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Comparison of Effectiveness of Self-Care Group Training and Acceptance and Commitment Therapy on Psychological Well-Being and Quality of Life of Patients with Type 2 Diabetes

Abas Molavi[1], Hamid Afshar-Zanjani[2], Kobra Hajializadeh[3]

[1] Department of Psychology, Kish International Branch, Islamic Azad University, , Kish Island, Iran
[2] Professor, Department of Psychiatry, School of Medicine AND Psychosomatic Reserch Center, Isfahan Univesity of Medical Sciences, Isfahan, Iran
[3] Associate Professor, Department of Psychology, Bandar Abbas Branch, Islamic Azad University, Bandar Abbas, Iran

Corresponding Author: Abas Molavi; Department of Psychology, Kish International Branch, Islamic Azad University, , Kish Island, Iran
Email: molavi79@yahoo.com

Quantitative Study

Abstract

Background: Diabetes mellitus (DM) is one of the most common weakening and chronic metabolic disorders. The present study was conducted to compare the effectiveness of self-care group training and acceptance and commitment therapy (ACT) on psychological well-being and quality of life (QOL) of patients with type 2 diabetes (T2D).

Methods: The present study was an applied and quasi-experimental study with a pretest-posttest design, a control group, and follow-up. The statistical population consisted of patients with T2D referring to medical centers in Kish Island, Iran, in 2019. The sample consisted of 60 patients with T2D who were selected using convenience sampling and were divided into the self-care needs training (n = 20), ACT (n = 20), and control groups (n = 20) using simple randomization method. The groups completed the World Health Organization Quality-of-Life Scale (WHOQOL-BREF) and Ryff's Scales of Psychological Well-being (SPWB). Data were analyzed using repeated measures analysis of variance (ANOVA) in SPSS software.

Results: The findings showed that ACT and self-care needs training lead to improved QOL and psychological well-being of patients with T2D. The results showed that ACT has a greater efficacy than self-care needs training in improving psychological well-being and QOL in patients with T2D ($P < 0.01$).

Conclusion: It can be concluded that ACT has a higher impact than self-care group training on QOL and psychological well-being of patients with T2D.

Keywords: Self-care; Acceptance and commitment; Quality of life; Psychological well-being, Diabetes mellitus

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Introduction

Diabetes mellitus (DM) is one of the most common weakening and chronic metabolic disorders. Today, more than 145 million people around the world are affected by the disease (Marso, , et al., 2016). The World Health Organization (WHO) estimates that the number of people with DM will reach 300 million by 2025 (American Diabetes Association, 2015). DM is associated with an increased risk of psychological disorders (Benitez & Mendoza Tascon, 2016).

One of the components affected by DM is quality of life (QOL). According to the WHO concept, the people have a sense of their community, meaning, aims, aspirations, and goals in terms of the quality of life (Dumuid, et al., 2017). QOL is a person's perception and personal experiences of health and illness (Ajmera & Jain, 2019). Since, like other variables, its measurement requires a comprehensive and specific definition, experts have always tried to provide an appropriate definition for it (Kim, Woo, & Uysal, 2015).

The scope of psychological well-being studies has extended from the area of individual life to social interactions (Ferrari, Dal Cin & Steele, 2017). Psychological well-being includes an individual's perceptions of the degree to which his/her specific planned goals are aligned with functional outcomes. (Hendrix, et al., 2016). In some processes, certain investigators conceptualize psychological well-being in terms of emotional processes (Pinto, Faiz, Davis, Almoudaris, & Vincent, 2016).

Acceptance and commitment therapy (ACT) is one of these therapies. Acceptance and commitment counseling is one of the most popular emotional acceptance and flexibility therapies (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). ACT is based on a research program about language and cognition called the theory of the framework of mental relations (Lin, Luking, Ebert, Buhrman, Andersson, & Baumeister,, 2015). ACT allows the client to achieve a more value-added and fulfilling life with greater psychological flexibility and has 6 main processes which lead to psychological flexibility (Dindo, Van Liew and Arch, 2017). Jennings, et al (2017) argued that the treatment of a large spectrum of psychological and behavioral disorders is only possible acceptance and commitment therapy. Gillanders, MacLean, and Jardine (2015) suggested that cognitive fusion is the strongest predictor of anxiety syndrome in people with cancer. Dinis, Carvalho, Gouveia, and Estanqueiro (2015) concluded that ACT is effective on individuals' psychological well-being and mental health.

