Influence of Cognitive Behavioral Therapy on Psychological Wellbeing and Ego-Resiliency in Type 2 Diabetes Patients in Sabzevar

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Abstract

Objective: Psychological wellbeing and ego-resiliency are highly affected in a chronic disease like type 2 diabetes mellitus (T2DM), where psychological interventions are considered as an option. The present study, therefore, aimed to investigate the effectiveness of cognitive-behavioral therapy (CBT) on psychological wellbeing and ego-resiliency of T2DM in Sabzevar, Iran.

Materials and Methods: This experimental pretest-posttest design was conducted on T2DM patients admitted to Diabetes Center in Sabzevar, Iran. The sample included 30 patients, selected by convenient sampling, and randomly assigned into control (n=15) and experimental groups (n=15). Ryff's Psychological Wellbeing Scale and Klohnen's Ego-resiliency Inventory were used to collect data. CBT was conducted for the experimental group. Statistical analyses were performed in SPSS17 using ANCOVA.

Results: The findings indicated that CBT had considerable impact on psychological wellbeing (and its six components: self-acceptance, personal growth, purpose in life, environmental mastery, autonomy, and positive relations with others), and ego-resiliency, in T2DM (*P*-value ≤ 0.01).

Conclusion: The application of CBT, in T2DM patients can be an effective, applicable and promising intervention to enhance the psychological wellbeing and ego-resiliency, two highly affected constructs in chronic diseases leading to serious comorbidities for health.

Keywords: Cognitive behavioral therapy, Type 2 diabetes mellitus, Psychological wellbeing, Personal autonomy.

Introduction

Type 2 diabetes mellitus (T2DM) is considered as a complex disorder regarding self-management and management of the disease (1), inducing psychological outcomes for the patient. Based on reports of International Diabetes Federation

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(IDF), its prevalence in the Middle East is rising and near epidemic (2); WHO predicts its prevalence will be reached to 6.8% by 2025 in Iran (3).

Tiredness of strict routine clinical and family care may also lay an additional burden with further psychological ramifications. This takes patients into tension in coping with morbidities; they encounter difficulties and start inclination towards negative thoughts due to low adaptation and diminished self-confidence; most evidently, persons with type 2 diabetes seem to be depowered in their psychological well-being (4) and resilience (5).

Parallel to medical therapies, psychological interventions are an option to change the lifestyle and to help them understand their particular condition; the advantage of psychological approaches over pharmacological approaches is the learning of skills and patients' empowerment to cope with future symptoms, and to reduce the risk of further comorbidities (6). Among these methods, Cognitive Behavioral Therapy (CBT) is proved and expected to alleviate symptoms in patients with diabetes (6). Psychological wellbeing is defined as the development of real capabilities of an individual (7). It is categorized in six dimensions: 1) self-acceptance; 2) positive relations with others; 3) autonomy; 4) having purpose in life; 5) personal growth; and 6) environmental mastery (8).

Another relevant construct is the ego-resiliency, or better understanding the patient's motivation, emotions and behaviors; it is conceptualized as one's power to accommodate with the existing hierarchical conditions (9); it is considered as one of the innate self-corrective mechanisms. In fact, ego-resiliency is the ability to adapt one's level of control temporarily up or down as circumstances dictate (10). Consequently, individuals with a high resiliency level experience positive affect, have higher self-confidence and better psychological adaptation (11). In stressful circumstances, individuals with a low resiliency levels may act either in a stiff and perseverant manner or chaotically and diffusely; in either case, the outcome may appear as maladaptive behavior (12).

Diabetes is both a cause and effect in behavioral problems, where one recommended psychotherapeutic intervention is CBT; the intervention focuses on behavioral activation and changing negative thoughts (6); it is found to be significantly successful in reducing psychological symptoms (6), in alleviating depressive symptoms and developing self-actualization, responsibility, interpersonal relationships, nutrition styles, physical activity and coping with stress (13), enhancing the quality of life and social performance (14), and lowering comorbidities such as stress and anxiety (15,16). It is also reported that CBT, applied either independently or together with a pharmacological approach, is effective on chronic diseases and consequent side effects (15,17,18), and hence it may be applied with confidence in research and treatment regimes.

The studies showed the efficacy of CBT on psychiatric comorbidities such as depression, anxiety and stress; however, they have not adequately considered psychological wellbeing and ego-resiliency. Diabetics are mostly prone to reactions such as denial, anxiety, depression, anger, endangered psychological wellbeing and lowered ego-resiliency. CBT, however, in managing diabetes in Iran, where the prevalence in on the rise, can be fruitful but it has been less investigated. Therefore, the present study was designed to investigate the efficacy of CBT on the psychological wellbeing and ego-resiliency in T2DM patients in Sabzevar, Iran.

