

Comparing the Effects of Group and Family-Centered Education in the Elderly Lifestyle

ARTICLE INFO

Article Type

Original Research

Authors

Shaafi M.S.¹ MSc,
Hosseini N.^{*2} PhD,
Akbarabbar Toori M.³ PhD,
Moqimi M.⁴ MSc

How to cite this article

Shaafi M.S, Hosseini N, Akbarabbar Toori M, Moqimi M. Comparing the Effects of Group and Family-Centered Education in the Elderly Lifestyle. Journal of Clinical Care and Skills. 2020;1(3):109-114.

ABSTRACT

Aims Inappropriate lifestyle can lead to the development of diseases in elderly. Although education contributes to the improvement of lifestyle, finding a cost-effective education method is important. The aim of this research was to compare the effects of group and family-centered education on the elderly lifestyle.

Materials & Methods This randomized controlled field trial with three-arm parallel-group was carried out on 150 old people aged from 60 to 74 years in Yasuj, Iran in 2015. The subjects were selected using purposive sampling method and randomly allocated into three groups with 50 subjects in each group including the group education, family-centered education, and control groups. The elderly lifestyle questionnaire was used to collect information before, 1, 2 and 3 months after educational interventions including family-centered education by home visits and group education in 8 sessions. The data were analyzed by SPSS 20 software using ANOVA with repeated measures, Chi square and Kruskal-Wallis tests and Tukey post hoc test.

Findings There was a growing trend in the lifestyle score of family-centered and group education groups in consecutive intervention periods ($p < 0.001$). The intergroup comparison between the lifestyle scores also demonstrated a statistically significant difference among lifestyle scores of the three groups ($p < 0.001$). This difference was between group and family-centered education groups with control group.

Conclusion Considering equally effects of the two education interventions, the higher cost and higher number of personnel required for home visits, group education is recommended as a suitable method for improving lifestyle of the elderly.

Keywords Elderly; Lifestyle; Education

CITATION LINKS

[1] Long epidemiologic clinical-pathologic ... [2] Grey matter: ageing in developing ... [3] Community public health nursing ... [4] The importance of atmospheric heat ... [5] Insufficient DNA methylation of affects ... [6] Lifestyle and genetic contributions to ... [7] Smoking in elderly Koreans: prevalence... [8] Behavioral and lifestyle treatment options... [9] Relationship between depression and ... [10] Effectiveness of a lifestyle intervention ... [11] American Heart Association guide for ... [12] Public health nursing: population-centered ... [13] Assessment of group versus individual ... [14] The effect of home healthcare on quality ... [15] Working more creatively with ... [16] Structural and functional markers of health depending ... [17] Comparison of the effect of maternal education ... [18] Rural-urban differences in health and health ... [19] Assessment of two culturally competent diabetes ... [20] Testing the Senior Exercise Self-efficacy ... [21] Group session teaching of behavioral ... [22] Group treatments for sensitive ... [23] Comparing the effect of two family- and ... [24] The effect of family-based intervention ... [25] Healthy lifestyle assessment questionnaire ... [26] Healthy lifestyle behaviors and all-cause ... [27] The effect of a supportive health promotion ... [28] family versus individually oriented intervention ... [29] Simultaneous vs sequential counseling ... [30] A lifestyle program for treated hypertensives improved ... [31] The effect of education on life style among ... [32] A systematic review of patient education in ... [33] A home-based nutrition intervention ... [34] Thresholds of physical activities necessary ... [35] Family involvement in school-based ... [36] The effect of family centered empowerment model on ... [37] Group Education Strategies for Diabetes Self ... [38] Does an information film about prenatal ...

¹Public Health Nursing Department, Nursing Faculty, Jahrom University of Medical Sciences, Jahrom, Iran

²Social Determinants of Health Research Center, Yasuj University of Medical Sciences, Yasuj, Iran

³Basic & Nutrition Sciences Department, Public Health Faculty, Yasuj University of Medical Sciences, Yasuj, Iran

⁴Nursing Faculty, Yasuj University of Medical Sciences, Yasuj, Iran

*Correspondence

Address: Nursing School, Yasuj University of Medical Sciences, Yasuj, Iran.

