Investigation of effects of educational intervention based on precede model on promoting healthy diet for elders in Tehran, 2014-2015

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A B S T R A C T

Due to increasing population of the elderly and do to their health especially healthy nutrition in old age, that can affect the amount of death, disability and quality of life in them, the present study was designed to investigate the educational intervention effect on healthy nutrition enhancement in the elderly. This quasi-experimental study was conducted on 78 old people, before and after the intervention, in two groups of Case and control. Before the intervention, the research-made questionnaire on nutrition in the elderly was completed in two groups. The intervention program was conducted based on the Precede model and then one month after the re-intervention, both groups completed the questionnaire. The collected data were analyzed using SPSS V21 software, paired t-test and t-test. In the case group, the average age was 68 ± 3.53 and in the control group was 68.36 ± 4.69. In terms of behavior, enabling, predisposing, reinforcing factors average score, there was a significant difference in both groups after the intervention ($P<0.001$). Using Precede model can lead to increasing awareness, attitude and changing behavior among the elderly to have a healthy nutrition.

Introduction

Because of some advances in medical and health sciences and social development around the world even in developing countries and consequently in Iran, the elderly population is increasing (1).

Gerontologists have investigated aging and its induced changes based on social, biological, psychological and situational processes. These changes can be affected by life events, diseases, genetics, socio-economic factors and lifestyle. (2)

Today, due to developing the nutrition science, scientists believe that healthy eating can guarantee our health. Relationship between some food toxins, the incidence of various types of cancers and a variety of gastrointestinal disorders caused by improper nutrition, cardiovascular diseases associated with special diets and etc. confirm the close relationship between diets and physical and mental health among people in a community. Research shows that proper eating habits such as limiting the calorie intake and consumption of antioxidants can lead to elderly health and longevity.

Although the nutrients needed by the elderly and the young people are the same, due to decreasing the physical activity and lean body mass and increasing the fat mass in the old age, our body needs fewer calories than in the past and if it receives energy *in excess* of that *required*, problems and complications such as obesity, high blood pressure etc. are created for them. Therefore, a proper nutrition training to provide health and control the complications and some diseases in this age group can be effective.

Using appropriately health education theories is necessary to make the health education programs effective (3). One of these models is "the precede model" which was presented by Lawrence Green. Each letter in PRECEDE represents a word that collectively make up the name of this model.

These letters are as follows: P=Predisposing, R=Reinforcing, E=Enabling, C = Causes (would be able to recognize the causes), E = Educational, D = Diagnosis, E = Evaluation. This model is one of the process models to change the behavior and investigate the possible outcomes of an educational program.

Due to the importance of nutrition in the elderly and providing an appropriate training for this group, the present study was designed to investigate the effect of the educational intervention based on the precede model to enhance the healthy eating pattern in the old age.

Materials and methods

Design

This study was a pre-post interventional quasi experimental study.

Research community

The seniors who were covered under health centers under Tehran, Iran and ShahidBeheshtiUniversities of Medical Sciences.

Research place

Health centers of medical sciences universities located in Tehran.

Research sample

In this study, the seniors who had health records in health centers andthey were willing to participate in the study were evaluated.

Data collection tool

In this study, the data collection tool was a researcher-made questionnaire on healthy nutrition in the old age. The questionnaire includes several sections:section one: demographic questions, 10 questions;section two: knowledge questions, questions 1-14; section three: attitude questions, questions 15-25; section four: beliefs questions, values and habits, questions 26-35; section five: enabling factors, questions 36-38;section

six:reinforcing factors, question 39-41 and section seven: questions related to behavioral performance, questions 42-48. Each questionwas graded based onLikert scale ranging from zero to two in the knowledge section and from one to five in the other sections.

To determine the validity of the questionnaire, 10 professors specialized in the field of health education were consulted. Then, to determine its reliability, 10% of the seniors were entered in a pilot study, and after collecting the questionnaires, *Cronbach's alpha coefficient* was calculated. Obtained coefficients for knowledge questions was 0.85, attitude: 0.91, beliefs, values and habits: 0.97, enabling questions: 0.89, reinforcing questions: 0.87, behavioral questions: 0.97.

