

Access this article online
Quick Response Code:

Website: www.jehp.net
DOI: 10.4103/jehp.jehp_1174_22

Comparison of the effect of acceptance and commitment therapy and reality therapy on the self-care of diabetes type II patients

Anahita Zandi, Hossein Dinpanah-Khoshdarehgi¹, Mohammad Ebrahim-Madahi², Farhad Jamehri³

Abstract:

BACKGROUND: Self-care is one of the most important factors affecting the lives of people with chronic diseases such as diabetes. This study attempted to compare the effectiveness of acceptance and commitment therapy (ACT) and reality therapy on self-care in type II diabetes patients.

MATERIALS AND METHODS: It was a quasi-experimental study with pretest–post-test control group design. The statistical population included 100 patients referred to diabetes clinics in Torbat Heydariyeh, 2020-2021. Using available sampling method, 60 patients were selected and randomly assigned to three groups of 20 people (2 experimental groups and a control group). Data collection instrument included demographic information and standard diabetes self-care questionnaire. Data analysis was performed using analysis of covariance and Bonferroni *post hoc* test.

RESULTS: The results showed that there was a significant difference between self-care scores of ACT and reality therapy groups compared to control group among type II diabetes patients ($P < .05$, $F = 56.55$). The effectiveness of ACT and reality therapy interventions on self-care rates in type II diabetes patients is different. The mean of self-care variable after intervention in the ACT group increased compared to reality therapy.

CONCLUSION: Due to the significant effect of ACT treatment on self-care behaviors of patients with type II diabetes, it is recommended that this therapy can be used in diabetes treatment centers to promote self-care and thus improve the control of diabetes in patients.

Keywords:

Acceptance and commitment therapy, diabetes mellitus, patients, reality therapy, self-care, type 2

Introduction

Diabetes is one of the chronic diseases and one of the most important causes of death and disability worldwide.^[1] Currently, about 171 million people in the world suffer from this disease, and it is estimated that this number will reach 300 million by 2020, while its age of onset is declining.^[1,2] Moreover, the prevalence of this disease in Iran is estimated at 6% of the population, that is, about 4 million people.^[3] Today, diabetes is

one of the most important health problems in the world, which dealing with it affects the physical, mental, social, and health dimensions of a person.^[3,4]

The findings showed that one of the most important factors affecting the lives of people with chronic diseases is self-care.^[5] Self-care is a multidimensional structure that includes lifestyle management, increased self-efficacy, emotional regulation, treatment of minor ailments, chronic disease management, and post hospital

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Zandi A, Dinpanah-Khoshdarehgi H, Ebrahim-Madahi M, Jamehri F. Comparison of the effect of acceptance and commitment therapy and reality therapy on the self-care of diabetes type II patients. *J Edu Health Promot* 2023;12:364.

PhD Student in Health Psychology, Department of Psychology, Dubai Branch, Islamic Azad University, Dubai, United Arab Emirates,

¹Department of Medical Emergency, School of Nursing and Midwifery, Torbat Heydariyeh University of Medical Sciences, Torbat Heydariyeh, Iran, ²Department of General and Clinical Psychology, Shahed University, Tehran, Iran, ³Department of General and Clinical Psychology, Allameh Tabataba'i University (ATU), Tehran, Iran

Address for correspondence:

Dr. Farhad Jamehri, Department of General and Clinical Psychology, Allameh Tabataba'i University (ATU), Tehran, Iran.
E-mail: farhadjomehri@yahoo.com

Received: 12-08-2022

Accepted: 08-12-2022

Published: 31-10-2023

care.^[6] Diabetes self-care activities, as a necessary first step in empowering the patient, require attention to diet, physical activity, blood sugar monitoring, and compliance with prescribed medications.^[7]

In patients with type II diabetes, more than 95% of the treatment process is performed by the patient and the treatment team has little control over the patient in the intervals between appointments.^[8] This requires more attention to the promotion of self-care activities, which include various dimensions such as physiological, social, emotional, and spiritual. Therefore, these patients require special self-care behaviors throughout life.^[9,10]

