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# Comparison of the effectiveness of acceptance and commitment therapy and compassion-focused therapy on the quality of life of mothers with gestational diabetes

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**Abstract**

**Introduction:** This study aimed to compare the effectiveness of acceptance and commitment therapy (ACT) and compassion-focused therapy (CFT) on the quality of life of mothers with gestational diabetes.

**Methods:** The quasi-experimental research was conducted based on a pretest-posttest control group design and follow-up. The statistical population of the study consisted of all pregnant mothers referring to the Milad Hospital in Tehran, Iran, in 2019, who was diagnosed with gestational diabetes. The samples (n=45) were selected using the purposive sampling method (considering the inclusion and exclusion criteria) and then randomly divided into three groups of ACT, CFT, and control groups. The acceptance and commitment and compassion-focused groups received Ferman and Herbert (2007) and Gilbert self-compassion (2008) training, respectively. Moreover, a three-month follow-up phase was performed on all participants in the three groups. The research tool was the World Health Organization Quality of Life (1986). The collected data were analyzed in SPSS software (version 22) using repeated measure analysis of variance.

**Results:** The results showed that ACT and CFT had a significant effect on improving the quality of life of mothers with gestational diabetes ($P<0.001$).

**Conclusion:** It was revealed that ACT had a greater impact on the quality of life of mothers with gestational diabetes than CFT.

*Keywords*: Acceptance and commitment therapy, Compassion-focused therapy, Quality of life, Gestational diabetes

## Introduction

Gestational diabetes is the most common metabolic complication of pregnancy, affecting 10-15% of all pregnancies, depending on diagnostic criteria. Gestational diabetes is defined as diabetes in the second or third trimester of pregnancy that was not evident before pregnancy (1). The prevalence of gestational diabetes is increasing worldwide, including in Iran. In a meta-analysis, the prevalence of gestational diabetes in Iran was estimated at 3.41, and despite many advances in clinical care, women with diabetes during pregnancy were found to be at high risk of side effects (2). Quality of life is considered one of the factors that affects such women during pregnancy, and in terms of social life and health measures, a considerable decrease has been observed in women with diabetes, compared to normal pregnant women (3). Health-related quality of life indicates a range of physical and social activities, as well as mental health, and is considered an important indicator of health (4). Nowadays, it has become highly important to evaluate and record the quality of life with a focus on health through the quality of life questionnaire in medical interventions (5). The quality of life of mothers with gestational diabetes has also been evaluated in related studies. Moreover, psychoticism can stimulate or worsen glucose levels with the activation of the hypothalamic-pituitary-adrenal and cause the progression of diabetes (6). Although chronic illnesses are associated with increased depression, anger, and stress, they are almost three times more common in diabetics, which undoubtedly reduce the quality of life; the prevalence of depression in such patients is two to three times higher than in the general population (7).

New psychological therapies, including acceptance and commitment therapy (ACT) and compassion-focused

therapy (CFT), have been developed in recent years to cure psychological disorders and chronic diseases. The main goal of the ACT is to create mental flexibility that enables patients to choose and act on the best practical approach instead of avoiding chaotic thoughts, feelings, memories, or tendencies (8). The most important effort in this treatment is to try to increase the acceptance of mental perception and reduce reciprocal ineffective witness actions. The patient is taught that any attempt to dispel or testify to these dysfunctional mental perceptions will either have negative effects or lead to their reinforcement. Therefore, patients must fully accept this experience without any internal or external reaction to be able to destroy it (9).

Compassion-focused therapy is another approach that reduces the level of diabetes and increases the quality of life of women with gestational diabetes (10). In this treatment, it is believed that when individuals use cognitive reassessment, emotional tissue may have a functional opposite to cognitive function. Consequently, although the content of confrontational thought may be useful in psychoticism, the emotional context may play a greater role in this regard (11). Compassion-focused therapy was originally developed for individuals with long-term emotional problems, often with high levels of shame and self-criticism, and has been developed as an individual therapy that seeks to help people develop their compassion and sense of helping others (12).

