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# Investigating the effect of educational interventions on maternal competence: A systematic review and meta-analysis

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## Abstract:

There have been many studies on maternal competence, but in the studies conducted in this field, different methods have been applied to educate mothers on maternal competence, which do not have a unified approach. This study aims to investigate the effect of educational interventions on maternal competence using a meta-analysis method. In this meta-analysis, a search was made in MEDLINE, CINAHL, PubMed, Scopus, Proquest, Google scholar, SID, and Magiran databases using Mesh and non-Mesh keywords between January 1992 and September 2022. The inclusion criteria included: Studies in which educational and counseling interventions on maternal competence have been investigated, studies that have used the Parenting Sense of Competence Scale (PSOC), RCT or interventional studies, participants who were primiparous women, articles that were published in English and Farsi, studies that reported sample size, mean and standard deviation of maternal competence scores in the intervention and control groups, and studies that scored at least 3 on the Jadad scale. Data were analyzed using Review Manager 5 (RevMan 5.3). In this meta-analysis and systematic review, finally, seven articles met the criteria for entering the research. The number of samples in the intervention group was 430 and in the control group was 429. The average maternal competence score with a 95% confidence interval was 3.51. This meta-analysis showed that educational interventions during pregnancy and after delivery could affect improving the competence of primiparous mothers. Education has increased the maternal competence score in the intervention group by 3.51 units compared to the control group.

## Keywords:

Clinical trial, counseling, education, maternal competence, maternal role competence

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## Introduction

The maternal role starts in pregnancy and continues over 4–6 months postpartum when most mothers obtain competence and satisfaction in their role.<sup>[1]</sup> The main components of the maternal role include an attachment to the baby through role identification, interaction with the baby, gaining competence in maternal behaviors, and expressing the feeling of pleasure in mother–infant interactions. The feeling of competence in the maternal role affects the quality of care of the baby and the interaction between mother and the baby.<sup>[2]</sup>

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In their study, Márk-Ribiczey *et al.* (2015) stated that maternal role competence is a reflection of the mother's belief in performing the role of the mother effectively.<sup>[3]</sup> Competence in the maternal role develops when mothers have the knowledge and skills of infant care necessary for the maternal role, and women who have competence in the maternal role feel comfortable with infant care tasks and interpreting their infants' behaviors that facilitate the mother's identity.<sup>[4]</sup> Various variables play a role in maternal role competence, including the mother's self-concept, the mother's physical and mental health, social support, stress,

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attachment to the baby, the baby's health, the mother's age, and parity.<sup>[5]</sup>

Ngai *et al.*<sup>[4]</sup> (2012) stated that women, who feel more competent, insist more on performing tasks related to the role of mother and avoid self-blame and feel more satisfied with the role of mother.

Parents, especially mothers, must constantly adapt to the changing needs of their children. Therefore, they may face problems in managing their child's behavior. This causes parents to doubt their competence and abilities in the role of parents and to conclude that they do not have the necessary self-efficacy to control and manage their child's behavior.<sup>[6]</sup>

Promoting the competence of mothers is the main goal of pregnancy educators.<sup>[7]</sup> In primiparous mothers, due to lack of experience, the need for an educational program regarding the maternal role seems essential.<sup>[8]</sup> A mother who gives birth for the first time may feel anxious about her competence and effectiveness in caring for her baby and how to meet the baby's needs. Based on this, it is very important to provide information about the fetus and pregnancy, taking care of oneself and the baby, and individual counseling services for mothers before birth, about things that affect the mother's sense of competence.<sup>[9]</sup> Teaching mothers about self-care and baby care reduces mothers' anxiety and increases their sense of competence. The mother will provide better care for the child by acquiring maternal role behaviors and self-confidence.<sup>[10]</sup>

