



Educational Intervention on Adopting Health Promotion Lifestyle Among Egyptian Post-Menopausal Females

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ABSTRACT

Background: Healthy lifestyle promotion among females, enables attainment of healthy generations. **Objectives:** To evaluate effect of an educational program about health promoting lifestyle on health outcomes menopausal symptoms among Egyptian females. **Method:** A quasi-experimental study, was conducted in two directorates in Zagazig district, Sharkia Governorate, Egypt from March to December 2021. A representative sample was drawn by a two-stage sample design. The study was conducted through three phases: pre and post intervention phases for both groups. Within intervention phase, educational program on adopting health promoting lifestyle was applied for the experimental group. **Results:** There is statistically non-significant difference between both groups regarding mean score of baseline health responsibility, physical activity, nutrition, spiritual growth, interpersonal relation, stress management, total health promotive lifestyles, somatic, psychological, urogenital, and total menopausal rating scale scores. There is statistically significant difference between them regarding means of all domains of both tools after intervention. Within experimental group, there is statistically significant improvement in domains and total scores after intervention. Mean systolic and diastolic blood pressure (SBP, DBP) become significantly lower among experimental group. There is significant decrease in mean BMI, blood sugar, SBP and DBP within experimental group. On the other hand, within control group, there is non-significant change in BMI, SBP, or DBP. **Conclusion:** Implementing educational interventions based on health-promoting behaviors is an effective technique for reducing illness occurrence and improving women's postmenopausal health.

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Behaviors, Egyptian females, health promotion, intervention, lifestyle.

INTRODUCTION

One of the cornerstone human rights is health. To be healthy, lifestyle has a crucial role. It has been demonstrated that a person's lifestyle and decisions have a significant impact on their wellbeing.¹ Health promoting lifestyle is demarcated as particular living style in which whole actions and beliefs, all controlled behaviors are enforced by individuals to maintain and improve health.²

A health promoting lifestyle can be termed as a multidimensional model of perceptions and activities commenced by personal motivations. It also articulates the human appeal for brilliance which leads to encouraging well-being, personal development, and a creative life.³ Lifestyle included several components as interpersonal relations, physical activity (PA), stress management, nutrition, spiritual growth, and health responsibility.⁴

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Menopause is an important turning point in reproductive and sexual life. Hormonal alterations result in alterations in cardiovascular disease risk indicators (CVDRI), and anthropometric adiposity indicators (AAI). These alterations may eventually lead to chronic illnesses with severe functional limitations.⁵ Health-promoting behaviors keep and regulate their health.⁶ Family-caregiving remains a predominantly feminine activity and represents a basis of extreme significance in supporting and sustaining family health.⁷ Women's health status is of utmost importance as they are believed to be role models for leading a healthy lifestyle to the subsequent generation.⁸

The objective of the current study was to evaluate effect of an educational program about health promoting lifestyle on health outcomes menopausal symptoms among Egyptian females

METHOD

A Quasi-experimental study. The study had three phases were taken in the data collection process. Pre-intervention data collection from experimental and control groups, study intervention in the experimental group, and 6-month post-intervention data collection from both experimental and control groups.

The study was carried out between March and December 2021 in two services directorates in Zagazig district, Sharkia Governorate, Egypt.

The study targeted female clerks, aged from 40-60 years old, who apparently healthy not diagnosed with any chronic diseases.

The sample was 70 in each group. It was calculated using Open-Epi software by assuming the means of post-test regarding the health promoting behavior were (146.89±22.07 experimental group, 133.88±29.56 control group⁹, at 95% confidence interval, power 80% and with about 10% to compensate for potential dropout.

A representative sample was drawn by a two-stage sample design. *First stage*: Two services directorates were randomly chosen from a list of all services directorates (16 one) <http://www.sharkia.gov.eg/modiriat/default.aspx>¹⁰ one as Intervention and other as control. *Second stage*: from each group desired sample size was rolled by simple random method.

