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Original Article

The Effect of Midwife-led Psycho-Education on Parental Stress, Postpartum Depression and Parental Competency in High Risk Pregnancy Women: A Randomized Controlled Trial

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Abstract

Introduction: Women with high-risk pregnancy are at increased risk of depression and anxiety during pregnancy, as well as a less favorable parent-infant interaction. This study aimed to investigate the effect of midwife-led psycho-education intervention on parental stress, competency, and postpartum depression in nulliparous women hospitalized with high-risk pregnancy.

Methods: This randomized controlled trial was carried out on 66 nulliparous women admitted to the high-risk pregnancy ward of Kamali Hospital, Karaj, Iran. Using convenient sampling method, the mothers were randomly assigned to control and intervention groups. In addition to routine care, the intervention group received four sessions of midwife-led psycho-education intervention in two group sessions in pregnancy and two individual sessions immediately after delivery. The parental stress, parental competency, and postpartum depression questionnaires were used for data collection before, after, and one month after the intervention. Data were analyzed using SPSS software ver. 13.0. Repeated-measures ANOVA test was used for comparing the mean scores of parenting stress, parental competency, and depression between and within both study groups before, after, and one month after delivery.

Results: While postpartum depression and parental stress decreased in intervention group, parental competency increased.

Conclusion: Our findings indicated that midwife-led psycho-education was effective on parental stress, competency, and postpartum depression in high-risk pregnancy mothers. Accordingly, prenatal distress in high-risk pregnancies should be assessed routinely.

Introduction

Pregnancy is a physiologic event in the life of women. Although pregnancy is defined as an exciting period and a happy time, it is considered a stressful experience, and for a significant number of women, this stage is associated with anxiety and stress that can directly affect their mental health.[1,2] Throughout the world, 20 million pregnant women (about 6-33%) are considered for high-risk pregnancies, which account for more than 800 deaths per day that is half of the pregnancy morbidity.[3] High-risk pregnant women are at risk of depression and stress during pregnancy.[4] Hospitalization from days to weeks usually requires excessive control and care, and women with high-risk pregnancy are separated from the families with high levels of psychological stress and uncertainty about the health of the unborn child.[5] High-risk pregnancy is extremely stressful due to limited physical activity within bed rest or hospitalization and limited housework for mothers.[6] Increased complications, mortality, and morbidity due to anxiety and depression are among the most important concerns in high-risk pregnancies.[7] Depression and anxiety during pregnancy are risk factors for postpartum depression. Prolonged and severe depression in the postpartum period affects maternal and infant attachment, breast feeding, and neonatal care, reducing mother's response to neonatal needs, as

well as any delay in the growth and development of the neonate.[8] In a study, the prevalence of depression (29%) and postpartum anxiety (92.5%) in women with high-risk pregnancy were compared with depression (17%) and postpartum anxiety (79.5%) in women with low-risk pregnancy.[9] Anxiety during pregnancy is associated with postpartum parental disorder behavior. Compared to postpartum, mental health during pregnancy is associated more with parental-neonatal interactions.[10] The results of a study showed that, compared to parents with low-risk pregnancy, those who experience high-risk pregnancy show a less favorable parent-neonate interaction due to low sensitivity and adaptation to parental role.[11] Education is an important part of pregnancy care for mothers admitted to hospital with pregnancy complications, and it can support early diagnosis and treatment of common symptoms of psychiatric disorders.[7] Mothers with high-risk pregnancies speak with uncertainty about their health, pregnancy outcomes, and family responsibilities. Physicians and healthcare staff can assess and screen mental disorders and offer health education and care in the field of pregnancy and mental health, and thus improve the quality of care and pregnancy outcome.[8,12] Midwife-led psycho-education is a type of intervention in the form of a brief counseling that does not require advanced psychotherapy and is provided by an obstetrician. According to reports, it has been effective in reducing stress and high levels of fear of birth, postpartum stress, cesarean section, and situational anxiety.

