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The Effectiveness of Time Perspective Therapy on Mental Well-being, Functional Flexibility, and Mental Cohesion in Patients with Type 2 Diabetes

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Abstract

Introduction: Considering the prevalence of the symptoms of type 2 diabetes, to prevent its chronicity and recurrence, it seems that measures should be taken in this regard. This study aimed to evaluate the effectiveness of time perspective therapy on mental well-being, functional flexibility, and mental cohesion in patients with type 2 diabetes.

Method: This quasi-experimental study was a pre-test, post-test, and follow-up after two months. The statistical population included people with type 2 diabetes who were referred to Mashhad Diabetes Center in 2020. Among them, 30 individuals with type 2 diabetes were selected by convenience sampling and were randomly assigned to an experimental and control group awaiting treatment. To collect data, the Mental Well-Being, Mental Cohesion, and Functional Flexibility Questionnaire scales were used.

Results: The results of repeated measures analysis of variance showed that time perspective treatment is effective on mental well-being, psychological cohesion, and functional flexibility in people with type 2 diabetes.

Conclusion: It can be concluded that time perspective therapy can be effective on mental well-being, psychological cohesion and functional flexibility in people with type 2 diabetes. It is suggested that by using these variables by medical centers, other relevant organs and organizations, an effective step can be taken to improve the mental health status of women.

Keywords: Type 2 Diabetes, Feeling of Mental Cohesion, Mental Well-Being, Functional Flexibility

Introduction

Diabetes is one of the most common metabolic disorders [1].The most common type of diabetes is type 2 diabetes, which is characterized by elevated blood sugar levels due to impaired insulin secretion and impaired function [2]. Diabetes is also the cause of death and the leading cause of amputation; blindness and chronic renal failure in the world [3]. According to the International Diabetes Association, the number of people will reach about 642 million by 2040, of which about 80% will live in poor and middle-class countries [4].There are several underlying factors for this disease, which can be an unhealthy lifestyle, high-calorie foods, obesity, genetics, insulin resistance, as well as environmental and psychological factors [5]. Although genetic and other factors play an important role in the etiology of diabetes, the increasing prevalence of diabetes in recent decades has been attributed to environmental and psychological factors [6]. Among the psychological factors that can be mentioned are mental well-being, functional flexibility, and psychological cohesion in people with diabetes.

Due to this disease, people with diabetes experience many psychological problems such as low mood, decreased energy and interest, guilt, difficulty concentrating, anorexia, thoughts

of death and suicide, chronic and daily stress that lead to it leads to a decrease in the level of mental well-being of individuals [7]. Mental well-being is one of the variables that affect health and longevity and is dependent on pleasure in the face of unpleasant experiences [8]. People with high well-being experience more positive emotions, positively evaluate their past, present, and future, others, events, and situations, and describe them as pleasant. In contrast, people with low well-being assess the above as undesirable and experience more negative emotions [9]. yet various studies have been conducted on the mental well-being of people with diabetes, which have been done by Sharifi, Nazarpour, and Davarnia [10] to evaluate the effectiveness of positive psychotherapy on the mental well-being of obese women with type 2 diabetes. Therefore, mental well-being can be reduced by diabetes, which in turn affects functional flexibility.

The functional flexibility contributes to the human ability to adapt when facing disasters or severe pressures, to overcome and even strengthen by it. This trait is supported, developed, and presented as a positive trait by a person's inner ability and social skills, and interaction with the environment [11]. Therefore, functional flexibility is one of the most important cognitive dimensions for people with diabetes because identifying and enhancing this structure will provide promising insights in people with type 2 diabetes. For example, Khandshour Shandiz et al. compared the two therapies of dialectical behavior therapy and mindfulness-based cognitive therapy on the functional flexibility of women with type 2 diabetes [12]. Therefore, increasing functional flexibility strengthens a person's adaptation to diabetes. Another personality variable that modulates daily stress and has been considered by many researchers in the field of diabetes in recent years is the feeling of psychological cohesion.

Feeling of mental cohesion has a great effect on controlling stress caused by chronic illness and feeling of high mental cohesion leads to better physical and mental well-being in people [13]. According to Antonovsky (1993), the sense of psychological cohesion consists of two components: 1) perceptibility, which refers to the development of one's perception that the world is predictable and understandable; 2) Management ability, which is defined as the development of a person's understanding of access to coping resources and the ability to manipulate facts [14]. The feeling of psychological cohesion is an influential component in people with diabetes. For example, Mikaeli and Rahimzadegan examined psychological intervention on the sense of psychological cohesion of people with type 2 diabetes [15].

