

EFFICACY OF COGNITIVE THERAPY IN REDUCING THE RATE OF DEPRESSION IN WOMEN WITH TYPE 2 DIABETES

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Abstract

The present study attempts to examine the impact of cognitive therapy in reducing depression in diabetic women. It is an experimental method research and pre-test - post-test and follow-up type together with the control group. 16 of diabetic women are randomly selected and homogeneously placed in two 8-member groups. Background information questionnaire and standard questionnaire Beck Depression Inventory, 2nd Edition, (BDI II) are used for data collection. In this study, Cronbach's Alpha obtained for the questionnaire is 83/0. For treating depression, 8 sessions of group therapy are implemented based on the treatment of Major Depressive Disorder (MDD) consistent with cognitive therapy protocol of Wales and Papa Georgiou. The findings demonstrate that cognitive therapy has some impacts in reducing depression. The results of multivariate covariance analysis test show that there exists a significant difference between mean of depression in follow-up stage in proportion to that of pre-treatment stage; and reducing depression at three-month follow-up stage is stable.

Keywords: Diabetic Women; Depression; Cognitive Therapy

INTRODUCTION

There are approximately 200 million people with diabetes in the world and comprehensive estimate shows that 121 million people of diabetic people currently suffer from depression (Noul and Hirdinc, 2007). Diabetes which is caused by impaired glucose metabolism in the body is one of the most common diseases (Bilious N. and Smith, 2004). Patients who have diabetes typically have mood disorders, anxiety, and psychosis (Donald, M. et al. 2007). There are numerous physical and psychological complications of diabetes that depression is one of the psychological effects. Simultaneity of diabetes with mental disorders may have a significant effect on the course of diabetes and exaggerated response of diabetic patient against problems and difficulties of life may impair the inhibition of disease. Thus, depression may make the course of diabetes complicated and make the control of the disease harder via hormonal changes caused by depression (cortisol) and the patients are more likely to be at risk of complications of diabetes (Ma'aani, 2004).

On the one side, depression is one of the most common mental health problems in the community (Butler and Hope, 2003) and can be considered as one of the most common

psychiatric problems of type 2 diabetes. Prevalence of depression in patients with diabetes is greater than the general population. Recent studies have shown that the prevalence of depression in patients with diabetes is 33% and this figure is higher than the one in other chronic medical diseases (Sasanfar and Farshchi, 2002); furthermore, Ali S. et al. (2006) have shown that the prevalence of major depression in people with type 2 diabetes is twice as common as in normal individuals and according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-4) lifetime risk of severe depression in women is 10-25 percent and in men is 5-12 percent (Myers, J. and Marsden, K. 2001). Problems associated with depression as well as costs of depression in diabetes due to individuals' sufferings and their reduced quality of life is common among patients with diabetes (Jacobson AM, de Groot M, Samson JA. 2001) and also the negative medical outcomes and economic and social costs are very high (Ciechanowski, P. Katon WJ, Russo, JE, 2000). Thus, the treatment and reduction of depression in patients with diabetes is crucial. Various methods have been occurred and used to treat depression. Among the non-pharmacological treatment methods, cognitive-behavioral therapy of Beck et al. (1979) has been widely studied (Beck et al. 1979). Despite the success of cognitive - behavioral therapy in the treatment of depression, due to its complexity and the number of procedures and techniques used, significant criticisms of the assumptions underlying this approach is imported. However, one of the new approaches of non-drug treatment of depression is meta-cognitive therapy. Cognitive therapy of depression emphasize on understanding the causes of rumination and removal of this maladaptive process. Rumination is the main feature of Cognitive-Attentional Syndrome (CAS) which is activated in response to negative thoughts, sadness, and experience of loss. Cognitive-Attentional Syndrome cause considerable persistence of negative beliefs and periods of sadness and leads to melancholy instrument. Theoretical explanations offered by cognitive approach (Wells, A., Matthews, G. 1994) considers rumination and worry as intentional and active coping strategies like repetition of idea to cope with excitement and threatening events. Rumination can be considered as a form of mental processing for dealing with troubled thoughts and feelings. Several studies have examined the role of meta-cognitive therapy in reducing depression. Zare (2012) demonstrates, in an eight-week research with A-B design on three patients diagnosed with major depressive disorder, that meta-cognitive therapy has effects in improvement of depressive symptoms. Dargahian et al. (2011) have studied two women with major depressive disorder. The findings demonstrate that the rate of depression has significant reduction in pre-test stage and the treatment changes caused in two-month follow-up stayed stable. Hashemi, Alilomahmoud, and Nosrat Abad (2010) demonstrated, in a single case experimental research using multiple baselines plan staircase in 8 sessions on three patients with one-month and three-month follow-ups, that cognitive therapy can be effective in treating patients with depression in way that all three treatments caused significant changes in symptoms of ill health and continued until the follow-up period. Wells et al. (2012) propose in their research that MCT is a precise and effective therapy and can pay the way for definitive randomized controlled areas for work. Treatment-resistant depressed patients in this study went under 8 sessions of cognitive therapy and substantial improvements were seen in all measures in the stage after the treatment and stayed in the follow-up stage. Ejed,