The results of a clinical trial showed the effect of education and telephone midwife-led psycho-education during pregnancy and after birth on the mental health of mothers in the 6 weeks of postpartum.[13-15] Given the prevalence of high-risk pregnancies and the limited psychological studies on these vulnerable mothers,[16] there is the need to assess the effect of psycho-education intervention on parental stress, competence, and postpartum depression of mothers with high-risk pregnancy. In the current randomized clinical trial, we educated the participants in two different time intervals (during pregnancy and during the postnatal period) to assess high-risk pregnancy, prenatal emotional distress, and later adaptation.

Materials and Methods

This was a randomized controlled trial study (IRCT20150119020719N10). The participants of this randomized controlled trial consisted of nulliparous mothers with high-risk pregnancy in the prenatal ward of Kamali Hospital in Karaj, Iran. This Hospital is a provincial referral center for mothers with high-risk pregnancy. The sample size in this study was based on the study carried out by Gao LL et al.,[17] using the formula for comparing two means with type-1 error of 0.5%, power of 0.8 and also (M1 = 33.66, SD1 = 6.12) and (M2 = 36.06, SD2 = 4.41) was considered. Thirty three individuals were selected for each group. Figure 1 shows the study

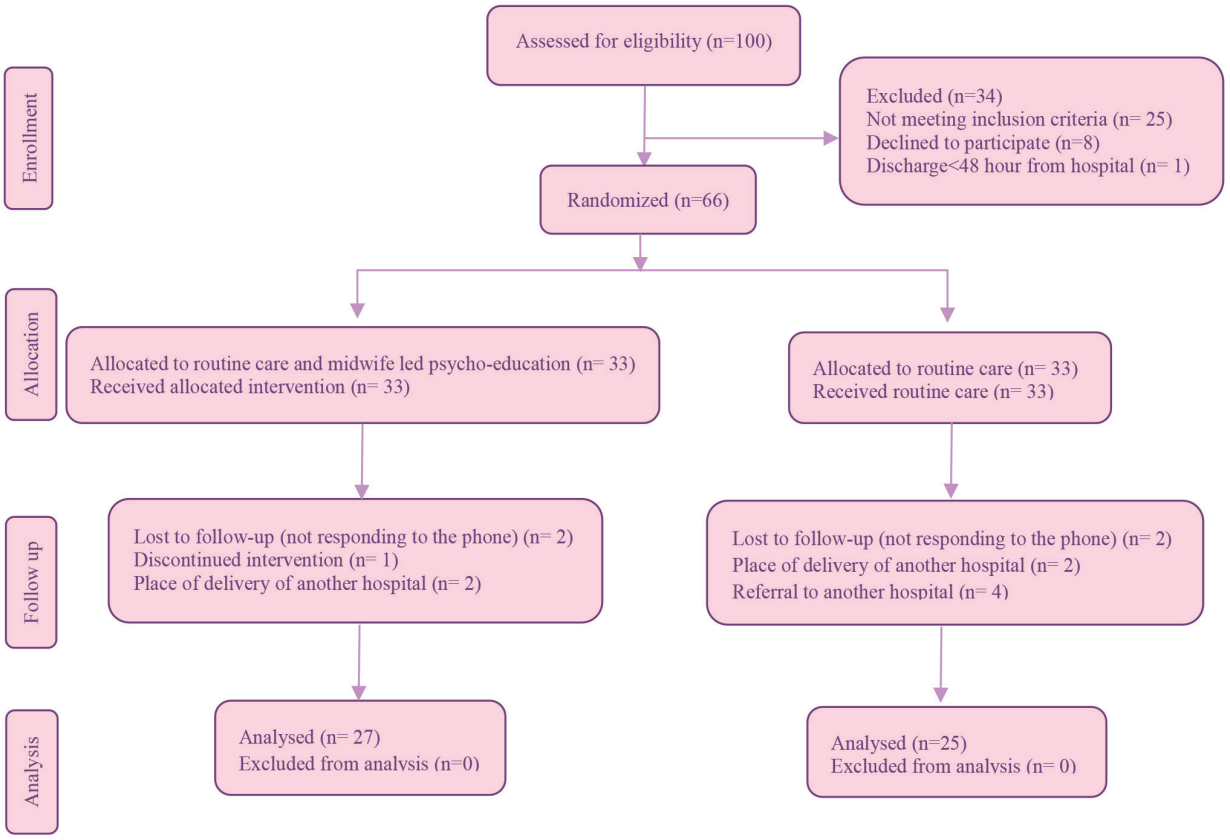

Figure 1. Flow chart of study

algorithm.

The inclusion criteria were being nulliparous, having the gestational age of 34 weeks and higher based on the last menstrual period or first sonography screening, being literate, being Iranian, being diagnosed with high-risk pregnancy, staying for at least three days in the prenatal ward of Kamali Hospital. Woman with lack of attendance to one group session, having a history of mental disorders, having a baby with physical and mental abnormalities, and place of delivery outside Kamali Hospital were excluded from this investigation. The researcher who conducted the midwife-led psycho-education program was a trained MSc student of Counselling in Midwifery.

The sampling method was convenient and the samples were randomly assigned to two groups of received counseling (intervention) and non-received counseling (control) by four-sized randomized blocks. There were six possibilities for inclusion in blocks (BABA, BBAA, ABBA, AABB, ABAB and BAAB). At the beginning of study, one of blocks was selected and four participants were put in that block, so that the number A belonged to the intervention group, and number B to the control group. The details of blocks were contained in asset of sealed envelopes; the person that did allocation did not have any information about research.