Data was obtained using self-administrated questionnaire and clinical data. The questionnaire consists of two sections: First section: personal data

(age, marital status, residence, and income). Second section: consisted of two parts. Part 1: Health Promoting Lifestyle Profile II (HPLPII) 52 items-tool **Table (1): Comparison between the studied groups regarding demographic data:**

	Experimental group N=70	Control group N=70	P-value
Age (year):			
Mean ± SD	47.74± 3.41	47.01 ± 3.67	0.226*
Marital status:			
Married	60 (85.7%)	51 (72.9%)	0.061#
Single	10 (14.3%)	19 (27.1%)	
Residence:			
Rural	43 (61.4%)	52 (74.3%)	0.103#
Urban	27 (38.6%)	18 (25.7%)	

*Independent sample t test #Chi square test

was created by Walker et al. aiming at assessing healthy promoting behaviors. It encompasses six factors, health responsibility (nine items), physical activity (eight items), nutrition (nine items), spiritual growth (nine items), interpersonal relations (nine items), and stress management (eight items). Each had a four-point response scale that specifies respondents' frequency of participating in each behavior. Items are scored as 1 = "never", 2 = "sometime", 3 = "often", 4 = "routinely" Higher scores indicate higher adherence. Overall score ranged from (52 to 208). Each self-administrated questionnaire took 10-20 minutes to complete.¹¹ Part 2: Menopause Rating Scale (MRS) which is a useful, globally accepted tool for evaluating menopause symptoms.¹² It consists of 11 items (symptoms or complaints), which are subdivided into three domains: somato-vegetative, psychological, and urogenital symptoms. Sweating/hot flushes, heart pain, sleep issues, and joint and muscle issues are all included in the somato-vegetative subscale. The psychological subscale also measures irritation, anxiety, physical and mental weariness, and melancholy mood. The urogenital domain comprises vaginal dryness, bladder and sexual issues.¹³ According to subjective perception symptoms severity, the items are rated using a 5-point Likert scale from 0 (no symptom) to 4 (1 = mild, 2 = moderate, 3 = severe, and 4 = very severe) The total score, ranged from 0 (asymptomatic) to 44 (highest degree of complaints). This scale had acceptable reliability and validity among various populations.¹⁴ Anthropometric Adiposity Indicators (AAIs) involving weight, height body mass index (BMI) were reported. Weight was measured to the nearest 0.1 kg while

Table (2): Comparison between the studied groups regarding health promoting lifestyle profile II before and after intervention:

	Experimental group N=70	Control group N=70	p-value*
Health responsibility			
Pre	18.06 ± 3.89	17.6 ± 2.86	0.484
Post	23.49 ± 2.6	17.56 ± 2.88	<0.001
p-value #	<0.001	0.08	
Physical activity:			
Pre	13.14 ± 3.09	12.89 ± 3.15	0.626
Post	16.64 ± 4.43	12.79 ± 3.17	<0.001
p-value #	<0.001	0.052	
Nutrition:			
Pre	18.71 ± 3.33	19.73 ± 3.29	0.072
Post	23.43 ± 2.69	19.77 ± 3.31	<0.001
p-value #	<0.001	0.083	
Spiritual growth:			
Pre	18.37 ± 3.29	19.27 ± 2.88	0.087
Post	21.79 ± 3.08	19.64 ± 2.93	<0.001
p-value #	<0.001	0.266	
Interpersonal relation			
Pre	15.56 ± 2.55	15.07 ± 2.77	0.283
Post	20.1 ± 3.59	15.07 ± 3.18	<0.001
p-value #	<0.001	>0.999	
Stress:			
Pre	15.73 ± 3.06	16.69 ± 2.66	0.051
Post	17.3 ± 3.1	16.23 ± 2.55	0.027
p-value #	<0.001	0.126	
Total:			
Pre	99.57 ± 9.73	101.24 ± 8.62	0.284
Post	122.74 ± 10.04	101.06 ± 7.73	<0.001
p-value #	<0.001	0.742	
% Change in total	23.23%	0%	<0.001
Median (range) §	(7.92% - 46.24%)	(-10.19 - 14.1%)	