J., Gerubac, A Eliss, N. (2010) investigated in a research major depression in adults with diabetes and the findings demonstrated that depression in diabetic patients are related to decrease in quality of life and reduce self-care programs and special management related to diabetes. Wells et al. (2008) in a study treated patients during 6 to 8 sessions of weekly cognitive therapy. They observed considerable improvement in depression, anxiety, and meta-cognitions. Wells et al. (2007) examined, in another study, four patients with depression in a single case experimental study and with multiple baselines. Results were associated in significant improvement in symptoms of depression and anxiety through grading and assessment by the interviewer.

RESEARCH METHODOLOGY

It is an experimental method research and is of pre-test - post-test and follow-up type together with the control group. In this design, the experimental group and the control group are tested three times. The first assessment with a pre-test before the implementation of test program and the second measurement with a post-test after the implementation of the test program were conducted. Half of the subjects were replaced in the experimental group and the other half was used as a control group to form an experimental group and a control group using cloning based on the Beck Depression Inventory Second Edition. Experimental and control groups were similar and measurement of dependent variables for both of them took place at the same time and under similar circumstances. In the follow-up stage which was one month after the treatment, final evaluation was conducted from patients of both groups (experimental and control) for further assessment. The statistical population of this study includes all diabetic women with depression who referred to Diabetes Association of Motahari Clinic of Shiraz in the summer and autumn of 2012 and they are in age range of 30 to 60 years old and have education higher than diploma and there is no history substance abuse in their records. To select a sample of 100, Beck Depression Inventory questionnaire was distributed among diabetic women of Diabetes Association who had been volunteers to take part in the research. The following criteria were utilized to select the samples.

Inclusion Criteria (score of higher than 19 in Beck Depression Inventory, between 30 to 60 years of age, education higher than diploma)

Exclusion Criteria (having concurrent chronic illnesses, not another psychological treatment, drug abuse, drug use for treatment of depression)

Following the criteria, 16 were randomly selected from among the remained 36, and after evaluation of depression questionnaire and ranking them, samples are placed in two matched 8-member groups regarding their depression scores.

Background information questionnaire and standard questionnaire Beck Depression Inventory, 2nd Edition, (BDI II) are used for data collection. This questionnaire includes 21 questions that is filled using quadrivalent scale. Total score of this test is between 0 and 63 and the score between 0 and 4 is deemed as rejection of depression and score between 5 and 10 as mild depression, scores between 11 and 18 as mild to average depression, between 20 and 29 as average to severe depression, and score between 30 and 63 is deemed as severe depression. The results of the research done by Beck, Stir, and Brown showed

that this questionnaire has high internal consistency (Sharifi et al. 2004). Internal consistency and test re-test reliability is reported as 0/87 for Iranian students (Dobson and Mohammadkhani, 2006). Furthermore, the coefficients of internal consistency of the questionnaire have been reported 0/81 in normal population (Beck A. T., Steer, R. A., Garbin, M. G., 1988). Rajabi (2005) has reported the coefficient of internal consistency of this questionnaire as 0/89. The reliability of the questionnaire in this research was obtained 0/84 by Cronbach's alpha test.

