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# Effect of maternal role training program based on Mercer theory on maternal self-confidence of primiparous women with unplanned pregnancy

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## Abstract:

**INTRODUCTION:** Maternal confidence is an extremely important factor in playing the mother's role and her identity formation. Loss of self-confidence occurs in primiparous women due to the lack of maternal skills. Obtaining the behaviors of maternal role and self-confidence, the mother provides better care for her child. Hence, the aim of this study was to examine the effect of maternal role training program based on Mercer theory on maternal self-confidence of primiparous women with unplanned pregnancy.

**METHODOLOGY OF THE RESEARCH:** This clinical trial was performed on 67 primiparous women referring to Mashhad health centers. Individuals were randomly divided into intervention and control groups. A maternal role training program based on Mercer theory was carried out for intervention group (three sessions of group training in the 34<sup>th</sup>, 35<sup>th</sup>, and 36<sup>th</sup> weeks of pregnancy and one individual training session before discharge from the hospital and then, weekly follow-up over the phone for 4 weeks). The control group received the normal pregnancy care. The research tools were questionnaires of demographic characteristics, London, DASS 21, Edinburgh Postnatal Depression Scale, Parenting Sense of Competence, General Impressions on Infant Temperament Questionnaire, and Six Simple Questions. Maternal self-confidence was measured before training, 4 weeks after delivery, and 4 months after delivery. Data analysis was carried out using independent *t*-test, Chi-square test, paired *t*-test, Mann-Whitney test, one-way ANOVA, and Wilcoxon test.  $P < 0.05$  was considered statistically significant.

**RESULTS:** There was a significant difference between mean maternal self-confidence changes (before training and 4 weeks after delivery ( $P = 0.003$ ) and before training and 4 months after delivery ( $P = 0.001$ ) in both groups. After eliminating the effect of interventional variables, the mean scores of maternal self-confidence after training in the intervention group had a statistically significant difference with that in the control group ( $P = 0.001$ ).

**CONCLUSIONS:** Maternal role training program based on Mercer theory increases maternal self-confidence in primiparous women with unplanned pregnancy. Teaching maternal role is recommended to all health-care providers.

## Keywords:

Self-confidence, training program, unplanned pregnancy

## Introduction

Maternal role is one of the most basic and important roles played by women

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during their lifetime,<sup>[1]</sup> and maternal self-confidence has been considered as a fundamental variable for compatibility with and playing maternal role.<sup>[2]</sup> Mercer has considered mother's self-confidence as an emotional component of maternal role while defining it as mother's perception of her ability to provide baby care and diagnose and respond to the baby's behavior along with the sense of satisfaction with maternal role.<sup>[3]</sup> Lederman *et al.* stated that self-confidence is an integral part of achieving a maternal role.<sup>[4]</sup> Emmanuel *et al.* states that successful compatibility with maternal roles will make the mother feel more confident and have more satisfaction with taking care of her baby.<sup>[5]</sup> Several factors influence mothers' self-efficacy and self-confidence including maternal age, level of education, depression, labor experience, newborn's gender, health status, nature and mood, and support from spouse, family members, and health-care provider.<sup>[6-10]</sup> The results of the study by Walker *et al.* showed that multiparous women have more self-confidence and a more positive attitude toward their motherhood compared to primiparous women.<sup>[11]</sup> Maçola *et al.* also showed that women with unplanned pregnancy have lower self-confidence compared to those with planned pregnancy.<sup>[12]</sup>

According to Mercer, mothers' low self-confidence leads to their delayed transformation into maternal role and identity while limiting their satisfaction with their role. However, mothers with high self-confidence achieve maternal role and satisfaction with their role.<sup>[13]</sup>

According to Halman *et al.*, there was a significant relation between familiarity with maternal role in the third trimester and the mother's self-confidence in maternal duties and her satisfaction with maternal role within 6 weeks after delivery.<sup>[14]</sup>

Mercer noted that women receiving education and information about pregnancy, child's birth, and parental role, along with an awareness of expectations at every stage of pregnancy and motherhood, report higher degrees of confidence and competence in playing their maternal role.<sup>[15]</sup>

