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# The effect of maternal role training program on role attainment and maternal role satisfaction in nulliparous women with unplanned pregnancy

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## Abstract:

**INTRODUCTION:** The maternal role is one of the most basic and important roles played by women during their lifetime. The process of the maternal role starts during pregnancy and to continue and develop after postpartum with the growth of suckling. However, unplanned pregnancy may jeopardize achieving the maternal role and reduce maternal role satisfaction. Therefore, the researcher conducted the present study to determine the impact of maternal role training program on attainment of role and role satisfaction in nulliparous women with unplanned pregnancy.

**METHODOLOGY OF THE RESEARCH:** In this clinical trial, the researcher divided 67 nulliparous women with unplanned pregnancies into two groups at random by drawing lots. For the intervention group, in addition to the usual pregnancy care, the researcher conducted 3 group training sessions at weeks 34, 35, and 36 of pregnancy and an individual training session in the 1<sup>st</sup> day after delivery before release; then, during the next 4 weeks, the researcher made follow-up phone calls each week. The control group received the usual pregnancy care. The research tools included London questionnaire to measure unplanned pregnancy, Myself-As-Mother Scale (SD-Self), My-Baby Scale (SD-Baby), Perceived Competence Scale to measure maternal role attainment, and Parenting Sense of Competence Scale to measure maternal role satisfaction. The researcher measured the maternal role attainment and maternal role satisfaction before training and 4 weeks after delivery. The researcher analyzed the data using SPSS software version 21 and statistical tests such as independent *t*-test, Chi-square, paired sample *t*-test, Mann-Whitney, one-way analysis of variance, and Wilcoxon. The amount of *P* was supposed to be <0.05.

**RESULTS:** The mean age of research units was 24.10 ± 4.3. Twenty-one persons (60%) in the intervention group and ten persons (31.3%) in the control group attained the maternal role (*P* = 0.019) and changes to achieve the maternal role in intervention group were significantly more than the control group (*P* = 0.002). Changes in the mean scores of maternal role satisfaction in the intervention group were significantly more than the control group (*P* = 0.023).

**CONCLUSION:** Maternal role training for nulliparous women with unplanned pregnancy during pregnancy and postpartum period can help them in maternal role attainment and maternal role satisfaction.

## Keywords:

Maternal behavior, psychological adaptation, training program, unplanned pregnancy

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## Introduction

Unplanned pregnancy (untimely and unwanted pregnancies) is a global problem.<sup>[1]</sup> The prevalence of unplanned pregnancy has been reported in various studies in Iran as 35%–42%, of which 19% were untimely and 16% were unwanted.<sup>[2]</sup> Women with unplanned pregnancies are exposed to problems such as increased mental and emotional problems during pregnancy and after childbirth and endangering the positive interaction of mother-infant and maternal role attainment.<sup>[3]</sup>

Mercer (1985) stated that maternal role attainment is a process in which the mother attains maternal role qualifications and adds maternal behaviors to her bunch of roles.<sup>[4]</sup> The maternal role process starts during pregnancy and continues 4–6 months after delivery<sup>[5]</sup> and consists of four steps:

- Waiting stage: Preparation for the birth of a child during pregnancy;
- Official stage (role playing): Familiarity and increased attachment to the baby, learning how to care for the baby;
- Informal stage (role attainment): Responding to exclusive properties of the baby, creating self-induced maternal behaviors and increased self-confidence in taking care of the newborn care; and
- Personal stage (maternal role identity): Joyful relationship between mother-newborn, love of suckling, and feeling competent.<sup>[6]</sup>

According to Mercer (1995), maternal role identity might be attained in 1 month or several months.<sup>[7]</sup>

Mother, newborn, and environment are variables connected to the maternal role. Maternal variables include mother's age, mother-infant separation, culture, socioeconomic level, marital status, parental self-confidence, birth experience, premature separation of mother-infant, stress, social support, personality, understanding the newborn, role conflict, and tension, neonatal health, and status variables including newborn's mood, health, reaction, and appearance, and environmental variables such as social support by spouse and family members and training by health staff.<sup>[8,9]</sup>

