Original Article

Effect of Peer Group Education on the Quality of Life of Elderly Individuals with Diabetes: A Randomized Clinical Trial

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Abstract

Background: Considering the important role of education and the benefits of peer education in increasing patients' independence in self-care, as well as the socio-economic benefit of using peer education, the present study was conducted to assess the effect of peer education on the quality of life (QOL) of elderly people with diabetes. **Materials and Methods:** This clinical trial was conducted with 44 diabetic people aged over 65 years in selected health centers of Isfahan, Iran, in 2014. After preparing the peer group, 8 educational sessions were held for the participants of the groups by their peers (intervention group) and by the researcher (control group). The Diabetes Quality-of-Life (DQOL) measure was used to assess their QOL before, immediately after, and 1 month after the intervention. **Results:** The difference between the groups in terms of the total quality of life score immediately after the intervention was significant (t = 8.63; p = 0.001). The results showed that the QOL score in the dimensions of worries about diabetes effects (t = 12.13, p = 0.042), impact of diabetes treatment, (t = 8.63, p = 0.001), and satisfaction with diabetes treatment (t = 11.33, p = 0.001) was significantly different in the groups immediately after the intervention. **Conclusions:** Peer education increased the QOL of patients with diabetes, with significantly better results than the researcher training group immediately after the training. Thus, this method can be used to improve the QOL of the aged population.

Keywords: *Aged, diabetes mellitus, Iran, peer group, quality of life*

Introduction

At present, increased life expectancy due to increased community health, considerable advancements in medical science, and reduced reproduction rate has caused a global increase in the aged population and has changed aging to a major public health problem in recent years.[1,2]

In Iran, the rapid rise in the older population has shifted medical health priorities towards issues concerning the elderly. Increased rate of chronic diseases, such as diabetes, with a three-fold increase in the elderly population is considered a potent threat to the healthcare system, especially in developing countries.[3,4] Controlling blood glucose levels is an essential issue in older patients, especially when they suffer from other diseases. Therefore, they should be trained on blood glucose control.[5]

Among various educational methods, cognitive-behavioral therapy (CBT) is an effective treatment,[6] a main form of which is peer group therapy. In this educational approach, individuals can benefit from the experiences gained by their peers to improve their symptoms in a simple and secure learning environment created by considering the similar characteristics of group members. Communication among peers encourages them to choose suitable healthcare behavior, as well as share their weaknesses, strengths, and experiences.[7]

Many studies have focused on peer group education in various diseases,[8,9] although a few have focused on diabetes care, especially in the elderly. One study on the effect of peer group education in patients with diabetes found that blood glucose levels improved in patients supported by peer groups compared to the group which only received insulin injection.[10] Despite various educational methods regarding different aspects of disease, such as group discussions, and face-to-face training, studies have shown low quality of life (QOL) in older patients with diabetes. Therefore, there is a need for novel educational methods.

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Peer education is a process in which motivated and trained individuals are responsible for organized education of their peers that aims to raise awareness and improve skills in the target individuals and enable them to accept their responsibility in protecting their health.[11,12]

Therefore, considering the important role of education and the benefits of peer education in increasing patients' independence in self-care, as well as the socio-economic benefit of using peer education within the public health system, the present study was conducted to assess the effect of peer education on QOL of elderly patients with diabetes.

Materials and Methods

This parallel-design clinical trial (IRCT2017011129662N2) was performed in three stages (at baseline and immediately and 1 month after the education) on 44 elderly patients (>65 years) with diabetes referring to selected healthcare centers in Isfahan (Imam Ali and Ghaedi centers), Iran, from 22nd October until December 2014. The participants were recruited using convenience sampling method. The main indicator was to calculate the sample size of the outbreak. For sample size calculation (S) was considered the estimated standard deviation (SD) of QOL score (which makes the difference meaningful) at 0.8, based on a previous research,[10] Z1 (confidence coefficient) of 1.96 and Z2 (test power factor) of 0.84. Considering the probability of the loss of participants to follow-up, 10% was added to the sample size and a final sample size of 28 individuals was considered for each group.

The inclusion criteria were being over 65 years of age, having a medical record in the healthcare centers, being willing to participate in the study, being literate, receiving insulin or glucose-lowering medications, and having no long-term side effects of diabetes. Patients who were absent from more than two sessions and those who were not willing to participate were excluded from the study. Initially, a list of elderly individuals with diabetes who had referred to the selected healthcare centers was compiled. After explaining the study objectives to the participants and ensuring them of the confidentiality of their information, written informed consent was obtained for enrollment into the study, following which they were invited to the center. The participants, who were recruited in the study using the convenience sampling method, were randomly assigned to two groups, with a 1:1 randomization ratio using the simple randomization method of flipping a coin. The randomization was performed by an analyzer who was not aware of group allocations and only randomized patients to groups A and B and kept the results of randomization in concealed envelopes. The specialist who visited the patients primarily and recruited the patients into the study based on the inclusion/exclusion criteria also divided patients into 2 groups based on the concealed envelopes, entitled "A" and "B." Only the researcher who was involved in education was aware of the group allocation. Demographic data of the participants were recorded.