Self-care is an active and practical process that is led by the patient and is essential to prevent short-term and long-term complications. Mora found that self-care activities, in addition to improving the life quality of individuals, have a very important role in reducing treatment costs.^[11]

Today, several psychological therapies have been proposed to improve the living conditions of patients with chronic medical diseases. Psychological interventions performed on patients with diabetes can be divided into three categories: support groups, coping skills training, and psychotherapy.^[12] Acceptance and commitment therapy (ACT) group is among the psychological treatments affecting chronic diseases. In the ACT approach, psychological distress in individuals is the product of trying to control or avoid negative thoughts and emotions.^[13] In treatment sessions with this approach, individuals are advised to accept what is beyond their personal control and to pay attention to the actions, behaviors, and activities that lead to a better life without prejudice.^[14] The goal of ACT is to strengthen the processes of acceptance, failure, self as a context, communication with the present, clarification of values, and participation in a valuable activity.^[15] The basic structure and concept in ACT is that psychological suffering and reflection are created by avoiding experiences, intertwined cognitions, failing to meet behavioral needs, and not conforming to core values.^[14,16]

Another effective psychological approach to patients involved in a chronic disease is reality therapy. It is one of the latest efforts of therapists to describe human beings, determine the rules of behavior, and how to achieve satisfaction, happiness, and self-care in diabetic patients. In reality therapy, confrontation with reality, responsibility, and evaluation of right and wrong behaviors are emphasized. The individual is responsible not only for his actions but also for his thoughts and feelings.^[17] This therapy tries to make the person know the short-term and long-term goals of his life. Explain them explicitly, evaluate ways to achieve their goals,

choose among them the methods that will lead to better results, and experience a more positive feeling toward yourself.^[18]

Meta-analysis studies have shown that although it is important to investigate background factors in the treatment of diabetes, it was not considered in the previous psychological treatments,^[8] while this issue is weighted in the present study. Considering the importance of self-care in patients with type II diabetes and the practical role of psychological therapies in improving the quality of life of people with diabetes and the importance of examining more effective therapies in them, the present study compares the effectiveness of ACT with reality therapy on self-care in type II diabetes patients.

Materials and Methods

Study design and setting

It was a quasi-experimental pretest and post-test control group study. The statistical population included 100 patients referred to diabetes clinics in Torbat-e Heydariehe in 2020-2021. Among them, 60 people who obtained score lower than the cut-off in the self-care questionnaire were selected by available sampling method. Then, participants were randomly assigned to three groups of 20 people (ACT and reality therapy groups and control group). The Consort diagram for the research is shown in Figure 1.

Inclusion criteria were age more than 40 years, attending meetings regularly, not having obvious physical and psychological problems, and not being placed in the treatment groups of ACT and reality therapy. Exclusion criteria were absence for more than three sessions, unwillingness to continue cooperating and attending sessions, and having serious physical or psychological problems other than diabetes.

Data collection instrument and technique

In this study, self-care questionnaire was used. Diabetes self-care questionnaire was developed by Toobert, Hampson, and Glasgow^[19] and has 15 items. The questions allow individuals to report the quality of their diabetes-related self-care activities over the past 7 days. The questionnaire included 6 subscales of diabetes, exercise, blood glucose test, insulin injection or antidiabetic pill, foot care, and smoking. A Likert-scale scoring method with eight options that give each behavior a score from 0 to 7, with the exception of the smoking behavior, which scores from 0 to 1 is used. In this questionnaire, the total scores are classified between 73 to 99 of good self-care, 47 to 72 of moderate self-care, and 0 to 46 of poor self-care. Hamadzadeh et al.^[20] reported its reliability through Cronbach's alpha