Phone: +98 (74) 33234115

Fax: +98 (74) 33235144

hosseini.nazafarin@yums.ac.ir

Article History

Received: July 16, 2019

Accepted: October 22, 2019

ePublished: September 21, 2020

Introduction

Mortality has declined considerably in developing countries and the number of old people has increased [1] and their number is expected to be about 2 billion people in 2050 in the world [2]. This increasing trend reflects the aging of the world population [3]. Old population is faced with a collection of age-specific cardiovascular conditions, cancer, chronic clinical problems, and social and psychological problems. These problems could be prevented by correcting the lifestyles [4]. The dimensions of the elderly lifestyle include healthy nutrition, physical activity and exercise, personal health, sleep health, oral health, restrictions on smoking, mental health, and prevention of accidents [5]. The elderly are faced with lifestyle problems [6]. According to research findings, 25% of the elderly in the United States lack physical activity [7], 26.6% suffer stress and anxiety [8], 75% suffer sleep disorders, and 11% smoking [9].

Lifestyle changes cause prevention of diseases, improvement of life quality, increased life expectancy, and improved mental and physical health [6]. Promotion of physical activity, healthy nutrition, and restrictions on smoking could lead to increased lifetime and improved health of the elderly [10].

The American Forum has introduced public education, which leads to a behavioral and lifestyle change, as one of the essentials for preventing the old age diseases [11]. One of the ways of education of individuals and families together is by home visit. Education of the person with person's family about lifestyle increases the person's ability to create and maintain lifestyle changes [12-14]. In spite of the advantages of home visits for family education purposes, this method calls for higher expenditure, more time, and more personnel [13].

Group education in health care centers could be used as a means of improving health [15]. In this method, mutual exchange of information, beliefs, and emotions occurs between learners and teachers, people grow in self-confidence and understanding, and better learning results are obtained. Group education is a simple and low-cost method [16], but some of its limitations include the shortage of human force, problems with collecting people in one place, and cooperation of people during sessions [17].

Selection of suitable, low-cost and effective teaching methods for changing lifestyles requires research and investigation. The research by Fogelholm *et al.* indicated the positive effect of physical activity on the elderly lifestyle [18]. Gucciardi *et al.* investigation also revealed the positive effect of nutrition on lifestyle of diabetics and was carried out using the group education [19]. Resnick *et al.* studied the effect of home visits on life quality of clients [20]. In another study, individual education was reported to be more effective than group education for behavioral interventions [21]. However, in another research group education was found to be more effective for

improvement of behavior and performance of the elderly as compared to individual education [22]. Results of an investigation showed the equal effects of family-centered and person-centered education on the reduction in body mass index (BMI) and two lifestyle dimensions, namely nutrition and physical activity [23]. On the other hand, in another study family-centered education was more effective than individual education for improvement of the aforementioned lifestyle dimensions [24].

In the above studies, the interventions for improving lifestyle with education were mostly designed for non-elderly groups and were on the nutrition or exercise dimensions. Moreover, these studies have examined the effect of family-centered and group education separately on other dimensions. Hence, the aim of this research was to determine and compare the effects of group and family-centered education on the elderly lifestyle.

Materials and Methods

The present research was a randomized controlled field trial study with three-arm parallel-groups. This study was conducted on 150 old people in Yasuj, Iran in 2015. Since no comprehensive study on the elderly lifestyle was available, 15 persons meeting the study criteria completed the lifestyle questionnaire in a pilot study and their mean lifestyle score was calculated. In view of the number of the study samples, using the sample size formula, the statistical power and error level of 80% and 5% were calculated for the test (at a confidence interval of 95%), respectively. Moreover, by predicting a difference of at least 20% between group scores (which is equal to a lifestyle score of 18) and a possible 20% sample loss, a total of 50 samples were estimated for each group.

After explaining the research objectives to the selected samples or subjects, their permission was obtained for completing the elderly lifestyle questionnaire. The questionnaires were completed by the elderly, and the questionnaires of illiterate subjects were completed by the researcher's assistant. The scores were calculated in the end by the researcher's assistant.

