

ORIGINAL RESEARCH**The effectiveness of emotion regulation group training in reducing depression, anxiety, and stress symptoms in women during pregnancy**Samira Ameli¹, Maryam Aslzaker², Saghar Salehpour³, Mahdi Jafari^{4*}

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Abstract

Background: Pregnancy and childbirth is a natural function but it is also a stressful and critical period that increases women's vulnerability to psychological problems and also increases the mental health problems of the woman and her fetus, so they need interventions to improve maternal health during this time. This study investigated the effectiveness of emotion regulation group training in reducing depression, anxiety, and stress symptoms in women during pregnancy and postpartum.

Materials and Methods: This quasi-experimental study had a pre-test, post-test and follow-up (2 months follow after delivery). The study population consisted of 31 pregnant women who were randomly divided into intervention (n = 15) and control (n = 16) groups. The Depression, Anxiety and Stress Questionnaire (DASS-21) was used in this study. Eight sessions of emotion regulation group training were administered to the intervention group and the control group received information about pregnancy and childbirth during 4 sessions. After intervention and also two months after delivery, the questionnaires were completed again. The results of the scales were analyzed by SPSS software using repeated measures analysis of variance.

Results: The data analysis showed that depression, anxiety and stress in the intervention group are decreasing from pre-test to post-test and follow-up significantly more than control group.

Conclusion: According to the results of this study, emotion regulation group training can be effective in reducing of depression, anxiety and stress symptoms in pregnant women.

Keywords: Emotion regulation group training, Depression, Anxiety, Stress, Pregnant women

Introduction

Pregnancy and childbirth are a natural occurrence in the women life cycle. Although pregnancy is a normal function, it is also considered to be a stressful experience (Kugu & Akyuz, 2001) and a critical period when mental health problems can be appeared (Seng, D'andrea, & Ford, 2014). During pregnancy, women become more vulnerable to various physical and psychological problems and difficulties (Karami, Mardani, ShakeriNejad, & Saki, 2015). Some of the disorders that may occur during pregnancy are: Neurosis, Depression, Anxiety, Obsessive-compulsive disorder (Foruzande, 2000), Post traumatic stress disorder (Dikmen-Yildiz, Ayers, & Phillips, 2017), Fear of delivery, sleep problems and fatigue (Hall et al., 2009). Depression is a serious problem which is associated with an increase in mortality rates. Earlier studies indicated that suicide rates in people with depression increase by 15% (Toosi, Akbarzadeh, Zare, & Sharif, 2011). Depression is a common disorder in pregnancy and afflicts 8.5 to 11 percent of women (Melville, Gavin, Guo, Fan, & Katon, 2010). Verreault et al. (2014) revealed the rate of depression during pregnancy as 28.3% and in the 4 months after delivery as 16.4%, and also established that depressed mood is associated with history of emotional problems (anxiety and depression), high sensitivity to anxiety and experiencing stressful events (Verreault et al., 2014). Agampodi et al. (2013) investigated the prevalence of prenatal depression as 16.2%, and self-harm in pregnant women as 9.9% (Agampodi & Agampodi, 2013). Approximately 3 to 6 percent of women experience major depression during pregnancy or within a few weeks or months after childbirth (Halbreich & Karkun, 2006). The prevalence of postpartum depression varies from 16% to 31% (Parsons, Young, Rochat, Kringelbach, & Stein, 2012) And almost 50% of the postpartum major depression periods actually begin before delivery (Association, 2013). Another disorders which may happen during pregnancy are anxiety disorders that are defined as predicating the future threats (Pallarés, Bernasconi, Feleder, & Cutrera, 2007). Anxiety disorders are important in pregnancy because more than 50% of pregnant women have some degree of anxiety (Avni-

Barron & Wiegartz, 2011). The rate of anxiety in women who are at risk is 18.95% (Halbreich & Karkun, 2006). Some factors that increase anxiety in pregnant women are fear of pain, previous experience of delivery, psychosocial problems, previous events (such as sexual abuse) and Inability to predict the delivery process (Otley, 2011). Frequency and severity of anxiety are related to woman's perception of stressors and her ability to cope with anxiety (Guszkowska, Langwald, Zaremba, & Dudziak, 2014). Anxiety during pregnancy is more associated with childbirth fear, fear of having a disabled child, and concerns about apparent changing due to pregnancy (Huizink, Mulder, de Medina, Visser, & Buitelaar, 2004).

