The Effect of Teach-Back Method on Self-Efficacy in Patients with Type 2 Diabetes

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Abstract

BACKGROUND: Diabetes is a chronic, metabolic and progressive disease which is commonly associated with increase in blood sugar caused by secretion or function of insulin. Therefore, daily blood sugar control, adherence to a dietary and pharmaceutical regimen, activity and foot care is fundamental. This study was conducted to investigate the effect of teach-back method on self-efficacy of patients with type 2 diabetes.

METHODS: A total of 74 eligible patients with type II diabetes were included in the study from Endocrine and Metabolism Clinic by convenience sampling method. The subjects were then assigned into the control and intervention groups. The data collection instruments consisted of a demographic data form and self-efficacy questionnaire of the patient with type 2 diabetes that were provided to the subjects before and 1 month after the training. Subjects in the intervention group received a 5-session training program by means of teach-back method. The control group received only routine programs. One month after the completion of the training sessions, the questionnaires were completed by the subjects in the 2 groups. The obtained data were analyzed by Chi-square test, Fisher Exact test, Independent t-test, Paired t-test, Mann-Whitney U test, and Wilcoxon signed-rank test, using SPSS.

RESULTS: Mean and standard deviation of self-efficacy for individuals in case group before the training were increased in comparison to one month after teach-back method, but in the control group, mean and standard deviation of the individuals, before and after the training were not significantly different. In addition, two groups had not significant different in regard with mean score of self-efficacy dimensions before the training, but there was a significant difference one month after training, and mean score of dimensions in case group was significantly higher than control group (P<0.001).

CONCLUSION: Teach-back method was a training method to ensure on patients perception. This study was conducted over a 1-month period, and it is recommended that the effect of this method be investigated over longer periods of time in order to assess its long-term effects and other chronic diseases.

Keywords: teach back · self-efficacy · type 2 diabetes · analysis tests

1. Introduction

Chronic diseases are one of the main causes of mortality and disability in today world [1]. Decline in physical activity, increase in obesity, tobacco use and the number of elders lead to considerable growth in prevalence of chronic diseases in societies [2]. Diabetes is one of the most common chronic metabolic diseases [3,4]. According to reports by world health organization, about 422 million individuals are affected by diabetes in 2014, which its prevalence is greater in low- and moderate income countries. Global prevalence of diabetes is estimated as 8.5% among adults aged more than 18 years. In addition, it was the seventh leading cause of mortality at year 2016 (1.6 million individuals died due to diabetes) [5]. Complications caused by diabetes include short-term complications such as hypoglycemia, diabetic ketoacidosis, and long-
term complications such as retinopathy, nephropathy, neuropathy and lesion in cardiovascular system [6]. In addition, it can lead to disability and a 10-year decline in life expectancy [7,8]. Hence, daily blood sugar control, adherence with a dietary and pharmaceutical regimen, activity a foot care is essential [9,10]. By performing these self-care behaviors, 95% of care and treatment for T2DM are provided [11,12]. On the other hand, application of self-care and self-efficacy behaviors has an important role in self-management and improvement in efficiency of training for people with diabetes [13].

Self-efficacy means self-confidence and individual’s ability to do self-care behaviors in specific conditions [14]. Perceived self-efficacy is an important factor for successful performance of the function and fundamental required skills to perform it [15]. Bandura described self-efficacy as individual’s belief on his ability in order to achieve a specific goal [16]. World health organization describes health promotion as self-efficacy of an individual to achieve control on his life [17]. Promotion in self-efficacy is an important pre-requisite in behavioral change process and leads to increase in life-expectancy [18,19].

Training is a proper tool to increase awareness level of clients, so that due to type of their problems, the training should provide active and informed cooperation for self-care [20]. On the other hand, training should be based on patient’s need, and emphasize the key tips which teach-back method provides this [21].

Teach-back method is an evidence-based and interactional training method, which assesses comprehensive understanding and perception through asking them and can leads to increase patient’s knowledge and perception and promote his self-management. This method provides invaluable information for patient and health care givers to improve disease process and outcomes [22], and its aim is to provide effective learning in patients, decline in memory error and mistakes [23]. One of the most effective methods to improve training perception is teach-back method [24,25]. In teach-back method, the trainer teaches contents in simple and understandable speaking without using medical terms to client, and after finishing the training, the clients are asked to explain the contents in a way they perceived. If client does not understand the contents properly, the trainer should repeat the contents for clients until complete understanding [26]. Since the trainer nurse can assess needs of affected patients by communicational skills, and has the possibility to design individualized training and presents necessary trainings for affected patients [27]. Therefore, due to the importance of training for patient and assurance on perception, individuals’ recall and maintenance of training information, this study aimed to determine the effect of teachback method on self-efficacy in patients with T2DM.