According to the results of recent studies performed on the effectiveness of admission-based therapy, along with drug therapy, it can be used as a complementary therapy to enhance the quality of life, mental health, and general mental status of patients with diabetes. Higher levels of compassion also reduce depressive symptoms and increase mental health, leading to the evidence of diabetes in the long run (13, 14). These results reinforce the importance of emphasizing psychological parameters, including self-compassion, in diabetes management. Considering the increasing number of patients with diabetes and their problems in mental health and quality of life, as well as difficulty in controlling blood sugar, it seems that many of such patients lack sufficient knowledge and skills to properly manage such problems. With the employment of some methods of psychotherapy and interventions, such problems can be reduced. In this regard, it seems necessary to investigate the effectiveness of different therapeutic methods, such as acceptance, commitment, and compassion therapy, and the results of such studies are used by therapists (15). Therefore, this study aimed to compare the effectiveness of ACT and CFT on the quality of life of mothers with gestational diabetes.

## Methods

The statistical population of this study consisted of all pregnant women referring to Milad Hospital in Tehran, Iran, who were diagnosed with gestational diabetes and selected using the purposeful sampling method. The inclusion criteria were having minimum diploma level, aging 25-40 years, and giving informed consent. On the other hand, the patients with psychiatric disorders requiring urgent treatment, such as psychotic symptoms and drug dependence, were excluded from the research. Afterward, the eligible cases (n=45) were identified and randomly divided into experimental and control groups. A sample size of at least 15 individuals per group was suggested for experimental and semi-experimental studies.

Regarding the ethical considerations, the research objectives and procedures were explained to all participants in written form, and they were informed of the right to leave the study at any time. Moreover, all subjects were assured of anonymity and confidentiality in this study.

The first experimental group received ACT based on Ferman and Herbert protocol in ten 90-minute sessions. The second experimental group was subjected to CFT which was set up in eight 90-minute sessions based on the Gilbert protocol. Follow-up was performed on all three groups 3 months after the post-test. The tool used to collect information in this research was the Health-Promoting Lifestyle Profile (HPLP) developed by Walker (1987).

### Health-Promoting Lifestyle Profile

This 52-item questionnaire consists of 6 subscales and is scored on a 4-point Likert scale (1=never, 2=frequently, 3=almost, and 4=always), with higher scores showing a higher level of health-promoting behavior. The internal consistency coefficients of this tool, evaluated by Cronbach's alpha coefficient method for subscales, were obtained at 0.96, 0.87, 0.84, 0.83, 0.82, 0.76, and 0.75 for the total scale, physical activity, spiritual growth, health responsibility, interpersonal relationships, nutrition, and stress management, respectively (15).

### Statistical Analysis

In descriptive statistics, mean and standard deviation indices were used. Inferential statistics section: Repeated measure ANOVA was used. To investigate the assumptions of the inferential test, Leven's test (to investigate the homogeneity of variances), Shapiro-Wilk test (for normality of data distribution), Mbox test, and Mauchly's sphericality test were used. The above statistical analysis was performed in SPSS software (version 22). The significance level of the tests was considered 0.05.

**Table 1**. Content of acceptance and commitment therapy sessions

| Session | Content |
|---|---|
| 1 | Establishing therapeutic relationships, familiarizing cases with the subject of research, responding to questionnaires, and closing treatment contracts |
| 2 | Discovering and evaluating treatment methods and evaluating their effect, discussing temporary and ineffective treatments using metaphors, receiving feedback, and providing tasks |
| 3 | Helping authorities to identify inefficient control strategies and recognize their futility, accepting painful personal events without conflicting with them using allegory, receiving feedback, and providing tasks |
| 4 | Explaining about avoiding painful experiences and awareness of its consequences, teaching acceptance steps, changing language concepts using allegory, teaching relaxation, receiving feedback, and providing assignment |
| 5 | Introducing a three-dimensional behavioral model to express the common behavior-emotion relationship, psychological functions, and visible behavior, discussing efforts to change behavior based on it, receiving feedback, and providing assignment |
| 6 | Explaining the concepts of role and context, observing oneself as a context and establishing self-contact using metaphors, being aware of different sensory perceptions, and separating from feelings that are part of subjective content |
| 7 | Explaining the concept of values, motivating participants to change and empower references for a better life, practicing concentration, receiving feedback, and providing assignments |
| 8 | Training commitment to action, identifying behavioral plans following values, and making commitments to act on them |
| 9 | Summing up meetings, performing post-test, and relapsing prevention |