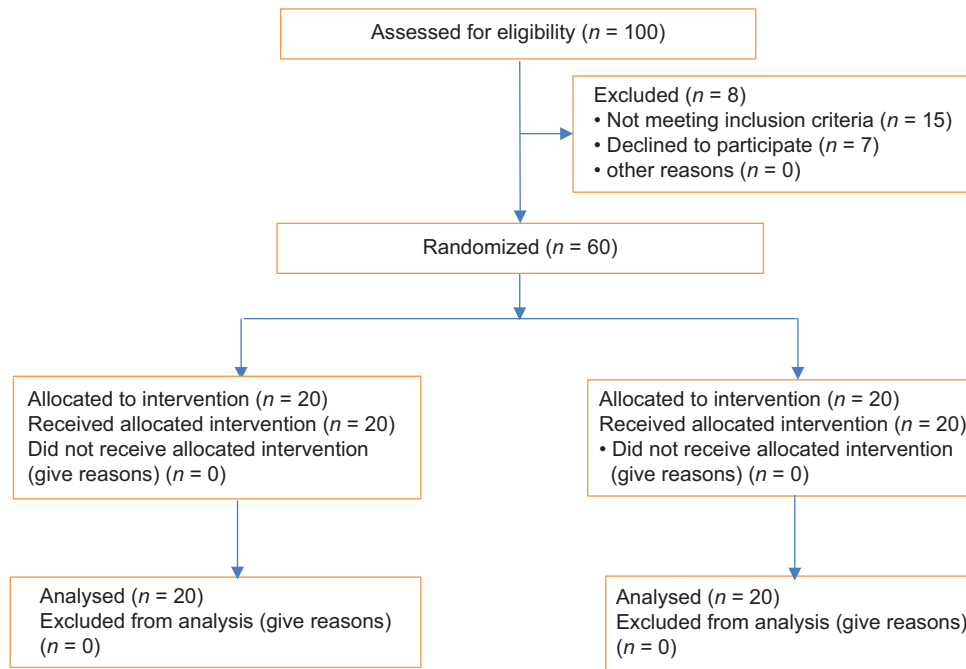


Figure 1: The Consort diagram for the research

coefficient of 0.84. They also confirmed the validity of this questionnaire. In Islami *et al.*^[21] study, Cronbach's alpha for the structure of self-care behaviors and the whole sample were 0.66 and 0.68, respectively, and the validity of 0.75 was obtained.

Here, after obtaining the necessary permits from the University of Medical Sciences, three previously assigned groups answered the self-care questionnaire. Then the experimental group of ACT received for 9 weeks and twice a week and each session for 90 minutes with respect to the treatment protocol of Honarparvaran *et al.*^[22] The reality therapy experimental group received treatment for 10 weeks and twice a week and each session for 90 minutes based on the Glaser treatment protocol. The control group did not receive any intervention. After the intervention sessions, post-test was performed on all three groups. At the end, to observe ethical considerations, the control group was suggested to undergo positive psychotherapy if they wished. The content session of ACT and reality therapy is summarized in Tables 1 and 2, respectively.

Ethical consideration

All ethical considerations in this study including the principle of confidentiality and volunteering to participate were observed. The present study was approved by Islamic Azad University, UAE Branch with ethics code No IR.IAU.SRB.1401.037.

Data analysis

Quantitative data were expressed as mean and standard deviation. Data analysis was done using

SPSS software version 21 and multivariate analysis of covariance (MANCOVA).

Results

The descriptive characteristics of participants are shown in Table 3. Also, the mean and standard deviation of the studied variables are presented in Table 4.

At first, the assumptions of before analysis were examined. The test of homogeneity of variance of the self-care variable was investigated. The value of Chi-squared statistic is equal to 0.020 and P value = .089; thus, the hypothesis of equality of variances has been observed. As can be seen in Figure 2, the assumption of homogeneity of the regression line slope is also observed for the self-care variable.