Also, there is an increasing evidence that the maternal stress of the pregnant mother's effects negatively on the fetus, including spontaneous abortion, Low fetal weight, changes in the hypothalamus-pituitary axis, suppression of the immune system (Couret, Jamin, Kuntz-Simon, Prunier, & Merlot, 2009), increased levels of stress hormones, chronic blood pressure (McCubbin, 2009), struggling with delayed walking and speaking (Pallarés et al., 2007), learning and memory deficits, sleep disorders and also increased emotional responses (Kohman, Tarr, Day, McLinden, & Boehm, 2008). Patel et al. (2004) also found that postpartum depression is related to emotional, cognitive and behavioral problems of children (Patel, Rahman, Jacob, & Hughes, 2004). On the other hand, research shows that the emotional state of the mother and the unborn baby are highly interconnected before birth (Ham Jr & Klimo, 2000).

And mothers' poor mental health can have harmful effects on the health and development of children (Patel et al., 2004). So it seems that the promotion of mental health of pregnant women is one of the priorities of public health. Emotion regulation is one of the important factors that influences the mental health and successful social interaction and also is one of the important interventions to help people manage stress and environmental tensions and choose appropriate coping strategies for responding to environmental problems (Gross & Jazaieri, 2014).

Research indicates that emotional regulation group training has a positive effect on ameliorate emotional problems, reducing self-

harm, and anxiety symptoms (Gratz & Gunderson, 2006). Since pregnant women are prone to have various emotional problems in coping with stressors (Bales et al., 2015), and the rate of depression and anxiety in pregnant women is about three times more likely than other women (Kingston et al., 2015), mental interventions like emotional regulation training can possibly reduce this vulnerability and promote mental health for these individuals. Therefore, the current study aims to investigate the effectiveness of emotion regulation group training in reducing depression, anxiety and stress symptoms in women during pregnancy and postpartum.

Materials and Methods

Participants were 39 pregnant women who were in their 12-25th week of pregnancy in the obstetrics and gynecology department of Ayatollah Taleghani hospital of Tehran. Women were selected by convenience sampling method and randomly divided into intervention and control groups. Finally, after missing some participants due to move to other cities, becoming illness and abortion, 15 women were in intervention group and 16 women selected as control group. Participants ranged from 18 to 35 years of age, most of them reported received high school diploma or higher education, 65% of participants were homemaker and most of them had pregnancy experience before.

Demographical Questionnaire

Questionnaire of demographic characteristics including age, birth order (number of previous pregnancies), duration of pregnancy, gender of fetus, type of previous delivery, level of education, employment status, number of children, medical or psychiatric illness history.

Depression, Anxiety and Stress Scales

The questionnaire consists of 21 expressions related to symptoms of negative affection (depression, anxiety, and stress). The depression subscale includes unhappiness, lack of self-esteem, hopelessness, the worthlessness of life, lack of enjoyment of life, and lack of energy and power. Anxiety subscale contains attempt to assess physiological arousal, fears, and situational anxiety, and the stress subscales include difficulty in achieving relaxation, nervous tension, irritability, and restlessness (Osman et al., 2012). The validity

and reliability of this scale have been studied by Asghari Moghaddam et al. in nonclinical samples and according to that, this scale has the necessary conditions for use in psychological research with Iranian people (Ali, Fouad, Parvin, & Jafar).

The present study is a quasi-experimental study with control group, random assignment and also pre-test, post-test and 2 months after childbirth follow-up. In this study, emotion regulation group training was considered as an independent variable and its effect on depression, anxiety and stress of pregnant women was investigated as dependent variables. All participants received all the information of the research by the researcher. Then, an informed consent was obtained from all individual participants. Participants were randomly assigned to the intervention group which participated in emotion regulation group training sessions for 8 weeks (one session each week) in accordance with Gross Emotion Regulation Protocol and control group which received information about pregnancy and childbirth during 4 sessions. The sessions' contents are summarized in the table below.

