women were selected from the SIB system (Family health information recording system) and each was assigned a code from the random number table,

and 70 people were randomly included in the study according to the postmenopausal women covered by each center. Then, they were randomly assigned to two intervention and control groups (35 in intervention and 35 in control). To hide random allocation, sequentially numbered, sealed, opaque envelopes (SNOSE) were used, and the people in each group had no communication with the other group. In this way, 35 A cards belonging to the control group and 35 B cards belonging to the intervention group were placed inside sealed opaque envelopes. At the beginning of the study, in the case of inclusion criteria, each person chose one of the envelopes and entered one of the control or intervention groups based on its content.

In this research, the inclusion criteria were: age 45-60 years (at least 12 full months have passed since their last menstruation), no smoking and alcohol consumption, willingness to participate in the study, having a contact number for follow-up, living in cities and villages around Urmia, having literacy, not suffering from mental illnesses that require hospitalization (such as psychosis), and not receiving medication or any treatment for menopausal symptoms. Exclusion criteria include: travel or change of living location during the intervention period, more than two absences in the sessions, and participating in other psychological treatments at the same time. If any person did not meet the criteria for entering the study or did not agree to participate in the study, the next person was replaced.

All the data were collected using demographic characteristics questionnaire and Health-Promoting Lifestyle Profile (HPLPII). The researcher-made demographic questionnaire includes marital status, number of children, number of births, age of woman, age of menopause, education level of woman, education level of husband, wife's occupation, husband's occupation, adequacy of family income, and place of residence.

Walker's Health-Promoting Lifestyle Profile is a tool for multi-dimensional assessment of health-promoting lifestyle. This questionnaire consists of 54 items that are a combination of 2 classes and 6 subclasses, including class 1: health responsibility (8 questions), physical activities (9 questions) and eating habits (10 questions), and class 2: spiritual growth (9 questions), interpersonal communication (10 questions) and stress management (8 questions). Each item is scored on a Likert scale. Each question includes 4 options which are scored as never (1), sometimes (2), often (3) and always (4). The range of the total health promoting lifestyle score is 54 to 216 and a separate score can be calculated for each subscale. So that for the subscale of responsibility for health, the score range is 8 to 32, physical activity is 9 to 36, eating habits is 10 to 40, spiritual growth is 9 to 36, and interpersonal communication is 10 to 40, and for the stress management subscale, the range of scores is 8 to 32. The score of each subscale is obtained from the average scores of the answers given to the questions of the same subscale. The higher score indicates the higher health-promoting lifestyle (37).

The validity and reliability of the Persian version of the health-promoting lifestyle by Mohammadi Zeydi and colleagues, Cronbach's alpha coefficient was obtained for responsibility of health (0.86), for physical activity (0.79), for nutrition (0.81), for spiritual growth (0.64), for interpersonal relationships (0.75), for stress management (0.91), and for the whole questionnaire (0.82). In this study, the content validity of the Persian version of this questionnaire was qualitatively conducted by a panel of experts consisting of a group of experts and specialists in the field of the research topic. The composition of this panel was psychology (n=2), nursing (n=2), health education (n=3), management (n=2), medicine (n=1 person) and nutrition (n=1) (38). Also, in the study of Mohammadi Zeydi et al., exploratory and confirmatory factor analysis was used for construct validity, and the results of confirmatory factor analysis in HPLPII (6 factors) based on the measurement model were obtained as GFI=0.91, CFI=0.96, RMSEA=0.045, AGFI=0.71 and all correlations between items were significant and the range of correlations was from 0.27 to 0.86; and the findings showed that the confirmatory factor analysis based on the 6-factor model obtained from exploratory factor analysis has a good fit with the obtained data and the findings according to a) internal agreement through Cronbach's alpha and item-total correlation, b) the observed pattern of

correlations in the tool, c) the results of the exploratory and confirmatory factor analysis in the models extracted from the factor structure of Persian version of HPLPII has positive support (38).

Before conducting the research, demographic characteristics were recorded. After giving the necessary explanations about the objectives and methods of the research to the participants, the questionnaires were completed during the stages before the intervention and then 10 days after the completion of the intervention sessions in the control and intervention groups by researcher.

In the intervention group, 35 women were divided into five groups of seven women and had six sessions of positive psychology, each session lasting 90 minutes, one session per week for a total of six consecutive weeks in comprehensive health centers selected by the researcher, while no intervention was done for the control group and received routine services.