The analysis of covariance (ANCOVA) was used to analyze the data and results are presented in Table 5. As per the results, self-care scores before the intervention had an effect on the self-care score after the test (in general, if the pretest scores are effective, its value is controlled not to affect the final results). The results of the corrected model showed that the value of F statistic is 56.55 and P value $<.05$, which shows that after removing the effect of self-care pretest scores and adjusting the effect of the confounder variable, there was a significant difference between the mean self-care scores after the intervention in the control group, ACT, and the reality therapy group.

Moreover, to evaluate the maximum effect of research groups on changing self-care scores, Bonferroni *post hoc*

Table 1: Acceptance and commitment therapy protocol

Sessions	Purposes	Content
First	Familiarity and building trust.	Basic acquaintance with the authorities and establishing a relationship and building trust and conducting a pre-test.
Second	Explaining about diabetes and its types, review of treatments related to diabetes, its costs and benefits, psychological education.	Review of treatments related to diabetes and its costs and benefits, psychological education, rest and hospitality, providing homework.
Third	Assessing patients' expectations of ACT.	Discussion of their experiences, assessing the individual's willingness to change, assessing patients' expectations of ACT, and providing homework.
Fourth	Avoid painful experiences and be aware of the consequences of avoidance.	Explaining the concept of acceptance and its difference with the concepts of failure, despair, denial, resistance and... Expressing the permanence of the admission process and its non-intermittency, talking about the problems and challenges of accepting diabetes, explaining about avoiding painful experiences and awareness of consequences of avoidance
Fifth	Introduction and understanding of self-reinforced fusion, application of cognitive fusion techniques.	Introducing and understanding self-reinforced fusion, application of cognitive fusion techniques, intervention in the performance of problematic language chains and metaphors; Undermining your waste with thoughts and emotions
Sixth	Demonstrating separation between self and inner experiences and observed behavior as context.	Demonstrating separation between self and inner experiences and behaviors observed as context, weakening self-concept and self-expression in these exercises, training participants to focus on their activities such as breathing and walking.
Seventh	Identifying the values of patients' lives and specifying and focusing on these values and paying attention to their power of choice.	Identifying the values of patients' lives and clarifying and focusing on these values and paying attention to their power of choice, using mindfulness techniques with emphasis on the present
Eighth	Differences between values, goals, mistakes, and possible internal and external barriers to pursuing values	Explaining the differences between values and goals and common mistakes in choosing values, listing the most important values and possible obstacles in their pursuit by members and sharing with others, group discussion on values-related goals and characteristics of specific goals that can be evaluated and realistic and in line with personal values, identifying three of the most important values of the members and determining the goals of the follower, each of those values and identifying actions and behaviors to achieve those goals.
Ninth	Review and summary	Understanding the nature of desire and commitment (commitment to action training): identifying behavioral plans in accordance with values and creating a commitment to act on them, expressing points about the concept of recurrence and readiness to deal with it, reviewing assignments and concluding meetings with clients

Table 2: Reality therapy protocol

Sessions	Session content
First	Introduction and general acquaintance with the format of sessions, creating psychotherapy, performing tests and designing the problem of registering a positive self-introduction on a page by clients
Second	Recognizing the 5 basic human needs, listing the basic needs with your own efforts and consultant's help and examining the importance of meeting these needs
Third	Asking for an overview of their current employment and cohabitation and investigating the causes.
Fourth	Explaining about general behavior and its four components (action, thought, feeling, physiology) and teaching that a person is able to directly control action and thought, and the other two components of behavior can be done only indirectly by controlling action and thought.
Fifth	Determining the degree of access or failure to use current behavior and action for employment and examining how their current behavior can help members achieve their goals and needs.
Sixth	Receiving feedback from the previous session, helping people understand their current behavior and feelings, and downplay the past in their current behavior and emphasizing internal control over employment.
Seventh	Familiarizing people with their responsibilities and helping them accept and increase their responsibility for choosing behaviors and strategies that lead to a tendency to despair and reduce happiness in employment.
Eighth	Receiving feedback from the previous session, determining the importance of planning to get things done faster and better, and making the best use of time and learn proper planning to achieve other goals in married life.
Ninth	Familiarity with issues of change and commitment, and presenting tasks, however small, based on increasing self-esteem, valuable self-concept until the next meeting and getting a written commitment from members to implement it and not accepting any excuses.
Tenth	Receiving feedback from previous sessions, reviewing and re-emphasizing members' acceptance of responsibility, helping individuals to replace internal control, facing reality, making ethical judgments about right and wrong behavior, be in the present and now, and finally the process of change which leads to a decrease in anxiety and an increase in positive emotions.