Maternal self-confidence in a woman is important for transition to motherhood period in the process of creating an identity of herself and a maternal identity. Interventional studies have shown that formal support and training improve maternal self-confidence. Social support, previous experience with a child, and acquiring necessary skills for parents through increased knowledge and adaptation to their role could increase maternal self-confidence.<sup>[16]</sup>

Mothers need postpartum emotional support. These supports can help mothers' health as well as maternal

roles in the postpartum period. This support can be emotional, financial, and educational along with self-confidence promotion. This support can be provided by the spouse, other relatives, or health workers.<sup>[17]</sup>

The findings show that most primiparous women are not ready to face maternal role.<sup>[11]</sup> Moreover, primiparous women suffer from anxiety due to their lack of experience, knowledge, and motherhood skills followed by a lowered self-confidence.<sup>[18]</sup> Providing a training program for parents while considering their needs increases parents' knowledge about their role and creates self-confidence.<sup>[19]</sup> Given that the mother is more confident during the third trimester of pregnancy, this stage is the best time to train pre- and post-partum care along with baby care.<sup>[20]</sup>

The results of the study conducted by Kashaninia *et al.* in Ardabil showed that the practical training of maternal roles for primiparous women has an impact on maternal self-confidence and maternal identity.<sup>[21]</sup> The study carried out by Delaram *et al.* (2016) in Kurdistan indicated that counting fetal movements in the third trimester of pregnancy has affected the confidence of primiparous women.<sup>[22]</sup> The results of the study by Jaafarnejad *et al.* (2014) in Mashhad showed that mother's training on infant care based on Bandura's self-efficacy theory does not affect maternal self-confidence.<sup>[23]</sup>

The study conducted by Hyun-Ju *et al.* in South Korea showed that maternal role training is an effective intervention in increasing self-confidence in baby care and promoting maternal identity.<sup>[24]</sup> Ozkan and Polat in Turkey have shown that training maternal identity development can be an effective intervention for primiparous women in achieving their maternal identity and self-confidence.<sup>[25]</sup>

Given that Mercer's theory has not been used to train maternal roles until now and regarding the importance of mother's self-confidence in performing her duties, the aim of this study was to examine the effect of maternal role training program based on Mercer theory on maternal self-confidence of primiparous women with unplanned pregnancy.

## Methodology of the Research

This study is a clinical trial with two groups of pre- and post-tests carried out on 67 primiparous women referring to health centers of Mashhad to receive pregnancy care in 2014–2015.

Based on the preliminary study with confidence coefficient of 99% and power of 90, the sample size was calculated to be 32 individuals in each group; however,

with prediction of possible removals, 35 individuals were assigned to each group and finally, the analysis was performed on 67 individuals (35 in the intervention group and 32 in the control group). Sampling was carried out through a multistage sampling and available method and ten urban health centers of Mashhad were selected randomly; five centers were allocated to the control group and five to the intervention group (taking into account the same socioeconomic context).

### Inclusion criteria

primiparous women, unplanned pregnancy with a score of 0–3 from the London questionnaire, gestational age of 33 weeks, living with a spouse, having singleton pregnancy, lacking medical illness, and midwifery problems.

### Exclusion criteria

preterm delivery, infant weight of <2500 g, hospitalization of the newborn in the Intensive Care Unit for any reason, sick and abnormal newborn, midwifery problems during and after pregnancy, and lack of participation in training sessions.

Research tools included demographic characteristics, questionnaires of London, DASS 21, Edinburgh Postnatal Depression Scale (EPDS), Parenting Sense of Competence (PSOC), General Impressions on Infant Temperament Questionnaire, and Six Simple Questions (SSQ).

The London questionnaire examines contraceptive methods, the time of pregnancy, the intention and desire for pregnancy, the relationship with the sexual partner, and the woman's preparation for pregnancy using a set of six questions. A score of 0–3 is considered as an unplanned pregnancy.

DASS 21 includes 21 questions assessing the depression, anxiety, and stress (seven questions for each).

EPDS includes ten multiple-choice questions. The minimum and maximum scores obtained from this scale are 0 and 30, respectively.

