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Original Article

Effect of Education on Physical Activity among the Rural Elderly in Zabol City

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Introduction: One of the most important causes of chronic diseases in elderly people is lack of physical activity. Studies have shown that lack of physical activity in the elderly causes osteoporosis, obesity, depression and sudden death from cardiovascular disease, type 2 diabetes and colon cancer. The aim of this study was to determine the effect of an educational intervention on knowledge and practice of physical activity among the rural elderly in Zabol city.

Methods: In this semi-experimental study, 200 elderly people over 60 years of age living in rural areas of Zabol city who were selected by multi-stage random sampling were divided into two groups: intervention and control. The data collection instrument was a researcher-made questionnaire that comprised 3 parts: demographic and background variables, knowledge and practice. Before the intervention, the questionnaires were completed by intervention and control group. The educational content for the intervention group was the Healthy Lifestyle Handbook and face-to-face training which included a practical representation of six smooth movements. However, no intervention was performed in the control group. After 2 months, the same questionnaire was completed again and the data were analyzed using SPSS software.

Results: Before the intervention, there was no difference in the mean score of knowledge and practice of the participants, but these differences were significant in the post intervention ($p < 0.001$). The mean of knowledge and practice scores in the control group in pre-intervention stage was 35.17 ± 2.05 and 6.24 ± 2.82, respectively, Which was 35.59 ± 1.82 and 5.91 ± 2.64 in the post-intervention phase, respectively, But the mean score of knowledge and practice in the intervention group in pre intervention stage increased from 35.6 ± 2.47 and 6.73 ± 3.43 to 37.85 ± 1.38, and 12.83 ± 9.09 in the post-intervention phase, respectively.

Conclusion: Educational intervention is effective in increasing awareness and overall level of physical activity among the elderly.

Keywords: Educational Intervention, Knowledge, Practice, Physical Activity, Elderly

Introduction

One of the most important causes of chronic illness in the elderly is lack of physical activity (1, 2). Studies have shown that lack of physical activity in the elderly cause osteoporosis, obesity, depression and sudden death from cardiovascular disease, type 2 diabetes and colon cancer (2-4). Findings from studies in the United

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States and Europe indicate that passive hours are high in adults over 50 and 60 years old, so that the elderly over 60 years of age are inactive at 80 percent of their waking hours (8-12 hours per day) (4). Physical activity is low prevalent among Iranian ageing people compared to industrialized countries such as South Korea and Europe (5). So that two third of Iranian older adults over 75 years of age do not attend regular physical activity and half have no plans to start a physical activity program (3).

In the same field, strong evidence of persistence over the past 30 years has shown the importance of lack of physical activity as a primary and independent risk factor for all deaths and the spread of disease, so that the reduction of all deaths and disabilities caused by chronic diseases has been reported through physical activity (6). These facts necessitate the implementation of health interventions in order to promote physical activity (7).

The impact of education interventions on knowledge and practice has been proven in many studies. Amirzadeh and colleague reported that educational intervention had a positive effect on increasing the awareness of elderly women about physical activity and subsequently on their behavior change in the intervention group (8). The study of Hejazi et al. showed that the mean scores of knowledge and practice of the elderly in the intervention group regarding health promotion behaviors such as physical activity, dietary habits and stress management, increased significantly after training (9). Moini and colleague found that educational curriculum has been effective on improving physical activity of employees in governmental centers (10). Considering the importance of the subject in particular in developing countries and the need for intervention to change this unhealthy behavior and that to date, there has been no research on the effect of educational intervention on the physical activity of elderly people in Zabol city, the aim of this study was to determine the effect of education intervention on knowledge and practice of rural elderly in Zabol city regarding physical activity.

Methods

Study Design

The present study was a semi-experimental research that was conducted on 200 elderly people over 60 years of age who were covered by Zabol District Health Center located in rural areas.

Procedure and sampling

Considering the practice score of the participants in previous studies (11, 12), α = %5 and β = %10, the standard deviation of knowledge score equal to 6, and assuming that at least 12% of the changes in the scores received by individuals in the practice section could be made at least after the study, the sample size was 84 in each group and according to probable loss, 100 people in each group were considered.

The criteria for entering the study included age over 60 years old and residency in rural area. Exclusion criteria included elderly with motor and functional disability.