Table 3: Demographic characteristics of the participants

Variable	Experimental group		Control group
	ACT	Reality therapy	
Gender			
Male	11 (55%)	10 (50%)	9 (45%)
Female	9 (45%)	10 (50%)	11 (55%)
Age			
31-40 years	4 (20%)	5 (25%)	5 (25%)
41-50 years	4 (20%)	6 (30%)	5 (25%)
51-60 years	7 (35%)	5 (25%)	7 (35%)
>60 years	5 (25%)	4 (20%)	3 (15%)
Level of Education			
Diploma	5 (25%)	5 (25%)	6 (30%)
Bachelor's degree	9 (45%)	9 (45%)	9 (45%)
Master's degree and higher	6 (30%)	6 (30%)	5 (25%)

Table 4: Mean and standard deviation of the studied variables among participants

Group	Pretest, Mean±SD	Posttest, Mean±SD
ACT	34.00±8.60	59.90±8.47
Reality therapy	35.40±10.04	47.40±9.19
Control	37.05±7.90	38.75±8.74

Table 5: Analysis of covariance related to self-care variable in control group, ACT and reality therapy groups

Source	MSE total	df	Mean MSE	F	Sig.	Etha square
Corrected model	6333.456	3.00	2111.152	45.340	0.0009	0.708
Fixed effect	2318.108	1.00	2318.108	49.784	0.0009	0.471
Self-care	1810.822	1.00	1810.822	38.890	0.0009	0.410
Group	5266.937	2.00	2633.468	56.557	0.0009	0.669

test was used, which the results are given in Table 6. The results showed that the difference between ACT and reality therapy group was significant. In general, the highest increase in self-care has been observed in ACT. The results of the difference between the groups are also shown in Figure 3.

Discussion

This study compared the effectiveness of two therapies on self-care behaviors in diabetic patients. The results showed that the effectiveness of ACT and reality therapy interventions on self-care was different among type II diabetes patients and in general the highest increase in self-care was observed in ACT. The results obtained from our study confirmed the findings of previous studies. For example, Baseri *et al.*^[23] investigated the effect of ACT on cognitive emotion regulation and emotional malaise in patients with type II diabetes and the results showed an increase in cognitive emotion regulation and decreased emotional malaise in patients with type 2 diabetes influenced by this psychological approach.

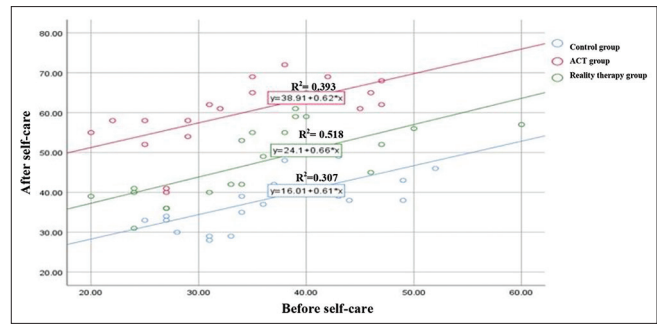


Figure 2: Investigating the similarity of the relationship between the self-care variable, before and after the intervention between the three groups