The result of the study by Kordi *et al.*<sup>[11]</sup> (2017) showed that maternal role training for nulliparous women with unplanned pregnancies during pregnancy and postpartum period can help them in maternal role attainment and maternal role satisfaction. The results of the study conducted by Fasanghari *et al.* (2019) showed that a maternal role training program based on Mercer theory increases maternal self-confidence in primiparous women with an unplanned pregnancies.<sup>[12]</sup> Mercer (2004) noted that women, who receive education and information about pregnancy, childbirth, parental role, and awareness of expectations at each stage of pregnancy and motherhood, report feeling more confident and competent in playing the maternal role.<sup>[13]</sup>

Azmoude *et al.*'s study (2014) showed that the educational program based on Bandura's self-efficacy theory is effective in maternal role competence.<sup>[14]</sup> Also, Jamshidbiki's study (2014) showed that mother and baby care education affects maternal competence.<sup>[15]</sup>

The result of a study by Ngai *et al.*<sup>[16]</sup> (2009) showed that childbirth psychoeducation program does not

affect maternal role competence. In a study by Gao *et al.* (2012), an interpersonal-psychotherapy-oriented childbirth education program had no effect on maternal role competence 6 weeks after delivery, but it created a significant difference in the maternal role competence score 3 months after delivery in two groups.<sup>[17]</sup>

So far, there have been many studies on the competence of the maternal role, but in the studies conducted in this field, different methods have been used to train mothers for the competence of the maternal role, which does not have a unified approach, and it is not clear exactly to what extent each of the different interventions is effective on maternal competence. In order to arrive at a valid conclusion and to the best of our knowledge, the efficacy of education on maternal role competence has not been systematically reviewed, so the aim of this systematic review and meta-analysis was to assess the effectiveness of educational interventions on maternal role competence.

## Materials and Methods

### Search strategy

The implementation method is meta-analysis. Examples of this study are research articles that have been published from January 1992 to September 2022. An extensive search of online databases including MEDLINE, CINAHL, PubMed, Scopus, Proquest, Google scholar, SID, and Magiran. The search strategy of articles used the keywords "maternal role competence," "maternal competence," "counseling," "education," and "RCT" along with OR and AND operators in the title and abstract. For searching the Persian electronic databases, keyword equivalents in Farsi were used. The search of databases was done by both researchers who had enough experience in search and knowledge and was responsible for the independent extraction of the data.

### Study selection

Both authors independently assessed the full text of relevant articles for eligibility based on the predefined criteria. In order to increase sensitivity, the list of articles references was manually checked. Disagreements between the investigators were resolved by discussion.

### Inclusion and exclusion criteria

The inclusion criteria included: studies in which educational and counseling interventions on maternal competence have been investigated, studies that have used the Parenting Sense of Competence Scale (PSOC), RCT or interventional studies, participants who were primiparous women, articles that have been published in English and Farsi, studies that have reported the sample size, mean and standard deviation of maternal competence scores in the intervention and control

groups, studies that have scored at least 3 on the Jadad scale.

Exclusion criteria included articles, abstracts related to congresses and conferences that lacked the full text of the article, and studies that did not use the Parenting Sense of Competence Scale (PSOC).

The corresponding author was contacted for articles that were missing relevant data.

**Data extraction and quality assessment**

In each of the primary studies, data were extracted based on the title of the article, the name of the first author, the year of publication, country, Method, Target population, Tools, Results, the sample size in the intervention and control groups, the random allocation status, the blinding status, the number of withdrawals, and the average score of maternal competence in the intervention and control groups. The Jadad scale was used to evaluate the quality of primary studies included in the meta-analysis. This scale includes three criteria of randomization, blinding, and sample attrition reporting in direct relation to the control of bias in interventional studies. The total score of these three criteria is 5. The range of criterion scores is 0–2 for randomization, 0–2 for blinding, and 0–1 for reporting sample attrition. A score of less than 3 indicates poor quality and a score of 3 or more indicates good quality of the study.<sup>[18]</sup> The risk of bias tool is based on six domains: sequence generation, allocation concealment, blinding, incomplete outcome data, selective outcome reporting, and “other sources of bias.” Critical assessments on the risk of bias (high, low, unclear) are made separately for each domain. Disagreements between the investigators were resolved by discussion.