The control group, consisting of 23 individuals, received training by the researcher. The intervention group, consisting of 21 individuals, who were interested and highly motivated was educated by peers. Both groups received eight sessions of training, each lasting 30–45 minutes. The content of the training sessions consisted of educational information regarding self-care, including exercise, diet, and skin care, and elements regarding QOL and common worries related to diabetes using lectures, discussions, and question and answer [Table 1]. The content of the sessions were devised under the supervision of the researcher and a diabetes specialist. The educational sessions in both groups were held at the health centers (Imam Ali and Ghaedi centers) on Tuesdays and Wednesdays at different times (at 9–10 a.m. for the peer-trained group and 10–11 a.m. for the researcher-trained group).

The researchers supervised the sessions and corrected the peers. The Diabetes Quality-of-Life (DQOL) measure was handed to all participants under the supervision of the researcher before the intervention and and immediately and 1 month after the end of the educational sessions. The researcher responded to the participants' questions and read the questions to them when necessary. The questionnaires were completed by the two groups at separate times and places, so that the participants of different groups did not meet each other. The DQOL questionnaire comprises 46 items which measure the QOL of patients with diabetes and the burden associated with diabetes treatment and glycemic control. The questionnaire contains the 4 subscales of satisfaction with treatment (15 items), impact of diabetes

Table 1: The educational content of each session for the two groups

Sessions	The educational content	Duration
The first session	Introduction and reviewing the impact of diabetes on the health of the elderly	30-45 min
The second session	What is diabetes? How does it affect everyday life?	30-45 min
The third session	The role of diet in diabetes self-care and its impact on quality of life	30-45 min
The fourth session	Exercise and insulin therapy for patients with diabetes	30-45 min
The fifth session	The efficacy of drugs on patients with diabetes	30-45 min
The sixth session	Blood sugar control in patients with diabetes	30-45 min
The seventh session	Self-care for patients with diabetes and its impact on quality of life	30-45 min
The eighth session	Diabetic foot ulcer and summery of the whole sessions	30-45 min

treatment (20 items), worries about the effects of diabetes (7 items), and social/vocational concerns (4 items), each scored based on a 5-point Likert scale ranging from 1 to 5. Its minimum and maximum total scores are 14 and 75 points, respectively. The original version of the questionnaire was written in English by Jacobson[13] and was translated into Persian by Pakpour *et al*., who reported adequate internal consistency reliability for all subscales.[14] Masaeli *et al*. reported a Cronbach's alpha of 89% for the questionnaire.[15]

The scores of the DQOL questionnaire were reported in each domain and in total, and were compared between the groups using independent samples *t*-test. Data were analyzed using IBM SPSS Statistics for Windows (version 20, IBM Corporation, Armonk, NY, USA). The significance level was set at 0.05 for all statistical tests.

Ethical considerations

This research approved by the Ethics Committee of the Medical Research Deputy of Isfahan University of Medical Sciences (code393510, October 2014). All participants signed the written informed consent after receiving explanation about the objectives of the study. Participants were ensured of the confidentiality of their information and anonymous analysis. The participants were informed that they could receive the results, if they desired.

Results

A total of 100 patients with diabetes were evaluated for being enrolled into the study [Figure 1], but 34 patients did not meet the inclusion criteria and 10 others did not give consent to participate in the study, resulting in 56 patients. The participants were randomized into two groups of 28 members. In the intervention group, 7 were excluded due to absence from more than 2 sessions, resulting in 21 members. In the control group, 5 were excluded due to absence from more than 2 sessions, resulting in 23 members, who entered the analysis.

Chi-square test showed no significant difference between the control and intervention groups with respect to sex and educational level [Table 2]. Independent *t*-test showed that the QOL score did not differ significantly at baseline between the groups ($t = 1.59$, $p = 0.840$), but improved significantly in the intervention group, compared to the control group, immediately after the educational sessions ($t = 8.63$, $p = 0.001$). However, it showed that the groups did not differ 1 month after the intervention ($t = 4.74$, $p = 0.223$). Immediately after the intervention, QOL score decreased in both groups [Table 3]. Analysis of three subscales of QOL at the three different stages of the study is shown in Table 4.

