

The effect of problem solving and decision making skills on tendency to depression and anxiety in patients with type 2 diabetes

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Abstract

Background: Diabetes is the most prevalent disease that has involved 177 million people all over the world and, due to this, these patients suffer from depression and anxiety and they should use special methods for controlling the same. The aim of this research is the study of the effect of problem solving and decision making skill on the rate of the tendency to depression and anxiety.

Materials and Methods: This research is a quasi-experimental (case-control) study. Statistically, the population of the present study was all diabetic patients of Qaemshahr who were controlled by physicians in 2011-2012. Thirty files were selected randomly from them and divided into two 15 patients' groups (control and subject group) randomly. The measurement tools were Back depression inventory (21 items) and Zank anxiety questionnaire that were distributed among two groups. Then, the subject group participated in eight sessions of teaching problem solving and decision making courses separately, and the second group (control group) did not receive any instruction.

Results: Finally, both groups had passed post-test and the data obtained from the questionnaires were studied by variance analysis statistical methods.

Conclusion: The results showed that teaching problem solving and decision making skills was very effective in reducing diabetic patients' depression and anxiety and resulted in reducing their depression and anxiety.

Key Words: Anxiety, decision-making, depression, problem-solving skill

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INTRODUCTION

Diabetes is one of the most important health problems and the most prevalent metabolic disease that necessitate constant care, and its side-effects are the most prevalent causes of the patients' death.^[1-3]

According to the World Health Organization, in the future 25 years, the number of diabetic people will increased to twice as much as now, such that it will

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increase from 171 million patients in 2000 to 366 million patients in 2030.^[4]

Anxiety as a part of all persons' lives is considered as a suitable and compatible reaction. The lack of anxiety or disease-like anxiety will endanger people and cause them to confront many problems. Balanced and constructive anxiety will make people struggle for their lives and make their lives more effective and stable.^[5]

The Katon (2008) study showed that the outbreak of depression in diabetic patients is 61/3%, and 40/6% suffer from acute or severe depression, although most of the chronic diseases are accompanied with the increase in depression outbreak. But, in diabetic patients, this problem is three times as much.^[6]

The results of the research of Simono *et al.* (2007) showed that depressed diabetic patients referred to physician's more than diabetic patients without depression, and have used outpatients' health care, and their therapeutic cost is 4/5 times as much as now.^[2]

The rate of anxiety and depression in diabetic patients was more than the normal population, and it was two-times as much as normal persons. In these patients, depression will affect considerably on diabetes prognosis, and some studies showed that the inability to diagnose and treat depression will make patients' diabetes prognosis serious.^[7] Some researchers found a weak to average relationship between depression and inappropriate control of blood-glucose in diabetic patients, but some of the other studies have not shown this relationship.^[8] Also, some studies showed that depression is accompanied with an increase in death rate in diabetic patients.^[6] Anxiety will increase the depression rate and cause patients to think about suicide, although it will result in concentration reduction and disorders in decision making skills.^[9] Diabetic patients need an effective and suitable treatment among the different methods accompanied by pharmaceutical treatment; teaching problem solving and decision making have special importance.^[10]

Problem solving and decision making skills include a set of abilities that will increase compatibility and positive and efficient behaviour; therefore, the patient can accept his/her social role responsibilities without hurting others or him/herself and confront efficiently with daily problems.^[11] Some researches were performed in this area by Malouff and Thorsteinsson about the effect of problem solving treatment on reducing the severity of some diseases. Considering the outbreak of depression and anxiety in diabetic

patients, finding a way for treating them will become important. In this research, the researcher wanted to measure the effect of problem solving skill on depression and anxiety.

MATERIALS AND METHODS

This research is a quasi-experimental (case-control) study. In this research, a control and a subject group were used and put randomly in groups. The research statistical population are all diabetic patients with type 2 diabetes, with ages between 20 and 60 years who were under control and treatment in Qaemshahr in 2010-2011. The total number of diabetic patients in two state hospitals of Qaemshahr, Razi and ValieAsr was 2801 patients.

