The Effectiveness of Dialectical Behavioral Therapy on Psychological Well-Being in Patients with Diabetes

Zahra Baramesipour[1,2], Mansoureh Nasirian[3]*, Najmeh Sedrpooshan[4]

1. Department of Psychology, Yazd Science and Research Branch, Islamic Azad University, Yazd, Iran.
2. Department of Psychology, Yazd Branch, Islamic Azad University, Yazd, Iran.
3. Psychiatrist, Department of Psychiatry, Shahid Sadughi University of Medical Science, Yazd, Iran.
4. Assistant Professor, Counseling Department, Islamic Azad University of Khomeinishahr, Khomeinishahr Branch, Daneshjou Blvd, Iran.

*Correspondence:
Mansoureh Nasirian, Psychiatrist, Department of Psychiatry, Shahid Sadughi University of Medical Science, Yazd, Iran.
Email: Dr.Nasirian@iauyazd.ac.ir
Tel: (98) 913 253 7633

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Abstract

Objective: Diabetes is a chronic disease causing not only somatic complications like hyperglycemia, but also increased psychological consequences and impaired psychological well-being in diabetics. Various psychological treatments have been applied so far to reduce the mental symptoms and promote the mental well-being of these patients. This study aimed at determining the efficiency of dialectical behavioral therapy in psychological well-being of diabetic patients.

Materials and Methods: Using the purposive sampling method, 20 diabetic patients were selected and assigned randomly to two experimental and control groups. Ryff's Psychological Well-being Questionnaire was used to collect the required data.

Results: Our findings indicated that the dialectical behavioral therapy was effective on psychological well-being of the diabetic patients. This method proved to be effective in our research hypotheses regarding different aspects of psychological well-being, i.e., self-acceptance, positive relations with others, self-autonomy, environment domination, purposeful life, and personal development.

Conclusion: Due to the effectiveness, it is advisable to use this therapeutic modality as a complementary method to other therapies.

Keywords: Dialectical behavioral therapies, Diabetes, Psychological well-being.

Introduction

Diabetes is a heterogeneous class of metabolic disorders characterized by chronic hyperglycemia and impaired metabolism of carbohydrates, fats, and proteins leading to some deficiencies in insulin secretion or its functioning (1). Increased incidence of diabetes and its low mortality rate have led to increased prevalence of this disease (2), so that the WHO has named it as the latent pandemics (3). The prevalence of this disorder in 2000 was 19% in individuals younger than 20 years, 8.6% between 20-65 years, and 20% in older than 65 years (4). Based on the latest statistics, a total of 171 million people suffer from diabetes and it is estimated that these figures exceed 300 million people by 2025 (5).

In addition to complications involving numerous body systems, diabetes induce various psychosocial disorders. Specifically, it exerts detrimental effects on the physical performance, mental status, interpersonal relations, social and familial position, and on the whole, the psychological well-being of the patients (6). This can affect the patients' cooperation for the follow-up of pharmacological treatments of diabetes. In recent decades, diabetes specialists and psychiatrists have focused on the psychological aspects of diabetes prevention and treatment, such as patients' psychological well-being. Well-being, means enjoying a state of complete psychosomatic and social welfare, and not just absence of any disease (7). In Ryff's viewpoint, well-being means promotion and enhancement manifested in one's realization of capabilities and intellectual powers. The dimensions of psychological well-being (self-acceptance, positive relations with others, self-autonomy, environment domination, purposeful life, and personal development) not only affect the individual's mental health, but also provide a suitable background for realization of the latent intelligences (8). Today, the psychological interventions are important, specifically for promotion of psychological well-being in chronic diseases such as diabetes. One such an intervention is dialectical behavioral therapy. Although this therapeutic method was first used in treating the borderline personality disorder (10-13), its efficacy is confirmed today in reducing the symptoms of psychiatric disorders including attention deficient hyperactivity (14), trichotillomania (15), post-traumatic stress disorder (16), depression and suicide tendencies (17), and improving life quality (18).

