

Investigating the effect of an empowerment program on physical activity of the elderly in Rezaeian Health Center, Iran, in 2014

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ABSTRACT

Background: Reaching geriatric period is one of the greatest successes in human Beings. The older adults are predisposed to risk of many diseases and disabilities, and physical activity is one of the most efficient methods to prevent geriatric period disorders. Therefore, the present study aimed define the effect of an empowerment program on physical activity of the elderly residing in Shahid Rezaian health care center in 2014.

Materials and Methods: This quasi-experimental study was conducted on 70 older adults, age 65 years and over, selected through convenient sampling and assigned to groups of study and control. Study group was divided into 5 seven-member subgroups and a one-hour session of physical exercises was administrated for them once a week for eight sequential weeks. All subjects evaluated before and after intervention by International Physical Activity Questionnaire. Subjects' physical activity was scored, based on the personal activity protocol, and the results were compared. Significance level was considered as $P < 0.05$.

Results: Frequency distributions of the female subjects were 29 (82%) and 28 (80%) in study and control groups respectively. Mean (SD) scores of physical activity were 347.8 (174.1) and 321.7 (119.2) before intervention, and 641.3 (240.6) and 331.3 (101.5) after intervention in study and control groups respectively. Independent t-test showed a significant increase in physical activity score in study group, compared to control ($t = 4.06$, $P < 0.001$).

Conclusions: The level of physical activity can be improved in the elderly through application of an empowerment program so as to take steps toward solving their immobility related problems and promoting their health through application of an empowerment program at this period of their life.

Key words: Elderly, empowerment, health, health problems, physical activity

INTRODUCTION

Today, the elderly are the fastest growing demographic group in the world due to increase in life expectancy. In 2000, the population of

individuals above 65 years of age was 600 million people globally, which constituted 10% of the total population. Researchers predicted that this number will reach about 2.2 billion people in 2050, which is 21% of the global population.^[1]

In 2008, the population of those aged 65 years and older was equal to 55 million people in the USA. It has been estimated that this population will be doubled (nearly 90 million people) in 2060^[2] and they will constitute 12% of the population.^[3]

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Submitted: 13-Jan-15; Accepted: 13-Dec-15

Access this article online	
Quick Response Code:	Website: www.ijnmrjournal.net
	DOI: 10.4103/1735-9066.185570

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How to cite: Manavi N, Abedi H. Investigating the effect of an empowerment program on physical activity of the elderly in Rezaeian Health Center, Iran, in 2014. Iranian J Nursing Midwifery Res 2016;21:345-50.

In the 2011 census, 5.7% of Iran's population consisted of individuals aged 65 years and older.^[4] It is expected that this number will increase up to more than 14% during the next 20 years.^[5]

The elderly are considered as vulnerable individuals facing a series of specific problems which reduce their quality of life (QOL).^[6] Moreover, the level of physical inactivity is increasing in many countries and is observed more in high-income countries.^[7] Only one-fifth of seniors perform enough physical activity.^[8] In addition, 85% and 75% of US seniors are inactive women and men, respectively.^[9]

In Iran, about 35.7% of the population (25.2% men and 46.5% women) is physically inactive, which is higher than the global average.^[10] Furthermore, 86.3% of the elderly in Isfahan, Iran, do not have sufficient amount of physical activity, according to the World Health Organization (WHO) classification.^[11] Physical inactivity has risky consequences for public health all around the world.^[12] It is the fourth risk factor of global mortality;^[13] 5–10% of mortality among the elderly each year is due to this issue.^[14] Physical inactivity is the cause of about 21–25% of breast cancer and colon cancer cases, 27% of diabetes cases, and 30% of ischemic heart diseases cases.^[12]

Scientific developments and urbanization have reduced the physical activity. Many activities which were previously performed physically by individuals are performed now by machines. Increasing working hours and its stress are the causes of lack of time and patience to deal with physical activity.^[15] Its other causes among lifestyle changes include using the Internet, performing personal tasks, working behind a desk, and using cars instead of bicycles.^[12]

In addition, chronic diseases cause limitation in activity for the elderly, which requires empowerment programs in order to prevent dependency and disability.^[16] The majority of senior citizens need to strengthen their movement and muscles.^[17] On the other hand, empowerment was one of the goals of accessible health for people until 2010.^[18] In addition, with increasing age, senior citizens experience problems related to self-care,^[19] which have negative effects on their self-esteem and result in inferiority, weakness, helplessness, and ultimately disappointment and discouragement.^[16]

One of the most important ways to reduce changes due to aging is physical exercise. Physical exercises cause compatibility, increase the mobility period, create strong bones, control obesity, and maintain and even strengthen the capacities of cardiopulmonary, neurological, and musculoskeletal function, and increase fitness for the elderly.