PSOC includes 17 items with two subscales of efficacy and satisfaction. The efficacy subscale (PSOC-E) evaluates the woman's perceived efficacy in maternal role (8 items). The satisfaction subscale (PSOC-S) assesses the woman's satisfaction in maternal role. The sum of these two subscales evaluates the self-confidence in the maternal role. Each item is ranked by a 6-point Likert scale. The scores range from 17 to 102. The higher score reflects more self-confidence in maternal role.

The short version of Early Infant Temperament Questionnaire consists of ten questions with scores

ranging from 10 to 60. The higher score indicates a tougher mood and a lower score indicates an easier mood for the infant.

SSQ includes the scores ranging from 6 to 42. The higher score indicates more satisfaction with care during delivery.

The validity of London questionnaire, PSOC, General Impressions on Infant Temperament, and SSQ was determined by content validity method, while the validity of the EPDS was confirmed by Montazeri *et al.* (2007) in Iran.<sup>[26]</sup> The validity of the DASS 21 has been confirmed by Mollahadi *et al.* and Mahmoudi *et al.*<sup>[27,28]</sup>

The reliability of London questionnaire, PSOC, DASS 21, EPDS, General Impressions on Infant Temperament, and SSQ with alpha coefficients of 0.71, 0.75, 0.90, 0.91, 0.72, and 0.90, respectively, was confirmed.

The researcher was present in selected health centers after obtaining permission from the Ethics Committee of Mashhad University of Medical Sciences and distributed the London questionnaire among primiparous women who announced their unplanned pregnancy, and in the event of acquiring the score of 0–3 and meeting the conditions of entry into the research, the goals of the study were explained to them and then the individual- family questionnaire and PSOC was given to them and was completed.

For the intervention group, the training program was presented by the researcher in three sessions during pregnancy and one pre-discharge session. Mothers were trained with attachment behavior to their fetus in their 34<sup>th</sup> week of pregnancy and then, a CD was played for them on the embodiment of maternal role. The second session included the 35<sup>th</sup> week of pregnancy with the content of instructing the behaviors of attachment to the infant and talking care of the infant, and the third session included women in their 36<sup>th</sup> week of pregnancy with the content of breastfeeding training. The duration of each session was 45–60 min held and it was in the form of a scientific show which was held in the place of medical health centers that had convenient chair and were quiet as much as possible. The researcher then would know about the date of delivery of the mothers in case of their hospitalization using weekly phone calls. The skills of interaction with the baby, baby care, and breastfeeding were taught through face-to-face training for 30–45 min before their discharge from the hospital and SSQ were completed. Then, the researcher contacted the research units through weekly phone calls for 4 weeks answering their questions. At the end of the first session, an educational CD containing embodiment of

maternal role and an educational booklet including the training content of behaviors of attachment to fetus and infant, baby care, and breastfeeding were provided by the researcher for mothers. In the control group, the usual care was taken by the midwife and the researcher met the research units at specified times (34<sup>th</sup>, 35<sup>th</sup>, and 36<sup>th</sup> weeks of pregnancy and before discharge from the hospital) to complete the questionnaires. Then, weekly phone calls would be made to remind the care-related issues for 4 weeks after delivery. Furthermore, 4 weeks and 4 months after delivery, mothers of both groups completed the PSOC. The pre- and post-test results were compared among the two groups [Figure 1].

Normality of distribution of quantitative variables was tested using Kolmogorov–Smirnov test. Statistical analysis was done using SPSS software version 21 (IBM corporation, Armonk, NY, USA) and descriptive statistics, independent *t*-test, paired *t*-test, Chi-square test, Fisher’s exact test, Mann–Whitney test, and Wilcoxon test. The significance level in this study was considered to be  $P < 0.05$ .

## Results

Two groups were homogeneous in terms of age, frequency of receiving prenatal care, the first visit for prenatal care, the support by spouse and others, and postpartum depression [Table 1]. In addition, the two groups were homogeneous in terms of education ( $P = 0.343$ ), information about baby care and breastfeeding ( $P = 0.766$ ), infant’s gender ( $P = 0.149$ ), and Childbirth experience ( $P = 0.709$ ) [Table 2].

