The effect of acceptance and commitment therapy on the degree of depression in type 2 diabetic patients

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Abstract
There have been numerous discussions regarding behavioral and cognitive approaches in the third wave especially in the area of depression treatment recently. The objective of the present study was to determine the effect of acceptance and commitment therapy method on the degree of depression in patients suffering from type 2 diabetes. It had the experimental research method and the statistical population was all diabetic patients in Diabetes Charity Institution in 2013. They were 30 patients who were put into two experimental and control groups. They completed Beck's depression inventory before and after intervention and the experimental group received group training of Acceptance and Commitment therapy (ACT) method in 8 one-hundred-and-twenty-minute sessions and the control group didn't receive such a training and was placed in therapy waiting list. The applied tools in the study included Beck Depression Inventory or BDI II. The results showed that there is a significant difference between pretest and posttest scores in experimental group comparing to control group (P<0.001). The results of the study showed the effect of acceptance and commitment therapy in decreasing depression in diabetic patients. Further, results demonstrated the steadiness of the therapy effect during follow-up period.

Key words: acceptance and therapeutic commitment, type 2 diabetes, depression, Beck test

Introduction
Diabetes is one of sanitary challenges in recent decades which imposes great economic loads on the society. (1) In Iran more than 3 million people suffer from diabetes and this number triples every 15 years. (2) Sweet diabetes, like every other chronic and debilitating disease, has caused some problems for the patients suffering from it and it affects all aspects of their daily life, one of the most important psychological aspects whereof is depression (3). Depression is one of the most prevalent psychiatric disorders in diabetic patients (4). Depression is a mood disorder which expresses itself with symptoms such as low mood, loss of feelings, vanity, psychomotor slowness, the feeling of being guilty and inability in concentration and the thoughts associated with death (5). During past decades the psychological aspects of diabetes have drawn the attention of many specialists, since diabetes is considered as one of the most laborious chronic diseases emotionally and behaviorally (6), these people experience the kinds of tension which might be the result of adaptation to diet, being limited the social life, repeated blood tests, insulin injection, lack of consciousness, and other complexities of weakness in controlling diabetes, disordering sexual function, other problems rooted in disease or therapy (7). The studies have demonstrated that the prevalence of depression is 61.3% in diabetic patients 40.6% of them suffer from moderate to high depression (8). Although most of chronic disease

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have the increase of depression, in diabetic patients the problem is tripled (9). Moreover, the study by Zahiroddin and Sadeghi showed that 78% of diabetic patients had depression based on Beck depression test (10). According to the study by Larijani et.al there is a bilateral relationship between diabetes and depression; that is, from the one hand, diabetes and different problems created from it cause the decrease in motivation and the feeling of hopelessness to the future and, on the other hand, this decrease of motivation can influence detection of depression. There is some evidence suggesting the effect of plasma glucose concentration on the mood of diabetic patients in a way that depression in diabetic patients is associated with weak control of blood sugar and the level of Hyperglycemia has a direct relationship with the intensity of depression (11).

Acceptance and Commitment Therapy which is abbreviated in ACT is one of the recent extended therapeutic models whose key therapeutic processes are different from cognitive-behavioral therapy. Its fundamental principles include:

1. Acceptance or the tendency to experience pain or other disturbing events without engaging in harnessing them.
2. Action according to value and commitment concomitant with tendency to act as personal meaningful objectives are more than omitting unwanted experiences which leads to healthy function interacting with other non-verbal dependencies.

This method involves empirical experiences and exposure-based tasks, lingual metaphors, and methods such as mental care (12). Acceptance and commitment therapy was created by Steven Hayes in 1986. It is a part of third wave of behavioral therapies and it was created following the second wave of therapies such as cognitive-behavioral therapy. ACT or acceptance and commitment therapy is related to a research program called Relational Frame Theory (RFT). This approach obviously accepts this change in thinking and feeling function rather than changing the form, content and their frequency (13). The major objective is to create mental flexibility, i.e. creating the ability to choose an activity among different alternatives which is more suitable, not just the activity to avoid disturbing thoughts, feelings, memories or tendencies which in fact are imposed on the individual (14). In this therapy at first it is attempted to increase the individual's mental acceptance regarding mental experiences (thoughts, feelings) and at the same time decrease ineffective controlling activities. The patient is taught that every kind of activity to avoid or control these unwanted mental experiences lacks effect or it has opposite effect and causes their intensity and should be accepted completely (these experiences without any internal and external reaction to omit them). In the second step the person's in-moment mental awareness is increased, that is, the individual will be aware of all his/her mental, thought and behavioral states in the present moment. In the third stage, the individual is taught to separate him/herself from these mental experiences (cognitive separation) in a way that he/she is able to act independent of these experiences.