**Statistical analysis**

RevMan software (5.3) was used for data analysis. The heterogeneity index between studies was determined using Cochran’s (Q) and I<sup>2</sup> tests. The point estimation of the standardized difference of the average maternal competence score with a 95% confidence interval was calculated in a forest plot, in which the size of the square indicates the weight of each study and the lines on both sides of it show the 95% confidence interval.

**Results**

By initial search through various databases, 1801342 articles were found, and 1796989 articles were eliminated by limiting the search strategy. From the remaining 4353 articles, by reviewing the titles and abstracts, 4334 irrelevant and repetitive studies were removed. In the following, from the remaining 19 articles, 12 studies with inclusion and exclusion criteria and the quality assessment checklist of the articles were reviewed and

excluded (three studies were dissertations, which were excluded due to the lack of access to the full text of the dissertation, seven cases were removed because the participants were not primiparous women or the PSOC questionnaire was not used, one study was excluded because it had reported the median and interquartile range for the maternal role competence variable, one study was excluded because it did not obtain a minimum score of 3 on the Jadad scale, and finally, seven studies met the criteria for entering the meta-analysis, [Diagram 1]). The type of study was a clinical trial in five studies, a quasi-experimental study in 1 and a semi-experimental in 1 study. All seven studies reported the mean and standard deviation for the maternal role competence variable [Tables 1 and 2].

Seven studies included in this meta-analysis have used different interventions to promote maternal competence. In two studies, the time of intervention was during pregnancy, in three studies both during pregnancy and the postpartum period, and in two studies it was the postpartum period. In the studies in which the intervention was performed during pregnancy, in 1 study, the intervention was performed in the 12<sup>th</sup> to 35<sup>th</sup> week of pregnancy, and in four studies, the intervention was performed in the 28<sup>th</sup> week of pregnancy or after (the third trimester of pregnancy). The average age in Gao’s studies was 28 years, in Kordi’s, Jamshidbiki’s, and Azmoude’s studies it was 24 years, in Ngai’s study it was 30–32 years, and in Jahdi’s study it was 18 years. In four studies, there was telephone follow-up. The time to measure maternal competence (after the intervention) in four studies, 6 weeks after delivery, in one study at 4 weeks after delivery, in one study at 10 days after delivery, and in