Materials and Methods

This experimental pretest-posttest design was conducted on T2DM patients admitted to Diabetes Center in Sabzevar, Iran. The sample size was estimated according to the results of Esmaili's posttest with 95% confidence interval and 80% power (3). The participants (n=30) were selected through convenient sampling, and randomly assigned into

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experimental (n=15) and control (n=15) groups. The inclusion criteria for all of them as follows: type 2 diabetes, six months passed from diagnosis, no other acute complications, intermediate reading and writing ability, age above 30 years, taking oral medications for controlling blood sugar, random blood sugar ≥ 200 mg/dl, or two FBS levels > 126 mg/dl, no mental retardation or acute psychiatric disorders.

In order to collect relevant data, we administered the Ryff's (1995) psychological wellbeing scale (7) and Klohnen's (1996) self-report ego-resiliency scale (11). For ethical purposes, instructions were given to (both experimental and control) participants prior to data collection, and they were ensured that the obtained data would be considered confidential and exclusively used for research purposes. Consequently, an informed consent (in Persian) was signed by each participant.

While the control group received no intervention, the participants in the experimental group participated in ten 90-minute face-to-face sessions of cognitive-behavioral therapy, held twice weekly. Each session ended with a summary of the contents and assignments for the next session; the CBT sessions took place in a private setting, guided and conducted by the second author. After completion of the CBT, participants in both groups completed the posttest questionnaires. The guidelines used in each session were based on White's CBT protocol (20). Table 1 presents brief steps of the interventional protocol session by session.

Data collection instruments

The Ryff's psychological wellbeing scale (long form): the Ryff's inventory consists of 84 questions (long form) reflecting the six areas of psychological well-being: self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth; each area is measured with 14 statements. Respondents rate statements on a scale of 1 to 6, with 1 indicating strong disagreement and 6 indicating strong agreement; some statements are negatively scored. The higher the score is, the more optimal the psychological wellbeing will be (21). In Iran, this scale is normalized and strong correlations are found to exist between this scale and life satisfaction, happiness and self-esteem, which indicate its validity too; by Cronbach's alpha, its reliability is estimated to be 0.82 for the total scale; corresponding figures for subscales

Table 1. Brief steps of the interventional protocol session by session

Session	CBT instruction and exercises
1	Introduction to the protocol, importance of psychological wellbeing and ego-resiliency, diabetes control, structure of the sessions and the whole plan, assigning tasks for each session
2	Session two: Discussing the relationship between thinking, emotions and behavior, autosuggestion techniques; management of diabetes; positive and negative thoughts; presentation of the assignments.
3	Reviewing assignments; strategies to control unwanted and negative thoughts; avoiding illogical and negative thoughts; planning a daily schedule and physical activities; keeping a record of blood sugar level; presentation of the assignments.
4	Aggression control, muscular relaxation, guided imagery relaxation techniques; controlling obsessions of limitations in daily activities; presentation of the assignments.
5	Discussing the psychological wellbeing and ego-resiliency in simple terms; exercising how to understand one's own motivations, emotions, and behaviors; muscular relaxation to ease pain and tension; presentation of the assignments.
6	Muscular relaxation; dietary plans; less carbohydrates and cholesterol; managing spontaneous thoughts in group therapy; presentation of the assignments.
7	Exercise on coping with stress; environmental stressors; problem-solving techniques by role-play and demonstrations; presentation of the assignments.
8	Problem-solving techniques; relevant exercises; self-management plans; medicinal arrangements; presentation of positive experiences by participants; presentation of the assignments.
9	Evaluating the participants' current status of psychological wellbeing and ego-resiliency; interpersonal relations; enjoyable leisure time activities; misconceptions; presentation of the assignments.
10	Strategies to improve psychological wellbeing and ego-resiliency; overview of the whole protocol; exercising the instructed skills and concluding the program.

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(self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth) are 0.71, .77, 0.78, 0.77, 0.70, and 0.78, respectively (21).

Klohnen's self-report Ego-resiliency scale: Klohnen (1996) developed a self-report scale for measuring ego-resiliency based on California Psychological Inventory (CPI); it consists of 14 unidimensional statements, and respondents rate statements on a scale of 1 to 4, with 1 indicating does not apply at all, and 4 indicating mostly applies; the better the score is, the higher the ego-resiliency will be. The scale is reported to be of acceptable validity (11); also, the reliability of its Farsi version is reported to be 0.72 (22).