In fact, the essential functions of this therapeutic method are: 1. Reinforcement and expansion of reservoir of skillful behavior patterns, 2. One's improved motivation for change through reducing unadoptable behavior, specially excitement and malfunctioning cognition, 3. Ensuring of generalization of new behavioral patterns from the treatment setting to the natural environment, 4. Organization (structuring) of the environment so that constructive behaviors, not the deficient or destructive behaviors, are reinforced, and 5. Improving the therapist's motivation and capabilities for more effective treatment (19). Furthermore, this treatment modality makes use of techniques such as tolerance of chaos, mindfulness, emotional regulation (adjustment), and effective communication, each of which being also used as an independent therapy in treating psychological disorders. Various researches have revealed the efficiency of this treatment procedure in improving psychological well-being and diabetes. For instance, some researchers investigated the psychological well-being on the basis of components of mindfulness as one of the techniques of dialectical behavioral therapy. The findings revealed that this technique is a powerful predictor of psychological well-being. Improved psychological well-being has a positive effect on the course of diabetes recovery (20,21,22). In another study, Bigdeli et al. (2013) showed that "emotional regulation" as one of dialectical techniques can serve as a strong predictor of psychological well-being (23). Considering the results of various studies conducted so far in this regard, it could be logically reasoned that the diabetics and their families are in urgent need of extensive non-pharmaceutical interventions not due to the wider prevalence of psychiatric disorders, but due to the need for patients' cooperation in treatment and follow-up at various stages of the treatment process. In this way, the tardive consequences of the disease could be prevented and along with better tolerance of the disease, a better life quality will be experienced (24). Since the improvement of the psychological disorders symptoms in diabetic patients are associated with their psychological well-being, this study aimed to investigate the efficiency of dialectical behavioral therapy in diabetics.

Materials and Methods

This was a quasi-experimental study (pretest, post-test, and control group). The population under study were all the diabetic patients (2000 patients) presenting to Yazd Center for Diabetes Research and Treatment during 2014-2015. Purposive sampling method was used to obtain a sample volume of 20 patients who were then assigned randomly to an experimental group (10 patients) and a control group (10 patients). Based on Cohen's table and statistical power (0.80), the sample volume was approved. The inclusion criteria was: 1.diagnosed diabetic patient, 2. Lack of affliction with other underlying diseases such as hypertension or cardiovascular disorders, and 3. no psychological disorders history. Also, the exclusion criteria was: 1. Being absent in more than two treatment sessions, and 2. lack of interest in participating in educational sessions and lack of performing the assignments of the educational period. Informed written consent was obtained from both the experimental and control group patients before the start of the therapeutic intervention.

Data Collection Instruments

A) Ryff's Psychological Well-being Questionnaire

This inventory was developed by Ryff in 1980. Our study used the original version of the questionnaire with 84 items. This checklist can assess 6 major scales of the psychological well-being pattern, so, it contains 6 sub-scales, each in turn, containing 14 items. This inventory has been designed for adults and has two other 54-item and 18-item versions, as well. The subjects are demanded to indicate to what degree they agree or disagree with each item on a 6-point Likert scale (1=completely disagree, 6=completely agree). The maximum and minimum scores on this scale are 504 and 84, respectively. Higher scores indicate better psychological well-being in each of the 6 subscales. The reliability co-efficient of this instrument is reported by Ryff & Case to be 0.83-0.91 (25) and its reliability co-efficient in Iran was estimated to be 0.85 using the test-retest reliability coefficient method (26).

B) The Dialectical Behavioral Protocol

The therapeutic protocol used in this study was derived from the textbook "Dialectical Behavioral Therapy" (27). The orientation sessions were held as six two-hour sessions.

ANCOVA and MANCOVA were used to test the research hypotheses. These tests are parametric statistics the performance of which demands certain presuppositions. Before doing these tests, the presuppositions including normal distribution of scores in the population under study, the homogeneity of gradient of regression of variables, and homogeneity of variances in both experimental and control groups were investigated.

