

The Effects of Fetal Movement Counting on Mental Health of Mother in Third Trimester—A Randomized Controlled Trial*

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Anxiety is one of the psychological problems in pregnant women that sometimes takes the form of pathological and affects the mental health of mother. The aim of this study was to determine the effects of fetal movement counting on mental health of mother. In a randomized-controlled trial, 208 nulliparous women were randomly divided into two groups. At 28th weeks, both groups completed the GHQ-28. Then the intervention group started to count fetal movements from 28th to 37th weeks of gestation and the control group received routine prenatal care. Again, both groups completed the questionnaire at 37 weeks' gestation and the results were compared. Analysis was performed by SPSS and a P value < 0.05 was considered significant. The mean scores of mental health of mothers in 28th and 37th of pregnancy was respectively 23.52 ± 10.23 and 21.09 ± 10.12 in the intervention group and the difference was significant ($P = 0.025$). The mean in the control group was 23.69 ± 9.43 and 23.88 ± 8.60 respectively, and the difference was not significant ($P = 0.52$). In comparing the mean scores between the two groups, it was found that the difference was not significant at 28th weeks of gestation ($P = 0.37$), but it was significant in 37th week ($P = 0.002$) and the counting of fetal movements could improve the mental health of mothers compared to control group. The women who had fetal movements counting at weeks 28 to 37 of gestation reported better mental health than the control group. The mother reported concerns about decreased fetal movement was similar in the two groups.

Keywords: fetal movement counting, general health, third trimester, pregnancy

Introduction

Mental health is defined as behavior consistent with the community, which accepts social reality and adapts to them. The studies show that 12.3 percent of women are suffering from mental health problems,

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especially depression between the ages of 18-24 (Hobel & Culhane, 2003). The pregnant women, due to the effects of pregnancy and childbirth, are prone to mental health problems and assessing the mental health of them is essential (Vijayaselvi, Beck, Abraham, Kurian, Regi, & Rebekah, 2015). Various studies indicate that anxiety is one of the psychological problems of pregnant women and the level of anxiety increases in the first and third trimester of pregnancy (Figueiredo & Conde, 2011). However, this anxiety is sometimes considered to be a natural mechanism to deal with mental worry which could prepare mothers for pregnancy and changes, but anxiety can be so intense that affects the mental health of mothers (Simon, 2003). Spontaneous abortion (Van den Bergh, Mulder, Mennes, & Glover, 2005), preterm delivery, and pregnancy induced hypertension (Neugebauer, Kline, Stein, Shrout, Warburton, & Susser, 1996) and reduced the mother's ability to care for the baby (Paarlberg, Vingerhoets, Passchier, Dekker, & Van, 1995; Andersson, Sundström-Poromaa, Wulff, Åström, & Bixo, 2006), there are problems that occur due to maternal anxiety during pregnancy. Various methods have been used to reduce anxiety. In this regard, stress management training, a variety of relaxation techniques (Bastani, Hidarnia, Kazemnejad, Vafaei, & Kashanian, 2005; Urizar & Muñoz, 2011), music therapy (Yang, Li, Zhu, Alexander, Liu, Zhou, & Ren, 2009), and exercise (Guszkowska, Langwald, & Sempolska, 2014) are methods that are used and have been proved to have a positive impact. First relationship between the mother and fetus usually begins during pregnancy and the findings of one study showed that the mothers who have a strong relationship with their babies have reported to have fewer concerns and the degree of concern is associated with the quality of maternal-fetal attachment (Abasi, Tafazzoli, Esmaili, & Hasanabadi, 2013). Also, some studies have shown that there is a relationship between depression in pregnancy and maternal-fetal attachment (Dubber, Reck, Müller, & Gawlik, 2015). Other studies reported that the mothers who were more attached to their baby also have more health behaviors that will improve their health (Alhusen, Hayat, & Gross, 2013; Hart & McMahon, 2006). Another study reported that the maternal-fetal attachment may increase the participation of women in the self-care during pregnancy and this behavior can affect the neonatal outcome (Dubber, Reck, Müller, & Gawlik, 2014).