Before the onset of intervention, Parenting Stress Index-Short Form (PSI-SF), Edinburg Post-Natal Depression Scale (EPDS), and Parenting Sense of Competency (PSOC) questionnaires were completed in both groups. The intervention group received midwife-led psycho-education in 2 sessions for a period of approximately 60-90 minutes in addition to slides, booklets, and group discussions during admission to high-risk pregnancy ward. They were then followed up by telephone until delivery, alongside two individual training sessions for approximately 60 minutes immediately after the delivery. PSOC consists of a parental competence and satisfaction, and is a 17-item instrument on the 6-point Likert scale (from absolutely agree to absolutely disagree). The range of scores is 17-102, in which a higher score indicates a higher level of parental sense of competence. The reliability and validity of the scale were determined by Johnston and Mash.[18] In Iran, the psychometry of the questionnaire was determined by Abdollahpour et al.[19]

The EPDS consists of 10 items with a 4-point Likert scale. The score is generally between 0-30. The highest score indicates negative emotions .The reliability of the Iranian version of this instrument was determined through test re-test (0.8), and the Cronbach's alpha value was 0.77.[20]

The PSI-SF is a short version of 36 items with a 5-point Likert scale developed by Abidin & Brunner in 1995. Higher scores indicate higher stress levels.[21] In Iran, the reliability of this instrument was obtained as 0.84 through test re-test and internal consistency coefficient for total stress and the alpha values for total stress index was 0.90.[22]

The content of 4 sessions of education was determined based on Fenwick et al., and Gamble et al.,[15,23] confirmed by the faculty members of the Midwifery, Psychology, and Pediatric Faculty of Alborz University of Medical Sciences. At the end of each training session, the researcher obtained feedback from mothers.

The content of the first session, which was presented in person and in the form of group training over a period of approximately 60-90 minutes, included showing kindness, providing descriptions of the goals of the study, simple and open questions about birth, actively listening, encouraging expression of concern, identifying and responding to individual conflicts, teaching problem-solving skills, training and improving communication skills required for child care, the way the baby grows up, talking in the mother role, the provision of information for the participants to accept the mother role, attempts to remove preventive barriers to communication with the neonate, postpartum depression symptoms, facilitating barriers to communicate with the neonate, and educating them to adopt strategies for decreasing stress.

