

*Original Article****The Effect of Electronic Education of Healthy Lifestyle on the Elderly's Awareness and Satisfaction***Ghasem Abedi<sup>1</sup> \*Abolhassan Naghibi<sup>1</sup> Fereshte Farshidi<sup>2</sup> Farideh Rostami<sup>1</sup> Ali Nadi<sup>1</sup>

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(Received: 16 Mar 2014; Revised: 9 Apr 2014; Accepted: 21 Jun 2014)

***Abstract***

***Background and purpose:*** The major motivation behind all human communities' efforts and transformation is to promote and advance human beings health. This study aimed at to compare the effect of a healthy lifestyle electronic education on the knowledge and satisfaction of the elderly.

***Materials and Methods:*** This semi-experimental method has been done along with pre- and post-test for people 65 and older at Sari-based retirement Club in 2011. A total of 30 elderly people have been chosen through simple random sampling in two distinct 15 individual classes for women and men. The learners' knowledge about nutrition has been assessed by using the standard questionnaire. The data have been described by SPSS software, using descriptive statistics and inferential statistics.

***Results:*** Mean score of elderly's awareness before electronic education was 1.72 with the standard deviation of 0.71 which increased to 2.37 for the mean and 0.90 for the standard deviation after the education. The paired t-test with 3.20, the observed difference is significant at the error level of 0.05. The mean of elderly's awareness before education was 11.55 with the standard deviation of 1.56 that increased after education 6.38 and 1.48, respectively. The level of satisfaction in the elderly was 52.73 with the standard deviation of 5.16.

***Conclusion:*** The result showed that training through educational film has been more effective on the elderly people's nutritional knowledge and also the old people have been satisfied with the healthy lifestyle training through educational film. Thus, training via film and other educational means is recommended to promote the elderly's health as a more efficient and effective method.

[Abedi Gh, \*Naghibi A, Farshidi F, Rostami F, Nadi A. **The Effect of Electronic Education of Healthy Lifestyle on the Elderly's Awareness and Satisfaction.** *IJHS* 2014; 2(2): 10-18] <http://jhs.mazums.ac.ir>

***Key words:*** Electronic Education, Healthy Lifestyle, The Elderly

## **1. Introduction**

The basic objective of all human societies' efforts and transformation is to elevate human beings' health and countries around the world have been looking for national development and their national life level promotion and this aim never comes true without investigating the causes and factors influencing human beings' health (1). The elderly population growth itself does not create problem rather it gets alarming when this population turns into one with no goal, disabled, and needy. The psychological evolution in lifecycles denotes that old age is a different and unique process in several dimensions and several directions. Being multidimensional and multidirectional does not mean that a person's evolution is different in social cognitive and health dimensions and it has been proved that the individuals up to above old age have the potential for evolution in many dimensions. Transformation potential differs and these individual differences exist up to old age to prevent the elderly from getting disabled, then their education in various areas such as sport, nutrition, social relations, and the other aspects can make the elderly population enjoy an optimal situation (2). As reported by Wunderlich in the US, Chicago food institution journal in September 2010, education brings about positive lifestyle changes in the elderly that can affect the old people's health (3). The recent advances in the computer and information industry, the introduction and emergence of local, regional, and international informing networks and in particular multimedia, communication technology have made novel methods and tools available for the educational program's designers, planners, administrators, and executors (4). Education refers to any kind of pre-planned activity or policy whose goal is to create learning in the learner while learning refers to creating some relatively stable changes in the learner's potential behavior providing this change occurs under the effect

of experience (5). Then learning is the goal and education is one of the tools or methods to achieve this goal (6). One of the educational methods is using electronic education that complements the present educational methods and in some cases substitute them. One of the major approaches of electronic education is multimedia software programs, which mean using more than one medium in education. Multimedia do not substitute with the existing education media rather they complement them; though, in most cases multimedia cannot meet the educational requirements alone. In the new century, the only thing that can make a person move ahead of the other competitors is to learn faster. Simultaneously and accompanied with so many widespread transformations happening in the world, the thinkers' approaches and perspectives have also undergone some changes to education and leaning. In the past, "training" was used for education meaning giving instruction and today the term "learning" is applied which means taking instruction (7).