They can also reduce the rate of deaths due to chronic illnesses and the symptoms of depression.^[20] Furthermore, hip fractures due to falls can be prevented with increasing bone density and muscle strength.^[21]

Unfortunately, despite the basic roles of nurses in different fields of elderly care and certain empowerment programs that are performed by directing and coordinating nursing care, a lack of these programs can be observed. Thus, the necessity to deal with these major issues in order to improve the health of the elderly is increased by 100-fold. Moreover, the researcher's observations are also effective in the selection of the subject. Those who work in the field of health care services witness frequent admissions of this stratum of the society to the hospitals daily. Sometimes low efficacy caused by induction of relatives and society's attitude toward them, lack of faith in their abilities, and severe dependence caused that they couldn't meet the least requirements. The implementation of the empowerment program can prevent the dependency of the elderly on others and would eliminate their inferiority complex, weakness, and helplessness. The aim of this study was to determine the impact of the empowerment program on physical mobility of senior citizens referred to Shahid Rezaeian Health Center, Iran, in 2014.

MATERIALS AND METHODS

This was a semi-experimental research performed on 70 individuals (>65 years of age and older) with a family file at the health center.

In this study, the impact of the independent variable (empowerment) on the dependent variable (physical activity) was measured before and after the test. The inclusion criteria were: Age over 65 years, willingness to participate, the ability to answer questions, the absence of contraindications for sports, and the ability to participate in meetings. The exclusion criteria included participant's withdrawal from the study due to any problem. First, people of over 65 years of age with family files in Shahid Rezaeian Health Center were invited to refer to the health center on a specific date. After justification and explanation of the objectives and time period of the study and obtaining written consent forms to participate in the study, the subjects were selected based on the inclusion criteria. The participants were randomly placed into experimental and control groups based on the objectives and odd and even numbers of family files in the health center. The Individual and International Physical Activity Questionnaire was used for data collection.

This questionnaire evaluates the responder's physical activity during the past week, and activities lasting longer

than 10 min were recorded. These activities included job activities, movement, household chores, and leisure activities which were classified as vigorous physical activity, average, and hiking. The empowerment program was conducted with a focus on physical activity among the elderly for the studied units.

The topics discussed in the intervention were obtained from relevant and influential texts and the Ministry of Health and Medical Education guideline to healthy lifestyle promotion for the elderly. This guideline includes the importance of physical activity for the elderly, the benefits of physical activity, problems of inactivity and inadequate physical activity, recommendations for physical activity, stretching exercises, strength, balance, static contractions (isometric), and recommendations for walking.

The experimental group was divided into five groups with seven participants in each of them because of administrative problems. Physical exercises were presented 1 h a week for 8 weeks using educational aids, audio-visual aids, lectures, group discussions, questions and answers, production and distribution of pamphlets and booklets, and practical exercises. Training and education sessions were conducted at the health center and booklets containing images were distributed among the subjects. Moreover, they were asked to do these exercises at home at least twice a day. The participants in both control and experimental groups were evaluated using the same initial questionnaires immediately after the intervention, and the results were compared with each other. This questionnaire is an international and standardized questionnaire, the validity of which has been confirmed in 12 different countries.^[22]

The validity and reliability of the questionnaire was approved by Kelishadi *et al.*^[23] In the research by SeyedEmami *et al.* on the effect of physical activity training on knowledge, attitude, and behavior of health contacts, the test-retest reliability of the questionnaire was assessed and the correlation coefficient was 0.74.^[24] The score of the questionnaire is calculated with the total amount of physical activity in the last week of based on the metabolic equivalent of task (MET)-minutes/week, and MET is a unit used to estimate energy expenditure of physical activity. A MET value is roughly equivalent to the energy consumption of an individual in resting position. All physical activities can be categorized as multiples of energy expenditure in resting position.

