Video Training Programs and the Quality of Life of Patients With Type II Diabetes

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Background: Improving health quality of life (QOL) for patients with type 2 diabetes are ongoing challenges for health care providers. Education can significantly reduce the chances of developing long-term complications of diabetes. Currently, there is a need to test the effects of a video tape program.

Objectives: The aim of this study was to evaluate the effect of video training programs on QOL of patients with type 2 diabetes.

Patients and Methods: This study with the quasi-experimental pretest-posttest design was conducted in the outpatient clinic of Golestan hospital in Ahvaz city, Iran, in 2014. Thirty patients were selected on the basis of a nonrandomized sampling. Each patient was assessed before starting the educational intervention by questionnaires about educational requirements and Iranian version of the Short-Form 36 (SF-36) health survey. After determining educational needs, a video-tape educational program was designed based on the principles of patient education and also through counseling with the experienced endocrinologist and nutritionist. This movie was shown to the patients for five one-hour sessions in two weeks. The questionnaire of QOL was completed one month after implementation of the educational program. Data were analyzed by descriptive statistics and paired t-test using SPSS software. P values of less than 0.05 were considered statistically significant.

Results: Results showed that there was a significant increase in general health perception (P = 0.033), physical functioning (P = 0.001), role physical (P = 0.000), social functioning (P = 0.001), pain (P = 0.002), and mental health (P = 0.001); however, there was no statistically significant increase in energy and fatigue and role emotional.

Conclusions: Our educational intervention with the video information method can improve the QOL of patients with type 2 diabetes. Additionally, an approach to patient education based on video may serve as a choice for people with diabetes to raise their disease-related knowledge in order to care for themselves and improving the QOL.

Keywords: Diabetes Mellitus; Quality of Life; Videotape Recording-Patient Education

1. Background

Diabetes mellitus in adults is a serious health problem that affects all aspects of the patient's life (1). Diabetes is caused by the impaired glucose endocrine system, which is characterized by abnormal blood glucose fluctuations and is usually associated with defects in insulin production and glucose metabolism (2). Although the incidence of diabetes varies widely in different populations, it is rising dramatically worldwide. Global incidence of diabetes in adults is 6.4%. According to the 2010 statistics, 285 million adults worldwide are diabetics. This figure will increase to 7.7%, or 439 million individuals, by 2030 (3). The prevalence of diabetes in different parts of Iran has been reported as 7.5% - 7.9%, which will be tripled in 15 years (4). According to the International Diabetes Association, diabetes is the fourth leading cause of death worldwide (5).

This chronic disease has various complications, including cardiovascular and cerebrovascular complications, diabetic neuropathy, kidney failure, impotence in men, and amputation due to wounds and infections which significantly and negatively affect the health and QOL in patients with diabetes. On the other hand, the sense of responsibility and hardship driven by the severe diet restrictions and daily use of oral medications or insulin, as well as the incompatibility between performing social roles and the importance of self-management along with the increased costs of drugs, have a significant impact on the general health, well-being, and the QOL of diabetic patients (6). Diabetic patients who suffer from these complications have a lower QOL compared with the nondiabetic patients (7). Patients with diabetes are also 2 to 4 times more likely to develop cardiovascular complications and have a mortality rate of 2 to 5 times higher than nondiabetics. They have a lower QOL compared to those without chronic diseases (8, 9). Funnel (2006) reported that most of patients (85.2%) experience high levels of distress during diagnosis, including shock, anger, anxiety, guilt, depression, and despair (10). Years after diagnosis, diabetic patients' problems such as fear of physical, psy-

chological, and social complications and economic costs can reduce the quality of their lives. Diabetes-related concerns are common among patients, and nearly 41% of patients enjoy poorer psychosocial health (11). Reduced QOL not only reduces life satisfaction in the diabetics, but also can influence the results of the treatment and care through affecting one's commitment to the health-care directives (6). Today, the goal of diabetes treatment is not exclusive to identifying the problems and increasing the level of patient care. Improving the QOL of patients is also an important goal (12). There is a reciprocal relationship between the control of diabetes symptoms and improving the QOL by educating the patients. In this regard, world health organization (WHO) argues that training is the basis of disease treatment and control. In order to achieve satisfactorily-controlled diabetes and have an increased QOL, diabetics require training. They also need to actively participate in disease management such as daily monitoring of blood glucose, direct meetings with medical personnel, regular exercise program and changes in diet and lifestyle (13). In this regard, nurses can determine the negative impact of the disease on the patients' QOL and design special care programs to correct them through examining the patients' health status and QOL (14). Moreover, improving the QOL not only is valuable for diabetic patients, but also, reduces the associated health care costs. Improving the patients' knowledge and performance means to improve control of metabolic status and performing the suitable self-care behavior. In other words, in order to be able to properly care for themselves and have a high QOL, diabetic patients should undergo training about their disease and improve their knowledge and skills regarding diabetes (15).