In line with the current research intervention, the positive psychology course taught by Dr. Martin Seligman from the University of Pennsylvania was completed by the researcher for 20 weeks online, and the documents and certificates of passing the positive psychology courses including: positive psychology, positive psychology and well-being, positive psychology and resilience, applications and interventions of positive psychology and research methods were obtained from the Pennsylvania University by the researcher. The steps of the intervention were so that the researcher, after re-introducing herself and stating the objectives of the meeting, and then getting to know more about the group members, provided information to menopausal women (21).

Table 1. Summary of positive psychology intervention method sessions (21)

Session	Objectives and summary of session
1	First, familiarity with the training course, optimism towards life, hope for the future, recognition of personal capabilities, familiarity with the classification of moral virtues, use of personal capabilities (providing a positive introduction task about oneself and writing the top 5 capabilities)
2	Second, emphasis on good memories, moving towards creating appropriate interpersonal relationships, teaching the technique of appreciation and gratitude, reviewing assignments by the researcher, answering questions and presenting this week's assignment (appreciation letter)
3	Third, getting to know positive social relationships, the role of positive relationships in a happy life, teaching and applying the constructive and active response technique, reviewing assignments by the researcher, answering questions and presenting this week's assignment (recording active and constructive responses in relation to others)
4	Fourth, examining the effects of writing three blessings or good things in life, purpose and meaning in life, reviewing assignments by the researcher, answering questions and presenting this week's assignment (writing three good events every day and why these events happen)
5	Fifth, getting to know positive emotions, the role of positive emotions in happiness and joy, using mention of blessings and good things in life as positive things, reviewing assignments by the researcher, answering questions and presenting this week's assignment (tasting the pleasures and engaging in a pleasurable event)
6	Sixth, feedback of the training course, holding happiness celebration, coordination for follow-up

The summary of intervention sessions of positive psychology is given in Table 1.

Descriptive and analytical statistics were used to analyze the data. Kolmogorov Smirnov test was used to check the normality of data distribution, and independent t and paired t tests, Chi Square, and Mann Whitney were used to compare the data. SPSS16 software was employed for data analysis.

Results

The study invited 70 women to participate and undergo assessment for the inclusion and exclusion criteria. Eventually, the study included 35 women who met the eligibility criteria (Figure 1).