2. Materials and Methods

This was a pretest–posttest clinical trial with control group. The subjects included 74 patients with type 2 diabetes who referred to the Endocrinology and Metabolism Clinic of Gonabad University of Medical Sciences, Gonabad City, Iran in 2018. The samples were selected by convenience sampling method and according to the inclusion criteria (people over 18 years, with no mental illnesses, literate, not part of the health workforce, with no history of participation in diabetes education programs in the last six month, and possibility of contacting with their family members), and exclusion criteria (developing physical problems that prevents self-care), were allocated to the 2 groups of control (n=37) and training (n=37).

After obtaining permission from the Ethics Committee of Iran University of Medical Sciences, the relevant data were collected by referring to the Diabetes Clinic of Gonabad City. The project, research objectives and, confidentiality of personal information were explained to the study participants. The written informed consent was obtained from all samples.

In order to prevent leakage of data, and to isolate the two groups, the control group and then the intervention group were selected. Selecting subjects was performed at the beginning of the week and training sessions were held during the same week in the diabetes clinic class for individual subjects and on a face-to-face basis; such that, in addition to the usual programs of the department, a person-to-person training program was conducted during 4 sessions of 30 to 45 min by a teach back method. Also, at the end of each training session, the educating manuals for diabetes were provided to the intervention group. In the control group, there were routine programs that included training by a doctor or nurse, and departmental posters. One month later, two groups were evaluated.

Data gathering tool include demographic characteristics and self-efficacy questionnaire of individuals with T2DM (DMSES). Demographic character-
The obtained data suggested that the control and intervention groups were homogeneous in terms of demographic information. The mean score of age was 47.08 years in the intervention group and 43.54 years in the control group, with the mean age of 45.31 years for both. The majority of subjects were married, housekeepers, held diploma degree, and had a history of diabetes for longer than 2 years (Table 1).

According to the Independent t test, the Mean ± SD scores of self-efficacy were 95.89 ± 10.77 in the intervention group and 95.54 ± 10.97 in the control group, before the training. There were no significant differences in terms of self-efficacy score before the training. There were no significant differences in terms of self-efficacy score before the training. There were no significant differences in terms of self-efficacy score before the training.

3. Results

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Table 1: Demographic information of type 2 diabetic patients in control and intervention groups

| Group      | Variable | Intervention | Control | Test Results |
|------------|----------|--------------|---------|--------------|
| Age, y     | 20-39    | 11(29.8)     | 15(40.6)| t=1.4        |
|            | 40-59    | 19(51.3)     | 17(45.9)| df=72        |
|            | 60-70    | 7(18.9)      | 5(13.5)| p*=0.16      |
|            | X ± Sd   | 47.08±10.39  | 43.54±11.20 |             |
| Gender     | Male     | 18(48.6)     | 18(48.6)| x²=0         |
|            | Female   | 19(51.4)     | 19(51.4)| df=1         |
|            |          |              |         | p**=1        |
| Marital status | Married | 30(81)       | 23(62.1)| x²=3.2       |
|            | Single   | 7(19)        | 14(37.9)| df=1         |
|            |          |              |         | p***=0.07    |
| Employment status | Employed | 3(8.2)       | 4(10.8)|              |
|            | Self-employment | 8(21.6) | 9(24.3)|              |
|            | Retired  | 5(13.5)      | 3(8.2)|              |
|            | Housekeeper | 12(32.4) | 11(29.7)|              |
|            | Unemployed | 5(13.5)   | 7(18.9)|              |
|            | Worker   | 4(10.8)      | 3(8.1)|              |

The collected data were analyzed by SPSS. Frequency distribution tables and related diagrams (for qualitative data) and mean and standard deviation (for quantitative data) were used to describe the results. The Kolmogorov-Smirnov test was used to assess the normality of the data. Paired sample t test and Independent t test were applied to compare the mean scores and normal data. Non-parametric Mann-Whitney U test and Wilcoxon signed-rank test were used for analyzing the non-normal data. The significance level was considered 0.05 for all tests.
training, between the 2 groups (p=0.89). The Mean ± SD scores of the subjects' self-efficacy were 148.51 ± 19.78 in the training group and 97.95 ± 15.72 in the control group, 1 month after the training. According to the Independent t test, self-efficacy score was significantly higher in the intervention group than control group (P<0.001). Also, the paired sample t test revealed a significant difference between self-efficacy in the intervention group before and 1 month after training, which significantly increased after training (t=13.94, p<0.001) (Table 2).