* Independent sample t test unless mentioned otherwise, #Paired sample t test, §Mann Whitney test.

putting on light clothes. Height was measured bare-footed and recorded to the nearest 0.1 cm with a calibrated stadiometer. Cardiovascular Disease Risk Indicators (CVDRI) were (SBP), (DBP), glycemic and lipid profile. All the measurements were obtained by a single investigator. Laboratory analysis was done under conventional laboratory circumstances, biochemical studies with the assistance of an expert technician.

The validity of the questionnaire used to get the data was evaluated by a group of specialists. A pilot study was done before the study to evaluate the reliability and validity of the questionnaires, using 10% of the total sample (they were included in the total sample). There were no technical or administrative challenges. Cronbach's Alpha was 0.84. The questionnaire was

translated by an expert from English to Arabic, then backwards by another expert translator, and then the original and translated copies of the questionnaire were reviewed to ensure accuracy.

Intervention: The experimental group's participants were split up into subgroups based on their participation in the workplace. The place of the intervention was in a suitable hall in the workplace, prepared with projection device). Lectures, PowerPoint slideshows and interactive learning tools such as question/answer, discussion, and brain storming were utilized. The content and teaching materials were prepared in line with educational goals and obtained from reliable sources that were approved by the Egyptian Ministry of Health and Population.

Table (3): Comparison between the studied groups regarding menopause rating scale (MRS) before and after intervention

	Experimental group N=70	Control group N=70	p-value*
Somatic			
Pre	11.34 ± 2.75	11.83 ± 2.61	0.286
Post	10.21 ± 2.58	11.77 ± 2.62	<0.001
p-value #	<0.001	0.288	
Urogenital:			
Pre	7.67 ± 2.43	7.71 ± 2.46	0.917
Post	6.74 ± 2.14	7.77 ± 2.51	0.01
p-value #	<0.001	0.109	
Psychic:			
Pre	9.11 ± 2.97	9.29 ± 2.75	0.723
Post	8.26 ± 2.76	9.2 ± 2.64	0.041
p-value #	<0.001	0.109	
Total:			
Pre	28.13 ± 5.07	28.83 ± 4.17	0.374
Post	25.21 ± 4.41	28.84 ± 4.16	<0.001
p-value #	<0.001	0.859	
% Change in total			
Median (range)	10 (0 - 20%)	0 (-7.7, 8%)	<0.001

* Independent sample t test unless mentioned otherwise # Paired sample t test

Table (4): Comparison between the studied groups regarding clinical data before and after intervention:

	Experimental group N=70	Control group N=70	p-value*
BMI (kg/m²)			
Pre	29.66 ± 5.71	29.06 ± 5.34	0.518
Post	27.64 ± 5.01	29.21 ± 5.58	0.081
p-value #	<0.001	0.46	
Fasting blood sugar (mg/dL):			
Pre	123.94 ± 38.71	118.44 ± 32.7	0.365
Post	112.67 ± 27.64	117.9 ± 32.73	0.309
p-value #	<0.001	0.438	
SBP (mmHg):			
Pre	131.0 ± 20.01	126.71 ± 12.13	0.199
Post	120.86 ± 12.13	126.14 ± 17.13	0.037
p-value #	<0.001	0.483	
DBP (mmHg):			
Pre	92.71 ± 14.74	93.43 ± 14.83	0.775
Post	84.21 ± 12.12	94.0 ± 13.98	<0.001
p-value #	<0.001	0.251	
Triglycerides			
Pre	148.9 ± 29.69	150.83 ± 31.06	0.708
Post	142.93 ± 28.98	151.09 ± 31.25	0.112
p-value #	<0.001	0.074	
Total cholesterol			
Pre	156.44 ± 30.76	158.7 ± 31.29	0.668
Post	152.21 ± 29.7	158.8 ± 31.13	0.204
p-value #	<0.001	0.545	

t independent sample t test # Paired sample t test

Each group of women in the experimental group completed 8 intervention session (45-60 minutes each, for two months). A brief description of definition of health, the idea of promoting health, the health-related issues, risk factors, and healthy lifestyle choices was discussed.