8 sessions of group therapy for the treatment of depression, based on the treatment of major depressive disorder (MDD) was conducted on a type of thinking called Cognitive-Attentional Syndrome (CAS). Cognitive therapy protocol was implemented based on the protocol of Wales and Papa Georgiou. Analysis of Covariance test (ANCOVA) was used with a significance level of 0/05.

CONCLUSIONS

16 people participate in this study in the form of two groups of 8 with a average age of 48/5 years old (SD=7/05) for the experiment group and average age of 48/9 years old (SD=7/5) for the control group. From all 16, 13 are married. Considering job, 9 of them are housewives, 3 of them working, and the rest 3 are retired. Regarding education, 8 of them are diploma holder, two of them college education, 5 of them are bachelors degree, and only one of them got masters. Chart 1 demonstrates changes related to the obtained means from Beck Depression Inventory in both experiment and control groups and in three stages of before treatment, after treatment, and follow-up. Among these, the highest mean is related to the pre treatment stage of the experiment group and the least mean is related to the after treatment stage of the same group.

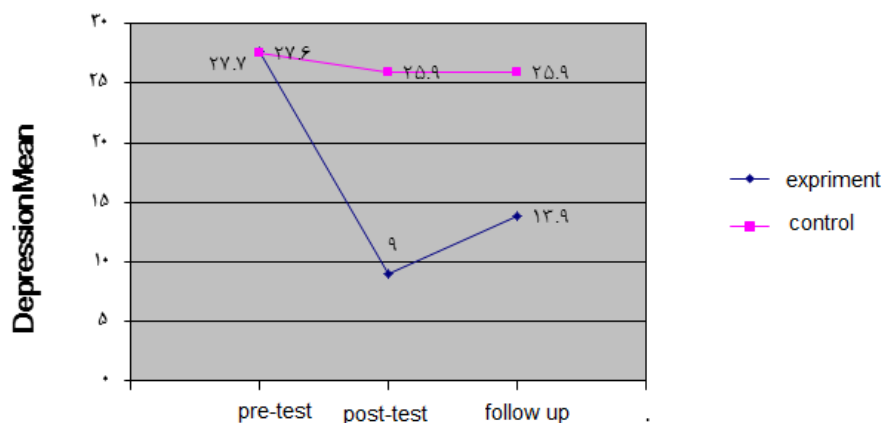


Chart (1)- Changes of Depression Mean in Different Stages of Treatment

Before conducting Analysis of Covariance test, normality of data distribution is investigated in three steps of measurement by Kolmogorov-Smirnov test. Results of this test showed that the data distribution is normal in all variables ($P > 0/05$).

Post-test depression score as dependent variable, pre-test depression score and education years as the variable of covariance (together), and also cognitive therapy (experiment and control groups) as independent variable were entered analyze of covariance test. Loon test confirmed the equality of variances ($p=0/388$). The obtained correlation between education years and pre-test of depression ($r=0/03$) is less than $0/80$ and this shows that the default canonical correlation is accepted between associated variables. Furthermore, the postulate of homogeneity of regression was tested and it demonstrated that there is no interaction among education years, pre-test score, and cognitive therapy (exposure to control and experiment groups). Therefore, given the lack of significant interaction ($F=2/5$ and $p=0/119$), assumption of homogeneity of regression has been achieved.