Theoretical Framework and Literature

The effect of fetal movement counting on maternal fetal attachment has been investigated in several studies. One of these studies has reported that the fetal movements counting regularly by mother can increase the attachment (Abasi et al., 2013). A study reported that the women who counted the fetal movements in the third trimester reported to have fewer concerns than the control group (Saastad, Winje, Israel, & Froen, 2012). Another study reported that the fetal movement counting does not affect on maternal fetal attachment (Saastad, Israel, Ahlborg, Gunnes, & Froen, 2011). However, contradictory findings have been reported about the impact of fetal movement counting on maternal fetal attachment, but so far the impact of fetal movement counting on general health of mother has not been studied. Therefore, this study was carried out to determine the effects of fetal movement counting on the mental health of mother.

Research Methodology

The study protocol was approved by the Ethics Committee of the University and the written consent of the samples was taken. The population of this quasi-experimental study which was conducted in 2013, was all nulliparous women who referred to Shahrekord health centers. Sampling was conducted in two health centers and at the first, the sampling was available. Then the subjects were randomly assigned to intervention and

non-intervention groups. The sample size was determined 208 women (100 women in the intervention group and 108 women in the control group), the study used a pilot study and determined the difference mean score 0.44 between the intervention and non-intervention groups, confidence interval 95% and power 90%. These people have a diploma, with single pregnancy, without planning on early termination of pregnancy, and so far had not participated in any investigation of fetal movement counting. Exclusion criteria included oligohydramnios, multiple pregnancy, fetal abnormalities, and maternal smoking. Also, the women who were educated in the medical and had information on fetal movement counting were excluded. At baseline all women had an ultrasound at 17th-18th weeks of pregnancy to detect the multiple pregnancy and fetal abnormality and basic information were obtained from them. Then they completed a personal information form and general health questionnaire (GHQ 28) in the 28th week of pregnancy. The questionnaire was first designed by Goldberg in 1979 and is using for primary screening of mental disorders in the general population and adults. It consists of 28 multiple-choice questions in four areas of depression, anxiety, somatic symptoms, and social dysfunction. The validity and reliability of the questionnaire were confirmed in various studies (Abasi et al., 2013; Farhood & Dimassi, 2015). The questionnaire has four sections and each section has seven questions. In response to each question, there are four items like much less than usual, less than usual, as always, and more than usual, and they were awarded a score of zero to three. Therefore, the maximum score in each section is 21 and the total score of questionnaire is 84 and a higher score indicates the less general health. According to different studies, the cut off point of questionnaire is determined by 22 and the general health of people who have a score above 22 is considered impaired. In the present study, we trained the fetal movement counting to the intervention group and they were given a chart to record the fetal movements counting. They were advised to place in the left lateral position every morning after breakfast for half an hour and counted and recorded the fetal movement. To ensure proper performance of this task, the subjects were telephoned once a week. They also were asked to show the fetal movements chart to Midwife Center in each visit. Fetal movement counting continued for 28th weeks to 37th weeks of pregnancy and the control group received the standard prenatal care. At the end of 37th weeks, both groups completed the GHQ questionnaire. We asked the women in the control group whether they have counted the fetal movements or not and if the answer was yes, these subjects were excluded from the final analysis. The data had a normal distribution and analysis was performed by using the SPSS (version 16) and a $P < 0.05$ was considered significant.

Results

Mean age of mothers was 26.35 ± 4.3 in the intervention group and 26.70 ± 3.9 in the control group and the difference was not significant ($P = 0.51$). There was no significant difference in the job ($P = 0.25$), level of education ($P = 0.16$), unwanted pregnancy ($P = 0.65$), and maternal smoking ($P = 0.32$) between the two groups. The average maternal weight was 61.8 ± 9.0 kg in the intervention group and 62.9 ± 7.2 kg in the control group and no significant difference was found between the two groups ($P = 0.34$). The mean of body mass index (BMI) was 24.2 ± 3.2 kg/m² in the intervention group and 24.8 ± 2.7 kg/m² in the control group and the difference was not significant ($P = 0.14$).

