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Comparing the Effectiveness of Solution-Focused Therapy and Dialectical Behavior Therapy on Self-Care and Quality of Life in Patients with Type 2 Diabetes

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A B S T R A C T

The objective of this study was to compare the effectiveness of solution-focused therapy and dialectical behavior therapy on self-care and quality of life in patients with type 2 diabetes. The present research was a semi-experimental pre-test, post-test with control group design including a follow-up period. The study population consisted of women with diabetes attending a health care center in District 6 of Tehran, of whom 45 were purposively selected and randomly assigned to two experimental groups (solution-focused therapy and dialectical behavior therapy) and one control group. The Self-Care Self-Efficacy Questionnaire by Lu (1996) and the WHOQOL BREF quality of life questionnaire were used. The first experimental group underwent seven 90-minute sessions of solution-focused therapy, and the second experimental group underwent eight 90-minute sessions of dialectical behavior therapy. Repeated measures analysis of variance was used for data analysis. Findings indicated that both solution-focused therapy and dialectical behavior therapy significantly improve self-care and quality of life ($p < 0.05$). Additionally, results showed that dialectical behavior therapy was more effective than solution-focused therapy in improving self-care and quality of life ($p < 0.05$). In conclusion, both solution-focused therapy and dialectical behavior therapy are effective in improving self-care and quality of life in patients with type 2 diabetes, with dialectical behavior therapy being more effective. Therefore, these approaches can be utilized alongside medical interventions in clinical settings.

Keywords: *Self-care, Dialectical behavior therapy, Solution-focused therapy, Quality of life*

1. Introduction

The prevalence of diabetes is the result of changes in lifestyle and socio-economic status of the society, which are accompanied by changes in the psychological aspects of individuals. Diabetes is a chronic disease that is incurable and significantly increases the risk of disrupting individuals' lives. Some individuals doubt their quality and hope for life upon being diagnosed with diabetes (1, 2). Type 2 diabetes is a chronic disease characterized by high blood sugar levels due to the body's inability to use insulin effectively or to produce sufficient insulin. It is often associated with obesity, sedentary lifestyles, and poor dietary habits (3). According to estimates provided by the International Diabetes Federation for the year 2030, the number of people with diabetes is expected to exceed 552 million. According to the report by the Diabetes Association of Iran, our country also faces a significant number of diabetes cases, with nearly 5 million people affected. This figure is considerably high, and it is noteworthy that half of the population is unaware of their diabetic condition, despite the World Health Organization's projections that this number will rise to 6 million by 2030. The World Health Organization recognizes diabetes as a serious threat to public health based on global statistics and trends (1). In Iran, according to the latest statistics from the Ministry of Health, more than 40 billion rials from the approved health budget are spent annually on diabetes control programs. Despite the substantial expenditures for the prevention and control of diabetes, the number of diabetic patients continues to rise, likely due to shortcomings in the implementation of self-care behaviors.

Self-care is an active process that a patient undertakes to prevent the onset of complications and to control the disease. Diabetic patients must perform self-care behaviors for the rest of their lives. Patients who do not take self-care behaviors seriously are more likely to experience disease complications, which are the most significant contributors to mortality among diabetic patients (4). Healthy eating, physical activity, monitoring blood sugar, and regular medication intake are among the self-care methods associated with diabetes. All these behaviors are linked to proper blood sugar control, reduced complications, and improved quality of life (5).

There is a reciprocal relationship between disease and quality of life. The primary goal of treating chronic diseases is to enhance quality of life by reducing the effects of the disease. Therefore, assessing the quality of life in these patients is considered a crucial therapeutic and care index worldwide (6). The World Health Organization defines quality of life as an individual's perceptions of their life situation in accordance with the culture and value systems in which they live and the relationship of these perceptions to goals, expectations, standards, and priorities. Quality of life is a multidimensional and complex concept that encompasses both objective and subjective factors. Quality of life is often viewed as the perception of satisfaction with life, social and family health, and physical and mental health (7).