Discussion

The present study results illustrated that the total QOL scores, as well as the scores of the three subscales, differed

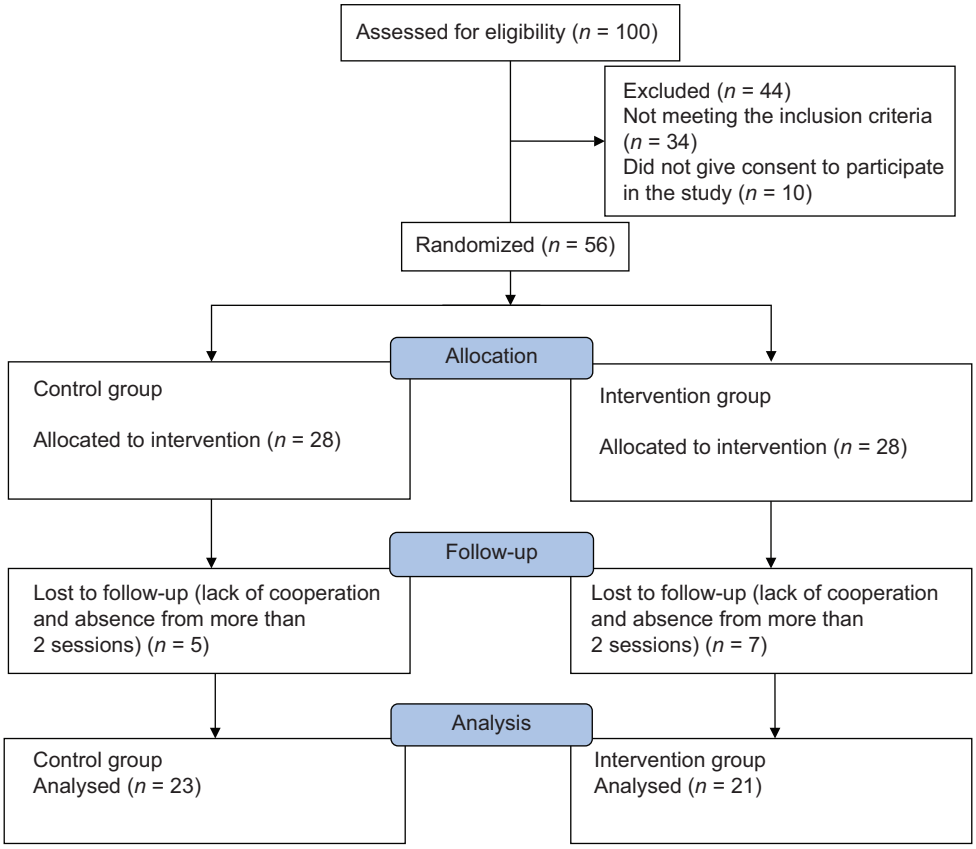

Figure 1: Flow diagram for enrollment of participants into the study

significantly between the control and intervention groups immediately after the intervention that shows the effectiveness of peer education in elderly patients with diabetes.

The results of this study regarding the satisfaction and diabetes impact subscales are consistent with several other studies. Uccelli *et al*. studied the effect of peer support groups on multiple sclerosis (MS) and found that peer groups have a positive and significant effect on the physical health of patients with MS.[16] However, Mohr *et al*. did not find such a significant difference in their study addressing the effect of a telephone-based peer support program on patients with MS.[17] This inconsistency between the results of studies could be attributed to the differences in the educations, the content of sessions, demographic characteristics of participants, and diseases.

Table 2: Comparison of the demographic variables in the two groups

Domain Chi-square	Interventional number (%)	Control number (%)	χ^2	*p*
Sex				
Female	13 (55%)	14 (66%)	0.09	0.732
Male	10 (45%)	7 (34%)		
Educational Level				
Elementary	6 (20%)	5 (26%)		
Middle School	8 (27%)	7 (34%)		
Diploma	4 (20%)	4 (16%)	0.44	0.451
Undergraduate degree	2 (10%)	3 (14%)		
Bachelor degree and higher	3 (13%)	2 (10%)		

With respect to the worries about diabetes, it was found that increasing the patients' awareness could reduce their anxiety and concern, increase their QOL, and reduce their blood pressure level, depression, and intrusive thoughts, and improve their sleep quality. In most studies, the training was given by specialists and nurses,[18-20] and no study was found to assess the effect of peer groups on the concern and worries of elderly patients with diabetes. In a long-term follow-up of 2, 3, and 4 years, Ridge *et al*. studied the effects of psychological treatments on improving glycemic control in type 1 diabetes and found that cognitive-behavioral diabetes interventions lose their effectiveness over time. Therefore, it is necessary to estimate the time of maximum effectiveness and repeat the interventions once in a while.[21] However, other researchers found that in a 1-month follow-up of hemoglobin and blood pressure levels, no change was observed in patients' weight, whereas depression, anxiety, and emotional distress decreased.[18] This is inconsistent with the present study findings. This inconsistency could be attributed to the difference in the participants' characteristics because the present study was only performed on elderly individuals with diabetes, who are highly dependent on their friends and peers and might therefore experience stress and be worried about being left alone after the end of the intervention period.

