

# The Effectiveness of Cognitive Therapy on Quality of Life in Patients with Type II Diabetes

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## Abstract

**Context:** Patients with diabetes face various physical and psychological problems such as depression, anxiety, disability, low mobility and obesity leading eventually to decrease quality of life. As a result, life quality is so important about diabetes and its treatment. **Aims:** The aim of this study was to determine the effectiveness of cognitive therapy on quality of life in patients with diabetes. **Subjects and Methods:** The research method was semi-experimental with pretest/posttest/follow-up and control group design. The population of the research were included all patients with type II diabetes who were referred to the Diabetes Clinic of Ganjavian Hospital. The sample volume included 40 subjects and an available sampling method was applied. Moreover, the substitution between control group and experimental group was randomly implemented. To collect the data, diabetes quality of life questionnaire was used. The intervention group has been received therapeutic sessions, and the control group was in waiting list. Data were collected through questionnaire of quality of life. **Results:** The results of the covariance analysis showed that cognitive therapy improved the quality of life in the experimental group in the posttest and follow-up stage ( $P < 0.05$ ). Cognitive therapy training can be effective in improving the quality of life in patients with type II diabetes ( $P < 0.05$ ). **Conclusion:** In order to findings, it can be concluded that the presentation of cognitive therapy beside other medical interventions is as a part of comprehensive treatment and care of diabetes.

**Keywords:** Cognitive therapy, life quality, type II diabetes

## INTRODUCTION

Diabetes is a heterogeneous group of metabolic diseases that their characteristics are chronic raising of hyperglycemia and carbohydrate, fat, and protein metabolism disorder, and as a result, it has created some deficiencies in insulin secretion or insulin action<sup>[1]</sup> that increasing the blood sugar is common characteristics of this heterogeneous group. The World Health Organization<sup>[2]</sup> has determined four main types of diabetes: diabetes type I, diabetes type II, gestational diabetes, and secondary diabetes to other states. Diabetes type II is the most common form so that 85%–95% of patients with diabetes have this type of diabetes in developed countries and in higher level in developing countries.<sup>[3]</sup>

On the other hand, the chronicity of diabetes along with its potential side effects often results in high financial costs as well as a decrease in life quality and changes of the lifestyle for the patient and family.<sup>[3-10]</sup>

Diabetic patients faced different physical and mental problems such as depression, anxiety, weakness, inactivity, and obesity that at last lead to decrease life quality. As a result, life quality is so important about diabetes and its treatment.<sup>[11]</sup> Life quality is defined as a multidimensional concept that has health compass and physical performance, mental health, social performance, satisfaction with treatment, concern about the future, and being well sense.<sup>[12]</sup> There is a mutual relationship between illness and quality of life, and physical disorders and physical symptoms have a direct impact on all of dimensions of quality of life. Therefore, the necessity for paying attention to evaluate new treatments, to determine and reduce costs, to identify all

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aspects of dissatisfaction with treatment, self-efficacy, self-care behaviors, to control blood sugar and its side effects as a result of these factors impact on the life quality is highly felt;<sup>[13]</sup> there is a clear and obvious relationship between quality of life and chronic diseases such as diabetes,<sup>[14]</sup> and quality of life of diabetic patients is one of the aims of diabetes management.<sup>[15]</sup> The increasing prevalence of diabetes in Iran and the increasing risk of diabetes complications showed the need for the present research in the country. According to this topic that one of the main aims in diabetic patients' treatment is improving the quality of life to gain a natural life, it is necessary to determine how the impact of quality of life to reach this aims.<sup>[4,16]</sup> However, mental disorders with diabetes often have neglected and do not try to treat it. Researches show that cognitive therapy has effect on symptoms as pharmacotherapy has on it.<sup>[17]</sup> The therapeutic cognition that Aaron Beck is its presenter focuses on cognitive transformations which are assumed to have a role in the formation of mental disorders. The purpose of therapeutic cognition is to eliminate psychological problems and to prevent the relapse of the disease through identifying negative cognitive processes and to create different, flexible and positive thinking methods as well as practicing useful cognitive and behavioral responses.<sup>[18]</sup> Hence, in this study, the effectiveness of cognitive therapy on quality of life in patients with diabetes type II was studied.