Considering the results of Independent t test, there was no significant differences between the 2 groups in terms of mean scores of self-efficacy before training. However, there was a significant difference between the groups, 1 month after training, which mean scores were significantly higher in the intervention group (P<0.001). In addition, according to the result of the paired t test in the intervention group, there was a significant difference between the mean scores of self-efficacy dimensions before and 1 month after training, and it was significantly higher 1 month later (P<0.001). Meanwhile, there was no significant differences in the control group (Table 3).

### Table 2: Numerical indicators of the self-efficacy in patients with type 2 diabetes in the control and intervention groups

| Time                      | Group                  | Intervention group | Control group | Independent t-test results |
|---------------------------|------------------------|--------------------|---------------|---------------------------|
|                           | Mean ± SD              | Mean ± SD          |               |                           |
| Before training           | 95.89 ± 10.77          | 95.54 ± 10.97      | t=0.13, df=72, p=0.89 |
| One month after training  | 148.51 ± 19.78         | 97.95 ± 15.72      | t=12.17, df=72, p<0.001 |
| Paired t-test results     | t=13.94, df=36, p<0.001| t=0.76, df=36, p=0.45 |

### 4. Discussion

The obtained results suggested that the mean scores and standard deviation of self-efficacy increased in the intervention group after implementing the teach-back method. However, there was no significant differences between the mean and standard deviation scores in the control group, before and after conducting the teach-back method. One study performed by Parizad et al., [28] at 2011 entitled “promotion of self-care in patients with T2DM: long-distance training”, showed that self-care in two control and case groups before the intervention was not significantly different [28]. In addition, in one study by Varaei et al, both groups before the training had not significant statistically difference in regard with self-efficacy [29], which the results of both studies were in line with the current study in regard with homogeneity of groups in dependent variable before the training. Mean and standard deviation of self-efficacy for the individuals in case group before the training in comparison to after training are increased, but in regard with control group, mean and standard deviation of the individuals before the training in comparison to end of the intervention showed no significant changes. The studies by Khavasi et al entitled “investigation of effect of peer-training on self-efficacy of the patients with diabetes type 2” [30-35] showed that performing interventions leads to significant difference in self-efficacy between individuals in case group in comparison to control group and improvement in
self-efficacy, which is in line with above studies. But the study by Naghibi et al., [36] there was no significant difference between patients in two groups before the training which is in line with the current study, but after the intervention, self-care of patients in both groups was significantly increased that this increase was greater in control group, the researchers knew the training for patient as the reason for significant self-care after the intervention in control group in service providing centers and external factors such as media, relative's awareness and patient’s reading, which increase in control group is inconsistent with the findings of the study [36]. Self-efficacy is an assurance that an individual performs a specific behaviour successfully, and expects obtained results. Bandura et al., believed that feeling of self-efficacy is formed as result of enduring challenges and sequential and step-by-step performance of the behavior. Bandura stated that self-efficacy, the main and important prerequisite of behavioral change, is one of the health behaviors [37]. Diabetes is a chronic disease which success in its treatment requires active and constant cooperation of individual in treatment process, and since daily activities and life-style and dietary habits of the patient have a considerable effect on diabetes and blood sugar control, training of the patient is of most important. Correct training in regard with diabetes leads to reduction in long-term complications and hospitalization in hospital. A training method for assurance on patients’ perception is teach-back method which is applicable and possible in the context of diabetes. Increase in knowledge enables individuals for better self-care, and leads to informed decision-making related to continuity of self-care and decline in physical and mental symptoms and signs [38].

5. Conclusion

Health education and appropriate corrective and behavioral approaches are one of the most effective ways of preventing and controlling diabetes. These trainings focus on raising awareness, reinforcing the motivation and skills of individuals to further engage in the implementation of prescribed therapies and participate actively in self-care with the help of other family members. Considering the efficacy of the intervention to improve the lifestyle of people with type 2 diabetes, rehabilitation in the field of diabetes is feasible and an effective way to improve the status of people with diabetes.

6. Limitations

Subjects with different educational levels may have differences in the answers to questions that were considered to be partly addressed by the control group.
Participants sometimes had difficulty attending training classes, trying to work more closely with them to solve this problem.

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