



Effect of Acceptance and Commitment Therapy on the Quality of Life in Infertile Women During Treatment: A Randomized Control Trial

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Abstract

Objectives: The present study aimed to investigate the effect of acceptance and commitment therapy (ACT) on the quality of life of infertile women during the treatment.

Materials and Methods: This study was a randomized clinical trial that was conducted on 40 infertile women admitted to the clinics of Arak, Iran. They were selected through a convenience sampling technique and were randomly assigned to intervention (n=20) and control (n=20) groups. The Fertility Quality of Life (FertiQoL) Questionnaire was used as a data collection tool, which was completed before and one month after the intervention. The counseling group was provided with eleven 90-minute sessions of ACT twice a week. Then, the data were analyzed using SPSS 23 through the chi-square test and independent samples test.

Results: Based on the results, there was a statistically significant difference between the mean scores of the quality of life in ACT and control groups before and one month after the intervention ($P < 0.05$).

Conclusions: In general, it seems that ACT improves the infertile women's quality of life and this treatment can be used for alleviating the quality of life of these women taking into account the high incidence of infertility.

Keywords: Acceptance and commitment therapy, Quality of life, Infertility, Women

Introduction

Infertility is defined as the failure to achieve a clinical pregnancy after 12 months of regular unprotected sexual intercourse (1) and affects 10%-15% of the couples at reproductive age (2). Inability to become pregnant can be of primary and secondary forms. Primary infertility means delayed pregnancy for couples with no experience of pregnancy in the past while secondary infertility occurs when the couples have a history of fertility but are currently unable to be pregnant (3). According to Onat and Aba (4), the problem may be from the husband (25%-40%), wife (40%-55%), or both (10%), or may have an unknown cause (10%). As a multidimensional issue, infertility is considered as an important threat to health worldwide, and its incidence is about 24.9% in Iran and 8-10% in the world (5)

Considering that men and women equally contribute to infertility, infertility is believed to be a woman's problem due to social prejudices and that is why women face more social and familial problems compared to men. Therefore, infertility has more negative effects on the quality of life and anxiety among women when compared to men (6).

In addition, the social stigma of infertility for infertile women is extremely harsh in some countries (7) that makes them socially deprived and thus they receive no appropriate and normal attention. Therefore, infertility

influences many aspects of their lives such as their psychological, physical, and social well-being (8).

On the other hand, social and cultural issues like the social and cultural stigma of infertility and various financial, occupational, individual, and collective pressures challenge the process of treatment and infertility experience for infertile people, especially women (6). In one study, 12% of infertile women stated that their quality of life was low while more than half of them had a desirable quality of life (9).

Although there is no unique and universal definition for the quality of life, there exists a widespread agreement on the multidimensionality of this concept including physical, psychological, and social dimensions (10). It seems that infertility-related issues have a negative effect on the quality of life of couples.

Accordingly, the negative effects of infertility for women, which emerge at individual and social levels, have made the researchers and therapists highly worried about this matter such that they attempted many various interventions to reduce their psychological problems through different approaches (11). One class of these different approaches is those based on acceptance and commitment which focuses on involvement in any experience whether positive or negative and aims to achieve a balanced experience. Acceptance and

Received 12 February 2018, Accepted 10 July 2018, Available online 19 September 2018

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commitment therapy (ACT) is one of the therapies which belongs to the third wave of cognitive behavioral therapies and has its roots in functional contextualism and relational frame theory (12). This therapy focuses on changing the relationship with internal experiences (e.g., thoughts, feelings, memories, and physical senses) instead of altering the content of the experiences directly (13).

In other words, ACT seeks to increase psychological flexibility. In this therapy, psychological flexibility is defined as the ability to contact with the present moment as a human being who is conscious of undesirable thoughts, emotions, and experiences and to change or persist in that behavior in the service of the selected values. This type of flexibility includes 6 core processes as acceptance, mindfulness, contact with the present moment, cognitive diffusion, values, and committed action (14).