One of the factors that make these structures doubtful and fragile is the development of a chronic and permanent disease such as diabetes, which forces the sufferer to control the disease, their lifestyle, and their food and medicine habits severely [16]. The combination of these factors causes stress and constant anxiety for the patient. Therefore, it is expected that mental well-being, functional flexibility, and a sense of mental cohesion are related to the level of physical and mental health of people with diabetes. Considering the prevalence of diabetes and also the effect of mental well-being, the functional flexibility, and the feeling of mental cohesion on the physical and mental health of these people, the use of psychological interventions along with medical interventions is necessary. Several psychotherapy interventions have been performed to improve people with diabetes. So far, no intervention has been done to increase mental well-being, the functional flexibility, and the sense of psychological cohesion of people with diabetes. In many previous psychological research, cognitive or cognitive-behavioral approaches have been used in order to improve physical and mental health. At the moment we are facing the third generation of these treatments, and among these treatments, we can mention the treatment based on time-vison.

The perspective of time describes the influence that past, present, and future considerations have on a wide range of human behaviors [17]. The perspective of time is the basic cognitive process by which individuals perceive, interpret, and interact with their material and social worlds, and describes the impact of attention to the past, present, and future on human behavior. The vision of time encompasses the five dimensions of the positive past, the negative past, the hedonistic present, the present, the future, and the future [18]. A negative past that shows pessimism about the past; a positive past reflects intense and joyful feelings about the past, while a hedonistic present indicates a desire to be happy and enjoy present experiences. It is also believed that uncontrollable forces plan destiny. The future measures thinking and planning to achieve long-term goals and, ultimately, assesses people's inclination toward the past, present, and future. [19]. So far, various studies have been conducted in this field which have shown the effectiveness of this treatment [20-23].

Therefore, given the relatively high prevalence of diabetes in Iran, the management of this disease is important because it affects the lives of millions. This study aimed to evaluate the effectiveness of time perspective therapy on mental well-being, functional flexibility, and mental cohesion in patients with type 2 diabetes.

Method

The present study was a quasi-experimental study with a pretest, posttest, and follow-up design with a control group. The statistical population of this study included people with type 2 diabetes who had referred to the Diabetes Center of Mashhad during 2020. After administering a questionnaire between a group of these patients, 30 people who had lower than average mental well-being, functional flexibility, and sense of cohesion were selected by available sampling and were randomly divided into two groups: experimental (n = 15) and control (n =15). The sample size was estimated based on the Cochran's formula and the number of patients with diabetes who had referred to the counseling center last year (47 people). However, only 30 people agreed to participate in this study. The inclusion criteria included: willingness to participate in the study, with type 2

diabetes, minimum cycle education and the exclusion criteria included: suffering from physical illness or other psychiatric disorders at the same time, unwillingness to continue participating in the study, and absence of more than two sessions. Inclusion criteria were assessed by a clinical psychologist, physician and relevant testing at the Diabetes Center The control group did not receive any intervention while the experimental group received time-vison therapy, after which the questionnaires were administered again between the two groups. After two months, questionnaires were administered between the groups for follow-up.

The research tools are as follows:

Mental Well-Being Questionnaire: This questionnaire was designed by Keys and Magyarmo (2003) [24] which consists of 45 questions and three subscales of emotional well-being including two parts of positive emotion and negative emotion (12 questions with a score of five degrees), psychological well-being (18 questions with a score of seven degrees), and social welfare (15 questions with a score of seven degrees). The range of scores in the emotional well-being subscale ranged from 16 to 56, psychological well-being between 18 and 126, and social well-being between 15 and 105. This questionnaire was administered and validated by Golshani et al. [25] on 57 subjects and the correlation coefficient of the mental well-being questionnaire was 0.78 and its sub-scales including emotional well-being, psychological well-being, and social well-being reported 0.76, 0.64, and 0.76, respectively. The internal consistency coefficient based on Cronbach's alpha was 0.80 for the whole questionnaire and 0.86, 0.80, and 0.61 for its sub-scales, respectively.