The second session, immediately after the first session, included reviewing previous session and assignments with a check list, providing information on the development of social support, discussion about exiting support network, talking about ways to receive additional emotional support, teaching problem-solving skills, asking about anything that should have been done differently during labor, teaching respiratory techniques, postpartum exercise, and strategies for focusing and reducing stress.

The third session was individual training held immediately after delivery, and included reviewing previous session and training respiratory techniques, training postpartum exercises, teaching strategies for reducing stress, the way the baby grows up, talking about motherhood transition, the provision of information to adapt the mother, attempts to remove preventive barriers to communicate with the neonate, facilitating barriers to communicate with the neonate, teaching how to cope with postpartum depression symptoms, teaching breast feeding, and problems that mothers usually encounter.

The fourth session was conducted on an individual basis and involved advice on the problems that occurred after birth, concerns raised with respect to the mother's role, the emphasis on the support of their relatives for up to 10 days after childbirth training, improving communication skills with the spouse after the birth the baby, and repeating the respiration and relaxation technique.

At the end of intervention sessions, to observe the ethical considerations, an educational booklet was given to the control group, too. In the intervention and control groups, PSI-SF, EPDS, and PSOC questionnaires were completed simultaneously before the education, after the discharge from hospital, and one month after delivery.

Data were analyzed using SPSS software Ver.13.0 (SPSS Inc., Chicago, IL, USA). Normality of the data was

also investigated via Kolmogorov-Smirnov test. T-test was correspondingly employed to compare baseline quantitative variables between the two study groups. The comparison of qualitative variables was also performed using chi-square test and Fisher's exact test. To compare the mean scores of parenting stress, competency, and depression between both study groups before, after, and one month after delivery, repeated-measures ANOVA test was used. *P*-value less than 0.05 was considered significant. Data analysis was carried out based on per-protocol analysis.

Results

Table 1 shows the demographic characteristics of nulliparous mothers with high-risk pregnancy. There was not significant difference between the demographic characteristics in the control and intervention group.

The results of repeated-measures ANOVA showed that the variable of paternal stress had a significant change over time in the counselling group ($P<0.001$) and there was a significant difference between the two groups ($P<0.001$). Therefore, midwife-led psycho-education had a significant effect on parental stress in the intervention group (Table 2).

Moreover, the variable of postpartum depression had a significant change over time in the intervention group ($P<0.001$) and there was a significant difference between the two groups ($P<0.001$). Therefore, midwife-led psycho-education had a significant effect on postpartum depression in the intervention group (Table 2).

Furthermore, the variable of parental competence had a significant change over time in the intervention group ($P<0.001$) and there was a significant difference between the two groups ($P<0.001$). Therefore, midwife-led psycho-education had a significant effect on parental competence in the intervention group (Table 2).