Another training method used to improve diabetes symptoms is self-care training. In this training method, self-care methods are explained to patients. Learning self-care activities can lead patients' toward maintaining health and well-being, increase their adaptation and self-care capability, and reduce their disabilities and treatment costs (Mahdi, Maddah, and Mohammadi, 2006) have suggested the development of treatment programs for self-care behaviors . The present study was conducted to compare the effectiveness of self-care group training and ACT on psychological well-being and quality of life of patients with type 2 diabetes (T2D).

Methods

The present study was an applied and quasi-experimental study with a pretest-posttest design, a control group, and follow-up. The statistical population consisted of patients with T2D referring to medical centers in Kish Island, Iran. The sample consisted of 60 patients with T2D who were selected using convenience sampling and were divided into 3 groups of self-care needs training (n = 20), ACT (n = 20), and

control group (n = 20) using randomization method. Based on an effect size of 0.25, alpha of 0.05, and power of 0.80, the number of subjects was calculated to be 20 people in each group. The probability of sample loss in the study was predicted to be 5 people in each group, and based on this, the total number of participants was considered to be 60 people. The control group did not receive any training.

The study inclusion criteria included duration of diabetes of at least 1 year, hemoglobin A1c (HbA1c) of above 7%, at least 30 years of age, middle school graduate degree, lack of diagnosed psychiatric care, lack of acute or chronic disorders, lack of serious mental disorder, and misuse of medicinal products. Severe DM complications that lead to hospitalization, absence from more than 2 treatment sessions, and occurrence of major stresses were considered as the exclusion criteria. The data collection tools used included the World Health Organization Quality-of-Life Scale (WHOQOL-BREF), and Ryff's Scales of Psychological Well-being (SPWB).

The World Health Organization Quality of Life Scale: The WHOQOL-BREF (1998) consists of 26 questions in the 4 subscales of physical health, mental health, social relations, and environmental health. The questions are scored based on a Likert scale ranging from 1 to 5. An individual's score in this questionnaire ranges between 26 and 130. This questionnaire has been standardized in Iran by Nejat et al. (2006) and the validity of the questionnaire has been reported to be appropriate. The test-retest reliability of the physical health, mental health, social relations, and environmental health subscales was reported to be 0.77, 0.75, 0.77 and 0.84, respectively, and the internal consistency of its subscales using Cronbach's alpha was reported to range from 0.52 to 0.84 for patients and healthy individuals. The internal consistency coefficients of its 8 subscales were reported to range between 0.70 and 0.85 and their test-retest coefficients with a time interval of 1 week were reported to range between 0.43 and 0.79. Moreover, this scale can distinguish healthy people from patients in all indicators (Asghari, Saadat, Atefi Karajvandani, & Janalizadeh Kokaneh, 2014).

Ryff's Scales of Psychological Well-being: Ryff (1989) developed the SPWB self-report tool to measure his theoretical model. He developed the 84-question version in 1989. In the 84-question version, 14 questions are allocated to each factor. These factors include self-acceptance, mastery of the environment, positive relationships with others, personal growth, purposefulness in life, and self-adherence (Ryff, 1995). In Iran, Bayani, Goudarzi, Kouchaki, and Bayani (2008) examined the validity and reliability of the 84-question version on a sample of university students. The test-retest reliability coefficient obtained for the overall score, and for the subscales of self-acceptance, positive relationships with others, self-adherence, mastery of the environment, purposefulness in life, and personal growth was 0.82, 0.71, 0.77, 0.78, 0.77, 0.70, and 0.78, respectively. The with Life Scale (SWLS),, Oxford Happiness Inventory (OHI), and Rosenberg Self-Esteem Scale (RSES) were used to assess the validity of the SPWB and the correlation of the scores of these tests with that of the SPWB was obtained to be 0.47, 0.58, and 0.46, respectively.

