ORIGINAL ARTICLE

The Effect of Teach-Back Method on Quality of Life in Patients with Implantable Cardioverter Defibrillator

FARZIN MOLLAZADEH[1], YASER MORADI[1], HOSSEIN JAFARIZADEH[1], RAHIM BAGHAEI[1*]
[1]Patient Safety Research Center, Clinical Research Institute, Urmia University of Medical Sciences, Urmia, Iran
**Corresponding author: Rahim Baghaei, Email: Baghaei.r@umsu.ac.ir*

ABSTRACT

Background: Issues concerning the quality of life in patients with Implantable Cardioverter Defibrillator (ICD) have raised concerns among healthcare providers and taken an effort to tackle the problems of these patients. It seems necessary to educate the patients about all the risk factors ahead and the benefits of living with an ICD in order to increase their quality of life. In this regard, the teach-back method can help improve the quality of life in patients with ICD.
Aim: To determine the effect of the teach-back method on the quality of life in patients with ICD.
Methods: This is a quasi-experimental study with a pretest-posttest design. A total of 70 eligible patients were recruited using convenience sampling and then assigned to two groups of intervention and control using a random number table. Data collection tools included a demographic questionnaire and the MacNew Heart Disease Health-Related Quality of Life (HD-HRQL) Questionnaire. Patients in the intervention group were educated using a teach-back method for at least five sessions of 30-45 minutes, while the control group only received routine care. Data were entered into SPSS Statistics for Windows, version 16.0 (SPSS Inc., Chicago, Ill., USA) and analyzed using descriptive (frequency distribution tables, mean, standard deviation) and analytical statistics (independent t-test, chi-square test, and repeated measures ANOVA).
Results: The results of repeated measures ANOVA showed that the differences in the mean score of quality of life and its dimensions were not similar in the two groups, so that there was a significant increase in the mean score of quality of life and its dimensions in the intervention group compared to the control group ($p \leq 0001$). Moreover, the results of Group × Time interaction indicated that these two variables affected the mean score of quality of life and its dimensions and differed significantly in measurement time points ($p \leq 0001$).
Conclusion: Based on the results of the present study, using the teach-back method had a positive effect on the quality of life in patients with ICD. Therefore, this method can create an optimal level of learning in these patients.
Keywords: Implantable Cardioverter Defibrillator, Quality of life, Teach-back

INTRODUCTION

An Implantable Cardioverter Defibrillator (ICD) is a small battery-powered device placed under the skin of the chest and it is about 5 cm in width and 85 grams in weight[1]. As of 2002, it had been only used as a secondary prevention in patients with life-threatening dysrhythmias and unstable rhythms. However, it is currently utilized as a primary prevention of sudden death in all patients with a history of left ventricular dysfunction and heart dysrhythmias[2]. In the United States, on average, a number of 114,000 ICD placement are conducted each year[3].

Despite all the advantages of ICD, a major issue surrounding it is that it affects patients' quality of life (QOL)[4]. Living with an ICD reminds patients of an unpredictable and painful shock and leads to feelings of dependence, anxiety, depression, and self-imposed limitations on physical activity, employment, and driving. Therefore, it negatively affects the physical and mental dimensions of QOL in these patients[5,6]. In a study by Chair et al. (2011), it was found that the QOL in physical and emotional dimensions was low in patients with ICD[7].

The QOL is defined as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It has also been recognized as a part of health over the past three decades and used in the evaluation of health programs as well as in the anticipation of needs related to social and health care[8]. Not only does poor QOL have negative effects on social relationships, family life, employment, and leisure activities, it increases the risk of disease-related hospitalization and death as well[9]. Since the QOL is an important treatment outcome for patients with ICD[10]; this has become a major concern for healthcare providers, especially nurses, to take positive steps in order to improve physical and psychological adaptation, overcome fears and its complications by developing and adopting effective and supportive care strategies for controlling debilitating problems and potential complications after ICD placement[1,4,11].

As much as the lack of information about the device operation and the care required after the device implantation causes stress, providing comprehensive and evidence-based information can alleviate the stress and anxiety and increase satisfaction and self-efficacy in patients[12]. The ICD can increase patients ' QOL, although using it requires patient education programs. Despite the cost-effectiveness and many benefits of patient education, this important issue is ignored in medical centers, so that in Iran, patient education is neither well nor completely implemented[9]. Patient education is of great importance in the care of patients with ICD[1]. Among teaching methods, teach-back is an interactive and effective method through which the learner is able to accurately "teach-back" what he/she has learned. In this face-to-face teaching method, the instructor teaches the educational content with a simple and understandable language. The instructor also allows

the client to repeat what he/she has learned in his/her own words. Moreover, the client allows the instructor to identify the items that need further instruction by stating the main points of the lessons (which is asked of the patient with open-ended questions), so that the teaching and learning process would be continued until the content is well understood by the client[13,14]. The teach-back method aims to provide education in accordance with the learner's literacy level. The trainee can be a patient, an individual, a family member, or another supportive person[15].

