

# The impact of healthy lifestyle education and integrated care on the quality of life of the elderly

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## Abstract

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**Background:** Due to increasing life expectancy and declining fertility rates, the population over the age of 60 in developed and developing countries is increasing. This matter draws attention toward the improvement of the health of the elderly and consideration of the health and treatment needs of this important group of human society. The aim of this study was to determine the effects of integrated care and educational interventions of a healthy lifestyle on the quality of life (QOL) of the elderly.

**Materials and Methods:** This semi-empirical study was conducted on 180 elderly patients admitted to the health centers in Rafsanjan, Iran. Multistage sampling was performed in the health centers of the city and the suburbs. The subjects were divided into two groups of intervention (n = 90) and control (n = 90). The intervention group was under the program of healthy lifestyle education for a period of 6 months. Data collection tools included a demographic questionnaire and the 36-Item Short Form Health Survey (SF-36). The questionnaires were completed through interviews during two time intervals of before and after the intervention. SPSS software was used for data analysis.

**Results:** The mean ages of subjects in the intervention and control groups were  $71.8 \pm 2.3$  and  $66.4 \pm 2.3$ , respectively. The mean QOL scores of subjects in the intervention and control groups before the intervention were  $56.05 \pm 2.17$  and  $61.39 \pm 1.46$  (out of 100), and after the intervention were  $62.11 \pm 3.03$  and  $56.9 \pm 1.59$ , respectively. The statistical comparison showed that the QOL score of the intervention group after the intervention was significantly higher than before the intervention ( $P < 0.001$ ).

**Conclusions:** The results of this study showed an increase in QOL of the elderly after the intervention compared to before the intervention. Therefore, by educating the elderly as groups and individuals about adopting a healthy lifestyle and by implementing healthcare, their QOL can be promoted.

**Keywords:** Elderly, Healthy, Life Style, Comprehensive Health Care, Quality of Life

## Introduction

Old age is a critical period of human life and attention to the requirements and problems of this period is a social necessity (1). Due to increasing life expectancy and declining fertility rates, the population over the age of 60 is growing around the world; thus, aging may be one of the most important public health problems in the next century (2). According to the United Nations' (UN) report, the elderly population will increase from 10.5% in 2007 to 21.5% in 2050.

In Iran, the increase in life expectancy over the last five decades has steadily increased the elderly population. Based on the population and housing census in 2011, the population of people over 60 years of age had reached 8.26% of the total population of Iran (3).

With the increasing of age among the elderly, changes occur in many aspects of their health. Due to these changes, the elderly are

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susceptible to injuries and reduced quality of life (QOL). The complications of aging can be controlled and the efficiency of the elderly can be increased by modifying their lifestyle and considering their QOL (4). QOL is a multidimensional concept and it includes favorable medical, psychological, and social situations (5). In addition, QOL is dynamic and its meaning varies between people and even throughout an individual's lifetime. It represents social impact on people and also on the perception and interpretation of the individual (6). The World Health Organization (WHO) has defined QOL as an understanding of one's self, the conception of each person of his or her position in life, understanding of the culture and values of where they live, and goals, standards, and interests. This concept is widely affected by a series of factors related to physical health, psychological state, level of independence, social relationships, and personal beliefs (7, 8).

The necessity of improving the health of older people and staying active in later life has prompted health officials to replace the concept of life expectancy with healthy life expectancy. This concept refers not only to the absence of disease, but also to the meaning of life without functional limitations. Maintaining of independence in daily activities and continuing of life through being active by the elderly is the most important issue in promoting the health of older adults (9). Today, attention is not only paid to the extension of life-span, but also to the remaining years of life being spent in comfort and physical and mental health. If such conditions are not provided, scientific developments to provide longer life will be ineffective and hazardous (1). Modifying lifestyle and attention to its quality can greatly increase efficiency and independence of the elderly and help them in controlling the multiple effects of aging and its various treatments (4). In this regard, a healthy lifestyle is a way of life that provides, maintains, and promotes the individual's health and wellbeing and QOL (9). Studies

showed that one-fifth of people with disabilities are in need of help with daily activities and this includes 58% of people over the age of 65. On the other hand, during the process of treatment and care of the elderly, the factors affecting their QOL should be constantly considered. Care and treatment strategies are effective when they can improve the QOL of the elderly (8). The aim of this study was to investigate the effect of integrated care and healthy lifestyle educational intervention on QOL of the elderly.

