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The Effectiveness of Acceptance and Commitment Therapy on Depression, Anxiety, and Stress in Nulliparous Pregnant Women

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Abstract

Background: It is necessary to help pregnant women to solve pregnancy problems by identifying the factors affecting depression, anxiety, and stress.

objectives: This study aimed to determine the effectiveness of Acceptance and Commitment Therapy in reducing depression, anxiety, and stress levels among nulliparous pregnant women.

Method: This semi-experimental study was conducted based on a pretest-posttest design with a control group. The statistical population of this study included all pregnant women referred to hospitals in Tehran, Iran, during 2019. In total, 34 eligible volunteers were selected by convenience sampling method and randomly assigned to two groups of Acceptance and Commitment Therapy and control. The experimental group participated in nine 120-min acceptance and commitment therapy sessions. The data were collected using depression, anxiety, and stress questionnaire (Lovibond and Lovibond, 1995). Following that, the obtained data were analyzed in SPSS software (version 22) using repeated measures analysis of variance. A p-value less than 0.05 was considered statistically significant.

Results: The results showed that Acceptance and Commitment Therapy significantly decreased depression (P<0.001), anxiety (P<0.001), and stress (P<0.001) in nulliparous pregnant women.

Conclusion: It can be concluded that Acceptance and Commitment Therapy was effective in reducing depression, anxiety, and stress levels among nulliparous pregnant women. Moreover, it can be used to improve the psychological problems of pregnant women.

Keywords: Acceptance and Commitment Therapy, Anxiety, Depression, Pregnancy

1. Introduction

Pregnancy is a new and unique situation in which every pregnant mother experiences many changes psychologically and physiologically (1). Moreover, pregnancy is somewhat stressful, which can cause mental disorders leading to recurrent attacks, a mental disorder that already exists, or maybe the onset of a new disease (2). Depression and anxiety are among the most common and important complications of pregnancy that have negative effects on the outcome of the pregnancy and growing fetus (3). Depression is a long period of sadness and the bad mood of all human beings at some point in their lives on which they feel depressed and can usually relate the cause of depression to certain events (4). Anxiety is often considered a response to an unpredictable and uncertain disturbing consequence (5). Anxiety states include both physiological (arousal) as well as psychological components (worry) and describe stress as a model of a person's specific and non-specific responses to the stimuli of events that disturb a person's balance as well as excessive pressure that impairs one's ability to cope (6).

The prevalence of postpartum depression in Iran was reported to be 21.3% in a meta-analysis (7). These changes put women at the risk of psychological vulnerability and anxiety experiencing. Intrauterine anxiety and stress lead to premature childbirth and prenatal delivery, which increases the risk of coronary artery disease in adults (8). Pregnancy anxiety is a strong factor in predicting negative birth outcomes. The results of studies on neurological immunology models have shown that stress during pregnancy affects mothers' mental health and fetal development, thereby leading to preterm birth (9). Maternal anxiety and depression during pregnancy and before childbirth are among the most important risk factors for postpartum mood problems (10). It should be mentioned that stress and anxiety have harmful effects on pregnancy and childbirth.

Anxiety stimulates the autonomic nervous system and contraction of smooth muscles of the arteries; moreover, it leads to an abnormal pattern of fetal heart rate, decreases uterine-placental blood flow and oxygen supply to the uterus, and increases the outcome of preterm labor. Anxiety

and stress are associated with experiencing numerous mental health problems, decreasing psychological well-being, and causing numerous problems in life (11). For many women, pregnancy is a period of stress and requires a kind of psychological adjustment to provide maternal and fetal health (12). A study conducted in Sweden showed that the prevalence of mental disorders during pregnancy was 14%, of which the prevalence rates of depression, anxiety, and stress symptoms in pregnancy were 25.3% and 43.3%, respectively (13-16).

Cognitive-Behavioral Therapy seems to be effective in the treatment of various disorders; however, there are doubts about its preventive effects on the reduction of symptoms, such as depression, anxiety, and stress (17). Furthermore, the acceptance of problems is not taken into consideration and remains a problem in this approach. Therefore, it can be said that in this approach, it is not possible to accept problems in people and completely effective preventive effects. This means that negative emotions, unaffected emotion regulation strategies, and concerns remain intact in this technique, and the person does not accept his/her problems, which can affect depression, anxiety, and stress in primed pregnant women. Therefore, another approach (i.e., Acceptance and Commitment Therapy) was also used in this study to make people accept their problems. Acceptance and Commitment Therapy emphasizes inclusive consciousness, along with openness to acceptance (18) (i.e., the person allows thoughts related to the problem to be present in mind without trying to control the thoughts related to the problem).