From among the statistical population, the researcher selected individuals according to the research criteria. After obtaining patients' consent to participate in the study, the questionnaires were distributed among them simultaneously. HbA1c test was performed before starting the sessions and with an informed consent. Both groups completed the WHOQOL-BREF and SPWB. Then, the training group underwent training. Blood sugar tests for participants in both groups were conducted at the end of the sessions. The control group participants wrote down their blood

sugar test report. The questionnaires were completed and HbA1c tests were again conducted 3 months after the end of the training to track and assess the stability of the therapeutic methods' effect.

In order to comply with ethical principles, the researcher assured the patients that their information would be confidential and analyzed as a group.

Ethical considerations were include: All participants in this research provided informed consents, all information was kept confidential and used for investigative purposes, the names of the participants were not recorded in order to protect their privacy, and the researchers themselves administered all questionnaires.

Self-care training sessions based on the training package of Shapiro and Brown (2007) were held in 5 weekly 90-minute sessions in a diabetes treatment clinic in Tehran, Iran. (Table 1).

ACT sessions based on the training package of Hayes et al. (2006) were held in 8 weekly 90-minute sessions in a diabetes treatment clinic. (Table 2).

Mean and standard deviation indices were used to describe the data, and repeated measures analysis of variance (ANOVA) and the Bonferroni test were used to analyze the data. In order to test the presuppositions of the inferential test, Levene's test (to check the homogeneity of variances), Kolmogorov-Smirnov test (for normal distribution of data), Box's M test, and Mauchley's sphericity test were used. Statistical analyses were performed in SPSS software (version 22, IBM Corporation, Armonk, NY, USA). The significance level of the tests was considered as 0.05.

Results

The mean and standard deviation of age in the experimental group was 46.4 (10.1) years and in the control group was 45.3 (9.65) years.

Table 3 show frequency distribution and comparison of demographic characteristics of research units.

Mean and standard deviation of research variables in the experimental and control groups is shown in table 4.

Repeated measures ANOVA was used to determine the importance of the difference between the 3 groups in terms of QOL and psychological well-being scores. Before conducting repeated measures ANOVA, the effects of the Box's M and Levene's tests were analyzed (Box's M = 10.10; $P > 0.05$). The non-significance of each of the variables in the Levene's test illustrated the intergroup variance equality status and the equality of the dependent variable error variance quantity in all classes. Wilks' Lambda test with a value of 0.13 and F = 46.51 showed a substantial difference in QOL and psychological well-being scores between the self-care preparation, acceptance and commitment counseling, and control groups ($P < 0.001$).

Table 1. Content of the Shapiro and Brown self-care training sessions (2007)

Sessions	Content
First	The lecturers introduced themselves and the disease and its process, prognosis, symptoms, complications, and risk factors were explained.
Second	Methods for prevention and controlling of the disease, and self-care behaviors and their importance were explained and discussed in simple words.
Third and fourth	These 2 sessions were held based on problem solving method. In addition, at this stage, the patients are taught skills they require to better control the disease.
Fifth	This session was based on training participation. This stage is designed in such a way that the patient, as a health connector, takes on the role of training his/her family.

Table 2. Content of acceptance and commitment therapy sessions of Hayes et al. (2006)