The inclusion criteria included the following: people aged between 60 and 75 years (young elderly), undesirable (42-98) or moderate (99-155) lifestyle scores from the questionnaire, lack of any disabling physical or psychological disease which would be known by asking the subject and by his/her appearance and would prevent the person from participating in the programs and their implementation, and tendency of the subject or his/her family for becoming involved with an intervention or group.

The exclusion criteria included any involvement with other education programs and absence in more than one session of education interventions. Hence, 150

old people meeting the inclusion criteria were selected as the research samples or subjects by purposive sampling method.

After explaining the goals and process of interventions fully to the participants in local health centers, their informed consent was obtained. The subjects were allocated randomly in intervention group 1, intervention group 2, and control group. The sampling continued as described until 50 subjects were allocated to each group.

The interventions of study were group and family-centered education about primary outcomes of elderly lifestyle. The data were collected by the Standard Lifestyle Questionnaire, which was localized in Iran by Eshaghi *et al.* [25]. The validity and reliability of this questionnaire have been confirmed. This questionnaire is composed of two sections: The first section inquires demographic information, and section two consists of 46 questions about nutrition, physical activity, mental health, personal health, oral health, sleep health, sexual health, prevention of accidents, and smoking restrictions. The minimum and maximum allowable scores of this questionnaire were 42 and 211, respectively.

The group education samples were divided into five 10-member groups. In the family-centered education group, in addition to the old member of each family, the key family members with the largest role in caring for the old person and his/her nutrition were informed of the research goals and intervention process by the researcher and completed the informed consent form. The family-centered education program was implemented through 8 one-hour education sessions at participants' homes. The sessions were held consecutively twice a week by the researchers (one M.S. nursing student and one nutritionist who provided nutrition education). In the group education intervention, the group discussion and question-answer methods were used with informed samples and the lecturing method was used for uninformed samples. The control group received no intervention by the researchers.

The questionnaires were completed one, two and three months following the interventions by the elderly and the researcher's assistant completed the questionnaires of illiterate samples. All of the

subjects stayed until the end of the research and their data was analyzed.

The data of questionnaires were coded and entered into SPSS 20 software by the researcher's assistants, who were not part of the research team and were not aware of the research goals and interventions. So this was the one blind study.

At first the normal distribution of variables was investigated by Kolmogorov-Smirnov test. Since some of the data on different study groups and at different times were normally distributed and some lacked normal distribution, both the parametric and non-parametric tests were used and both tests provided equal responses. Considering the parametric or non-parametric nature of data, analysis of variance (ANOVA) with repeated measures, Chi square and Kruskal-Wallis tests and Tukey post hoc test were used for analyzing the data.

Findings

The mean age of samples was 67.90 ± 5.17 years old. Moreover, 46.0% of samples were female and 54.0% were male. A total of 60% of samples were illiterate and 40% were literate. No significant difference was observed among the studied groups in terms of demographic variables ($p > 0.05$; Table 1).

The statistically significant difference was shown between the mean lifestyle scores of the intervention groups (i.e. the group education and family-centered education groups) before the study, and 1, 2 and 3 months after intervention ($p < 0.001$). There was a significant increase one month following the intervention in the family-centered and group education groups as compared to the period before the intervention. A significant increase was also observed 2 months after the intervention as compared to the results one month after intervention, and the same increase was seen 3 months after the intervention as compared to the results obtained 2 months after intervention in the two intervention groups ($p < 0.001$). However, no statistically significant difference was observed in the mean lifestyle scores of the control group, before the study and 1, 2, and 3 months after intervention ($p > 0.05$; Table 2).

