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# Comparison of group motivational interviewing and multimedia education on elderly lifestyle

Mahmoud Movahedi, Feryal Khamseh<sup>1</sup>, Abbas Ebadi<sup>2</sup>, Zahra Hajiamini<sup>3</sup>, Ali Navidian<sup>4</sup>

## Abstract:

**BACKGROUND:** Many of the problems caused by aging can be delayed and the health of the elderly maintained by improving and applying a healthy lifestyle during old age. Therefore, the researcher has designed and implemented a study aimed “compare the impact of group motivational interviews with multimedia education on improving lifestyle in the elderly.”

**METHODS:** This study is triple blind before and after clinical trial was performed on three groups of thirty ( $n = 90$ ) of the elderly with mean age  $63.41 \pm 6.88$  who were members of the elderly centers of Tehran city neighborhoods with average to unfavorable lifestyle score. The first test group was subjected to group motivational interviewing during five sessions. The second test group was subjected to distant multimedia training. No training was given to the third group as the control group. After 3 months, the lifestyle questionnaire was completed in three groups. The results were analyzed by these techniques as statistical tests such as mean, standard deviation, relative frequency, and absolute frequency were used. The inferential statistical tests such as paired *t*-test and one-way ANOVA were used, respectively, to compare the pre- and post-mean scores and in each group and compare the mean scores of lifestyle dimensions in three groups.

**RESULTS:** Both motivational interviewing and multimedia education have been effective in changing the lifestyle of the elderly, but according to the findings, motivational interviewing has a greater impact on elderly lifestyle. The total lifestyle score in four areas such as nutrition, self-care, mental health, and physical activity was significantly different in the three groups after the intervention ( $P < 0.001$ ).

**CONCLUSIONS:** Each educational program can somehow improve behavioral skills in individuals. Effective teaching methods should address the learning difficulties and inability to learn during the aging period. The results of this study can be a step toward the elaboration of strategies for education and promotion of healthy lifestyle in the elderly.

## Keywords:

Elder, lifestyle, motivational interview, multimedia education

## Introduction

With increasing urbanization, population transition toward middle age and elderly, and increased burden of noncommunicable and chronic diseases, the important point is healthy aging and prevention of these diseases, which, in addition to health problems, also imposes a heavy burden on the health sector and

community.<sup>[1]</sup> Aging changes are associated with health problems and decreasing the level of activities. As the age increases, functional dysfunction increases and its negative effect on the ability to maintain independence increases the need for help, which in turn can be effective in reducing the quality of life of the elderly.<sup>[2]</sup> The statistics show that 19%–26% of elderly people have experienced some kind of the incident leading to therapeutic measures during the year<sup>[3]</sup> Many of the problems caused by aging can be delayed and the health of

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*Behavioral Sciences Research Center, Life Style Institute, Baqiyatallah University of Medical Sciences, Departments of <sup>1</sup>Psychological Nursing and <sup>3</sup>Health, Faculty of Nursing, Baqiyatallah University of Medical Sciences, <sup>2</sup>Behavioral Sciences Research Center, Faculty of Nursing, Life Style Institute, Baqiyatallah University of Medical Sciences, Tehran, <sup>4</sup>Department of Nursing, Health Research Center of Pregnancy, Zahedan University of Medical Sciences, Zahedan, Iran*

## Address for correspondence:

Ms. Feryal Khamseh,  
6<sup>th</sup> Floor, Faculty of Nursing, Mollasadra St, Baqiyatallah University of Medical Sciences, Tehran, Iran.  
E-mail: [khamseh\\_110@yahoo.com](mailto:khamseh_110@yahoo.com)