## SUBJECTS AND METHODS

The research method was a semi-experimental with pretest/posttest/follow-up and control group design. The statistical population were included all patients with type II diabetes aged 25–45 years who have treated in the Ganjaviyan Hospital Diabetes Clinic and 1 year of their diagnosis should be past. We used an available sampling method, and the sample size was 40 patients; the replacement of the patients in the intervention group and the control group was randomly. The inclusion criteria of this study were as follows: (1) having diabetes type II, (2) at least diploma

education, (3) lack of psychic and personality disorder, and (4) age range between 25 and 45 years. The exclusion criteria of this were as follows: (1) having psychic and personality disorder and (2) the absence of more than two sessions of intervention.

Tools for this research included demographic information questionnaire for measuring demographic variables, and the questionnaire was codified by researcher, and in fact, it was description of the patients who had participated in the research and information consists of age, sex, occupation, level of education, income, occupation and level of education of parents and so on.

### Diabetes quality of life

Measurement D-39, which has been developed to assess the quality of life in patients with diabetes, has 39 questions and 5 dimensions including control diabetes, anxiety and concern, social press, energy, and mobility; physical reaction is assessing in the Likert scale from 1 to 7. Scores range from 39 to 273. Above scores indicate low quality of life. This scale has been validated in a sample by 460 patients with diabetes type I and II.<sup>[19]</sup> Coefficients of Cronbach's alpha were different dimensions from 0.81 to 0.93 which indicates high internal homology of this scale.

Then, both groups were evaluated before therapeutic intervention. Then, on the experimental therapeutic intervention, therapy of cognition group was applied based on the group methods, and the meetings are held weekly for 2 h (ten sessions). The control group did not receive the therapeutic intervention in a group. Then, the two groups were evaluated by the use of post-test and after three months, the re-evaluation was carried out to follow up in order to measure the effect of the independent variable (group therapy intervention) on the dependent variable (post-test scores and follow up).

Brief description of the sessions based on Beck's cognitive therapy is shown in Table 1.

**Table 1: Brief description of the sessions of cognitive therapy**

Sessions	Content
First session	Familiarity with other team members, familiarity with the rules of the group and the working group
Second session	Review the previous session, introducing cognitive therapy for members
Third session	Group discussion and explanation of the members of the group about your automatic thoughts and identification of recurring thoughts and annoying and the cooperation of members in identification each other's automatic thoughts
Fourth session	Full explanation of five cognitive mistakes, identification the group members' cognition mistakes, using Socrates' questions, direct questions, and mental imagery to detect automatic thoughts of members and determining their cognitive mistakes
Fifth session	Discuss on the issue of musts as one of the identification techniques of stem scheme and determination evidence against stem scheme
Sixth session	Explaining about how to make alternative thoughts and cognition of right over the wrong thoughts to provide feedback and undergrowth and strengthening by the therapist to logical thoughts and encourage subjects for strengthening
Seventh session	Learning to use three columns of method includes identification of automatic thoughts scoring them, determination of the errors and cognition of automatic thoughts, knowing how to respond logically to the automatic thoughts and scoring them
Eighth session	Training to be calm on anxiety-causing situations and exercise it in the session and asking the members to exercise daily at home
Ninth session	Discuss about the late emotional experiences and exercise the previous techniques about those experiences
Tenth session	Review all sessions, encouraging members to continue training the skills of daily life after performing the test

## RESULTS

The average age of the participants of cognition therapy experimental group is 41.25 and of control group is 41.30. The education of the participants in this research was from elementary to bachelor degree that diploma has appropriated the highest frequency. Quality of life scores in both groups is shown in Table 2.

The average score of life quality in pretest phase in the experimental group (cognition therapy) was 152.17 and in the control group was equal to 155.59. Furthermore, the average score of life quality in the phase of posttest in the experimental group (cognition therapy) was 147.49 and in the control group was equal to 157.33. Finally, the average score of life quality in the follow-up phase in the experimental group (cognition therapy) was 148.53 and in the control group was 154.16. Considering that, the aim of the research was determining the effectiveness of cognition therapy in improving quality of life of in diabetes patients, and the research hypothesis was analyzed using covariance analysis. Utilizing the covariance analysis test requires some essential assumptions to be observed including the regularity of the dependent variable scores and control, the homogeneity of variance and the homogeneity of the regression lines. In this study, these assumptions have examined. The assumption of the regression lines' parallel is analyzed. It indicated that this assumption is between group and pretest. Table 3 shows the result of the ANCOVA test.

