Original Article

The effect of peer group education on anxiety, stress, and depression in older adults living in nursing homes

Abstract

Background: The effects of peer education have been addressed in different populations, but this method of education has not been applied in the elderly population of Iran, and its effect has not been studied. The present study investigated the effects of peer group education on anxiety, stress, and depression of the older adults living in nursing homes. **Materials and Methods:** This research is a quasi-experimental study with an intervention and control group and it was conducted on 70 elderly citizens living in Qom nursing homes in July 2017. For the intervention group, a relaxation and stress reduction program was trained through the peer group. The control group received routine care. Data were collected using a Demographic information questionnaire and Depression Anxiety Stress Scale-21 (DASS-21). Data were collected at the beginning, 10 and 30 days after the intervention. Data analysis was performed using SPSS 19, descriptive statistics, and repeated measure analysis of variance. **Results:** The results of the study showed no significant difference between any of the demographic variables at the beginning of the study ($p > 0.05$). The statistical test showed that the effects of time ($p < 0.001$) and group ($p < 0.011$) were significant on anxiety, stress, and depression. **Conclusions:** The results of this study showed that peer education could decrease anxiety, stress, and depression in the elderly. Therefore, this educational method can be used by nurses to promote various health education programs, e.g., to health promotion and prevent disease especially in the elderly community.

Keywords: *Aged, anxiety, depression, nursing homes, peer group, stress*

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Introduction

Currently, the world's elderly population is increasing and the ratio of the elderly to the young and adolescent is growing rapidly.[1] Iran is no exception and the increase in the number of elderly people in Iran has become a major challenge so that Khodaveisi *et al.*, quote from the Statistical Center of Iran, the population of the elderly in Iran in 2016 was about 720,000, which was about 10.8% of the country's population.[2] Therefore, due to the increase in the number of elderly people cost of care for the elderly at home and the disease in the elderly, the referral to nursing homes for nursing care is expected to increase. Therefore, the demand for nursing homes in Iran is increasing.[3] Aging has various psychological and social consequences, such as anger, insomnia, anxiety, and depression.[4,5] Various studies in Iran have evaluated the status of psychological disorders in the elderly, and in most studies, anxiety, and depression disorders are reported as common disorders in the elderly.[6-8] Going to a nursing home which often begins with health problems and the death of the spouse is known as an important shift in the elderly life and it exacerbates anxiety, depression in the elderly,[3,9] and relocation stress in the elderly.[10] On the contrary, some mental disorders, including anxiety and depression, are a cause of taking care of the elderly in nursing homes, which are the most prevalent mental health problems among the elderly in nursing homes.[11] Indeed, these disorders are regarded as the most common mental response to the stress.[9] However, studies, in general, have shown a very high rate of anxiety and depression in the elderly, and the prevalence of mental disorders in the elderly is estimated at 80% in some studies.[12]

As the rate of the elderly population in Iran is increasing, the importance of the issues related to the mental health of the elderly

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should be taken into consideration both in the community and care centers.[13] To control mental disorders, such as anxiety, depression, and stress, non-medical treatments, such as cognitive behavioral therapy and music therapy, are the most influential rehabilitation methods.[14,15] One of the effective non-medical treatment methods is to train and inform the elderly about health diseases by those who suffer from similar diseases. This method is called the peer education.[16] Shared experience leads peers to choose the best and most appropriate health behaviors and plays an important role in improving their health.[17] Interestingly, using the peer education method ascends the motivation level of individuals[18] and it can promote their health.[17] Therefore, despite support services for the elderly, they are more likely to maintain their wellness, promote health, and improve performance.[19] Accordingly, Simmons *et al*. believe that if people try to maintain their health actively, they will increase their quality of life and health.[20] Therefore, the purpose of peer education is to increase people's health behaviors and this is done by people with shared experience in the same field.[21] In Iran, some studies have examined this training approach; a study conducted by Dehghani *et al*. reported a significant decrease in the mean score of depression in the intervention group.[22]

Various non-pharmacological treatments have been used to reduce anxiety and depression in the elderly, for example, mindfulness-based cognitive therapy and structured reminiscence has been used, which has various implications in later studies.[23,24] In this field, peer education has not been used as an effective educational method in the elderly, and its effectiveness is unknown. However, studies have reported peer education in other fields effective for the elderly, for example, Ghasemi *et al*. found that peer education increases the quality of life of the elderly with diabetes.[25] However, unfortunately, less attention has been paid to the impact of peer education methods on the elderly in Iran and nursing homes. Therefore, due to the high prevalence of anxiety, depression, and stress among the elderlies living in the nursing homes, and given that people's participation in maintaining their health can improve the physical and psychological consequences, this study was designed to determine the effect of peer group education on anxiety, stress, and depression in the elderly living in nursing homes in Qom city.