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the elderly maintained by improving and applying a healthy lifestyle during old age.<sup>[4]</sup> Clark believes that adopting interventions on the elderly's lifestyle reduce the negative outcomes of this era and interventional lifestyle has beneficial effects on the elderly.<sup>[5]</sup> Previous studies in Japan also show that healthy lifestyles help prevent depression in old age. These studies also indicated that there is a relationship between smoking, high weight, inappropriate sleep, and increased risk of depression and memory loss.<sup>[6,7]</sup> The results of another study in Spain showed that the likelihood of death shows 20% increase for any reason over 5 years among people who have unhealthy lifestyles. These findings emphasize the importance of maintaining a healthy lifestyle throughout life to aging regardless of the history of vascular disease.<sup>[8]</sup> Therefore, we can prevent disease early among the elderly by modifying lifestyle and adopting proper training.<sup>[9]</sup> Various educational styles can be used in this regard, but it is important to note that the elderly may not receive all teaching methods.<sup>[10]</sup> Traditional information and education, the use of modern educational technologies and applications (self-directed video tutorials), and participation in educational and counseling groups are important training programs for behavioral change in the elderly.<sup>[11]</sup> It is critical that the staff carefully assess the educational needs of their elderly patients and their families. Special considerations are taken if the patient has a physical disability, language barrier, or learning disability. All patients deserve the right to be informed and have their learning needs met and should be individually guided toward positive and healthy outcomes. Educational styles vary and patients may not be receptive to all teaching methods. The elderly may have immediate reactions to their environment: to noise levels, room temperature, and educational preferences should be accommodated. Since technology is always evolving and the needs of our patients continue to be dynamic, we must change the way information and education is provided. The elderly can benefit greatly from technology that is easy to master. It provides alternatives that may not have been previously present and opportunities to learn, teach, and communicate.<sup>[12]</sup> Educators and health-care providers search for methods of teaching people disease prevention while attempting to control costs. One strategy is to adopt "cheaper" computerized health education programs.<sup>[13]</sup> Abedi stated that e-learning is a less costly and more satisfactory method than the traditional one to teach healthy life.<sup>[14]</sup> Multimedia learning is an important part of human resource education and development, and its benefits include learning in any place and at any time, inherent flexibility, and its lower cost than face-to-face learning and its more educational impact compared to other teaching methods<sup>[15]</sup> and multimedia education-based function is more useful to deal with memory loss as well as increasing the memory storage

performance of older learners than young people's age group.<sup>[16]</sup> However, behavioral change in the elderly's lifestyle, which has been used for many years, seems to be difficult using usual methods.<sup>[17]</sup> Another behavioral change strategy is to empower individuals by reinforcing and enhancing their intrinsic motivation because any behavior that a person does is not random and aimless, but there is a reason for any behavior.<sup>[18]</sup> Motivational interviewing is a method that causes stable behavior change in individuals, a reference-based approach, and a guide for enhancing intrinsic motivation that is used to discover, identify, and resolve doubts and ambivalence in order to make changes.<sup>[19]</sup> Many studies have confirmed the use of motivational interviewing method for behavioral changes such as smoking cessation, weight loss, and increased physical activity and other health behaviors.<sup>[20]</sup> For example, Navidian *et al.* state that adding motivational interviewing to conventional weight control programs can increase the lifestyle-based self-efficacy as a predictor of weight loss.<sup>[21]</sup> Cunning *et al.* concluded in a review study that motivational interviewing can produce useful results in dealing with a wide range of health issues faced by older people.<sup>[22]</sup> Therefore, we can prevent disease early among the elderly by modifying lifestyle and adopting proper training.<sup>[15]</sup> Various educational styles can be used in this regard, but it is important to note that the elderly may not receive all teaching methods.<sup>[10]</sup> Therefore, considering the necessity of making sustainable behavioral changes in elderly people about lifestyle changes and the necessity of reaching the appropriate educational methods of this age, which is both accepted by individuals and economically demanding, needs further investigation. The reason for this study was to "compare the impact of group motivational interviews with multimedia education on elderly lifestyle."

## Methods

This clinical trial study was performed in three groups with IRCT201505068290N7 code in the Iranian Clinical Trials Center. The sample population included elderly people studied were younger elderly people aged 55 years and older, who were on the verge of entering the elderly and had autonomy of functioning, lack of specific diseases and limitation of movement, and had literacy in reading and writing, and living in their families. They were doing their own work and were the members of the daily centers of neighborhood aging cultural and recreational centers are located in the 22 districts of Tehran municipality. These centers have various focal points, including the Health Center, the Women's Center, the Elderly Club, and whose purpose is to provide various services in the cultural, educational, artistic, and sports fields of each neighborhood (374 neighborhood houses in 22 municipalities). Thus,

in each region, there are several neighborhoods that people of each neighborhood due to the geographic extent of the area in question cannot interact and have a specific relationship with the exchange of information. Accordingly, in a cross-sectional descriptive study, the lifestyle of 400 members of these centers was evaluated by the researcher. The criteria for entry to study were at least 55 years old, membership in the health centers' senior aging centers, lack of specific diseases and limiting mobility, as well as the consent of individuals to participate in the study.<sup>[23]</sup> Data were collected using a questionnaire on healthy lifestyle measurements in Iranian elderly. The questionnaire was designed by Ishaqi *et al.* (2009) with a demographic section and the main part containing 46 question.<sup>[24]</sup> For sampling at this stage using the Altman's nomogram and the standard difference calculated from previous studies (the standard difference was 1.42), including  $\alpha = 0.05$ ,  $\alpha = 10\%$ ,  $\beta$  and power = 90% required sample in each group. At least 28 people were calculated and considering the drop of about 10%, the sample size for each group was estimated to be about thirty. Therefore, based on the findings of the first descriptive study (lifestyle scores), those with poor or moderate scores, 90 were randomly selected and finally, they were randomly assigned to two intervention groups (motivational interviewing and multimedia education) and control were divided.