Sessions	Goal	Content of sessions
First	Fully understanding the nature of anxiety and identifying its coping strategies based on the results of the questionnaire or any other method/ controlling personal events	Introducing the members, explaining the group counseling rules, determining the goals, determining previous efforts of clients to deal with anxiety, describing thoughts and signs, introducing inefficient control system to clients, reminding them that self-control is problematic, and homework
Second	Dealing with the experiences of the client, strengthening him/her, and his/her recognition that "self-control is a problem"	Tug of War with a monster metaphor, polygraph metaphor, emphasizing the importance of promoting and cultivating mindfulness, and homework: "What is the function of worry?"
Third	Creating an orientation for developing mindfulness skills as an alternative to worry and introducing the concept of defusion	Polygraph metaphor, practicing the metaphor of milk, milk, milk, passion as an alternative to control, two-scale metaphor, instructions for passion, clear emotions vs. vague emotions, introducing mindfulness through mindful breathing practice, and homework: continuing mindfulness practice
Fourth	Introducing the importance of values and how to distinguish them from goals, and setting simple behavioral goals in order to achieve specific values	Introducing values, discussing the relationship between goals and values, choosing values, and homework: presenting a value identification sheet, performing a valuable action
Fifth	Continuing creation of an orientation toward mindfulness and providing more practical ways to cultivate defusion	Recognizing values using the metaphor of "tombstone", instructions for mindfulness skills, practicing mindfulness, and homework: identifying a valuable action (behavioral goal to achieve during the week)
Sixth	Paying attention to emotion function, behavioral avoidance habit, and distinguishing clear and vague emotions	Instructions for emotion function, instructions for emotional cycle control, emotional avoidance (hot stove metaphor), clear emotions vs. vague emotions, and homework: practicing mindfulness, and identifying a valuable action (setting a behavioral goal to achieve during the week)
Seventh	Explaining the distinction between observer selves and conceptual selves and identifying the relationship between self-conceptualizations and anxiety and worry	Chessboard metaphor, discussing observer self vs. conceptual self, practicing observer self, identifying a valuable action to perform during the week, and homework: performing an action with a specific value
Eight	Presenting the idea of commitment as a tool to move toward specific goals and strengthening choices to achieve those goals	Commitment as a process, identifying operational steps, presenting the gardening metaphor, obstacles to achieving goals, the metaphor of passengers on the bus, the metaphor of climbing a mountain, identifying a valuable action (behavioral goal) to perform during the week, and homework: performing an action with a specific value

The results presented in table 5 indicate that QOL ($F = 137.18$) and psychological well-being ($F = 68.18$) are significant at the level of 0.0001. The Bonferroni test was also used for the paired comparison of groups.

Table 6 indicates that the mean QOL and psychological well-being posttest scores were higher in the ACT group compared to the self-care training group and control group ($P < 0.01$). In other words, acceptance and commitment counseling was the most effective in terms of efficacy, but self-care instruction was also effective on the study variables ($P < 0.01$).

Table 3. Frequency distribution and comparison of demographic characteristics of research units

Demographic variables		Acceptance and commitment therapy	Self-care treatment	Control	P-value
Gender	Female	11 (55)	8 (40)	10 (50)	0.27
	Male	9 (45)	12 (60)	10 (50)	
Marital status	Single, divorced, or widowed	2 (10)	3 (15)	1 (5)	0.93
	Married	18 (90)	17 (85)	19 (95)	
Age (year)	30-40	6 (30)	6 (30)	5 (25)	0.31
	41-50	10 (50)	9 (45)	10 (50)	
	51-60	4 (20)	5 (25)	5 (25)	
Education	Up to high school diploma	11 (55)	12 (60)	9 (45)	0.11
	Associate degree	5 (25)	7 (35)	6 (30)	
	Bachelor's degree and higher	4 (20)	1 (5)	5 (25)	

Discussion

According to the obtained results, the greatest effect on the research variables was observed in the ACT, and then, self-care group. The results of this study are consistent with the results of studies by Ebrahimpour, Mirzaeian & Hasanzadeh (2019), Pourkazem & Eshghi Nogourani (2018), Baraz, Zarea & Shahbazian (2017), Abd Elalem, Shehata & Shattla (2018).

It can be said that in the approach based on ACT, clients are taught to accept their emotions in the first step and have more flexibility. During the treatment sessions, patients are encouraged to reduce useless struggle with psychological content. When thoughts and feelings are viewed with openness and acceptance, the most painful of them seem less threatening and more tolerable, and ineffective control acts are reduced. Thus, as the acceptance of the disease and commitment to treatment improves, the patient's perception, and thus, adherence to treatment instructions increase (Pourkazem & Eshghi Nogourani 2018).

ACT had a greater impact on patients' cognitive evaluation. In this approach, the patients are helped to focus on the present moment instead of living in the past and future. The individual learns to substitute the controlling of internal events with acceptance and taking steps to achieve his/her own goals and values (Batink, Bakker, Vaessen, Kasanova, & Collip, 2016). Through encouraging repeated practice, focused attention on neutral stimuli, and purposeful awareness of body and mind, ACT frees individuals from mental preoccupation with threatening thoughts and performance concerns and removes their minds from automatic gear. That is, these techniques improve patients' cognitive evaluation by increasing their awareness of current moment experiences, and reminding them to pay attention to the cognitive system and more efficient information processing (Mattila, et al., 2016).