Table 1) Comparison of demographic variables in the studied groups (n=50 in each group)

Demographic variables	Group education	Family-focused education	Control group	P. Value
Mean age (years old)	68.22±4.76	67.36±5.74	68.38± 5.01	0.57
Mean weight (Kg)	79.32±9.52	78.18± 8.89	76.10± 8.32	0.192
Frequency of sex				
Male	20 (40.0%)	25 (50.0%)	24 (48.0%)	0.56
Female	30 (60.0%)	25 (50.0%)	26 (52.0%)	
Frequency of literacy				
Illiterate	25 (50.0%)	31 (62.0%)	34 (68.0%)	0.17
Literate	25 (50.0%)	19 (38.0%)	16 (32.0%)	

Table 2) The mean scores of lifestyle in studied groups before, 1, 2, and 3 months after intervention

Groups	Before intervention	1 month after intervention	2 months after intervention	3 months after intervention
Group education	78.26±10.32	173.18±18.00	186.64±5.25	196.04±5.00
Family-focused education	76.02± 9.88	170.3±12.23	184.14±6.20	196.32±5.23
Control	60.62± 4.77	60.62±4.70	60.32±4.58	59.30±4.24

Also there was a growing trend in the lifestyle score of family-centered and group education groups in consecutive intervention periods ($p < 0.001$), but the mean scores of the control group demonstrated a constant trend in the consecutive study periods.

Moreover, one, two, and three months after the intervention, the mean lifestyle scores of the two intervention groups (group and family education groups) increased significantly as compared to the control group ($p < 0.001$). However, the mean lifestyle scores of the group education group were not significantly different than the scores of the family-centered education group before the intervention, and 1, 2, and 3 months after intervention.

The lifestyle score of the samples in the family-centered and group education groups moved from the undesirable and moderate levels before intervention to the desirable level after intervention, but the lifestyles of the control group members after intervention were as undesirable and moderate as before the intervention.

Discussion

Results of this research indicated that the group education and family-centered education interventions significantly and equally improved lifestyle dimensions. Three months after the intervention, the mean lifestyle scores of the group education and family-centered education groups increased by about 118 and 120, respectively. However, the mean lifestyle score of the control group declined.

No similar study has compared the effects of group and family-centered education through home visits, and most studies have examined the effects of group and family-centered interventions separately. On the other hand, in our study the entire lifestyle of the elderly was examined [26-29].

The results showed a significant increase in the mean lifestyle score of participants in the group education as compared to the control group ($p < 0.001$). In line with the results of our study, Rickheim *et al.* also reported the contribution of group education to improve lifestyle of people visiting health centers [13]. Although in this study the validity and reliability of the questionnaire were approved for overall lifestyle measurements and the topic-related validity of questionnaires was not confirmed, the mean score of questions about each topic was measured and examined. In the studies by Burek *et al.* and Kelly & Abraham, the nutrition and physical activity levels of the elderly increased significantly after the intervention in the group education group as compared to the control group [30, 31]. In the present research, in addition to the overall lifestyle score, a significant increase was observed in the nutrition and physical activity dimensions after intervention in the group education and family-centered education as compared to the results before intervention and the

control group results after intervention. The difference between our study and Kelly and Abraham's study is that they studied samples over 65 years and did not include other lifestyle dimensions in the intervention. Hence, the intervention might be effective for people over 75 years. Unlike the above studies, Ghisi *et al.* in the review study found educational interventions in cardiac care have been shown to promote physical activity, and healthier dietary habits and smoking cessation, although any related improvement in response to cardiac symptoms, medication obedience or psychosocial welfare is more equivocal [32].

Our findings indicated that education was effective in the family-centered education group as compared to the control group. Findings of the present research complied with Bernestin *et al.* findings, who reported the effect of family-centered education on diet [33]. In this study, in addition to the overall lifestyle, the nutrition of participants in the family-centered education group also improved. Results of the present study also complied with the findings reported by Cousins *et al.*, who indicated that women taking nutrition education classes with their spouses and children showed a higher weight loss than women participating the classes alone [28]. In the family-centered education method, education of the person along with his/her family contributes to provision of a suitable platform for improvement and correction of the person's lifestyle. Similar to the results of our study, in the research by Resnick *et al.* as well as Nakao *et al.*, the family-centered education program, which was implemented through home visits, contributed significantly to improvement of physical health of the elderly [20, 34]. Therefore, programs lead the elderly toward empowerment by relying on family are effective.

In the research by Bloom *et al.*, the family-centered education intervention did not significantly influence consumption of vegetable and fruits by the samples [35]. However, in our research, family-centered education led to an increase in the score of nutrition. In the aforementioned study, most adolescents were overweight and had nutritional problems. Moreover, correction and alteration of lifestyle of adolescents is harder than the elderly due to the consumption of high-calorie food and mechanical lifestyle of adolescents. In our research, however, the elderly population was studied, and perhaps it could be stated that the elderly follow educations better than adolescents because most old people need support and encouragement [36].

