Clinical Trial/Experimental Study

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Comparison of group cognitive behavioral therapy and interactive lectures in reducing anxiety during pregnancy

A quasi experimental trial

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Abstract

Background: Anxiety during pregnancy and its adverse effects on mother and baby is a health concern worldwide. This study aimed to investigate the effects of group cognitive behavioral therapy (GCBT) compared with interactive lectures (IL) on anxiety during pregnancy.

Methods: This quasi experimental trial was conducted in Sari city, in north Iran, from March to July 2015. Participants were 91 obstetrically and medically low-risk nulliparous women with a mild to moderate anxiety level, as assessed by Spielberger's State-Trait Anxiety Inventory. Participants were selected from the general population by cluster sampling and assigned to 3 groups: a cognitive behavioral therapy (CBT) group (n = 31), an IL group (n = 30), and a control group (n = 30). All participants completed a demographic characteristics form and the Speilberger State-Trait Anxiety Inventory. The inventory was completed again by the CBT and IL groups 4 weeks after the interventions, and 4 weeks after the initial questionnaire by the control group. Data were analyzed with chi-squared tests, independent *t*-tests, paired *t*-tests, ANOVA, and Dunnett post hoc test.

Results: A significant decline in state and trait anxiety was found in the CBT and IL groups at 4 weeks ($P < 0.001$). GCBT was more effective than IL in reducing participants' anxiety, but the difference was not significant ($P > 0.05$).

Conclusion: GCBT and IL had beneficial effects in reducing anxiety in pregnancy. The psychological status of pregnant women in prenatal care services should be investigated and either of these methods used to manage maternal anxiety, depending on the available healthcare service resources.

Abbreviations: CBT = cognitive behavioral therapy, GCBT = group cognitive behavioral therapy, IL = interactive lectures.

Keywords: anxiety, cognitive behavioral therapy, interactive lecture, pregnancy

1. Introduction

Pregnancy is a major event in a woman's life. Despite being desired or anticipated, pregnancy can be considered a distressing and stressful event[1,2] and some psychologists have suggested pregnancy can be an emotional crisis. If this crisis is not managed properly, it may become a long-term crisis with undesirable consequences.[3–6] The prevalence of anxiety disorders in pregnancy varies depending on the trimester of pregnancy.[7] It has been reported that 54% of women experienced antenatal anxiety during at least 1 trimester, with anxiety more frequent in the second trimester.[8] In Iran, the prevalence of anxiety problems in pregnancy is 18% to 30%.[9,10]

Different factors during pregnancy can cause anxiety, including hormonal changes, physical changes (especially in a woman's appearance), and accepting the parenting role.[11,12] In addition, factors such as heredity changes in neurotransmitters, facing stressful life events, low socioeconomic status,[13,14] experience of problems including still birth, miscarriage, congenital malformations, unwanted pregnancy, and fear of childbirth contribute to anxiety during pregnancy.[15,16] Studies have shown anxiety is more frequent in nulliparous women who are pregnant for the first time.[7,17]

People tend to have a distorted view of the world when they are in a negative state of mind. This can become a cycle where negative thoughts reinforce negative emotions, which in turn produce negative actions. If the cycle is not broken, it inevitably has detrimental physical and mental effects on the person concerned. In addition, if these cycles occur often, they can lead to clinical depression and anxiety.[18,19]

Various methods are effective in reducing anxiety, such as relaxation techniques,[9,20–22] music,[23,24] medication,[25]

Editor: Anish Thachangattuthodi.

This article is adapted from a thesis for a Master of Science in Midwifery (project no. 1411), funded by the Mazandaran University of Medical Sciences.

The authors have no conflicts of interest to disclose.

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Medicine (2016) 95:43(e5224)

Received: 12 June 2016 / Received in final form: 30 September 2016 / Accepted: 3 October 2016

http://dx.doi.org/10.1097/MD.0000000000005224

psychological and emotional support from family,[26,27] and social support.[28] Some studies have reported maternal anxiety can be managed by consultation and education.[21,29,30] Existing research on counseling to reduce anxiety in pregnancy has reported differing effects. Some studies have found counseling was inefficient in reducing anxiety and psychological complications in pregnancy,[31,32] whereas others have shown positive effects of group counseling and education on prevention and management of anxiety during pregnancy.[30,33,34] A randomized controlled trial found a significant improvement in anxiety levels in women of reproductive age after 8 weekly counseling sessions.[30] Another study indicated that a lecture involving 2-way interaction between the presenter and participants and discussion among participants in large group presentations supported the effectiveness of education.[35]

Based on this evidence, the present study aimed to compare the benefits of group cognitive behavioral therapy (GCBT) and interactive lectures (IL) on anxiety in nulliparous women.