Historically, various psychological and psychotherapeutic approaches have offered different strategies for changing thoughts, behaviors, and emotions, ultimately aiming to enhance human quality of life. Among the therapeutic methods used to improve diabetic patients is solution-focused therapy. Solution-focused therapy is based on finding solutions, not solving problems, and is guided by exploring the client's existing strengths and optimism for the future, rather than discussing current issues and their causes in the past (8). Essentially, short-term solution-focused therapy is based on the assumption that clients can change their problems and possible solutions (5). However, despite the conciseness and empiricism of strategic approaches, practitioners of this model emphasize collaboration between the therapist and client in constructing solution-focused narratives. Consequently, solution-focused therapists can raise the client's issues through narratives and assist them in finding solutions (2). Moreover, we are faced with the high prevalence, frequent relapses, and chronic nature of this disease; this points to the inadequacy of existing therapeutic interventions and the need to introduce new treatments with greater efficacy and durability to address the challenges posed by the human and social costs involved. Dialectical Behavior Therapy (DBT) is a new therapeutic approach that combines principles of cognitive behavioral therapies and Zen philosophy, initially developed to treat borderline personality disorder but has also been studied for a relatively wide range of disorders, including anxiety, and has shown effectiveness (9).

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Given the high prevalence of type 2 diabetes and concerns about the future of these patients, this research aimed to compare the effectiveness of solution-focused therapy and dialectical behavior therapy on self-care and quality of life in patients with type 2 diabetes. Additionally, while some studies contradict the effectiveness of dialectical behavior therapy on self-care and quality of life, no research has yet compared the effectiveness of solution-focused therapy on self-care and quality of life. Therefore, with the increasing prevalence of the disease and its adverse effects on the physical and mental health of the patient, the necessity arises for health improvement and the development of various programs to enhance self-care and quality of life. Thus, the aim of this research was to compare the effectiveness of solution-focused therapy and dialectical behavior therapy on self-care and quality of life in patients with type 2 diabetes.

2. Methods and Materials

2.1. Study Design and Participants

The current research utilized a semi-experimental design with pre-test, post-test, and a control group including a follow-up period. The study population consisted of women diagnosed with type 2 diabetes who visited a health care center in District 6 of Tehran, totaling 250 individuals. The sample size for this study, calculated using GPower version 3.1, was determined to be 45. Participants were selected through purposive non-random sampling and randomly divided into three groups (each group consisting of 15 participants) across two experimental groups (solution-focused therapy and dialectical behavior therapy) and one control group. Inclusion criteria for patient participation in the study were diagnosis of type 2 diabetes by a specialist physician, informed and willing consent to participate in the research, ability to attend sessions and collaborate, a minimum educational level of a high school diploma, and age range between 25 to 55 years. Exclusion criteria included non-cooperation in therapy sessions, incomplete questionnaire submissions, withdrawal of consent to continue participation, concurrent participation in other psychotherapeutic interventions, and absence from more than three sessions. In addition to informed consent and confidentiality of participant information, another ethical consideration was the provision of free intervention for the control group after the study.

2.2. Measures

2.2.1. Self-Care Self-Efficacy

Originally designed by Lu in 1996 for cancer patients and later translated into Persian by Azizi Fini for use. This questionnaire contains 29 questions, each with five Likert-scale options ranging from "completely confident" (5 points) to "slightly confident" (1 point). It encompasses four dimensions: adaptability, stress reduction, decision-making, and enjoyment of life. The questionnaire assesses individuals' confidence in performing self-care tasks, with total scores ranging from 29 to 145. This instrument is a self-report measure, and its internal consistency was reported with a Cronbach's alpha of 0.94 (4).

2.2.2. Quality of Life

Developed by the World Health Organization, this questionnaire includes 26 items that assess overall and general quality of life. It features four subscales: physical health, psychological health, social relationships, and environment health, along with an overall score. Each of the 26 items is scored from 1 to 5, with items 3, 4, and 26 reverse scored. The physical health subscale includes 7 questions, psychological health 6 questions, social health 3 questions, and environmental health 8 questions, with overall quality of life and general health comprising 2 questions. Initially, a raw score is obtained for each subscale, which is then converted into a standardized score ranging from zero to one hundred. Scores from 0 to 30 indicate poor quality of life, 30 to 70 indicate average quality of life, and 70 to 100 represent higher and satisfactory quality of life. This questionnaire has been validated in various countries by the WHO Quality of Life Group, and its validity and reliability have also been established in Iran by Nejat and colleagues (6, 7).

2.3. Interventions

2.3.1. Solution-Focused

Solution-Focused Therapy consisted of 7 sessions, each 90 minutes long, held weekly (10, 11).

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Session 1: The initial session is dedicated to introductions between the therapist and clients, briefly exploring the clients' life histories. The therapist outlines the principles and philosophy of solution-focused therapy, setting the groundwork for the therapeutic process. This session helps to establish rapport and clarify the therapy's goal-oriented nature, aiming to direct focus towards solutions rather than problems.

Session 2: In the second session, the therapist assists clients in defining their goals based on the solution-focused approach. Clients are encouraged to propose their solutions, which are discussed and refined during the session. This collaborative goal-setting is crucial for motivating clients and tailoring the therapy to their specific needs and aspirations.

