THE EFFECTIVENESS OF COGNITIVE THERAPY IN REDUCING GLYCOSYLATED HEMOGLOBIN IN DIABETIC PATIENTS

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ABSTRACT

Introduction: Type II diabetes is an illness that is associated with the severity of the lifestyle and it has very strong behavioral and emotional component as far as some experts considered as a behavioral issue. The aim of this study was to determine the effectiveness of cognitive therapy in reducing glycated hemoglobin patients with diabetes.

Materials and methods: The study was a quasi-experimental type and research project were the two groups of experimental group and control group, along with pre-test, post-test and follow-up. The statistical population were includes all patients with type II diabetes in the range of 25 to 45 years old age that have treated in the Ganjaviyan hospital diabetes clinic and one year of their diagnosis should past. We used an available sampling method and sample size was 40 patients and the replacement of the subjects in the intervention group and the control group was randomly. The sample of individuals was selected based on the entry-exit criteria (age 25 to 45 years old, the lack of any obvious mental disorder, the passage of one year since diagnosis of type II diabetes). Then both groups were evaluated before therapeutic intervention, in the next stage therapeutic intervention was carried out on experimental group of cognitive therapy in group method. Meetings are held weekly for 2 hours (ten sessions). The control group did not receive the therapeutic intervention in a group. So, both groups were evaluated with the use of post-test and then after three months re-evaluation was conducted as a follow-up to the amount of the effectiveness of independent variables (therapeutic intervention in a group) on the dependent variable (grades and following) will be measured.

Results: The results of the Covariance analysis showed that cognitive therapy cause reduction of blood sugar (HbA1c) in the experimental group in the post-test and following stage.

Conclusions: Training cognitive therapy can result in blood sugar control (HbA1c) in patients with type II diabetes. So, it is recommended that the presentation of these trainings beside other medical interventions is as a part of comprehensive treatment and care of diabetes.

Keywords: Type II diabetes, Cognitive therapy, Glycemic control: HbA1c.

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Introduction

Diabetes mellitus consists of heterogeneity group of diseases relating to metabolism that is characterized by their high blood sugar and carbohydrate, lipid and protein metabolism disorder resulting from a defect or secretion function of insulin10. The high prevalence of the disease, not surprisingly is remarkable research subject in the various clinical areas; why so the increasing prevalence of diabetes and the complex etiology and reconciliation mechanisms with it requires changes in the related concepts of diabetes and treatment programs, which so far have been considered. This change should be from physical to socio-psychological factors, which may be found effective on the disease management and its consequences. Also, new treatment recommendations in particular
importance to consolidate socio-psychological concepts with the usual care in patients with diabetes is approved, so it helped the patients in achieving proper sugar control and increasing the adaptability of the individual\(^2\). Also, it has done researches on the level of mental health in diabetic patients; including Sadeghi et al.\(^6\) that showed 54% of those with diabetes are suspected to the mental disorders. In fact, the diabetes is one of the major and real stressor in life, that is needed adaptation and substantially psychological, emotion and physical contrast.

The mental and physical treatments of the patient help the therapist to evaluate and manage the stress and adapt with chronic disease. Researchers suggest the effect of stress reduction of the mental care on health and the health of patients with diabetes\(^3\). In fact, it can be said that type II diabetes is a disease that is strongly associated with the lifestyle and it has a strong behavioral and emotional component as far as some experts considered it a behavioral issue\(^4\).

There are mental conditions associated with diabetes, it has often neglected and not trying to treat it. Studies indicate that cognitive therapy can be effected like of symptoms on pharmacotherapy\(^3\). Aurenbeck who has presented cognitive therapy, it has focused on the cognitive changes, which are presumed to formation of mental disorders. The goal of cognitive therapy is psychological troubleshooting and the prevention of recurrence of negative cognitive processes through creating different thinking ways, flexible and positive and training cognitive and behavioral responses is useful\(^5\). It should be in accordance with the positive result of the research of positive psychological interventions has proven in improving blood sugar control\(^14\). For example, it has done the research of Serlachius, et al.\(^8\), with the objective of random controlled study of cognitive behavioral therapy to improve blood sugar control and mental health in adolescents with type I diabetes. So, psycho-social health in the intervention group has increased compared to the control group. Glycated hemoglobin is as a gallery index metabolic diabetes disease this sentence is not clear.\(^2\). The aim of this study was to investigate the effectiveness of cognitive therapy in reducing glycosylated hemoglobin in diabetic patients.