Table 1. Demographic characteristic of mothers with high risk pregnancy

Variable	Intervention	Control	P-Value
	N (%)	N (%)	
The cause of high risk pregnancy			
Preeclampsia	8(24.24)	7(21.21)	
Gestational diabetes mellitus	7(21.21)	6(18.18)	
Pre-term labor	5(15.16)	3(9.09)	
Vaginal bleeding	4(12.12)	5(15.16)	
Varicella	4(12.12)	0(0.00)	-¥
Thrombocytopenia	2(6.06)	0(0.00)	
Oligohydramnios	1(3.03)	7(21.21)	
Pre mature rupture of membrane	1(3.03)	2(6.06)	
Pyelonephritis	1(3.03)	2(6.06)	
Intra uterine growth deficiency	0(0.00)	1(3.03)	
Mother's Job			
Housewife	30(90.9)	31(93.9)	-¥
Employee	2(6.1)	2(6.1)	
Others	1(3.0)	0(0.00)	
Type of delivery			
Natural childbirth	16(48.5)	17(51.5)	χ^2= 1.06 0.80£
Cesarean section	17(51.5)	16(48.5)	
Level of education			
Elementary	16(48.5)	17(51.5)	χ^2= 0.542
Diploma	7(21.2)	10(30.3)	0.33£
University	10(30.3)	6(18.2)	
Baby sex			
Girl	16(48.5)	18(54.5)	χ^2=0.06
Boy	17(51.5)	15(45.5)	0.62£
Intention to pregnancy			
Wanted	29(87.9)	28(84.8)	F=1.07
Unwanted	4(12.1)	5(15.2)	0.72€
Economic			
Poor	6(18.2)	6(18.2)	
Moderate	25(75.8)	26(78.8)	-¥
Good	2(6)	1(3.0)	
Excellent	0(0.00)	0(0.00)	
Abortion history			
Yes	11(33.3)	9(27.3)	χ^2=0.85
No	22(66.7)	24(72.7)	0.59£
Hospitalization of infant			
Yes	6(18.2)	4(12.1)	χ^2=0.44
No	27(81.8)	29(87.9)	0.49£

¥ Statistical calculation was not possible due to low frequency; £Chi-square test; €Fisher test

Discussion

The results of the current study showed midwife-led psycho- education had a significant effect on parental stress, postpartum depression and parental competency in high risk pregnancy women. Midwife-led psycho-education had effect on reduction parental stress in intervention group. In a prospective study, the prevalence and severity of anxiety among 310 mothers admitted to a high-risk pregnancy ward in Vancouver in the second trimester to 6 months postpartum was reported to be between 13% and 21% in the pregnancy, and 11% to 17% after delivery.[24]In another study on 62 mothers admitted to high-risk pregnancy ward, 27% of women experienced depression symptoms, 13% experienced symptoms of anxiety, and 77% of them reported that group psychological education was very helpful in treating them. Only 5% of women received treatment for their depression during pregnancy.[6] Another study showed that group education of nulliparous women with high-risk pregnancy reduced their anxiety, which is consistent with our findings. Group training increases self-confidence, improves mental status, and creates a friendly and intimate environment for more communication and expression of their experiences.[16] In a systematic study on prenatal stress and anxiety in women with a history of high-risk pregnancy, it was reported that anxiety and perinatal depression significantly increased the risk of postpartum depression in women high-risk pregnancy women.[25]

The results of this study indicated the effect of midwife-led psycho-education intervention on postpartum depression. The results of a study on the effect of prenatal psychological training on postpartum depression and the increasing satisfaction of couples showed the positive impact of psychological education.[26] Moreover, in another

Table 2. Parental stress, postpartum depression, and maternal sense of competency in women with high-risk pregnancy

Variable	Before Mean (SD)	After Mean (SD)	One month after Mean (SD)	Repeated measure	
				P (Within group)	P (Between group)
Parental stress					
Intervention	68.12 (12.16)	52.22 (8.53)	47.00 (11.51)	F=37.46, P<0.001*	F=1319.9, P<0.001*
Control	67.09 (15.90)	72.78 (13.82)	58.84 (8.59)	F=39.41, P<0.001*	
Postpartum depression					
Intervention	10.96 (5.78)	10.64 (5.83)	8.33 (4.70)	F=2.7033, P<0.001*	F=79.91, P<0.001*
Control	12.12 (6.39)	12.60 (5.78)	14.16 (5.51)	F=3.642, P<0.07	
parental competency					
Intervention	71.15 (19.9)	82.35 (8.68)	89.70(11.27)	F=13.7, P<0.001*	F=2022.4, P<0.001*
Control	69.82 (9.36)	75.03 (9.67)	83.12 (8.73)	F=12.6, P<0.001*	

*Statistically significant

study, the effect of relaxation on the depression score in women with high-risk pregnancy in hospitals was highlighted.[4] The results of these studies were consistent with those of the current study.