In order to achieve the validity of the data collection instruments, we used the Persian translations of the Klohnen's (1996) scale (22), and the Ryff's (1995) scale (21); we also checked their accuracy in copying to avoid misconceptions; also, expert judgments by professors of psychology at the Islamic Azad University, Torbat-e-Jam Branch, Torbat-e-Jam, Iran, proved that the questionnaires were complete. Therefore, their face and content validity were confirmed. As for reliability, Cronbach's-alpha obtained for Ryff's psychological well-being scale (1995) and Klohnen's self-report Ego-resiliency scale (1996) were 0.76 and 0.71, respectively.

The study design and ethical issue were approved as the MSc. thesis in clinical psychology in a major university in Iran (Ethics approved and thesis code: 11820701932081). The statistical analysis was conducted in SPSS 17 using descriptive measures (mean and standard deviation) and analysis of covariance.

Ethical considerations

This article is extracted from the second author's MSc. thesis (Ethics approved and thesis code: 11820701932081) in clinical psychology conducted at Islamic Azad University of Torbat-e-Jam, Iran.

Results

Descriptive data about total score of the psychological wellbeing and its components, together with total ego-resiliency scores, both pretest and posttest, are presented in Table 2 below. The mean posttest scores of the psychological wellbeing (total) in the experimental and control groups were 420.23 (±8.57) and 369 (±9.09), respectively. The mean posttest scores of the ego-resiliency in the experimental and control groups were 48.47 (±3.53) and 45.00 (±4.22), respectively. The values of all factors in the experimental group significantly increased; in the control group, however, only 'the ego' significantly increased. Before the intervention, no significant difference was observed between the control and experimental groups; but after the intervention was completed, all factors were observed to significantly increase in the experimental group. In order to determine the efficacy of CBT on psychological wellbeing (and its dimensions) and ego-resiliency, analysis of covariance was used. The results indicated a significant difference between the posttest scores of the experimental and control groups (P-value ≤ 0.05); in other words, CBT has been effective in enhancing the posttest scores of psychological wellbeing (and its dimensions) and ego-resiliency in T2DM (Table 2).

Discussion

The present study investigated the efficacy of CBT on enhancing the psychological wellbeing and ego-resiliency in T2DM patients. The results suggested the efficacy of CBT on psychological wellbeing and its components (i.e. self-acceptance, positive relations with others, autonomy, having purpose in life, personal growth, and environmental mastery) and ego-resiliency; in other words, after cognitive-behavioral therapy, the experimental group showed higher levels of psychological well-being and ego-resiliency, which is in line with the findings of Yousefi and Khayam Nekouyi (2010) who reported the efficacy of CBT used

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Table 2. Mean and standard error of psychological wellbeing and ego-resiliency in the experimental and control groups

Dimensions	Groups	Pretest Mean (±SE)	Posttest Mean (±SE)	*P*-value	ANCOVA *P*-value
Psychological wellbeing (Total)	Experimental	374.92 (±9.64)	420.23 (±8.57)	0.001	
	Control	368.57 (±9.75)	369.00 (±9.09)	0.95	<0.0001
	P-value	0.5	<0.001		
Self-acceptance	Experimental	53.85 (±2.40)	61.23 (±2.54)	0.001	
	Control	57.21 (±1.96)	54.93 (±1.88)	0.1	<0.0001
	P-value	0.26	0.050		
Positive relations with others	Experimental	57.54 (±1.72)	63.92 (±1.65)	0.001	
	Control	53.14 (±2.09)	52.86 (±1.77)	0.99	<0.0001
	P-value	0.36	0.002		
Autonomy	Experimental	52.69 (±2.29)	59.08 (±1.91)	0.001	
	Control	50.93 (±1.42)	51.86 (±1.20)	0.34	<0.0001
	P-value	0.82	0.004		
Environmental mastery	Experimental	55.69 (±2.03)	61.31 (±1.98)	0.002	
	Control	54.43 (±2.92)	54.36 (±2.68)	0.79	<0.0001
	P-value	0.62	0.05		
Purpose in life	Experimental	56.62 (±2.39)	63.69 (±2.10)	0.001	
	Control	55.00 (±1.99)	55.93 (±1.97)	0.11	<0.0001
	P-value	0.52	0.02		
Personal growth	Experimental	56.38 (±1.90)	62.77 (±1.95)	0.002	
	Control	53.93 (±2.12)	54.07 (±2.19)	0.78	<0.0001
	P-value	0.81	0.03		
Ego-resiliency	Experimental	42.15 (±1.26)	48.23 (±0.97)	0.001	
	Control	43.93 (±1.13)	45.00 (±1.17)	0.02	0.003
	P-value	0.55	0.06		

both separately and together with medical treatment regimes in managing chronic diseases (19). The efficacy of CBT observed in the present study is comparable to some earlier studies too (3,5,6,13-16).

