

The Effect of Counseling based on Acceptance and Commitment therapy on the Anxiety of Pregnant Women with Gestational Hypertension

Samaneh Khazaei Fadafan (MSc)¹, Nahid Jahani Shoorab (PhD)^{2*}, Zhaleh Feyzi (PhD)³, Saeed Akhlaghi (PhD)⁴

¹MSc of Counseling in Midwifery, Nursing and Midwifery Care Research Centre. Mashhad University of Medical Sciences, Mashhad, Iran

²Assistant Professor, Nursing and Midwifery Care Research Centre. Mashhad University of Medical Sciences, Mashhad, Iran

³Associate Professor, Psychiatric and Behavioral Sciences Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

⁴Assistant Professor, Social Determinant of Health Research Centre, Mashhad University of Medical Sciences, Mashhad, Iran

ARTICLE INFO	ABSTRACT
Article type: Original article	Background & aim: Pregnant women with gestational hypertension experience higher level of anxiety during pregnancy. Managing pregnancy anxiety is of particular importance in order to control and manage blood pressure and its related complications. This study was designed to evaluate the effect of counseling based on acceptance and commitment therapy on the anxiety of pregnant women with gestational hypertension.
Article History: Received: 24-May-2022 Accepted: 05-Nov-2022	Methods: This randomized clinical trial was conducted in 2021 on 58 pregnant women referring to 5 healthcare centers in Mashhad, Iran. Pregnant women with gestational age of 24-26 weeks with non-severe preeclampsia and gestational hypertension were selected by convenience sampling and then through permutation blocks were randomly placed into two intervention and control groups. Intervention group received 8 group counseling sessions and control group only received the usual pregnancy care. Van den Bergh's Pregnancy-Related Anxiety Questionnaire was completed before, immediately and one month after counseling in both groups. Data were analyzed by SPSS (version 25) using independent t test, Mann-Whitney and analysis of variance with repeated measures.
Key words: Acceptance and Commitment Counseling Group Counseling Pregnancy Anxiety Gestational Hypertension	Results: No significant difference was found between the two groups in terms of pregnancy anxiety before intervention (182.7±59.2 vs. 202.0±62.2), Immediately (186.3±57.9 vs. 152.3±44.6) and one month after the intervention (190.6±58.3 vs. 154.1±45.5), the mean pregnancy anxiety score significantly reduced in the intervention group compared to the control group (P=0.015, P=0.011). Conclusion: Counseling based on acceptance and commitment therapy is effective on the anxiety of pregnant women with gestational hypertension. It is therefore recommended to use this counseling approach in delivering pregnancy care to this vulnerable population.

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Introduction

Blood pressure disorders including pre-eclampsia, gestational hypertension and chronic hypertension occur in 10% of pregnancies, and along with bleeding and infection, it is one of the common causes of maternal mortality and fetal

complications (1). In developed countries, 16% of maternal deaths are caused by gestational hypertension during pregnancy (2-3). The prevalence of blood pressure disorders during pregnancy in America (2021) was reported as

* *Corresponding author*; Nahid Jahani Shoorab, Assistant Professor, Nursing and Midwifery Care Research Centre. Mashhad University of Medical Sciences, Mashhad, Iran. Tel: 00989153165194; Email: jahanishn@mums.ac.ir



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13.8% (2) and in Zabol (2018) as 6.5% (3). Some complications of blood pressure disorders during pregnancy include increased rate of fetal and neonatal mortality, preterm delivery, low birth weight, intrauterine growth restriction (1), placental abruption (4), increased cesarean delivery, heart failure, kidney failure, thromboembolism, and maternal death (5).