Research findings revealed that group education and family-centered education equally influenced lifestyle of the elderly. In fact, hypothesis on the difference between the effects of these two methods on lifestyle was rejected. No difference was observed between the scores of the two groups in other lifestyle dimensions. No study was also found by the

researchers on the effects of group and family-centered educations on lifestyle of people. In the investigation by Tang *et al.* the group and individual education strategies led to equal results in terms of self-management skills of diabetics [37]. The lack of difference between the two intervention groups could be explained by the assumption that the elderly are more submissive and their experiences influence each other.

Although both education strategies influenced the mental health of the elderly in our research, family-centered education was more effective than group education in this regard. In addition, in the study by Bjorklund *et al.* the mean scores of stress and anxiety (mental health) of pregnant women in the intervention and control groups were not significantly different following the group education [38]. To explain this finding it could be stated that in addition to the person under study, his/her family, friends, relatives and care providers (for old people) are involved in mental health, especially stress, of that person.

In this research, the group and family-centered education interventions improved mean scores of restrictions on smoking, but the mean score of restricted smoking in the elderly was higher in the group education group than the family education group. In the study by Kim *et al.* group education brought about a decrease in smoking [32].

Assessment of the overall lifestyle scores of the intervention groups suggests that this forms of education has the highest influence on the lifestyle of the elderly three months after intervention as compared to the periods one and two months after intervention. However, the overall lifestyle score of the control group did not increase significantly. In the Trans Theoretical Model (TTM) in order to reach the action stage, it is necessary to pass the precontemplation, contemplation and preparation phases which may last for 6 months. However, this theory could explain the increase.

The interventions meant to control risk factors indicate that family-centered interventions are superior to individual-centered interventions [38]. Results of this research confirm the hypothesis that improvements of lifestyle of the two intervention groups were equal. Hence, due to the ease of use, cost-effectiveness and lack of need for help in the group education strategy (as compared to family-centered strategy), this intervention could be used separately or simultaneously with other interventions for altering lifestyle of the elderly provided that its effectiveness is approved via further research.

Limitations of this study were short time period for measuring the effects of education and the lack of interest of families in the presence of nurses in their families. It is recommended to conduct this study on other populations with different cultures to examine the effect of education on the elderly lifestyle six months to one year after intervention.

Conclusion

Considering equally effects of the two education interventions, the higher cost and higher number of personnel required for home visits, group education is recommended as a suitable method for improving lifestyle of the elderly.

Acknowledgements: This article was the result of a research approved as project by the research deputy of Yasuj University of Medical Sciences. Hence, we hereby express our gratitude to this center and all of the elderly who aided the researchers in the course of this research

Ethical Permission: Prior to the investigations, the project won the approval of the Ethics Committee of the research sector of Yasuj University of Medical Sciences as research no. 9301202502. Moreover, informed consent of the samples was obtained and all of the moral considerations (including confidentiality of information) were taken into account. The samples were not charged, and following the research education pamphlets were given to the control group. Registration number of clinical trials was IRCT2015070420401N4.

Conflict of Interests: No declared.

Authors' Contribution: Shaafi M. (First author), Introduction author/ Original researcher (40%); Hosseini N. (Second author), Discussion author (30%); Akbartabar Toori M. (Third author), Methodologist/ Statistical analyst (20%); Moqimi M. (Fourth author), Assistant (10%)

Funding: This research has been sponsored by the research deputy of Yasuj University of Medical Sciences.