The main goal of acceptance and commitment-based interventions is to create psychological flexibility (i.e., instead of merely being practical to avoid thoughts, feelings, memories, emotions, or disturbing tendencies, or in fact imposed on the individual, the ability to make practical choices among different options that are more appropriate). In this approach, it is accepted to change the function of thoughts and feelings instead of deformation, content, or frequency (19).

Bonacquisti et al. concluded a study and concluded that Acceptance and Commitment Therapy was effective in depression and mood disorders during pregnancy (20). Moreover, Feyzi et al., in a study entitled "Effectiveness of Acceptance and Commitment Therapy in Anxiety and Depression in Pregnant Women by IVF", showed that acceptance and commitment intervention led to a decrease in anxiety and depression among pregnant women undergoing in vitro fertilization (IVF) treatment (21). Similarly, Brown et al. indicated that acceptance and group commitment therapy was effective in parental psychological stress, psychological flexibility, and self-confidence in managerial behaviors, as well as family adaptation, and the number of disorders in children with bone problems (22).

Therefore, considering the negative consequences and effects of depression, anxiety, and stress, as well as emotional states of pregnant women on fetuses and its long-term effects on negative population growth, it seems necessary to investigate anxiety and depression treatment strategies and their mental health problems. Accordingly, this study aimed to determine the effectiveness of Acceptance and Commitment Therapy in reducing depression, anxiety, and stress levels among nulliparous pregnant women.

2. Methods

This semi-experimental study was conducted based on a pretest-posttest design with a control group. The statistical population of this study included all pregnant women (n=157) referred to Shahid Taleghani, Hedayat, and Amiralmoonin hospitals in Tehran, Iran, during 2019 for birth control. Regarding the sample attrition (10%), 0.40, 0.95, and test power (0.80), 34 pregnant women were selected using the convenience sampling method (23). The inclusion criteria were: 1) gestational age at 25-20 weeks, 2) single fetus, 3) age range between 20 and 35 years, 4) women with primer. On the other hand, the mothers who did not comply with the group rules expressed at the beginning of the intervention and those who were absent in more than two sessions were excluded from the study. Regarding the ethical considerations, all individuals were informed about the research objectives and procedures, as well as voluntary participation in the study in the written form. Moreover, they were assured of the confidentiality and anonymity of their information that would be used just for research.

The pregnant women were randomly divided into two groups of experimental (Acceptance and Commitment Therapy) (n=17) and control (n=17). Before acceptance and commitment-based intervention, a depression, anxiety, and stress scale (24) was used to measure the depression, anxiety, and stress levels of both groups (pretest). Subsequently, the experimental group was requested to participate in nine 120-min Acceptance and Commitment Therapy sessions. After completion of the intervention, depression, anxiety, and stress levels of both groups were measured again at the posttest stage.

Depression, anxiety, and stress scale:

This 21-item scale was developed by Lovibond and Lovibond in 1995 to measure depression, anxiety, and stress (24). In total, seven items in this tool seek information to measure each symptom of depression, anxiety, and stress. The items are rated on a four-point Likert scale of "no", "low", "high", and "very many options". The lowest and highest scores for each item are 0 and 3 indicating the lowest and highest levels of depression, anxiety, and stress, respectively. Therefore, "at all" and "too high" options, the lowest and highest scores are considered, respectively. In order to evaluate the psychometric properties of this scale, Lovibond and Lovibond (24) performed it on a non-clinical sample of 2,914 people. Cronbach's alpha values for depression, anxiety, and stress subscales were obtained at 0.84, 0.84, and 0.91, respectively (24). The validity and reliability of this questionnaire in Iran have been assessed by Salehpour et al., who estimated the test-resentment validity of depression, anxiety, and stress scales at 0.81, 0.74, and 0.78, respectively (25). In the present study, the reliability values of depression, anxiety, and stress subscales were determined at 0.79, 0.76, and 0.78, respectively, using Cronbach's alpha.

The experimental group participated in eight 120-min Acceptance and Commitment Therapy sessions once a

week for two months based on Hayes' training package. The validity of this protocol has been confirmed by its creators and obtained a high face and content validity (26).

The obtained data were analyzed in SPSS software (version 22) using mean±SD and repeated measures analysis of variance (ANOVA). It is worth noting that Levene's test (to investigate the homogeneity of variances), Kolmogorov-Smirnov test (for normal distribution of data), Mbox test, and Mauchly's sphericity test were used in order to investigate the assumptions of the inferential test. Analysis of variance was also used to compare the three groups in terms of age. A p-value less than 0.05 was considered statistically significant.