Considering that the patients with ICD have the major responsibility of caring for themselves and it is practically impossible to monitor these patients around the clock, the slightest error in the patient care process can negatively affect the QOL in these patients and cause detrimental consequences. Therefore, educating patients with ICD is a key issue in their treatment and care process. The present study was aimed at determining the effect of the teach-back method on the QOL in patients with ICD.

METHODS

Study Design: This is a quasi-experimental follow-up study with a pretest-posttest design which has been conducted for one year in Seyed Al-Shohada Hospital in Urmia, Iran.

Participants & Setting: Based on a study by Salavati et al[16] and considering a confidence interval of 95% and power of 80%, the minimum sample size was calculated to be 30 for each group. Considering the sample attrition of 15% for each group, the final sample size was considered to be 35 for each group.

$$n = \frac{(Z\ \alpha/2 + Z\_\beta)^2 \times (S_1^{2} + S_2^2)}{(x_1^- - x_2^-)^2} = 35$$

Inclusion criteria consisted of the followings: being in the 30-70 age range, passing at least 3 months from ICD placement, having a low score of QOL (based on the MacNew HD-HRQL Questionnaire, the average score of QOL ranges from 27 to 67), having full orientation (awareness of time, place and person), having the ability to communicate effectively with the nurse, having the ability to self-care, and understand and speak Persian, having a minimum literacy, having no mental health disorder (based on patient's medical history). Exclusion criteria included withdrawal from the study and being absent from more than one session.

A total of 70 eligible patients were selected using convenience sampling in accordance with the inclusion and exclusion criteria. They were then allocated to two groups of intervention and control using sealed envelope randomization.

The intervention included teaching educational content using the teach-back method; in a way that the educational content was taught to the intervention group using the teach-back method and the control group only received the routine care of the clinic.

During the intervention, first, a needs assessment was conducted, so that the patient education needs in relation to the ICD and its complications, self-care and adaptation methods were evaluated. Then, planning was adopted for each patient based on the pretest and patient's needs. The next stage was the implementation, in which the researcher taught the educational content individually for 30-45 minutes. The patient education was conducted in at least five sessions with emphasis on the issues the patient had problems with. The main aim of the education was to simply and clearly convey the educational content with emphasis on key points and then asking the patient to repeat what he/she has learned in their own words. Mentioning 75% of the educational content by the patient correctly meant that the patient education was effective, otherwise the teach-back process would be conducted again and the unintelligible items would be re-taught until the client could repeat what has been taught about his/her illness. The final evaluation (follow-up) was carried out 2 and 4 weeks after the intervention by completing the MacNew HD-HRQL Questionnaire by the patients in the two groups and eventually the educational content was provided for the control group.

Data Collection Tools: Data were collected using a demographic questionnaire and the MacNew Heart Disease Health-Related Quality of Life (HD-HRQL) Questionnaire. The demographic questionnaire included information about age, gender, marital status, level of education, illness duration, and the length of time passed from ICD placement.

The MacNew HD-HRQL Questionnaire has been developed specifically to measure health-related QOL in patients with heart disease. This tool has 27 items fallen into three subscales of physical limitation (14 questions), emotional function (12 questions), and social function (13 questions). The items is scored on a 7-point Likert scale from 7 (high HRQL) to 1 (poor HRQL)[17-19]. The face and content validity of this tool has been confirmed in a study by Salavati et al. (2017) using expert panel (by 10 experts). Furthermore, in their study, Cronbach's alpha coefficient was 0.90, which indicates almost perfect internal consistency of the questionnaire[16].

After providing explanations of the study objective and methodology, the written informed consent was obtained from all participants. All participants underwent a pretest to assess their QOL using the MacNew HD-HRQL Questionnaire.

Statistical Analysis: After collecting the questionnaires, all data were entered into SPSS Statistics for Windows, version 16.0. Descriptive (mean and standard deviation) and analytical statistics (independent t-test, chi-square test, and repeated measures ANOVA) were utilized to compare data between the two groups before and after the intervention. The significance level was set at $p<0.05$. The normality of data distribution was assessed using the Kolmogorov-Smirnov test.