Hypertension and preeclampsia are serious complications during pregnancy that not only affect the physical health of mother and fetus, but also have consequences for the psychological health of mother such as anxiety. There are many factors and stresses during pregnancy that make mother susceptible to psychological disorders such as anxiety (1). There are strong pathophysiological findings regarding the correlation of anxiety as an important mechanism for the relationship between psychological-psychiatric diseases and unwanted pregnancy outcomes, including preeclampsia. In this regard, several studies reported changes in the plasma levels of cortisol, beta-endorphin-releasing hormones, corticotrophin, and serotonin concentration in pregnant women gestational hypertension and anxiety (4).

First pregnancy, old age, obesity, diabetes, and history of high blood pressure (1) are among the important risk factors of gestational hypertension. Positive human immunodeficiency virus serum (1), male gender of fetus (6), sleep disorders in mother (7), and low physical activity of mother in early pregnancy are other less important risk factors (9). Chronic hypertension which existed before pregnancy is a group of blood pressure disorders during pregnancy. Another group is hypertension caused by pregnancy which appears during pregnancy. Gestational hypertension (increased blood pressure without proteinuria) and preeclampsia (high blood pressure with proteinuria and organ damage) are two major groups of this category (1,10).

Pregnancy blood pressure disorders are associated with pregnancy anxiety because they affect all body systems and there is need for long-term hospitalization for diagnosis, treatment or follow-up of patients, as well as the possibility of unpredictable and uncontrollable events such as premature birth and fetal

complications which are subsequently associated with unexpected medical interventions. In addition, sometimes the fear of death leads to extreme anxiety and fear in mothers (10). Pregnancy anxiety refers to the presence of a negative feeling in a pregnant woman due to physical and mental problems caused by pregnancy, fear of childbirth, concern about her health and the baby, fear of changes in her body image or relationship with husband (12). The prevalence of pregnancy anxiety in the first trimester varies from 24.6% to 2.18% in the third trimester (11).

Studies have reported different prevalence of anxiety. For example, the prevalence of pregnancy anxiety is reported to be 22% (13) in Sweden, 29% (14) in Bangladesh, 20.4% (15) in Pakistan, and 26.6% in Iran (16). Unintended pregnancy, suffering from medical diseases, women's understanding of the risks of pregnancy and first pregnancy (17), labor pains, fear of advanced age delivery, low education level and low marital satisfaction (18), mother's literacy level and low economic status, inadequate support, poor communication with spouse and physical violence from husband are also closely related to anxiety during pregnancy and increase the level of anxiety in pregnant women (11,18).

The occurrence of consequences such as disorders in the development of nervous system, disorders in the physical and mental health of neonate, and the risk of emotional and mental disorders throughout life (19) and maternal consequences such as mental problems, incompatibility with child care duties, psychological imbalance, negative attitude towards pregnancy and childbirth are the consequences of pregnancy anxiety (20).

Pregnant women with hypertensive disorders and preeclampsia often have more health complaints compared to those with normal pregnancies because they suffer from more psychological and physical problems and have higher levels of anxiety. It seems that care of women with pregnancy anxiety, as well as their counseling and referral to more advanced diagnosis and treatments, can reduce maternal and fetal outcomes and mortality, and improve their anxiety level, followed by improved blood pressure (21).

Counseling interventions are among the recommended strategies to prevent the use of anti-anxiety drugs and their side effects. Counseling based on Acceptance and Commitment Therapy (ACT) is designed to improve a wide range of psychological problems. The goal of this treatment unlike the classic approaches of cognitive behavioral therapy, which seek to change the shape of disturbing thoughts and feelings, is to reduce the avoidance of unpleasant experiences, to strengthen the psychological flexibility of clients, so that when the client achieves these goals, instead of avoiding unwanted events, he spends his energy on values and improving his quality of life (22). This type of counseling or treatment includes six basic steps of acceptance, failure, self as context, connection with the present time, values and committed actions (23). This consultation has been used in the treatment of anxiety, depression, chronic pain, obsessive disorders, anger and aggression, and panic attacks (23-25).