Materials and Methods

This is a quasi-experimental study from the beginning of 2017 until the beginning of 2019 in the city of Qom. It is conducted in three stages to determine the impact of peer education on anxiety, stress, and depression in elderly who reside in nursing homes. After achieving the ethics code and recommendation letter from the research deputy of Qom University of Medical Science (QUMS) and obtaining permission from Qom Welfare Organization to enter the fieldwork, the authors received the permission for fieldwork

study. Due to the existence of two elderly nursing centers in Qom city and the educational content of the intervention, a quasi-experimental design was used to test the research hypotheses. Therefore, the elderlies living in one of the centers entered the research as an intervention group and the elderlies living in another nursing home center were selected as the control group randomly. Quasi-experimental studies and pretest–posttest studies with a comparison group are the best ways to answer research questions. This research plan provides information about the status of groups before and after the intervention.[26] As mentioned, the participants in the study were the elderly living in nursing homes in Qom. Based on the study of Dehghani[27] and the following formula, and regarding coefficient interval of 95%, the test power (hypothesis) is equal to 90%, the sample size is 70. $\alpha = 0.05$; $\beta = 0.1$; $\sigma_1 = 1.27$; $\sigma_2 = 1.17$; $\mu_1 = 5.07$; $\mu_2 = 4$

Simple random sampling was performed in each of the nursing homes to select the intervention and control groups. In this way, the list of the elderly was prepared and the subjects were randomly selected from the list, if they agreed with participating in the research and had the inclusion criteria, they were selected as the research sample. The study's inclusion criteria were as follows. The elderly should be aware of time, place, and person, the elderly should understand and perceive content in Persian, they should not have significant physical disability, severe hearing, and visual disorder, they should have stayed in a nursing home for at least 6 months, and they should not receive any training in the field of relaxation and stress reduction techniques. Exclusion criteria were reluctant to participate in the study and leaving the nursing home. Fortunately, none of the participants left the research process.

Data collection was performed by a two-part questionnaire. The first part of the questionnaire is related to demographic characteristics of the elderly that has filled in by looking at the elderly's medical case or asking him/her some questions. The second part of the questionnaire is related to the DASS-21 questionnaire. This questionnaire consists of 21 questions and each subscale (anxiety, stress, and depression) is measured by seven questions. The highest score on each of the subscales is 21 and the minimum score is 0. It has been validated for the Iranian population by Sahebi *et al*., using a valuable validity coefficient and for depression, anxiety, and stress subscales. Cronbach's alpha coefficients were 0.77, 0.79, and 0.78, respectively.[28] This questionnaire has been used for various communities in Iran.[29,30] The demographic information questionnaire includes five questions in the fields of age, gender, level of education, socialized medicine, social security, and it has been completed by the participants at the beginning of the study and the DASS-21 questionnaire have been completed at the beginning, 10 days after, and 30 days after attending the study. The data collector was blinded

to the intervention and control group. The data have been analyzed using SPSS version 19 (IBM Corporation, Armonk, NY, USA), independent t-test, paired t-tests, Chi-squared test, Fisher-exact test, and Repeated Measure RM-analysis of variance (ANOVA). RM-ANOVA common in studies to measure a dependent variable over two or more time points, or subjects have undergone two or more conditions.[26]

To choose a peer group to train in the intervention group, after studying and reviewing articles in the field of peer education, the researcher selected three elderly group who have characteristics such as volunteering for training, having less anxiety, stress, and depression based on the DASS-21 questionnaire, appropriate social relations, at least 1 year experience in a nursing home, higher education, and informed consent to participate in the study. In the end, a three-member group with an average age of 63 years was selected. Peers were trained to teach educational content to the intervention group. The educational content was taught to the peers in three 1-h sessions. [Table 1] The training was conducted for three consecutive days from 10:00 to 11:00 in the morning. After training the peers, they began training the intervention group. During the study, peers were available and answered the questions of the intervention group according to the booklet. In the control group, the elderly received the usual care, including health, nutrition, and recreation in the nursing home.

The educational content was extracted from the book of relaxation and stress reduction by Martha Davis, and translated by Nahid Khajehmughi.[31] After training their peers, they practiced the training program in the presence of the researcher for a week, to master the content. The educational training content was written in a 32 pages booklet, which was given to the peers. The validity of educational training content was confirmed by ten faculty members of QUMS.

Ethical considerations

This research has been approved by the Ethics Committee in Biomedical Research of QUMS, with the MUQ. REC.1395.160. To comply with the ethical standards, measures, such as obtaining a research and ethics license from QUMS, providing sufficient information to the units participating in the research, obtaining informed consent, and following the principles of truthfulness, solitude, and confidentiality, throughout the research process were considered. In this study, the elderly participants in the study were aware of the time, place, and person; therefore, their informed consent was obtained. At the end of the research, the educational booklet was prepared in several volumes and provided to the nursing home center for the use of other older adults.