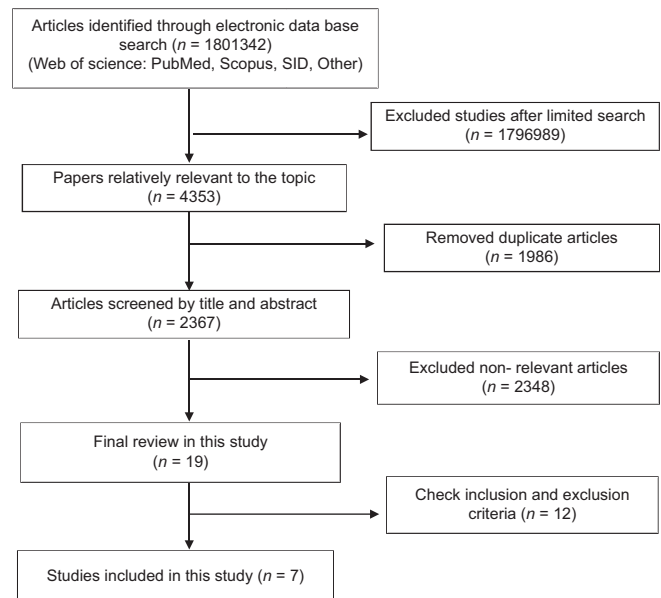


Diagram 1: Flowchart of searching and literature reviews for selecting studies

**Table 1: Systematic review of the impact of educational interventions on maternal role competence**

Row	Author's name and year/country	Name of the article	Method	Target population	Tools	Results
1	Ngai <i>et al.</i> (2009) <sup>[16]</sup> China	The effects of a childbirth psychoeducation program on learned resourcefulness, maternal role competence and perinatal depression: A quasi-experiment	In addition to the routine childbirth education program, the intervention group received 3 one-hour sessions of a psychological education program based on the concept of learned resourcefulness (focusing on cognitive reconstruction, problem-solving and self-efficacy (Rosenbaum). The control group received the usual childbirth education program.	184 primiparous pregnant women (92 people in the intervention group and 92 people in the control group)	Parenting Sense of Competence (PSOC)	Childbirth psychoeducation program does not affect the maternal role competence
2	Azmoude <i>et al.</i> (2014) <sup>[14]</sup> Iran	Effect of self-efficacy-based training on maternal sense of competency of primiparous women in the infants care	For the intervention group, an education program based on Bandura's self-efficacy theory was implemented 10–15 days after delivery. The control group received the usual care.	61 primiparous pregnant women (30 people in the intervention group and 31 people in the control group)	Parenting Sense of Competence (PSOC)	The education program based on Bandura's self-efficacy theory leads to a significant increase in the self-efficacy score and sense of maternal competence of primiparous women
3	Jamshidbiki <i>et al.</i> (2014) <sup>[15]</sup> Iran	The effect of education on maternal role attainment and stress in the postpartum period among primiparous women.	The intervention group received three sessions of mother and baby care group education (two sessions during pregnancy and one session after delivery (between days 10 and 25). The control group received usual pregnancy care.	100 primiparous pregnant women (50 people in the intervention group and 50 people in the control group)	Parenting Sense of Competence (PSOC)	Mother and baby care education increase maternal competence 6 and 12 weeks after delivery.
4	Kordi <i>et al.</i> (2016) <sup>[18]</sup> Iran	Effect of a Maternal Role Education Program on Postpartum Maternal Role Competence in Nulliparous Women with Unplanned Pregnancy	For the intervention group, an educational program based on the Mercer theory was implemented in groups of 4 to 7 people during 4 sessions in the 34 <sup>th</sup> , 35 <sup>th</sup> , and 36 <sup>th</sup> weeks of pregnancy and before discharge from the hospital. The control group received usual pregnancy care.	67 primiparous pregnant women (35 people in the intervention group and 32 people in the control group)	Parenting Sense of Competence (PSOC)	Teaching the role of the mother increases the competence of the role of mother in primiparous women.
5	Jahdi <i>et al.</i> (2019) <sup>[20]</sup> Iran	Effect of Attachment Behaviors Education on Maternal Competence attainment in Nulliparous Adolescent Women	The intervention group received 3 sessions of group education during the 28 <sup>th</sup> to 32 <sup>nd</sup> week of pregnancy regarding attachment behaviors to the fetus (including counting fetal movements and recording them, imagining the appearance of the fetus, talking to the fetus, etc.). Usual care was performed in the control group.	73 pregnant teenage women primiparous (37 people in the intervention group and 36 people in the control group)	Parenting Sense of Competence (PSOC)	Teaching attachment behaviors are effective in acquiring the competence of teenage mothers
6	Gao <i>et al.</i> (2012) <sup>[17]</sup> China	Effects of an interpersonal-psychotherapy-oriented childbirth education programme for Chinese first-time childbearing women at 3-month follow up: Randomised controlled trial	In addition to the routine prenatal classes, the intervention group received two 90-minute interpersonal psychotherapy group sessions and a telephone counseling session in the second week after delivery. The control group received routine prenatal classes.	194 primiparous pregnant women (96 people in the intervention group and 98 people in the control group)	Parenting Sense of Competence (PSOC)	The intervention did not have any effect on maternal competence 6 weeks after delivery, but made a significant difference in the maternal role competence score 3 months after delivery in the two groups.
7	Gao <i>et al.</i> (2015) <sup>[21]</sup> China	Effects of an interpersonal-psychotherapy-oriented postnatal programme for Chinese first-time mothers: A Randomized controlled trial	In addition to routine postpartum care, the intervention group received a one-hour individual education session after birth before discharge and a telephone follow-up within 2 weeks after discharge. The control group received routine postpartum care.	180 primiparous pregnant women (90 people in the study group and 90 people in the control group)	Parenting Sense of Competence (PSOC)	Interpersonal psychotherapy program after giving birth improves the competence of the mother's role 6 weeks after giving birth.