Vakilian (2019) in a clinical trial titled "the effectiveness of acceptance and commitment therapy on women's anxiety in the second and third trimesters of pregnancy reported that the implementation of eight 90-minute sessions of acceptance and commitment therapy significantly reduced pregnancy anxiety in the intervention group (n=20) compared to the control group (n=21) (11). Utami et al. (2020) reported the positive effect of this type of counseling on anxiety and blood pressure in people with primary hypertension in Indonesia (24). In the study of Ajei et al. (2018), the anxiety of mothers with autistic children in Tehran reduced as 40% with the acceptance and commitment therapy after ten implementation sessions (26). It should be noted that the mechanism of blood pressure in pregnancy is different from initial blood pressure and is caused by placental development disorder and diffuse disorder of endothelium function (1). On the other hand, fetal and neonatal outcomes are of the major concerns of mothers, which makes it difficult to control anxiety (11). Considering the necessity of pregnancy anxiety control in patients with gestational hypertension and not finding a study in this field, the current study was designed to evaluate the effectiveness of

acceptance and commitment group counseling on the anxiety of pregnant women with gestational hypertension.

Materials and Methods

This two-group, randomized, controlled trial was conducted in 2021 (from April to September) on 58 pregnant women referring to 5 healthcare centers in Mashhad, Iran

According to the anxiety score of women in two groups of intervention (148.35 ± 31.17) and control (215.38 ± 31.17) in the study by Vakilian et al. (2019) (11) and using the formula of comparing means, with a confidence of 99% and a power of 95%, the sample size in the present study was determined as 16 subjects in each group. Due to the possibility of dropping samples and for the possibility of comparing subgroups, the sample size was considered to be 30 subjects in each group.

$$N \geq (Z_{1-\alpha/2} + Z_{1-\beta})^2 (\delta_1^2 + \delta_2^2) / (\mu_1 - \mu_2)^2$$

From each center, 12 samples (total of 60 subjects) who met the inclusion criteria were selected by convenience sampling method and then randomly divided into two groups through permutation blocks. For this purpose and according to the sample size of 60 subjects, ten 4 blocks were selected from AABB, ABAB, ABBA, BABA, BBAA, BAAB blocks and ten 2 blocks from BA, AB blocks using random numbers table.

Inclusion criteria were being Iranian, at least secondary school education, no addiction to tobacco and alcohol, having a smartphone with Android system, scoring less than 26 from Beck's anxiety questionnaire, gestational age of 24-26 weeks, having gestational hypertension or non-severe preeclampsia (according to the patient's file), singleton pregnancy, not suffering from chronic underlying diseases and medical and obstetric complications during pregnancy, no history of mental disorders and history of hospitalization during recent pregnancy. Exclusion criteria were unwillingness to participate in the research, not participating in more than two counseling sessions, suffering from medical and obstetric complications during the research, which require medical and pharmaceutical interventions, the presence of

family arguments and accidents during the study.

Demographic characteristics form, Beck anxiety Inventory (27), and Zemen social support questionnaire (28) were completed before the intervention, and Van den Bergh's Pregnancy-Related Anxiety Questionnaire (PRAQ) (11) was completed before, immediately and one month after counseling in both groups. The pregnancy anxiety inventory has 58 items in five areas: fear of childbirth, fear of giving birth to a disabled child, fear of changes in mood and its consequences on child, fear of changes in the mother's personal life, and fear of changes in marital relations. This questionnaire is scored based on a 7-option Likert scale from 1-7 (1 completely disagree, to 7 completely agree) and scoring is obtained by adding up the scores of each statement. The range of pregnancy anxiety scores is 58 to 406. The validity of pregnancy anxiety inventory has been confirmed by Vakilian (11) through content validity. In the present study, the reliability of Van den Bergh questionnaire was confirmed using Cronbach's alpha coefficient of 0.82.

Zemen social support questionnaire with 12-item was prepared by Zemen and colleagues in 1988 and was designed based on a five-point Likert scale: 1=strongly disagree, 2=disagree, 3=no opinion, 4=agree, 5=strongly agree. The validity of this questionnaire has been confirmed in the research of Avidéh et al. (29). In this study, the reliability of Zemen social support questionnaire was confirmed using Cronbach's alpha coefficient of 0.83.