As it is shown in Table 3, after deletion the effect of the sync variables on the dependent variable, they have calculated according to the *F* coefficient. Once the effect of the synchronous variables on the dependent variable is eliminated and it is calculated according to the coefficient *F*, it is observed that there is significant difference among the moderated

averages of the participants' life quality scores in terms of group membership (experimental group and one control group) in the post-test phase ( $P < 0.01$ ).

Therefore, the hypothesis of the research was confirmed. So that, there was a significant difference between two groups' average scores of life quality, and the experimental group of cognition therapy had an influence on improving life quality of participants in posttest and follow-up experimental group. The amount of this rate's effect in the posttest is 49.9%. The statistical power near to 1 and significance level near to 0 represent the sample's adequacy. This effectiveness was not observed in the follow-up phase.

## DISCUSSION

The results of covariance analysis related to the hypothesis of this research showed that there was a significant difference between the average of adjusted scores of life quality of attendees based on the membership of a group (the experimental group and a control group) at the stage of posttest and follow-up ( $P < 0.01$ ). Therefore, there was a significant difference between the average scores of life quality and of two groups, and the experimental group of cognition therapy had an influence on improving life quality of participants in posttest and follow-up experimental group. It has not found a research exactly similar, but these findings to some extent are match with researches of Rubin and Peyrot,<sup>[20]</sup> Tankova *et al.*,<sup>[21]</sup> Ghavami *et al.*,<sup>[11]</sup> Nagelkerk *et al.*,<sup>[8]</sup> Saito *et al.*,<sup>[14]</sup> Berk *et al.*,<sup>[22]</sup> De Groot *et al.*,<sup>[23]</sup> Forman *et al.*,<sup>[24]</sup> Safren *et al.*,<sup>[25]</sup> Safren *et al.*,<sup>[26]</sup> Shomaker *et al.*,<sup>[27]</sup> and Stagl *et al.*<sup>[28]</sup> In this study, the effectiveness of psychological treatments is discussed on the quality of life of diabetic patients.

To determine the results, it can be said that diabetes is a chronic disease and noncommunicable which hyperglycemia is looking for a reduction of insulin secretion, resistance to insulin action, or both of them. The people with such disease in addition to early or late side-effects, such as hypoglycemia, and vascular involvement, pressures from disease control, observing therapeutic programs, complex and costly care, frequent visits to a physician, various tests, will also face concerns about the future and the probability of catching the disease for the children, social and familial disorders, sexual problems and work disorders, like other chronic diseases. In other words, this disease can

**Table 2: Quality of life scores in both groups**

Groups	Statistics	Pretest	Posttest	Follow-up
Cognitive therapy	Mean	152.17	147.49	148.53
	<i>n</i>	20	20	20
	SD	22.21	19.86	22.24
Control group	Mean	155.59	157.33	154.16
	<i>n</i>	20	20	20
	SD	9.38	9.31	11.74

SD: Standard deviation

**Table 3: Results of covariance analysis effects of group membership on scores of life quality in diabetic patients in the two groups**

Variables	SS	Df	MS	<i>F</i>	Significant	The effect	Statistical power
Group membership**							
Posttest	459.683	1	459.683	36.781	0.001**	0.499	0.99
Follow-up	49.057	1	49.057	1.791	0.189	0.046	0.256
Error							
Posttest	462.420	37	12.498				
Follow-up	1013.466	37	27.391				

SS: Sum of squares, MS: Mean of squares. \*\*Significant at level .01

have a negative impact on the progression of the created side effects, psychosocial status, and personal, familial and emotional relationships. In fact, the incidence of diabetes disrupts the orderly flow of life and affects the quality of life in different aspects, due to disease complications and long-term treatment. Therefore, reform of quality of life not only is beneficial for diabetics but also medical and health-care costs are reduced. On the other hand, according to the clinical observations of the researcher and referring to the protocol therapeutic used in this research, we can understand that the cause of this impact is changing the attitude of patrons in the first session. It is due to irrational thoughts and negative cycle of thoughts, and the aim of treatment is dealing with negative thoughts from the first meetings. The subjects of this research (diabetes patients) have welcomed this new attitude.<sup>[18,30]</sup>

In total, by explaining the above findings, it can be said that people learn in the cognitive therapy how to face with different issues and problems in life completely and solve them and alternative existing issues and problems on solving them, and they were successful in focusing on them. Hence, they learn to change ways of facing with issues and events.