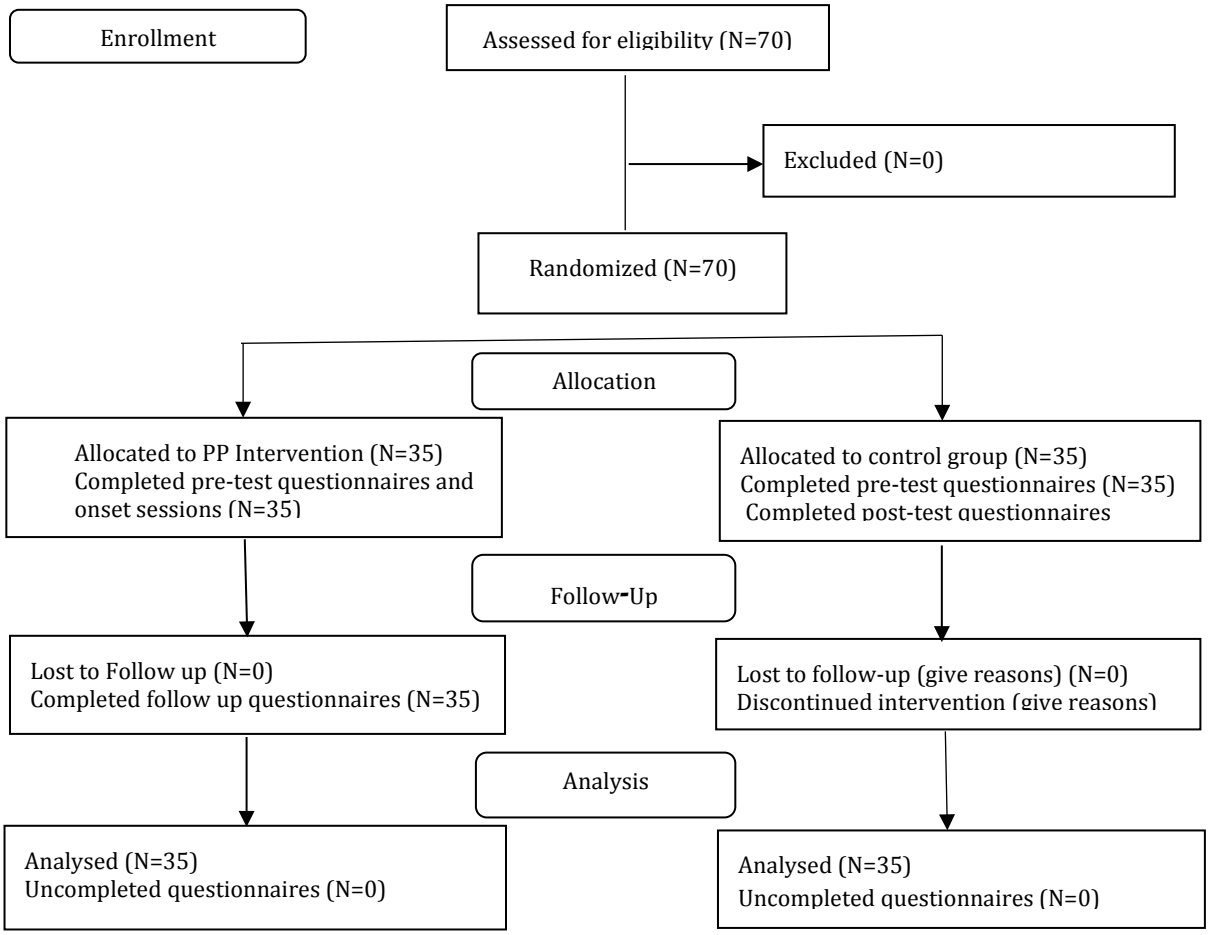

Figure 1. CONSORT Flowchart of the study

The normality of the data distribution was checked with the Kolmogorov Smirnov test, and only the elapsed time since menopause did not have a normal distribution. More than half of the postmenopausal women in the control group (51.4%) and in the intervention group (80.0%) had diploma and university education.

In addition, 28.6% of them in the control group and 45.7% in the intervention group were employed. Moreover, 85.7% of the control group and 80.0% of the intervention group lived in their own house and 88.5% of them in control group and 88.6% of intervention group reported the family's income as sufficient and relatively sufficient. Also, 65.7% of their spouses in control group and 80.4% in the intervention group had a diploma or higher education and the occupation of 45.7% in control group and 37.1% in intervention group was reported as an employee. No significant differences were observed between the control and intervention groups in these aspects (Table 2).

The average age of women in the control group was 56.31±2.78 and in the intervention group was 54.37±3.33. Also, the average age at menopause for women in control group was 50.03±2.82 and in the intervention group was 50.03±2.14. No significant differences were observed between the control and intervention groups in terms of age, age at menopause, and time since menopause (Table 3).

Table 2. Frequency distribution of demographic variables of postmenopausal women in two groups

Demographic characteristics	Frequency (%)		
	Control	Intervention	P-Value
Marital status			
Single	2(5.7)	5(14.3)	
Married	30(85.7)	27(77.1)	0.486
Divorced	3(8.6)	3(8.6)	
Educational ststus			
Elementary	10(28.6)	3(8.6)	
Middle School	3(8.6)	3(8.6)	
High School	4(11.4)	1(2.9)	0.065
Diploma	11(31.4)	13(37.1)	
Academic	7(20)	15(42.9)	
Woman's job			
Housewife	22(62.9)	18(51.4)	
Retired	3(8.6)	1(2.9)	0.249
Employed	10(28.6)	16(45.7)	
Sufficient family income			
sufficient	13(37.1)	15(42.9)	
Insufficient	4(11.4)	4(11.4)	0.878
relatively enough	18(51.4)	16(45.7)	
Husband's education			
Illiterate	3(8.6)	0(0)	
Elementary	1(2.9)	0(0)	
Middle School	3(8.6)	2(5.7)	0.374
Diploma	14(40)	13(37.1)	
Academic	9(25.7)	12(43.3)	
husband's job			
Employee	16(45.7)	13(37.1)	
Manual worker	3(8/6)	1(2.9)	
Shopkeeper	6(17.1)	11(31.4)	0.313
Other	5(14.3)	2(5.7)	
Residencestatus			
Habitation	30(85.7)	28(80)	
Rental	2(5.7)	3(8.6)	
Parents' house	3(8.6)	3(8.6)	0.737
Other	0(0)	1(2.9)	
Number of births			
None	1(2.9)	2(5.7)	
1-2	15(42.9)	24(68.6)	0.050
3 and more	19(54.3)	9(25.7)	