The research on the effect of ACT as a therapy for mood disorders confirmed it as an effective treatment for mood, anxiety, and other psychological disorders such as pain and eating disorder (15,16). The ACT is used for treating anger (17), chronic pain, drug abuse, and many other problems as well (18,19). Further, it is an effective therapy for decreasing infertility stress, psychological distress, and infertility-related depression (20), as well as a promising treatment for patients who have failed in vitro fertilization. According to a previous study, ACT improves the relationship between distressed couples and their life satisfaction (21).

Although many studies have so far approved the effectiveness of ACT (15-17,20-22), limited data are available regarding its effect on infertility and the quality of life of women (20,21,23). The present study used fertility quality of life (FertiQoL) Questionnaire, which, to the best of our knowledge, has not so far been utilized in any other similar project. This questionnaire was first designed by Boivin et al to measure the quality of the life of infertile people (23). A critical review of studies attempting to use psychological treatments for helping infertile women to overcome their problems shows that most of the employed methods have not paid enough attention to environmental and cultural congruence needed in the process of treatment. This issue has received serious attention in recent years. Thus, comprehensive and combined treatments are required for integrating the environmental and cultural elements. The results of this research not only create a good setting for studying ACT but also pave the way for other researchers to continue their studies on this therapy. Therefore, the following three hypotheses were proposed in this study in order to fill the current gaps:

1. There is no significant difference between the quality of life before and one month after the intervention in the ACT group.
2. There is no significant difference between the quality of life before and one month after the intervention in the control group.

3. There is no significant difference between the quality of life of the ACT and control groups before and one month after the intervention.

Materials and Methods

This study was a two-group clinical trial including pre-test and post-test (a follow-up one month after the intervention). Statistical and population encompassed all the infertile women living in Arak, Iran and infertile women referring to Omid Rouyn Infertility Center in Arak in the summer and fall of 2016, respectively. Forty infertile women were selected through convenience sampling technique based on inclusion criteria and randomly assigned to ACT (n=20) and control (n=20) groups using the random blocks (Figure 1). Accordingly, given the 0.95 confidence interval and the power of 0.80, the sample size was determined 20 patients in each counseling, control group and based on the recommendation of reliable scientific references (24).

Inclusion Criteria

- Being within the age range of 18-45 years;
- Having a junior high school degree and above;
- Having an infertility history for at least 1 year;
- Not taking psychiatric and psychedelic drugs for at least 2 weeks before the trial;
- Not suffering from severe psychological or physical diseases;
- Not having a history of assisted reproductive technology.

Exclusion Criteria

- Being absent for 2 consecutive or non-consecutive sessions;
- Having a positive pregnancy test;
- Not doing the assignments and exercises at home for three consecutive or non-consecutive sessions;
- Taking psychiatric and psychedelic drugs during the trial;
- Experiencing stressful events during the study such as the death of the loved ones, divorce, and immigration.

The data collection instrument was FertiQoL Questionnaire. This questionnaire, designed by Boivin et al was applied to measure the quality of the life of infertile people and contained 36 questions. Each participant had to comment on each statement in a 4-point (0-4) Likert-type scale as well (23).

FertiQoL was evaluated by 24 core items covering emotional, mind-body, relational, and social subscales each including six questions. Additionally, the treatment section encompassed 10 items covering environment (6 items) and tolerability (4 items) subscales. Two additional items evaluated the general quality of life and physical health and some questions were scored reversely. In addition, the overall score of the questionnaire was between 0 and 100 and higher scores indicated a more