Beck Anxiety Inventory (BAI) with 21 items is standard and each item is scored from 0 to 3. The total score is from 0 to 63. The validity of this questionnaire was confirmed by Aaron Beck and colleagues in 1990 through content validity (27). In the present study, the reliability of Beck Anxiety Inventory was confirmed using Cronbach's alpha coefficient of 0.76.

After obtaining the necessary permits from the Ethics Committee, Research Vice-Chancellor of Mashhad University of Medical Sciences, and the Provincial Health Center, the researcher went to the 5 health centers of Mashhad and sampling started after the necessary explanations. The researcher first introduced herself to eligible mothers and expressed the

purpose of the research and also stated about the confidentiality of information, and if they agreed and completed the written consent, they entered the study.

For the intervention group, eight counselling sessions (three groups, with an average of 10 subjects) were held by the researcher at intervals of two sessions per week, each session lasting 45-60 minutes. The first counselling session was held in person in the mother's classroom, and the next seven sessions were held virtually and in a group between the counsellor and clients through Sky Room.

The content of the first meeting includes: introduction of group members to each other and greetings, stating the group rules (confidentiality and non-disclosure of personal information of participants, timely attendance of members in meetings, no absence of more than two meetings), explanation about pregnancy, introduction and general description about counselling approach, explanation of pain and suffering.

Second session: living in the present, not mixing with the past and future and mindfulness, writing unpleasant thoughts and feelings.

Third session: experiential avoidance, use of shovel metaphor, practice of control strategies for unpleasant thoughts and feelings.

Fourth session: accepting your feelings without reacting to them and trying to suppress or avoid unpleasant thoughts and feelings, using the bus metaphor and writing down how the control strategies have worked in the long term.

The fifth session: explanation of breaking (separation of thoughts means creating a little gap between oneself and thoughts), the metaphor of a rebellious horse (unpleasant thoughts and feelings), practice of using metaphors of breaking.

Sixth Session: explaining about the self as context (the self-time which is assumed as the context means that it is not considered equal to experiences, but is equal to the person (is a context) who has these experiences (these experiences happening in him) and he himself as an observer notices them, using the metaphor of a chessboard.

Seventh session: Identifying the important values of life and moving in its direction, the

difference between value and goal, dartboard practice.

Eighth session: providing methods to the person so that can manage obstacles while moving in the direction of values and learning committed action (action which rather than being thoughtless and sudden, is conscious, deliberate, motivated, values-inspired, and flexible and adaptive to the situation), mindfulness practice focused on the end of counseling.

At the end of session, the questionnaires were completed by pregnant women. Also, a file of the summary of the sessions was given for practicing at home. The control and intervention

groups both received the routine pregnancy care by health care providers and midwives. One month after the end of the intervention, the Van den Bergh's Pregnancy-Related Anxiety Questionnaire (PRAQ) was completed again by two groups.

Finally, since one person in the intervention group suffered from severe preeclampsia and one person suffered from corona in the control group, the analysis was performed on 29 women in each group (Figure 1). Data were analyzed by SPSS software (version 25) and independent t-test, Mann-Whitney and analysis of variance with repeated measures. $P < 0.05$ was considered statistically significant.