Multi-stage random sampling was used. For that, first, the rural health centers of Zabol were divided into four areas including health centers of Zabol, health centers of Zahak, health centers of Hirmand and health centers of Hamoon. Next, two Health Houses (The most environmentally unit and the first level of health care service provision in Iranian health system) from each health center were randomly selected (totally 8 Health Houses) and randomly assigned equally to the intervention and control groups (4 Health Houses each) and from population under supervised by each Health House, 25 individuals entered the study randomly.

Instruments

The data gathering tool was a researcher-made questionnaire that comprised 3 parts:

Demographic and background variables: This section contains 10 questions about age, sex, level of education, past occupation, current occupation, place of birth, current residency, marital status, number of children and income level.

Knowledge questionnaire: This part included 13 questions and focuses on the impact of exercise in preventing of non-communicable diseases; such as "Does exercise delay early premature aging?", "Is exercise useful for osteoporosis prevention?", "Is exercise, helps the mental health of humans? ", "Does exercise control blood lipids. For correct answers, score 3, for "I do not know" answers, score 2, and for wrong answers, score 1 was considered. Totally, the scores range for this section was from 13 to 39.

Practice questionnaire: This section included 5 questions devoted to the duration of physical activity included: “Do you exercise?” If the answer to the questions was "Yes," they would answer the following questions: "How often do you exercise on a weekly basis?", "How many exercises have you played last week?", "How many times did you have the least regular physical activity per day last week?", "How many Have you exercised after awakening?" and "How many times have you had more than half an hour physical activity last week?" for the answers "I did not exercise at all”1 score, "less than three times" 2 score, "three times" 3 score, and "four times and more" 4 score was given that scores range was from 5 to 20.

Face and content validity of the questionnaire approved by 10 health education experts and questionnaire reformed based on their opinion. The instrument’s content validity ratio and content validity index also was assessed and approved.

The questionnaires were completed by 15 elderly people via interview. Based on the comments and suggestions received by the aforementioned individuals, changes were made to clarify the items. The reliability of the questionnaire was also measured by the test- retest method in two weeks. Correlation coefficient of knowledge items was 0.76 and practice was 0.95.

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Interventions

The educational content for intervention group was determined by the researchers based on the information obtained from the pretest stage and using the Healthy Lifestyle Improvement Manual for the elderly. The face-to-face training method was a practical representation of the smooth movements (6 movements). The content taught in two sessions of 30-45 minutes to elderly men and women in the intervention group.

The training session was held on the educational content included proper instruction in walking and simple and regular movements, and the presentation of the practice of movements was explained in plain and intelligible language and focused on the issues mentioned above in order to create behavior according to the results.

In the control group no intervention was performed. After the Lapse of waiting time (2 months), the same questionnaire was completed again for the elderly and the results of the two questionnaires were compared.

Ethical considerations

The research protocol was approved by the Research Ethics Committee of Zahedan University of Medical Sciences (code: IR.ZAUMS.REC.1394.4). In addition, after explaining the research purposes to the participants, obtaining their written informed consent, ensuring confidentiality of information and voluntarily answering the questions, the people who were willing to participate in the study were included.

Data analysis

Data analysis was done using SPSS 16. For comparing gender, level of education and occupation between two groups, Chi-square test was used and independent t-test was used to compare the mean age of the two groups. Also, for comparing the mean of knowledge and practice scores between two groups and for comparing the mean of knowledge and practice scores before and after the intervention, paired t-test was used. $P < 0.05$ was considered significant.

Results

This study was performed on 200 rural elderlies in Zabol city which were equally divided into intervention and control groups, and the two groups did not differ significantly in variables of gender, level of education, occupation and age. (Table 1) There was no statistically significant difference in the mean score of knowledge among the subjects before the intervention ($p = 0.183$). However, in the post-intervention stage, the difference of mean of knowledge scores in the intervention and control groups was statistically significant ($p < 0.001$). (Table 2)

There was no statistically significant difference in mean practice score before intervention ($P = 0.122$), but after intervention, there was a significant difference between mean of changes in practice score in intervention and control group ($p < 0.001$). (Table 3)

Table 1. Frequency distribution of demographic variables in intervention and control groups

Demographic variables		Intervention group		Control group		P-value
		Number	Percent	Number	Percent	
Gender	**Male**	50	50	53	53	0.67
	Female	50	50	47	47	
Education	**Illiterate**	80	80	79	79	0.78
	Primary	15	15	19	19	
	Guidance school and upper	5	5	2	2	
Job	**Employed**	6	6	9	9	0.42
	Jobless	94	94	91	91	
Age	**Mean ± SD**	68.29 ± 6.54		68.18 ± 7.64		0.19