**Table 2**. Content of compassion-focused therapy sessions

| Session | Content |
|---|---|
| **1** | Participants received information on the nature of posttraumatic stress, followed by the exposure to intimate partner violence and the factors that maintain it. Subsequently, as part of the rationale for practicing self-compassion, psychoeducation was provided on the interactions between three emotion regulation systems, namely threat/self-protection, achievement/activating, and contentment/soothing systems. The fear of compassion was normalized, and misconceptions about self-compassion were explored. The cases then learned and practiced mindful breathing and simple grounding techniques (i.e., orienting oneself to the present; using the five senses to increase nonjudgmental awareness of the present). |
| **2** | Psychoeducation was provided to subjects on how to follow issues with an empathetic point of view (especially toward developing a self-directed empathetic approach). Moreover, subjects were informed about the detrimental effects of avoiding painful feelings throughout the therapy procedure, especially those feelings that are derived from the unpleasant interpersonal experiences they had with their intimate partner. |
| **3** | Subjects received psychoeducation on compassionate and sympathetic thoughts and their functions, along with developing and feeling higher diverse emotions related to individuals' concerns to increase care and attention toward their health. In this regard, training sessions were provided to generate more compassionate and sympathetic thoughts as an alternative to self-critical thoughts. This task included examining the self-critical thoughts and feelings of subjects, in which subjects were required to re-express their thoughts and then tried to focus on other alternatives of concepts and evidence that seemed to be more compassionate. |
| **4** | Subjects received psychoeducation on forgiveness. In this regard, they were taught how to foster self-forgiveness and a nonjudgmental acceptance toward mistakes to accelerate changes. Accordingly, subjects were required to address their inner talks that had been led to self-criticism. Afterward, subjects were provided with related examples on self-forgiveness and inner support. |
| **5** | Subjects received psychoeducation on taking an acceptance-based point of view toward events. They learned to accept probable future changes to foster greater tolerance against difficult and challenging conditions following exposure to various events. |
| **6** | Subjects received psychoeducation on life values and valuable and transcendent sense of self. Accordingly, they were informed about how life values can motivate and help individuals to cope with difficult emotions. In this regard, in session training on mapping important values, the use of a life compass was provided for subjects. Besides, subjects were taught about how to foster self-worth feelings, and developing self-worth feelings to assist subjects to be more capable of dealing effectively and efficiently with their difficult conditions. |
| **7** | Subjects received psychoeducation on being responsible toward themselves. Responsibility-taking is one of the main components of CFT, in which subjects learned to take a nonjudgmental point of view toward self to be capable of fostering more efficient feeling and viewpoint toward themselves. |
| **8** | In the final session, participants engaged in a general review of self-compassion skills from the intervention. Subsequently, they identified the exercises that they had found most helpful, reflected on their progress and changes they had experienced since starting the intervention and made a plan for continued self-compassion practice. |

## Results

In this study, the participants' age was estimated at a range of 25-40 years, and 69.76% and 30.24% of the cases were respectively male and female. The mean age scores for the ACT, CFT, and control groups were calculated at 34.26±10.11, 32.18±9.19, and 33.50±9.73, respectively (P>0.05). Table 3 summarizes the mean scores of the variables of health-promoting lifestyle components in the experimental and control groups.

ACT: Acceptance and commitment therapy, CFT: Compassion-focused therapy

As Table 3 shows, the mean values of the ACT and CFT groups in the post-test phase increased, compared to the pre-test stage. Based on the results presented in this table, it can be said that ACT and CFT improved the health-promoting behaviors of mothers with gestational diabetes.

Investigation of the assumption of the normal distribution of scores of dependent variables in thepre-test phase

ACT: Acceptance and commitment therapy, CFT: Compassion-focused therapy

According to the results of Table 4, the significant levels obtained for each research variable were higher than 0.05, the null hypothesis was confirmed, and the data in all three groups were normal; as a result, parametric tests could be used to measure it.

Mixed variance analysis (one-factor, within-subjects, and one factor) was used between subjects to investigate the effect of ACT and CFT on health-promoting behaviors in the pre-test, post-test, and follow-up stages. The three stages of pre-test, post-test, and follow-up were considered intra-subject and grouping the subjects into three groups as an inter-subject factor. To examine the significant differences between the mean score of health-promoting behaviors components, the three groups were studied in three stages of treatment and first assumptions of homogeneity of variances and sphericity. As can be