The orientation sessions of dialectical behavioral therapy

Session no.	Materials taught
1	Familiarity and introduction of the members to each other, statement of the group's regulations, completion of the pretest, familiarity with goals and objectives, number of sessions and explanation of ethical rules.
2	Familiarity with the negative consequences of self-damaging coping skills, teaching of essential skills of chaos tolerance including the three skills of fundamental acceptance, attention diversion, and self-tranquilization (attention diversion through pleasant activities, attention diversion through counting, and self-tranquilization through the five senses).
3	Teaching of advanced skills of chaos tolerance (the use of the present tense) including: conscious deliberate breathing, imagination of a safe place, and the use of approving monologs.
4	Teaching of awareness attention (exercise of carelessness, exercise of concentration for 1 min, exercise of concentration on one object, exercise of the light photon, and exercise of 3-min recording of thoughts).
5	Teaching of emotional organization skills, the use of identification skills and recording of emotions, the use of counteractive thoughts and balancing between thoughts and feelings.
6	The use of concentration exercise for 1 minute for another time, a review of the previous sessions, expression of feelings of group members, and completion of the post-test.

Results

The mean and standard deviation (SD) of psychological well-being and its subscales are given in Table 1 for the experimental and control groups. As observed, the pretest means of psychological well-being are almost equal for both the experimental and control groups. Yet, in the post-test, the scores of the experimental group were improved.

The results of investigation of presuppositions are presented in Table 2.

As can be observed in Table 2, the values of Kolmogorov-Smirnov test, Levin test, and test of homogeneity of variances gradient are all insignificant. In other words, the null hypothesis in these tests is confirmed and it can be concluded that the scores of psychological well-being are normally distributed, the variances of both experimental and control groups are equal in the pretest, and the regression gradient of variables is also homogeneous. Hence, the presuppositions of the ANCOVA and MANCOVA tests are approved in the present study. Having confirmed the presuppositions of the tests, ANCOVA was used to investigate the main hypothesis of the research, i.e., the effectiveness of dialectical behavioral therapy in improving the psychological well-being total score of the diabetics. The results are given in Table 3.

As can be observed, the F-value of the experimental group is significant indicating that the post-test scores of psychological well-being in the experimental group have improved significantly compared to the control

Table 1. Means and SDs of the experimental and control groups in the pretest and post-test of psychological well-being

Variables	Statistic	Control group		Experimental group	
		Pretest	Post-test	Pretest	Post-test
Total score of psychological well-being	Mean	338.71	330.69	399.75	399.87
	SD	48.55	53.68	47.99	48.73
Self-acceptance	Mean	51.28	50.57	53.37	64.00
	SD	10.95	10.4	8.88	9.20
Positive relations with others	Mean	56.14	56.43	58.25	70.37
	SD	9.18	8.66	9.74	8.96
Self-autonomy	Mean	55.86	51.00	49.00	58.62
	SD	9.56	9.01	8.38	8.54
Environment domination	Mean	57.14	54.57	55.62	65.00
	SD	10.85	10.99	11.52	10.19
Purposeful life	Mean	59.43	57.86	59.50	68.87
	SD	10.43	10.24	8.91	8.47
Personal development	Mean	58.86	60.28	64.00	73.00
	SD	10.67	10.06	9.94	10.41

Table 2. Study of presuppositions of normal distribution of scores, homogeneity of variances of both groups, and homogeneity of regression gradient