The first test group was subjected to a group motivational interview (a 2-h session on per week) during the five sessions. The structure of the sessions was extracted from the group motivational interviewing workbook and prepared and conducted by the researcher after coordination with the faculty members. The first session was focused on familiarizing and preparing the elderly. At the second session, the elderly expressed their feelings about lifestyle changes. The third session discussed the positive and negative aspects of lifestyle changes and values were discussed in the fourth session. Values are internal elements that originate from one's own character that help determine goals and activities. Decisions that are consistent with individual values provide a sense of satisfaction and enhance the energy and self-esteem of the individual. Fifth session deals with the identification of tempting positions and the final evaluation. The purpose of this session is to reassess the commitment, level of trust and confidence, and motivation for change. Identifying situations and helping to assess and at the same time increase self-confidence are other goals of this session. At this stage, the second test group was simultaneously subjected to multimedia-based distant instruction, in which the training content was provided as educational software. The content of educational multimedia content was provided to the test group as training software. Based on the use of the comments of more than ninety elderly experts on the Delphi

scheme, they conducted three rounds by E-mail and the educational content for each selected title including text, photos, videos, and audio was collected and approved by the relevant professors. The software designer was also asked to use specific features such as the use of video and animation and photo and video in order to better use this age group. In cases where the educational text was available, the audio text was also placed next to it. So that only by clicking on specific subjects, people could use educational facilities, and in several sessions, the researcher displayed the software produced publicly and used it for use by the elderly or family members with whom they lived. The educational multimedia software was given to the intervention group and Tutorial on how to use the software. Moreover, advice was given on how to use the software by phone and face-to-face.

It should be noted that in this study, elderly people who were able to use computers or in the family could benefit from the help of family members, such as their children or grandchildren, were used. No training was provided for the third group as the control group. The third phase of the study after a 3-month period, the lifestyle questionnaire was given to the first and second groups and the control group for measuring the effectiveness of the trainings and their impact on the elderly lifestyle. The lifestyle of the three groups was evaluated and the content of the training was provided to the control group in the form of software at the end and after the third stage test. Descriptive statistics (mean, standard deviation, relative frequency, and absolute frequency) were used. The inferential statistical tests such as (paired *t*-test) and one-way ANOVA were used, respectively, to compare the pre- and post-mean scores and in each group and compare the mean scores of lifestyle dimensions in three groups.

## Results

The mean age of the intervention group was  $63.41 \pm 6.88$ , with the minimum and maximum ages of 55 and 85 years, respectively. A total of 14 individuals were not covered by insurance and 82 individuals were not dependent on others in terms of carrying out their personal tasks [Table 1]. Lifestyle score in total and in four areas (nutrition, self-care, mental health, and physical activity) was significantly different in the three groups after the intervention ( $P < 0.001$ ). Tukey's test showed that this difference was related to the difference between the control and the other two groups [Table 2]. Furthermore, there were significant differences between the mean changes of pre- and post-intervention scores in the multimedia and motivational interviewing groups in the follow-up tests. The difference in mean scores indicates that interventions of motivational interviewing have a

greater impact on multimedia both in the total score and in other areas interventions [Table 2].

### Discussion

In this study, the findings indicate that postintervention lifestyle score is significantly different in three groups (motivational interviewing, multimedia,

and control groups). In line with this finding on the impact of motivational interviewing, one can refer to Cuning et al.'s study who concluded that motivational interviewing could produce useful results in dealing with a wide range of health issues faced by the elderly such as weight loss, quit smoking, diet improvement, physical activity, cholesterol lowering, pressure, and blood sugar control.<sup>[22]</sup> Movahedi also described the role of motivational interviewing in self-care education to the elderly in an overview study.<sup>[15]</sup> In line with this study, we can refer to Murphy's studies, which are based on the effectiveness of motivational interviewing to reduce the use of alcohol and marijuana.<sup>[25]</sup> Audrain who described the effectiveness of the motivational interviewing in changing smoking behavior.<sup>[26]</sup> Taylor's study which described motivational interviewing as effective in changing lifestyle for weight loss.<sup>[27]</sup> We can also refer to Navidian's study which indicates the effect of motivational interviewing on increasing lifestyle self-efficacy and the effectiveness of this method in reducing the symptoms of obsessive-compulsive patients.<sup>[21]</sup> In general, the findings of the studies all indicate the desirable effect of the motivational interviewing on the behavioral changes, to which people are accustomed years and the continuation of these behaviors may cause disease or disability. In addition,