**Table 3.** Mean scores of the variables of health-promoting lifestyle components in the experimental and control groups

| Group | Dimension | Index | Pre-test | Post-test | Follow-up |
|---|---|---|---|---|---|
| ACT | | Mean | 24.33 | 33.60 | 32.80 |
| | | SD | 2.69 | 5.10 | 5.25 |
| CFT | Nutrition | Mean | 25.80 | 30.87 | 30.27 |
| | | SD | 5.70 | 3.96 | 4.68 |
| Control | | Mean | 24.73 | 25.00 | 26.40 |
| | | SD | 5.01 | 7.44 | 7.42 |
| ACT | | Mean | 26.73 | 31.20 | 31.00 |
| | | SD | 4.77 | 4.21 | 5.03 |
| CFT | Physical activity | Mean | 23.00 | 27.00 | 28.67 |
| | | SD | 4.41 | 3.53 | 4.81 |
| Control | | Mean | 25.00 | 24.20 | 24.40 |
| | | SD | 4.47 | 7.03 | 5.77 |
| ACT | | Mean | 23.67 | 32.60 | 32.60 |
| | | SD | 4.88 | 3.91 | 3.44 |
| CFT | Health responsibility | Mean | 21.13 | 28.80 | 30.07 |
| | | SD | 3.07 | 3.30 | 3.69 |
| Control | | Mean | 21.40 | 19.80 | 21.40 |
| | | SD | 3.14 | 5.61 | 5.42 |
| ACT | | Mean | 27.67 | 33.20 | 33.40 |
| | | SD | 5.38 | 3.30 | 2.50 |
| CFT | Stress management | Mean | 25.13 | 31.00 | 32.47 |
| | | SD | 2.77 | 3.40 | 3.50 |
| Control | | Mean | 26.07 | 25.80 | 26.80 |
| | | SD | 4.89 | 7.56 | 7.56 |
| ACT | | Mean | 25.67 | 31.20 | 31.00 |
| | | SD | 5.05 | 4.21 | 4.19 |
| CFT | Interpersonal relationships | Mean | 27.13 | 30.60 | 31.07 |
| | | SD | 3.81 | 3.89 | 3.90 |
| Control | | Mean | 25.27 | 24.40 | 25.60 |
| | | SD | 4.33 | 6.02 | 5.88 |
| ACT | | Mean | 27.40 | 31.80 | 31.60 |
| | | SD | 5.57 | 6.09 | 6.09 |
| CFT | Spiritual growth | Mean | 27.13 | 29.47 | 29.80 |
| | | SD | 4.37 | 3.91 | 3.84 |
| Control | | Mean | 26.73 | 26.60 | 26.80 |
| | | SD | 4.06 | 6.09 | 6.49 |

**Table 4.** Shapiro–Wilk test

| Group | Index | Health-promoting lifestyle |
|---|---|---|
| ACT | Z | 0.931 |
| | sig | 0.28 |
| CFT | Z | 0.921 |
| | sig | 0.202 |
| Control | Z | 0.77 |
| | sig | 0.59 |

**Table 5.** Levene's F test for investigating homogeneity of variances in control and experimental groups

| | Nutrition | Physical activity | Health responsibility | Stress management | Interpersonal relationships | Spiritual growth |
|---|---|---|---|---|---|---|
| F | 1.118 | 0.191 | 0.282 | 0 | 0.535 | 0.034 |
| df 1 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| df 2 | 28.00 | 28.00 | 28.00 | 28.00 | 28.00 | 28.00 |
| sig | 0.299 | 0.665 | 0.6 | 0.987 | 0.47 | 0.855 |

**Table 6.** Mauchly's sphericity test

| | Nutrition | Physical activity | Health responsibility | Stress management | Interpersonal relationships | Spiritual growth |
|---|---|---|---|---|---|---|
| df | 2 | 2 | 2 | 2 | 2 | 2 |
| Mauchly's W | 0.51 | 0.55 | 0.41 | 0.31 | 0.53 | 0.30 |
| Sig | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |

**Table 7.** Multivariate analysis of variance analysis of health-promoting behaviors scores in two groups

| Effect source | Tests | Value | F | Partial Eta Squared | Sig |
|---|---|---|---|---|---|
| Between groups | Pillai's trace | 0.45 | 3.17 | 0.45 | 0.02 |
| | Wilks' lambda | 0.55 | 3.17 | 0.45 | 0.02 |
| | Hotelling's trace | 0.83 | 3.17 | 0.45 | 0.02 |
| | Roy's largest root | 0.83 | 3.17 | 0.45 | 0.02 |
| Within groups | Pillai's trace | 0.87 | 9.29 | 0.87 | 0.001 |
| | Wilks' lambda | 0.13 | 9.29 | 0.87 | 0.001 |
| | Hotelling's trace | 6.56 | 9.29 | 0.87 | 0.001 |
| | Roy's largest root | 6.56 | 9.29 | 0.87 | 0.001 |
| Group*Time | Pillai's trace | 0.50 | 1.40 | 0.50 | 0.26 |
| | Wilks' lambda | 0.50 | 1.40 | 0.50 | 0.26 |
| | Hotelling's trace | 0.99 | 1.40 | 0.50 | 0.26 |
| | Roy's largest root | 0.99 | 1.40 | 0.50 | 0.26 |

seen, there is an assumption of the equality of variances (P>0.05), saying that the variance of the difference between all combinations of groups (spheres) needs to be the same. To investigate this hypothesis, the researchers used Mauchly's sphericity test, the results of which are tabulated in Table 6.

Based on the results of Table 6, the assumption of sphericity is violated (P<0.05). Accordingly, the Greenhouse–Geisser was used to test the hypotheses to obtain a more precise approximation, and the results of intra-group variance analysis were calculated concerning the lack of sphericity assumption. This section first presents the results of the multivariate tests.

The results of the Table 7 showed that with the multivariate analysis of variance, there was a significant effect for the factor of the independent variable. This effect indicated that a significant difference was observed between at least one component of health-promoting behaviors of mothers with gestational diabetes in the two experimental groups (Lambda Wilk=0.26, P<0.05). It indicated that there was a significant difference between at least one of the components of health-promoting behaviors of mothers with gestational diabetes in the three measurement stages (P<0.05). The results of the univariate tests were reported in the context of multivariate mixed analysis of variance.

**Table 8.** Multivariate analysis of variance mix model for components of health-promoting behaviors

| Variables | Source | SS | df | MS | F | Sig | Partial Eta Squared |
|---|---|---|---|---|---|---|---|
| Nutrition | Time | 936.69 | 1.36 | 686.65 | 35.97 | 0.001 | 0.56 |
| | Time*Group | 431.27 | 1.18 | 367.04 | 16.92 | 0.001 | 0.38 |
| | Group | 36.10 | 1.00 | 36.10 | 0.92 | 0.347 | 0.03 |
| Physical activity | Time | 1,490.96 | 1.18 | 1,258.7 | 57.90 | 0.001 | 0.67 |
| | Time*Group | 758.69 | 1.26 | 604.77 | 36.84 | 0.001 | 0.57 |
| | Group | 263.51 | 1.00 | 263.51 | 7.55 | 0.01 | 0.21 |
| Health responsibility | Time | 417.36 | 1.38 | 302.45 | 19.44 | 0.001 | 0.41 |
| | Time*Group | 231.27 | 1.34 | 172.47 | 7.00 | 0.007 | 0.20 |
| | Group | 196.54 | 1.00 | 196.54 | 11.80 | 0.002 | 0.30 |
| Stress management | Time | 84.20 | 1.36 | 61.72 | 4.23 | 0.048 | 0.10 |
| | Time*Group | 14.16 | 1.18 | 12.05 | 0.56 | 0.489 | 0.02 |
| | Group | 80.28 | 1.00 | 80.28 | 4.41 | 0.045 | 0.14 |
| Interpersonal relationships | Time | 8.02 | 1.18 | 6.77 | 0.31 | 0.619 | 0.01 |
| | Time*Group | 10.69 | 1.26 | 8.52 | 0.52 | 0.516 | 0.02 |
| | Group | 2.18 | 1.00 | 2.18 | 0.07 | 0.794 | 0.00 |
| Spiritual growth | Time | 16.69 | 1.38 | 12.09 | 0.78 | 0.423 | 0.03 |
| | Time*Group | 17.27 | 1.34 | 12.88 | 0.52 | 0.526 | 0.02 |
| | Group | 48.40 | 1.00 | 48.40 | 1.10 | 0.304 | 0.04 |