Table (5): Relation between percent change in total score and demographic data among those within Experimental group:

	% Increase in total score Median (range)	p-value*	% Decrease in total MRS score Median (range)	p-value*
Marital status				
Married	22.8 (7.92 - 45.78%)	0.179	10.2 (3.33-18.2%)	0.591
Single	27.3 (13.27-46.24%)		9.55 (0-20%)	
Residence:				
Rural	24 (8.7 - 45.78%)	0.402	9.1 (0-20%)	0.31
Urban	22.1 (7.92 - 46.24%)		11.1 (3.3-16.7%)	
Comorbidities				
No	22.2 (7.92 - 46.24%)	0.219	10 (3.3-20%)	0.477
Yes	23.7 (8.94 - 45.78%)		9.0 (0-15%)	
Age (year)#	r=0.03	0.840	r=0.191	0.112

* Mann Whitney test, # Spearman rank correlation coefficient (r).

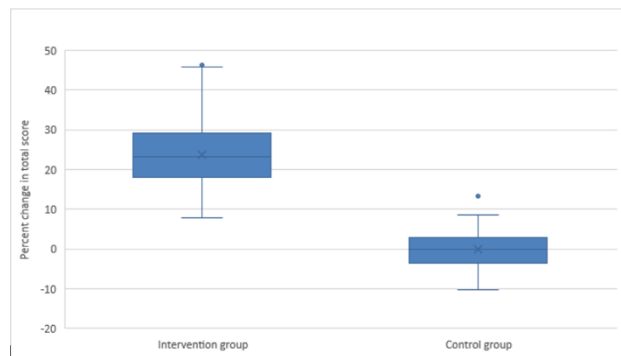


Figure (1): Boxplot showing comparison between the studied groups regarding percent change in total score (Z=-10.124, p<0.001)

were discussed through brainstorming technique. The definition of communication, different types of communication, healthy communication principles, appropriate communication practices, and communication challenges were discussed. Lastly, the definition and meaning of spirituality, the difference between religion and spirituality, the meaning of spiritual needs in our lives, and spirituality as a method of coping were also presented.

Data management: Data analysis was performed using Statistical Package for the Social Sciences version 26 (SPSS-26). Depending on the type of data, quantitative variables were labelled using means, standard deviations, or median and range. The

Terms Definitions: A healthy diet was defined as well as topics about the definition of exercise and physical activity were discussed, along with the benefits of exercising and its value to health. The definition of stress and its symptoms, factors leading to stress, personal stress sources, and stress control methods

absolute frequencies of categorical variables were used to describe them, and the chi square test was used to compare them. Chi square for trend test was utilized to compare ordinal data between two groups. To validate the assumptions utilized in parametric testing, the Kolmogorov-Smirnov (distribution-type) and Levene (homogeneity of variances) tests were used. Mann Whitney test (for data that are not normally distributed) and independent samples t-test (for data that are normally distributed) were both used to compare quantitative data between two groups. The strength and direction of relationships between two quantitative factors were evaluated using Spearman rank correlation coefficients (for data that were not regularly distributed). The paired sample t test (for data with a normally distributed distribution) was used to compare the same variable in one group over two points in time. P<0.05 was used as the statistical significance level. If p≤0.001, a highly significant difference was evident.