### Materials and Methods

This was a quasi-experimental study conducted on 180 elderly in Rafsanjan, Iran, in 2013. The subjects were divided into two groups of intervention ( $n = 90$ ) and control ( $n = 90$ ). In this study, the sample size was estimated at 75 patients in each group in two communities according to a pilot study, with regard to 90% power and 5% error, and using the formula to calculate the minimum sample size to compare the means. With the possibility of sample loss (attrition), the total sample volume was equivalent to 200 people (100 people per group). Multistage sampling was used to select patients from health centers of the city and the suburbs. Sampling was performed in 7 health centers located in the East, West, South, and center of the city of Rafsanjan. Elderly people (over 60 years) were selected through random sampling of health records of the households available at the health centers. The subjects were selected from neighborhoods covered by the health centers. After obtaining informed consents from the participants, based on the population of each center, a specific number of elderly who had the inclusion criteria and were covered by the health center were selected to participate in the study. The inclusion criteria included the elderly who had no physical or psychological problems and were able to visit the health centers at the given date. To perform the study, all the participants were

invited to visit the health centers at an appointed date. Then, necessary clarifications about the details, objectives, and the duration of the study were provided for them and written consent forms were obtained.

Data collection tools included a demographic information questionnaire and the standard questionnaire on QOL [the 36-Item Short Form Health Survey (SF-36)]. The SF-36 is one of the most common and the most comprehensive standard equipment in the field. It is used as a standard tool for measuring health outcomes at the international level. It should be noted that the SF-36 was localized and its validity and reliability were verified by Montazeri et al. (10). Demographic information included gender, age, place of residence, marital status, smoking and drugs use, education, occupation, income level, and history of the disease. The SF-36 includes 8 dimensions of physical functioning, role impairment due to physical health, bodily pain, general health perception, energy and vitality, social functioning, role impairment due to emotional health, and mental health. Each of the 8 dimensions obtained a score of 0 to 100. This scoring was obtained based on the standard measure for SF-36. Questions with 3 items had scores of 0, 50, and 100, 5-item questions had scores of 0, 25, 50, 75, and 100, and 6-item questions had scores of 0, 20, 40, 60, 80, and 100. Higher scores indicated better performance (11).

In this study, integrated and comprehensive care had the concept of using risk factors and simple and comprehensive integrated clinical signs at the level of the service-users. In this model, the minimum risk factors and key clinical signs were used for early detection, appropriate treatment, and timely referral. The comprehensive care program for the elderly was designed as a program entitled comprehensive integrated care for the elderly specifically for physicians and non-physicians by the Ministry of Health and Medical Education. In this regard, the elderly referred to the health-treatment centers and health

clinics following the health personnel's announcement.

In this program, in addition to the assessment of hypertensive disorders, the elderly would also be trained on the risk of cardiovascular disease, eating disorders, diabetes, vision and hearing disorders, depression and sleep disorders, osteoporosis, urinary incontinence, tuberculosis, dementia, falls and balance, and immunization to prevent diseases in older people. The cases with the need to be referred to a physician would be notified. At the end of the care process, the elderly at the risk of one or more diseases would benefit from a higher level of care. They would be placed in the referral cycle, and if they did not have any illnesses, they would be placed in the periodic care cycle (12).

Healthy lifestyle education program for the elderly was presented to the participants in two sessions using teaching aids. During the training sessions, a guide to improving healthy lifestyles for the elderly, including nutrition and exercise, as well as educational programs listed in the training manual for integrated care for the elderly published by the Ministry of Health and Medical Education were taught. Healthcare personnel were trained to educate participants, who did not participate fully in both classes, individually when they visited the health centers.

The subjects were followed for six months. At the end of the six months, the intervention and integrated care re-evaluation was performed using the same initial questionnaire and the results were compared. Those in the control group completed the questionnaire at the beginning and the end of the study and the names of this group were given to the healthcare personnel. They were directed not to provide any of the services listed in this group until the end of the study period. If any individual in the control group was mistakenly provided with services, they were removed from the control group at the end of the study. The second series of services were provided for the elderly in the control group at the end of the study period and after completion of the

questionnaire. Both series of questionnaires in all the health centers were completed by one of the trained staff.

The collected data were analyzed using SPSS software (version 22, SPSS Inc., Chicago, IL, USA). Based on the normal or abnormal distribution of data, descriptive statistics and inferential statistical tests were also used.

Kolmogorov-Smirnov test was used to compare data before and after the intervention, and independent t-test was used to compare the mean scores between the two groups. ANOVA was used for comparison between more than 2 groups on some of the variables of the study. Significance level was considered as less than 0.5.