Maternal role attainment creates secure attachment to the infant, increases women's confidence to promote the child's cognitive, behavioral and physical development, a sense of mastery in taking care of infant without the help of others and develops, a sense of satisfaction and pleasure in the maternal role.<sup>[5,10]</sup> According to Mercer (2006), maternal role satisfaction means a kind of satisfaction and enjoyment and pleasure that a woman experiences in interacting with her infant and in carrying out maternal role tasks after the birth of the

baby.<sup>[11]</sup> Mothers with planned pregnancies experience more fun and pleasure in the maternal role than mothers with unplanned pregnancies.<sup>[3]</sup>

According to some studies, stress, mother's age, nulliparous status, training level, mother's occupation, family income, health status, delivery complications, and newborn's mood are related to the maternal role.<sup>[12]</sup> Guidubaldi (1989) stated that the feeling of satisfaction of maternal role by the woman has a positive effect on the growth of the baby.<sup>[13]</sup> Based on a study by Ahmadi Faraz *et al.* (2012), Iranian women are emotional and child-centered and the preoccupation of proper performance of maternal role has always been associated with them.<sup>[14]</sup> So far, few studies have been reported in the context of the program to promote the maternal role.<sup>[5,15-19]</sup>

In a study by Srisomboon *et al.* (2011) in Thailand, the program to promote maternal role was effective in maternal role attainment in teenage mothers with unplanned pregnancy.<sup>[20]</sup> A study by Bae *et al.* (2009) in Korea, web-based training was effective in nulliparous women's attainment of maternal role.<sup>[15]</sup> A study by Ozkan *et al.* (2011) in Turkey, maternal identity training based on Mercer's theory was effective in nulliparous women's attainment of maternal role and understanding the child.<sup>[16]</sup>

A study by Khakbazan *et al.* (2014) in Tehran indicated that training had no impact on maternal identity.<sup>[5]</sup> A study by Kung Sook (2001) in Korea showed that maternal role training program for nulliparous women affected mother-baby interaction and infant growth.<sup>[17]</sup> Phanthufak *et al.* (2009) in Thailand showed that maternal role promotion campaign is effective on maternal role satisfaction, mother-infant attachment, qualification in learning baby behavior, and baby growth and may reinforce the maternal role in nulliparous women.<sup>[18]</sup>

Ngai *et al.* (2009) in China showed that a psychological delivery training program based on Rozenbaum's theory increased the maternal role satisfaction in 6 weeks to 6 months after delivery.<sup>[19]</sup> Given that the lack of knowledge and awareness about maternal role is the most important factor in refusing the maternal role, due to lack of experience in nulliparous mothers, there is a need for training programs related to the maternal role.<sup>[21,22]</sup> Educating mothers about caring for themselves and their baby reduces anxiety and increases a feeling of competence and maternal identity attainment.<sup>[23]</sup> According to the results of a study by Ahern *et al.* (2003) in the United States, awareness of the values and cultural beliefs of women helps the instructors to better understand attachment behaviors and behaviors corresponding to maternal

role attainment.<sup>[24]</sup> On the basis of legislation by Iran's Ministry of Health, Treatment, and Medical Training, one of the most important responsibilities of the midwife is preparing the pregnant women to accept the maternal role.<sup>[25]</sup> According to limited studies in the context of maternal role attainment and satisfaction and impact of culture on the development of maternal role, the researcher decided to determine the effect of maternal role training program on maternal role attainment and satisfaction in nulliparous women with unplanned pregnancy.

### Methodology of the Research

The present study is a pre- and post-test clinical trial on two groups that after obtaining the permission from the Ethics Committee of Mashhad University of Medical Sciences was conducted on 67 nulliparous women referring to health centers in the city of Mashhad in 2014. Based on the results of the preliminary study and the equation:

$$N = \frac{\left( Z_{1-\frac{\alpha}{2}} + Z_{1-\beta} \right)^2 (S_1^2 + S_2^2)}{(\bar{x}_1 - \bar{x}_2)^2}$$

and taking into account:

$$Z_{1-\frac{\alpha}{2}} = 2.58$$

$$Z_{1-\beta} = 1.28$$

$$S_1 = 6/35$$

$$S_2 = 7/56$$

$$\bar{X}_1 = 105.25$$

$$\bar{X}_2 = 98.60$$

The researcher calculated the sample size as  $n = 32$  persons in each group and by considering a potential loss of 10%, the sample size was estimated as 35 persons in each group, and in the control group, three persons were excluded from the research (two persons did not fill the postdelivery questionnaire and one person due to lack of interest to continue the research), and ultimately, the researcher analyzed 67 cases (35 in the intervention group and 32 in the control group).