Sample size and sampling method

The method of sampling was available and the sample size was calculated based on the following formula:

$$n = \frac{2 \left(Z_{1-\alpha/_2} + Z_{1-\beta} \right)^2 \sigma^2}{(\mu_1 - \mu_2)^2}$$
$$\frac{2(1.96 + 1.64)^2 (89.4)}{(89.6 - 58.3)^{\,2}} = 18.2 \sim 19$$

Procedure

After receiving permission from the Ethics Committee of the University in this project, half of the members of the sample group fell into the case group and the other half fell into the control group. The aims of the study were explained to both groups and the people, after announcing their approval consciously, were entered to the study. Both groups were examined two times using the questionnaire on healthy nutrition in the old age.Along with the first measurement, pre-

test was administered and along with the second measurement, post-test was performed. The difference was that the case groupwas received the independent variable (training based on the precede model), but in the control group the independent variable was not applied.

Data analysis

Using descriptive statistics methods, descriptive parameters of data (frequency distribution tables, mean and standard deviation) and in the analytical section, t-test (paired and independent) have been used. The significant level has been considered $P<0.05$.

Results and Discussion

In this study, 78 elderlies covered by health centers of Tehran University of Medical Sciences were studied. The average age in the case group was 68 ± 3.53 and in the control group was68.36 ± 4.69. Gender distribution was almost identical in both groups. Most of the subjects in both groups were married and the majority of them were under diploma.And in terms of demographic variables, no significant difference was observed between two groups ($P>0.05$) (Table 1).

In the intervention group, after training, the results of the study changed and the total score of different structures of precede increased.So that the average of knowledge score in the intervention group after training 4.45 score increased.While in the control group, this only 0.37 score increased. The average of attitude scorein the case group after training 8.08 score increased, while in the control group, the differenceof scores before and after intervention was 0.59. The results showed that the scores of enabling factors and behavioral factors in the case

group significantly increased more than them in the control group and a significant difference was observed between the case and control group after the intervention (P<0.001). (Table 2).

The results of this study showed that training using precede model has an effect on increasing the level of awareness, changing improper attitudes and behaviors and gaining proper behavior about nutrition among elderlies. This change was observed in some components in the control group which could be due to increasing the elderlies' sensitivity, in the control group, to gain awareness of other resources after completing the questionnaire. In another study conducted by Afkari and colleagues in 2009-2010, the effect of educational intervention based on the precede model on the improving the quality of elderlies' life was studied. The results of their study proved that the average score of all components of the "precede model" including predisposing (awareness and attitudes), enabling, reinforcing and behavioral factors and therefore the quality of elderlies' life in the intervention group compared to the control group, showed a significant difference after the educational intervention (p <0/05) (1).

Table.1 Comparison of distribution of demographic variables frequency between case and control group

Qualitative variables	case		control		P-value
	number	percent	number	percent	
Education level					
Under diploma	27	69.23	27	69.23	0.79
diploma	9	23.07	8	20.51	
Above diploma	3	7.69	4	10.26	
gender					
female	19	48.72	20	51.28	0.67
male	20	51.28	19	48.72	
Marital status					
married	37	94.88	35	89.75	0.63
single	0	0	0	0	
Other (Divorced spouse and spouse died)	2	5.12	4	10.25	
Employment status					
Retired	13	33.33	15	38.46	0.35
Governmental	2	5.13	1	2.56	
Free	9	23.08	7	17.95	
Unemployed	4	10.26	2	5.13	
Housewife	11	28.20	14	35.90	
Quantitative variables	**mean**	**Standard deviation**	**mean**	**Standard deviation**	
age					
	68	3.526	68.36	4.687	0.82