**Table1: Comparison two Intervention and control groups in terms of demographic variables**

Demographic		Intervention group		Control group		P-Value
		N	%	N	%	
Sex	Woman	49	54.4	44	48.9	0.45
	Man	41	45.6	46	51.1	
Residence	City	69	76.7	64	71.7	0.25
	Village	21	23.3	26	28.9	
Age	60-64.9	27	30	31	34.4	0.78
	65-69.9	38	42.2	30	33.3	
	70-74.9	17	18.9	20	22.2	
	75-79.9	6	6.7	6	6.7	
	80-84.9	2	2	2	2.2	
	80<	0	0	1	1.1	
Marriage Status	Marriages	66	73.3	73	81.1	0.29
	Single	1	1.1	1	1.1	
	Widow	21	23.3	14	15.6	
	Divorced	2	2.2	0	0	
	Missing			2	2.2	
Life Entourage	Alone	11	12.2	8	8.9	0.47
	With along	79	87.8	82	91.1	
Level of Education	Illiterate	47	52.2	49	54.4	0.84
	Elementary	30	33.3	28	31.1	
	Middle School	6	6.7	9	10	
	Collegiate	4	4.4	3	3.3	
	Missing	3	3.3	1	1.1	
Job	Employee	2	2.2	2	2.2	0.5
	Retired	25	27.8	23	25.6	
	Free	13	14.4	21	23.3	
	Unemployed	50	55.6	44	48.9	
Family Income	Low	30	33.3	25	27.8	0.55
	Medium	53	58.9	61	67.8	
	High	3	3.3	2	2.2	
	Missing	4	4.4	2	2.2	
Chronic of Disease	Yes	66	73.3	70	77.8	0.35
	No	24	26.7	20	22.2	

## Results

Demographic characteristics such as gender, place of residence, age, marital status, family, education, occupation, income, and history of disease of the two groups are presented in table 1. The mean age of subjects in the intervention group was  $71.8 \pm 2.3$  years and in

the control group was  $66.4 \pm 2.3$  years. The gender distribution in the intervention group was 54.4% women and the control group was 48.9% women. Regarding marital status, the majority of the elderly were married and were living with their spouse (intervention group = 73.3%, and control group = 81.1%). Among the subjects, 52.2% in the intervention group

and 54.4% in the control group were illiterate. Regarding occupation, 55.6% in the intervention group and 48.9% in the control group were unemployed. Household income levels in the intervention and control groups were average in 58.9% and 67.8% of subjects and low in 33.3% and 27.8% of subjects, respectively. Only 3.3% in the intervention group and 2.2% in the control group had high levels of income (Table 1).

Chi-square test showed no significant differences between intervention and control groups in terms of age, gender, residence, marital status, family (living alone or with a companion), level of education, occupation, income, and history of diseases ( $P > 0.050$ ) (Table 1). The before and after results of the intervention group showed a significant difference in the 8 dimensions, except in the energy and vitality dimension and emotional

welfare, following the educational intervention ( $P < 0.050$ ) (Table 2). The mean total scores of QOL in the intervention and control groups before the intervention were  $54.85 \pm 1.45$  and  $61.39 \pm 1.46$  (from 100) and after the intervention were  $60.62 \pm 1.48$  and  $56.9 \pm 1.59$ , respectively.

According to the status of the data, paired t-test was used to compare the mean difference before and after the intervention and between the two study groups. The comparison of mean QOL before and after the intervention in the intervention group showed a significant difference ( $P < 0.001$ ) (Table 2). In the control group, the mean total score of QOL had reduced from  $61.39 \pm 1.46$  to  $56.9 \pm 1.59$ . Paired t-test showed that the difference was significant ( $P < 0.003$ ). This reflected the deterioration of QOL over time in this group (Table 2).

**Table2: Comparison of the mean and SD scores of quality of life Elderly before and after the intervention and control groups**