Antonowski Mental Cohesion Questionnaire: This questionnaire was designed by Antonovski (1993). This questionnaire has 13 questions, each of which consists of seven Likert questions. In addition to the overall score of the three subscales, this questionnaire evaluated perceptibility, controllability, and significance. In Iran, Sharif and Alipour [26] standardized the questionnaire after translation on Iranian students. Cronbach's alpha of the questionnaire in male and female students was 0.75 and 0.78, respectively, and the simultaneous validity of this scale with the questionnaire of 45 questions of psychological toughness was 0.54. Also, the retest coefficient of the whole scale was 0.66. In addition, to evaluate the validity of the questionnaire, these researchers examined the relationship between the subscales of perceptibility, controllability, and significance with the total score of the questionnaire, which was 0.86, 0.81, and 0.76, respectively. The results show the desired validity and reliability of the scale.

Functional Flexibility Questionnaire: This questionnaire was designed by Davidson and Connor (2003) [27]. The authors of this scale believe that this questionnaire is well able to distinguish resilient and non-resilient individuals in clinical groups, and can be used in research and clinical situations. The questionnaire has 25 items that are scored on a Likert scale between zero (completely incorrect) and five (always correct). Samani, Jokar, and Sohrgard [28] in a cross-sectional study in Shiraz students reported a reliability of 0.89 and a Cronbach's alpha of 0.87. Validity coefficient equal to 0.86 which was obtained at the level of $p<0.001$. Therefore, the above scale has a very good validity in the selected sample. In the present study, Cronbach's alpha coefficients were calculated to be 0.90 with the reliability of the present questionnaire.

In this study, the time perspective therapy designed by Zimbardo [29] was performed in 10 group sessions and each session for 90 minutes once a week in Mashhad Diabetes Center in 2020. A description of the time perspective therapy sessions is as follows.

The control group was placed on a waiting list to be treated at the end of data collection. Data were collected in three stages: before the intervention, after the intervention, and after two months. Data analysis was performed using SPSS software version 22 and a statistical test of analysis of variance with repeated measures. Individuals were also demographically analyzed using descriptive statistics (frequency, percentage, mean and standard deviation).

Results

The present study was performed on 30 people with diabetes in the experimental (n = 15) and control (n = 15) groups. In the experimental group, 86% were women and 14% were men, and in the control group, 67% were women and 33% were men.

As it can be seen in Table 2, in the variables of mental well-being, functional flexibility, and sense of psychological cohesion, the mean of post-test scores and follow-up of the experimental group is higher than the mean of its pre-test scores. However in the control group, the mean scores of post-test and follow-up are less than the pre-test or have not changed. Analysis of variance with repeated measures was used to evaluate the effectiveness of time Perspective therapy on mental well-being, functional flexibility, and feeling of psychological cohesion. The results of the Levin test to measure the equality of variance of groups in the variables of mental well-being, functional flexibility, and sense of psychological cohesion were more than 0.05. So, it can be said with 0.95 confidence that it is possible to judge that experimental and control groups over the dispersion of mental well-being scores, functional flexibility, and a sense of psychological cohesion are the same in a pre-test, post-test, and follow-up. Also, statistics and F related to Mohle sphericity and M-box tests of mental well-being, functional flexibility, and sense of mental cohesion were obtained to measure the spherical shape of the variance matrix above the alpha level of 0.05, respectively. Therefore, all the stated assumptions were made for repeated measurement statistical analysis.

Before applying the repeated measures ANOVA, the required pre-assumptions such as the results of the Box's M test, the Levene's test and Mauchly's test of sphericity were considered and confirmed. Since the Box's M test results were not significant for any of the variables ($P< 0.05$), the homogeneity of variance-covariance matrices was confirmed. Moreover, the insignificance of all the variables in the Levene's test indicates that the between

group variances are equal and that the error variance of the dependent variables is equal among both groups (P>0.05). However, the Mauchly's sphericity test results did not confirm the equality of the variance-covariance for any of the variables. Therefore, the Greenhouse–Geisser tests were applied for analyzing the obtained data.

The results of Table 3 indicate that F variables of mental well-being, psychological cohesion, and functional flexibility are significant in the experimental group (P <0.05) and this indicates the positive effect of time perspective treatment on mental well-being and its dimensions.