References

- 1- Bennett DA, Launer LJ. Long epidemiologic clinical-pathologic studies of aging and Alzheimer's disease. *Curr Alzheimer Res.* 2012;9(6):617-20.
- 2- Shetty P. Grey matter: ageing in developing countries. *Lancet.* 2012;379(9823):1285-7.
- 3- Frances A, Maurer CMS. Community public health nursing practice. 4th Edition. St. Louis: Elsevier/Saunders; 2009.
- 4- von Wichert P. The importance of atmospheric heat waves for health service in already altered people. *Med Klin (Munich).* 2008;103(2):75-9. [German]
- 5- Liu L, van Groen T, Kadish I, Li Y, Wang D, James SR, et al. Insufficient DNA methylation of affects healthy aging and promotes age-related healthy problems. *Clin Epigenetics.* 2011;2(2):349-60.
- 6- Woodard JL, Sugarman MA, Nielson KA, Smith JC, Seidenberg M, Durgerian S, et al. Lifestyle and genetic contributions to cognitive decline and hippocampal structure and function in healthy aging. *Curr Alzheimer Res.* 2012;9(4):436-46.
- 7- Kim SK, Park JH, Lee JJ, Lee SB, Kim TH, Han J, et al. Smoking in elderly Koreans: prevalence and factors associated with smoking cessation. *Arch Gerontol Geriatr.* 2013;56(1):214-9.
- 8- Tiernan KA. Behavioral and lifestyle treatment options post myocardial infarction: an exploratory analysis of