In the fetal movement counting group, the mean score of maternal general health using GHQ was 23.52 ± 10.23 at 28th and 21.09 ± 10.12 at 37th and the difference was significant ($P = 0.025$), which means that the fetal movement counting improved the general health of mother. This rate at the control group was 23.96 ± 9.43 at 28th and 23.88 ± 8.60 at 37th and the difference was not significant ($P = 0.52$). The comparing of mean

scores in general health between the intervention and the control group at 28th and 37th of pregnancy is presented in Table 1 and it shows that the mean difference was not significant at 28th ($P = 0.37$), but a significant difference was found between the two groups at 37th week of gestation ($P = 0.002$) and the fetal movement counting significantly improved the mothers' general health.

Table 1

Comparing the Mean Scores of General Health Between the Intervention and the Control Group at 28th and 37th of Pregnancy

Group	Scores of general health	28th weeks of gestation mean \pm SD	37th weeks of gestation mean \pm SD	P value (comparing the mean scores at 28th and 37th)
Intervention (fetal movement counting)		23.52 \pm 10.23	21.09 \pm 10.12	0.025**
Control (standard care)		23.96 \pm 9.43	23.88 \pm 8.60	0.52**
P value (comparing the mean scores between the two groups at 28th)		0.37*	0.002*	

Notes. *Independent t test; ** Paired t test.

No significant difference was found between the groups with respect to the mean number of mother's concern, mother's hospitalization due to decreasing the fetal movements and gestational age at the time of reduction of fetal movements.

Discussion

The aim of this study was to determine the impact the counting fetal movements on maternal general health. In this regards, the findings showed that the general health of mother had improved after the fetal movement counting and in the control group who did not count the fetal movements had no change. In the reviewing of studies on fetal movement counting, the similar study was not found to detect the effect of fetal movement counting on general health of mother, but a study which examined the effects of training attachment on the maternal fetal attachment reported that the training attachment increases the emotional relationship between the mothers and fetus and with the continuation of these behaviors in the mother, the researchers can hope that the mothers have better mental health in the future and the behavioral disorders reduced in later life (Abasi et al., 2013). Saastad et al. reported that the women who have less emotional connection with their baby show less healthy behaviors and higher levels of anxiety and depression and these problems can lead to pregnancy complications (Saastad, Israel, Ahlborg, Gunnes, & Froen, 2012). The feeling of fetal movement can be indirectly a sign of fetal health and the counting of fetal movements in addition to the impact on attachment, can be alert to the dangers of pregnancy (Saastad, Ahlborg, & Fren, 2008). In this regard, a study reported that the mothers who have counting the fetal movements have more attachment to the fetus and the mothers try to provide necessary health care and ensure the welfare and health of her child (Abasi, Tafaoli, & Esmaeili, 2010). A study reported that the mothers who have less attachment to their baby are more prone to anxiety and depression (Condon & Corkindale, 1997). Another study reported that the maternal-fetal attachment has a protective effect against anxiety (Gaffney, 1986). A study reported that there is a significant correlation between the maternal-fetal attachment and the mother's mental health in the first trimester of pregnancy and these mothers experience less stress (Dubber, Reck, Müller, & Gawlik, 2014). A study reported that changing one's attention from the problems of daily activities to another activity can reduce the stress and maternal-fetal attachment behavior can provide such conditions (Brown & Solchany, 2004). What certain is that the attachment behaviors not only help the mothers to relieve from worry, but also help them to pay more attention

to their fetus and it is considered to be a form of relaxation. From the findings of these studies and the current study, it can be concluded that an increase of maternal-fetal attachment can cause a better mental health for mother, which can also affect the fetal health. It is also effective in improving the maternal social health through the promotion of mental health of mother. Therefore, it is suggested to all health care providers to recommend the fetal movement counting to all mothers during pregnancy.

The present study had limitations, one limitation was that in the two groups, more women were employed and educated and the generalization of results must be limited to the same population, another limitation was the history of mental illness in mothers could affect the results and in this regard the researchers have cited the statements of mothers. The performing of the study had a larger sample and controlling of the confounders was recommended.

Conclusions

The fetal movements counting in weeks 28 to 37 of pregnancy improved the mental of mothers. This simple and inexpensive method is suggested to improve the mental health of mothers.

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