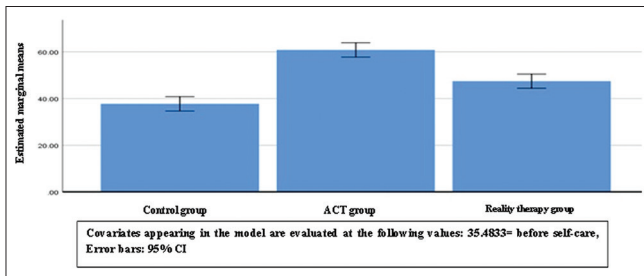
Abdollahi *et al.* also showed that ACT affect the self-care behaviors of people with type II diabetes.^[24] Molavi *et al.* concluded that self-care in the stage immediately after the intervention has a significant difference between the means of both experimental and control groups.^[25] Rashidi *et al.*^[26] and Maghsoudi *et al.*^[27] achieved similar results and showed that the effectiveness of ACT in the experimental group leads to a significant increase in self-care activities in patients with type II diabetes.

Explaining that ACT has a greater effect on self-care than type of reality therapy in type II diabetic patients, it should be noted that in ACT, thoughts and feelings are considered important and related to overt behavior. That is, in ACT, instead of simply focusing on reducing the symptom, the context in which the symptom occurs, such as disturbing thoughts or anxiety, occurs, and then the client is helped to act in a way that is consistent with his or her values. In fact, ACT is less focused on reducing symptoms and more focused on increasing quality of life^[13] because during ACT, people learn to accept their feelings without avoidance and focus more on the annoying content of their thoughts with a more conscious focus on their thinking process to get rid of them and relate it to a purpose-based action. Increased acceptance in people with diabetes causes them to pay more attention to themselves and their health and to perform self-care behaviors better and more that is to try to take prescribed medications and take insulin on time, do more physical activity, and measure their daily blood sugar, all of which improve metabolism. Yu *et al.*^[7] argued that clarifying values and internalizing committed action during ACT motivates group members to continue and adhere to treatment. In addition, the two important processes of ACT, namely being in the present time and the self, are formed as a context during the acquisition of mindfulness skills in ACT, both of which increase clients' awareness of themselves and their current needs and this awareness helps to perpetuate self-care behaviors in patients.

Gregg *et al.*^[28] believed that if patients with diabetes do not find the necessary motivation for self-care behaviors,

Table 6: Bonferroni post hoc test to evaluate the effectiveness of the three groups on the research variable

(I) Group	(J) Group	Mean difference	SD	Sig.	Confidence level	
					Lower bound	Higher bound
Control group	Group ACT	-23.083*	2.180	0.0001	-28.463	-17.703
	Reality therapy	-9.696*	2.164	0.008	-18.037	-4.354
Group ACT	Control group	23.083*	2.180	0.0001	17.703	28.463
	Reality therapy	13.387*	2.163	0.0009	8.050	18.725
Reality therapy	Control group	9.696*	2.164	0.008	4.354	15.037
	Group ACT	-13.387*	2.163	0.0009	-18.725	-8.050

**Figure 3:** The difference between the treatment groups and the control group

they do not understand the importance of recommended behaviors in their diabetes management and do not have the necessary skills to create behaviors to affect their quality of life in the long run. ACT takes steps in these three areas and is therefore expected to have more lasting effects on individual behavior.

Hayes *et al.*^[14] believe that the clarification of values and the internalization of committed action, which takes place during ACT, give the group members enough motivation to continue and adhere to the treatment. In addition, two important processes of ACT, that is, contact with the present and oneself as a background during the acquisition of mindfulness skills, are formed in the ACT, both of which make the clients aware of themselves and their current needs increase and this awareness helps to continue self-care behaviors in patients.^[29] However, in reality therapy, confrontation with reality, responsibility, and evaluation of right and wrong behaviors are emphasized and the person learns that he is responsible not only for his actions but also for his thoughts and feelings.^[30] This means that a type 2 diabetes patient is not a victim of his or her past and present, unless he or she wants to be less self-reliant as a result of diabetes. Although this therapeutic approach is used for both normal and abnormal behaviors and for the development of self-care methods,^[17] so the difference between the effectiveness of ACT and reality therapy interventions on self-care seems reasonable in patients with type II diabetes.