### Method

The study was a quasi-experimental type and research project were the two groups of experimental group and control group, along with pre-test, post-test and follow-up. The statistical population were includes all patients with type II diabetes in the range of 25 to 45 years old age that have treated in the Ganjaviyan hospital diabetes clinic and one year of their diagnosis should past. We used an available sampling method and sample size was 40 patients and the replacement of the subjects in the intervention group and the control group was randomly. Then both groups were evaluated before therapeutic intervention. Then on the experimental therapeutic intervention therapy of cognition group were applied based on the group methods, the meetings are held weekly for 2 hours (ten sessions). The control group did not receive the therapeutic intervention in a group. So, both groups were evaluated with the use of post-test and then after three months re-evaluation was conducted as a follow-up to the amount of the effectiveness of independent variables (therapeutic intervention in a group) on the dependent variable (grades and following) will be measured.

Brief description the meetings were as follows:

1. First session: familiarity with other team members, familiarity with the rules of the group and the Working Group.
2. Second session: review the previous session, introducing cognitive therapy for members.
3. 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.
4. 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.
5. Fifth session: Discuss on the issue of musts as one of the identification techniques of stem scheme and determination evidence against stem scheme.
6. 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.

Finally the tenth session: Review all sessions, encouraging members to continue training the skills of daily life after performing the test.

Tools for this research included demographic information questionnaire for measuring demographic variables, the questionnaire was codified by researcher, and in fact, it was description of the subjects that had participated in the research and information consists such as age, sex, occupation, level of education, income, occupation and level of education of parents and so on. Metabolic data (HbA1c) of blood test: hemoglobin test (A1C) is a common blood test, which has efficiency for screening diabetic patients and it shows how the patients have been successful in the control of diabetes mellitus. I agree that it is very common, but please provide here, methods, techniques and protocols.

The test of hemoglobin (HbA1c) indicates the level of Glucose (sugar) along with the hemoglobin in the blood and the patients have average blood sugar in the past 2 to 3 months. Therefore, in the event that if the amount of blood sugar in 2 or 3 months was high, the result of this experiment would represent improper blood sugar control and the possibility of further diabetic complications.

Analysis of data

The research hypothesis were analyzed by using Covariance analysis. Using the Covariance analysis test requires obsvance of some basic assumptions, which include normality of the scores of dependent variables and control, so the homogeneity of variance and the homogeneity of regression lines. In this study, these assumptions have examined. Normality of the dependent variable and the control by Shapiro and Wilk’s test the errors of the homogeneity of variance, it was been analyzed and confirmed by Levene test.

Results

The average age of the participants of cognition therapy experimental group is 41.25 and the average 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. Glycosylated hemoglobin scores in the two groups. Glycosylated hemoglobin scores in the two groups are shown in table 1.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Statistics</th>
<th>Pre-test</th>
<th>Post-test</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive therapy</td>
<td>Mean</td>
<td>8.48</td>
<td>7.91</td>
<td>7.98</td>
</tr>
<tr>
<td></td>
<td>Number</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Standard deviation</td>
<td>0.4</td>
<td>0.44</td>
<td>0.42</td>
</tr>
<tr>
<td>Control group</td>
<td>Mean</td>
<td>8.42</td>
<td>8.33</td>
<td>8.2</td>
</tr>
<tr>
<td></td>
<td>Number</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Standard deviation</td>
<td>0.37</td>
<td>0.43</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Table 1: Glycosylated hemoglobin scores in the two groups.

The average scores of glycated hemoglobin in pre-test phase in the experimental group (cognition therapy) are equal to 8.48, and the control group is equal to 8.42. Also, the average scores of glycated hemoglobin in the phase of post-test in the experimental group (cognition therapy) is equal to 7.91 and the control group is equal to 8.33.