one study at 8 weeks after the intervention (10 weeks after delivery) was observed. In four studies, education was done in groups and in three studies, education was done individually. The educational content in Gao’s studies includes the prenatal psychoeducational program (parenting coping skills, problem-solving strategies, and decision-making skills to deal with newborn care issues and common neonatal issues), interpersonal psychotherapy program (interpersonal psychotherapy techniques, communication barriers, and communication skills, topics related to baby’s gender, information about postpartum depression, development of social support, identification of interpersonal conflict after childbirth and skills to resolve these conflicts) which were presented in the form of lecture and video viewing. In Jamshidbiki’s study, self-care and baby care education were through lectures, slide shows, and practical demonstrations and films, in Kordi’s study, the mother’s role education was through lectures and practical demonstration, in Ngai’s study, psychological education was based on Rosenbaum’s concept of learned resourcefulness through presented through discussion, demonstration, and practice. In the study by Azmoude, self-efficacy promotion strategies (evolution during infancy, care along with growth and development of the infant, common diseases during infancy and its care, joys of motherhood, self-care during the postpartum period,

and father’s care of the infant) were presented through a lecture. In Jahdi’s study, educating mother–fetus attachment behaviors (formation of mother–fetus attachment behaviors, the benefits and time of its initiation, and the practical implementation of these behaviors) was through lecture, group discussions, and questions and answers.

The standardized mean difference of maternal role competence score in the intervention group with a 95% confidence interval (2.86–4.20) is 3.51 units more than the control group. In addition, I-Squared is 81% and  $P < 0.001$  [Diagram 2]. The minimum average maternal competence score in Jahdi’s study is 31.29 and the maximum in the study of Azmoude is 75.5. The risk assessment of the trials’ bias is shown in Figure 1. This analysis indicated there was a low risk. Also, a comparison of the standardized mean difference of the maternal role competence score showed that although education is effective on the maternal role competence, it seems that group education is more effective than individual education (4.73 with a 95% confidence interval (3.60–5.86) in group education compared to 2.43 with a 95% confidence interval (1.40–3.46) in individual education [Diagram 3]. Figure 2 shows the funnel diagram for the graphical analysis of the publication bias in the meta-analysis that indicates the quality of the included studies is high and the possibility of publication bias is low.