Table 2. Comparison of the mean of knowledge score before and after intervention in the intervention and control groups

Variable	Group	Pre- intervention Mean ± SD	Post- intervention Mean ± SD	Difference Mean ± SD	Paired t- test
Knowledge	**Intervention**	35.6 ± 2.47	37.85 ± 1.38	2.25 ± 1.09	t = 1.33, df = 198, P < 0.001
	Control	35.17 ± 2.05	35.49 ± 1.82	0.32 ± 0.23	t = 0.119, df = 198, P = 0.418
	Difference mean	0.43 ± 0.42	2.36 ± 0.44		
Independent t- test		t = 1. 22, df = 198, P = 0.183	t = 1.33, df = 198, P < 0.001		

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Table 3. Comparison of the mean of practice scores before and after intervention in the intervention and control groups

Variable	Group	Pre- intervention Mean ± SD	Post- intervention Mean ± SD	Difference Mean ± SD	Paired t- test
Practice	**Intervention**	6.73 ± 3.43	12.83 ± 4.09	6.1 ± 0.66	t = 0.82, df = 198, P < 0.001
	Control	6.04 ± 2.82	5.91 ± 2.64	0.13 ± 0.18	t = 1.75, df = 198, P = 0.082
	Difference mean	0.69 ± 0.61	6.92 ± 1.45		
Independent t- test		t= -1.24, df = 198, P = 0.122	t = 1.55, df = 198, P < 0.001		

Discussion

The study aimed to determine the effect of educational intervention on knowledge and practice of rural elderly in Zabol city regarding physical activity. The results of this study showed that educational intervention was effective on knowledge and practice about physical activity of elderly people. Considering that the maximum knowledge score in this study was 39, the mean score of knowledge of the subjects in the pre-intervention stage was 35. Probably the reason for the high score of knowledge in the elderly can be the education provided by health and medical personnel in health care centers or easy questionnaire questions.

In the study of Tabatabaei and colleagues (13) and Seyed Emami and colleagues (14), the mean score of knowledge in the pre-intervention phase was moderate and contradicted our findings. The reason for this inconsistency is probably due to lack of necessary information resources in the field of physical activity. In the study of Estebsari (15), the mean score of the subjects' knowledge about physical activity was weak, which contradicts our findings. Part of this difference can be due to the difference in knowledge and categorization tool or geographic difference.

The mean score of knowledge in the intervention group was significantly higher than the control group after intervention, which indicates the effect of educational intervention to increase the awareness of the elderly. The study by Karimi et al (16), which aimed to determine the effect of educational intervention on improving the physical activity of elderly men in the city of Qom, showed that after the intervention, the mean score of knowledge among intervention group was significantly increased.

The mean score of practice in the pre intervention stage in the intervention and control groups was not statistically significant, but after intervention, this level was statistically significant in the intervention group but in the control group there was no change. This finding is consistent with the results of Amirzadeh and colleagues' research on physical activity of women in Urmia (8), and Dinger et al. (17) on low-mobility women who reported improvement in practice after an educational intervention on physical activity is similar.

In this regard, Hortz et al. (18) in their study, by implementing educational intervention based on the social cognitive theory, showed that implementation of educational sessions about physical activity increased the average physical activity outside school hours. Hazavehei et al. (19) also reported increasing physical activity among students in their study. Also, Teymouri et al. (20) and Sallis et al. (21) mentioned in their studies the usefulness of training classes in promoting physical activity, which are consistent with the results of our study.

Conclusion

Educational intervention is effective in increasing awareness and overall level of physical activity among the elderly. Therefore, it is recommended that health care providers use this intervention to improve the physical activity of elderly in rural areas.

Study limitations

As the subjects were originally from rural area of Zabol, the results may not be generalized to other socioeconomic situations, although many studies in different settings have previously proven the efficacy of such education on improving physical activity.

Conflict of interest

The authors declare no potential conflicts of interests.

Acknowledgment

This research is the result of the dissertation of the Master's Degree in Health Education, of the corresponding author in Zahedan University of Medical Sciences. Authors want to appreciate the efforts of the elderly who have played a significant role in the collection of data in this research.

Authors' contributions

Study design: MSJ, SS
Data collection and analysis: MSJ, SMD
Manuscript preparation: MSJ, SS, EM, MAZ
All the authors have read the manuscript and approved the final version.

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