Table 3. Quantitative demographic characteristics of postmenopausal women in two groups

Variable	Control group	Intervention group	Test statistics
	Mean±SD	Mean±SD	
Age*	56.31±2.78	54.37±3.33	P=0.071 df=68
Age of menopause*	50.03±2.82	50.03±2.14	P=1.000 df=68
Elapsed time since menopause (ranked mean)**	36.54	34.46	P=0.644 Z= -0.44

According to the text, there was no significant difference in the variables between the two group.

According to Table 4, the mean of the total scores of health promoting lifestyle dimensions after the intervention was 136.51±22.57 in the control group and 142.00±24.20 in the intervention group.

Table 4. Mean score of the health-promoting lifestyle and its dimensions in postmenopausal women in two groups

Variable	Pretest Mean±SD	P-Value	Posttest Mean±SD	P-Value
Interpersonal communication				
Control	27.94±4.33	0.000	26.77±4.37	0.472
Intervention	23.57±4.29		26.00±4.54	
Stress management				
Control	19.57±3.42	0.115	19.25±3.52	0.208
Intervention	18.00±4.71		20.42±4.15	
Spiritual growth				
Control	25.20±4.92	0.180	24.54±5.02	0.321
Intervention	23.74±4.03		25.62±4.00	
Responsibility for health				
Control	20.65±3.93	0.710	20.65±3.74	0.041
Intervention	20.28±4.38		22.48±3.60	
Physical activity				
Control	18.62±7.00	0.645	18.48±6.98	0.505
Intervention	17.85±6.93		19.57±6.55	
Diet habits				
Control	26.77±4.11	0.944	26.80±4.19	0.350
Intervention	26.85±5.92		27.88±5.37	
Total				
Control	138.77±22.02	0.133	136.51±22.57	0.330
Intervention	130.31±24.47		142.00±24.20	

Based on the Independent t-test in the dimension of interpersonal communication (P=0.000) before the intervention was significant and in the dimension of health responsibility (P=0.041) after the intervention was significant, but there was no statistically significant difference in other dimensions (P>0.05).

According to Table 5, the results of the independent t-test showed a statistically significant difference in all dimensions of the health-promoting lifestyle score between the intervention and control groups (P< 0.05).

Table 5. Comparison of mean difference of health-promoting lifestyle score and its dimensions before and after intervention in postmenopausal women in two groups

Variable(difference of before and after intervention)	Control group	Intervention group	Mean difference control-intervention	Independent t-test results
	Mean±SD	Mean±SD		
Interpersonal communication	-1.171±1.58	2.42±2.04	3.60	P=0.000 df= 63.90 t= 8.23
Stress management	-0.314±0.83	2.42±1.28	2.74	P =0.000 df=58.12 t=10.57
Spiritual growth	-0.657±1.34	1.88±1.38	2.54	P=0.000 df=68 t=7.77

Variable(difference of before and after intervention)	Control group	Intervention group	Mean difference control-intervention	Independent t-test results
	Mean±SD	Mean±SD		
Responsibility for health	0.000±1.21	2.20±1.47	2.20	P=0.000 df=68 t=6.82
Physical activity	-0.142±0.80	1.71±1.58	1.85	P=0.000 df=50.65 t=6.18
Diet habits	0.028±0.95	1.02±1.46	1.00	P=0.001 df=58.45 t=3.38
Total	-2.25±2.48	11.68±5.02	13.94	P=0.000 df=49.75 t=14.71

Discussion

The present study was performed to determine the effect of positive psychology intervention on health-promoting lifestyle in postmenopausal women referred to the comprehensive health centers of Urmia, Iran. According to the results in the present study, the demographic characteristics of the participants in the intervention and control groups were homogeneous in terms of personal information, economic and social status, and history of menopause, and the increase in the health- promoting lifestyle score and its dimensions in the intervention group compared to the control group can indicate that positive psychology can affect the health-promoting lifestyle of these people.