The criteria for inclusion in the research were nulliparous women, unplanned pregnancy by earning a score of 0–3 in London questionnaire, single pregnancy, 33 weeks of pregnancy, living with spouse; and the exclusion criteria were preterm pregnancy, sick and abnormal baby,

infant hospitalized in the Intensive Care Unit for any reason, obstetrical problems during pregnancy, infant weight <2500 g, a history of infertility, studying medical sciences or psychology, catching medical diseases, and not attending any training courses.

Data collection tool in this study included personal particulars and childbirth-newborn form, London questionnaire, Myself-As-Mother Scale, My-Baby Scale, Perceived Competence Scale (PCS), Parenting Sense of Competence (PSOC) questionnaire, and overall perception of baby mood questionnaire.

London questionnaire has six questions that ask women about the use of contraception methods, pregnancy date, pregnancy intention, relationship with sex partner, and preparation for pregnancy. Each question has a score of 0–2. Total scores are between 0 and 12. A score of 0–3 means unplanned.

To assess the maternal role attainment, the researcher used three various scales (Myself-As-Mother Scale, My-Baby Scale, PCS).

Myself-As-Mother Scale consisted of 22 items, with a 7-point semantic differentiation scale. The range of scores was 11–77. High scores indicated a positive maternal self-assessment.

My-Baby Scale consisted of 21 items, with a 7-point semantic differentiation scale. The range of scores was 6–42. High total scores indicated a positive assessment of the person about the baby.

PCS included six items that measure competence in baby care and feeding. The scope of responses to the questions was from no competency (score 1) to fully competent (score 6). The perceived competence total scores range was between 1 and 6. A high score indicated a higher level of perceived competence in baby care. A score  $\geq 45$  in Myself-As-Mother Scale, a score  $\geq 30$  in My-Baby Scale, and a score  $\geq 4$  in the perceived competence Scale meant successful maternal role attainment.

The PSOC questionnaire by Gibaud-Wallston is a 17-item scale that measures the two subscales of PSOC and satisfaction in which 9 items evaluate role satisfaction. Each item is rated by 6-point Likert Scale. The range of subscale scores of role satisfaction is 9–54 and a higher score indicates higher maternal role satisfaction.

The questionnaire of overall mothers' understanding of the mood of baby that is a concise version of the initial newborn mood questionnaire, studies the baby's mood between 1 and 4 months of age, and contains ten

questions, and each question's score is a number between 1 and 6. The scores' range is between 10 and 60. A high score indicates harsher temperament and a lower score indicates milder mood of the baby.

The validity of the London questionnaire, Myself-As-Mother Scale, My-Baby Scale, PCS, PSOC scale, and overall perception of mother of the infant's mood scale were determined by the content validity method and the reliability of London questionnaire and Myself-As-Mother Scale, My-Baby Scale, PCS, PSOC scale (subscale of role satisfaction), and overall perception of mother of the infant's mood scale were confirmed with the alpha coefficient of 0.71, 0.84, 0.64, 0.88, 0.71, and 0.72, respectively.

The sampling method was based on multistage sampling method such that the researcher selected ten urban health centers covered by five centers in the city of Mashhad at random. Next, based on drawing lot, the researcher assigned five centers to intervention group and five centers to control group. The researcher submitted the London questionnaire to the nulliparous women with 33 weeks of pregnancy that announced their pregnancy was unplanned, and if they earned a score of 0–3 and other requirements to enter the study, the researcher explained the research goals to them and obtained their filled informed consent form. Then, in week 34 of pregnancy and before the training, the researcher submitted to them the personal family questionnaire, Myself-As-Mother Scale, My-Baby Scale, perceived competence Scale, and PSOC questionnaire and explained how to fill them correctly.