Test presuppositions	Kolmogorov-Smirnov test				Levin's test		Homogeneity of regression gradient	
Variables	Experimental group		Control group		Statistic	Level of significance	Statistic	Level of significance
	Statistic	Level of significance	Statistic	Level of significance				
Total score of psychological well-being	0.59	0.89	0.62	0.85	0.03	0.95	0.057	0.81
Self-acceptance	0.34	0.99	0.73	0.66	0.01	0.99	0.36	0.55
Positive relations with others	0.55	0.92	0.61	0.85	0.05	0.83	2.09	0.16
Self-autonomy	0.33	0.99	0.44	0.98	0.33	0.58	2.34	0.14
Environment domination	0.43	0.98	0.87	0.44	0.02	0.90	0.57	0.46
Purposeful life	0.46	0.97	0.64	0.81	2.01	0.18	0.01	0.98
Personal development	0.47	0.97	0.67	0.77	0.17	0.68	2.61	0.12

group, so, this hypothesis is confirmed. This means that dialectical behavioral therapy has induced a significant improvement in the psychological well-being of the subjects in the experimental group. The effect size index indicates that 99.6% of the changes in the psychological well-being of the experimental group is attributed to dialectical behavior therapy.

MANCOVA was used to determine the effect of dialectical behavior therapy on the subscales of psychological well-being and the results are displayed in Table 4. As observed, all the F-values are significant and the research hypothesis concerning the effect of the independent variable on the subscales of psychological well-being is confirmed. In other words, by controlling the pretest, the scores of at least one of the subscales of psychological well-being in the post-test in the experimental group subjects are significantly greater than the scores of the control group subjects. Regarding the significant F-value in MANCOVA, to determine in which subscale of the psychological well-being there are differences between the two groups, ANCOVA was used in the context of MANCOVA and the results are given in Table 5.

As can be observed in Table 5, all F-values are significant which indicate the post-test scores of experimental group for all six subscales of psychological well-being have improved significantly compared to the control group. The values of effect size indicate that 55% of the change in self-acceptance, 76% of the change in positive relations with others, 82% of the change in self-autonomy, 53% of the change in environment domination, 0.67% of the change in purposeful life, and 80% of the change in personal development is attributed to the effect of dialectical behavior therapy.

Discussion

The findings of this study showed that dialectical behavioral therapy is effective in improving the psychological well-being of diabetics. These findings are indirectly consistent with the findings of other studies (28,29). Although these researchers applied the cognitive-behavioral method for controlling the blood sugar level in their diabetic patients and improving their life quality, since the dialectical behavioral therapy is derived from cognitive-behavioral therapy, and it could be said that the foundation of this method is based on the cognitive-behavioral procedure (30), hence, the similarities between these two treatment modalities may indicate the point that the dialectical behavioral therapy is also effective in improving the life quality and psychological well-being of the diabetic patients. Moreover, our findings are consistent with the results of the researchers abroad (18,31,32). These researchers have demonstrated in their studies that dialectical behavioral therapy is effective in decreasing impulsive behaviors, improving life quality, reducing the feeling of vanity and absurdity, and also increasing management of negative emotions and excitements. One important skill in dialectical behavior therapy, considered as the crux of the method, is mindfulness or attentiveness (27). Mindfulness is a style of better communication with life which is able to relieve somatic pains, enrich the life, and make it meaningful. Mindfulness performs this via coordination with instantaneous experience and provision of a direct insight into the role of the mind in creating unnecessary worries and anxiety (33). Several studies have demonstrated the effect of increased mindfulness on psychological well-being and, subsequently, increased satisfaction with life (20,21,22). This is because as well-being improves, anxiety, depression, negative emotions, and psychotic symptoms decrease, while self-esteem, optimism, and positive emotions increase. As the mindfulness techniques were also used as one the dialectical behavioral therapy techniques in our study, it could be said that this method, in its own turn, has improved the diabetic patients' psychological well-being. Another important skill in dialectical behavioral therapy in addition to the

Table 3. Results of ANCOVA for comparison of post-test scores and total scores of psychological well-being of the experimental and control groups

Sources	Sum of squares	d.f.	Mean of squares	F	Level of significance	Effect index	Test power
Pretest effect	27252.58	1	27252.58	27.935	0.0001	0.70	0.998
Group effect	17393.25	1	17393.25	11.507	0.001	0.59	0.969
Error	11921.73	15	993.48				
Total	2084478.00	20					

Table 4. Results of MANCOVA for comparing post-test scores of the subscales of psychological well-being in the experimental and control groups with the control of pretest