Based on the independent *t*-test, changes in mean self-confidence scores (mean difference in self-confidence scores before training and 4 weeks after delivery) were statistically significant in both groups ( $P = 0.003$ ). According to the Mann–Whitney test, changes in mean self-confidence scores (difference in mean self-confidence scores before training and 4 months after delivery) were statistically significant in both groups ( $P = 0.001$ ) [Table 3].

The mean score of self-confidence after intervention in the intervention group had a significant difference with the control group, after eliminating the effect of confounding variables and controlling the mean of self-confidence scores before training ( $P = 0.001$ ) [Table 4].

## Discussion

The findings of this study showed that maternal role training based on Mercer theory increases maternal self-confidence in primiparous women with unplanned pregnancy.

**Table 1: Comparison of mean age, frequency of receiving prenatal care, first visit for prenatal care, support by spouse and other, and postpartum depression in the intervention and control groups**

Variable	Group Mean±SD		Significance level
	Intervention	Control	
Age	24.03±4.630	24.19±4.083	0.882*
Frequency of receiving prenatal care	3.51±0.8	3.31±0.8	0.253**
First visit for prenatal care	13.57±8	13.56±6.6	0.669**
Support by spouse	8.23±1.646	8.06±2.639	0.465**
Support by other	8.26±2.227	8.09±2.480	0.932**
Postpartum depression	12.43±6.8	10.50±5.4	0.067**

\*Independent *t*-test, \*\*Mann-Whitney. SD=Standard deviation

In the study of Kashaninia *et al.*, (2015), maternal role practical training for primiparous women increased maternal self-confidence 4 months after delivery,<sup>[21]</sup> which was consistent with the results of the present study. In the Kashaninia’s study, two training sessions were held during pregnancy and one session was held before hospital discharge using interactive method and representation for primiparous women with gestational age of 36–38 weeks. The Pharis questionnaire was used to measure maternal self-confidence.

One of the similarities between the study of Kashaninia and the present study was the examination of four stages of Mercer theory as well as the evaluation of mothers’ self-confidence 4 months after delivery (the time of mother’s identity formation). In Mercer theory, maternal responses are mediated by internal factors including past and present experiences and self-confidence.<sup>[29]</sup> Maternal self-confidence is essential to move toward motherhood stage during the process of mother’s identity formation.<sup>[30]</sup> Primiparous women need to spend more time achieving self-confidence when facing the responsibilities of baby care.<sup>[31,32]</sup>

The results of the study conducted by Jaafarnejad *et al.* (2014) showed that infant care training package based on Bandura’s self-efficacy theory did not affect maternal self-confidence of primiparous women,<sup>[23]</sup> which was not consistent with the results of the present study. The difference between the study by Jaafarnejad and the present study was in their content, training time, posttest time, and maternal self-confidence measurement tool. The training and posttest were conducted in postpartum period and maternal self-confidence was measured using Lips questionnaire. In the study conducted by Jaafarnejad, most of research units had planned pregnancy.

A study by Delaram *et al.* (2015) showed that fetal movements counting during the 28<sup>th</sup> to 37<sup>th</sup> weeks of