In this questionnaire, walking, moderate physical activity, and intense physical activity were considered as 3.3 METs, 4 METs, and 8 METs, respectively. To calculate the total amount of physical activity in each week, the amount of walking ($\text{MET} \times \text{minute} \times \text{day}$), moderate physical activity

($\text{MET} \times \text{minute} \times \text{day}$), and vigorous physical activity ($\text{MET} \times \text{minute} \times \text{day}$) were added up. Content validity was used to determine validity of the demographic characteristics questionnaire. Therefore, the researcher presented the questionnaire to several nursing and midwifery faculty members of Islamic Azad University, Khorasgan Branch, Isfahan, Iran, and provided the necessary clarifications. Their opinions were obtained and the necessary changes were applied in the final questionnaire. SPSS software (version 19; SPSS Inc., Chicago, IL, USA) was used for analyzing the data.

Independent *t*-test was used to compare the mean score of physical mobility between the two groups before and after the intervention. Paired *t*-test was used to compare the mean score of physical inactivity between the control and experimental groups before and after the intervention.

Ethical considerations

In order to adhere to ethical considerations, after receiving permission from the Ethics Committee of Isfahan University of Medical Sciences, Isfahan, with the code 493037, written informed consent forms were obtained from the participants. Moreover, in the case of sports injuries treated at the same center, the researcher would take responsibility for all costs. If desired, the possibility of undergoing the intervention was provided for the control group participants after sampling. In addition, due to moral considerations, educational booklets were distributed among control group participants like in the test group as empowerment, so that the control group was not deprived of them, but the test group had the opportunity to deal with them in empowerment issue.

RESULTS

In this study, 70 elderly individuals were studied with an average age of 69.2 and standard deviation of 3.4 years. The highest percentages of subjects were women in both groups: 29 individuals (82.9%) in the experimental group and 28 individuals (80%) in the control group. Paired *t*-test results showed that there was no significant difference between the mean scores of physical mobility in the control group before and after the intervention ($P = 0.470$). However, the results showed that in the experimental group, the mean score after the intervention was significantly higher than the mean score before the intervention ($P < 0.001$) [Table 1]. Furthermore, independent *t*-test revealed that there was no significant difference between the mean scores of physical mobility of the two groups before the intervention ($P = 0.460$). Nevertheless, after the intervention, the average score of physical mobility in the experimental group was 641.3 and in the control group was 331.3. This means the score of physical activity of the

experimental group was significantly higher than the control group ($P < 0.001$) [Table 1].

Independent t -test showed that there was no significant difference in the average age ($P = 0.49$), body mass index (BMI) ($P = 0.51$), and the number of children ($P = 0.80$) in the two groups [Table 2].

Moreover, the findings indicated that there was no statistically significant difference among the study subjects in terms of marriage ($P = 0.49$), occupation ($P = 0.29$), education ($P = 0.27$), type of insurance ($P = 0.50$), and incidence of chronic disease ($P > 0.99$) in the experimental and control groups [Table 3].

DISCUSSION

The findings of this study showed a significant statistical difference between the average scores of physical mobility of the two groups after the intervention. This finding was consistent with that of the study by Kafame *et al.*^[25] They carried out their study to determine the impact of a self-management program on the health status of patients with multiple sclerosis (MS) and compared the health status of test and control groups after the intervention including daily operations. Their results showed that the self-management program was effective in various aspects of health and the ability to perform activities.^[25]

The results showed that the empowerment intervention in this study led to an increase in physical mobility in the experimental group, thus showing the necessity of implementing empowerment interventions in the field of elderly physical mobility. This result was consistent with that of the study by Lautenschlager *et al.*^[26] Lautenschlager

et al. studied the effect of physical activity on the cognitive function of elderly people at risk of Alzheimer’s disease. Their results showed that performing an empowerment program for physical activity affected the cognitive function of the elderly, which was consistent with the present study results.^[26] In a research conducted by Resnick *et al.*, an empowerment program was designed and implemented for senior citizens.^[27] Their results showed a significant effect on the physical mobility of seniors after the intervention; the amount of their physical mobility increased from medium to high level.^[27] This finding was in agreement with the results of this study.