The population of this study was the patients who were referred to the hospital, and they were divided into two groups as a subject group ($n = 15$) and a control group ($n = 15$). For data collection, the researcher held one explaining session as a trainer of the problem solving skill of the subject group, and he explained the primary recommendation, objectives and the rules and he held eight sessions for teaching problem solving skill and making groups' member familiar with three kinds of contradictions (feelings-inter values and inter needs). In the first session, group members were introduced and primary definitions were provided; in the second session, key concepts for solving problems were stated and basic stages in problem solving and the first and second skill for solving problem were reviewed; in the third session, the obstacles of problem solving recognition (six obstacles) were studied and third (exploration of solutions) and fourth skills of problem solving (solutions' trial) were studied; in the fifth session, the last skill of problem solving (resources evaluation) was stated; in the sixth session, the skills' application in psychology were studied; in the seventh session, important points were stated; and in the last session, previous problems were reviewed.

Data collection tools

1. Beck depression inventory (21 items): This scale was compiled for the first time by Neron Back, Ward, Mendelsohn, Mack and Oraph (1961) and was reviewed several times. Now, it is used with 21 items with a special symptom of depression. The subject patient will select one of these items that show his/her severity of depression symptom. Each item will have the scores of 0 to 3; in this way, the total score of the questionnaire will be from 0 to 63. This type of questionnaire can be used in the statistical population of older than 13 year olds. The validity of this research is the reliability coefficient of this test that was obtained from the

re-test of a group of 20 psychology students, which was 0/76.

- Zank anxiety test S.A.S. (20 items): This scale has 20 questions with four items and was provided based on bodily and sentimental symptoms. Diagnosis criteria were used for making this scale that was compatible with the most prevalent features of anxiety disorders. Diagnosis criteria S.A.S. have five sentimental symptoms and 15 bodily symptoms. This questionnaire was normalized in Iran and a Vakily obtained its reliability in 2007 that was 0/87 and AsgharMoghadam, Saed, DibajNia and Zangene have its reliability equal to 0/89. Also, Kalkhoran, Bahrami, Farrokhi, Zaraati and Tarrahomi have reached to reliability 0/84 and Fifel obtained its reliability equal to 0/49 and Nimier has obtained it in a research to be 0/91. In this research, reliability coefficient was obtained by re-test of a group of 20 students of psychology that was 0/82.

Statistical analysis

The data obtained from this research were analyzed by descriptive statistical methods (mean and standard deviation) and, because the variances among the scores of the two groups were not equal, Uman Whitney's test was used.

Table 1: Baseline characteristics of two group

Variables	Subject group N (%)	Control group N (%)
Age (mean)	44	47
20-29	3 (20)	1 (6.7)
30-39	1 (6/7)	4 (26.7)
40-49	6 (40)	4 (26.7)
50-59	5 (33/3)	6 (40)
Education		
Lower than diploma	11 (73/3)	10 (66.7)
Diploma	2 (13/3)	3 (20)
Higher than diploma	2 (13/3)	2 (13/3)

Table 2: Comparing the changes of variables after the study

Variables	Subject group (mean)		Control group (mean)	
	Before study	After study	Before study	After study
Depression	35.10	23.10	34.30	33.64
Anxiety	62.10	55.92	63.60	62.94

Table 3: The variance equality of depression and anxiety rate of subject and control group

Hypothesis	Indices	Control group	Subject group	F	Significant	α
H1	The difference between pre and post test	0/06	12	19/73	0/000	0/05
	Standard deviation	0/70	10/05			
H2	The difference between pre and post test	0/60	6/93	9/88	0/005	0/05
	Standard deviation	0/89	6/18			

RESULTS

Two hypotheses were studied in this research: Teaching problem solving skill and decision making, which leads to reducing depression in patients with diabetes type 2.