It is essential to train diabetic patients considering the multiplicity of the problems in diabetes and the need to increase their knowledge and awareness about the disease to improve their QOL. It has been noted that training in diabetes plays a key role in the development of self-care and self-management skills, and thereby, an improved QOL (16). So far, the training programs for patients have been mostly the face to face training type, which in most cases, has been effective. However, this method requires a trained teacher and other educational materials which access to them may be limited in hospitals. Therefore, it is necessary to use the training programs and teaching methods for diabetics that do not have limitations of the face to face trainings (16). One of the alternatives is video training. Video can transfer the basic concepts to larger number of patients in a short time. It is more beneficial than urgent training since its content is predetermined. Some of the advantages of video training include the ability to create data storage, consistency of information, lack of anxiety during training, adding new information to previous content, and an increased adaptation. Another advantage of video is the use of color, motion, and various scenes, while their combination with sound and picture brings about a comprehensive training (17).

Video enables trainees to acquire the required information without time and place limitations (18). In patient training, multimedia technology has been widely used to increase understanding of suitable self-care activities to control disease symptoms such as diabetes (18, 19), asthma (20), cancer (21), pregnancy (22), and colonoscopy (23). The effectiveness of multimedia technology in diabetic patients has been variable. For example, the results of two clinical trials showed that the computer-based multimedia training program consisting of a sequence of audio and video affects the patient's knowledge about the diabetes complications but had no significant impact on biomedical and self-efficacy consequences (18, 19). Results of a study conducted in New Zealand showed that training through video affects the knowledge of patients with diabetes. However, it did not affect metabolic variables (24). Literature review showed that further interventions are needed to increases the effectiveness of video interventions to improve the patients' health behaviors (25). Since there is little evidence available in Iran regarding the effectiveness of video training in improving the diabetics' QOL, the aim of this study was to determine the effect of video training programs on QOL in patients with type II diabetes.

2. Objectives

The aim of this study was to examine the effect of video training programs on QOL of patients with type 2 diabetes.

3. Patients and Methods

This study is part of a large study to investigate the comparison of two methods of attended and nonattended (video tape) educational programs on problems and QOL of patients with type 2 diabetes. In this article, only the results of video-tape education were reported. In this quasi-experimental, pretest-posttest interventional study, we considered each subject as his/her own control.

The following statistical formula and the QOL literature were used to determine the sample size:

$$(1) \quad n = \frac{\left(z_{1-\frac{\alpha}{2}} + z_{1-\beta}\right)^2 \left(s_1^2 + s_2^2\right)}{\left(\bar{x}_1 - \bar{x}_2\right)^2} = \frac{(1.96 + 0.84)^2 \left[(5.5^2)(8.4^2)\right]}{(98.4 - 94.4)^2} = \frac{(7.84)(30.25 + 70.56)}{16} = 49.1 \cong 50$$

Where $z_\alpha = 1.96$, $z_\beta = 0.84$, $s_1 = 5.5$, $s_2 = 8.4$ and d is the average difference between QOL which, according to the present study, was 98.4 and 94.4 in the experimental and control groups, respectively, after the intervention (26). Fifty patients were selected. Fifteen patients were excluded due to not participating in the two training sessions, whereas 5 patients were excluded due to severe complications and the inability to continue the study. Finally, 30 patients with type 2 diabetes were selected through nonrandomized sampling according to the inclusion criteria.

The inclusion criteria were as follows: 1. Patients with diabetes but without comorbidity; 2. Patients who had not intended to immigrate during the intervention and

training programs; 3. Patients who had a good physical condition and were willing to participate in training; 4. Patients who had not previously received formal training on self-care and did not participate in the training program in this field during the study; 5. Patients who did not have mental health problems and infectious diseases; 6. Patients with at least one year of diabetes history. The exclusion criteria were the lack of participation in one training session and refusing to continue.