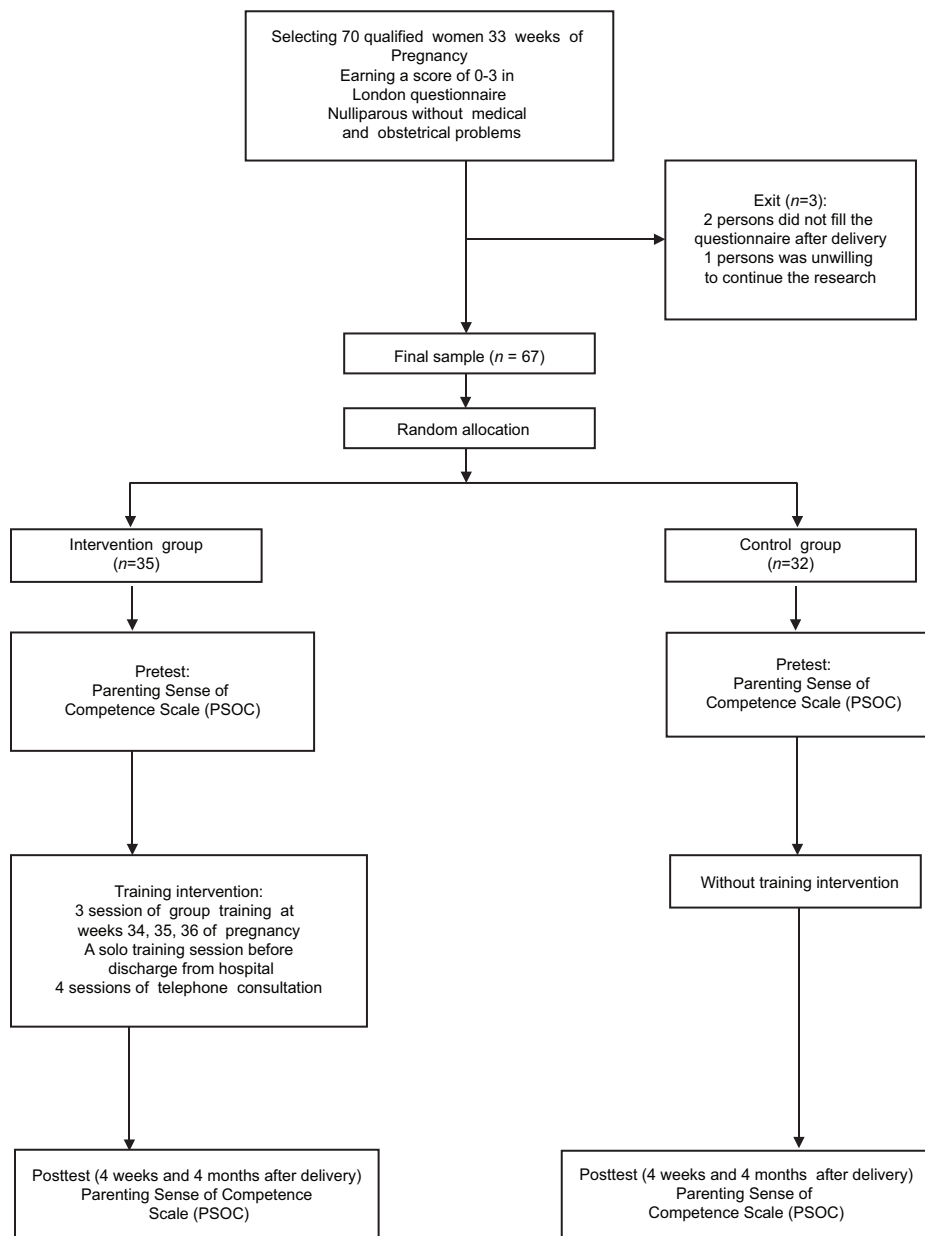


Figure 1: CONSORT flowchart of participants

pregnancy increased the mothers' self-confidence,<sup>[22]</sup> which was consistent with the present study. In their study, 200 primiparous women recorded fetal movements every morning after breakfast for ½ h while lying on the left side, and posttest was done at the end of the 37<sup>th</sup> week of pregnancy while Rosenberg scale was used to measure self-confidence.

The results of a study by Hyun-Ju *et al.* showed that maternal self-confidence training is an effective intervention for increasing self-confidence in baby care and promoting maternal identity,<sup>[24]</sup> which was consistent with the results of the present study. In their study, primiparous women were individually trained on a daily basis from their 1<sup>st</sup> day after delivery (attachment,

breastfeeding, baby bathing, and baby care) for up to 14 days in the form of a representation. Posttest was carried out on the 14<sup>th</sup> day and Pharis questionnaire was used to measure maternal self-confidence. In this study, posttest was done immediately after intervention and the effect of time on it has not been studied.