RESULTS

This study included 140 participants: 70 in each group. Mean age of participants was 45.7 and 42.3 years for experimental and control groups respectively with statistically non-significant difference. About 86% and 73% within experimental and control groups were married and 61.4% and 74.3% within experimental and control groups came from rural areas (Table 1)

There is statistically non-significant difference between both groups regarding mean score of health responsibility, physical activity, nutrition, spiritual growth, interpersonal relation, stress management and total health promotive lifestyles. There is statistically significant difference between them regarding mean score of all domains which all were significantly higher within experimental group after intervention (Table 2)

Within experimental group, there is statistically significant improvement in mean score of all domains

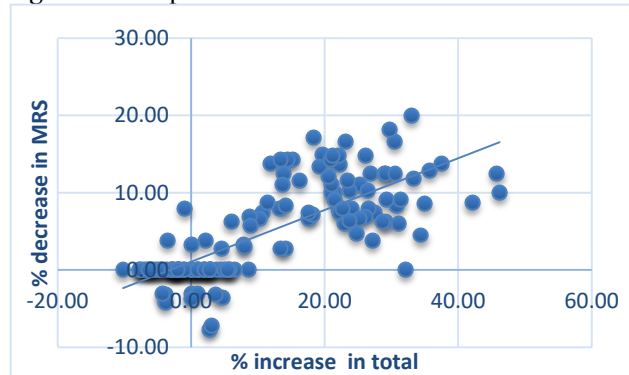


Figure (2): Scatter dot graph showing significant positive correlation between percent change in MRS and total score ($r=0.762$, $p<0.001$)

and total scores after intervention. However, there is non-significant change within control group (Table 2) Concerning percent change in total health promotive scores, within experimental group (median percent change was 23.23% versus 0% within control group) with statistically significant difference ($p<0.001$) (figure 1)

There is statically significant difference between the studied groups regarding mean score of psychics, somatic, urogenital, and total MRS score before intervention. There is statistically significant difference between them after intervention (Mean scores are significantly lower in experimental group). In experimental group, there is statistically significant decrease in mean score of all domains but there is non-significant change in control group. There is significant difference between groups regarding percent decrease in mean score of total MRS after intervention (Table 3)

There is statistically non-significant difference between both groups regarding mean body mass index before and after intervention. Similarly, there is non-significant difference between both group regarding

mean blood sugar before or after intervention (Table 4)

Regarding SBP and DBP, there is statistically non-significant difference between both groups while there is significant difference between them after intervention where both mean SBP and DBP become significantly lower among experimental group.

There is significant decrease in mean BMI, blood sugar, SBP and DBP within experimental group. On the other hand, within control group, there is non-significant change in mean BMI, blood sugar, SBP, DBP, triglycerides or total cholesterol (Table 5)

There is statistically non-significant relation between percent change in total score or MRS and either marital status, residence, or comorbidities. There is non-significant correlation between both and age of participants (Table 6)

There is statistically significant positive correlation between percent decrease in MRS after intervention and percent increase in HPLPII (Figure 2)

DISCUSSION

Health promotion model (HPM) has a proven role in diminishing risk factors, disease severity of chronic diseases and promoting a healthy lifestyle.¹⁵ This study aims at assessing effect of a health education intervention on adopting health promoting lifestyle and reduction of severity of menopausal symptoms among 140 female employees in the Sharqia governorate. By the end of this study, we found that implementation of health education program significantly improves total score of HPLP-II and its all dimensions and significantly reduces severity of menopausal symptoms within experimental group after the intervention, but there was no significant change in control group

In a prior Egyptian study conducted in Benha, where intervention was done on group of hypertensive patients and yielded that mean knowledge and health promoting score were significantly higher after program implementation.¹⁶

The healthy lifestyle modifications improved both mean HPLP-II score and quality of life among PMW instantly and after three months of intervention.¹⁷

Similar promising results were declared in previous research evaluating effect of education program on promoting lifestyle in hemodialysis patients and, obsessive-compulsive disorders.¹⁸ They indicate that

education health promoting behaviors can affect the lifestyle of patient with chronic disease.

Mahidpour and colleagues¹ evaluated role of educational intervention on health prompting lifestyle among middle aged women and reported that program had a significant positive impact on improving mean scores of PA, mental health, and interpersonal relationship, yet, the nutrition means not significantly increased which partly disagreed with ours.