Table 4. Mean and standard deviation of research variables in the experimental and control groups

Variable	Group	Pretest	Posttest	Follow-up
		Mean ± SD	Mean± SD	Mean ± SD
Quality of life	Acceptance and commitment	58.75 ± 6.49	68.15 ± 6.19	67.15 ± 6.12
	Self-care	60.60± 4.30	66.05 ± 3.63	65.35 ± 3.55
	Control	59.95± 4.51	60.50 ± 4.62	60.45 ± 4.68
Psychological well-being	Acceptance and commitment	30.45± 3.57	36.45 ± 3.5	35.75 ± 3.36
	Self-care	27.75 ± 3.89	31.55 ± 3.99	30.95 ± 4.11
	Control	30.90 ± 4.27	31.55 ± 4.09	31.70 ± 3.97

Table 5. Comparison of pretest and posttest in experimental and control groups using repeated measures analysis of variance

Variables	Source of effect	SS	df	MS	F	P	Eta square
Quality of life	Time	213.75	1.38	154.38	203.40	0.001	0.84
	Time*group	141.65	1.38	102.30	134.79	0.001	0.78
	Group	410.70	2	410.70	7.74	0.008	0.17
Psychological well-being	Time	120.01	2	60.00	402.76	0.001	0.87
	Time*group	54.15	2	27.07	124.70	0.001	0.76
	Group	111.24	2	55.62	318.69	0.001	0.86

In explaining this finding, it can be said that patients' knowledge on early and late complications of the disorder, signs of extreme hyperglycemia, and the importance of blood sugar regulation and steps to avoid complications can be improved by introducing frequent educational interventions. As mentioned in previous studies, awareness is a prelude to behavior change in all health-related educational programs (Ebrahimpour, Mirzaeian & Hasanzadeh, 2019). Therefore, it is recommended that special attention be paid to increasing patients' awareness about T2D in diabetes clinics and other health centers. These findings indicate that these studies have been able to successfully address patients' beliefs and attitudes about the importance of self-care behaviors in controlling disease complications and improving patients' health. Therefore, it is recommended that educational interventions emphasize on improving patients' attitudes toward self-care behaviors. Attitude is mentioned as one of the main pillars of behavior change. In some studies, it has been observed that despite the increase in awareness and lack of change in attitude, education has an effect on patients' self-care behaviors (Butler, Carello, & Maguin, 2017). These results indicate that it is necessary to pay attention to patients' attitudes as one of the variables affecting people's behavior; thus, shifting focus from raising awareness to creating a positive attitude is a path that must be taken to change behavior (Lin, Luking, Ebert, Buhrman, Andersson, & Baumeister, 2015).

This study is planned to be conducted on another sample and the findings will be compared with the results of this research. It is suggested that the therapies introduced in the present study be compared with other psychological interventions. Moreover, it is recommended that researchers consider the results obtained in the present study as new research hypotheses in future researches. It is suggested that this research be performed in other cities and its results be evaluated. It is also suggested that this group training be followed up with individual counseling. Today, in most parts of the world, treatment is implemented in groups and teams (Pinto, Faiz, Davis, Almoudaris & Vincent, 2016).

Conclusion

According to the study results, it can be concluded that group ACT has a greater impact than self-care group training on QOL and psychological well-being of patients with T2D.

Table 6. Comparison of research variables using the Bonferroni test

Variables	Group	Group	Mean difference	P
Quality of life	Self-care	Acceptance and commitment	-3.81	0.001
	Acceptance and commitment treatment	Control	4.90	0.001
		Control	8.71	0.001
Psychological well-being	Self-care	Acceptance and commitment	-2.43	0.001
	Acceptance and commitment treatment	Control	2.92	0.001
		Control	5.36	0.001

Conflict of Interests

Authors have no conflict of interests.

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