Table 2 – Test Results of Effects among Variables

	Freedom Degree	Mean Square	F	Significant Level	Effect Coef.	Test Power
Groups' Interaction, Education Years, and Pre-test of Depression	2	22/8	3/5	0/119	0/28	0/41

It is seen in the analysis that education variable does not have any significant relation with depression ($p=0/80$) and does not have any effects on the suggested model but F measure of pre-test variable of depression is significant ($F=7/1$, $p=0/021$) and shows that assumption of the correlation of associated variable and dependent variable is significant in this case. Main impact (cognitive therapy) which means the difference between two groups of control and experiment is also significant ($p=0/001$). In the table of dual comparisons (Table 4) it is also shown that the experiment group, compared to the control group, has experienced significant decrease in post-test score of depression compared to that of the pre-test ($p=0/001$); therefore, cognitive therapy has impacts on reduction of depression.

Table 3 – Results of Analyze Covariance Test

	Freedom Degree	Mean Square	F	Significant Level	Effect measure	Test Power
Pre-test of Depression	1	101/8	7/1	0/021	0/78	0/67
Number of Education Years	1	1/03	0/07	0/80	0/006	0/06
Group	1	1149/3	79/9	0/001	0/87	0/99

Table 4 – Comparison of Depression Changes of Control and Experiment Group

Group	Mean Difference	SD	Level of Significance
Control-Experiment	-17	1/82	0/001

For investigating the rate of stability in one-month follow-up of depression follow-up score as dependent variable, pretest of depression score and education years as covariance variable (together) and cognitive therapy (control and experiment groups) also as independent variable are entered analyze of covariance test. Loon test confirms the equality of variances ($p=0/737$). The obtained correlation between education years and pre-test of depression ($r=0/03$) is less than $0/80$ and this shows that the default canonical correlation is

accepted between associated variables. Furthermore, the postulate of homogeneity of regression was tested and it demonstrated that there is no interaction among education years, pre-test score, and cognitive therapy (exposure to control and experiment groups). Therefore, given the lack of significant interaction ($F=2/5$ and $p=0/119$), assumption of homogeneity of regression has been achieved.

Main impact (cognitive therapy) which means the difference between two groups of control and experiment is also significant ($p=0/001$). In the table of dual comparisons is also shown that the experiment group, compared to the control group, has experienced significant decrease in follow-up score of depression compared to that of the pre-test ($p=0/001$); therefore, cognitive therapy has impacts on reduction of depression in one-month follow-up stage.

Table 5 – Results of Analyze Covariance Test

	Freedom Degree	Mean Square	F	Significant Level	Effect measure	Test Power
Depression Rate	1	23/03	1/43	0/255	0/015	0/068
Number of Education Years	1	8/69	0/54	0/447	0/043	0/104
Group	1	792/7	49/2	0/001	0/80	0/99

Table 6 – Comparison of Depression Changes of Control and Experiment Group in Follow-up Stage

Group	Mean Difference	SD	Level of Significance
Control-Experiment	-14/08	2/07	0/001

DISCUSSION AND CONCLUSIONS

Cognitive therapy is a new advance in understanding the causes of mental health and problems and their treatments. This study was performed to examine the impact of cognitive therapy on depression in women with type II diabetes. The results show that cognitive therapy is effective on reducing depression in women with type II diabetes. Results of the research about one-month follow-up also show that the results of this therapy in reducing depression are stable. The results of this research are in line with those of the researches of Wells et al. (2008), Wells et al. (2007), Hashemi, Mahmoudalilo, and Nosrat Abad (2010), Dargahian et al. (2011), and Zare (2012). A research with different results was not found by the author. Wells et al. (2008) have done a case study on 4 people with depression and demonstrated that cognitive therapy causes decrease in symptoms of depression. Furthermore, Hashemi, Mahmoudalilo, and Nosrat Abad (2010) as well as Zare (2012) also on 3 patients with depression found the same thing. Zare (2012) points out that this picture could be mediated by the sign placement and maintenance of major depressive disorder. Dargahian et al. (2011) also note Cognitive therapy with the decrease of rumination, attention focused on their positive and negative meta-cognitive beliefs are effective in decrease of symptoms of major depression and rumination. Regarding the existence of relation between rumination and depression which is emphasized in numerous studies (Bagheri Nejad, Salehi, and Tabatabai, 2010; Papa Georgiou and Wells, 2003), consideration of negative cognitive style and rumination as a risk factor for depression and