**Table 9.** Bonferroni post-test results for comparing two-to-two mean time measurement times of research variables

| Variables | Time | Mean difference | Std. error | P-value | |
|---|---|---|---|---|---|
| Nutrition | Pre-test | Post-test | 5.37 | 1.48 | 0.001 |
| | Pre-test | Follow-up | 6.22 | 1.67 | 0.001 |
| | Post-test | Follow-up | 1.84 | 0.53 | 0.541 |
| Physical activity | Pre-test | Post-test | 4.82 | 1.06 | 0.001 |
| | Pre-test | Follow-up | 6.40 | 1.21 | 0.001 |
| | Post-test | Follow-up | 0.57 | 0.20 | 0.321 |
| Health responsibility | Pre-test | Post-test | 3.77 | 1.11 | 0.001 |
| | Pre-test | Follow-up | 5.86 | 1.03 | 0.001 |
| | Post-test | Follow-up | 0.57 | 0.36 | 0.170 |
| Stress management | Pre-test | Post-test | 7.82 | 1.18 | 0.001 |
| | Pre-test | Follow-up | 6.29 | 1.55 | 0.001 |
| | Post-test | Follow-up | 0.67 | 0.35 | 0.197 |
| Interpersonal relationships | Pre-test | Post-test | 8.54 | 1.07 | 0.001 |
| | Pre-test | Follow-up | 7.46 | 1.36 | 0.001 |
| | Post-test | Follow-up | 0.89 | 0.19 | 0.442 |
| Spiritual growth | Pre-test | Post-test | 6.27 | 1.06 | 0.001 |
| | Pre-test | Follow-up | 8.32 | 1.21 | 0.001 |
| | Post-test | Follow-up | 0.25 | 0.46 | 0.578 |

The results of Table 8 revealed that the analysis of variance for intragroup factor (i.e., time) was significant for all components of health-promoting behaviors. Furthermore, the interaction between group and time and inter-group factor was significant for all components of health-promoting behaviors ($P<0.01$). Bonferroni post-test was used to investigate the effect of time, the results of which are presented in Table 9.

Based on the findings of Table 9 regarding the interaction of stage factors and F group calculated for the effect of stages (pre-test, post-test, and follow-up) between the two groups based on ACT and CFT at the level of 0.05 was significant for the components of nutrition, exercise, and health responsibility ($P<0.05$). As a result, a significant difference was observed between the mean scores of pre-test, post-test, and follow-up of components of nutrition, exercise, and health responsibility in the two groups. Interactive graph of adjusted mean scores of nutrition and stress management components scores in the two groups based on ACT and CFT in the different stages of pre-test, post-test, and follow-up.

ACT: Acceptance and commitment therapy, CFT: Compassion-focused therapy

According to the results of Figure 1 for intergroup

**Table 10.** Summary of Tukey's posthoc test results for comparison of pairwise groups

| Variables | Time | | Mean difference | Std. error | P-value |
|---|---|---|---|---|---|
| Nutrition | ACT | CFT | 4.13 | 1.39 | 0.001 |
| | ACT | Control | 8.80 | 1.39 | 0.001 |
| | CFT | Control | 4.66 | 1.39 | 0.001 |
| Physical activity | ACT | CFT | 3.84 | 1.20 | 0.001 |
| | ACT | Control | 6.62 | 1.20 | 0.001 |
| | CFT | Control | 4.02 | 1.20 | 0.001 |
| Health responsibility | ACT | CFT | 6.98 | 1.20 | 0.001 |
| | ACT | Control | 9.59 | 1.20 | 0.001 |
| | CFT | Control | 3.45 | 1.20 | 0.001 |
| Stress management | ACT | CFT | 5.84 | 1.20 | 0.001 |
| | ACT | Control | 8.38 | 1.20 | 0.001 |
| | CFT | Control | 6.02 | 1.20 | 0.001 |
| Interpersonal relationships | ACT | CFT | 4.36 | 1.20 | 0.001 |
| | ACT | Control | 9.20 | 1.20 | 0.001 |
| | CFT | Control | 6.63 | 1.20 | 0.001 |
| Spiritual growth | ACT | CFT | 4.21 | 1.20 | 0.001 |
| | ACT | Control | 8.50 | 1.20 | 0.001 |
| | CFT | Control | 5.89 | 1.20 | 0.001 |