E-learning has made the learners physical presence unnecessary in the classroom but the issue worth to keep in mind is to focus on producing the content with quality and compatible with the educational technology and educational psychological findings and standards. Using information and communication technology in teaching puts the classroom into technology focus. Though, there was a time when the only educational tool was the blackboard where it merely made writing possible, today with the help of film, picture, voice, and slide and etc. technology, the quality of education can be enhanced (4). Many educational psychologists believe that learning conditions should be organized in such a manner that every learner deal with activity and learning based on their potentials. When there are a lot of addressees requiring education at a stable and cost effective condition, the best method is electronic education (8).

In E-learning, the learners access the educational courses round-the-clock, study with their desired speed; they do not need to commute to be present at the classes and the time required for learning decreases by 25-30% (9). Besides, E-learning results in significantly saving the teachers' time and educational practitioners and educational costs because in this method, educational material are compiled once and are used in various places several times. Diverse studies have demonstrated that E-learning is at least more effective than the traditional education and it is even more efficient and makes the learners more satisfied (10-11).

Womble (12) stated that assessing E-learning learners' satisfaction can be a predictive factor of success in learning. Coles (13) reported that utilizing visual media like showing film has been very effective in training the audiences and the patients. In the study by Saffari et al. titled "Comparing the effect of diet in two styles as speech and showing film on the health providers nutritional knowledge and attitude", it has been concluded that both styles, that is, speech and showing film can equally be the effective methods to promote the individuals' nutritional knowledge and attitude (14). This study aims to determine the knowledge of the elderly before and after participating in educational style in the form of E-training about correct nutrition and satisfaction level.

## **2. Materials and Methods**

The present research is a semi-experimental study using pretests and posttests done on the elderly aged 65 and above belonging to Sari-based Retirement Club. For sampling regarding the statistical community size (700 subjects), all the old people as the members of the club have been given the explanation about the study method after being coordinated with the province health center and the retirement club and then they have been sent the invitations that following

sending the invitations in two stages, 167 subjects agreed to cooperate. Out of the ones accepting to cooperate, 30 people referring to the club have been selected by simple random sampling method in two groups of women and men and organized in two distinct 15-subject groups (15 women and 15 men). In order to prevent error and bias and maintaining the samples uniformity, the subjects in both groups of women and men have been made uniform in terms of age, education, residential, educational major and post-retirement years number. About observing ethics in the study, in addition to explaining the study method to the participants, they have been assured that in case of being reluctant at any study stage, they are allowed to quit.

On one hand, in order to assess the old learners' knowledge about nutrition, the data have been collected using the standard questionnaire of the health and medical education ministry in the form of pretest and posttest. The questionnaire being confirmed through the views of management experts and the elderly bureau experts of Mazandaran Medical Science University health department has been analyzed for the tool reliability so that for reliability, the questionnaire has been first filled in by a primary 20 subject group and its Cronbach's alpha has been gained 83%. Then, the health center experts have been demanded to hold classes electronically in their codified curriculum for a group of old people, after coordination with the dependent health-treatment centers, the elderly health program plan for holding the researcher's classes in the mentioned training classes has been run. The researcher has played the educational film for the elderly in the presence of the liable film instructor expert. And the pre- and post-test have been taken. The participants have been given the pre- and post-test forms in order to assess learning level, then to assess their satisfaction, the polling questionnaire have been distributed.

Educational content includes: the researcher-made E-educational media educational film based on educational guide for improving healthy lifestyle in old age period about nutrition and physical exercises. It is worth to mention that this study educational film researcher-made tool scientific and educational content script has been analyzed and collected based on the abovementioned tools and then after final verification, it has been finally revised by the plan experts and the masters and following that the film primary script has been prepared for making the film. After preparing the film pictures and sound effects and compiling the prepared film primary version basics, it has been submitted to the technical experts and after the mentioned individuals' opinions have been exerted, the revised version has been displayed for field testing for the study target group who were the elderly recalled for training, the film has been displayed randomly for the number of the participants in one of the training classes and the study old people's comments for revision have been collected. Gathering the mentioned old people's educational comments and needs about the primary version of the prepared educational CD and offering the collected comments to the relevant experts and the honored teachers in a polls meeting, all of the collected comments have been summed up ultimately and the second version of the educational film has been reviewed and revised based on that. Then the second version of the prepared CD has been displayed for the same group for final poll taking and revision and their comments have been inquired that in the end, after repeating the mentioned steps, the final version has been prepared to be displayed.