Test	value	F	Level of significance	E-square
Pillai's trace	0.746	15.410	0.0001	0.746
Wilks' lambda test	0.254	15.410	0.0001	0.746
Hotelling 'trace	2.935	15.410	0.0001	0.746
Roy's largest root test	2.935	15.410	0.0001	0.746

Table 5. Results of ANCOVA in the context of MANCOVA on the post-test scores of subscales of psychological well-being

Effect	Source of changes	Sum of squares	d.f.	Mean of squares	F	Level of significance	Effect size
Group	**Self-acceptance**	133.62	1	113.62	26.87	0.001	0.55
	Positive relations with others	25.94	1	25.94	54.14	0.001	0.76
	Self-autonomy	85.36	1	85.36	81.27	0.001	0.82
	Environment domination	133.20	1	133.20	19.81	0.001	0.53
	Purposeful life	22.17	1	22.17	34.88	0.001	0.67
	Personal development	12.10	1	12.10	69.04	0.0001	0.80

mindfulness skill is the emotion regulation skill. Research has revealed that instruction on emotion regulation can positively affect the psychological well-being (23). Furthermore, the application of this skill increases the effective relations which is itself another noticeable dialectical therapy (28). Seeing that this technique is used along with other ones in this study, it could be asserted that our finding in this regard is consistent with the findings of above-mentioned studies supporting out hypothesis. It seems that one concept emphasized in dialectical behavioral therapy is fundamental acceptance, i.e., admitting the point that we should accept ourselves without judging our actions and thoughts. This, of course, requires some changes in our attitudes. The diabetic patients have probably achieved fundamental acceptance through making changes in their attitudes towards themselves and their illness. This component could be obtained through not thinking of the past (for diabetics, not thinking of the way their disorder began and not regretting the fact that they are affected with diabetes), not thinking of future problems related to diabetes (for diabetics, not thinking of which symptom or complication will appear next resulting in their increased anxiety), and accepting the present status without judging about themselves (for diabetics, not thinking about why they were affected with this ailment, not thinking that they do not deserve this nuance and so, scolding themselves and aggravating the situation). This, in turn, induces some changes in the diabetic patients leading them to accept themselves without any preconditions on the basis of not judging about themselves, and their actions and thoughts; so, they value themselves and their lives. Consequently, they discard the unhealthy unreliable methods and use better ones to resolve their current

problems. This, in turn, predisposes to a reduction in anxiety, worry, stress, and depression, finally resulting in the removal of unconstructive mental occupation and gives them a better psychological well-being.

Conclusion

Based on the research conducted so far and also according to the findings of the present study, it can be postulated that dialectical behavioral therapy can reduce anxiety, worry, environmental stress, and depression. One factor that aggravates stress and anxiety in diabetics is fear of the prognosis or future course of the disease such as affliction with blindness, amputation, and cardiovascular diseases. Additionally, another consequence of diabetes in these individuals is lack of tolerance of complications of the disease and the need for continuous monitoring of their blood glucose level. Although anxiety, depression, and fear of future (due to psychosomatic symptoms of diabetes) are not directly correlated with aspects of psychological well-being, patients can gain a better control on their lives through decreasing these psychological effects so that they can make better decisions for their lives. Patients concerned just with their present status, are not negatively involved in the problems of the past, i.e., how their diseases developed or why it happened. Further, they do not notice the future problems; rather, their mind is occupied with the present. This, in turn, improves the components of better relations with others and life and decreases the stressors, resulting in a purposeful life with optimal personal development. Subsequently, these changes are correlated with aspects of psychological well-being and improve it. Regarding the importance of psychological problems depriving diabetics from enjoying a good life quality, the identification and resolving of these problems should be given priority. The dialectical behavioral therapy has proved to be very effective in reducing the psychological symptoms of patients. Hence, the application of this therapeutic modality as an adjunct to other common pharmaceutical therapies will lead to a decrease in psychological symptoms in diabetics and bestows an optimized psychological well-being on them.

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