The forth is the attempt to decrease the excessive concentration on self-imagination, personal story (like being a victim) which the person has made for him/herself. Fifth is helping the individual to know his/her basic personal values and to clearly specify and change them into specific behavioral objectives (value clarification). At last there is motivating for committable actions, that is, acting tended toward recognized objectives and accepting mental experiences. These mental experiences can be depressive, compulsive thoughts; those associated with accidents (Trauma), phobia, etc. (14). There are various cognitive therapies to treat patients with diabetes. Some researchers believe that applying this method due to its hidden mechanism such
as acceptance, increasing awareness, desensitization, presence at the moment, and observation without judgment, confrontation, and emancipation combining with traditional cognitive behavioral therapy techniques can increase the effectiveness besides decreasing disease symptoms (15). Regarding diabetic patients some research has pointed out cognitive therapy function with mental care (16).

The present study is to determine the effectiveness of acceptance and commitment therapy effectiveness on the decrease of depression in patients suffering from diabetes.

Material and method

The research method, the statistical population and sample: the present research method is empirical with experimental and control groups and administering pretest and posttest. Experimental study is a predetermined plan or design through which the manner of administering independent variable and the manner of research group are determined and its most basic role is the control. The research statistical population is all patients having type 2 diabetes by the diagnosis of the internist and according to clinical experiments, and referred to Isfahan diabetes charity center in spring and summer of 2013. (Due to the fluency of the referees, the statistical sample size is not clear in this time) Through clinical interview, depression has been diagnosed by the researcher under the supervision psychiatrist and according to DSM-IV-TR diagnostic principles. The method of administering the research is that at first Beck’s depression inventory and demographic questionnaire including questions regarding age, gender, marital status, and duration of diabetes were given to the patients. In order to observe moral considerations of the study there were some abridged explanations about the questionnaire. In the beginning of completing the questionnaire, the referees were told that the study was just a research and they were assured that their answers would be confidential.

In the present study acceptance and commitment therapy or ACT is an independent variable and the depression is dependent variable. Thirty people were selected and they were randomly put into two experimental and control groups and each group included 15 people. Taking the general objective of the study into account including determining the degree of ACT effectiveness on the decrease of diabetic patients, the presence of one experimental and one control group, the pretest-posttest-follow-up design were used. The therapeutic intervention (acceptance and commitment therapy) was administered for the experimental group, while the control group didn't receive it. And (this group will be put into second turn in waiting list). Follow-up test was administered in order to assess the maintenance of the effect of therapeutic intervention in both experimental and control groups. It worth mentioning that in experimental group there was no drop in the number of participants which indicated the patients’ tendency and creating commitment to this therapeutic method from the viewpoint of the researchers. Regarding control group in follow-up stage not all participants took part and the researchers were forced to request them to participate in test and finally they succeeded.

Measurement instrument

1. Beck depression inventory, 2nd edition (BDI II): this inventory was codified to measure the intensity of depression by Beck in 1963 and it was revised in 1994. This scale includes 21 items and each item has a score from 0 to 3. The highest score in this inventory is 63. Each of the items in this inventory measures one of the symptoms of depression (17). Ghasem Zade et.al reported alpha coefficient of this questionnaire (α=0.87) and its retest coefficient (r=0.74) and its correlation with Beck inventory reported (0.93) the first edition (18).
2. The questionnaire of demographic information
   Was made by the researcher and it included the questions regarding age, education, marital status, the duration of suffering from diabetes and the number of family members. This questionnaire was used to control these variables (age, education, etc).

3. Acceptance and commitment therapy education
   In acceptance and commitment therapy a collection of empirical exercises and metaphors are combined with behavioral standard interventions so that it can foster accepting therapeutic experiences without judgment. This empirical acceptance is not an objective in itself, rather relates to improving activities toward appropriate personal objectives.

The criteria to include in and withdraw from the research were:
1. Depression diagnosis according to DSM-IV-TR, this interview and diagnosis were conducted by the psychiatrist.
2. The score from Beck was higher than 16.
3. The minimum age was 18 years.
4. Participants during the past month didn't have psychiatric therapy and in this month they shouldn't have changed medication dose.

Sessions objectives:
First session: familiarity and creating relationship with group members, mental education, rest and entertainment, distributing questionnaire.
Second session: discussing about experiences and their evaluation, making creative hopelessness, rest and entertainment, efficacy as the measurement criterion.
Third session: reviewing the experiences of previous sessions, stating control as a problem, measuring performance, rest and entertainment, examining the exercises for the next week.
Forth session: reviewing the experiences of previous sessions, assignment and behavioral commitment, introducing defusion, the application of cognitive defusion techniques, rest and entertainment, intervention in the performance of problematic chains of language, debilitating integration of thoughts and affections.
Fifth session: reviewing assignments and behavioral commitment of the observer, showing separation between self, internal experiences and behavior, observing self as a background, debilitating self-conception and self-expression.
Sixth session: performance measurement, applying mind awareness techniques, contradiction between experience and mind, rest and entertainments, modeling going out of mind, training to see internal experiences as a process.
Seventh session: performance measurement, introducing the meaning of value, showing the dangers of concentration on results, exploring practical values of life.
Eighth session: understanding the nature of tendency and commitment, determining action models appropriate for values.