Table 1. Acceptance and Commitment Therapy Content

Sessions	Content
1	Establishing therapeutic relationships; Familiarizing people with the subject of research; Responding to questionnaires; 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 and receiving feedback; Providing assignment
4	Explaining about avoiding painful experiences and awareness of its consequences; Teaching acceptance steps; Changing language concepts using allegory; Teaching relaxation; Receiving feedback; Providing assignment
5	Introducing a 3D behavioral model to express the common relationship among behavior/emotions, psychological functions, and visible behavior; Discussing efforts to change behavior based on it; Receiving feedback; Providing assignments
6	Explaining the concepts of role and context; Observing oneself as a context; Establishing self-contact using metaphors, awareness of different sensory perceptions, and separation from feelings that are part of subjective content
7	Explaining the concept of values; Motivating them to change and empower references for a better life; Practicing concentration; Receiving feedback; Providing assignments; Training commitment to action; Identifying behavioral plans in accordance with values; Making commitments to act on them
8	Summing up meetings; Performing posttest; Preventing relapse

3. Results

The mean±SD ages of the experimental (Acceptance and Commitment Therapy) and control groups were 31.03±7.38 and 31.81±7.81 years, respectively. Accordingly, there was no significant difference between the two groups in terms of age (P=0.348). Moreover, the age ranges of the experimental and control groups were obtained at 22-34 and 20-34 years, respectively. Table 2 tabulates the descriptive indicators (mean±SD) of depression, anxiety, and stress scores in the experimental and control groups at pretest, posttest, and follow-up stages.

Before administering repeated measure ANOVA, the

Table 2. Mean±SD of depression, anxiety, and stress scores of both groups at pretest, posttest, and follow-up

Variables		Pretest		Posttest		Follow-up	
	Group	M	SD	M	SD	M	SD
Depression	ACT	13.55	2.18	7.30	1.68	7.65	1.34
	Control	14.5	2.92	15.05	3.11	15	2.88
Anxiety	Act	12.80	2.19	6.00	1.23	6.30	1.26
	Control	11.55	1.93	11.90	1.71	12.35	1.89
Stress	ACT	17.30	3.71	10.30	2.13	10.20	1.73
	Control	16.40	3.37	16.75	2.97	16.80	2.41

Table 3. Analysis of repeated measures to investigate the effect of time and group on depression, anxiety, and stress

Variable	Source effect		F	P	Eta
Depression	Within subject	Time	11.47	0.001	0.22
		Time*Group	42.06	0.001	0.65
	Between Group	Group	40.30	0.001	0.64
Anxiety	Within subject	Time	8.82	0.001	0.21
		Time*Group	93.65	0.001	0.80
	Between Group	Group	5.59	0.001	0.17
Stress	Within subject	Time	94.12	0.001	0.69
		Time*Group	46.88	0.001	0.69
	Between Group	Group	6.15	0.005	0.22

results of the Mbox and Levene's tests were evaluated for observing the assumptions. Since the Mbox test was not significant for any of the variables, the homogeneity of variance-covariance matrices was not rejected. Moreover, no significant difference of any of the variables in Levene's test showed that the assumption of parity of inter-group variances was not rejected in the study. Finally, the results of Mauchly's sphericity test showed that this test was also significant for the research variables, and therefore, the assumption of variance parity within the subjects (assuming sphericity) was not observed in this study (P<0.001). Therefore, the Greenhouse Geisser test was used to investigate the results of the univariate test for intra-group effects and interactions. Furthermore, the Greenhouse Geisser test with a value of 0.86 (P<0.001) showed a significant difference between the effectiveness of Cognitive-Behavioral Therapy and Acceptance and Commitment Therapy in reducing depression, anxiety, and stress levels among the experimental and control groups at the significant level of 0.05.

As can be observed in Table 3, the analysis of variance of depression variable was significant for the effect of time (P<0.001) and group (P<0.001). Moreover, the size of the effect of a group intervention for depression was obtained at 0.64. Analysis of variance of anxiety variable was also significant for the effect of time (P>0.001) and group (P<0.001). In addition, the size of the group intervention for anxiety was estimated at 0.17. Similarly, analysis of variance of stress variable was significant for the effect of time (P<0.001) and group (P<0.001), and the effect size of a group intervention for stress was determined at 0.22. Accordingly, a significant difference was observed between the experimental and control groups during the study stages in terms of depression, anxiety, and stress, indicating the effect of the intervention. The results also showed that the effectiveness of Acceptance and Commitment Therapy at the follow-up stage was persistent for all three variables of depression, anxiety, and stress.