**Table 1: Demographic variables**

Demographic variables	Frequency, n (%)
Age group	
55–65	61 (67.8)
66–75	25 (27.8)
76–86	4 (4.4)
Sex	
Male	46 (51.1)
Female	44 (48.9)
Marital status	
Single	7 (7.8)
Married	47 (52.2)
divorced	9 (10)
Aligned	27 (30)
Education	
Elementary to guide	55 (61.1)
Diploma until graduate	19 (21.1)
Baccalaureate to Ph.D.	16 (17.8)

**Table 2: Comparison of mean and standard deviation of lifestyle (total score and nutrition, physical activity, mental health, and self-care) in the studied groups**

Lifestyle areas	Test groups	Mean (SD)		Difference of mean	t-pair (P)
		Before the study	After studying		
Total score	Motivational interview	58.02 (9.6)	71.49 (7.3)	13.47 (8.3)	<0.001
	Multimedia	62.55 (6.2)	68.51 (6.8)	5.96 (6.1)	<0.001
	Control	59.52 (8.5)	58.77 (8.6)	-0.742 (5.06)	0.428
	One-way ANOVA	F=2.3 P<0.001	F=22.49 P<0.001	F=34.37 P<0.001	
Nutrition	Motivational interview	48.50 (10.5)	63.7 (10.6)	15.20 (9.9)	<0.001
	Multimedia	48.81 (10.6)	59.1 (9.9)	10.29 (9.2)	<0.001
	Control	50.50 (11.04)	49.6 (11.8)	-0.892 (5.8)	0.413
	One-way ANOVA	F=0.3 P=0.741	F=13.1 P<0.001	F=28.1 P<0.001	
Physical activity	Motivational interview	41.8 (16.5)	61.8 (14.8)	20.02 (19.02)	<0.001
	Multimedia	53.3 (15.6)	66.1 (16.4)	12.83 (11.4)	<0.001
	Control	43.3 (14.9)	44.5 (17.5)	1.16 (10.6)	0.553
	One-way ANOVA	F=4.73 P<0.001	F=14.7 P<0.001	F=13.4 P<0.001	
Mental health	Motivational interview	63.83 (16.2)	77.08 (10.5)	13.25 (15.7)	<0.001
	Multimedia	68 (13.8)	70.16 (13.7)	2.16 (14.9)	0.435
	Control	62.33 (14.9)	63.58 (13.4)	1.25 (10.6)	0.523
	One-way ANOVA	F=1.16 P=0.318	F=8/48 P<0.001	F=6.87 P=0.002	
Self-care	Motivational interview	67.2 (11.3)	77.46 (8.2)	10.25 (10.7)	<0.001
	Multimedia	73.5 (7.7)	75.99 (5.4)	2.48 (5.5)	<0.001
	Control	70.05 (9.8)	67.69 (10.9)	-2.35 (7.4)	0.093
	One-way ANOVA	F=3.12 P=0.049	F=11.45 P<0.001	F=18.02 P<0.001	