In terms of nutrition and in line with current results, previous study found that the intervention group's mean of appropriate nutrition improved after training.¹⁹

Regarding stress management, previous studies conveyed that educational intervention reduced perceived stress, trait anxiety, and mood anxiety, which is line with the current study.²⁰

In line with these findings, Peyman et al. found that self-efficacy perception headed the maintenance and promotion of education hence behavior in Hamadan in a study that attempted to assess the influence of self-efficacy-centered education on encouraging dietary practices. It has the potential to influence eating habit self-efficacy.²¹

Sabzmakan et al. found that following the intervention, people's attitudes, efficacy, and subjective norms about healthy food expenditure dramatically changed.²²

We also found that both mean systolic, diastolic blood pressure, BMI, fasting blood sugar and lipid profile were significantly lower only in the experimental group after program implementation. These changes can be attributed to adopting healthy lifestyle that gives promising result and can be motives for women to adhere to healthy lifestyle. This finding is also in line with the findings of the Sri Lankan study by Rathnayake and colleagues concerning significant improvements in total cholesterol, triglycerides, and FBS in the intervention group.²³ Blood pressure control and reduction of lipid profile were reported after implementation of health education program according to Sabry et al. study.¹⁶ Improvement in blood pressure, lipid profile and glycemic control can be attributed to adopting healthy lifestyle as all of PA, stress management and healthy diet.

Nazari and colleagues reported significant difference in the mean scores HPLPII and MRS only in the experimental group ($P < .05$), in concordance with

ours.²⁴ Results of research by Mansikkamakia et al put emphasis on the significance of PMW's PA, as a vital aspect for healthy lifestyles, in lessening both mental and physical symptoms.²⁵ PA, was established as both effective and efficient approach that enhances health, physical function, and physical health in PMW.²⁶

Stress is well perceived a precipitating factor in hot flashes. Neuroendocrine substances elaborated as a response to stress influences thermoregulation at hypothalamus level. Hot flashes can occur as result of an imbalance in the autonomic nervous system, in which the "stress-buffering" function of the parasympathetic nervous system failed to adequately counteract the intensified stimulation of the sympathetic nervous system. Hence both increasing PA and stress management can improve vasomotor symptoms. PA can also release opioids in response to single vigorous activity.²⁷

Menopause which comes usually accompanied with weight gain, is linked with boosted prevalence of obesity, metabolic syndrome, cardiovascular disease (CVD), and osteoporosis. Weight gain is not only related to the menopause transition, but also due to sedentariness. Therefore, PA along with calorie restriction ought to be advised in all PMW generally and specifically to those with excess weight, for declines in CVDRI.²⁸ In a prior study in India, authors proposed that designed training curricula about management of menopausal symptoms could have a positive influence on improving knowledge and practices of PMW's.²⁹ This gives promising result on effect of adoption of health education program that is expected to decrease both morbidity and mortality. Health literacy can be a proper solution to modify expenditures on health especially in low-income country in context of current economic crisis.

CONCLUSIONS

Implementing educational interventions based on health-promoting behaviors is an effective technique for reducing illness occurrence and improving women's postmenopausal health.

Ethical Consideration

Prior to implementation of the study, approval by an Institutional Review Board (IRB) for Medical Research Ethics, Faculty of Medicine was obtained (ZU-IRB 9073) and formal approval was gained from the relevant directorates. Informed written consent was obtained from all study members after simple and

clear explanation of the research objectives. After finishing our research, a health education message was also given to control group to give them rights to improve their health.

Study limitations: The present study is a short-term education intervention with a relatively small sample size with short follow up period (6 months). All of that could be deemed as limitations. There are several strengths. The study incorporated almost matched samples, reduced the contacts between the two groups, that enhanced the quality of study. Also, some of participants upon examination and laboratory investigation, had been diagnosed for the first time as being prediabetics, diabetics and hypertensives so this can affect total score preintervention.

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