The results of qualitative studies in explaining the life experiences of mothers with high-risk pregnancy for more than three days in hospital showed the need for support as the most important factor. Also, educating patients for their needs and raising awareness about the stressors in the long-term hospitalization period within pregnancy could help mothers improve their self-confidence to seek better care.[5,27]

The results of repeated-measures ANOVA showed the effect of time on the score of parental competence in both the intervention and control groups. Over time, parental competency increased in the two groups, but this increase was higher in the intervention group. The reason for increasing parental competence in the control group could be the transition of time and adaption to motherhood role in the two groups. In a longitudinal study, the effect of high-risk pregnancy and parental stress during pregnancy was measured and parental competency was measured in the first days after birth; high-risk pregnant mothers experienced more stress, less sense of competency, and less satisfaction, and the adaption to the motherhood role in high-risk pregnancy was considered difficult and problematic.[11] In another study of women with high-risk and low-risk pregnancies, the level of postpartum fear was associated with concerns about maternal role, and there was a significant relationship between depression and attachment, with depressed women showing less attachment to their child.[28,29] These results did not agree with those of the current study, because parental competency was measured during the first days after birth in that study, but in the current study, we measured parental competency one month after birth, and time transition might have affected motherhood role adaption. The results of studies showed that mindfulness-based interventions were effective in enhancing maternal roles in nulliparous women. Most nulliparous women often lack parental competence to play a role in motherhood, most of which is due to the lack of experience.[30-32] The results of that study was consistent with those of the current study. Parental competency requires psychological and emotional preparation. The need for support on the part of the spouse is one of the most important issues in high-risk pregnancies.[11]

This study educated the participants in two different time intervals (during pregnancy and after delivery); moreover, we followed the mothers from high-risk pregnancy ward to delivery room and postpartum ward. The main limitation of the current study was the participation of mothers with high-risk pregnancies with a gestational age of 34 weeks or higher delivered in hospital during hospitalization in high-risk pregnancy ward. It is recommended that a longitudinal study be conducted on mothers with lower gestational age. Another limitation was that only mothers with high-risk pregnancy participated in this study; thus, it is suggested that further studies investigate the effect of education on high-risk pregnancies, with the fathers involved in the educational program. In this study, we held four sessions of training in the period of pregnancy and two postpartum sessions. Accordingly, it is suggested that a study with more educational sessions be designed in the long time and at least 3 months after delivery in high-risk pregnant mothers.

Conclusion

The findings of current study indicated that midwife-led psycho-education was effective on stress, competency, and postpartum depression in high-risk pregnancy mothers. It is suggested that prenatal distress be assessed routinely, and especially if high-risk pregnancies are diagnosed. Furthermore, midwife-led psycho-education should be offered to distressed mothers during the perinatal and postpartum period. Trained health care providers should be available for mothers who experience high-risk pregnancy.

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Ethical Issues

This study was approved by the Research Deputy of

Research Highlights

What is the current knowledge?
High risk pregnant women are at risk of depression and stress during pregnancy.

What is new here?
Midwife-led psycho-education was effective on parental stress, competency and postpartum depression in high risk pregnancy mothers.

Alborz University of Medical Sciences and approved by the ethics committee of Alborz University of Medical Sciences (Code: Abzums.Rec.1396.215). Moreover, it was recorded in the Iranian Clinical Trial Center (No: IRCT20150119020719N10). All participants signed informed consent forms and the researcher considered all the material and moral rights of the research subjects.

Conflict of Interest

The authors state that there is no conflict of interests in this research.

Author's Contributions

SES: is supervision, designed and performed the study; LC: is student that performed the studies and intervention; MA: designed and consulted about the educational program for high risk pregnant counselling; MAK: consulted about content of educational program and data analysis.

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