4. Discussion

This study aimed to determine the effectiveness of Acceptance and Commitment Therapy in reducing depression, anxiety, and stress levels among nulliparous pregnant women. According to the results, Acceptance and Commitment Therapy was effective in reducing depression, anxiety, and stress among primed pregnant women. The results of this study were in line with the findings of a study conducted by Bonacquisti et al. (21), who concluded that Acceptance and Commitment Therapy was effective in depression and mood disorders during pregnancy.

In explaining this finding, it can be said that the prevalence of depression is one of the most common and important complications of pregnancy that has negative effects on the outcome of the pregnancy and growing fetus (2). In various studies, it has been reported that untreated depression during pregnancy will lead to negative consequences on fetal development (3). On the other hand, antidepressant consumption during pregnancy also has worse consequences on fetal development (13). Therefore, treatment of depression in pregnancy by psychological interventions is the most appropriate treatment. One of these treatments is Cognitive-Behavioral Therapy as well as Acceptance and Commitment Therapy. Third-wave psychology emphasizes pervasive consciousness, along with openness to acceptance. Pregnant women were encouraged to allow thoughts related to the disease to be present in their minds without trying to control thoughts related to the disease. When these experiences (i.e., thoughts and feelings) were observed with openness and acceptance, even the most painful experiences seemed less threatening and tolerable, thereby reducing uncentered controls.

Pregnant women learned that any action to avoid or control these unwanted mental experiences was ineffective or had an inverse effect; therefore, they accepted the experiences completely without any reaction to remove them. The experienced avoidance of depressed people from their thoughts, experiences, feelings, and memories creates a traumatic process, which is why one of the goals of interventions in this study is to change the initial avoidance patterns. Experienced avoidance is functionally defined as attempts to avoid or evade fusion with depressing thoughts and feelings. The component of acceptance in the acceptance and commitment-based approach made it possible for mothers to feel their inner experiences without trying to control them, which made them less threatening. Moreover, in these treatment programs, pregnant women learned to experience their thoughts and feelings instead of trying to stop them; additionally, they link them with their set of defined goals and value system and try to be in constant contact with them and adjust their lives accordingly (3).

According to the results of this study, Acceptance and Commitment Therapy was more effective in reducing anxiety in primer pregnant women. Furthermore, this therapy led to a reduction in anxiety and depression among pregnant women undergoing IVF (16).

In explaining the effectiveness of Acceptance and Commitment Therapy in reducing anxiety levels among pregnant women, it can be said that pregnancy alone is a predisposing factor for anxiety; therefore, it seems that pregnancy increases the risk of anxiety. Furthermore, persistent anxiety during pregnancy may cause miscarriage, preterm labor, hypertension, changes in heart rate pattern and fetal movements, as well as adverse neonatal outcomes, such as low birth weight, prematurity, and intrauterine growth delay (12). It also seems that being aware of the present without using the judgment lens helps mothers to interact better with pregnancy, which results in better emotional regulation and coping strategies, thereby promoting pregnancy (14). Mothers who participated actively in cognitive-behavioral exercises along with fault and acceptance techniques, as well as detailed discussions about values and goals, all experienced a decrease in anxiety.

The obtainment of the training techniques related to reforming cognitive processes, an increase in the tolerance level, attention to the value systems, and selection of an approach to dealing with problems are considered in the Acceptance and Commitment Therapy that could affect the reduction and management of anxiety in pregnant women during a proper process. In addition, value clari-

fication and persistence to act in the path of these values allow expectant mothers to act in a way that can further reduce individual anxiety (11).

Regarding the limitations of this study, one can refer to time constraints and lack of access to the participants at follow-up. It is suggested that more controlled studies be conducted on the effectiveness of Acceptance and Commitment Therapy regarding other variables, such as depression, anxiety, and stress. Further studies are also recommended to investigate the effect of Acceptance and Commitment Therapy on the physical and mental health of pregnant women during pregnancy. Postpartum depression as a family and social problem has a relatively high prevalence. Moreover, the need for social, family, and emotional support of women has increased following more responsibilities due to the birth of the child. Therefore, the use of these pains in educational planning of hospitals can help to improve postpartum depression and its complications.

5. Conclusion

Based on the findings of this study, it can be said that Acceptance and Commitment Therapy was effective in reducing depression, anxiety, and stress levels among nulliparous pregnant women. Moreover, Acceptance and Commitment Therapy can be used to reduce psychological problems in pregnant women.

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