Table 1. Content of Time Perspective Therapy Sessions

Session	Content
Session 1	Title: Creating understanding between members and familiarity with the goals, rules and structure of meetings and conducting pre-exams Agenda: Familiarity of group members with each other and telling their life story; Determining the rules and norms of the group; Review the structure and goals of the meetings; Helping members to participate in the group; Familiarity with type 2 diabetes
Session 2	Title: Introducing different types of time perspectives, self-relaxation Agenda: Introducing the perspective dimensions of the past (negative and positive), present (hedonistic, comfort-oriented and deterministic) and the future (personal, transcendent); Teaching self-relaxation behaviors Breathing exercises and mental visualization
Session 3	Title: Moving from negative past to positive past Agenda: Reviewing the most important memories in the negative past to reduce the impact of memories in the negative past; Examining the advantages and disadvantages of staying in the negative past; Examining the consequences of moving positively towards the past; Use related techniques to move from negative past to positive past
Session 4	Title: Moving from negative past to positive past Agenda: Use related techniques to move from the negative past to the positive past
Meeting 5	Title: Moving from the deterministic and comfortable to the sensible hedonistic Agenda: Examining the advantages and disadvantages of both types of situations (deterministic and comfort); Examining the consequences of moving towards the hedonistic present; Use related techniques to move from the deterministic and the comfortable to the sensible hedonistic
Session 6	Title: Examining the consequences of moving to a positive and hedonistic past Agenda: Using techniques to fixate on the positive and hedonistic past
Session 7	Title: Moving to the future (personal and transcendent(Agenda: Examining the consequences and benefits of moving towards the future (personal and transcendent); Use related techniques to achieve a personal and transcendent future
Session 8	Title: Moving to the future (continued) Agenda: Continue to review the consequences and benefits of moving towards the future (continued)
Session 9	Title: Reviewing past sessions to achieve a balanced time perspective and post-test implementation Agenda: An overview of past sessions; Get feedback from group members and take a post-test
Session 10	Title: Review of the content expressed in time vision therapy sessions Agenda: An overview of past sessions; Get feedback from group members

Table 2. Descriptive Statistics on Mental Well-being, Sense of Psychological Cohesion and Functional Flexibility

Variable	Time Perspective Therapy group			Control group		
	T1	T2	T3	T1	T2	T3
	M	M	M	M	M	M
	sd	sd	sd	sd	sd	sd
Emotional well-being subscale	17.80	30.20	30.60	20.60	19.66	19.20
	2.88	1.97	2.06	2.02	2.02	1.93
Psychological well-being	26.73	40.33	40.73	28.80	27.53	27
	4.33	5.08	4.86	4.34	4.18	4.03
Social well-being	21	37.06	37.53	22.73	22.13	21.33
	3.50	4.81	4.54	4.04	3.88	3.79
**Mental Well-being	65.53	107.60	108.86	72.13	69.23	67.53
	8.5	9.34	8.95	5.57	5.08	4.86
Perceptibility	13.26	20	20.60	13.33	12.33	11.66
	1.75	3.35	3.33	1.71	1.71	1.54
Controllability	10.40	14.80	15.40	10.40	9.80	9.06
	1.05	1.37	1.24	1.05	0.77	0.88
Significance	9.40	13.60	14.26	9.46	8.53	7.60
	0.98	0.82	0.96	0.91	0.91	1.05
**Mental Cohesion	23.06	48.40	50.26	32.20	30.66	28.23
	2.73	4.23	4.04	2.07	1.87	1.71
Functional flexibility	30.86	42.66	47.53	30.20	29.33	28.53
	1.84	2.12	1.59	2.30	2.25	2.16