Results

The results revealed that members of both groups (intervention and control) are homogeneous in terms of demographic characteristics, and no significant difference was observed between the intervention and control groups ($p > 0.05$). The average age of participants in the study is was approximately 73 years old. A total of 51.40% of participants were male and 48.60% of them were female. [Table 2]

The mean anxiety, stress, and depression of patients in the intervention and control groups at the beginning of the study were 15.65 vs. 15.34, 15.34 vs. 15.14, and

Table 1: Relaxation and stress education program for peer group		
Sessions	**Goals**	**Summary of training and evaluation method**
First session:	S/he lies on a flat surface.	The first session was taught in theory and then taught in practice by researchers. Peers practice the content of the first session in the presence of the researcher.
Content:	S/he should put his feet touching the ground, and close his eyes.	
Careful examination of the body		
Body relaxation technique	S/he moves her limbs as well.	
Deep breathing technique	She/he should take deep breaths	At the same time, the researchers evaluated the activity of peers, compare it to the content, and give feedback if the peers are doing poorly or moderately.
	The ultimate goal: the peers should do the content of the training session as well.	
Second session:	S/he can do normal and deep breathing well.	Like the first session
Content:	S/he can perform diaphragmatic and intermittent breathing.	
Teaching breathing techniques		
Teaching aerobic exercise	S/he can count her/his breaths and sigh deeply.	
	S/he can do aerobic exercises including jogging and brisk walking.	
Third session:	S/he can do stretching exercises.	Like the first session
Content:	S/he can move the joints in the range of motion.	
Training muscle strengthening exercises	S/he can do isometric exercises.	
Training stretching exercises		

17.57 vs. 15.74, respectively. There was no statistically significant difference between the scores of anxiety, stress, and depression in the two groups at the beginning of the study. After the intervention, the Mauchly's test of sphericity RM-ANOVA showed that the effect of time ($p < 0.001$) and group ($p < 0.011$) was significant on anxiety, stress, and depression. [Table 3]

The result of the independent t-test showed that there was no significant difference in the mean (SD) of depression, anxiety, and stress between the two groups before intervention. However, the results of paired t-test showed that there was a significant difference between the first and second phases of the study in the intervention group ($p < 0.001$). Also, there was a significant difference between the first and third phases of the study in the intervention group ($p < 0.001$), which indicates the effectiveness of the intervention in the intervention group. For the control group, the results of paired *t*-test

showed no statistically significant difference between the first vs. second phases and the first vs. third phases of the study, was observed, ($p = 0.058$) and ($p = 0.077$), respectively [Tables 4 and 5].

Discussion

According to the results, peer education has been effective in improving anxiety, stress, and depression in the elderly. These results are consistent with Zhang's study, who found that a rehabilitation program for the elderly with osteoporotic fractures improved their stress and anxiety.[32] Similarly, Farahmand *et al.* found that a self-care education program is effective in managing hypertension in the elderly who are discharged from the cardiac internal wards.[33] These studies have shown that relaxation and self-care programs in the elderly affect their therapeutic and psychological consequences, which are in line with the results of the present study, which means that self-care training and health-promoting behaviors enhance wellness in the elderly. Based on Razie *et al.* study, Zhang reports that training aerobic rehabilitation practices are more effective than other traditional health programs in improving self-efficacy, mood, and activity of patients.[32] Training aerobics and relaxation exercises improve self-efficacy and mood. In the present study, the training program includes relaxation and stress management techniques, trained through peers, which is a more effective educational approach than other teaching methods. The benefits of peer training, including easy, low-cost, and effective education, based on life experiences and lack of need for special equipment, are reported in various studies.[34] This training program protects individuals not to return to high-risk behaviors because it increases the motivation and readiness of individuals.[15] Also, the results of the present study are comparable with the results of the studies conducted by Molazem *et al.*,[35] and Guo *et al.*,[36] Molazem *et al.* in their peer-based study found that peer education reduced the anxiety and depression of the intervention group compared to the control group in patients undergoing angiography.[35] They argued that peer education could be offered as a low-cost and complementary therapy or as a form of alternative medicine as a treatment that reduced anxiety and depression impressively. Molazem believes that peer instructions are more close to reality, resulting in better acceptance by others and increase awareness in individuals.[35]

Bayati *et al.* found that peer education is effective in the self-care of hemodialysis patients. They emphasize the low-cost and ease of this educational method.[34] Borzou *et al.* who conducted a comparative study of nurse and peer education on the quality of life in patients with heart failure showed that peer education has a better effect on patients' quality of life in the long run.[37] Ghasemi *et al.* concluded that peer education increases self-care among the elderly with diabetes, they consider the use

Table 2: Demographic characteristics in the intervention and control groups at baseline [Mean (SD), Freq. (%) of participates, *n*=70]