Findings
The data analysis was conducted based on the scores of pretest and posttest about research variables. In order to analyze the data the method of COVARIANCE analysis and descriptive statistics methods were applied. The statistical findings from the research to get to the objectives of intervention were analyzed via applying SPSS 18 software. In terms of demographic variables, the age means of the experimental group and control group were 49 and 47.5 respectively. The education in both groups was below diploma, diploma, and above diploma. The descriptive data of the study were presented in table (1).
Table (1) mean and standard deviation of the scores of Beck depression test at pretest, posttest and follow-up stages in two experimental and control groups.

<table>
<thead>
<tr>
<th></th>
<th>Pretest</th>
<th>posttest</th>
<th>follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>standard deviation</td>
<td>mean</td>
</tr>
<tr>
<td>Experimental</td>
<td>30.93</td>
<td>7.86</td>
<td>20.13</td>
</tr>
<tr>
<td>Control</td>
<td>33.26</td>
<td>4.83</td>
<td>30.86</td>
</tr>
</tbody>
</table>

In this study, COVARIANCE analysis was applied for the inferential analysis of research results.

Table (2) COVARIANCE analysis of the effect of group membership on the decrease of depression in experimental group at posttest and follow-up stages

<table>
<thead>
<tr>
<th>Situation</th>
<th>- variables</th>
<th>- sum squares</th>
<th>- degree of freedom</th>
<th>- mean squares</th>
<th>- F(1,24)</th>
<th>(F) significance</th>
<th>- effect size</th>
<th>- statistical power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>272.819</td>
<td>1</td>
<td></td>
<td>272.819</td>
<td>8.271</td>
<td>0.008</td>
<td>0.234</td>
<td>0.792</td>
</tr>
<tr>
<td>Posttest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Membership Group</td>
<td>676.608</td>
<td>1</td>
<td></td>
<td>676.608</td>
<td>20.511</td>
<td>0.000</td>
<td>0.432</td>
<td>0.992</td>
</tr>
<tr>
<td>n=15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Follow-up</td>
<td>149.437</td>
<td>1</td>
<td></td>
<td>149.437</td>
<td>8.007</td>
<td>0.009</td>
<td>0.229</td>
<td>0.779</td>
</tr>
<tr>
<td>Pretest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Membership Group</td>
<td>1057.610</td>
<td>1</td>
<td></td>
<td>1057.610</td>
<td>56.669</td>
<td>0.000</td>
<td>0.677</td>
<td>~1</td>
</tr>
<tr>
<td>n=15</td>
<td></td>
<td></td>
<td></td>
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</tr>
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</table>

As the results of table (2) shows, the difference between adjusted means after controlling control variables in experimental and control group at posttest and follow-up stages is significant (p<0.001), therefore the effect of acceptance and commitment therapy was confirmed in decreasing depression in diabetic patients who were in experimental group.

Discussion and conclusion

The results showed that ACT is effective in decreasing depression in type 2 diabetic patients. The scores of posttest in the degree of depression confirm ACT method in decreasing the degree of depression. These results are in line with the results from the study by Whitebird in decreasing depression of diabetic patients and sickness management (16). Moreover, the results of recent study, agrees with the study by Gregg and Hayes which evaluated the effectiveness of ACT in managing diabetes and the skills of acceptance and awareness of thought control as well as negative feelings associated with diabetes positive (19), and also the results showed that applying the method of mind awareness can cause the decrease in recurrence of depression attacks (20).

The results of the present study is along with the researches carried out by Kaviani (21) and it states that teaching mind awareness to the patients suffering from mood and anxiety disorders leads to a considerable improvement in mental health and decreasing depression. Moreover, its advantage as an intervention method has been indicated for a large variety of chronic mental disorders.

It agrees with the study carried out by Gregg and Callghan, they believe that applying this method due to its hidden mechanism such as acceptance, increasing awareness, desensitization, presence at the moment, and observation without judgment, confrontation, and emancipation
combining with traditional cognitive behavioral therapy techniques can increase the effectiveness besides decreasing disease symptom (22). The results of the research are congruent with the study by Zattle. They found out that the participants in ACT intervention group showed a significant decrease in faith, being believable and frequency of negative thoughts. This study which was conducted on type 2 diabetic patients showed the effectiveness of intervention based on active attention to the present time, mind awareness and acceptance in decreasing diabetic patients and sickness management. Therefore, cognitive therapy concomitant with mental care is effective in improving diabetic patents. This therapy method is an structured and short-term intervention, and the objective of thinking mental care, like traditional cognitive therapy, is not altering the thinking content; rather the aim is to create a different attitude or relationship with thoughts, feelings and affections which includes maintaining total and momentary attention as well as having the attitude involving acceptance and without judgment (23). The conducted research agrees with the results of the study by Forman (14). This study has investigated the acceptance and commitment therapy in improving the depression in diabetic patients. Taking the results into account, this therapy method can be applied as a selected psychotherapy and complement of medical therapy to decrease depression in diabetic patients. There is hope that the results of the present study, encourage the specialists in this field to emphasize more on mental aspect of this sickness its direct result can be better and faster treatment and it has important advantages socially and economically. For better effectiveness, acceptance and commitment therapy, clinical interview to diagnose the type of depression is obligatory. Therapy about individuals who are observed to have durations of mania and depression are not such effective. In order to confirm the results of the current study, administering it in other countries is suggested.

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