Table 3. Mixed Analysis of Variance with Repeated Measures of Variables

Variable	Source	ss	Df	F	P	Partial eta
Emotional well-being subscale	Interaction (Time*Group)	149.30	1	34.83	0.0001	0.57
	Within-subjects (Time)	147.47	1	34.40	0.0001	0.57
	Between subjects (Group)	46.71	1	10.90	0.003	0.29
psychological well-being	Interaction (Time*Group)	96.67	1	8.94	0.006	0.25
	Within-subjects (Time)	86.97	1	8.04	0.009	0.23
	Between subjects (Group)	84.08	1	7.45	0.002	0.25
social well-being	Interaction (Time*Group)	203.46	1	12.06	0.002	0.31
	Within-subjects (Time)	193.05	1	11.44	0.002	0.30
	Between subjects (Group)	543.97	1	32.25	0.0001	0.55
**Mental Well-being	Interaction (Time*Group)	67.82	1	21.73	0.0001	0.45
	Within-subjects (Time)	64.28	1	20.59	0.0001	0.44
	Between subjects (Group)	105.22	1	33.74	0.0001	0.56
perceptibility	Interaction (Time*Group)	48.46	1	4.22	0.05	0.14
	Within-subjects (Time)	54.28	1	4.73	0.03	0.15
	Between subjects (Group)	76.31	1	6.65	0.01	0.20
controllability	Interaction (Time*Group)	8.39	1	10.52	0.003	0.28
	Within-subjects (Time)	1.01	1	1.27	0.26	0.04
	Between subjects (Group)	41.03	1	51.44	0.0001	0.66
significance	Interaction (Time*Group)	7.21	1	11.91	0.002	0.30
	Within-subjects (Time)	524.85	1	885.95	0.0001	0.97
	Between subjects (Group)	31.36	1	31.36	0.0001	0.65
**Mental Cohesion	Interaction (Time*Group)	93220.41	1	4.65	0.0001	0.99
	Within-subjects (Time)	5900.41	1	294.67	0.0001	0.91
	Between subjects (Group)	560.66	1	30.17	0.0001	0.90
Functional flexibility	Interaction (Time*Group)	67.82	1	21.73	0.0001	0.45
	Within-subjects (Time)	64.28	1	20.59	0.0001	0.44
	Between subjects (Group)	105.32	1	33.74	0.0001	0.56

Tukey post hoc test compares the components of mental well-being, psychological cohesion, and functional flexibility in three stages of research in the treatment of time perspective. The results showed that there was a significant increase in mental well-being, psychological cohesion, and functional flexibility of the post-test score compared to the pre-test ($p<0.05$). Also, the results showed that there was no significant difference between post-test and follow-up in the component of mental well-being and functional flexibility ($p<0.05$). However, in the component of psychological cohesion, in the dimension of significance and general psychological cohesion between post-test and there was a significant difference ($p <0.05$). This is while there was no significant difference between post-test and follow-up in terms of manageability and comprehensibility ($p> 0.05$).

Discussion

This study aimed to evaluate the effectiveness of time perspective therapy on mental well-being, functional flexibility, and mental cohesion in patients with type 2 diabetes. The results of this study showed that time perspective treatment has a significant effect on mental well-being, functional flexibility, and psychological cohesion in the post-test and follow-up stages compared to the pre-test. In addition, the results showed that there is no significant difference between the post-test and follow-up in the component of mental well-being and psychological cohesion, but there is a significant difference between the post-test and follow-up in the component of functional flexibility. The findings of this study are consistent with previous research [20-23].

Time-vison is a flexible concept that expands with

cognitive development and responds to life-changing situations. At the same time, if one of the time horizons (past, present, future) is overused out of habit and chronically, it may prove to be an underlying method that predicts future behaviors. Hence, the perspective of time is considered as a multidimensional and semi-flexible cognitive process that is shaped by the cultural and social world, thereby increasing the mental well-being of people with diabetes. Also, the treatment of time perspective is based on the perception of individual structure in terms of time, which includes the analysis of personal experiences in separate time intervals [30]. Work on mental well-being and its components makes the most effective change in psychotherapy. Time perspective focuses on the impact of past experiences and plans on each person's current decision-making process and behavioral patterns. The vision of time strengthens the readiness of people to accept various responsibilities by setting motivational goals in the not too distant future and by improving the behavioral process to achieve the goals. It also stimulates the ability of individuals to cope with the obstacles of marriage. In addition, by emphasizing good memories, happy times, life thrills, and pastimes, they will prevent the view that life is determined by destiny and that having a plan and purpose is useless. Since time perspective is one of the general characteristics of personality, it plays an important role in life processes and events and affects many areas of one's activity. It is also based on the effect that one's thoughts on the past and present have an effect on the productivity of his activities at the present.