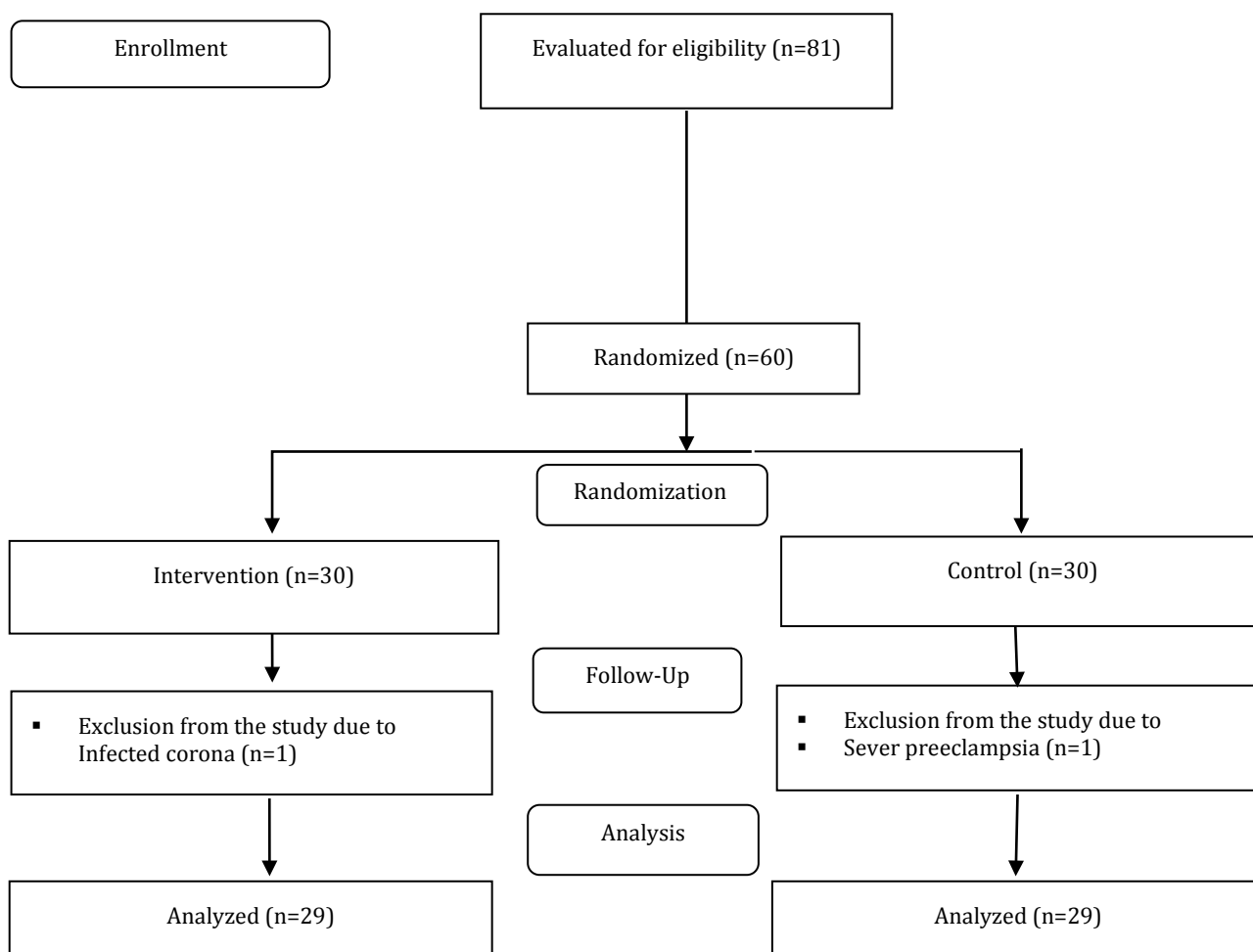


Figure 1. The CONSORT flow diagram of the study

Results

No significant difference was observed between the two groups in terms of mean age,

gestational age, number of pregnancy care received and the amount of social support (Table 1).