Table 1. The contents of Gross Emotion Regulation Protocol's sessions

First session	The participants were introduced to each other. Meeting the participants and stating the framework and rules. Focus on emotional events and recording them.
Second session	Familiarizing with advanced skills of distress tolerance. Having a group discussion on emotional events that happened last week. Record an emotional event, identify the type of skills applied, and exercise conscious breathing. Teaching the fundamental skills of awareness to experience in the present with greater awareness.
Third session	Doing focus exercises, practicing their experiences, describing feelings, and practicing conscious attention. Recording turbulent emotions and the appropriate strategy to encounter them. Teaching advanced skills of conscious attention: becoming familiar with the negative judgments and control them.
Fourth session	Practicing negative judgments, providing a record of thoughts to initiate conscious attention in daily life. Practicing conscious attention and recording the outcome. Exploring conscious attention: these skills are to complement the previous trainings.
Fifth session	Improving the mindfulness skills with compassion, retaining affection toward self and others, meditation activity to achieve peace and quiet. Use one of the above-mentioned exercises to encounter turbulent emotions, and take note of one of them to be discussed in the next session. Emotion: what is it and how does it act?
Sixth session	Recognition and recording of emotions, identifying self-detracting behaviors, lowering. Recording the emotions and multiple dimensions (triggering events, physical changes, facial expressions, and the desire for action). Conscious attention to emotions without judging, dealing with emotions, taking action against the intense emotional desires, planning counteracting, and problem solving.
Seventh session	Reduce the physical vulnerability, recording positive events, and observing and accepting emotions and coping with them.
Eighth Session	Identifying what you want and practicing communication styles. Exercise: adjusting demands, propounding a simple request, composing resourceful drafts, keen listening, and practicing saying no.

Results

The results of group emotion regulation training on depression, anxiety, and stress were assessed using factor analysis of variance (ANOVA) with repeated measures. The assumption of normal distribution of data due to low sample size was tested using Shapiro-Wilk test. The results revealed that in both groups, depression, anxiety and stress had normal distribution and assumption of normality was made.

Descriptive indices of depression, anxiety and stress for groups showed that the mean of depression scores decreased from pre-test to

post-test and follow-up, while mean of depression scores in control group increased slightly. Anxiety and stress scores also decreased from pre-test to post-test and follow-up but no significant change was observed in the control group. In the intervention group, the scores of anxiety and stress decreased more than depression scores (Table 1).

Table 2. The mean of intervention and control groups in the three measurement stages

Variable	Intervention M (SD)			Control M (SD)		
	Pre-test	Post-test	Follow-up	Pre-test	Post-test	Follow-up
Depression	14.13(5.68)	10.13(3.66)	7.73(3.84)	13.38(4.18)	15.0(5.51)	16.36(3.74)
Anxiety	14.13(4.69)	10.13(5.26)	7.47(3.74)	12.13(3.90)	15.75(5.16)	11.25(3.99)
Stress	26.93(3.69)	21.73(5.50)	17.33(5.11)	24.13(4.65)	28.88(4.13)	22.13(3.96)

The Mokhli statistic of depression ($p = 0.63$), anxiety ($p = 0.22$) and stress ($p = 0.08$) confirmed Bartlett's sphericity hypothesis. The results of the variance homogeneity test (Levin) revealed no significant difference between the two groups in depression, anxiety, and stress in the three measurements. This means that the assumption of homogeneity of variance was made.

The results of multivariate analysis of variance between the two groups on depression, anxiety, and stress revealed that the Intergroup effect (time) with value of 0.51 and The group \times time interaction effect with value of 0.52 were significant which means that the mean of depression, anxiety, and stress scores have changed (from pre-test to Post-test and follow-up) and changes occurred more at least in one group and in one of the components.

Then, the results of the univariate analysis of variance were analyzed which showed that the intragroup effect (both groups) on depression, anxiety, and stress was significant. In addition, the intergroup effect (time) was significant only on anxiety and stress. There was also a significant group \times time interaction effect on depression, anxiety and stress (Table 3).

Table 3. Multivariate Analysis of Variance with Repeated Measurement in Depression, Anxiety and Stress

Source of effect	Variable	F	P	η^2
Intergroup effect	Depression	14.17	0.001	0.33
	Anxiety	5.01	0.03	0.15
	Stress	9.31	0.001	0.24
Intra-subject effect	Depression	1.49	0.23	0.05
	Anxiety	8.62	0.001	0.23
	Stress	17.23	0.001	0.37
The effect of group \times time interaction	Depression	10.97	0.001	0.27
	Anxiety	7.56	0.001	0.21
	Stress	10.79	0.001	0.27

The group \times time interaction effect was significant on the depression from pre-test to follow-up, and on anxiety component from pre-test to post-test and pre-test to follow-up and also on the stress component from pre-test to post-test and pre-test to follow-up. This means that depression, anxiety and stress in the intervention group decreased over time more compared to the control group (Table 4).