## CONCLUSION

The goal of this approach is the identifying and minimizing the cognitive distortions and controlling problem and logical analysis. In psychotherapy, it is believed that what the references learn in the treatment society, it becomes common gradually and after a while his life's positions were generalized. Hence, considering the fact that lifestyle is a collection of behaviors, functions, and his or her thinking approach in different situations, and since treatment can generally change these behaviors in relation with his/her treatment condition, it is possible to expect that such change could be seen later on in other situations and circumstances of his/her life. It can be expected that later this change can be seen on other conditions and situations of his life. The patients who have powerful skills in diabetes were tended to report flexible lifestyle, and more desirable quality of life associated with diabetes in comparison with the patients lacks this skill. This research proposes the need for more attention of the problems and the roots of these patients and proper interventions to improve them.

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## Conflicts of interest

There are no conflicts of interest.

## REFERENCES

- Mensing C, Boucher J, Cypress M, Weinger K, Mulcahy K, Barta P, *et al.* National standards for diabetes self-management education. *Diabetes Care* 2006;29 Suppl 1:S78-85.
- Group W. The development of the World Health Organization quality of life assessment instrument (the WHOQOL). In: *Quality of Life Assessment: International Perspectives*. New York: Springer; 1994. p. 41-57.
- L'Heveder R, Nolan T. International diabetes federation. *Diabetes Res Clin Pract* 2013;101:349-51.
- Redekop WK, Koopmanschap MA, Stolk RP, Rutten GE, Wolffenbuttel BH, Niessen LW, *et al.* Health-related quality of life and treatment satisfaction in dutch patients with Type 2 diabetes. *Diabetes Care* 2002;25:458-63.
- Tang TS, Brown MB, Funnell MM, Anderson RM. Social support, quality of life, and self-care behaviors among African Americans with Type 2 diabetes. *Diabetes Educ* 2008;34:266-76.
- Testa MA, Simonson DC. Health economic benefits and quality of life during improved glycemic control in patients with type 2 diabetes mellitus: A randomized, controlled, double-blind trial. *JAMA* 1998;280:1490-6.
- Wexler DJ, Grant RW, Wittenberg E, Bosch JL, Cagliero E, Delahanty L, *et al.* Correlates of health-related quality of life in Type 2 diabetes. *Diabetologia* 2006;49:1489-97.
- Nagelkerk J, Reick K, Meengs L. Perceived barriers and effective strategies to diabetes self-management. *J Adv Nurs* 2006;54:151-8.
- Zyoud SH, Al-Jabi SW, Sweileh WM, Arandi DA, Dabeek SA, Esawi HH, *et al.* Relationship of treatment satisfaction to health-related quality of life among palestinian patients with Type 2 diabetes mellitus: Findings from a cross-sectional study. *J Clin Transl Endocrinol* 2015;2:66-71.
- Ismail-Beigi F, Moghissi E, Tikkin M, Hirsch IB, Inzucchi SE, Genuth S, *et al.* Individualizing glycemic targets in Type 2 diabetes mellitus: Implications of recent clinical trials. *Ann Intern Med* 2011;154:554-9.
- Ghavami H, Ahmadi F, Entezami H, Memarian R. Effectiveness of applying continuous care model on quality of life level in diabetic patients. *J Urmia Univ Med Sci* 2005;16:22-7.
- El Achhab Y, Nejari C, Chikri M, Lyoussi B. Disease-specific health-related quality of life instruments among adults diabetic: A systematic review. *Diabetes Res Clin Pract* 2008;80:171-84.
- Ali S, Stone M, Skinner TC, Robertson N, Davies M, Khunti K, *et al.* The association between depression and health-related quality of life in people with Type 2 diabetes: A systematic literature review. *Diabetes Metab Res Rev* 2010;26:75-89.
- Saito I, Inami F, Ikebe T, Moriwaki C, Tsubakimoto A, Yonemasu K, *et al.* Impact of diabetes on health-related quality of life in a population study in Japan. *Diabetes Res Clin Pract* 2006;73:51-7.
- Lowes L, Eddy D, Channon S, McNamara R, Robling M, Gregory JW, *et al.* The experience of living with Type 1 diabetes and attending clinic from the perception of children, adolescents and carers: Analysis of qualitative data from the DEPICED study. *J Pediatr Nurs* 2015;30:54-62.
- Trento M, Passera P, Borgo E, Tomalino M, Bajardi M, Cavallo F, *et al.* A 5-year randomized controlled study of learning, problem solving ability, and quality of life modifications in people with Type 2 diabetes managed by group care. *Diabetes Care* 2004;27:670-5.
- Seminario NA, Farias ST, Jorgensen J, Bourgeois JA, Seyal M. Determination of prevalence of depression in an epilepsy clinic using a brief DSM-IV-based self-report questionnaire. *Epilepsy Behav* 2009;15:362-6.
- Sadock BJ, Sadock VA. Kaplan and Sadock's Concise Textbook of Clinical Psychiatry. Philadelphia, PA: Wolters Kluwer/Lippincott Williams and Wilkins; 2008.
- Bazazian S, Besharat A. The role of attachment styles in adjustment to type I diabetes. *J Behav Sci* 2010;2:21-33.
- Rubin RR, Peyrot M. Quality of life and diabetes. *Diabetes Metab Res Rev* 1999;15:205-18.
- Tankova T, Dakovska G, Koev D. Education of diabetic patients-a one year experience. *Patient Educ Couns* 2001;43:139-45.
- Berk KA, Buijks HIM, Verhoeven AJM, Mulder MT, Özcan B, van 't Spijker A, *et al.* Group cognitive behavioural therapy and weight regain after diet in Type 2 diabetes: Results from the randomised controlled POWER trial. *Diabetologia* 2018;61:790-9.
- de Groot M, Doyle T, Averyt J. Program ACTIVE: Cognitive behavioral therapy to treat depression in adults with Type 2 diabetes in rural Appalachia. *J Cogn Psychother* 2017;31:158-70.
- Forman EM, Herbert JD, Moitra E, Yeomans PD, Geller PA. A randomized controlled effectiveness trial of acceptance and commitment therapy and cognitive therapy for anxiety and depression.