For the intervention group, the researcher conducted the training program during three sessions in the weeks 34, 35, and 36 of pregnancy for groups of 4–7 persons using dramatic techniques and a doll and CD and a solo session in the 1<sup>st</sup> day after delivery. The duration of training in each session during pregnancy was 45–60 min and 30–45 min after childbirth. These training sessions included behaviors of attachment to fetus in the first session. Next, the researcher used a personal laptop computer to play an audio CD describing maternal role and a trance was induced in them to trigger mental hallucination such that they imagined their maternal role and thought they were actually playing a mother's role. In the end of this session, a training CD with the content of maternal roleplaying and a training manual with the content of attachment to the fetus and newborn, general infant care, and breastfeeding which was prepared by the researcher was given to them to use at home. The content of training manual was based on reference books and articles, instructions released by the Ministry of Health, and approved by supervisor and advisor professors. The content of the maternal roleplaying CD was prepared

by the advisor professor based on guided visualization techniques. The training content of the second session included behaviors of attachment to infant and general infant care, and the third session included breastfeeding, mother's diet during breastfeeding, taking vitamins, and baby warning signs. Then, the researcher made weekly phone call to mothers to get the news about the mothers' date of delivery.

In the 1<sup>st</sup> day after childbirth at the hospital, the researcher taught skills such as interaction with the newborn, baby care, and breastfeeding and answered to their questions. Furthermore, the information related to childbirth was completed through interviews. Then, the researcher called the intervention group mothers every week for 4 weeks at predetermined hours and answered to their questions about the conducted training and the problems that they or their infants had.

In the control group, a midwife carried out the usual care and in the weeks 34, 35, and 36 of the pregnancy and the 1<sup>st</sup> day after childbirth, the researcher met the research units for the completion of the questionnaires. Then, the researcher called them every week for 4 weeks as a reminder of cares. At the end of study (4 weeks after delivery), a training manual with the content of attachment to the fetus and newborn, breastfeeding, and general baby care was given to the control group. In the 4<sup>th</sup> week after giving birth, mothers in both groups filled the Myself-As-Mother Scale, My-Baby Scale, PCS, PSOC Scale, and overall perception of baby mood questionnaire. The pre- and post-test results were compared between the two groups [Figure 1].

The researcher tested natural distribution of quantitative variables using the Kolmogorov–Smirnov test and conducted statistical analysis by SPSS software version 21 (IBM Corporation, Armonk, NY, USA) and descriptive statistics, independent *t*-test, paired sample *t*-test, Chi-square test, Fisher's exact test, Mann–Whitney test, and Wilcoxon test. The *P* value in this study was set at *P* < 0.05.

## Results

The mean age in the intervention and control groups was  $24.03 \pm 4.6$  and  $24.19 \pm 4$  (*P* = 0.882), respectively, and mean spouse support score was  $8.23 \pm 1.6$  and  $8.06 \pm 2.6$  (*P* = 0.465) and mean support score by other people was  $8.26 \pm 2.2$  and  $8.09 \pm 2.4$ , the stress, anxiety-depression score was  $18.63 \pm 9.1$  and  $16.09 \pm 9.7$  (*P* = 0.275) and self-confidence score was  $63.69 \pm 8.8$  and  $65.56 \pm 10.7$  (*P* = 0.436), the number of days that others helped in baby care was  $12.29 \pm 5.6$  and  $14.44 \pm 8.1$  (*P* = 0.329), the first time of baby breastfeeding was  $2.03 \pm 0.8$  and  $2.06 \pm 0.9$  (*P* = 0.859),