also reduction of rumination as a result of cognitive therapy (Zare, 2012; Dargahian et al. 2011; Wells et al. 2008), it is possible to some extent to relate the reduction of depression as a result of cognitive therapy to reduction of rumination in patients with diabetes. Furthermore, it can be said that since the content of individual thoughts tend to match their moods and this is true about the people who have a tendency to depression, cognitive therapy, intervening in the process of thinking through attention and mindfulness techniques, interrupt the patients' access to the content of their depressed mind and make them aware of this content of their minds. Mindfulness can be considered anything more than a way to deal with thoughts. It means that patients, through the practice of learning rather than avoiding their depressing thoughts, or drowning in a sequence of associations, they hear and see their thoughts in the forms of sounds, words, or mental images separate from the external fact and just as happen in their minds. In cognitive therapy terms, facing with thoughts in form of a conscious mind avoids cognitive-attention syndrome by the patients and prevents patient entrapment in the vicious sequencing distracted thoughts and emotional consequences of making them depressed.

Cognitive therapy, like its self, considers cognitive therapy of thoughts as the origin of emotions such as sadness and depression except that it considers stability of emotions on the condition of the style of response of individuals to their own content of minds rather than three levels of cognitive content. From this perspective, the process of thinking ahead of its content, determines the emotional consequences. Furthermore, cognitive therapy knows continuous treatment of cognitive symptoms of depression, such as lack of motivational thinking, decision difficulty, and decentralization to deepen the feelings of depression. Therefore, meta-cognitive therapy, taking a step beyond cognitive therapy, deals with the steady and stable processing courses that lead to reduction in depression symptoms. Findings of this study showed that the intervention in the level of meta-cognition of diabetic patients reduce their depression rate and this change obtained through their attention focus from depressing thoughts to viewing them and consciousness of mind regarding them. In short, in the following explanations it can be said that this result is inflexible due to a different way of communicating ideas, refusing to stop resistance or the development of the conceptual analysis of a style of maladaptive worry, and threat of rumination.

Also there was not a possibility to isolate the pure effects of cognitive therapy in the absence of some factors that could limit the generalizability of the results. But, given the fact that these limitations exist in all treatment methods, this restriction seems justified. Even the most rigorous clinical trial methods cannot control for example the effect of confounding variables such as the relationship with the therapist.

SUGGESTIONS

Regarding the results of this study, it is suggested that in order to check the status of components of meta-cognition and the roles of these components in depression, more research should be done. It is also suggested in the future researches that scholars examine the impact of cognitive therapy of components of depression on other samples of depressed subjects without underlying diseases, male subjects, subjects with different education levels, etc.

Regarding the time limitation in this research, it is also suggested that longer follow-up of 9 and 12 months length be investigated in stability of cognitive therapy research.

Finally, regarding the reduction of symptoms of depression in women with diabetes type 2 and its stability in three-month follow-up, meta-cognitive therapy is suggested as a effective treatment method.