The limitedness of the statistical population to type II diabetes patients was one of the limitations of the present study. It is recommended that due to the important role of the therapies of ACT and reality therapy in long-term

care, including timely use of medication, nutrition, and exercise, etc., in health policy related to chronic diseases should be considered.

Conclusion

Due to the significant effect of ACT treatment on self-care behaviors of patients with type II diabetes, it is recommended that this treatment be used in diabetes treatment centers in the country to promote self-care and thus improve the control of diabetes in patients.

Acknowledgments

This article is taken from the doctoral dissertation in Health Psychology of the Islamic Azad University, UAE Branch. We sincerely thank all those who participated and contributed to the present study.

Financial support and sponsorship

None.

Conflicts of interest

There are no conflicts of interest.

References

- Shaw JE, Sicree RA, Zimmet PZ. Global estimates of the prevalence of diabetes for 2010 and 2030. *Diabetes Res Clin Pract* 2010;87:4-14.
- Saadatjoo S, Rezvanee M, Tabyee S, Oudi D. Life quality comparison in type 2 diabetic patients and none diabetic persons. *Mod Care J, Sci Quarterly Birjand Nurs Midwifery Faculty* 2012;9(1): 24-31.
- Barati S, Sadeghipour P, Ghaemmaghami Z, Mohebbi B, Baay M, Alemzadeh-Ansari MJ, *et al.* Warning signals of elevated prediabetes prevalence in the modern Iranian urban population. *Prim Care Diabetes* 2021;15:472-9.
- Lin X, Xu Y, Pan X, Xu J, Ding Y, Sun X, *et al.* Global, regional, and national burden and trend of diabetes in 195 countries and territories: An analysis from 1990 to 2025. *Sci Rep* 2020;10:1-11.
- Kralik D, Price K, Telford K. The meaning of self-care for people with chronic illness. *J Nurs Healthc Chronic Illn.* 2010;2:197-204.
- Tol A, Pourreza A, Shojaeezadeh D, Mahmoodi M, Mohebbi B. The assessment of relations between socioeconomic status and number of complications among type 2 diabetic patients. *Iran J Public Health* 2012;41:66.
- Yu PC, Bosnyak Z, Ceriello A. The importance of glycated haemoglobin (HbA1c) and postprandial glucose (PPG) control on cardiovascular outcomes in patients with type 2 diabetes. *Diabetes Res Clin Pract* 2010;89:1-9. doi: 10.1016/j.diabres. 2009.12.009.