Table 4. The groups' time interaction effect in pre-test, post-test and follow-up between two groups

Variables	Post-test with pre-test		Follow-up with post-test		Follow-up with pre-test	
	F (P)	η^2	F (P)	η^2	F (P)	η^2
Depression	6.77 (0.01)	0.19	4.17 (0.05)	0.13	21.34 (0.001)	0.42
Anxiety	10.65 (0.001)	0.27	0.85 (0.36)	0.03	10.62 (0.001)	0.27
Stress	15.13 (0.001)	0.34	1.80 (0.19)	0.06	10.65 (0.001)	0.27

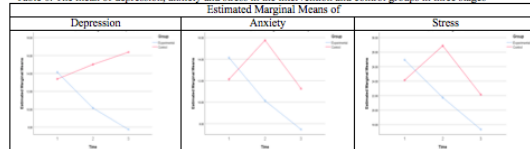
Simple intra-group effects were followed in three measurement steps. Results revealed that in the intervention group, scores of depression, anxiety and stress from pre-test to post-test, post-test to follow-up and pre-test to follow-up were significantly different. In the control group, there was no significant difference in depression scores from pre-test to post-test and post-test to follow-up but there was a significant difference from pre-test to follow-up. There was also a significant difference in anxiety and stress scores in the control group from pre-test to post-test and post-test to follow-up, but there was no significant change from pre-test to follow-up.

Table 5. Post hoc test results of simple effect in each group on Depression, Anxiety and Stress

Groups	Variables	Post-test with pre-test		Follow-up with post-test		Follow-up with pre-test	
		F (P)	η^2	F (P)	η^2	F (P)	η^2
Intervention group	Depression	8.75 (0.01)	0.38	6.25 (0.03)	0.31	17.01 (0.001)	0.55
	Anxiety	6.67 (0.02)	0.32	5.54 (0.03)	0.28	34.65 (0.001)	0.71
	Stress	9.89 (0.01)	0.41	14.04 (0.001)	0.50	49.17 (0.001)	0.78
Control group	Depression	0.95 (0.34)	0.06	0.79 (0.39)	0.05	5.09 (0.04)	0.25
	Anxiety	4.37 (0.05)	0.23	7.84 (0.01)	0.34	0.42 (0.53)	0.03
	Stress	6.05 (0.03)	0.29	27.41 (0.001)	0.65	1.17 (0.30)	0.07

As can be seen in Table 6, the mean of depression scores in control group in the pre-test to post-test and follow-up are mildly increasing, whereas the depression scores in the pre-test to post-test and follow-up in intervention group are decreasing. Anxiety scores in the control group are also increased from pre-test to post-test and decreased from post-test to follow-up. But anxiety scores in the intervention group decreased from pre-test to post-test and follow-up. Also, stress scores in the control group are increased from pre-test to post-test and decreased from post-test to follow-up, but in the intervention group are decreased from pre-test to post-test and follow-up.

Table 6. The mean of depression, anxiety and stress in the intervention and control groups in three stages



Discussion

In the present study, "The effectiveness of emotion regulation group training in reducing depression, stress and anxiety symptoms in women during pregnancy" was investigated and the results revealed that the implemented training protocol was able to significantly reduce the symptoms of depression in women during pregnancy and prevent a relative

increase in the severity of symptoms of depression after childbirth (Austin et al., 2008).

Evidence from similar intervention research indicates that emotion regulation group training leave a significant positive effect on mental health components, especially depression (kamali, Vaghee, Asgharipour, & Behnam vashani, 2016). Mennin et al. (Mennin, Fresco, Ritter, & Heimberg, 2015) also reported that emotion regulation training can significantly reduce the symptoms of depressive disorder.