The tool used in this study included the demographic information questionnaire and the standard 36-item QOL questionnaire in the Iranian population. The 36-item questionnaire included 8 dimensions of physical functioning, physical role restrictions, bodily pain, general health perception, energy and power, social functioning, emotional role restrictions, and mental health. Each of the 8 dimensions had a score of 0 to 100. This score is based on the Short-Form 36 (SF-36) standard measure. The 3-item question with scores of (0, 50, and 100), the 5-item question with scores of (0, 25, 50, 75, and 100), and the 6-item question with scores of (0, 20, 40, 60, 80, and 100) were considered, where higher scores indicate better performance. Each of the 8 dimensions had a score of 0 to 100, where higher scores indicate better performance. The standard mean QOL was 50, there values higher and lower than 50 represent a high and low mean performance, respectively (27). Quality of life questionnaire is a standard measure, whose validity and reliability was confirmed in the Iranian population by Montazeri et al. in 2005 (28). The reliability of the tool used in this study was greater than 85%.

Research units were examined on two sessions during two weeks before training using the questionnaires of training requirements and QOL. The needs and the problems were identified after collecting and analyzing the necessary data. Then, based on the needs of patients in relation to diet, medication, glycemic control skills, and physical activity, a video was designed and prepared though consulting nutritionists, endocrinologists, and nurses. Patients were divided into three groups of 10. The video content was displayed for each group in five 1-hour sessions during two weeks (3 sessions in the first week, and 2 sessions in the second week). In total, 15 training sessions in the form of videos were held during a 4-week period. Fifteen to twenty minutes of questions and answers followed each video. One month after the program, similar to before the intervention, the subjects were evaluated using the Iranian QOL SF-36 questionnaire.

Ethical considerations in this study included the authorizations of the respective institution, the introduction of the researcher to the respective unit, obtaining written consent from patients, explaining the procedures, the right to withdraw from the study at any time, and the privacy of patients.

SPSS 17 (Inc. Chicago, Illinois, USA) was used for data analysis. Paired t-tests were used to compare QOL before and after the training, and the descriptive statistics were used to assess the demographic characteristics.

4. Results

Thirty patients with type II diabetes were studied. They aged between 31 - 60 years with the mean age of 44.67 ± 12.45 years. Among the subjects, 40% were male, and 60% were female, 16.7% had the primary school education, 23.3% had the secondary school education, 43.3% had high school diploma, and 16.7% had a university education. Ninety percent were married, 23.3% were employees, 53.3% were self-employed, and 23.3% were retired. Results of the impact of video training on the QOL in diabetics are presented in Table 1.

As can be seen in Table 1, all the dimensions of the QOL improved after the videos were displayed. The improvement in general health perception (P = 0.033), physical functioning (P = 0.001), role physical (P = 0.000), social functioning (P = 0.001), pain (P = 0.002), and mental health (P = 0.001) was statistically significant; however, there was no statistically significant increase in energy and fatigue and role emotional.

Table 1. Comparison of the Mean Dimensions of the Quality of Life Before and After Displaying the Training Video Intervention in Patients With Type II Diabetes

Score of Quality of Life	Before Video Education	After Video Education	df	t	P Value
General health perception	40.83 ± 16.71	47.50 ± 15.87	29	-2.23	0.033 [a]
Physical functioning	53.10 ± 24.47	67.75 ± 23.09	29	1.52	0.001 [a]
Role physical	67.70 ± 21.59	87.29 ± 15.35	29	5.187	0.000 [a]
Role emotional	51.04 ± 19.07	53.12 ± 18.62	29	0.659	0.515
Social functioning	47.91 ± 23.21	70.41 ± 20.62	29	3.86	0.001 [a]
Pain	35.58 ± 29.38	65 ± 27.34	29	3.454	0.002 [a]
Energy and fatigue	51.57 ± 17.60	54.44 ± 14.41	29	-1.09	0.281
Mental health	66.66 ± 27.45	88.21 ± 14.86	29	3.857	0.001 [a]
Overall health	58.73 ± 9.10	66.61 ± 14.84	29	-0.98	0.001 [a]

[a] A significant difference.