Finally, the average scores of glycated hemoglobin in the phase follow-up in the experimental group (cognition therapy) are equal to 7.98 and the control group is equal to 8.20. Considering that, the aim of the research was determining the effectiveness of cognition therapy in reducing glycated hemoglobin of diabetes patients, the research hypothesis were analyzed by using Covariance analysis. Using the Covariance analysis test requires observance of some basic assumptions, which include normality of the scores of dependent and control, so the homogeneity of variance and the homogeneity of regression lines. In this study, these assumptions have examined. The assumption of the regression lines’ parallel are analyzed. It indicated that this assumption is between group and pre-test to follow up treatment and blood sugar.

As it is shown in table 2 that after deletion the effect of the sync variables on the dependent variable, they have calculated according to the F coefficient. It is seen that there is a significant differences between the averages justified scores of glycated
hemoglobin of participants based on membership of a group (the experimental group and a control group) in the post-test phase and follow up. There is a significant difference between mean and follow up (p<0.01).

Therefore, the hypothesis of the research was confirmed. Therefore, there is a significant difference between two groups’ average scores of glycated hemoglobin and the cognition therapy experimental group effect on reducing scores of glycated hemoglobin of participants in post-test and follow up experimental group.

The amount of this rate’s effect in the post-test is 53.6% and at follow-up phase is 47.1%. The statistical power near to 1 and significance level near to 0 represents the sample’s adequacy.

**Discussion and conclusion**

The results of Covariance analysis related to the hypothesis of this research showed that there is a significant difference between the average of adjusted scores of glycated hemoglobin of attendees based on membership of a group (the experimental group and a control group) at the stage of post-test and follow-up (P<0.01). Therefore, there is a significant difference between the average scores of glycated hemoglobin and of two groups and the experimental cognition therapy effect on decreasing scores of glycated hemoglobin of participants in post-test and follow up of experimental group. It has not found a research exactly similar but these findings to some extent are match with researches of Timareh, et al.(11), Undén, et al.(13), Thorpe, et al.(10), Son, et al.(9), Tovote, et al.(12), Serlachius, et al.(8). To determine the results, it can be said that diabetes is chronic disease, and no communicable which hyperglycemia is looking for a reduction of insulin secretion, resistance to insulin action, or both of them. The person who attacks this disease early or late complication causes to face problems. Such as hyperglycemia and artery disease with the stresses of disease control, compliance with treatment, complex and costly care, haunting to the doctor, taking various tests, worry about the future and the possibility of the morbidity of children, social and family disorder, sexual problems and disorder in work, like a chronic disease(4).

In other words, the disease can have negative effects on complications, psychological status, individual, family and the patient’s emotional. In the classification of psychiatric, it has fit in psychosomatic diseases. In this category of diseases, it has discussed on the role of the behavioral patterns and stress (mental pressure) in the incidence and continuation of physical illness.

Therefore, it can be said that diabetes mellitus is associated with mental phenomenon. 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 aim of treatment is dealing with negative thoughts from the first meetings. The subjects of this research (diabetes patients) have welcomed this new attitude(5).

Table 2: Results of covariance analysis effects of group membership on scores of glycosylated hemoglobin in diabetic patients in the two groups.

<table>
<thead>
<tr>
<th>Variables</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>sig</th>
<th>The effect</th>
<th>Statistical power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group membership</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-test</td>
<td>2.224</td>
<td>1</td>
<td>2.224</td>
<td>42.806</td>
<td>0.001**</td>
<td>0.536</td>
<td>0.99</td>
</tr>
<tr>
<td>Tracking</td>
<td>0.776</td>
<td>1</td>
<td>0.776</td>
<td>32.969</td>
<td>0.001**</td>
<td>0.471</td>
<td>0.99</td>
</tr>
<tr>
<td>Error</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-test</td>
<td>1.922</td>
<td>37</td>
<td>0.052</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tracking</td>
<td>0.871</td>
<td>37</td>
<td>0.024</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

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. So, they learn to change ways of facing with issues and events. The goal of this approach is the identification 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.
So according to this, lifestyle is set of actions, behaviors, also how to think in different situations and because the treatments can totally do these actions and behaviors associated with the condition of his treatment to make changes. 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.

References


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