It needs to be pointed out that in order to avoid the test error; the old people who had watched the film for their opinion polls have not been participated in the final sampling. For sampling, the samples have been divided for the two groups, one made up of women

and another men group participating in electronic training (educational film) in class, the researcher accompanied with the plan expert has displayed the film for the elderly. The participants have been given the pre- and post-test forms to assess their learning. Then, in order to assess satisfaction, their satisfaction has been assessed by using polling questionnaire. The collected data by SPSS software (version 17, SPSS Inc., Chicago, IL, USA) has been used to describe the descriptive statistics criteria, that is, mean and standard deviation and after that the pre- and post-test questions have been applied for generalizability of the findings from the inferential statistics criteria (dependent t-test and independent t-test).

### **3. Results**

This study subjects included 30 old people aged 65 or above. Of this number, 15 were women and 15 were men. The participating old ones aged 65-69 (N = 16, 53%) have been the highest that decreased as the participants number age increased. Regarding education level, the majority of the elderly (N = 13, 45%) have been just able to read and write and 23.3% have been absolutely uneducated and merely (N = 10, 12%) have had secondary level or higher education. About their residential area, most of them were urban dwellers (N = 25, 85%) (Table 1).

To analyze the effect of electronic education on the degree of the elderly's awareness about nutrition in a healthy lifestyle, the correlation t-test is used. Table 2 shows the result of applying this test before and after electronic education.

The mean of scores of the elderly's awareness on foods and water and liquids before electronic education with the 0.71 standard deviation is 1.72 which increased to the mean of 2.37 and the standard deviation of 0.90 after electronic education. Based on the correlation t-test with the amount of 3.20, the

observed difference, at the error level of 0.05, is significant. In bread and grains before the education, it was 1.63 with the standard deviation of 0.50, and after that, it was the mean changed into 2.93 and the standard deviation of 0.78. Based on the paired t-test, with the amount of 6.59, the observed difference at the error level of 0.05 was significant. In fruits and vegetables, before education, the mean of awareness was 2.66 with the standard deviation of 0.86. After education it changed into 3.28 and the standard deviation of 0.95. Based on the paired t-test with the amount of 2.27, the

observed difference, at the error level of 0.05, was significant. In milk and dairies, the mean of awareness before education, was 2.80, with standard deviation of 0.71, which increased to 4.00 with the standard deviation of 0.65 after electronic education. Based on the paired t-test with the amount of 7.86, the observed difference at the error level of 0.05 was significant. In meat and beans, the mean of awareness before electronic education, was 1.14 with the standard deviation of 0.49, that increased to the mean of 1.82 and the standard deviation of 0.60 after education.

**Table 1.** Frequency and relative distribution of the elderly demographic participating in the two educational methods

The community characteristic	Female		Male		Total	
	Frequency	Frequency %	Frequency	Frequency %	Frequency	Frequency %
Age						
65-59	11	36.7	5	7.16	16	53.3
70-74	3	11.7	7	3.23	10	35.0
75-79	0	0.0	3	10.00	3	10.0
80-84	1	1.7	0	1.00	1	1.7
Education level						
Illiterate	2	8.3	5	15.00	7	23.3
Reading and writing/Quranic literacy	6	21.7	7	23.30	13	45.0
Literacy movement	1	5.0	2	6.70	3	11.7
Secondary level	1	1.7	1	3.30	2	5.0
Diploma holder	1	8.3	1	1.70	3	10.0
University graduate	2	5.0	0	0.00	2	5.0
Residential						
Urban	13	45	12	40	25	85
Rural	2	5	3	10	5	15

**Table 2.** The paired t-test to analyze the effect of electronic education in increasing the elderly's awareness

Food group	Groups	Mean	Standard deviation	Degree of freedom	T-value	Significant	Result
Water and liquids	After education	2.3747	0.90564	29	3.208	0.003	Sig.
	Before education	1.7269	0.71043				
Bread and grains	After education	2.9239	0.78737	29	6.590	0.000	Sig.
	Before education	1.6324	0.50691				
Fruits and vegetables	After education	3.2824	0.95189	29	2.275	0.030	Sig.
	Before education	2.6676	0.86636				
Milk and grains	After education	4.0000	0.65467	29	7.968	0.000	Sig.
	Before education	2.8018	0.71026				
Meat and beans	After education	1.8279	0.60827	29	5.087	0.000	Sig.
	Before education	1.1483	0.49623				
Other groups	After education	1.8949	0.41575	29	3.696	0.001	Sig.
	Before education	1.4924	0.50757				
Total awareness	After education	16.3038	1.48959	29	11.391	0.000	Sig.
	Before education	11.5593	1.56910				

Based on the paired t-test with the amount of 5.08, the observed difference at the error level of 0.05 was significant. In other foods, the mean of awareness, before electronic education, was 1.49 with the standard deviation of 0.41, which increased to the mean of 1.89 and the standard deviation of 0.41 after education. Based on the paired t-test, with the amount of 3.69, the observed difference was significant at the level of 0.05, totally, the mean of the elderly's awareness, before education was 11.5 with the standard deviation of 1.56 that increased to 16.38 with the standard deviation of 1.48 after electronic education. This increase, based on the paired t statistic, was significant with amount of 11.39 at the error level of 0.05.

