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Comparison of the Effects of Massage Therapy and Guided Imagery on Anxiety of Nulliparous Women during Pregnancy

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ABSTRACT

Pregnant women are anxious about birth, the health of the fetus, and changes in their appearance during pregnancy. This study aimed to compare the effects of massage therapy and guided imagery on the anxiety of nulliparous women during pregnancy. This clinical trial recruited 75 nulliparous pregnant women presenting to health centers in Zahedan who were placed in three groups of Massage Therapy, Guided Imagery, and Control. Data collection tool was the Pregnancy-related Anxiety Questionnaire - revised. Questionnaires were completed by groups before and six weeks after the intervention. Data were analyzed using descriptive and inferential statistics in SPSS software. The mean anxiety scores were significantly different among the three groups after the intervention (P<0.000). In addition, post-hoc test demonstrated significant differences between the control and massage therapy groups, and control and guided imagery groups (P<0.000), but there was no significant relationship betweenmassage therapy and guided imagery groups (p=0.928). Although no significant relationship was found between education level and maternal anxiety, people with higher education applied more for the guided imagery. The use of these techniques in pregnancy reduced anxiety during pregnancy. However, we did not observe a significant difference between the two methods while the use of massage techniques was more acceptable to all nulliparous women and the use of guided imagery techniques was more welcomed by subjects with higher education. Hence it is recommended that level of education be considered for choosing the method for reducing anxiety in pregnant mothers.

Keywords: Massage Therapy, Guided Imagery, Anxiety, Nulliparous

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INTRODUCTION

Anxiety is an unpleasant and unknown feeling that reveals itself with symptoms such as fatigue, irritability and palpitations [1]. Women experience extreme feelings and mental conflicts during pregnancy due to permanent changes in their life and their new responsibilities, i.e. childcare. Ambivalence is quite normal among women during pregnancy, however, it can be much more intense in some cases and lead to fear of giving birth and pregnancy-related anxiety [2]. This can create a period of stress and anxiety for women and significantly affect their quality of

life, especially in nulliparous women. Many factors, including concerns about the fetal status, fear of giving birth, changes in fitness, changing roles, responsibilities, motherhood duties, and a significant distinction in interpersonal relationships with others are associated with anxiety before birth [3-5]. In several studies, 15 percent of women in Iran reported experiencing anxiety during pregnancy [6-8]. Other results showed that anxiety is one of mothers'psychological problems during pregnancy that appears as a U-shaped process,i.e. anxiety increases in the first and third trimesters [9, 10].

Anxiety during pregnancy has different consequences for both mother and fetus. These include severe nausea and vomiting in early pregnancy, the risk of developing hypertension and associated preeclampsia, low birth weight, fetal distress, stillbirth, neonatal death, neonatal abnormalities, breastfeeding problems, excessive baby crying, obstetric complications (long labor and premature delivery), increased mood disorders and autoimmune disorders in the postpartum period [3, 11, 12]. Studies also suggest a relationship between antenatal anxiety and postpartum depression [13, 14].

Nowadays, there are various interventions including complementary and alternative therapies to control anxiety. Health care providers can learn and implement them in the national healthcare system [12, 15]. These methods have turned into a common treatment for pregnant women and women admitted to labor departments. The results of a survey indicated that most of the pregnant participants (62 percent) and 61 percent of healthcare providers reported that they use complementary and alternative therapies during pregnancy [16]. Massage therapy is one of the most important and effectively used non-pharmacological techniques for controlling anxiety [12]. Massage is defined as systematic touch of soft tissues for therapeutic purposes, such as pain relief, increased comfort and patient's relaxation [17]. Extensive evaluation of massage therapy outcomes has shown that massage affects the parasympathetic nervous system through the hypothalamus [12]. Reducing the levels of stress hormones such as cortisol, epinephrine, and nor epinephrine, this technique can effectively improve a number of pregnancy outcomes, which result in reduced pain, reduced anxiety, reduced lymphedema, increased plasma beta-endorphins, psychological stress relief, reduced muscle tension, reduced fatigue, reduced need for sedatives and sleeping pills, striated and smooth muscle relaxation, increased capillary volume, decreased heart rate and blood pressure, and increased skin temperature and blood circulation [18-21]. Studies have also shown that massage is useful during pregnancy and leads to decreased depression, anxiety, pain in the back and legs, cortisol levels and number of preterm infants [22-24]. Other studies have reported that massage therapy improves mood and sleep patterns in addition to reducing anxiety [25-27].