Table.2 Comparison of average of components scores of Precede model in the case and control groups before and after intervention

variable	The intervention group		t-test Paired	The control group		t-test Paired	T-test	
	Before intervention	After intervention		Before intervention	After intervention		Before intervention	After intervention
	Mean and Standard deviation	Mean and standard deviation	p	Mean and Standard deviation	Mean and standard deviation	p	p	p
The average of awareness	4.08± 22.13	1.73± 26.58	0.001<	4.19± 21.37	4.02± 21.74	0.004<	0.353	0.001<
Attitude score	4.69± 42.52	3.52± 50.60	0.001<	4.45± 41.25	4.46± 41.84	0.001	0.16	0.001<
The beliefs and values and habits score	4.80± 41.80	2.37± 48.17	0.001<	4.51± 41.82	4.50± 42.35	0.001<	0.98	0.001<
The enabling factors score	1.99± 9.35	1.51± 11.43	0.001<	2.05± 9.27	9.45±1.99	0.01	0.85	0.001<
The reinforcing factors score	1.70± 11.11	1.04± 12.78	0.001<	1.79± 11.25	1.83± 11.37	0.03	0.69	0.001<
behavior	3.31± 25.64	1.96± 30.96	0.001<	4.26± 23.82	4.41± 24.550	0.001	0.018	0.001<

The results of Orouji and colleagues in 2006-2007 showed that the average scores of predisposing (awareness and attitude), reinforcing and enabling factors in the intervention group in where this model had been taught, compared to the control group showed a significant statistical difference (P<0.05) (4).

The results of Hazavei and colleagues' study which was conducted to investigate the effect of an educational program, based on the precede model, on depression in patients who had had coronary artery bypass surgery, showed a reduction of average score of depression in the intervention group compared to the control group after the intervention and also a significant increase in the average score of predisposing, enabling, reinforcing factors and predictive behaviors from depression in the intervention group compared to the control group after the intervention (5).

The results of Salehi and Forouzan Heidari's study represented a significant increase in the structures of precede model and improvement of predisposing, enabling, reinforcing and behavioral factors (6).

CuyCastellano and his colleagues released the results of a study in which predisposing, reinforcing, enabling and also social, environmental and behavioral factors related to changes in eating behaviors among a population of men in Mississippi were

investigated. In this study, evaluation of environmental, behavioral, educational and management phases of precede-proceed model was conducted. The interviews findings showed that gender-cultural roles and the life style as social-environmental factors, which should be considered in nutrition interventions, affect predisposing, reinforcing and enabling eating factors (7).

Doshmangir's study also proved that the average total score of life quality of elderlies in two groups of intervention and control after the educational intervention and based on the precede model, had a significant statistical difference (8).

Conclusion

Due to the results of this study, designing and conducting an educational program based on the precede model can improve eating behaviors in elderlies.

References

1. Afkari Mohammad Ishaq, Solhi Mahnaz, Matin Habibe, Hosseini Fatemeh, MansourianMorteza,2010-2011, the effect of education intervention on the qualitative enhancement of elder's life based on Precede model
2. YektaMaram, Ali Mohammad and Sokhangooee Yahya. (2011-2012). The importance of nutrition in old age. Tehran: State Welfare Organization
3. Mohammadi N, Rafiee Farsh, Akbari MA, Jamshidi H., (2005-2006). Health Education (Introduction to Applied Concepts) for health education experts, MehrRavesh
4. Oruji Muhammad Ali, Hashemi SeyyedIraj, Hazavei Seyyed Mohammad Mehdi, CharkaziAbdo Al Rahman, JavaheriJavad, Moazzeni Mohammad, 2012-2013, 51, The impact of the educational program on preventive behaviors from brucellosis among villagers in Khomein town based on Precede model.
5. Hazavei SMM, L, SabzMakan L, Hassanzadeh A,Rabiee K, 2008-2009, 40, The impact of an educational program, based on Precede model, on depression in patients who had coronary artery bypass surgery.
6. Salehi Leila, Heidari Froozan, 2010-2011, 21, Application of precede programming model to improve eating behaviors related to cardiovascular diseases in a rural community.
7. CuyCastellanos, D, Downey L, Graham-Kresge S, Yadrick K, ZoellnerJ, Connell CL. Examining the Diet of Post-Migrant Hispanic Males Using the precede-proced Model: Predisposing, Reinforcing, and Enabling Dietary Factors. J Nutr Educ Behav.2012; 1-10
8. Doshmangir Parinaz, Shirzadi Shayesteh , Tagdisi Mohamad Hossein, Doshmangir Leila. Effect of an Educational Intervention According to the PRECEDE Model to Promote Elderly Quality of Life. Journal of Education and Community Health2014; 1(2): 1-9.