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## Exploring the Effectiveness of Nutritional Instruction on Changes related to the Nutrition Behavior in the Elderly Population.

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### ABSTRACT

Aging comes with its associated problem. This study aimed to explore the effectiveness of nutritional instruction on changes related to the nutrition behavior in the elderly population. The population consists of all elderly people in Bijar. 120 senior citizens (Male, female), over 60 years old, with a cluster sampling, including two stages were selected in a semi-experimental method and were placed in two groups (control and intervention). Measuring nutrition was done for both groups in two stages; one before instruction and the second was two months after receiving the instruction. Eventually, data were collected via nutrition questionnaire and analyzed by statistical test using SPSS. Findings showed that nutrition instruction significantly affects nutrition awareness in the elders. The results had a significant effect on their information about nutrition. Significant differences were observed between male and female senior citizen according to the level of information about nutrition. Instructing old people about nutrition helps to improve their awareness and attitude and causes changes and improvements of nutritional behaviors in their life. The level of information in the female seniors was more than the male seniors and also the permanent information was more observed in older people living in cities than villages.

**Keywords:** senior citizen, nutrition, instruction

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## INTRODUCTION

Aging is one of the most important demographic, social and economic issues in the world. It is increasing in the developing world as well as other parts of the globe. The aging has become a global concern [1]. Several definitions are used to describe the age in which people become old, but there is no general agreement on the age in which a person becomes old. Calendar age should be considered equivalence with biological age to determine the threshold of entry into old age. While, both calendar and biological age are not necessarily synonymous. The threshold of old age is attributed to various factors such as the age of entry into the labor market, life quality, retirement age and life expectancy. In many African countries, life expectancy is low, and old age at onset is about 50 years old. Moreover, in the developing countries, the starting old age is different in relation to the development level and life expectancy. In developed countries, life expectancy is higher than the rest of the world. In general, the age of 65 years is considered as the starting of the old age [2].

Literally elder means increasing age and getting older [3]. Usually, aging is the last period of the life cycle that encompasses all living things and this phenomenon is increasing in the recent decades. Due to the fact that the physical and mental characteristics of the aging process is different among people, it is impossible to determine an age range for aging. In addition, aging is a relative matter and its starting is attributed to the time and place. Nevertheless, aging defined as 65 years of age and older. Sometimes, there are differences in age criteria, but it seems that the age of 65 years is a suitable criteria for identifying the old age according to the trilogy grouping [1]. Population proportion in the 65 years age group and older represent the aged population percentage. The aging population increased with increasing this proportion [4]. According to the General Population and Housing Census in 2012, the population proportion of people aged 65 years and over to total population was 7.5 in Iran [5]. By considering the Iranian population and growth rate of 1.5 percent in Iran, it is anticipated that this growth rate will increase to 14.5 in 1404 [6].

Older people are potentially vulnerable, especially when they are affected by nutritional problems. So, without proper precautions, the risk of significant problems is expected in social and health care systems [7]. Raising knowledge of elderly people about the important role of proper nutrition in maintaining health is very important. To prevent the disability in elderly people, teaching them about the effect of various topics on health such as exercise, nutrition, and social activities can be useful to improve the health of the aging population in the years to come. Training is any pre-planned activities and its aim is to create an inclusive learning. Nowadays, the advancement of information technology allowed a more preventive measures through electronic methods for older people such as training courses in relation to proper nutrition. Safari et al. in their study on the effect of lecture and showing on the knowledge and attitude of elderly people concluded that both of them were effective. Selecting a suitable method for training should be considered by the following factors: cost-effectiveness, flexibility, convenient use, enhancing the quality, and availability. Although, the program quality and cost-effectiveness are the most important options in education. Moreover, there should be a balance between product quality and cost of education [8-12]. Nutrition as a reinforcing factor for body and soul and an essential factor for life has a great value. Energy demand declines during aging. This is due to getting older, reduced physical activity, and a reduction in energy. Ismaili fakhar and Zand studied the nutritional status and related factors in elderly patients. They reported 53.3 percent of the studied population had malnutrition and 27.1 percent was at risk of malnutrition. Roozbeh et al. showed that nutrition and lifestyle among elderly people are important issues that have received a little attention in developing countries. The necessity of attention to nutrition for keeping the life quality and health in elderly people is recognized. Elderly people are potentially vulnerable to malnutrition [13]. Because the aging process is associated with physiological, economic and social factors affecting the physical and mental performance [14]. In the old age, decreased appetite and weight loss are common and various factors such as physiological function and acute and chronic diseases in these ages affect the nutritional status. On the other hand, reducing the sense of taste and smell, malfunction (due to undesirable dental health) and reduced gastric acid can all lead to a decrease in eating, body mass, and body reserves of nutrients [15].