Quality of life	Mean $\pm$ SD					
	Intervention group			control group		
	Before	After	P-Value	Before	After	P-Value
Physical functioning (PF)	56.05 $\pm$ 2.17	62.11 $\pm$ 3.03	0.006	58.17 $\pm$ 2.90	52.33 $\pm$ 3.11	0.007
Role-Physical (RP)	47.5 $\pm$ 4.39	66.67 $\pm$ 4.54	0.001	70 $\pm$ 4.24	53.61 $\pm$ 5.05	0.002
Role- Emotional (RE)	52.59 $\pm$ 5.02	75.56 $\pm$ 4.14	0.001	71.11 $\pm$ 4.47	60 $\pm$ 4.75	0.015
Energy fatigue (EF)	52.08 $\pm$ 1.76	49.8 $\pm$ 2.01	0.440	51.04 $\pm$ 1.75	56.74 $\pm$ 2.11	0.048
Emotional well-being (EW)	6083 $\pm$ 1.82	6022 $\pm$ 1.85	0.829	60.167 $\pm$ 1.87	62.94 $\pm$ 1.98	0.307
Social functioning (SF)	64.72 $\pm$ 2.12	48.33 $\pm$ 1.41	0.001	50.55 $\pm$ 1.67	58.5 $\pm$ 2.19	0.001
Pain (P)	6067 $\pm$ 2.56	65.89 $\pm$ 3.19	0.189	58.5 $\pm$ 2.19	65.89 $\pm$ 2.80	0.044
General Health (GH)	44.39 $\pm$ 1.46	56.39 $\pm$ 1.54	0.001	52.056 $\pm$ 1.60	52.94 $\pm$ 1.52	0.701
physical health subscale	52.15 $\pm$ 1.78	62.76 $\pm$ 2.06	0.001	59.68 $\pm$ 1.7	56.19 $\pm$ 2.1	0.061
Mental health subscale	57.56 $\pm$ 1.62	58.47 $\pm$ 1.42	0.661	63.11 $\pm$ 1.72	57.56 $\pm$ 1.61	0.003
Total quality of life Index	54.85 $\pm$ 1.45	60.62 $\pm$ 1.48	0.001	61.39 $\pm$ 1.46	56.9 $\pm$ 1.59	0.003

### Discussion

In the present study, the comparison of some demographic variables between the two groups showed that, despite being a quasi-experimental study, the variables in the two groups were the same. It can be concluded that the impact of confounding factors were controlled in this study. The main achievement in this study was illustrating the positive

impact of healthy lifestyle education and integrated care on the QOL of the elderly. This study showed the necessity of paying attention to and dealing with this matter in order to modify the risk factors for QOL reduction. With the increase in life expectancy around the world, and as a result, a substantial increase in the elderly population, not only the length of life of the elderly, but also their QOL requires improvement (13). The aging process and the

degradation of multiple body systems are inevitable. This analytical process is effective on QOL, and therefore, it is necessary to take appropriate measures to protect and promote the health of the elderly (8).

The study population reported better mental health than physical health, which can be due to family and social networks support of older people. On the other hand, since a wide range of physical illnesses is associated with the elderly, it results in an improved mental health compared to physical health in the studied population. In the study by Hekmat Pour et al. on the impact of education on healthy lifestyles, the mental health of the participants was shown to be better than their physical health (9). On the other hand, the mean QOL score in the experimental group increased from 54.85 to 60.62. The aspects with positive changes in this study were physical functioning, role impairment due to physical health, role impairment due to emotional health, bodily pain, and general health. The comparison of the two main subscales showed that the subscale of physical health was promoted more than the subscale of mental health. However, lack of attention to the QOL of the elderly affected their QOL. Therefore, the overall mean score of QOL in the control group had decreased from 61.39 to 56.9 during the six months of the study. These data showed that, in the absence of planning and effective actions in this area, the QOL of the elderly will decrease overtime.

Heydari et al., in a study entitled the effect of self-care educational program on QOL, studied 60 elderly individuals who referred to Omid Elderly Care Center in Borujen, Iran (4). They showed that the QOL of older people had increased after the intervention (4). Rostami et al. trained the elderly in Masjed Soleiman, Iran, based on Orem's self-care model and this method resulted in a significant increase in all aspects of their QOL (13). The results of the study by Salar et al. on the effects of continuous consultation on the QOL of the elderly of Zahedan, Iran, also showed an increase in the QOL score in all dimensions

(8). Hamidizadeh et al. managed to enhance all aspects of older adults' QOL with light exercise training (14). In this study, the dimensions of physical functioning, general health, and social functioning had more evident increase (14). These results were consistent with the present study results regarding physical functioning and general health, but regarding social functioning the results were inconsistent. In all the mentioned studies, all the aspects had increased after education. However, in the present study, dimensions of physical functioning, role impairment due to physical health, role impairment due to emotional health, bodily pain, and general health had increased, while other dimensions had decreased. Therefore, the results were inconsistent with the present study results. These differences might be due to the fact that there are many factors affecting QOL and these factors are different in every society. In this study, the QOL of men was higher than women and was consistent with the study by Alipour et al. on the role of social support in QOL of the elderly (15). Many factors can affect QOL. In addition, special attention to the elderly, periodic examinations, self-care education, creating geriatric clinics, intersectional cooperation, and public policies can improve the health and QOL of the elderly.