In a study by Ozkan, (2011) and Polat, maternal identity development education affected maternal self-confidence in primiparous women,<sup>[25]</sup> which was consistent with the results of the present study. Self-confidence measurement tool in Ozkan study was Pharis Self-confidence Scale, and all four stages of Mercer's theory were measured while trainings were provided during the pre- and post-partum

**Table 2: Distribution of the frequency of studied women in terms of education, information about child care and breastfeeding, infant's gender, and childbirth experience in the intervention and control groups**

Variable	Group		Significance level
	Intervention, n (%)	Control, n (%)	
Education			
Middle school and less	4 (11.4)	8 (25)	0.343*
High school and diploma	19 (54.3)	14 (43.8)	
Academic and higher	12 (34.3)	10 (31.3)	
Information about child care and breastfeeding			
Yes	14 (40)	14 (43.8)	0.756*
No	21 (60)	18 (56.2)	
Infant's gender			
Girl	18 (51.4)	22 (68.8)	0.149*
Boy	17 (48.6)	10 (31.4)	
Childbirth experience			
Very negative, slightly negative	5 (14.3)	2 (6.3)	0.709**
Not negative, not positive	0 (0)	2 (6.3)	
Hard but positive	23 (65.7)	24 (75)	
Hard but very positive	7 (20)	4 (12.5)	

\* $\chi^2$ , \*\*Mann-Whitney

**Table 3: Comparison of changes in mean and standard deviation of maternal self-confidence scores in intervention and control groups during the study**

Variable	Group	Mean±SD	
		4 weeks after delivery with before intervention	4 months after delivery with before intervention
Self-confidence	Intervention	10.46±10.94	11.97±8.13
	Control	2.69±9.09	5.38±8.54
Independent t-test and Mann-Whitney tests		t=-3.144 P=0.003	Z=-3.274 P=0.001

SD=Standard deviation

**Table 4: Results of repeated measures analysis for the effect of training intervention on average confidence scores through controlling the mean score of self-confidence before training**

Variable	Group	Mean±SD		
		Before intervention	4 weeks after childbirth	4 months after childbirth
Self-confidence	Intervention	63.69±8.88	74.14±10.87	75.66±9.67
	Control	65.56±10.70	68.25±10.82	70.94±11.55
The result of the analysis of variance of repeated data		Exposure effect: P=0.689, F=0.162 Effect of time: P=0.341, F=0.920 Effect of group: P=0.001, F=13.079		

SD=Standard deviation

periods (one session during pregnancy and one session before hospital discharge) including the factors influencing the development of maternal identity, developmental factors during pregnancy, the importance of breastfeeding, maternal compliance issues, the mother's own care and newborn care, implementing the maternal role with other roles and responsibilities of the family, and the importance of mother-infant relationship through lectures and slideshows. Posttest was conducted 4 months after delivery. The similarity between these two studies is that the training was based on the 4-stage Mercer theory of achieving the maternal role. In Ozkan's study, 25% of women had unplanned pregnancy, while in this study, all women had unplanned pregnancy. One of the main

features of Ozkan's study and the present study was the measurement of the self-confidence of mothers during their identity formation. Self-confidence in fulfilling the duties of the maternal role and achieving the maternal identity leads to their satisfaction with maternal role, showing that the woman has successfully achieved a maternal role.<sup>[33]</sup> As maternal identity develops, supporting mother increases mother's self-confidence, but any kind of support does not necessarily cause the increase in self-confidence.<sup>[34]</sup>

In a study by Kordi *et al.*, maternal role training to primiparous women with unplanned pregnancy had increased maternal competence.<sup>[35]</sup> A mother who acquires the skills and behaviors necessary to take care of

the child has the competence for maternal role. Maternal self-confidence has a close relationship with maternal identity, competence for maternal role, and achieving maternal role.<sup>[16]</sup>

Studies have shown that training primiparous mothers and providing them with information about neonatal behaviors might increase their self-confidence while helping them achieve maternal role.<sup>[36]</sup> Therefore, it is very important to help mothers to increase their self-confidence.<sup>[23]</sup>

One of the limitations of this research, beyond the researcher's control, was the support of spouse and others for primiparous women in which case the researcher tried to control the research units to some extent by asking questions through the personal information questionnaire.

One of the strengths of this research was measuring maternal self-confidence during the time of mother's identity formation (maternal identity is usually achieved 4 months after delivery), the comparison of control and intervention groups of similar socioeconomic context, and, consequently, its high degree of generalizability.

## Conclusions

The results of the present research showed that maternal role training based on Mercer theory increases mother's self-confidence. Given that increased maternal self-confidence improves mother's understanding of her maternal role and improved taking care of the baby, teaching maternal role is recommended to all health-care providers.

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## Conflicts of interest

There are no conflicts of interest.

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