Another alternative therapy is the guided imagery technique for managing stress and anxiety during pregnancy. Guided imagery is a mind-body technique based on the assumption that the mind and body are linked together and can affect and reinforce each other during treatment and health improvement. The same brain area that is activated when one experiences an event is activated during its imagery, that is, the person creates a current of thought in themselves which enables them to see, hear, feel or smell something that they desire and imagine it [28]. Studies have indicated that guided imagery has positive effects on pregnancy-related health outcomes, such as prolonging pregnancy, mental health and gestational hypertension [29-31]. Guided imagery has also been associated with reduction of stress, anxiety, sleep disturbance and fatigue during pregnancy [32-35]. However, some studies have shown that guided imagery has effectively increased relaxation level and reduced heart rate, but insignificantly reduced epinephrine levels [31]. Another study suggested that guided imagery had no effects on anxiety score in pregnant women [36].

As studies indicated, mother's anxiety during pregnancy threatens both mother's and fetus's health [37-39]. Therefore, controlling anxiety and maintaining and promoting pregnant women's relaxation can be a maternal health research priority. Hence, using techniques to reduce anxiety during pregnancy and childbirth has found a special place in modern obstetrics nowadays. Massage training centers have been established along with other complementary and non-pharmacological pain- and anxiety-reducing methods during labor in most countries [40, 41]. Even though most studies on massage therapy were about pain and anxiety control during labor [19, 40, 42, 43], few studies have evaluated massage therapy and its effect on anxiety during pregnancy in Iranian pregnant women. Moreover, studies have been carried out on guided imagery in patients undergoing surgery and in the postpartum period [44, 46], but a literature review showed that there were no studies on the effects of guided imagery on pregnant women with high anxiety in Iran. A major difference between the two methods is massage requires a trained person, while guided imagery is accessible to all and does not need special training, place, or a professional. Therefore, it is helpful to investigate the effects of these methods on reducing anxiety in pregnant women and to

compare their efficacy. Accordingly, the present study aimed to compare the effects of massage and guided imagery on anxiety during pregnancy in nulliparous women presenting to health centers in Zahedan, Iran.

MATERIALS AND METHODS

The randomized clinical trial was conducted with pretest and post-test design. The study population included nulliparous pregnant women presenting to health centers in Zahedan, Iran. Sampling continued for four months (21.1.2016 - 19.5.2016). The sample size was determined 20 patients in each group with 95% confidence level and statistical power of 80% using the findings of a similar study [47]. Finally, considering the possibility of sample loss, 25 patients were selected for each group. Among the five districts of Zahedan, three health centers that received more patients and had more appropriate facilities were selected. The subjects were then assigned to three groups of massage therapy, guided imagery, and control through drawing, that is, the first qualified person was placed in the massage group, the second one in the guided imagery group, and the third one in the control group. This process continued until the desired sample size was reached.

Inclusion criteria were being 18 to 35 years old, having singleton pregnancy, being in the second trimester (gestational weeks 22 to 28), being Iranian, being literate, absence of stressful life events in the past six months, no use of any anti-anxiety medication, not participating in massage therapy and similar activities, lack of physical problems that put subject or her fetus at risk by practicing massage such as a history of spinal cord injury or surgery, the ability to attend services regularly, no history of recurrent miscarriages, no drug addiction, no physical and mental illnesses, and no obstetric complications such as cervical cerclage, placenta previa, high fever, premature rupture of membranes, or polyhydramnios. Exclusion criteria included the occurrence of stressful events or any obstetrical complications during the process where intervention wouldput the health of the mother or the fetus at risk for example, high blood pressure during pregnancy, placental abruption, skin lesion at the site of massage formed during the massage, childbirth during the study, unwillingness to continue to participate in the study, and no intervention (less than three days a week in guided imagery group).

Data were collected using questionnaires. The first questionnaire included demographic information and the second one was a pregnancy-related anxiety questionnaire - revised 2. In addition, a daily exercise form designed by the researchers was used to record the exercise dates in the guided imagery group.