Table 1 shows the demographic characteristic of two groups and Table 2 shows the results of testing two groups of equal mean (moderately severe depression and anxiety) were placed [Table 2].

Because the test of variance equality showed that there is a significant difference between the variances of both groups (significant in H1 was 0/000 and in H2 was 0/005, which is smaller than $\alpha = 0/05$), we can judge with 95% confidence that the variances are not equal [Table 3]. Therefore, we could not use the *t* test for two independent groups and so we used the Uman Whitney test. Tables and diagrams showed that the difference between the ranges of depression and anxiety of two subject and control groups is significant because the *P* value in the depression test was 0/000 and in the anxiety test was 0/001, that is smaller than $\alpha = 0/05$ [Table 4]. Therefore, the average difference of before and after the study in the subject group in hypothesis one equals to 12, which is higher than the average difference of the control group before and after of 0/06, and in hypothesis 2 equals to 6/93 higher than the average difference of before and after in the control group, which was 0/60 [Table 3]. We can judge with the 95% confidence that teaching problem solving and decision making skill is effective in tendency to depression in diabetic patients with type 2 diabetes, which means that teaching problem solving skills will decrease the diabetic patients' tendencies to depression.

DISCUSSION

The results of the first research showed that teaching problem solving and decision making skill will result in reducing tendency to depression in diabetic patient's type 2. These results are compatible with the results of the researches performed by Malouffand Thorsteinsson (2007). They showed in a research that problem solving therapy is effective in reducing the symptoms of depression.^[10] Also, Nezu and Pery used patients with depression and tested them in

Table 4: The comparison of the effect of teaching problem solving and division making skills on tendency to depression and anxiety of subjects

Hypothesis	Groups	Range	Uman Whitney	Significant	Rate α
H1 (depression)	Subject	21	30	0.000	0.05
	Control	10			
H2 (anxiety)	Subject	20.70	34.50	0.001	0.05
	Control	10.30			

two groups of control and subject groups. The subject group took part in the therapeutic sessions of problem solving and the control group were held in a waiting list for treatment. The results showed that more than 85% of the subjects in the subject group showed meaningful reduction in depression symptoms at the end of therapeutic sessions, although this rate was 9% in the control group.^[12] The second hypothesis of teaching problem solving and decision making skill resulted in a reduction of tendency to anxiety in diabetic patients type 2. This result is compatible with the results of Davis and Lysaker, who studied the efficiency of the cognitive-behavioral techniques in improving meta cognitive beliefs and cognitive and behavioral techniques in developing metacognitive skills in patients with anxiety.^[13] Ligro *et al.* (2003) showed the effect of cognitive-behavioral treatment on anxiety. In this research, 10 adolescents with anxiety were treated by cognitive-behavioral treatment and, finally, seven persons were cured completely.^[14] In a research, Dowrick (2000) compared the effect of problem solving treatment with the effect of group psychology training among patients with depression. The results showed that although using both types of treatments of problem solving and group psychology training are effective in reducing depression, the effect of problem solving is more than the effect of group psychology teaching.^[15] Also, McNaughton *et al.* executed a research on the effect of therapeutic-cognitive behavior on 35 young girls with social anxiety. After treatment, they observed considerable developments in the subject group that were higher than the control group, such that their social anxiety reduced by 50% firmly.^[16]

The present research showed that by accurate study of problem solving skills, the factors of depression and anxiety in diabetic patients with type 2 diabetes can be controlled effectively, and it should be mentioned that this is in the interaction between the individual and the environment, in which the environment's need and possibilities accessible by individuals are incompatible and there is no solution for removing this imbalance. Problem solving skill necessitates using

old knowledge and principles in a new combination. Equipping with the ability and skill of problem solving in difficulties that humans confront has an important effect on human tranquility. In teaching problem solving and decision making skill, people learn to define the problem accurately and make a decision. This ability causes more feeling of being valuable and reduces failure due to the lack of power of problem solving and making daily decision, and is effective in the rate of individuals' psychological welfare.

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