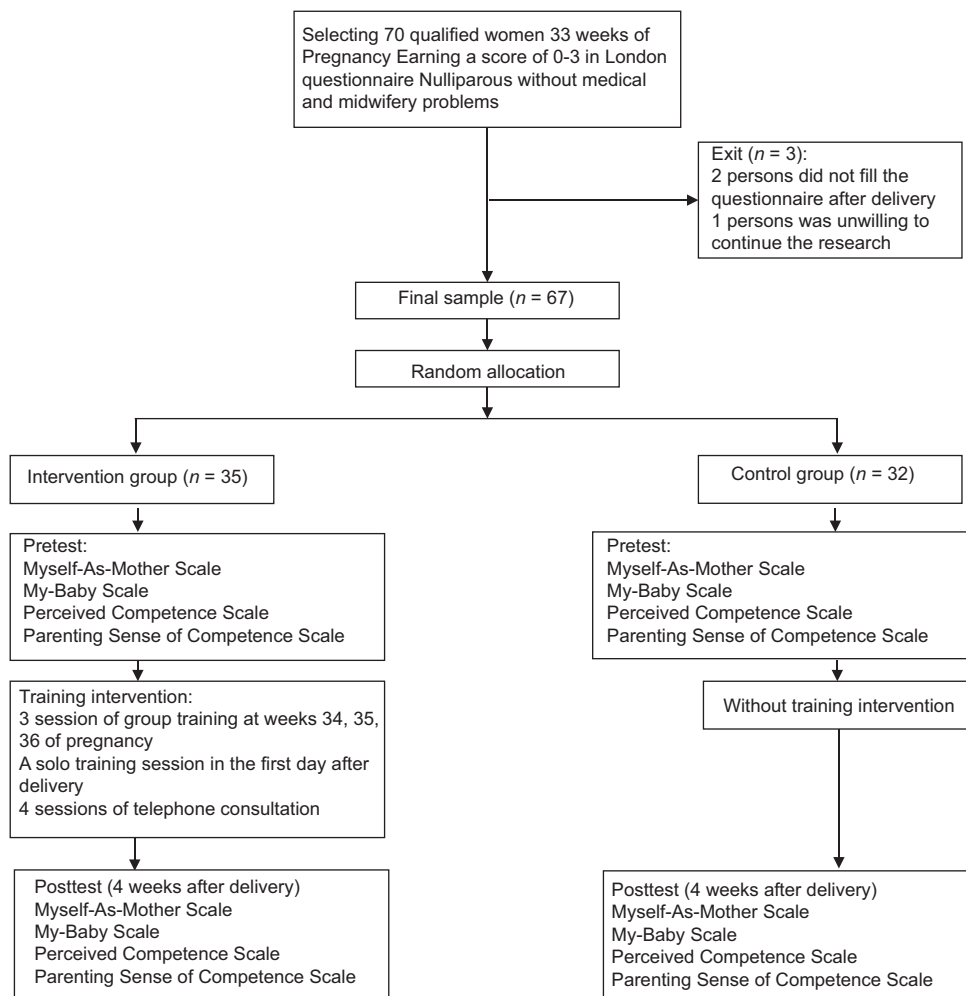


Figure 1: CONSORT flow chart of participants

postnatal depression was  $12.43 \pm 6.8$  and  $10.50 \pm 5.4$ , baby mood was  $32.20 \pm 3.7$  and  $32.47 \pm 4.9$  ( $P = 0.804$ ), and the two groups were homogeneous in terms of these variables.

On the basis of the Fisher's exact test, the two groups were homogeneous in terms of jobs ( $P = 0.378$ ), baby's gender ( $P = 0.149$ ), history of abortion ( $P = 0.701$ ) such that in the intervention and control groups, respectively, 31.4% ( $n = 11$ ) and 21.9% ( $n = 7$ ) were employed and 68.6% ( $n = 24$ ) and 78.1% ( $n = 25$ ) were homemakers, and the baby's gender in 51.4% ( $n = 18$ ) and 68.8% ( $n = 22$ ) was female and 8.6% ( $n = 3$ ) and 12.5% ( $n = 4$ ) had a history of abortion.

Furthermore, the two groups in terms of level of education, socioeconomic class, type of delivery, baby care experience before childbirth, and childbirth rank were homogenous [Table 1].

According to Mann-Whitney test before training, the maternal role attainment in the two groups was similar ( $P = 0.066$ ); however, after the training, the maternal role

attainment in the intervention group was significantly more than the control group ( $P = 0.019$ ) [Table 2].

According to Mann-Whitney test result, changes in maternal role attainment in the intervention group were significantly more than control ( $P = 0.112$ ) [Table 3].

Based on independent *t*-test results, the mean score of maternal role satisfaction before training was identical in the two groups ( $P = 0.394$ ) and after the training, there was no statistically significant difference ( $P = 0.164$ ). According to the results of paired sample *t*-test, there was a statistically significant difference between the mean score of maternal role satisfaction before and after training in the intervention group ( $P = 0.001$ ), but the difference was not statistically significant in control group ( $P = 0.196$ ) [Table 4].