2. Materials and methods

2.1. Setting and participants

Participants in this quasi experimental trial were recruited from 3 primary healthcare centers in Sari city, in north Iran, between March and July 2015. The inclusion criteria were nulliparous women in the second trimester of pregnancy with a mild to moderate anxiety level (a score of <75 on the Speilberger State-Trait Anxiety Inventory),[36] and no history of antipsychotic medication. Women with a history of serious illness, such as heart or respiratory disease, diabetes, thyroid disorders, or a high-risk obstetrical history were excluded.

2.2. Sampling

The sample size was calculated as 34 pregnant women for each group according to the mean and standard deviation of the measured anxiety score. Toosi et al[21] reported anxiety scores (mean ± standard deviation) of 44.33 ± 4.21 in the intervention group and 47.45 ± 4.90 in the control group, and reported a 95% confidence coefficient and power of 0.84. After considering the likelihood of participant dropout, we selected 38 nulliparous pregnant women for each group based on a cluster sampling method. First, we used a random numbers table to select 3 primary healthcare centers from the 20 healthcare services in the study area. These centers formed the main clusters and were randomly assigned as the intervention centers (2 centers in which mothers received one of the interventions plus standard prenatal care) or the control center (in which only mothers received standard prenatal care). Next, eligible pregnant women from the selected primary healthcare centers were invited by phone to participate in this study based on a convenience sampling method.

2.3. Instruments

Data were collected through an 18-item demographic and obstetrical information check list and the Speilberger State-Trait Anxiety Inventory. This 40-item inventory is a well validated self-report questionnaire designed to screen for state (20 items) and trait anxiety (20 items). It has a standardized alpha coefficient of 0.79 for state anxiety and 0.94 for trait anxiety. Total scores range from 20 to 80.[36]

2.4. Procedure

GCBT was delivered in 3 groups of 12 to 13 participants. Each group received 4 group counseling sessions, with 2 sessions per week. Sessions were led by a midwife with a Master of Science in counseling in midwifery as the therapist/counselor, and a psychiatrist as a group leader and co-therapist. Before the start of the study, the midwife underwent a 12-h training session provided by a licensed psychologist who specialized in cognitive behavioral therapy (CBT). To establish initial interaction, the counselor started the first session by introducing the research team and the objectives of the study and asking the participants to introduce themselves. Next, anxiety and its characteristics were explained. After that, with participation from the group, a common definition of anxiety was offered, and the anxiety state, thoughts, feelings, and behavior cycle were explained. As homework, group participants were asked write down their cycle of thoughts, feelings, and behavior. They were invited to examine negative thoughts and emotionally charged situations in their lives, and apply the alternative techniques that were discussed. Sessions 2 and 3 also had homework assignments, involving participants identifying their anxiety. The fourth session focused on a review of the previous sessions and how participants could continue to implement what they had learned, and included questions and answers. Each GCBT session lasted 120 to 150 min.

Four lectures (2 sessions/wk) were conducted with the IL group (n = 38), each lasting 120 to 150 min. In the first session, the counselor introduced herself and the objectives of the study, asked participants to introduce themselves, and described the characteristics of the IL. The lectures discussed the concept of anxiety and whether pregnancy was stressful. The cycle of state, thoughts, feelings, and behavior was described at the end of the first session. Participants were asked to study this cycle for the next session. In the second session, the discussion about the content of the first lecture was recorded and causes of anxiety were explained. The third session covered the effects of anxiety on mother, baby, and pregnancy outcomes, and the fourth session focused on ways to control and manage anxiety. All IL sessions were held by the same midwife who provided the GCBT.

Four weeks after completion of the interventions, participants in the CBT and IL groups completed the Speilberger State-Trait Anxiety Inventory a second time. The control group (who received standard prenatal care) completed the Speilberger State-Trait Anxiety Inventory at the start of the study and 4 weeks after completion of the initial questionnaire.