Ethics Approval: Prior to the beginning of the study, ethical approval was obtained from the local Ethics Committee in Medical Research (with ethics number of IR.UMSU.REC.1399.059). Then, the researchers introduced themselves to the participants and provided an explanation of the study objectives and methodology. Moreover, all participants gave their written informed consent before the beginning of the study and they were all assured of confidentiality of data.

RESULTS

The results of Chi-square and independent t-test showed that there was no significant difference between the two groups in terms of demographic characteristics. In other words, the two groups were homogeneous (Table 1).

The results of repeated measures ANOVA revealed that differences in the mean score of QOL and its dimensions were not similar between the two groups and it was found that there was a significant increase in the mean score of QOL and its dimensions in the intervention group compared to the control group. The results of Group × Time interaction in this test demonstrated that these two variables affected the mean score of QOL and its dimensions and there was a statistically significant difference between them in measurement time points (Table 3).

Table (1): Comparison of demographic characteristics between the control and intervention groups.

Variable		Control group	Intervention group	Independent t-test	Chi-square test
Age (year)		57.97±10.36	57.17±9.10	t=-0.34 p=0.73	
Illness duration (month)		43.17±28.55	48.42±34.39	t=0.70 p=0.48	
Length of time passed from ICD placement		32.74±26.78	37.02±30.24	t=0.62 p=0.53	
Gender (n)	Male	15	11		x^2=0.97 p=0.45
	Female	20	24		
Marital status	Single	8	5		x^2=4.92 p=0.17
	Married	27	30		
Level of education	Primary	7	6		x^2=4.64 p=0.32
	Secondary	28	29		

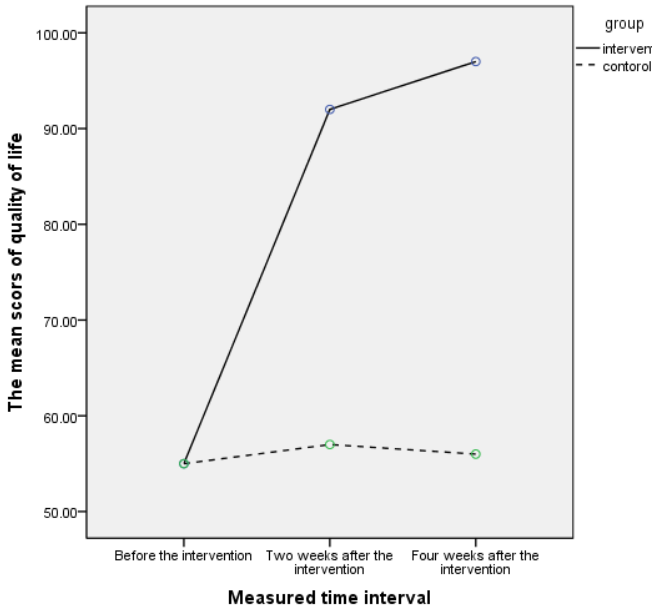
Table 2: The mean scores of QOL and its dimensions before, two and four weeks after the intervention between the intervention and control groups.

The QOL and its dimensions	Group	Before the intervention	2 weeks after the intervention	4 weeks after the intervention
		Mean±SD	Mean±SD	Mean±SD
Physical limitation	Intervention	29.5±3.18	40.20±7.41	42.13±3.02
	control	28.31±3.06	29.61±5.12	28.80±2.19
Emotional function	Intervention	30.19±2.14	43.54±9.41	47.52±6.01
	control	29.81±2.21	31.02±1.54	30.32±3.73
Social function	Intervention	27.02±2.22	43.11±10.09	45.28±5.51
	control	26.56±3.07	27.14±3.24	27.68±3.13
The overall QOL	Intervention	55.02±4.86	92.48±19.17	97.88±8.75
	control	55.48±5.77	57.70±5.10	56.37±6.36

Table 3: Results of within-subjects ANOVA in three measurements of the QOL and its dimensions

variable	Source of differences	Total Sum of Squares (*SST*)	*d.f.*	Mean of Squares (*MS*)	*F*	*p*
Physical limitation	Time	3318.80	*1.74*	1159.40	*55.08*	*0.000*
	Group × Time (interaction effect)	3276.64	*1.74*	1881.32	*77.84*	*0.000*
	Group	6799.56	*1*	6799.56	*358.66*	*0.000*
Emotional function	Time	6003.09	*1.65*	3623.95	*85.27*	*0.000*
	Group × Time (interaction effect)	5079.45	*1.65*	3066.37	*72.15*	*0.000*
	Group	8601.60	*1*	8601.60	*245.69*	*0.000*
Social function	Time	4212.08	*1.52*	2767.41	*70.68*	*0.000*
	Group × Time (interaction effect)	3805.74	*1.52*	2500.44	*63.86*	*0.000*
	Group	7381.07	*1*	7381.07	*303.40*	*0.000*
The QOL	Time	20384.26	*1.56*	13042.99	*102.84*	*0.000*
	Group × Time (interaction effect)	17300.89	*1.56*	11070.08	*78.28*	*0.000*
	Group	33143.37	*1*	33143.37	*373.06*	*0.000*

Fig. 1: changes in the mean score of QOL in the intervention and control groups during the study period.