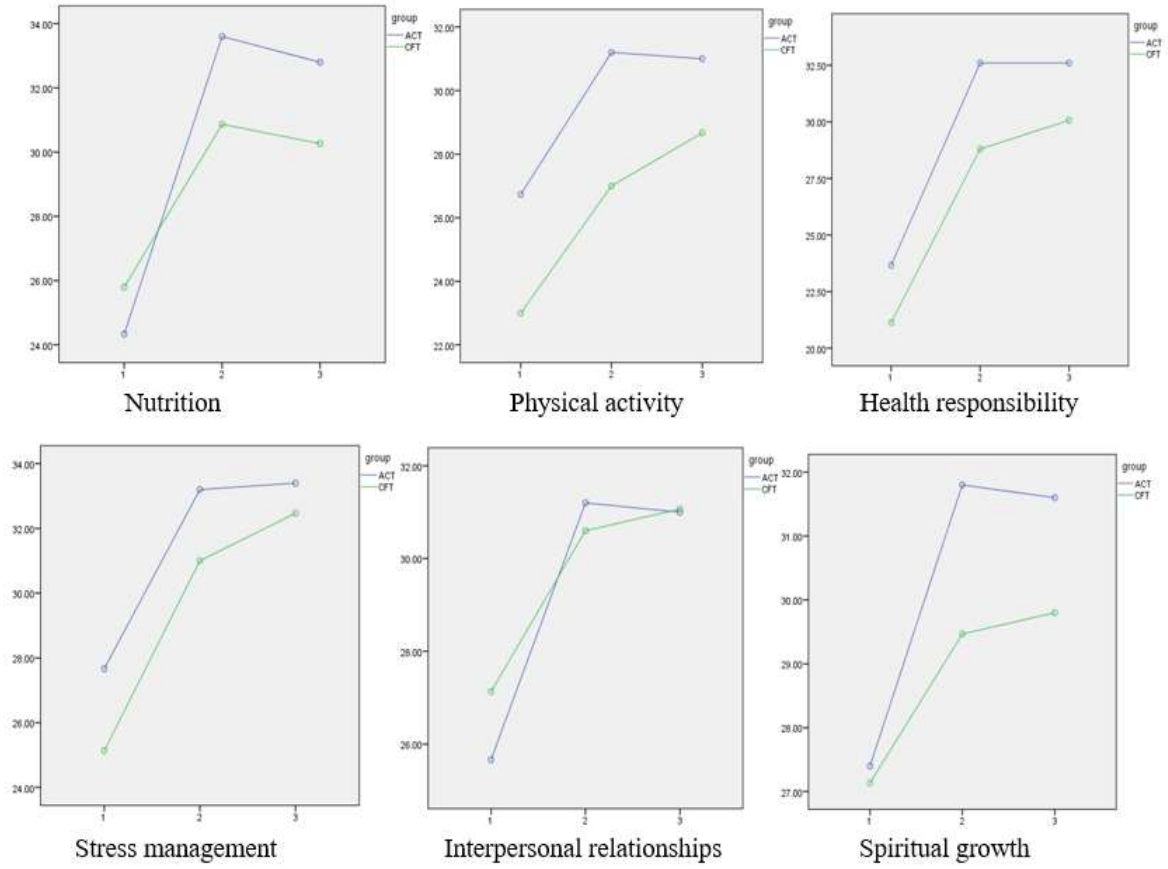


**Figure 1.** Comparison of pre-test, post-test, and follow-up of health-promoting behaviors components in experimental and control groups

factor F calculated at the significant level of 0.05, exercise, responsibility for health, and stress management were significant (P<0.05). Consequently, there was a significant difference between the overall mean scores of physical activities, responsibility for health, and stress management in the two groups of ACT and CFT therapy. Additionally, the modified means showed that the increase in these three components was higher in the ACT group than in the CFT group.

## Discussion

In explaining the effectiveness of ACT on improving

health-promoting behaviors according to Viskovich and Pakenham (16), it can be said that in ACT, individuals learn to accept emotions without avoidance, focus on the disturbing content of their thoughts, and be more aware of their thought process and relate it to goal-based action. Increased acceptance among individuals with diabetes makes themselves and their health more valuable to them and perform better and more health-promoting behaviors. In other words, such individuals try to take prescription medications and insulin on a timely basis, do more physical activity, and measure their daily blood sugar, which all together improve metabolism.

The clarification of values and the internalization of the committed practice that takes place during the group's acceptance and commitment therapies provide the group members sufficient motivation to continue and adhere to the treatment. In this study, since diabetes patients had sufficient motivation toward health-promoting behaviors through contact with the present moment and self as context, acceptance and commitment therapy could increase health-promoting behaviors. It was revealed that CFT in the experimental group had a significant effect on psychological health, social health, responsibility for health, and stress management in mothers with gestational diabetes than in the control group. The results of a study showed that after receiving eight sessions of CFT, this treatment could reduce depression and control blood sugar in diabetic patients (17). This finding was consistent with that of the present research.