## Discussion

The findings of this study showed that maternal role training program increased maternal role attainment and maternal role satisfaction in nulliparous women with unplanned pregnancy.

In a study by Srisomboon *et al.* (2011), the maternal role promotion program increased the maternal role attainment 4 weeks after delivery<sup>[20]</sup> which was consistent with the results of the present study. Their study was a quasi-experimental study with only a posttest provided

for nulliparous women with unplanned pregnancies under 19 years of age, there was one training session at week 36 of pregnancy and for the evaluation of the maternal role, the successful maternal role attainment Successful (MRAS1, form B) was used.

**Table 1: Distribution of the frequency of studied women in terms of mother's level of education, socioeconomic class, type of delivery, baby care experience before the current childbirth, and childbirth rank in the intervention and control groups**

Variable	Group		P
	Intervention, quantity (%)	Control, quantity (%)	
Mother's level of education			
Guidance school and lower	4 (11.4)	8 (25)	0.343*
High school and diploma	19 (54.3)	14 (43.8)	
University and higher	12 (34.3)	10 (31.3)	
Socioeconomic class			
2	22 (62.9)	22 (68.8)	0.710*
3	7 (20)	4 (12.5)	
4	6 (17.1)	6 (18.8)	
Type of delivery			
Natural	22 (62.9)	19 (59.4)	0.770*
Cesarean	13 (37.1)	13 (40.6)	
Baby care experience before the current childbirth			
Inexperienced	26 (74.3)	22 (68.8)	0.612**
1 experience	6 (17.1)	6 (18.8)	
2 experiences	1 (2.9)	3 (9.4)	
3 experiences and more	2 (5.7)	1 (3.1)	
Baby care experience before the current childbirth			
1	13 (37.1)	13 (40.6)	0.588*
2	5 (14.3)	7 (21.9)	
3 and more	17 (48.6)	12 (37.5)	

\*Chi-square, \*\*Mann-Whitney test

The result of the study by Bae *et al.* (2009) showed that an 8-week program based on the Web in the postpartum period was effective in maternal role attainment in nulliparous women<sup>[15]</sup> that was consistent with the results of the present study. The Bae study was nonexperimental with pre- and post-test and the training program content included physical exercise after delivery, breast care to prepare for the baby's feeding, taking care of the baby, and interaction with the baby with the use of the Web in the postpartum period, and the measurement tool of maternal role attainment was Walker's role attainment questionnaire.

In a study by Ozkan *et al.* (2011), maternal role identity development training was effective in maternal role attainment in nulliparous women<sup>[16]</sup> that complies with the results of the present study. The measurement tools in maternal role attainment in the Ozkan study were Myself-As-Mother Scale, My-Baby Scale, and Pharis Self-Confidence, and the training content included factors affecting the development of the identity of mother, developmental factors during pregnancy, importance of breastfeeding with mother's milk, motherhood compliance issues, self-care and baby care, implementation of maternal role with other recurring roles and responsibilities in the family, emphasis on the mother-baby relationship presented through lecture and slide show, and then, the posttest was conducted 4 months after childbirth. One of the benefits of the Ozkan study was assessing

**Table 2: Distribution of the frequency of maternal role attainment before the training and 4 weeks after delivery in the intervention and control groups**

Variable	Group						Mann-Whitney test result (Z, P)
	Intervention		Control		Total		
	Yes, quantity (%)	No, quantity (%)	Yes, quantity (%)	No, quantity (%)	Yes, quantity (%)	No, quantity (%)	
Maternal role attainment							
Before training	0	35 (100)	3 (9.4)	29 (90.6)	3 (4.5)	64 (95.5)	-1.840, 0.066
4 weeks after delivery	21 (60)	14 (40)	10 (31.3)	22 (68.8)	31 (46.3)	36 (53.7)	-2.340, 0.019

**Table 3: Distribution of the frequency of changes in maternal role attainment in the intervention and control groups**

Variable	Group			Mann-Whitney test result ( $\chi^2$ , P)
	Intervention, quantity (%)	Control, quantity (%)	Total, quantity (%)	
Changes in maternal role attainment				
Became more	21.(60)	7.(21.9)	28.(41.8)	-3.137, 0.002
No change	14.(40)	25 (78.1)	39.(58.2)	
Total	35 (100)	32.(100)	67.(100)	