SD=Standard deviation

the findings in this study indicated an increase in the total score of lifestyle level and an increase in score in other lifestyle areas after applying multimedia education software in the elderly [Table 1], which is in line with the Molinari's study, because he concluded in his study that the elderly viewed training provided through computer programs as useful and showed significant improvements in their ability to perform their personal duties.<sup>[28]</sup> Gerven *et al.* also concluded that multimedia education has a more efficient performance than traditional education and based on the findings of this study, multimedia-based education is more useful for the elderly than the youth age group.<sup>[18]</sup> While comparing the effectiveness of both traditional and electronic teaching methods used for healthy lifestyle in the field of nutrition education for the elderly, Abedi also concluded that educational videos are more effective in increased nutritional awareness of the elderly. Furthermore, the elderly were more satisfied with educational videos compared with the traditional method as the method used for teaching healthy lifestyle. On the other hand, the cost of multimedia-based education to the elderly is lower compared to book-based education. Therefore, multimedia-based education has proven to be a more efficient and effective method to promote the health status of the elderly.<sup>[14]</sup> Daneshmandi *et al.* also concluded that in case of availability of favorable conditions in terms of time and place and teaching aids, training with multimedia software packages is more effective than the lecture method in increasing the level of knowledge of individuals.<sup>[29]</sup> According to the above studies, it can be stated that in terms of the effectiveness of multimedia education software on learning and changing the behavior of the elderly results are consistent with the current study, but it is not more efficient than motivational interviewing method because, along with the benefits of using multimedia software in educational programs, there are also disadvantages including conditions of use of multimedia software such as access to appropriate computers and having at least computer literacy are essential to use the capabilities of this educational media.<sup>[30]</sup> In addition, users' fears due to the need for technical knowledge to use educational content and the emergence of negative results due to the excessive amount of time and carelessness in the supply of educational software are among obstacles to the use of multimedia educational software.<sup>[15]</sup> The results show that the mean difference between pre- and post-intervention mean score of lifestyle in the motivational interviewing group 13.47 (8.3) was more than the multimedia intervention group 5.96 (6.1%). This difference can be seen in all aspects of lifestyle. One can consider the principles of the motivational interviewing to justify the attractiveness of motivational interviewing in the elderly and their more willingness toward it, compared with the multimedia method, so that the principles

and spirit of motivational interviewing emphasize on participation, calling, and respect for the autonomy of individuals. In addition to the principles, motivational interviewing consists of the following principles: empathy and seeing the world from the eyes of the authorities without judgment and criticism, increasing the contradiction between current behaviors and values that motivate a person in life, avoid controversy for change and supporting individual's self-efficacy, believing that the authorities can do the necessary measures and succeed in the making the change.<sup>[21]</sup> Therefore, according to the spirits of the elderly, each of whom has positive experiences in life and less involved in social interactions, the principles of motivational interviewing are more consistent with the spirits of the elderly. Furthermore, the elderly tend to have a great deal of interest in their peer group. Therefore, according to motivational interviewing techniques, which include asking open questions, reflexive listening (reflective thinking), authorities confirmation, summarizing the discussions performed, and the call for talk about change, the formation of aging groups led by an expert makes it possible for individuals in these groups to participate actively in decision-making to prevent, diagnose, and treat the common diseases of this age by sharing their experiences. In addition, the quality and lifestyle of the elderly are improved by expressing self-care issues in these groups.<sup>[4]</sup> In this regard, the result of Moradi's study, which indicate the significance of the relationship between social participation and its dimensions with the quality of life of the elderly<sup>[31]</sup> and Livasar's study showed cognitive group counseling is more effective in reducing anxiety and depression than drug therapy.<sup>[32]</sup> In general, the results indicated the effectiveness of both methods on changing the lifestyle of the elderly. There was a significant difference between lifestyle score in motivational interviewing and multimedia education groups before and after the intervention so that the motivational interviewing group had a higher mean score in all dimensions as well as overall lifestyle score, and this mean difference was significantly higher than the multimedia software education group. However, there was no study to compare the results in the field of comparing motivational interviewing and multimedia education, which necessitates more extensive studies in this field. To carry out this study, there were a number of difficulties and limitations that could be mentioned: the lack of proper cooperation between some municipal officials and authorities to enter the study environment. Access to the elderly in some neighbourhoods and lack of proper cooperation to fill out questionnaires. The timing of completing the questionnaires due to the dispersion of villages in different neighbourhoods of Tehran Fatigue and malaise of the elderly due to age constraints and also the number of elderly people familiar with computers was limited. The presence of visual and auditory

problems in order to complete the questionnaire, which was solved with the help of guidance from the researcher and problem-solvers.

## Conclusions

In general, it can be concluded that any educational program can somehow improve behavioral skills in individuals. Effective teaching methods should be considered the learning difficulties and inability to learn during the aging period. Knowledge was the most important factors influencing elderly healthy lifestyle. It seems that increasing the elderly awareness about the links between lifestyles and chronic diseases might help them to understand the potential health consequences of their actions and encourage them to make much-needed lifestyle changes. Each educational program can somehow improve behavioral skills in individuals. Effective teaching methods should address the learning difficulties and inability to learn during the aging period. The results of this study can be a step toward elaboration of strategies for education and promotion of healthy lifestyle in the elderly.

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## Conflicts of interest

There are no conflicts of interest

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