- patients' preferences for treatment [Dissertation]. Philadelphia: Drexel University; 2008.
- 9- Aylaz R, Aktürk Ü, Erci B, Öztürk H, Aslan H. Relationship between depression and loneliness in elderly and examination of influential factors. *Arch Gerontol Geriatr*. 2012;55(3):548-54.
- 10- Clark F1, Jackson J, Carlson M, Chou CP, Cherry BJ, Jordan-Marsh M, et al. Effectiveness of a lifestyle intervention in promoting the well-being of independently living older people: results of the well elderly 2 randomised controlled trial. *J Epidemiol Community Health*. 2012;66(9):782-90.
- 11- Pearson TA, Bazzarre TL, Daniels SR, Fair JM, Fortmann SP, Franklin BA, et al. American Heart Association guide for improving cardiovascular health at the community level: a statement for public health practitioners, healthcare providers, and health policy makers from the American Heart Association Expert Panel on Population and Prevention Science. *Circulation*. 2003;107(4):645-51.
- 12- Stanhop M, Lancaster J. Public health nursing: population-centered health care in the community. 7th Edition. Toronto: Mosby Elsevier; 2008.
- 13- Rickheim PL, Weaver TW, Flader JL, Kendall DM. Assessment of group versus individual diabetes education: a randomized study. *Diabetes Care*. 2002;25(2):269-74.
- 14- Nural N, Hintistan S, Gürsoy AA, Duman EN. The effect of home healthcare on quality of life in patients diagnosed with gastrointestinal cancer. *Gastroenterol Nurs*. 2009;32(4):273-83.
- 15- Benson JF. Working more creatively with group. 4th Edition. London: Routledge; 2019.
- 16- Skrzek A, Ignasiak Z, Sławińska T, Domaradzki J, Fugiel J, Sebastjan A, et al. Structural and functional markers of health depending on lifestyle in elderly women from Poland. *Clin Interv Aging*. 2015;10:781-92.
- 17- Baghdari N, Bahrami Morghmaleki A, Norouzi A, Karimi Moonaghi H. Comparison of the effect of maternal education via newsletter and group discussion on the nutritional quality of preschoolers. *Evid Based Care J*. 2014;3(4):75-84. [Persian]
- 18- Fogelholm M, Valve R, Absetz P, Heinonen H, Uutela A, Patja K, et al. Rural-urban differences in health and health behaviour: a baseline description of a community health-promotion programme for the elderly. *Scand J Public Health*. 2006;34(6):632-40.
- 19- Gucciardi E, Demelo M, Lee RN, Grace SL. Assessment of two culturally competent diabetes education methods: individual versus individual plus group education in Canadian Portuguese adults with type 2 diabetes. *Ethn Health*. 2007;12(2):163-87.
- 20- Resnick B, Luisi D, Vogel A. Testing the Senior Exercise Self-efficacy Project (SESEP) for use with urban dwelling minority older adults. *Public Health Nurs*. 2008;25(3):221-34.
- 21- Lajiness MJ, Wolfert C, Hall S, Sampsel C, Diokno AC. Group session teaching of behavioral modification program for urinary incontinence: establishing the teachers. *Urol Nurs*. 2007;27(2):124-7.
- 22- Lamb SE, Pepper J, Lall R, Jørstad-Stein EC, Clark MD, Hill L, Fereday-Smith J. Group treatments for sensitive health care problems: a randomised controlled trial of group versus individual physiotherapy sessions for female urinary incontinence. *BMC Womens Health*. 2009;9:26.
- 23- Bahraminejad N, Hanifi N, Moosavinasab N. Comparing the effect of two family- and individual-based interventions on blood pressure and lifestyle. *J Qazvin Univ Med Sci*. 2008;12(1):62-79. [Persian]
- 24- Rabiei L, Mostafavi F, Masoudi R, Hassanzadeh A. The effect of family-based intervention on empowerment of the elders. *J Educ Health Promot*. 2013;2:24.
- 25- Eshaghi SR, Farajzadegan Z, Babak A. Healthy lifestyle assessment questionnaire in elderly: translation, reliability and validity. *Payesh J*. 2010;9(1):91-9. [Persian]
- 26- Ford ES, Bergmann MM, Boeing H, Li C, Capewell S. Healthy lifestyle behaviors and all-cause mortality among adults in the United States. *Prev Med*. 2012;55(1):23-7.
- 27- Heidari F, Mohammad Khan Kermanshahi S, Vanaki Z. The effect of a supportive health promotion program on the lifestyle of premenopause teachers. *Feyz*. 2013;17(1):14-24. [Persian]
- 28- Cousins JH, Rubovits DS, Dunn JK, Reeves RS, Ramirez AG, Foreyt JP. Family versus individually oriented intervention for weight loss in Mexican American women. *Public Health Rep*. 1992;107(5):549-55.
- 29- Hyman DJ, Pavlik VN, Taylor WC, Goodrick GK, Moye L. Simultaneous vs sequential counseling for multiple behavior change. *Arch Intern Med*. 2007;167(11):1152-8.
- 30- Burke V, Beilin LJ, Cutt HE, Mansour J, Williams A, Mori TA. A lifestyle program for treated hypertensives improved health-related behaviors and cardiovascular risk factors, a randomized controlled trial. *J Clin Epidemiol*. 2007;60(2):133-41.
- 31- Nasrabadi T, Goodarzi N, Shahrjerdi A, Hamta A. The effect of education on life style among patients suffering from ischemic heart disease *J Mazandaran Univ Med Sci*. 2010;20(79):72-9. [Persian]
- 32- Ghisi GL, Abdallah F, Grace SL, Thomas S, Oh P. A systematic review of patient education in cardiac patients: do they increase knowledge and promote health behavior change? *Patient Educ Couns*. 2014;95(2):160-74.
- 33- Bernstein A, Nelson ME, Tucker KL, Layne J, Johnson E, Nuernberger A, et al. A home-based nutrition intervention to increase consumption of fruits, vegetables, and calcium-rich foods in community dwelling elders. *J Am Diet Assoc*. 2002;102(10):1421-7.
- 34- Nakao H, Yoshikawa T, Hara T, Wang L, Suzuki T, Fujimoto S. Thresholds of physical activities necessary for living a self-supporting life in elderly women. *Osaka City Med J*. 2007;53(2):53-61.
- 35- Blom-Hoffman J, Wilcox KR, Dunn L, Leff SS, Power TJ. Family involvement in school-based health promotion: bringing nutrition information home. *Sch Psych Rev*. 2008;37(4):567-77.
- 36- Masoudi R, Soleimani M, Qorbani M, Hashemina A, Pour Dehkordi A, Bahrami N. The effect of family centered empowerment model on the quality of life in elderly people. *J Qazvin Univ Med Sci*. 2010;14(1):57-64. [Persian]
- 37- Tang TS, Funnell MM, Anderson RM. Group Education Strategies for Diabetes Self-Management. *Diabetes Spectrum*. 2006;19(2):99-105.
- 38- Bjorklund U, Marsk A, Ohman SG. Does an information film about prenatal testing in early pregnancy affect women's anxiety and worries? *J Psychosom Obstet Gynaecol*. 2013;34(1):9-14.