DISCUSSION

The present study aimed to determine the effect of the teach-back method on the QOL in patients with ICD. Implementation of the teach-back method increased the mean score of the QOL and its dimensions (physical, emotional and social function) in patients with ICD. Ghiasvand et al. (2017) concluded that the teach-back method can be effective in educating women during the postpartum period, and that is because the mean score of postpartum QOL improved statistically and significantly in the trial group[20]. In a study by Dalir et al. (2015) on the effect of the teach-back method on self-care in patients with heart failure, it was revealed that there was a statistically significant difference between the intervention and control groups in the mean score of self-care after the intervention[21]. Awuah-Asamoah (2019) revealed that the teach-back method had a statistically significant effect on pre-discharge knowledge retention and self-care in heart failure patients[22]. The results of the above studies are consistent with the results of our study. However, Ross (2016) came into inconsistent results with the results of our study as he indicated that the QOL in heart failure patients increased slightly, although it was not statistically significant[23].

Based on the results of the above studies and the consistency of the majority of them with our study, the teach-back method can be considered as a reliable and highly effective model for educating patients, especially those with chronic diseases such as patients with ICD.

In a study by Hwang et al. (2020), it was found that educational intervention improved the knowledge and self-care of heart failure patients. However, in contrast to the results of the present study, no positive change was found in the QOL of these patients(24).

Ataee et al. (2017), in a study on patients with a permanent pacemaker, revealed that there was a significant increase in the mean scores of emotional, physical, and social dimensions of QOL and the overall QOL. They also utilized the MacNew HD-HRQL Questionnaire to collect data(25). Rahmani et al. (2019) also indicated that the nurse-peer-led support intervention can have a significant effect on all three dimensions of emotional, physical and social function as well as the overall mean score of QOL(26). The results of the two above studies are also consistent with the results of the present study.

Regarding the nature of ICD placement and the issues concerning the QOL in both physical and emotional dimensions, patients with ICD are interested in receiving health education, so that they could improve their QOL by managing their health conditions. Therefore, patient education with patient-centered health education methods such as teach-back can ensure learning in these patients.

CONCLUSION

Based on the findings of the present study, the teach-back method had a positive effect on the QOL in patients with ICD. Therefore, using this method as an evidence-based and cost-effective method creates an effective education for these patients. Nurses and other healthcare providers can utilize this method to better understand and convey the educational content to the patients with chronic diseases, especially patients with ICD.

Acknowledgment: The present study is extracted from a research project. We express our appreciation to Vice-Chancellor for Research of Urmia University of Medical Sciences, all the officials and staff working in the cardiology clinic of Seyed Al-Shohada Hospital, and all the patients who were participated in this project and helped us to conduct this study. It is hoped that the present study will improve the QOL of patients with ICD and take steps towards providing better patient care.

Conflict of Interests: The authors declare that there is no conflict of interests regarding the publication of this paper.

REFERENCES

1. Oshvandi k, keshmiri k, salavati m, emkanjoo z, musavi s. Effectiveness of education based on orem's self-care model in self-care activity of patients with implantable cardioverter defibrillators %j hayat. 2013;19(3):47-55.
2. Magyar-russell g, thombs bd, cai jx, baveja t, kuhl ea, singh pp, et al. The prevalence of anxiety and depression in adults with implantable cardioverter defibrillators: a systematic review. Journal of psychosomatic research. 2011;71(4):223-31.
3. Marcus fi, zareba w, calkins h, towbin ja, basso c, bluemke da, et al. Arrhythmogenic right ventricular cardiomyopathy/ dysplasia clinical presentation and diagnostic evaluation: results from the north american multidisciplinary study. Heart rhythm. 2009;6(7):984-92.
4. Kao cw, chen my, chen ty, lin ph. Effect of psycho-educational interventions on quality of life in patients with implantable cardioverter defibrillators: a meta-analysis of randomized controlled trials. Health and quality of life outcomes. 2016;14(1):138.
5. Forouhari S, Heidari Z, Tavana Z, Mihanpour H, Sayadi M, Shayan A, et al. Effect of some hormones related to polycystic ovary syndrome on health-related quality of life.