In contrast, other studies (e.g. Berking et al.) that have examined the effectiveness of emotion-based training on depressive disorder reported conflicting results with the present study (Berking, Ebert, Cuijpers, & Hofmann, 2013). However, these studies have focused more on negative symptoms. By examining the long-term effects of emotion regulation deficits on depressive symptoms, can be understood that emotion regulation deficits may increase depressive symptoms' severity, so enhancing emotion regulation skills can prevent increasing the depressive symptoms' severity and also decrease the symptoms (Berking, Wirtz, Svaldi, & Hofmann, 2014). Emotion regulation group training as a protocol-based intervention can reduce symptoms of depression during pregnancy and postpartum by regulating the emotions and reducing emotional maladjustment. Being aware of negative and positive emotions regardless of judgment of good or bad, and accept them through emotion regulation training, reduce the likelihood of occurrence and repetition of negative thoughts. In emotion regulation exercises, by continually repeating the exercises and raising awareness by validating and not avoiding the emotions, one can have greater automatic control over the emotional, behavioral, and physiological consequences of their emotions. It also does not take specific negative feedback from the environment and can re-appraise negative thoughts and choose a more appropriate strategy for dealing with stressful situations.

The training program has been able to significantly reduce the symptoms of anxiety in women during pregnancy and prevent the increase of anxiety symptoms in the postpartum period (Austin et al., 2008). The

results indicated that due to the critical conditions of pregnancy, anxiety has increased significantly in the control group, but in the intervention group there has been a relative decrease in anxiety, which represents the acceptable efficacy of emotion regulation group training during pregnancy and postpartum. Wirts et al. investigated the relationship between emotion regulation and anxiety symptoms and reported that emotion regulation skills training by reducing negative emotions can predict the severity of anxiety disorder symptoms (Wirtz, Hofmann, Riper, & Berking, 2014).

Avoidance is one of the emotion regulation strategies that is found in most anxiety disorders (Mehrabi A, 2015). Applying this strategy is problematic because repeated avoidance of safe (not dangerous) situations causes abnormal fear to continue and a negative effect on psychosocial functioning. This strategy may be effective in the short term, but in the long term prevents the habituation and normal fear decreasing. In the present study, the amount of emotional vulnerability and emotional skills was assessed, which included the following three components: 1) self-assessment aimed at identifying one's own emotional experiences 2) self-assessment aimed at identifying one's own emotional vulnerability 3) self-assessment aiming to identify your regulating Strategies. After thoroughly evaluating emotional vulnerability and emotional skills, one learns that avoidance and withdrawal are not always adaptable and may be useful in the short term but can lead to negative emotions in the long term. Avoiding anxious situations is one of the maladaptive coping strategies that is most prevalent in anxiety and depression. As people become aware of this defective process, and consequently, the reduction in the use of avoidant coping strategies, the amount of experienced stress and anxiety by the individual also decreases.

The implemented emotion regulation training program has been able to significantly reduce women's stress symptoms during pregnancy and prevent the increase and relapse of stress symptoms after childbirth. The results of stress symptoms in both intervention and control groups represented that the stress symptoms in the control group is almost constant. Whereas

with fluctuations and changes in pregnancy, the intervention group's stress symptoms significantly decreased from pre-test to postpartum (follow-up).

The results of the present study are consistent with similar studies on the effectiveness of emotion regulation intervention (Dunn, Hanieh, Roberts, & Powrie, 2012; Nesayan, Hosseini, & Asadi Gandomani, 2017; Sherwen, Scoloveno, & Weingarten, 1995; Sobhi-Gharamaleki, Porzoor, Aghajani, & Narimani, 2015).

By training emotion regulation and effective emotion regulation strategies, pregnant women have been able to recognize emotions and situations, naming the emotions, validating them and react to them effectively instead of avoiding or having impulsive reactions to emotional experience. In fact, pregnant women through emotion regulation exercises, experience this level of awareness of what their experiences, thoughts, reactions and emotions are in a particular situation. When one does not have ineffective reactions to the stressful situations, can better identify the emotions, anticipate possible reactions, and exhibits the most appropriate response to

situations. For example, women during pregnancy have many concerns about their fetal health, the future of pregnancy, the delivery process, and their physical health, and also usually experience a great deal of confusion and arousal that results in explosive reactions. Through recognizing her own emotions and Verbal expression of emotions and sharing them with others, she can respond more effectively to this anxious and stressful situation. In consequence, she will receive more social and effective support from her family and friends. This woman stops physiological feedback to her dysfunctional thoughts by accepting the current situation and muscle relaxation and identifying ineffective strategies. Therefore, emotion regulation training, which focuses on emotional cognition and acceptance, can reduce depression, anxiety and stress symptoms by reducing impulses and ineffective strategies.

Conflict of interest

Authors declare no conflict of interest.

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