T2DM bears both physical and psychological complications, and is associated with low levels of psychological wellbeing and ego-resiliency, where the effective role of CBT on enhancing psychological wellbeing and ego-resiliency may be reconsidered in therapeutic protocols. In earlier studies, enhancing physical activities (23), improving the quality of life (24), relieving depressive symptoms (3,13-16), and controlling tension or nervous strain (18) have been investigated. Therefore, enhancing their general health and psychological wellbeing may contribute to their self-management strategies in coping with strains following the long procedure of pharmacological routines, as well as the burden of mental pressures (6,17), and help them return to socially improved lifestyle with higher agility and hopefulness. In other studies researching the role of CBT in changing the lifestyle in T2DM patients, the results also suggest the success of CBT in improving their lifestyle and encouraging them to appropriate diet and exercise (3,16).

Diabetics' chronic exposure to medical and settings brings about a feeling of being psychologically neglected, with grave outcomes (20). In other words, a short period after the clinical diagnosis of diabetes, patients start underestimating their own capabilities and self-confidence, and become more and more socially isolated, also imbalanced and disordered social relationships; these may originate in somatic changes by dietary preventive measures, exercise and a compulsory acceptance of the imposed lifestyle. Also, loss of independence may follow repeated insulin injections and daily blood glucose control. A meaningless life confronts them with little or no motivation, mostly with barriers against professional developments in life; they also feel that normal life dreams are no longer achievable due to lost opportunities, and find less or no control over environmental factors. In addition, the exhausting care plans and medical treatment regimens lead them to diminished resilience,

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which is highly required for tackling strains and psychological of outcomes of diabetes. Therefore, this chronic condition entails special attention by psychiatrists and care providers to make changes towards CBT in educational packages to meet their psychological needs together with medications.

A probable reason for the efficacy of CBT on psychological wellbeing and ego-resiliency is, presumably, a change in the participants' lifestyle by replacing effective and positive thoughts and behaviors with old, negative and ineffective ones, whereby they rely more on efficient strategies for understanding and coping with stressful psychological strains. Also, during the CBT counseling sessions, they learn problem-solving skills, analyzing the events and their proper relation to environmental factors; this creates positive attitude towards oneself, enhanced relationship with others, adopting active roles in life, purpose in life, motivation for further developments and taking advantage of opportunities. For instance, in the present study, the participants were suggested to avoid negative thoughts and behaviors to speed up their recovery. Therefore, the CBT instructions imply that they ignore the negative thoughts whenever they arise, and to adopt positive ones instead. In short, a feeling of hope and self-confidence follows only if they find traces of lowered diabetes symptoms. However, the present study had limitations such as lack of a control group; we recommend further studies using CBT on diabetics with a control group, a larger sample and involving both genders.

Conclusions

The results indicated that CBT was effective in enhancing the patients' psychological wellbeing and ego-resiliency. Therefore, it may be advisable to apply CBT in clinic centers to alleviate psychological symptoms. Also, the results may be used to trigger the propensity of psychiatrists and care-providers to pay special attention to the psychological aspects along with somatic aspects in successfully managing diabetes. Although we find this research and its findings really illuminating for local therapists, a major limitations of the present study was its design and limited sample, the results of which may be less definitely generalized to dissimilar contexts because of the complex nature of diabetes; therefore, future research may focus on larger, stratified and proportionate samples, conducted longitudinally from various communities. Also, patients on insulin were not included since their cooperation was not likely to be guaranteed, therefore, this was another limitation to the study. Clinical trials with more rigorous controls may be recommended too.