Session 3: This session aims to help clients recognize their own capabilities and strengths. The therapist facilitates an understanding of diverse perspectives among clients, enhancing empathy and mutual respect. Clients learn to appreciate their own and others' resources, which can be leveraged to address their challenges.

Session 4: The fourth session focuses on identifying and articulating positive exceptions in clients' behaviors and interactions. Clients are praised for their positive actions and encouraged to overlook negative behaviors. This reinforces positive change and helps clients to focus on what works well in their relationships and personal behaviors.

Session 5: The therapist introduces the "miracle question," a technique that helps clients envision the desired change as if a miracle happened overnight. This session teaches clients to recognize how both good and bad moments are products of their thoughts and actions, fostering a proactive attitude towards life's challenges.

Session 6: This session is designed to allow clients to experience new emotions and to highlight the importance of hidden meanings behind significant words or phrases used during therapy. It emphasizes the power of language and reflection in transforming one’s outlook and emotional responses.

Session 7: The final session involves summarizing the therapeutic content covered in previous sessions, with active collaboration from clients. This conclusion helps to reinforce the learning and progress made, ensuring that clients feel equipped to continue applying solution-focused strategies independently.

2.3.2. Dialectical Behavior Therapy

Dialectical Behavior Therapy involved 8 sessions, each 90 minutes long, held weekly (9, 12).

Session 1: The initial session introduces members to each other and outlines the goals of the therapy group. Preliminary explanations of dialectical behavior therapy (DBT) and its connection to thoughts and behaviors are provided, along with a conceptualization of the clients' issues. Clients are prepared for the therapy and introduced to the DBT model. The homework involves making a list of enjoyable and motivational activities to include in their weekly schedule.

Session 2: This session reviews the homework from the previous session, answers questions, and introduces mindfulness training (both emotional and wise mindfulness). Clients learn which skills to observe and describe without judgment. The homework is to practice these mindfulness skills daily and describe them without passing judgment.

Session 3: The third session evaluates the homework, clarifies any ambiguities, and teaches distress tolerance skills, including distraction techniques and self-soothing using the five senses. Mindfulness practice is analyzed and taught using Socratic dialogue techniques. The homework includes daily practice of mindfulness and distraction, along with journaling these experiences.

Session 4: Cognitive beliefs of individuals and their impacts are defined, including positive and negative cognitive beliefs and how internal valuation can motivate individuals. Self-esteem and self-confidence are discussed, and methods to increase self-awareness and emotional regulation are taught. Homework involves evaluating cognitive beliefs, valuing them appropriately, and documenting these activities.

Session 5: The session focuses on teaching integrated self-awareness and emotional regulation, discussing their benefits for physical, mental, and social health, and relational behaviors. Efforts are made to enhance life quality, reduce emotional vulnerability, increase positive emotions, and change emotions through contradictory intentions. Homework is to practice self-awareness and self-belief concerning the discussed topics.

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Session 6: This session evaluates the exercises done over the week, discusses self-efficacy and its impacts on integrated self-awareness, emotion, and life quality improvement. The orientation is towards resolving negative emotions and enhancing positive emotions alongside mindfulness. Homework includes reviewing the past week's tasks and taking notes to ensure that session topics are not forgotten.

Session 7: This session educates on behaviors related to physical, mental, social, and relational human health, discussing how to reduce emotional vulnerability and increase positive emotions by changing emotions through contradictory intentions. Homework involves practicing emotional mindfulness, understanding emotions, and allowing space for them.

Session 8: The final session summarizes and reviews all prior sessions, reminding participants of the course content and addressing any questions or ambiguities they might have. Homework stresses the application of learned skills in necessary life situations, reinforcing the integration of DBT skills into daily life.

2.4. Data Analysis

For hypothesis testing, repeated measures analysis of variance was conducted using SPSS version 26.

3. Findings and Results

The solution-focused therapy group had an average age of 37.8 with a standard deviation of 3.51, the dialectical behavior therapy group had an average age of 38.9 with a standard deviation of 3.46, and the control group had an average age of 38.3 with a standard deviation of 3.9. The minimum age of participants in this study was 28, and the maximum age was 40. Also, considering a significance level greater than 0.05, there was no significant difference between the three groups, and it can be said that the groups are homogeneous in terms of age.