A significant difference was observed between the three study stages in the intervention group with respect to QOL scores, which increased over time, indicating an

Table 3: Comparison of the total quality of life scores before, immediately after, and one month after the intervention in the two groups

Time	Intervention Mean (SD)*	Control Mean (SD)*	*t*	*p*
Before the intervention	146.03 (47.20)	165.25 (30.40)	1.59	0.840
Immediately after the intervention	151.73 (27.56)	85.00 (28.91)	8.63	0.001
One month after the intervention	160.30 (33.23)	148.18 (31.80)	4.74	0.223

*SD: Standard deviation

Table 4: Comparison of the mean scores of different quality of life dimensions

Domains	Time	Intervention mean (SD)*	Control mean (SD)*	*t*	*p*
Worries about diabetes effects	Before the intervention	48.03 (3.60)	33.40 (6.20)	1.93	0.431
	Immediately after the intervention	28.09 (2.08)	40.13 (3.18)	12.13	0.042
	One month after the intervention	50.70 (3.09)	42.12 (7.16)	4.33	0.213
Impact of diabetes treatment	Before the intervention	54.10 (6.77)	53.13 (13.70)	1.59	0.341
	Immediately after the intervention	26.22 (8.90)	56.36 (7.83)	8.63	0.001
	One month after the intervention	43.04 (9.39)	54.63 (6.22)	4.74	0.163
Satisfaction with diabetes treatment	Before the intervention	62.66 (5.83)	0.60 (7.9)	0.99	0.501
	Immediately after the intervention	32.22 (4.09)	65.36 (5.83)	11.33	0.001
	One month after the intervention	6.50 (6.50)	64.63 (6.22)	3.60	0.384

*SD: Standard deviation

improvement in the participants' QOL. This finding is consistent with a previous related study.[22] The difference in the total QOL score between the study groups immediately after the intervention showed that peer education has a positive effect on the QOL of elderly individuals with diabetes.

Berkman *et al*. believe that social support improves health only when a sense of closeness is created through emotional support.[23] Emotional support is shaped through a caring relationship with others. In this study, peer-group support significantly increased the elderly's QOL probably due to receiving help from others in stressful situations.

In another study on the effect of peer education on self-efficacy and QOL of patients with diabetes, the researchers found that such education positively increased these variables.[24] Diabetes-related education, given by peers, can increase the patients' QOL, which would in turn lead to better diabetes control and reduced hospital costs. The present study results are in line with other studies on other diseases, such as cancer,[25] and most studies indicating beneficiary effects of peer education on different aspects of diabetes, such as glycemic control,[11] and self-management.[26,27]

On the other hand, it was found that, immediately after the intervention, the QOL of patients improved in the intervention group compare to the control group. It is noteworthy that, after the intervention, most patients showed interest in continuing the interventions and explained that discontinuing such sessions would facilitate their further isolation because they would not have the opportunity to interact with their peers. Lack of social and mental support from peer groups could deteriorate patients' physical health. Moreover, their learning of various strategies for coping with their disease through peer education would end after the end of the sessions. Some participants who were not willing to participate in the study and complete the questionnaires were motivated by financial support to reduce the confounding effect of these patients in the results of the study. The main limitations of the present study included the short-term follow-up period of the study and the small number of participants, which were mainly due to the low tolerance of the elderly. However, the researchers tried to limit the number of participants lost to follow-up by explaining the study objectives to them with great patience.

Conclusion

Peer education led to an improvement in the total scores of QOL in patients with diabetes. Furthermore, significantly better results were observed in the three subscales, including satisfaction, impact of diabetes treatment, and worries about the disease effects, compared to the researcher trainings group, especially immediately after the training. However, the difference between the intervention and control groups failed to be statistically significant, which indicates that the continuous training of patients by a peer can lead to better results in the QOL of elderly patients with diabetes. Therefore, this educational approach could be used to improve the QOL of the aged population over time.

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Conflicts of interest

Nothing to declare.

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