2.5. Statistical analysis

Statistical analyses were performed with SPSS for Windows Version 18.0 (PASW Statistics for Windows, Version 18.0, SPSS Inc, Chicago, IL). Descriptive statistics were used to determine participants' demographic characteristics and mean anxiety scores. The relationship between variables was evaluated by chi-squared tests, independent *t*-tests, paired *t*-tests, ANOVA, and Dunnett post hoc test. A *P* value of 0.05 or less was considered significant.

2.6. Ethical considerations

In this study, eligible women were first informed about the study objectives. They were provided with contact details for the research team at Mazandaran University of Medical Sciences and its deputy research ethics committee (Ethical code: IR.MAZUMS.

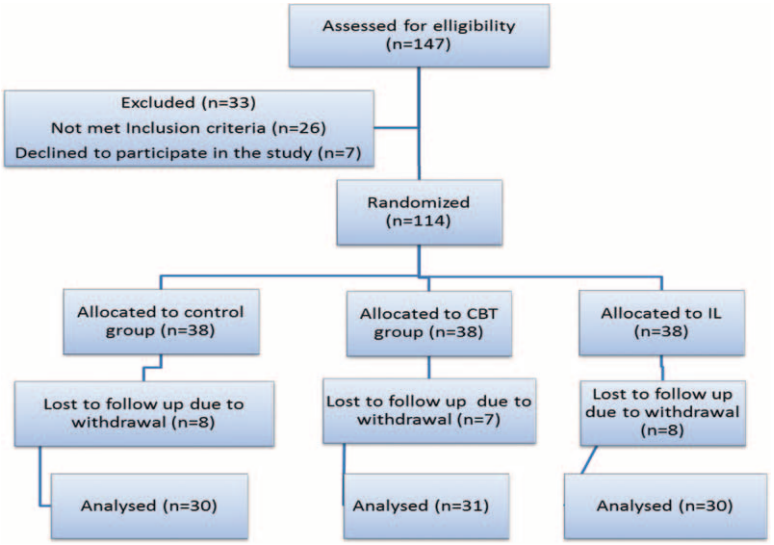

Figure 1. Consort flow diagram.

REC.94.1411) to allow them to discuss any concerns regarding the study. Data confidentiality was emphasized and they were asked to complete an informed consent form. This form noted that the information collected would remain confidential and that they could withdraw from the study at any time. After control group participants completed the second Speilberger State-Trait Anxiety Inventory, they were provided with education about anxiety management. The study was registered in the Iranian Registry of Clinical Trials (www.irct.ir), registration number: IRCT2015071022609N1.

3. Results

Data were collected from 91 pregnant women, with gestational ages ranging from 13 to 26 weeks (CBT group: n = 31; IL group n = 30; and control group: n = 30) (Fig. 1). The mean age of the participants was 26.04 ± 4.68 years (range 16–39 years). Differences between participant subgroups were investigated using chi-squared tests for categorical data and ANOVA for quantitative variables (Table 1). Before the intervention, no significant differences between the groups were found for variables such as age, gestational age, job, education level, and mean state and trait anxiety scores.

There was a significant difference in the level of state and trait anxiety in both the CBT and IL groups before and after the intervention ($P < 0.001$). However, there were no differences in state anxiety ($P = 0.330$) or trait anxiety ($P = 0.147$) in the control group between baseline and 4 weeks later (Table 2).

As the main objective of the study was to compare the effects of GCBT with IL on anxiety, ANOVA and a post hoc Dunnett test were performed. The results showed significant differences between the 3 groups in state anxiety ($P = 0.011$) and trait anxiety ($P = 0.016$) (Table 2). The post hoc Dunnett test found no significant difference between GCBT and IL for state anxiety ($P = 0.079$) or trait anxiety ($P = 0.069$) (Table 3).

4. Discussion

Although some pregnant women suffer from anxiety disorders during pregnancy, little attention is directed to screening for this problem and its management in prenatal care services. GCBT is a practical, effective, and affordable approach for the management

Table 1

Participants' demographic and obstetric data (n = 91).