In this treatment, by providing a safe and reliable environment, the people in the group were encouraged to pay attention to their lives in the past and to express a different interpretation of their memories by expressing their negative memories of the past. Time therapy vision techniques (used in this study) help people gain the independence they need to choose how to spend time and plan their lives. Turning people's attention to the future (personal and transcendent) helps people to direct their lives towards a meaningful outlook on life. The techniques used in the perspective of time therapy focused on the time dimension of the future which have a postmodern nature and rely on the abilities and capabilities of the individual to try to draw a meaningful future that leads to personal growth. The underlying philosophy of using personal abilities to draw and formulate meaningful life in the light of looking to the future is self-acceptance. In other words, one of the basic principles of using personal abilities to draw and formulate a meaningful life in the light of looking to the future is self-acceptance. Actually, one of the underlying principles of the time therapy perspective, which is also indirectly seen in most of the techniques of this approach, is accepting oneself with all its strengths and weaknesses, designing a meaningful life, and living a life according to plans (Independence). In this study, which was performed on people with diabetes, the role of providing a safe hospital in the perspective of treatment time in recounting memories and its effect in reducing the negative effects of the past and increasing the sense of mental well-being has been confirmed. During the treatment process, by introducing the perspective approach of treatment time and familiarity with the three time periods (negative, positive), present (hedonistic, deterministic), and future (personal, transcendent), people were taught the ability to have a purposeful life with growth. They have personality and independence in life, and they do not have to sacrifice life in the present and the future for the unpleasant memories of the past.

In flexible diabetics, ways to deal with the problem are directly explored and are usually created by finding appropriate solutions to the problem of satisfaction and reducing worries and anxieties. In fact, functional flexibility provides the necessary facilities to deal with stressful situations. This potentially calls the person to positive confrontation and problem solving and increases his chances of success. Therefore, functional flexibility improves their problem-solving skills by changing people's attitudes. It can also be said that psychological inflexibility involves mental processes that cause a person to suffer from emotion-oriented strategies. According to Zimbardo and Boyd's theory, adaptation, functional flexibility, and mental acceptance do not occur unless one draws a clear vision for one's future. Future outlook refers to one's efforts to achieve goals and achievements in the future that can affect the progress of individuals or other factors. Lack of looking to the future within an individual or society has adverse effects on moods, thoughts, morals, and social behavior in general. Living without thinking and trying is worrying and anxious and disappointed with its results and consequences. Therefore, it seems that treating the perspective of time by working on frustration and not setting goals in the future, and focusing on the present, increases functional flexibility in individuals.

Feelings of mental cohesion play an important role in controlling the stress of chronic illness. A feeling of high psychological cohesion leads to better physical and mental well-being in people. In general, people with diabetes experience lower levels of health over time and spend more on treatment than other people in the community. Having a chronic illness seriously threatens the key components of cohesion (perception, management, and significance. It can actually be stated that irrational thinking about past, present, and future attitudes and despair of achieving positive results and consequences in the future, people with diabetes from trying to achieve goals and solve problems stops. Excessive worry about the future and having a negative attitude to achieve positive results distracts them from living in the present and striving for the expected positive consequences. This is while a balanced time perspective is a more positive alternative to a life that takes one away from any particular time bias. Individuals move between past, future, and present mental frameworks according to position, demands, values, and resource evaluation or cognitive and social evaluation. Maintaining a balance between past experiences, present tendencies, and future consequences is essential to having a balanced temporal

orientation [29].

On the other hand, using too much one-time orientation and not using other time frames creates problems for people. Osin et al. [31] believe that if a person's perspective is limited to a one-time category and the presence of other categories is minimized, it will cause loss of coherence and dysfunction. The concept of time perspective is also introduced as a person's perception of his past, future, and present. In addition, the choice of cognitive and emotional experiences related to past or future events can affect a person's activity and can also motivate future activities. On the other hand, people are motivated by their understanding of time. Changes in a person's futuristic time perspective direct his energy and resources to instrumental and emotional outcomes and play a key role in a person's life. When people can control themselves more, they can control the past and the future, and by interpreting and reviewing the past, they can feel more in control of the future.

One of the limitations of the present study was the limited sample size, which could not be increased according to the inclusion criteria. Finally, according to the results of the study, it is suggested that specialists and therapists in dealing with people with symptoms of diabetes and also developing treatment programs for these people, should consider the time perspective approach. Also, this study is only a cross-sectional study and examines the positive effects of this program over only a few months. It is suggested that appropriate longitudinal research be conducted to evaluate the long-term effects of this intervention program and its extent over the next few years.

Conclusion

Given the prevalence of diabetes, it seems that measures should be taken to prevent its recurrence. Based on the research findings, the time perspective approach has been effective in improving mental well-being, action flexibility and psychological cohesion in individuals. Therefore, the results of this study can be beneficial for people with diabetes.

Ethical Approval

Participants willingly completed the questionnaires and signed an informed written consent for the treatment plan. This research has been extracted from the doctoral dissertation of the first author.

Conflict of Interest

The authors declare no conflicts of interest.

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