Regarding the effectiveness of CFT on improving health-promoting behaviors based on Borgermans et.al, it can be said that CFT has an essential role in the mental health of individuals with chronic disease (18), and those with learning and performing skills (19). Individuals associated with it can acquire happiness and well-being and improve them . Compassion-focused therapy can lead to adaptive experiences, such activities as learning, or alternative behaviors. Moreover, it has appropriate coping resources that help people to cope well with adverse life events (20). As a result, individuals learn to be kind to themselves, feel shared with others, be aware of their living conditions, and face issues and problems with an unbiased attitude.

On the one hand, in explaining the non-difference between the effectiveness of ACT and CFT on the components of health-promoting behaviors among patients with diabetes, it can be said that such individuals usually experience unpleasant experiences and events. They respond painfully through extreme control or avoiding efforts. In such circumstances, their mind tells them that they have to control the situation better and that they should not have unpleasant thoughts and feelings. If this type of attitude is harsh and critical, it will conflict with health and both ACT and CFT through mindfulness and acceptance problems . Consequently, both methods have strong theoretical underpinnings and various commonalities that use the principle of mindfulness, acceptance of problems, and non-judgment to treatment.

Acceptance and commitment therapy had a more significant impact on improving the scores of exercise, health responsibility, and stress management among mothers with gestational diabetes than CFT. Moreover, the effectiveness of ACT on improving the components of health-promoting behaviors can be explained by its greater adaptation to the status of mothers with diabetes. According to the ACT, an important factor in causing and sustaining psychological trauma, and thereby, increasing maladaptive emotion regulation is empirical avoidance (21), which is exaggerated negative evaluation of internal experiences (e.g., thoughts, feelings, and emotions) and it is the unwillingness to experience that leads to trying to control or escape them and can interfere with one's performance. Individuals with more empirical avoidance experience positive emotional experiences and less mental health and feel that their lives are meaningless. Nevertheless, the goal of ACT is to reduce experiential avoidance and increase psychological flexibility by accepting unavoidable and distressing unpleasant emotions, fostering awareness to counteract excessive conflict with cognition, and identifying personal values related to behavioral goals. It encourages individuals to communicate their experiences fully without resistance as they move toward their worthy goals and accept them without judgment. This measure increases the motivation for change and encourages the individual to strive to achieve the worthwhile goals of their lives, leading to improved emotion regulation, especially in their cognitive domain. Psychological flexibility and acceptance can improve a person's mental health and his/her wellbeing in a variety of areas and help them promote meaningful aspects of life and enhance health-promoting activities (22). Therefore, once one can accept the existing and initial emotional state with all his/her ability, there is no longer a need to move quickly to achieve the optimal emotional state. In this respect, one can better use higher-level methods, including positive thinking strategies and acceptance of suffering (as human suffering is the normal state of affairs for human adults). Self-blame is created when one is not aware of events and rejects them.

The reason for the higher effectiveness of ACT than CFT can be attributed to its basic principles of treatment which are based on acceptance and commitment to increasing psychological flexibility. In other words, these principles include acceptance or willingness to experience pain or other disturbing events without attempting to

contain them and take measures based on value or commitment combined with the willingness to act as meaningful personal goals before eliminating unwanted experiences, and because linguistic methods and cognitive processes interact with other nonverbal affiliations. This method includes exposure-based exercises, linguistic metaphors, and methods, such as mental care. As mentioned above, the main purpose of this treatment is to create psychological flexibility to develop the ability to make practical choices among different options that are more appropriate, rather than solely taking action to avoid disturbing thoughts, feelings, memories, or tendencies, or imposed on the individual (23).

The present study was conducted through the self-report of the measurement tool, and since in this study, only one questionnaire was used for data collection and there were executive limitations, interviews were not used for collecting research data. Considering that the present research was conducted in Tehran, different environmental conditions and cultural-economic backgrounds had an impact on diabetes. In this regard, it was hard to generalize the findings of this study to other regions with other cultural and economic backgrounds since some aspects of the disease are dependant on environmental conditions.

## Conclusion

The results of this research showed that ACT and CFT could enhance the health-promoting behaviors among gestational diabetes.

## Conflicts of interest

The authors declare that there is no conflict of interest.

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