	Intervention		Control	*P* value
	Cognitive behavioral therapy	Interactive lectures		
Age*	26.16 ± 3.89	26.18 ± 4.74	24.93 ± 5.04	0.051
Gestational age*	21.09 ± 4.67	20.33 ± 3.90	22.30 ± 4.32	0.455
Education†				0.401
Primary	3 (10.00)	4 (13.33)	8 (26.66)	
Diploma	13 (43.33)	15 (50.00)	13 (43.33)	
Bachelor	14 (46.67)	11 (36.67)	9 (30.01)	
Job†				0.687
Household	28 (93.33)	26 (86.66)	28 (93.33)	
Employed	2 (6.67)	4 (13.34)	2 (6.67)	
State anxiety score*	38.51 ± 10.03	40.83 ± 8.61	37.70 ± 7.19	0.355
Trait anxiety score†	38.00 ± 8.86	41.06 ± 7.59	38.33 ± 8.69	0.303

* Mean (standard deviation).
† Number (%).

Table 2

Comparison of state and trait anxiety scores (mean and standard deviation) before and after intervention: within group comparisons by *t* test, between-group comparisons by ANOVA.

Variables	Groups	Pretest	Posttest	*P* value within groups	*P* value between groups
State anxiety score	Cognitive behavioral therapy	38.51 ± 10.03	32.25 ± 7.83	<0.001	0.011
	Interactive lectures	40.83 ± 8.61	36.20 ± 7.82	<0.001	
	Control	37.70 ± 7.19	38.03 ± 6.83	0.330	
Trait anxiety score	Cognitive behavioral therapy	38.00 ± 8.86	33.16 ± 8.05	<0.001	0.016
	Interactive lectures	41.06 ± 7.59	37.46 ± 7.08	<0.001	
	Control	38.33 ± 8.69	38.93 ± 8.63	0.147	

Table 3

Comparison of state and trait anxiety scores (mean difference) after intervention: ANOVA and Dunnett test.

Variables	(I) Group	(J) Group	Mean difference (I − J)	Std error	Sig.	95% Confidence interval	
						Lower bound	Upper bound
State anxiety score	Control	Cognitive behavioral therapy	5.775*	1.924	0.007	1.447	10.103
	Interactive lectures	Cognitive behavioral therapy	3.941	1.924	0.079	−0.385	8.269
Trait anxiety score	Control	Cognitive behavioral therapy	5.772*	2.037	0.011	1.189	10.354
	Interactive lectures	Cognitive behavioral therapy	4.305	2.037	0.069	−0.277	10.354

* The mean difference was significant at $P < 0.05$.

of a number of disorders, including depression and anxiety.[37–39] To our knowledge, this study is one of the few studies to investigate the effectiveness of GCBT on maternal anxiety compared with IL and routine prenatal care.

The results of this study are consistent with previous studies[30,40,41] that found GCBT reduced anxiety in pregnant women. This method, involving identifying the cycle of the situation, thoughts, feelings, and behavior, and identifying inefficient thoughts and cognitive errors and replacing them with rational thoughts was effective in reducing maternal anxiety. Changing peoples' thoughts and beliefs may help them to think more positively about themselves and the world around them. However, other studies have not found group counseling to be effective in reducing maternal anxiety.[31,32] It may be that the number of sessions and quality of counseling are important factors. Implementing 3 to 6 sessions of group behavioral counseling with a psychiatrist or psychologist is considered to be effective.[33]

Consistent with other studies,[42,43] our study showed that IL reduced maternal anxiety. By increasing maternal knowledge about pregnancy and clarifying uncertainties about aspects of pregnancy and delivery, education can have a profound impact on maternal anxiety. Although a study reported that the reduction in maternal anxiety in an education group versus a control group was not significant.[29] In that study, education was implemented in 2 sessions; 1 over the phone and 1 individual session. It may be that more education sessions may have a more significant effect.

Dunnett post hoc test results showed that there was no significant difference in the mean state and trait anxiety scores between the CBT and IL groups after the intervention. Both the GCBT and the IL had beneficial effects on reducing maternal anxiety.

A limitation of this study was that the 4-week follow-up period was too short to allow conclusions about the long-term effect of the interventions. A larger study with more weeks follow-up is recommended to confirm results. In addition, participants' demographic characteristics (e.g., nulliparity) might limit the generalizability of the findings. Finally, we determined anxiety based on the Spielberger State-Trait Anxiety Inventory; however, gains in well-being and life functioning should also be part of treatment evaluation in future studies.

In conclusion, the psychological status of pregnant women should be investigated in prenatal care services, and either CBT or IL implemented depending on available resources. This issue is particularly important in healthcare services in developing countries where access to psychologists and psychotherapists experienced in CBT is limited.

Acknowledgment

The authors thank all participants in this research project.

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