Table 1. Mean of some characteristics of the pregnant women in the two intervention and control group

Variable	Group		Test result
	Control	Intervention	
	Mean±SD Median (third quartile, first quartile)	Mean±SD Median (third quartile, first quartile)	
Age (years)	31.8 ± 5.6 30.0 (28.0 . 36.0)	33.6 ± 7.1 33 (29.0 . 39.0)	t=1.0 P*=0.299
Gestational age (weeks)	24.9 ± 0.9 25.0 (24.0 . 25.0)	24.5 ± 0.7 24.0 (24.0 . 25.0)	Z=-1.9 P**=0.53
Number of pregnancy care received	5.8 ±1.6 6.0 (5.0 .6.0)	5.8 ±1.6 5.5 (5.0 .6.0)	Z=-0.0 P**=0.977
Total score of social support	48.8 ± 0.7 45.5(48.0 . 54.3)	45.4 ± 8.6 47.5 (38.0 . 49.0)	t=-1.5 P*=0.137

* Independent t ** Mann-Whitney

Table 2. Mean of pregnancy anxiety score in pregnant women with gestational hypertension during the phases of study in the two intervention and control group

Pregnancy anxiety score	Group		Test result
	Control	Intervention	
	Mean±SD Median (third quartile, first quartile)	Mean±SD Median (third quartile, first quartile)	
Before intervention	59.2±182.7 144.0(214)(180.1)	62.2±202.0 196.0(154.0.242.2)	t =1.2 P*=0.230
Immediately after intervention	57.9±186.3 186.2(146.0,222.0)	44.6±152.3 153.0(114.5,182.0)	t =2.5 P*=0.015
One month after intervention	58.3±190.6 194.0(148.5,235.0)	45.5±154.1 150.0(114.0, 178.6)	t =2.6 P*=0.011
Changes after intervention compared to before intervention	10.4±3.7 5.0(0.4, 9.5)	24.0±49.7 40.0(68.3.33.5)	Z=6.3 P**<0.001
Changes one month after intervention compared to before intervention	10.2±7.7 8.0(0.9,14.5)	23.3±48.0 47.8(64.0, 28.0)	t =11.8, P*<0.001
Changes one month after intervention compared to immediately after intervention	6.9±3.9 4.0(0.5, 7.9)	6.4±1.8 2.0(3.8, 6.0)	t =1.2 P*=0.238
Intergroup test result	F=9.6 P***=0.001	F=119.7, P***<0.001	

* Independent t ** Mann-Whitney, *** Repeated measures ANOVA

In the intervention group, 24 cases (82.8%) and in the control group, 22 (75.9%) of the pregnant women were housewives. Monthly income was reported as sufficient in 18 cases of the intervention group (62.1%) and in 20

(69.0%) of the control group; Fisher's exact test did not show significant difference in this regard (P=0.166). Regarding the number of children, 9 cases (0.31%) in the intervention group and 13 (44.8%) in the control group had one child; Chi-

square test did not indicate significant difference in this regard ($P=0.574$).

Before the intervention, the pregnancy anxiety of the studied pregnant women did not differ between the two groups ($P=0.230$). But immediately ($P=0.015$), and one month after the intervention, the pregnancy anxiety score significantly decreased in the test group and significantly increased in the control group ($P=0.011$). According to Mann-Whitney test, significant changes was found in pregnancy anxiety immediately after the intervention ($P=0.238$) and one month later compared to before the intervention ($P<0.001$). However, the changes in pregnancy anxiety one month after the intervention was not significant compared with immediately after the intervention ($P=0.238$). In the intragroup comparison in the intervention group, the analysis of variance test with repeated measures indicated significant difference between the stages ($P<0.001$). Bonferroni's post hoc test found a significant difference between after the intervention and before the intervention ($P<0.001$). Also, significant difference was observed between one month after the intervention and before the intervention ($P<0.001$), although no significant difference was observed between one month after the intervention and immediately after the intervention ($P=0.456$) (Table 2).

Discussion

According to the findings of the current study, counseling based on acceptance and commitment therapy reduces pregnancy anxiety in patients with preeclampsia and gestational hypertension. Also, the reduction of anxiety in the intervention group compared to the control group was maintained one month after the intervention. In terms of the effect of counseling based on acceptance and commitment therapy on anxiety, the results of the present study were consistent with the results of studies by Vakilian et al. (2019) (11) and utami et al. (2020) (24).