Masoodi *et al.* conducted research on the effect of a family-centered empowerment model on perceived satisfaction and self-esteem of caregivers of patients with MS.^[28] The results showed that there was a significant difference in all aspects of perceived satisfaction and self-esteem in the experimental group after the intervention in comparison to before the intervention.^[28] This was indicative of the impact of the empowerment program on MS caregivers, which was in agreement with the present study results.^[28] Teymouri *et al.* studied the effect of a family-centered empowerment model on the QOL of school-age children with asthma.^[29] Their results showed that there was significant difference between the average scores of general QOL of children before and after the intervention in the test group.^[29] This finding was in agreement with the results of this study. The results of the study by Hekmatpou *et al.* were also in line with this study.^[30] Hekmatpou *et al.* evaluated the effect of a healthy lifestyle program on the promotion of physical activity among seniors in the city of Arak, Iran. They showed that a significant difference was achieved through physical activity between the experimental and control groups in

Table 1: The mean score of physical activity before and after the intervention in the experimental and control groups

Group	Before the intervention		After the intervention		Paired t -test		Independent t -test	
	Average	Standard deviation	Average	Standard deviation	t	P	t	P
Test	347.8	174.1	641.3	240.6	4.05	<0.001	0.73	0.466
Control	321.7	119.2	331.3	101.5	0.72	0.471	4.06	<0.001

Table 2: The average of age, weight, height, body mass index, and number of children in the experimental and control groups

Variable	Experimental group		Control group		Test result	
	Average	Standard deviation	Average	Standard deviation	Independent t -test	P
Age (years)	68.6	3.9	69.2	3.4	0.68	0.49
Weight (kg)	69.1	10.6	69.1	10.1	0.33	0.74
Height (cm)	157.7	8.2	156.1	9.5	0.35	0.72
BMI (weight in kilograms divided by the square of height in meters)	27.8	3.1	28.5	4.5	0.66	0.51
Number of children	4.1	1.6	5	2.2	1.67	0.15

BMI: Body mass index

Table 3: The relative frequency distribution of patients by gender, marital status, occupation, education, type of insurance, chronic disease status, residence status, and family status in the experimental and control groups

Features	Experimental group		Control group		Test result (P)
	Frequency	Percentage	Frequency	Percentage	
Gender					
Women	29	82.9	28	80	0.76
Men	6	17.1	7	20	
Marital status					
Married	26	74.3	26	74.3	0.49
Widowed	8	22.9	9	25.7	
Divorced	1	2.9	0	0	
Occupational status					
Employed	1	2.9	0	0	0.29
Unemployed and retired	7	20	11	31.4	
Housewife	27	77.1	24	68.6	
Education					
Illiterate	3	8.6	9	25.7	0.27
Literacy movement	8	22.9	5	14.3	
Primary school	15	42.9	14	40	
Guidance school	5	14.3	3	8.6	
Diploma	3	8.6	4	11.4	
University	1	2.9	0	0	
Type of insurance					
Social security organization	15	42.9	19	54.3	0.50
Iran health insurance organization	17	48.6	15	42.9	
Armed forces health	2	5.7	1	2.9	
Relief committee	1	2.9	0	0	
Chronic disease					
Yes	29	82.9	29	82.9	>0.99
No	6	17.1	6	17.1	

terms of general health, vitality and mental health, they are physical health, social health, physical pain, and QOL. The impact of physical activity in the experimental group was emphasized.^[30]

In contrast to these results, the study by SeyedEmami *et al.* on the effect of education on physical activity of health volunteers showed no significant difference in the rate of physical activity of the experimental group before and after the intervention.^[24] This difference could be due to differences in the target group and the type of intervention.^[24] In the present study, senior participants of the experimental group were empowered in terms of physical mobility and ability to independently conduct their own exercises. This finding demonstrated the effectiveness of empowerment programs in inactivity complications and enhancing their motivation to become physically active.

CONCLUSION

Based on the interventions in this study, it can be concluded that empowerment interventions lead to increased physical mobility among the elderly. Therefore, it is suggested that health planners pay special attention to the issue of seniors' physical mobility, promote physical activity among seniors, and provide adequate protection in terms of their empowerment. Moreover, the use of the capabilities of community health nurses in health centers to develop empowerment programs can be recommended. The efforts of officials in the field of health status will result in the correct application of empowerment programs and patterns.

Acknowledgment

This article has been derived from a thesis research project No: 23810403922018, of Islamic Azad University, Isfahan (Khorasgan) Branch. The authors greatly appreciate the

cooperation of Islamic Azad University, Isfahan (Khorasgan) Branch, Isfahan University of Medical Sciences and all the elderly helped them by participating in this study.

Financial support and sponsorship

Islamic Azad University, Isfahan (Khorasgan) Branch, Isfahan, Iran.

Conflicts of interest

There are no conflicts of interest.

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