Previous studies showed that a decrease in nutrients and an increase in the risk of malnutrition was observed with increasing age [16, 17]. Malnutrition is an important risk factor for a number of clinical disorders that despite its abundance in the elderly often remains undiagnosed in this population. Chronic diseases such as obesity, abnormal lipid profile, glucose intolerance, diabetes mellitus, and hypertension are attributed to the diet and affect the nutrition and health of elderly people [17]. It also led to consequences such as reduced performance, reduced life quality and increased mortality [18]. It has adverse effects on their

mental health as well [19]. Poor diet is a predisposing factor for osteoarthritis, diabetes, cardiovascular disease, and increased blood pressure. In addition, it imposes huge costs on the government and causes economic, social, and health complications. So, careful planning is required to solve these issues [20]. Poor nutrition is considered as part of the natural aging process. By contrast, there is a possibility to detect, prevent, and treat it.

Early diagnosis provides the possibility of appropriate intervention. A large number of chronic diseases in the elderly can be prevented or treated using appropriate nutrition. It also emphasizes the importance of screening of nutritional status in the elderly [21]. In general, the nutritional problems increased with the increase of age [22]. Raising knowledge about how to keep health by proper nutrition is important in elderly people. According to the report of Food Association of America in 2010, the nutrition education leads to positive changes in lifestyle among older people and can affect the health of elderly people. Older people are potentially vulnerable, especially when they are affected by nutritional problems. So, without proper precautions, the risk of significant problems is expected in social and health care systems [24]. To prevent the disability in older people, training them about the effect of various topics on health such as exercise, nutrition and social activities can be useful to improve the health of aging population [25]. Kim et al. reported that the nutritional quality index and reduced dietary fat were significantly improved after nutrition education intervention program in elderly people [26]. The results of Perez-Escamilla et al. study showed that, after the nutrition intervention program, there was a significant difference between intervention and control group. Also, they reported that the nutritional status of the interventional group was improved [27]. Estebarsari et al. reported that the training intervention had a positive and significant effect on the knowledge of elderly people and can promote healthy behaviors in this group [28]. Therefore, growing knowledge about how to keep health by proper nutrition is important in elderly people [29]. In this regard, through training, proper diet and regular exercise can change this pattern in elderly population [30]. Training is any pre-planned activities and its aim is to create an inclusive learning. Learning is defined as relatively permanent changes in the behavior of learner, provided that these changes occur as a result of a new experience [28]. Nowadays, the traditional methods of teaching and learning have gradually lost their effectiveness with the advent of new technologies and methods. Learners have to follow the new practices and procedures for the transfer of knowledge and increase their learning to keep pace with the ever-changing environment. In addition, the value of nutrition education programs is related to the effectiveness of these programs. On the other hand, the effectiveness of educational programs is associated with providing appropriate theoretical support and basic health needs [31-33]. So that, selecting the appropriate methods of education is necessary. Selecting a suitable method for training should be considered based on the various factors such as cost-effectiveness, flexibility, convenient use, enhancing the quality, as well as availability. Although, quality is the most important option in education, but cost effectiveness of programs is also important. Moreover, there should be a balance between product quality and education cost [34]. Therefore, elderly education is very important [35].

In previous studies, there was no used inclusive methods in this field. Most of the educational methods are traditional or electronic. Due to the lack of face to face contact in electronic methods, most of the educational information are presented theoretically. On the other hand, there is no assurance of the quality of the received training in the mentioned method. The electronic method is not a useful and efficient method. Also, the traditional method is not based on the elderly demands. So, previous methods are not efficient enough. In this regard, in the present study, we tried to use an efficient and active method through Inquiry for being sure of received the trainings. Moreover, visiting can provide the possibility of building a relationship between the studied population. Also, familiarizing them to others can raise the level of awareness regarding their problems, as well as other methods by elderly people. Therefore, the main objective of this study was to survey the effectiveness of nutritional education on the nutrition behavioral changes in elderly population of Bijar city, Kurdistan, Iran.

## MATERIALS AND METHODS

This quasi-experimental study was conducted as a pretest-posttest with a control group. The study population consisted of all elderly people of Bijar up to the end of 2014. In this semi-experimental study, 120 elderly people (men and women) who were over 60 years were selected using a two-stage cluster (the first step, four urban centers of seven city center and four rural health centers of 15 rural health centers were selected in Bijar city. In the next step, 30 elderly people were randomly selected from the selected centers) and were randomly divided into interventional and control groups. In the present study, nutrition education

was an independent variable. Training was conducted on the interventional group for two days (16 hours). While, the control group received no training at all. Both groups were evaluated before and two months after holding the nutrition education program. The education sessions were carried out according to the handbook of improving healthy lifestyle in the aging (Volume 1, nutrition and exercise) [6], book of elderly nutrition in health and disease [7], and paper of nutrition problems and diet in aging and its related nursing care [8].