**Table 4: The mean and standard deviation of scores of maternal role satisfaction before training and 4 weeks after training in the intervention and control groups**

Variable	Group (mean±SD)			Independent t-test result (t, df, P)
	Intervention (n=35)	Control (n=32)	Total (n=67)	
Maternal role satisfaction				
Before training	29.74±6.4	31.09±6.3	30.39±6.4	0.85, 65, 0.394
4 weeks after delivery	34.89±7.6	32.34±7	33.67±7.4	-1.40, 65, 0.164
Changes in mean score before and after training	5.14±7.9	1.25±5.3	3.28±7	-2.32, 65, 0.023
Paired sample t-test result (t, df, P)	-3.82, 34, 0.0010	-1.32, 31, 0.196		

SD = Standard deviation

the maternal role attainment 4 months after giving birth when the maternal identity is formed and the last stage of maternal role attainment has also been measured; however, according to Mercer, the maternal role identity can be formed 1 month after giving birth as well.

In a study by Phanthufak *et al.* (2009), the maternal role promotion program increased the maternal role satisfaction 6 weeks after delivery<sup>[18]</sup> that complies with the results of the present study. The difference of Phanthufak study with this study was in the content and time of training, time of posttest, and the role satisfaction measurement tool. The content of Phanthufak study included interaction with baby through massage and touch in the weeks 36 and 37 of pregnancy and posttest time 6 weeks after childbirth and the maternal satisfaction questionnaire by Russell was used.

The study of Ngai *et al.* (2009) showed that 3 training sessions based on Rozenbaum's learned strategy increased the maternal role satisfaction 6 weeks after delivery<sup>[19]</sup> that complies with the results of the present study. In Ngai study, training with the content of dealing with stress skills and parental problems, techniques of modification of irrational thoughts about maternal role and newborn care, training problem-solving strategies, and decision-making skills related to newborn care problems were presented in the second quarter as lectures while in the present study, the general baby care and attachment to the fetus and baby were displayed in a practical dramatic way with the use of artificial body parts in the third quarter.

The result of a study by Khakbazan *et al.* (2014) showed that training had no impact on maternal identity 6 and 12 weeks after delivery but improved maternal competence and reduced the stress in maternal role attainment 6 and 12 weeks after childbirth<sup>[5]</sup> which did not comply with the results of the present study. The difference between this study and the present study was in content, training time and method, measurement tools of maternal role attainment, and posttest time. In the Khakbazan study, the majority of research units had planned pregnancy and the training content of self-care and baby care was provided through slide show, film, and lecture in the weeks 36 and 37 of pregnancy and 10–25 days after delivery. In Khakbazan's

study, maternal role has been emphasized in two concepts of maternal identity and competence, Therefore, the questionnaire of maternal identity in the third quarter and postpartum maternal identity questionnaire were used to evaluate the mother's identity. PSOC questionnaire was used to assess maternal competence which was measured at 6 and 12 week postpartum; however, in the present study, training was conducted by practical demonstration method and maternal role attainment was based on three different questionnaires measured at 4 weeks after delivery.

Teaching mothers about their own care and newborn care reduce mother's anxiety and increase a feeling of competence and maternal role attainment and the mother with attaining maternal role and self-confidence could take a better care of the baby.<sup>[23]</sup>

One of the limitations of the research which was out of the control of the researcher was studying the mother's personality features and the role attainment and maternal role satisfaction was conducted just 4 weeks after delivery that could be conducted in longer periods.

One of the points of strengths of this study was sampling five health centers in Mashhad with diverse socioeconomic classes, comparison of the control and intervention groups was conducted within similar socioeconomic strata and as a result, high generalization potential and ongoing support of the researcher of the research units can be mentioned in this regard.

## Conclusion

The results of this study showed that maternal role training for nulliparous women with unplanned pregnancy during pregnancy and the postpartum period is effective in maternal role attainment and maternal role satisfaction. Midwives and women's health-care personnel, by teaching maternal role to them, can help women in appropriate maternal role attainment and maternal role satisfaction.

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### Conflicts of interest

There are no conflicts of interest.

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