5. Discussion

Results showed that displaying training video leads to the adoption of the taught factors by patients, resulting in a positive impact on all dimensions of QOL of patients with diabetes, so that after training, statistically significant differences were observed in most dimensions. Generally, the mean overall QOL of these patients was significantly increased. In this regard, it is stated that treatment acceptance and adherence to the self-care principles by the diabetic patients is very valuable in disease management and brings about disease control and the necessary lifestyle changes (29). The field's literature emphasizes that QOL is an important and valuable consequence in patients with diabetes which has to be routinely evaluated along with training assessments (30, 31).

Since few studies have been conducted on the impact of video training on the QOL of patients with type II diabetes, it was impossible to compare the results of the present study with other studies in this field. Consistent with our results, the results reported by Ataee et al. (2013) showed that video-based self-care behavior training has a significant positive effect on the QOL of patients with a permanent pacemaker (32).

Huang et al. (2009) showed that multimedia training affects the diabetic patients' knowledge but does not significantly affect the glycemic control and diabetes self-care behaviors (18). In a study conducted by Saeid Pour et al. (2013) in Tehran, it was reported that self-care training affects the mean QOL of patients with diabetes, so that the mean QOL increased from 46 before the training to 75.52 after the training (P = 0.04) (15). Shayeghian et al. (2013) showed that effective self-care behaviors in diabetic patient lead to glycosylated hemoglobin levels closer to normal and an improved QOL (33). The results obtained by Hall et al. (2009) were consistent with our results. They showed that QOL is affected by everyday treatment requirements (self-care), and the ability to adapt to self-care behaviors is directly related to the QOL (34). Rakhshandehroo et al. (2006) examined the impact of health education on QOL of patients with diabetes. Consistent with the present results, training affected the QOL, while the mean QOL score was increased from 35.2 ± 9 before the training to 53.6 ± 9.7 after the training (35). The difference with the current research was in the teaching methods which were face to face.

No statistically significant increase was observed in the dimensions of emotional functioning and vital energy. In other words, training was more effective on the physical dimensions, whereas it did not highly affect the mental and psychological health. This was expected because our educational content was not focused on the psychological issues and placed more emphasis on health issues and physical symptoms control. Therefore, due to a slight increase in these dimensions, it is recommend considering patients' psychological issues in future studies and educate patient regarding these issues.

Clinical guidelines in diabetes care (2011) notes that since diabetes is a chronic disease, and patients are sensitive to their treatment and care routine and consider it a threat to their health, training and self-management behaviors are health requirements in this group of patients. However, since upon completion of training sessions, the sensitivities caused by the trainings gradually diminish, training courses are recommended for patients with diabetes at least every 6 months (36). Since the number of nurses in hospitals is currently not sufficient in Iran, and they do not have enough time for patient training, periodically-conducted face to face training programs are not applicable. Therefore, training programs that do not require face to face interactions can help reduce the need for nurses. Accordingly, videos can solve this major challenge in Iran. Therefore, we recommend that nurses utilize the appropriate instructional videos in health centers.

5.1. Conclusion

In this study, the video training intervention improved the QOL in patients with diabetes. Teaching approach based on interactive multimedia tools is a good choice for diabetics for enhancing their knowledge about self-care and increasing their QOL. Results can be used as guidance for nurse managers and practitioners in nursing training programs to consider the importance of video training in patients with diabetes and hold classes and training courses to promote the practical application of instructional videos.

This study had some limitations. One of the limitations of this study was that there was no control group, and follow-ups were performed only once after training. Therefore, it is recommended to conduct the research with a control group and with higher number of follow-ups to evaluate the effects of instructional videos over time. Another limitation was that the QOL questionnaire used here was not exclusive to patients with diabetes. Therefore, we recommend a comparative study with the 36-item questionnaire form and a questionnaire exclusive to patients with diabetes. Another limitation of this study was that it was conducted in only one hospital which reduces the generalizability of the results.

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Authors' Contributions

Shahram Baraz: Study concept and design, analysis, and interpretation of data, drafting the manuscript, and critical revisions for important intellectual content; Hajiee Bibi Shahbazian and Kourosh Zarea: Study conception and design, supervision; Mojtaba Miladinia: acquisition of data.

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