Table 1

Comparison of Mean and Standard Deviation Among Three Groups at Three Stages: Before, After Intervention, and Follow-up

Variable	Group	Stage	Mean	Standard Deviation
Self-Care	Solution-Focused	Pre-test	73.8	5.64
		Post-test	85.6	5.19
		Follow-up	86.4	5.06
	Dialectical Behavior Therapy	Pre-test	73	5.18
		Post-test	88.8	5.15
		Follow-up	87.8	5.15
	Control	Pre-test	72.2	4.91
		Post-test	74.4	4.18
		Follow-up	74.1	4.48
Quality of Life	Solution-Focused	Pre-test	42.6	5.55
		Post-test	33.9	4.92
		Follow-up	34.2	4.79
	Dialectical Behavior Therapy	Pre-test	41.1	5.23
		Post-test	31.1	4.62
		Follow-up	32	4.47
	Control	Pre-test	41.2	3.51
		Post-test	41	3.46
		Follow-up	41.1	3.62

Table 1 shows the mean self-care and quality of life scores for the three groups: solution-focused, dialectical behavior therapy, and control. As observed, there is no significant difference in self-care and quality of life among the groups in the pre-test; however, post-intervention, the intervention groups showed significant differences compared to the control group, and these differences were also visible during the follow-up phase. Shapiro-Wilk test results were not significant, indicating that the distribution of scores for dependent variables is normal. Levene's test results were not significant for any of the dependent variables, suggesting that the assumption of homogeneity of variances between groups is maintained. The sphericity assumption was not met; therefore, Greenhouse-Geisser

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corrected values will be used for degrees of freedom in the analysis of variance calculations. All tests for Pillai's trace, Wilks' lambda, Hotelling's trace, and largest root were significant, indicating significant differences in self-care, quality of life, and overall adherence based on group, assessment time, and the interaction between group and time of assessment. This leads to the conclusion that there are significant differences in the effectiveness of solution-focused therapy and dialectical behavior therapy on self-care and quality of life in patients with type 2 diabetes.

Table 2

Mixed ANOVA Results for Examining the Effect of Group and Time of Evaluation on Dependent Variables

Source	Dependent Variable	Sum of Squares	df	Mean Squares	F	Sig.	Effect Size
Within-Subjects	Time of Evaluation	Self-Care	3466.4	1.03	3348.1	160.5	0.001
	Quality of Life	1718.2	1.03	1664.2	209.5	0.001	0.789
Time * Group	Self-Care	1317.8	3.10	424.2	20.3	0.001	0.522
	Quality of Life	557.1	3.09	179.8	22.6	0.001	0.548
Error	Self-Care	1208.9	57.9	20.8			
	Quality of Life	459.2	57.8	7.94			
Between-Subjects	Group	Self-Care	2181.5	3	727.1	6.33	0.001
	Quality of Life	981.6	3	327.2	4.39	0.008	0.191
Error	Self-Care	6426.08	56	114.7			
	Quality of Life	4166.6	56	74.4			

According to the results reported in Table 2, the main effect of time of evaluation on all four dependent variables is significant. This means that the scores of self-care and quality of life for all participants, regardless of the group they belong to, are significantly different in the pre-test, post-test, and follow-up. A Bonferroni post-hoc test was used to examine the source of differences, and the results are presented in Table 3.

Table 3

Pairwise Comparison of Solution-Focused and Dialectical Behavior Therapy Groups Across Three Stages of the Study on Self-Care and Quality of Life Variables

Variable	Stage	Mean Difference	Standard Error	Significance Level
Self-Care	Pre-test	-1.13	2.70	0.99
	Post-test	-13.33	2.36	0.001
	Follow-up	-12.95	2.70	0.001
Quality of Life	Pre-test	1.12	2.31	0.99
	Post-test	20.04	2.19	0.001
	Follow-up	19.56	2.49	0.001

The results in Table 3 indicate that the differences in the post-test and follow-up stages between the solution-focused and dialectical behavior therapy groups are significant ($p < 0.05$), but in the pre-test stage, the difference between the groups is not significant ($p > 0.05$).

4. Discussion and Conclusion

The present study aimed to compare the effectiveness of solution-focused therapy and dialectical behavior therapy on self-care and quality of life in patients with type 2 diabetes. The results indicated significant differences in the effectiveness of solution-focused therapy and dialectical behavior therapy on self-care and quality of life in patients with type 2 diabetes, with dialectical behavior therapy performing better compared to solution-focused therapy in improving self-care and quality of life. The findings of this study are consistent with the prior research (9-15).