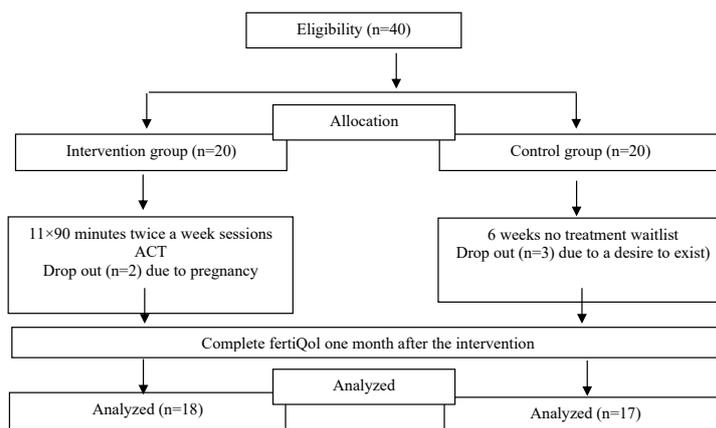


Figure 1. Flowchart of Participant's Progression Through the Study

desirable quality of life. The validity of this questionnaire was verified and the Cronbach alpha was satisfactory and in the range of 0.72-0.92 for subscales of treatment and the core FertiQoL (23). Further, the studies in Iran show acceptable validity and reliability for this scale, for example, in a study on 221 infertile women, the reliability coefficient was obtained as 0.90 for the whole questionnaire using the test-retest method (2).

The ACT group attended full eleven 90-minute counseling sessions twice a week (25) and a post-test was performed one month after the final session. The control group received no intervention and stayed in the waiting list. The content of the counseling sessions are summarized in Table 1 (26). It is noteworthy that considerations regarding informed consent and confidentiality were taken into account in all stages of the research. All the participants signed the informed consent forms and each participant received a code instead of her first and last name while their names along with their codes were kept confidential by the researcher. Eventually, the obtained data were analyzed using SPSS23 software by descriptive statistics, chi-square test, as well as independent and paired samples *t* test. Type I error was considered as 5% as well.

Results

The average age of women was 32.7 (±5.1) and 29.5± (8.5) in the ACT and control groups respectively, and the difference was not statistically significant (*P*=0.85). Further, the average age of the husbands was 36.8 (±4.8) and 33.4 (±6.2) in ACT and control groups, respectively (*P*= 0.84). Furthermore, the average duration of marriage in the ACT and control groups was 8.6 (±5.8) and 5.8 (±2.6), respectively, and the difference was not statistically significant (*P*=0.87). Table 2 presents the other demographic characteristics of the groups and Table 3 provides the means and standard deviations of pre-test and post-test (one month after the intervention) and the components of the quality of life in ACT and control groups.

As shown in Table 3, there was a significant increase in the overall mean and the quality of life in the post-test (follow-up) of the ACT group compared to those in the pre-test whereas no significant change was observed in the post-test (follow-up) of the control group. Moreover, no significant difference was found between the means of the components of the quality of life in the ACT and control groups in the pre-test. However, the means of the components of the quality of life in the ACT and those

Table 1. Content of the Counseling Sessions

Sessions	Content
First	1. Briefing and introduction
Second	1. Familiarity with the concept of creative helplessness; 2. Hungry tiger metaphor
Third	1. Creative hopelessness continued 2. Tug-of-war with a monster
Fourth	1. Control is a problem; 2. Polygraph metaphor
Fifth	1. Control is a problem; 2. Two scales metaphor; 3. The key to fighting and clean versus dirty discomfort
Sixth	1. Control is a problem; 2. Chocolate cake metaphor; 3. Mindfulness with conscious breathing exercises
Seventh	1. Defusion from unpleasant thoughts and feelings; 2. Numbers metaphor; 3. Passengers on the bus metaphor
Eighth	1. Defusion; 2. Willingness and acceptance; 3. Lion metaphor; 4. Parade practice; 5. Mindfulness training
Ninth	1. Defusion; 2. Self as the context; 3. Gravestone practice; 4. Relation between goals and values
Tenth	1. Values review; 2. Self as the context; 3. Chessboard metaphor; 4. Beggar metaphor; 5. Stating values and commitment
Eleventh	1. Reviewing and summarizing the materials