In the study of Vakilian et al. (2019), acceptance and commitment therapy decreased the anxiety of 42 pregnant women in the second or third trimester of pregnancy (11), which is consistent with the findings of the current study. Anxiety in the group of acceptance and commitment counseling significantly decreased

after the intervention compared to before the intervention and remained stable one month after the intervention; while in the control group, increased anxiety was reported along with increase in gestational age showing the stability of the eff

ect of this type of counseling. In the study of Yutami et al. (2020), overt anxiety compared to hidden anxiety in 124 men and women with high blood pressure and anxiety in Indonesia significantly decreased after receiving four two-hour counseling sessions based on acceptance and commitment. Also, these researchers reported that blood pressure significantly decreased in the intervention group compared to the control group (24).

In the study of Ajei et al. (2018), both methods of acceptance and commitment counseling and cognitive-behavioral therapy significantly reduced anxiety after ten sessions on mothers with autistic children from Behara center in Tehran. Although there was no difference between the effectiveness of acceptance and commitment therapy with cognitive-behavioral therapy on reducing anxiety and promoting mothers (40% in acceptance and commitment therapy and 41% in cognitive-behavioral therapy), but in the follow-up phase after three months, the reduction in anxiety was higher in the ACT group (48% vs. 43%). Also, after the intervention, increased acceptance was higher in mothers of counseling (ACT) than cognitive-behavioral therapy (83% higher acceptance vs. 65%) and even stability of the effect of group counseling based on acceptance and commitment was greater than cognitive-behavioral therapy on improving acceptance after three months (68% versus 59%) (26). The reason for the greater effect of ACT can be the promoting client's acceptance because the belief of acceptance and commitment counseling is that a person should accept what is out of personal control and be committed to an action which enriches life (11). In the present study, the reduction of anxiety compared to the control group was calculated as 23.8% immediately and 23% after one month. Although the study of Ajei et al. was consistent with the present study in reducing anxiety, but lower effectiveness was reported in the present study. The reason can be

the difference in the participants and the difference in the concern of these mothers about the death of their fetus, which is very high when they have high blood pressure, it can affect the effectiveness of counseling based on acceptance and commitment therapy, and it was not possible to compare the acceptance aspect of these two studies due to the lack of completion of the acceptance and commitment therapy questionnaire which was one of the limitations of the present study.

Another limitation of this research is no control of all the factors affecting anxiety and individual differences of women in being influenced by counseling. There is no definitive way to control it and with random allocation, it was relatively controlled. Of the strengths of the current study, we can point to the companionship of a psychologist in act counseling alongside the researcher, and all sessions were designed and implemented with full preparation. Therefore, it is always emphasized that the structure of health centers (personnel and equipment) has an impact on the quality of care (30).

Conclusion

The findings of this research indicated that counseling based on acceptance and commitment therapy reduces pregnancy anxiety in patients with preeclampsia and gestational hypertension. Therefore, it is recommended to use the group counseling based on acceptance and commitment therapy to control pregnancy anxiety in women with mild preeclampsia and gestational hypertension.

Declarations

Acknowledgments

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Conflicts of interest

Authors declared no conflicts of interest.

Ethical Considerations

This research was conducted with observing confidentiality and obtaining written permission and was registered in the Iranian Registry Clinical Trial center with the code (IRCT20210218050401N1). Additionally, first researcher assured participants that their information would remain confidential and that they could withdraw from the study at any time. The women entered the study if they were willing to participate in the study and met the inclusion criteria and obtained written consent.

Code of Ethics

The ethics committee of Mashhad University of Medical Sciences has approved this research with the code (IR.MUMS.NURSE.REC.1398.073).

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Authors' contributions

NJ supervised the study. S KH participated in data collection, data analysis, Zh F assisted with data interpretation. SA assisted with data analysis. All authors have read and approved the manuscript.

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