- Behav Modif 2007;31:772-99.
25. Safren SA, Gonzalez JS, Wexler DJ, Psaros C, Delahanty LM, Blashill AJ, *et al.* A randomized controlled trial of cognitive behavioral therapy for adherence and depression (CBT-AD) in patients with uncontrolled Type 2 diabetes. *Diabetes Care* 2014;37:625-33.
  26. Safren SA, Gonzalez JS, Wexler DJ, Psaros C, Delahanty LM, Blashill AJ, *et al.* Erratum. A Randomized controlled trial of cognitive behavioral therapy for adherence and depression (CBT-AD) in patients with uncontrolled Type 2 diabetes. *Diabetes Care* 2016;39:1065.
  27. Shomaker LB, Bruggink S, Pivarunas B, Skoranski A, Foss J, Chaffin E, *et al.* Pilot randomized controlled trial of a mindfulness-based group intervention in adolescent girls at risk for Type 2 diabetes with depressive symptoms. *Complement Ther Med* 2017;32:66-74.
  28. Stagl JM, Antoni MH, Lechner SC, Bouchard LC, Blomberg BB, Glück S, *et al.* Randomized controlled trial of cognitive behavioral stress management in breast cancer: A brief report of effects on 5-year depressive symptoms. *Health Psychol* 2015;34:176-80.
  29. Sadabadi MH, Khairuddin JB, Poursharifi H. The role of locus of control in self-care behaviors of people with Type 2 diabetes. *J Behav Sci* 2011;5:245-51.
  30. Nichols GA, Brown JB. Functional status before and after diagnosis of Type 2 diabetes. *Diabet Med* 2004;21:793-7.