A questionnaire was used to evaluate the nutritional knowledge among the elderly people, which contained 20 questions. All knowledge questions were categorized as correct, not correct, and no information. In this questionnaire, score one (1) was considered for the correct answers and score zero (0) was considered for the incorrect and no information answers. After filling out the questionnaire, the scores were summed for each questionnaire, and then were classified into three categories as a percentage. The score in the range 0-50% indicated poor knowledge requiring more training. Scores in the ranges of 50-70% indicated average lasting knowledge requiring educational interventions. Scores in the ranges of 70-100% indicated that the participants had a good lasting information and did not require more retraining or further educational intervention [36]. Before the interview, participants were reassured that their information would remain confidential. The obtained data were analyzed using paired t-test and separate Two-Way ANOVA in SPSS version 20.

**RESULTS**

Descriptive statistics of attachment styles are presented in the following table for both groups.

**Table 1. Descriptive statistics of gender variable in both groups**

Group	Variable	Frequency	Frequency (%)
Intervention	Male	30	0.5
	Female	30	0.5
Control	Male	30	0.15
	Female	30	0.5

As shown in Table 1, in both groups, half of the participants (50%) were males and the other half (50%) were females. According to the results of separate Two-Way ANOVA tests, the nutritional information in the interventional group (M=16.78, SD=1.47) was more than that of the control group (M=11.97, SD=2.98). Moreover, based on the t-test (T=11.22, p<0.0001), there was a significant difference in nutrition information between intervention and control groups. Also, based on the residence in urban and rural area, the nutritional information in the urban population (M=17.23, SD=1.67) was more than rural population (M=16.33, SD=1.10). By considering the scores of t and significant level (T=2.46, p<0.01), there was a significant difference in the nutrition information between elderly people in the urban and rural area. Finally, based on the sex of the participants, the nutrition information in men (M=15.9, SD=1.21) was lower than that of the women (M=17.67, SD=1.15). By considering the scores of t and significant levels (T=5.77, p<0.0001), there was a significant difference in the nutrition information between men and women.

**Table 2. Independent T-test for variables in both groups**

Variable	Parameter	Number	Average	Standard deviation	t	df	p
Nutritional information	Interventional	60	16.78	1.47	11.22	58	0.0001
	Control	60	11.97	2.98		58	
Residence	Urban	60	17.23	1.67	2.46	58	0.01
	Rural	60	16.33	1.10		58	
Sex	Male	60	15.9	1.21	5.77	58	0.0001
	Female	60	17.67	1.15		58	

**RESULT AND DISCUSSION**

Ageing is a natural process, it is one of the stages of growth and evolution in the human population. Moreover, this process is in company with different aspects of psychological and social changes. Therefore, regarding nutritional status, care is necessary to preserve quality of life and health in elders. Aged people are

potentially vulnerable to malnutrition. To improve the nutritional status of the elderly people, nutritional education programs is necessary. According to the results and nutritional information, there are significant differences between both interventional and control groups. So, these results indicated that the educational intervention program had a significant effect on the intervention group compared to the control group. This finding is consistent with the results of previous studies [11, 36, 37]. The knowledge score in the intervention group was increased and this can be a valuable finding. As a prerequisite factor to select an appropriate method and correct attitude, nutritional knowledge is a must. Moreover, there was a significant difference in nutritional knowledge among rural and urban residents. According to the results, the knowledge of the residents in the urban areas was more than rural area. This results is in line with the findings of previous studies [36,38,39]. In addition to improving the nutritional knowledge and attitude in elderly people, educational program can cause an increase in their nutritional behaviors. The nutritional knowledge in elderly women was more than that of elderly men.

Finally, there was a statically significant different between both studied groups. It should be noted that, in this study, the researcher trained the aged group as well. Moreover, due to the choice of the elderly people as the target group, there were numerous problems and difficulties, including communication and earning their trust, encouraging them to participate in the meetings and discussions, and coordinating meetings. Results showed that enabling factors can increase the nutrition knowledge in elderly people as an effective intervention in the interventional group. These factors include information, nutritional skills, nutrition, consulting opportunities, etc., which lead to a change in the attitude of elderly people (poor nutrition to appropriate nutrition). While, in the control group, due to the lack of intervention, there was no significant change in the mean scores of enabling factors. According to the results, the following suggestions and hints may be useful for improving the quality of life in the nutritional health of the elderly; bearing in mind that education has a key role in the prevention and health promotion in every society. In the first step, the nutrition education courses should be held for personnel of health centers by giving them the right information. Then, health care centers should prioritize the nutrition programs in the health care systems to enhance people's health, especially in the elderly people that are covered by the health care system. Nutrition education will be effective when the training is continuously done and using a dietary intervention on the vulnerable groups of society, especially the elderly. Follow-up and evaluation has an effective role in the sustainability of the obtained results. Therefore, the results of the presented education should be evaluated continually by appropriate assessment methods and required interventions.

The main limitation of this study was related to the self-reporting in filling out the questionnaires. Because in practice, it was not feasible to monitor all participants and control their answer. Moreover, there were other difficulties such as telephone follow ups, lack of direct control on the elderly nutrition, lack of facilities, and difficulties in coordinating with the elderly people. As mentioned earlier, coordinating with elders for training sessions was very difficult. According to the above, use of health education models is recommended to achieve correct results in the area of nutrition education for the elders.

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