Table 2. Characteristics of the Subjects in ACT and Control Groups

Variables	ACT No. (%)	Control No. (%)	P Value
Participants' education level			0.6*
Elementary	1 (5.6)	2 (11.8)	
Junior high school	3 (16.6)	1 (5.8)	
High school diploma	5 (27.8)	6 (35.3)	
Collegiate	9 (50)	8 (47.1)	
Participants' working status			0.3*
Housewife	17 (94.4)	16 (94.1)	
Hired	1 (5.6)	1 (5.9)	
Spouses' Education level			0.6*
Elementary	3 (16.7)	0 (0)	
Junior high school	4 (22.2)	4 (18.8)	
High school diploma	6 (33.3)	6 (37.7)	
Collegiate	5 (27.8)	7 (43.7)	
Spouses' working status			0.5*
Employee	16 (94.1)	16 (94.1)	
Unemployed	2 (5.9)	1 (5.9)	
Location			0.9*
Urban	17 (94.4)	15 (93.8)	
Rural	1 (5.6)	2 (6.2)	
Economic status			0.014*
Good	1 (5.6)	3 (17.6)	
Moderate	9 (50)	11 (64.7)	
Poor	8 (44.4)	3 (17.7)	

ACT, acceptance and commitment therapy.

*Chi-square test.

in the control group significantly differed in the post-test (follow-up). Therefore, according to the results of the study, the first and third hypotheses are rejected while the second one is verified.

Discussion

This clinical trial examined the effect of ACT on the quality of life of infertile women during treatment. Based on our findings, no significant difference was observed between the mean score of the quality of life between the 2 groups before the intervention. However, the results showed that ACT was effective in improving the quality of life and its components in infertile women who were evaluated after one month.

This result is indirectly compatible with the findings of several previous studies (15,16,22) and directly with the results of some other studies (20,21), indicating that ACT was as an effective therapy for reducing infertility-related stressful factors. Other studies also confirmed the effect of ACT. For example, ACT was found to reduce depression in people who were unable to work due to disability or illness (27). Additionally, this type of therapy played a role in reducing depressive symptoms and improving cognitive emotion regulation strategies in depressive students (26). Based on the results of another study, ACT contributed to increasing the quality of life, general health, vitality, and the mental health of infertile women (12).

Similarly, ACT involves cognitive-behavioral problem solving, moment-to-moment awareness of emotions (mindfulness), and the unconditional acceptance of the problem and helps individuals to improve their problem-solving skills. These patients have multiple cognitive

Table 3. Mean Subcategories of the Quality of Life Before and One Month After Intervention Among ACT and Control groups

Quality of Life Categories	Time	Groups		P Value*
		ACT Mean (±SD)	Control Mean (±SD)	
Total FertiQoL	Pretest	53.7 (±8.6)	55.2 (±12.4)	0.6
	Posttest	69.3 (±9.6)	55.1 (±12)	0.001
Mind/body	Pretest	55.1 (±15.8)	66.4 (±17.3)	0.52
	Posttest	79.1 (±16.6)	65.4 (±18.2)	0.02
Emotional	Pretest	40.7 (±15.8)	49.3 (±22.3)	0.1
	Posttest	72.9 (±14.1)	48.5 (±20.8)	0.001
Relational	Pretest	67.6 (±18.7)	66.9 (±13.5)	0.9
	Posttest	83.1 (±13.6)	64 (±11)	0.001
Social	Pretest	61.9 (±17.3)	60.7 (±18.4)	0.8
	Posttest	68.9 (±18.9)	54.7 (±14.4)	0.018
Environment	Pretest	52.5 (±13.3)	48.8 (±16.3)	0.4
	Posttest	58.3 (±11.8)	52.9 (±12)	0.1
Tolerability	Pretest	49.5 (±16.3)	52.5 (±14.8)	0.5
	Posttest	69 (±12.7)	53.2 (±18.2)	0.005

ACT: Acceptance and commitment therapy; SD: Standard deviation; FertiQoL: Fertility quality of life

*Independent sample t test.