In 2018, Malik et al. in a study aimed to investigate health-promoting behaviors and menopausal symptoms in menopausal women in rural India showed that the lifestyle modification program significantly reduced menopausal symptoms and improved health-promoting behaviors among postmenopausal women, which is in line with the results of the present study (39). In their study, the mean age of menopause was reported as 47.5 years and the mean age of menopause in the present study was reported as 50.03 years, although there was a difference between their study and the present study, and the age of menopause was slightly higher in the present study but the results were consistent. In a systematic review in 2022 aimed to evaluate the effect of psychological interventions on hot flashes caused by menopause, Samami et al. stated that psychological interventions and especially cognitive behavioral therapy and relaxation techniques potentially affect vasomotor symptoms and hot flashes in postmenopausal women, which is in line with the results of the present study (40-41).

In 2019, Mousavi et al. in a study investigating the effect of health-promoting lifestyle education on the health-promoting behaviors of postmenopausal women stated that health-promoting lifestyle training is effective on the health-promoting behaviors of postmenopausal women (42). In their study, the largest increase was in the dimension of physical activity and the smallest increase in the dimension of health responsibility, which is different from the present study in this aspect. In the current study, the greatest increase was in the dimension of interpersonal communication and the least increase in the dimension of eating habits, which can be due to the fact that the health-promoting lifestyle education has a practical aspect of applying this education, and this is while positive psychology is more focused on changing people's attitudes, and it is better to consider that the increase of positive psychology intervention sessions may have a greater impact on improving the lifestyle of menopausal women.

The results of the current research are consistent with the results of Endicott et al. (2013), Rindner et al. (2017) and Anderson et al. (2006). Endicott et al. (2013) conducted their study with aim to determine the effect of educational intervention on knowledge, health beliefs, and self-efficacy in controlling menopausal symptoms including osteoporosis. Menopausal symptoms have improved and

comparing the scores of the intervention group after counseling compared to their scores in the pre-test phase and also compared to the control group significantly increased. The study of Rindner et al. in 2017 showed that the effect of group training is effective in reducing perimenopausal symptoms. In 2006, Anderson et al. in their study to determine the effect of a multi-model intervention to prevent heart disease in menopausal and postmenopausal women reported a reduction in the risk of heart disease after the intervention, which is in accordance with the results of the current research in terms of the physical dimension (3,43-44). Our results are in contrast with the findings of the study of Anjezab et al. in 2012, that examined the effect of the health-promoting life-style educational intervention on 88 middle-aged women, and no significant difference was observed in the field of nutrition. However, the mean score of other dimensions of health-promoting lifestyle increased significantly after the intervention in the intervention group (45).

According to the results obtained in this research, it seems that the changes made in this intervention in women have improved the dimension of interpersonal communication and stress management and spiritual growth, there is a possibility that the intervention affected the attitudes of women and probably this type of intervention can have more lasting effects than other interventions, and this is an important Strength of the study. It is suggested that other studies compare the effect of this type of intervention with other interventions on its long-term effects in improving the health-promoting lifestyle of postmenopausal women and other vulnerable groups.

One of the limitations of this study is that the current research was conducted in only one city, and since the cultural characteristics of any society can influence the health-promoting lifestyle of people, as well as their attitude towards menopause and even life, this issue can affect the generalizability of the results of this study. It is suggested to conduct more studies with more ethnic and cultural diversity in this region as well as in other cities, provinces and regions in order to increase the generalizability of the results of this study.

Conclusion

As evidenced by the results of the present study, positive psychology intervention can have an effect in improving health-promoting lifestyle in postmenopausal women. Therefore, the use of positive psychological intervention is recommended due to its cost-effectiveness and ease of implementation by postmenopausal women, as well as its effectiveness in improving the lifestyle of postmenopausal women.

Considering the importance of a health-promoting lifestyle in managing the symptoms and problems related to menopause, it is recommended to provide solutions for the implementation of effective trainings and interventions to improve the quality of life of women during this period.

Declarations

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Conflicts of interest

The authors declared no conflicts of interest.

Ethical *approval*

Following approval by the Ethics Committee of Urmia University of Medical Sciences, Urmia, Iran, participants were informed about the research objectives and provided written informed consent. They were assured of confidentiality and the right to withdraw from the study at any time without consequence.

Code of Ethics

ethical code of IR.UMSU.REC.1401.135.

Use of Artificial Intelligence (AI)

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Authors' contribution

SR and SM contributed substantially in the conception and design of the study. SM and HF carried out the data collection. SM and SR analysed and interpreted the data. SM drafted the manuscript. SR reviewed the manuscript critically for important intellectual content. All authors read and approved the final manuscript and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved'.

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