The pregnancy-related anxiety questionnaire - revised (PRAQR) was a shortened version of Vandenberg's 34-item PRAQ. This questionnaire was revised by Huizink in 2004 and widely used to assess and identify pregnancy-related anxiety [48-50]. The questionnaire (PRAQ-R) included 10 items, each scored based on Likert scale ranging from 1 (definitely false) to 5 (definitely true). PRAQR has three subscales, (1) fear of giving birth (three items: 2, 6, 8); (2) worries about bearing a physically or mentally handicapped child (four items: 4, 9, 10, 11); and (3) concern about one's own appearance (three items: 3, 5, 7) [50]. Questionnaires were scored by summing the scores of each item - scored from 1 to 5. The pregnancy anxiety score was obtained from 1 to 50. The Test – Retest method was used to validate the English instrument. That is, after obtaining permission from the questionnaire developers to translate and study the reliability and validity of the questionnaire, the English questionnaire was translated by two translators independently. The two translations were compared by translators and professors who had sufficient proficiency in English and experience in validating questionnaires (first comparison). The comparison results were given to two other individuals who were proficient both in Persian and English as a single text to be translated into English. The translations were compared again (second comparison) and a final English version was produced from the two versions. Then, the questionnaire was given to two groups to be completed in order to assess its face validity and fix possible problems. One group included six members of midwifery faculty and the other five pregnant women who matched the study subjects. The latter group had no problems understanding the questionnaire. The comments of midwifery faculty members were applied in the final questionnaire. The reliability was assessed by Cronbach's alpha (0.779).

After obtaining informed consent, demographic information form and PRAQ-R2 were completed by the researcher. In the massage group, participants were massaged for 20 minutes after the pre-test. Head and neck, back, arms and legs massages were given by the researchers for 10 minutes on each side (totally 20 minutes), once a week, for six weeks (from the 22nd to the 28thweeks of pregnancy), at mothers' education classes at health centers that were equipped with appropriate facilities likesheets, and were as quiet as possible. In order to maintain patient privacy, the rooms were equipped with thick curtains and room dividers. Also, the room door was locked to prevent others

from entering the room for greater respect for privacy during the massage. Different body parts were massage done by one while the rest of the body was covered. A gown was used to cover the back and long skirts covered the legs. The causes and ways to control anxiety and the purpose of the intervention were discussed in the first session before giving massage. Then massage therapy was performed by the researcher while the participant was lying on one side with a pillow behind her and one between her legs for support, for about 20 minutes [51].

In the guided imagery group, the intervention was conducted as guided by the researcher in aquiet place with the help of a video CD. After the pre-test, the participants received guided imagery techniques for 20 minutes, once a week, for six weeks (from the 22nd to the 28thweeks of pregnancy) in education classes at the health center. In addition, the researcher-made forms for recording daily exercises were given to the mothers. Mothers filled out one sample at the presence of the researcher to ensure the accuracy of the completion. It was explained that they should listen to the video CD for 20 minutes every day in a quiet environment and record the dates in the relevant form. Also, mothers were called twice a week to remind them of the exercise. The forms were collected by the researcher at the next appointment. The CD content included a comforting voice that invited the listener to imagine a comfortable position like visualizing the pleasant scene of a beach using all her senses, as well as listening to positive statements such as “I am calm” and “I have the power and energy of raising a child” [34].

PRAQ-R2 was completed in both groups a week after the last exercise session. The control group received the routine cares during pregnancy. The control group members were contacted at the end of the sixth week and invited to participate in the post-test. The related questionnaires were completed then.

Data analysis was performed using descriptive statistics (mean, standard deviation, frequency number and percentage) and inferential statistics (ANOVA test, paired t-test) in SPSS v.16 software.

RESULTS

The results showed that all three groups matched for demographic characteristics such as age, gestational age, employment, abortion history and ethnicity, but not for education (Tables 1 and 2)

Table 1Comparison between the mean and SD of age and gestational age in different groups

Group / Variable	Massage	Guided Imagery	Control	Test Results
	M±SD	M±SD	M±SD	
Age	22.76 ± 3.85	23.76 ± 3.74	23.92± 4.41	0.544
Gestational Age	22.12 ± 0.93	22.20 ± 0.87	22.12 ± 0.93	0.937

Table 2Comparison of demographic variables in different groups

Variable	Group	Massage	Guided Imagery	Control	Test Results
		Number (percentage)	Number (percentage)	Number (percentage)	
Level of Education	Secondary School	10 (40%)	3 (12%)	3 (12%)	0.011
	Finished High school	6 (24%)	5 (20%)	12 (48%)	
	Academic	9 (36%)	17 (68%)	10 (40%)	
Employment status	Employed	6 (24%)	9 (36%)	3 (12%)	0.139
	Housewife	19 (76%)	16 (64%)	22 (88%)	
Abortion history	Yes	3 (12%)	3 (12%)	1 (4%)	0.532
	No	22 (88%)	22 (88%)	24 (96%)	
Ethnicity	Fars	16 (64%)	17 (68%)	17 (68%)	0.942
	Balooch	9 (36%)	8 (32%)	8 (32%)	

Results before the intervention showed that the mean score of anxiety was high among all three groups of massage therapy, guided imagery, and control and there were no significant differences among them (p = 0.063).The ANOVA test showed that the mean score of anxiety in all three groups had statistically significant differences after the intervention (p<0.001). The post-hoc test showed that the control and massage therapy groups (P = 0.000), and control and guided imagery groups (P = 0.000) had significant differences, while no significant differenceswere found between massage therapy and guided imagery (p = 0.928) (Table 3).