In explaining the findings, it can be stated that solution-focused therapy utilizes the clients' resources and capabilities in the process of change, creating a vision of hope in patients. Solution-focused therapists believe that problems persist and worsen through the methods individuals use to solve them, reminding individuals of

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problem-solving skills when necessary, enabling them to break the dysfunctional cycle of the problem and develop long-term solutions. Identifying, determining, extracting, and enhancing exceptions by clients regarding their problems is a crucial factor in change in solution-focused therapy. In the solution-focused approach, identifying exceptions maintains the client's engagement in a positive direction until the end of the treatment process. As DeShazer has explained, for clients, the first thing that comes to mind is the problem itself, while for therapists, the first thing is the exceptions (10, 11).

The results showed that solution-focused therapy is effective in improving self-care and quality of life in patients with type 2 diabetes. In interpreting these results, it can be said that in solution-focused therapy, individuals are encouraged to do more of what they were doing during positive times compared to negative times, which in itself leads to improved self-care and consequently quality of life. In this therapy method, individuals are asked to remember what they used to do in the past that improved their condition and then re-establish the same behaviors and activities they once did (16). In the current study, solution-focused therapy led to increased self-care and quality of life in patients with type 2 diabetes. In this therapeutic method, miracle questions are one of the intervention questions used by solution-focused therapists to guide clients toward describing salient topics in the present and to envision a problem-free future. Miracle questions help clients extract the necessary elements to be different; they help discover new topics and also enable them to describe cognitive behavioral differences in themselves and others. Also, since the primary emphasis in this therapy is on small changes leading to larger changes, and the therapy focuses on individual self-care issues and their impact on quality of life, it increases the patient's eagerness to continue the change process and therefore, after a while, observe greater changes in their quality of life.

The results also showed that dialectical behavior therapy is effective in improving self-care and quality of life in patients with type 2 diabetes. It can be said that dialectical behavior therapy in its therapeutic approach uses two strategies of acceptance (comprising components like mindfulness and distress tolerance) and commitment (comprising components like emotional regulation and effectiveness). This therapeutic approach helps individuals to feel balanced and non-judgmental, accept life's emotions and events, reduce psychological distress, and thereby enhance physical, mental, and emotional well-being. Also, self-care in diabetic patients is most related to diet and foot care, and least related to insulin injections, physical activity, and blood sugar testing, with dialectical behavior therapy helping patients with type 2 diabetes play an effective role in improving self-care and quality of life (14). Regarding the impact of dialectical behavior therapy on self-care, it should be noted that dialectical behavior therapy is derived from the biopsychosocial theory, which believes that emotional dysregulation leads to psychological problems (13). Dialectical behavior therapy, by reducing emotional vulnerability, leads to the individual's adaptive efforts to reduce self-blame, sadness, negative emotions, despair, and psychological suffering caused by the disease, thereby increasing self-care and the quality of life of these patients (15).

As a result, the comparison of the two therapeutic methods showed that dialectical behavior therapy was more effective than solution-focused therapy in increasing self-care and quality of life in the post-test phase. In explaining this finding, it can be said that given the similarities such as the short duration of both treatments and the equal number of sessions to explain this difference, dialectical behavior therapy creates psychological effects such as thought, emotion, and behavior moderation, which alleviates sadness. Therefore, this treatment, due to its effects on self-care and quality of life, can lead to increased longevity and well-being of diabetic patients. Additionally, the results from the follow-up study showed that the laughter therapy program was still effective in increasing self-care and quality of life in diabetic patients two months later. In explaining the results of this finding, it can be said that the effects of this program are long-term and can have lasting effects on increasing hope and maintaining motivation and goal-directed behaviors in patients with type 2 diabetes.

The limitations of the present research include reliance on questionnaires for data collection and lack of overall control of sample individuals between pre-test, post-test, and follow-up. It is recommended that future research consider intervening variables such as the impact of subcultures and socio-economic conditions to enhance research results, use other data collection methods such as interviews and

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observation, and sample other age, gender groups, and from different communities.

Authors' Contributions

Z.L. led the overall project, designed the study protocol, and supervised the intervention processes. M.S. and M.D. were involved in the recruitment and training of participants, facilitated therapy sessions, and collected data. F.M. contributed to data management, performed statistical analysis, and participated in manuscript drafting. N.T., the corresponding author, coordinated the research team, oversaw the quality control of data collection, contributed to data interpretation, and was primarily responsible for drafting and revising the manuscript. All authors have read and approved the final manuscript for publication.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

The study placed a high emphasis on ethical considerations. Informed consent obtained from all participants, ensuring they are fully aware of the nature of the study and their role in it. Confidentiality strictly maintained, with data anonymized to protect individual privacy. The study adhered to the ethical guidelines for research with human subjects as outlined in the Declaration of Helsinki.

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