To analyze the degree of elderly's satisfaction on the education of healthy lifestyle through electronics, by using questionnaire, 13 survey questions were used which included the five dimension Likert spectrum from totally dissatisfied to totally satisfied. Therefore, the total amount of the questionnaire scores were compared based on the sample single t-test with the amount of 40 (average satisfaction). The mean satisfaction rate of the elderly was  $52.73330 \pm 5.16576$  (t-statistic: 13.50100). This amount was statistically significant.

Based on the findings of the research, and the satisfaction questionnaire, the level of the elderly's satisfaction was 52.73330 with the standard deviation of 5.16576. Based on the single sample t-test with the amount of 13.50100 at the error level of 0.05, this level of satisfaction, with the fix amount of 40 (average level of satisfaction), there is a significant difference, and, therefore, it is in the suitable satisfaction boundary.

To compare the level of awareness between male and female elderly, after education, the independent t-test is applied.

As it is compared in table 4, the mean of the elderly's awareness after electronic

education in water and liquids in the elderly group of men was 2.69 with the standard deviation of 0.92, and in the female elderly was 2.05 with standard deviation of 0.79. Considering the amount of the independent t which is 2.04 and with the amount of significance at the error level of 0.05, this difference is not significant. In bread and grains, in the elderly group of men, it was 2.88 with standard deviation of 0.82, and in the elderly group of women it was 2.96 with standard deviation of 0.77. Considering the independent t-test which is -0.262 and the significance at the level of 0.05, this difference is not significant. In fruits and vegetables, in the elderly group of men, it was 3.439 with the standard deviation of 0.83. Based on the independent t-test which was 0.874 and the amount of the significance at the error level of 0.05, this difference is not significant. In milk and other diaries, in the elderly group of men it was 4.06 with the standard deviation of 0.59, and in the elderly group of women it was 3.93 with the standard deviation of 0.72. Considering the independent t of 0.506 and the significance amount at the error level of 0.05, this difference is not significant. In meat and beans, in the elderly group of men, it was 1.73 with the standard deviation of 0.52, and in the elderly group of women, it was 1.92 with the standard deviation of 0.68. Considering the independent t-test of -0.875 and the amount of significance at the error level of 0.05, this difference is not significant. In other foods, in the elderly group of men, it was 1.84 with the standard deviation of 0.43, and in the elderly group of women, it was 1.94 with the standard deviation of 0.43. Considering the independent t-test of -0.711 and the significance at the error level of 0.05, the difference is not significant. Totally, in the degree of the male elderly's awareness after the electronic education was 16.65 with the standard deviation of 1.40 and the mean of the

**Table 4.** The Independent t-test table to examine the effect of electronic education in increasing the elderly's awareness

Food group	Groups	Mean	Standard deviation	Degree of freedom	T-value	Significant	Result
Water and liquids	Man	2.6960	0.92072	28	2.049	0.050	NS
	Woman	2.0518	0.79233				
Bread and grains	Man	2.8856	0.82061	28	-0.262	0.795	NS
	Woman	2.9623	0.77950				
Fruits and vegetables	Man	3.4349	1.06046	28	0.874	0.389	NS
	Woman	3.1298	0.83815				
Milk and grains	Man	4.0612	0.59484	28	0.505	0.617	NS
	Woman	3.9389	0.72522				
Meat and beans	Man	1.7303	0.52476	28	-0.875	0.389	NS
	Woman	1.9255	0.68603				
Other groups	Man	1.8404	0.43077	28	-0.711	0.483	NS
	Woman	1.9493	0.40758				
Total awareness	Man	16.6500	1.40120	28	1.288	0.208	NS
	Woman	15.9575	1.54142				

NS: Non-significant

female elderly's awareness after the electronic education was 15.95 with the standard deviation of 1.54. Considering the t amount, it was 1.28 with significance of 0.208 at the error level of 0.05. No significant difference was observed between the awareness of the male and female elderly.