Table 3Comparing the mean and standard deviation of anxiety score before and after the intervention in different groups

Stage Group	**Before intervention** Mean and SD	**After intervention** Mean and SD	**Paired t-test**
Massage	32.36 ± 7.187	21.88 ± 6.966	t = -13.563 df = 24 P < 0.001
Guided Imagery	30.36 ± 7.046	21.20 ± 5.43	t = -8.068 df = 24 P < 0.001
Control	26.24 ± 8.242	32.40 ± 7.065	t = 6.438 df = 24 P < 0.001
ANOVA	* F = 2.866 df = 3 P = 0.063	F = 23.113 df = 2 P < 0.001	

** Analysis of covariance was used*

Although the results indicated that both massage therapy and guided imagery reduce anxiety during pregnancy, people with academic education were more persistent and committed to continuing the exercises in the guided imagery group while education level made no differences in the massage therapy group and the technique was welcomed by both educated and uneducated people.

CONCLUSION

The present study aimed to compare the effects of massage therapy and guided imagery on anxiety in nulliparous women during pregnancy. The results showed significant differences between mean of pregnancy-related anxiety in massage therapy and guided imagery groups compared to the control group in the post-test, while there was no significant relationship between the massage therapy and guided imagery groups. The findings suggest that the use of either technique had no superiority over another. Another study was conducted in line with the present study to determine the effectiveness of massage with guided imagery and massage without guided imagery in reducing anxiety. The findings suggested that massage reduces anxiety with or without guided imagery [52]. This study did not clarify which technique was more effective in reducing anxiety whereas the present study employed each method individually to examine their effects separately. Although no significant differences were found in reducing pregnancy-related anxiety in massage therapy and guided imagery groups, fewer women with higher education levels in the guided imagery group left the study. This result is in line with Chuang's [53]. Meanwhile, all pregnant women in the massage therapy group were satisfied with the interventions, indicating that massage therapy was accepted by pregnant women with different characteristics.

Moreover, another study conducted to compare the effects of yoga and massage therapy on anxiety during pregnancy showed that after 12 weeks, anxiety decreased in the pregnant women [51]. That study indicated that both methods were effective in reducing anxiety during pregnancy while the present study showed that massage therapy was more acceptable among pregnant women.

Gedde-Dahl et al. (2011) evaluated the effects of relaxation techniques along witha guided imagery technique in the last trimester of pregnancy. The results showed that the guided imagery significantly increased their total health score but did not change their anxiety [36]. The failure of guided imagery to reduce pregnant women's anxiety score can be attributed to not using a pregnancy-specific anxiety scale. In the present study guided imagery techniques reduced pregnancy-related anxiety, consistent with previous studies [34, 35].

Bazrafshan et al. (2010) examined the effects of Slow-Stroke back massage on anxiety in nulliparous pregnant women. They showed that the mean score of anxiety in the intervention and control groups were statistically different after the intervention. Their findings were consistent with those of the present study, i.e. massage reduces anxiety in pregnant women [12]. The results of a study that used massage therapy suggested that the mean score of anxiety after the intervention was statistically significant in the intervention and control groups [54]. A limitation of this study was the lack of suitable places for a safe and secure space during massage therapy and guided imagery in the health centers. Although efforts were made to provide such conditions, due to the positive effects of such methods in reducing anxiety during pregnancy and their acceptance by pregnant women, providing a special place for this purpose at health centers seems necessary. A problem in executing this study was little willingness of some

participants in the guided imagery group to cooperate at home. The researcher, in such cases, explained the importance of the matter and tried to motivate them to be more cooperative in practicing the techniques at home. If the participants did not have access to video playing devices, guided imagery file was sent to them via Telegram™. However, the results of the present study indicated that the use of complementary non-pharmacological treatments are effective in reducing anxiety during pregnancy and they can be considered an effective method for preventing or reducing pregnancy-related anxiety. Therefore, midwives and other medical teams can use such verified methods for reducing pregnancy-related anxiety.

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