distortions and inefficient thoughts, thus the activation of these thoughts makes them focus on themselves, feel worthless and hopeless, and experience low mood, and finally, deteriorates their symptoms. Teaching different methods of challenging by unreasonable thoughts and choosing an appropriate approach to the problem, which is known as “cognitive defusion” in ACT, can affect the quality of the life of infertile couples through affecting these aspects (11)

The physical aspect (i.e., general health, physical role, and bodily pain) is considered as one of the important dimensions of the quality of life. Based on the results of a study, infertile people have problems which are related to the physical dimension (28). As no research has not specifically investigated the effectiveness of ACT in dimensions related to quality of life of infertile couples, it can be generally concluded that in case of effectiveness of these training method for improving physical dimension, infertility and its subsequent stress can cause physiological stress. This stress and pain caused by different types of infertility treatments can create a lot of health problems (20). ACT increases acceptance and reduces cognitive avoidance, leading to reduced infertility, physiological stress, and physical pain (29).

In addition, mental health (i.e., emotional role, vitality, and social functioning) is regarded as another important dimension of the quality of life. The results showed ACT led to an improvement in this dimension among the infertile women in the intervention group as compared to the control group. These results are in line with those of the other studies (30-32), indicating that the third wave of behavioral treatments is effective in reducing the impulsive behaviors which disturb the quality of life such as mood and emotional disorders, anger, and emotional instability. Based on the ACT, increased cognitive defusion and conscious acceptance help women and couples to experience negative interactions and thoughts in a new way and reduce their negative actions. They further learn to struggle with and accept the situations and thoughts that they used to avoid. The clarification of relational values and committed action in the service of these values provide the couples with the chance to act in a way to lead their lives toward satisfaction and relation, reducing individual and physiological stress.

According to the findings of the studies by Peterson and Eifert, as well as Peterson et al, therapeutic strategies based on cognitive-behavioral and patient-centered approach include those psychological interventions which focus on improvements in

- Attributional styles;
- Mindfulness;
- Challenging through unreasonable beliefs;
- Empathy;
- The acceptance of the problem;
- Muscle relaxation;
- Teaching problem-solving skills, meditation,

biofeedback, guided mental imagery, and coping strategies.

The above-mentioned strategies not only decrease the negative emotional consequences of different diseases and disorders but also help to increase the commitment to therapeutic advice (20,21). Therefore, therapists are dealing with infertile couples are recommended to use ACT including mental acceptance, cognitive diffusion, and tracking behaviors guided by values in their future trials in order to reduce these couples suffering.

Conclusions

Overall, the treatment process and the obtained results demonstrated that ACT could be an effective treatment for infertile women. Thus, further extensive studies are required to investigate the differences and similarities of ACT with other therapies on the quality of life and the effect of this approach on the outcome of infertility treatment. Due to time limitations and the lack of access to the clients, the study failed to conduct a longer follow-up and thus there is no information on the stability of effect of ACT in the long run. Despite the efforts of the researchers to remove or control confounding variables about personal differences, psychological characteristics of individuals, behavioral discrepancy among the midwife, gynecologist and other members of the treatment team in visit with infertile women during the intervention, could not be controlled. Based on the findings of this research, ACT was generally effective in the quality of life. Therefore, this type of therapy can be utilized as an effective treatment for solving marital problems in infertility, counseling, and psychotherapy clinics.

Conflict of Interests

Authors declare that they have no conflict of interests.

Ethical Issues

This study was approved by the Ethics Committee of Arak University of Medical Sciences (ethic No. 1395.153). In addition, it was registered in the Iranian Registry of Clinical Trials website (identifier: IRCT2016082129433N1).

Financial Support

Arak University of Medical Sciences (grant No. 1188) provided financial support.

Acknowledgments

We would like to thank the Research Council of Arak University of Medical Sciences for their financial support, as well as all the personnel of Omid Rouyn Infertility Center in Arak, Iran. Special thanks also go to the infertile women who participated in the study and all those who collaborated with the researchers in this study.

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