REFERENCES

- 1- Butler, Gilian, and Tony Hope (2003). *Mental Health Guide*. Trans. By Mehdi Gharaghe Chi. Tehran: Alborz. (Pub: 1995).
- 2- Bagheri Nejad, Mina, Javad. Salehi Fardi, and Seyed Mahmoud Tabatabai (2010). Relation of Rumination and Depression in a Case Study of Iranian Students. *Training and Psychology Studies Quarterly*. No. 23. Pp: 21-38.
- 3- Bailus, Rodi, and Toni. Smith (2004). *Diabetes*. Trans. By Mohammad Taher. Tehran: Peydayesh. (Pub: 1996).
- 4- Dobson, Kit, and Parvaneh. Mohammad Khani (2006). *Intervention Effectiveness Based on Recurrent Depression*. Case Study. Tehran: Tavan Bakhsh University. 25-30.
- 5- Rajabi, Gholam Reza (2005). Psychometric Properties of the Beck Depression Inventory Short Form. *Journal of Iranian Psychologists*. (1) 4, 291-298.
- 6- Zare, Hadi (2012). *Effectiveness of Cognitive Therapy on Depression and Rumination*. M. A. Thesis. Allameh Tabataba'i University.
- 7- Sasanfar, Samira, and Shirin Farshchi (2002). *Prevalence of Depression in Diabetic Patients Referred to Diabetes Clinic of Semnan*. PhD. Medicine Thesis. Semnan Faculty of Medicine.
- 8- Sharifi, Vandad, Seyed Mohammad. As'adi, and Mohammad Reza, Mohammadi (2004). Reliability and Applicability of the Persian Version Structured Diagnostic Interview Based on DSMIV for SCDI. *Journal of Cognitive Science*. 8-22.
- 9- Ma'ani, Iraj (2004). *Psychosomatic Medicine, Mental Pain and Treat*. Tehran: Chapaksh. No. (61).
- 10- Hashemi, Zohre, Majid, AliloMahmoud, and Toraj, Hashemi Nosrat Abadi (2010). Effects of Cognitive Treatment of Major Depressive Disorder. Case Study. *Journal of Clinical Psychology*. 2nd Year. No. 3. Pp (85-97).
- 11- Ali, S., Stone, M. A., Peters, J. L., Davies, M. J., & Khunti, K. (2006). The prevalence of comorbid depression in adults with type 2 diabetes: systematic review and meta-analysis. *Diabetes Med*, 23, 1165-1173.
- 12- Beck A.T. (1986). *Anxiety Disorders and Phobias: A Cognitive Approach*. Basic Books: New York.
- 13- Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression*. New York: Guilford Press.
- 14- Ciechanowski, P., Katon, W. J., & Russo, J. E. (2000). Impact of depress symptoms on adherence, function and costs. *Arch Intern Med*, 160, 3278–3285.
- 15- Donald, M., Hilty, M. D., Robert, M., McCarron, DO., & Hendry, M. D. (2007). Management of mental illness in patients with diabetes. *Psychiatry and Behavioral*

- Science, University of California, Davis, 2230 Stockton Boulevard, Sacramento, CA, 95817, USA.
- 16- Jacobson, A. M., Groot, M., & Samson, J. A. (2001). Effects of psychiatric type II disorders and symptoms on quality of life in patients with type I and diabetes mellitus. *Quality Life Res*, 6, 11–20.
 - 17- Kochanska, G., Barry, R. A., Jimenez, A. L., Hollatz, A. L., & Woodard, J. (2009). Guilt and effortful control: Two mechanisms that prevent disruptive developmental trajectories. *Journal of Personality and Social Psychology*, 97(2), 322–333.
 - 18- Myers, J., & Marsden, K. 2001 or (2003). *A Self-help Approach to Health Promotion in population. Professional perspectives*, second edition, 11–20.
 - 19- Papageorgiou, C., & Wells, A. (2003). An Empirical Test of a Clinical Metacognitive Model of Rumination and depression. *CognTher Res*. 27, 261-273.
 - 20- Wells, A. (1994). Meta-cognition and worry: A cognitive model of -generalized anxiety disorder. *Behavior Cognition therapy*, 23, 310-320.
 - 21- Wells, A., Fisher, P. L., Myers, S., Wheatley, J., Patel, T., & Brewin, C. (2008). An open trial of metacognitive therapy in the treatment of major depressive disorder. Manuscript in in preparation .
 - 22- Wells, A., Fisher, P., Myers, S., Wheatlet, J., Patel, T., Chris R., B. (2012). Metacognitive therapy in treatment-resistant depression: A platform trial. *Behavior Research and therapy*, volume 50, Issue 6, Pages 367–373.
 - 23- Wells, A., fisher, P., Samuel, M., Trishna, P., & Chris, R. (2007). Meta-cognitive therapy in recurrent and persistent depression. *Cognitive Therapy*, 96, 84-100.
 - 24- Gerubac, and Eliss (2010)
 - 25- Noul and Hirdinc, (2007)
 - 26- Dargahian et al. (2011)