8. Steinsbekk A, Rygg L, Lisulo M, Rise MB, Fretheim A. Group based diabetes self-management education compared to routine treatment for people with type 2 diabetes mellitus. A systematic review with meta-analysis. *BMC Health Serv Res* 2012;12:1-19. doi: 10.1186/1472-6963-12-213.
9. Karimi N, Saadat-Gharin S, Tol A, Sadeghi R, Yaseri M, Mohebbi B. A problem-based learning health literacy intervention program on improving health-promoting behaviors among girl students. *J Educ Health Promot* 2019;8:251. doi: 10.4103/jehp.jehp_476_19.
10. Vinter-Repalust N, Petricek G, Katic M. Obstacles which patients with type 2 diabetes meet while adhering to the therapeutic regimen in everyday life: Qualitative study. *Croat Med J* 2004;45:630-6.
11. Firooz M, Mazloom SR, Kimiae SA, Hasanzadeh F. Comparing the effect of group education versus group counseling for self-care on glycated-hemoglobin in patients with diabetes type II. *J Mazandaran Univ Med Sci* 2015;25:26-36.
12. Feifer C, Tansman M. Promoting psychology in diabetes primary care. *Professional Psychology: Research and Practice* 1999; 30(1): 14-21. <https://doi.org/10.1037/0735-7028.30.1.14>.
13. Hayes SC, Pistorello J, Levin ME. Acceptance and commitment therapy as a unified model of behavior change. *The Counseling Psychologist* 2012;40:976-1002.
14. Hayes SC, Levin ME, Plumb-Villardaga J, Villatte JL, Pistorello J. Acceptance and commitment therapy and contextual behavioral science: Examining the progress of a distinctive model of behavioral and cognitive therapy. *Behav Ther* 2013;44:180-98.
15. Kashdan TB, Barrios V, Forsyth JP, Steger MF. Experiential avoidance as a generalized psychological vulnerability: Comparisons with coping and emotion regulation strategies. *Behaviour Res Ther* 2006;44:1301-20.
16. Hayes S, Lillis J. *Acceptance and Commitment Therapy* Washington, DC: American Psychological Association; 2012.
17. Sedaghat M, Sahebi A, ShahabiMoghaddam S. The effectiveness of individualized reality therapy on major depression patients with suicide attempt history. *J Police Med* 2017;5:371-8.
18. Corey G. *Theory and Practice of Counseling and Psychotherapy*. Cengage Learning; California State University, Fullerton 2012.
19. Toobert DJ, Hampson SE, Glasgow RE. The summary of diabetes self-care activities measure: Results from 7 studies and a revised scale. *Diabetes Care* 2000;23:943-50.
20. Hamadzadeh S, Ezatti ZH, Abedsaeidi ZH, Nasiri N. Coping styles and self-care behaviors among diabetic patients. *Iran J Nurs* 2013;25:24-33.
21. Eslami M, Fesharaki M, Farmahini Farahani B, Haji Esmailpour A. Depression and self-care behaviors in depressed and non-depressed patients with diabetes. *Iran J Diabetes Metabolism* 2011;10:313-8.
22. Honarparvaran N, Mirzaei Kia H, Nayeri A, Lotfi M. *Practical Guide for Therapists in Acceptance and Commitment Therapy*. Mashhad: Omid-e Mehr; 2014.
23. Baseri LD, Bozorgi ZD. Effectiveness of group therapy based on acceptance and commitment on cognitive emotion regulation and alexithymia of patients with type 2 diabetes. *Iran J Psychiat Nurs* 2017;5:7-14.
24. Abdollahi S, Hatami M, Manesh FM, Askari P. The effectiveness of acceptance and commitment therapy on the self-care and adherence to treatment in patients with type 2 diabetes. *Int Arch Health Sci* 2020;7:78.
25. Molavi A, Afshar-Zanjani H, Hajjalizadeh K. Comparison of the effectiveness of self-care group training and group-based acceptance and commitment therapy on the quality of life and psychological well-being of patients with type 2 diabetes. *Int J Body Mind Cult* 2020;7:163-71.
26. Rashidi A, Whitehead L, Newson L, Astin F, Gill P, Lane DA, et al. The role of acceptance and commitment therapy in cardiovascular and diabetes healthcare: A scoping review. *Int J Environ Res Public Health* 2021;18:8126. doi: 10.3390/ijerph 18158126.
27. Maghsoudi Z, Razavi Z, Razavi M, Javadi M. Efficacy of acceptance and commitment therapy for emotional distress in the elderly with type 2 diabetes: A randomized controlled trial. *Diabetes Metab Syndr Obes* 2019;12:2137.
28. Gregg JA, Callaghan GM, Hayes SC, Glenn-Lawson JL. Improving diabetes self-management through acceptance, mindfulness, and values: A randomized controlled trial. *J Consult Clin Psychol* 2007;75:336.
29. Hosseinpanahi M, Mirghafourvand M, Farshbaf-Khalili A, Esmailpour K, Rezaei M, Malakouti J. The effect of counseling based on acceptance and commitment therapy on mental health and quality of life among infertile couples: A randomized controlled trial. *J Educ Health Promot* 2020;9:251. doi: 10.4103/jehp.jehp_512_20.
30. Koleshtajani EJ, Zabihi R, Yekta MA. The effectiveness of reality therapy on sexual satisfaction and marital intimacy of infertile women. *J Educ Health Promot*. 2022;11:275.