The Iranian Journal of Obstetrics, Gynecology and Infertility. 2016;18(186):17-27.
6. Tomzik j, koltermann kc, zabel m, willich sn, reinhold t. Quality of life in patients with an implantable cardioverter defibrillator: a systematic review. Frontiers in cardiovascular medicine. 2015;2:34.
7. Chair sy, lee ck, choi kc, sears sf. Quality of life outcomes in chinese patients with implantable cardioverter defibrillators. Pacing and clinical electrophysiology : pace. 2011;34(7):858-67.
8. Eftekhar ardebili h, mirsaeidi zs. Assessment of factors affecting quality of life of elderly clients coveraged bye health centers of southern of tehran j salmand: iranian journal of ageing. 2015;9(4):268-77.
9. Abedi ha, yasaman-alipour m, abdeyazdan g. Quality of life in heart failure patients referred to the kerman outpatient centers, 2010 %j journal of shahrekord uuniversity of medical sciences. 2011;13(5):55-63.
10. Kao cw, friedmann e, thomas sa. Quality of life predicts one-year survival in patients with implantable cardioverter defibrillators. Quality of life research : an international journal of quality of life aspects of treatment, care and rehabilitation. 2010;19(3):307-15.
11. Lemon j, kirkness a, edelman sjajoan, the. Educational intervention for patients with automatic implantable cardioverter defibrillators. 2007;24(3):26.
12. Golabchi a, sokot arani s, mousavi g, sadeghi gandomani h, meydani zjjommis. Comparison of the effect of video-training based technique by video and group discussion on the level of stress, anxiety, depression and self-efficacy of patients undergoing pacemaker and cardiac implantation defibrillator. 2019;5(1):12-20.
13. Oshvandi k, jokar m, khatiban m, keyani j, yousefzadeh mr, sultanian arjijod, et al. The effect of self care education based on teach back method on promotion of self care behaviors in type ii diabetic patients: a clinical trial study. 2014;13(2):131-43.
14. Hatefi moadab n, elahi n, moradbeygi k, fakhri m, latifi s, elhami sjjcrps. Effect of teach-back educational method on surgical anxiety in primiparouscesarean section women. 2015;4(2):169-77.
15. Tamura-lis wjun. Teach-back for quality education and patient safety. 2013;33(6).
16. Salavati m, khatiban m, moghadari koosha b, soltanian ajajon, care m. Evaluating the effect of teach back education on self-care behaviours and quality of life in patients with myocardial infarction in 2015: a randomised controlled trial. 2017;25(1):-.
17. Daskapan a, höfer s, oldridge n, alkan n, muderrisoglu h, tuzun ehjjoeicp. The validity and reliability of the turkish version of the macnew heart disease questionnaire in patients with angina. 2008;14(2):209-13.
18. Höfer s, turk-adawi k, oldridge njejfpch. The macnew heart disease health-related quality of life questionnaire: updated reference data for users. 2016;4(1):221-9.
19. Nekouei zk, yousefy a, manshaee qjijome. The effect of cognitive-behavioral therapy on the improvement of cardiac patients' life quality. 2010;10(2).
20. Ghiasvand f, riazi h, hajian s, kazemi e, firoozi ajep. The effect of a self-care program based on the teach back method on the postpartum quality of life. 2017;9(4):4180.
21. Dalir z, reihani z, mazlom r, vakilian f. Effect of training based on teach back method on self-care in patients with heart failure %j journal of mazandaran university of medical sciences. 2016;25(134):209-20.
22. Awuah-asamoah m. Effects of teach-back method of education on knowledge of heart failure self-care management and post-discharge knowledge retention. 2019.
23. Ross dj. The effects of the teach back method on heart failure patients: grand canyon university; 2016.
24. Hwang b, pelter mm, moser dk, dracup kjpe, counseling. Effects of an educational intervention on heart failure knowledge, self-care behaviors, and health-related quality of life of patients with heart failure: exploring the role of depression. 2020.
25. Ataee e, haghjoo m, dalvandi a, bakhshandeh hjijocn. Effect of self-care education on quality of life among patients with permanent pacemaker. 2013;1(4):40-7.
26. Rahmani a, moradi y, saadat s, alinezhad vjjoun, faculty m. The effect of nurse-peer-led support intervention on quality of life in patients with an implantable cardioverter-defibrillator: a randomized clinical trial. 2019;17(3):227-38