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Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

References

1. Gunther MP, Winker P, Wudy SA, Brosig B. New methods in exploring old topics: case studying brittle diabetes in the family context. Journal of diabetes research. 2016;2016.
2. International Diabetes Federation, 2016, available online at http://www.idf.org/regions/middle-east-north-africa
3. Asadnia S, Issazadeghan A, Ansari B. Evaluation of the effectiveness of cognitive behavioral therapy on decreasing depression levels and improving the lifestyle of patients with type 2 diabetes. Studies in Medical Sciences.2013;24(10):812-22. (in Persian)
4. Vazquez C, Hervas G, Rahona JJ, Gomez D. Psychological well-being and health. Contributions

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[DOI: 10.18502/ijdo.v13i2.6477]

of positive psychology. Annuary of clinical and health psychology. 2009;5(2009):15-27.
5. Mazlom Bafroe N, Shams Esfand Abadi H, Jalali MR, Afkhami Ardakani M, Dadgari A. The Relationship between Resilience and Hardiness in Patients with Type 2 Diabetes in Yazd. SSU_Journals. 2015;23(2):1858-65. (in Persian)
6. Tovote KA, Fleer J, Snippe E, Bas IV, Links TP, Emmelkamp PM, et al. Cognitive behavioral therapy and mindfulness-based cognitive therapy for depressive symptoms in patients with diabetes: design of a randomized controlled trial. BMC psychology. 2013;1(1):1-0.
7. Ryff CD. Psychological well-being in adult life. Current directions in psychological science. 1995;4(4):99-104.
8. Keys CL, Shmotkin D, Ryff CD. Optimizing well-being: The empirical encounter of two traditions. Journal of Personality and Social Psychology. 2002;82(6):1007-22.
9. Farkas D, Orosz G. Ego-resiliency reloaded: a three-component model of general resiliency. PloS one. 2015;10(3):e0120883.
10. Block J. Personality as an affect-processing system: Toward an integrative theory. Psychology Press; 2002.
11. Letzring TD, Block J, Funder DC. Ego-control and ego-resiliency: Generalization of self-report scales based on personality descriptions from acquaintances, clinicians, and the self. Journal of research in personality. 2005;39(4):395-422.
12. Cicchetti D. Resilience under conditions of extreme stress: a multilevel perspective. World Psychiatry. 2010;9(3):145.
13. Britneff E, Winkley K. The role of psychological interventions for people with diabetes and mental health issues. Journal of Diabetes Nursing. 2013;17(8).
14. Keogh KM, Smith SM, White P, McGilloway S, Kelly A, Gibney J, et al. Psychological family intervention for poorly controlled type 2 diabetes. The American journal of managed care. 2011;17(2):105-13.
15. Harvey JN. Psychosocial interventions for the diabetic patient. Diabetes, metabolic syndrome and obesity: Targets and therapy. 2015;8:29-43.
16. De Groot M, Doyle T, Kushnick M, Shubrook J, Merrill J, Rabideau E, et al. Can lifestyle interventions do more than reduce diabetes risk? Treating depression in adults with type 2 diabetes with exercise and cognitive behavioral therapy. Current diabetes reports. 2012;12(2):157-66.
17. Hampson SE, Skinner TC, Hart J, Storey L, Gage H, Foxcroft D, Kimber A, Shaw K, Walker J. Effects of educational and psychosocial interventions for adolescents with diabetes mellitus: a systematic review. Database of Abstracts of Reviews of Effects (DARE):Quality-assessed Reviews [Internet].2001.;5(10):1-79.
18. Ismail K, Winkley K, Rabe-Hesketh S. Systematic review and meta-analysis of randomized controlled trials of psychological interventions to improve glycemic control in patients with type 2 diabetes. Lancet. 2004; 363:1589–1597.
19. Yousefy A, Nekouei ZK. Basis of Cognitive-Behavioral Trainings and its Applications in Recovery of Chronic Diseases. Iranian Journal of Medical Education. 2011;10(5)792-800. (in Persian)
20. White CA. Cognitive behaviour therapy for chronic medical problems: A guide to assessment and treatment in practice. John Wiley & Sons Ltd; 2001.
21. Bayani AA, Mohammad Koochekya A, Bayani A. Reliability and validity of Ryff's psychological well-being scales. Iranian journal of psychiatry and clinical psychology. 2008;14(2):146-51. (in Persian)
22. Besharat M, Jahed HA, Hosseini A. Investigating the moderating role of satisfaction with life in the relationship between resiliency and general health. Counseling Culture and Psycotherapy. 2014 21;5(17):67-87. (in Persian)
23. Dela F, von Linstow ME, Mikines KJ, Galbo H. Physical training may enhance β-cell function in type 2 diabetes. American Journal of Physiology-Endocrinology and Metabolism. 2004;287(5):E1024-31.
24. Shim YT, Lee J, Toh MP, Tang WE, Ko Y. Health-related quality of life and glycaemic control in patients with Type 2 diabetes mellitus in Singapore. Diabetic Medicine. 2012;29(8):e241-8.

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