#### 4. Discussion

The present research has been conducted to study the effect of electronic education of healthy lifestyle on the elderly's knowledge and satisfaction level. The results denote that the old people's knowledge level in the pretest E-education (film) has been meaningfully higher than that of the posttest. Thus the findings indicate that electronic education method has positive effect. To support the aforementioned findings, Atreja stated that E-learning covers more than a third of the current educational projects and it probably will encompass half of E-learning activities in the coming years (9).

In the study titled "The elderly's knowledge, attitude and performance about healthy lifestyle in old age period in Tehran in 2003" performed by Samadi et al., the study subjects had relatively low or little knowledge, attitude and performance regarding healthy lifestyle

that depicts the necessity of an accurate and comprehensive planning about healthy life for the elderly (15). Ghasemi et al. conducted a research to promote the nutritional health of the elderly residing in that hospice using MNA tool. According to this study results, 35.9% of the old people suffered from very serious malnutrition, the value which decreased by 18.3% after education (16). The results of studying the nutritional intervention titled "The effect of nutrition-based educational classes for a low-income old people group in the USA" by Viteri in 2006 focusing on healthy diet behaviors among the participants revealed that based on the food pyramid guide and food labels, no difference has been observed in the diets of eating fruit and vegetables. However, the results of two months after the intervention have reported some increases in consuming fruit and vegetables and using food labels. Thus, in this study, it is recommended to educated nutrition to the elderly using food pyramid form and food labels (17). The research by Park; suggested that when the learners find out that learning an educational course is easy, their satisfaction with the educational course will rise. In contrast, if learning the educational course material is felt difficult for them, their satisfaction will drop (18).

In the study conducted in Canada in 2009 as “Nutrition Policy for the Elderly” revealed that despite the nutritional risks identified in this population, it is required to plan a comprehensive program for the old people and the nutritionists need to be supported for nutritional plan for old people in Canada (19). In the research conducted in the USA in 2010 by Wunderlich titled “The nutrition-based educational methods influencing nutrition risk factors”, it was shown that nutrition-based education can lead to positive lifestyle changes that in turn influences the old people’s health; thus, it is critical to particularly focus on the elderly’s nutritional requirements (3). The study performed in Spain as “Participatory learning strategies by nurses in training nutrition to the elderly” suggested that participatory learning boosts nurses’ nutritional knowledge enhancement potential in working with old people since the problem related to lack of education and nutritional science is even perceived among the other age brackets (20). Kamp et al. have done a research in the USA food institute about training nutrition and food plan for the elderly. The study results indicated that the policy for curbing costs has to be in line with nutritional education in long-term care plans with nutritional educations to the elderly and caring at home. So that the younger age groups have the opportunity at home for appropriate food trainings and access correct nutritional programs and the elderly also benefit from better and high quality food.<sup>1</sup> In 2010, the study done in Canada as “To determine the knowledge and behavior change after choosing nutritional pattern among the elderly” demonstrated that the method behind sending simple nutritional education messages has been more effective in reducing malnutrition and behavior change and knowledge increase compared with the method called education through pamphlets. Thus, planning and

executing nutritional programs for the elderly appropriately helps them to raise their nutrition knowledge and change their behavior in diet (21). Regarding the mentioned study results, the researcher believes that using electronic education method as substitution or supplementary for the traditional one can be a suitable approach applied for the elderly. Though the results of the present research have some limitations namely the results of educating through the mentioned method was only based on nutrition education content and it has not been assessed whether it can be generalized to the other old age healthy lifestyle issues like diseases, sport, and so on that is itself a challenge in conducting further studies. Of the other restrictions in this research, we can mention the samples being confined to the Retirement Club elderly so that the researchers recommend to conduct broader and more various studies in the elderly samples living in rural or urban areas, nursing homes in future. On the other hand, considering the old people unwilling to be present at traditional classes due to different reasons, the film-based education is more effective.

### ***Acknowledgement***

Hereby, we greatly appreciate Science Research Center at Mazandaran University of Medical Sciences for supporting this research project financially and also all the elderly participating in this study, social security retirement club, Sari-located welfare office, the daily rehab center of Saraye Mehr in Sari, With the center for health in Babol (Rehabilitation center, seniors’ Babol daily training Center under welfare organization, the elderly Health Center of Mazandaran Medical Science University health department and the elderly health department of Sari Health Center cooperating with us sincerely in this study.

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