	Intervention	Control	*p*
Age			
Year	72.74 (3.53)	73.17 (3.13)	0.504*
Gender			
Male	20 (28.60%)	16 (22.90%)	0.473**
Female	15 (21.40%)	19 (27.10%)	
Socialized medicine			
Yes	30 (42.90%)	31 (44.30%)	0.50***
No	5 (7.10%)	4 (5.70%)	
Social security			
Yes	4 (5.70%)	5 (7.10%)	0.50***
No	31 (44.30%)	30 (42.90%)	
Education			
Uneducated	20 (28.60%)	18 (25.70%)	0.631**
Diploma and under diploma	15 (21.40%)	17 (24.30%)	
>Diploma	0 (0.00%)	0 (0.00%)	

*Independent *t*-test, **Chi-square test, ***Fisher-exact test

Table 3: Mean (SD) and results of repeated measurements for depression, anxiety, and stress

Variable	Time	Intervention	Control	*p*
Anxiety	Before intervention	15.65 (3.45)	15.34 (3.19)	0.001
	10 days after	12.62 (3.63)	17.37 (3.63)	
	30 days after	12.17 (3.40)	17.51 (2.22)	
Stress	Before intervention	15.34 (3.02)	15.14 (3.43)	0.001
	10 days after	11.60 (2.14)	14.91 (2.98)	
	30 days after	12.97 (2.02)	16.14 (2.06)	
Depression	Before intervention	17.57 (4.27)	15.74 (3.39)	0.001
	10 days after	14.37 (3.28)	17.51 (3.65)	
	30 days after	13.31 (3.47)	17.08 (2.62)	

Table 4: Comparison of depression, anxiety, and stress scores in the first and second phases of the study in experiment and control groups

	Group		95% confidence upper	*t*	df	*p*
Modakhele1	Pair 1	Dep1 - Dep2	9.10	3.62	34	0.001
	Pair 2	Anex1 - Anex2	6.81	3.10	34	0.004
	Pair 3	Stress1 - Stress2	10.16	5.68	34	<0.001
	Pair 4	Total1 - Total2	24.66	5.48	34	<0.001
Control1	Pair 1	Dep1 - Dep2	-0.05	-2.06	34	0.046
	Pair 2	Anex1 - Anex2	-1.80	-3.21	34	0.003
	Pair 3	Stress1 - Stress2	3.94	0.266	34	0.792
	Pair 4	Total1 - Total2	0.27	-1.96	34	0.058

Table 5: Comparison of depression, anxiety and stress scores in the first and third phases of the study between experiment and control groups

	Group		95% Confidence Upper	*t*	df	*p*
Modakhele1	Pair 1	Dep1 - Dep3	12.63	5.19	34	<0.001
	Pair 2	Anex1 - Anex3	7.81	3.55	34	0.001
	Pair 3	Stress1 - Stress3	9.35	5.24	34	<0.001
	Pair 4	Total1 - Total3	27.86	5.98	34	<0.001
Control1	Pair 1	Dep1 - Dep3	0.18	-1.91	34	0.064
	Pair 2	Anex1 - Anex3	0.11	-3.12	34	0.054
	Pair 3	Stress1 - Stress3	1.37	-1.20	34	0.237
	Pair 4	Total1 - Total3	0.73	-2.50	34	0.077

of peer education in the elderly as an effective disease management method.[16] Because one of the main causes of mental disorders in elderly nursing homes is the lack of resources for treatment and appropriate supplementary therapy methods with the main treatments,[38] the present study attempted to take basic steps toward reducing the prevalence of mental disorders in elderly nursing homes by peer education as a complementary and economical method.

Thus, most studies that have used peer education to influence the outcomes of patients proved the effectiveness of this educational method. Even in comparison to other training methods, peer education had a better effect and more benefits, the reason is that patients are more confident in the effectiveness of the techniques and experiences of people who had similar conditions and people try to use methods that others have used in similar situations.[34,39] Therefore, peer education can be used as a complementary and cost-effective solution to health promotion and disease prevention in the elderly as a high-risk group, and because nurses play a very important role in primary prevention, they can use this educational technique in health promotion, disease prevention, and rehabilitation. One of the limitations of this study was the lack of random allocation due to the conditions and structure of the nursing home in Qom. Also, the low number of sessions due to the inability of the elderly in these nursing centers was another limitation of the present study.

Conclusion

Using peer experiences for others and regarding the advantage of peer education, such as easy training, no

need for advanced equipment, effective, and cost-effective, and this method can be developed particularly in disease prevention and health promotion process to boost wellness of the community and especially in the elderly community. It is suggested that the effectiveness of this educational approach be researched in other fields related to the elderly, in order to strengthen the evidence related to its effectiveness in this age group.

Conflicts of interest

Nothing to declare.

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