This study showed the positive effect of a comprehensive care program and healthy lifestyle education program on the QOL of the elderly. It seems that the use of healthcare and educational programs for the elderly is a necessity and can improve their QOL. Therefore, due to the growing elderly population in the coming years in Iran and since the ultimate goal of healthcare is health promotion in all demographic groups, it is essential that the relevant authorities address these issues through planning and policy making. Healthcare workers are frequently in contact with the elderly due to the nature of their occupation. Therefore, if they could provide simple instructions on adopting a healthy lifestyle and the importance of self-

care for the elderly, not only could they enhance QOL of the elderly, but they could also improve public health, reduce costs, and perform their professional responsibilities.

### Conclusion

According to the results of this study and similar studies regarding the increase of QOL, healthy lifestyle education and performing healthcare can improve the QOL of older people. It should be noted that many factors can affect QOL and these factors are different in every society. Therefore, it is suggested that each society investigate the QOL of the people within their community in order to identify the most important aspects of people's lives in terms of impact on QOL and conduct necessary planning.

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### References

1. Habibi A, Neekpoor S, Seyedolshohda M, Haghani H. Health promotion behaviours and quality of life among elderly people: A cross-sectional survey 2006. *Journal of Ardabil University of Medical Sciences* 2008; 8(1):29-36.
2. Vahdani-Nia MS, Goshtasebi A, Montazeri A, Maftoon F. Health-related quality of life in an elderly population in Iran: a population-based study. *Payesh* 2005; 4(2):113-20.
3. Ministry of Health and Medical Education. National program of Health system Upheaval, welfare and dignity of the elderly in Iran. Tehran: Ministry of Health and Medical Education; 2012.
4. Heidari M, Shahbazi S. Effect of self-care training program on quality of life of elders. *Iran Journal of Nursing* 2012; 25(75):1-8.
5. Walker A. Understanding quality of life in old age. 1<sup>st</sup> ed. United Kingdom: Open University Press; 2005. P.14-26.
6. Van Malderen L, Mets T, Gorus E. Interventions to enhance the quality of life of older people in residential long-term care: A systematic review. *Ageing Res Rev* 2013; 12(1):141-50.
7. World Health Organization (WHO). Measuring quality of life: The World Health Organization quality of life instrument. Geneva: WHO; 1993. WHO/MSA/MNH/PSF/97.4.
8. Salar AR, Ahmadi F, Faghihzadeh S. Study of effectiveness of continuous care consultation on the quality of life of elderly clients. *Zahedan Journal of Research in Medical Sciences* 2004; 5(4):261-7.
9. Hekmatpoue D, Shamsi M, Zamani M. The effect of healthylifestyle educational programs on the quality of life of the elderly in Arak. *Arak University of Medical Sciences Journal* 2013; 16(3):1-11
10. Motamed N, Ayatollahi A, Zare N, Sadeghi-Hassanabadi A. Validity and reliability of the Persian translation of the SF-36 version 2 questionnaire. *East Mediterr Health J* 2005; 11(3):349-57.
11. Baraz Sh, Mohammadi E, Broumand B. The effect of self-care educational program on decreasing the problems and improving the quality of life of dialysis patients. *Scientific Journal of Kurdistan University of Medical Sciences* 2006; 10(4):69-79.
12. Khoshbeen S, Madani Z, Alizadeh M, Pourmorovat S. Directory educational of Integrated care and comprehensive of the elderly. Tehran: Ministry of Health and Medical Education; 2009.
13. Baraz Sh, Rostami M, Farzianpor F, Rasekh A. Effect of Orem Self Care Model on elderly's quality of life in care centers of Masjed Suleiman in 2007-2008. *Arak University of Medical Sciences Journal* 2009; 12(2):51-9.
14. Hamidizadeh S, Ahmadi F, Aslani Y, Eatemadifar S, Salehi K, Kordeyazdi R. Study effect of a group-based exercise program on the quality of life in older men and women in 2006-2007. *The Journal of Shahid Sadoughi University of Medical Sciences* 2008; 16(1):81-6.
15. Alipoor F, Sajadi H, Forozan A, Biglarian A. The role of social support in elderly quality of life. *Social Welfare Quarterly* 2009; 8(33):149-67.
16. Barrett CJ, Smerdely P. A comparison of community-based resistance exercise and flexibility exercise for seniors. *Aust J Physiother* 2002; 48(3):215-9.