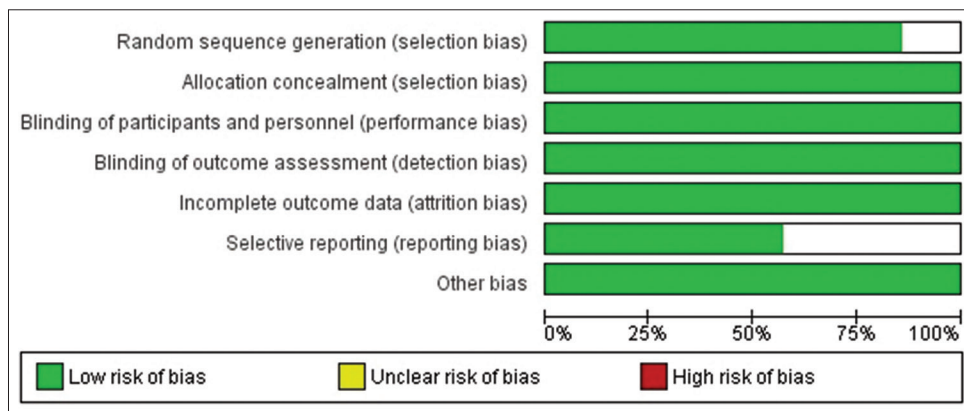


Figure 1: Summary of bias risk assessment

Table 2: Characteristics of the primary studies included in the meta-analysis

Author	Year	Type of study	The average score of maternal competence in the intervention group	The average score of maternal competence in the control group	Study quality evaluation score (Jadad)
Ngai <i>et al.</i> <sup>[16]</sup>	2009	quasi-experimental	33.5	31.9	3
Gao <i>et al.</i> <sup>[17]</sup>	2012	RCT	35.74	32.43	3
Azmoude <i>et al.</i> <sup>[14]</sup>	2014	RCT	75.5	68.3	3
Jamshidbiki <i>et al.</i> <sup>[15]</sup>	2014	quasi-experimental	62.17	62.65	3
Gao <i>et al.</i> <sup>[21]</sup>	2015	RCT	35.87	32.79	4
Kordi <i>et al.</i> <sup>[19]</sup>	2016	RCT	39.26	35.91	3
Jahdi <i>et al.</i> <sup>[20]</sup>	2019	RCT	31.29	24.22	4

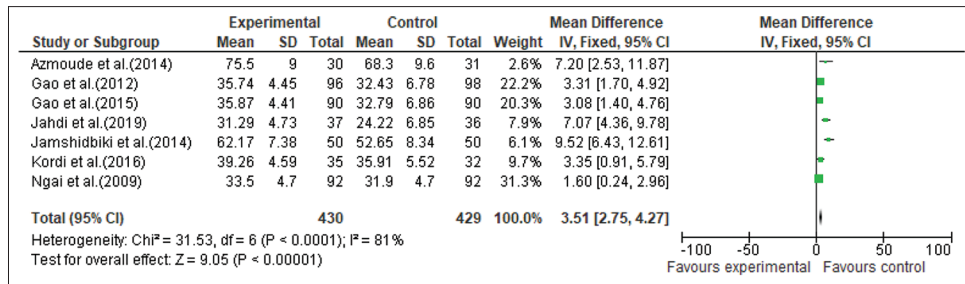


Diagram 2: The average standardized difference of the maternal role competence score between intervention and control groups in each of the primary studies and the overall estimate

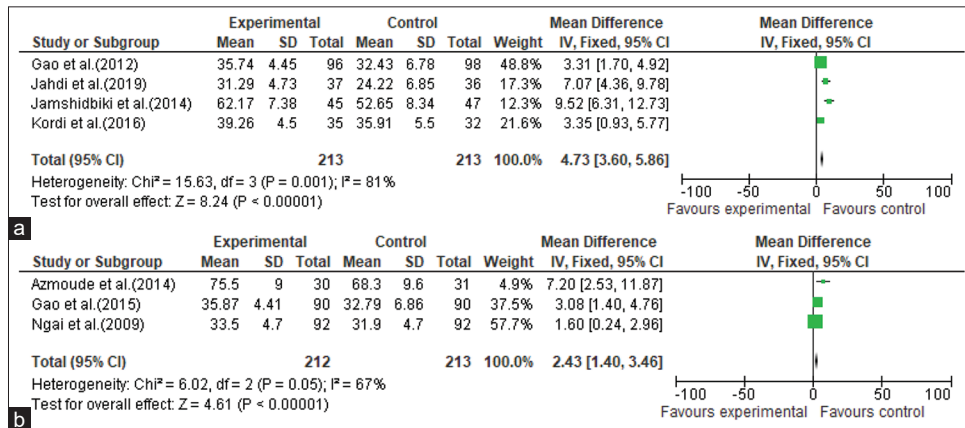


Diagram 3: Comparison of the standardized mean difference of the maternal role competence score in studies with group education (a) and individual education (b) in each of the primary studies

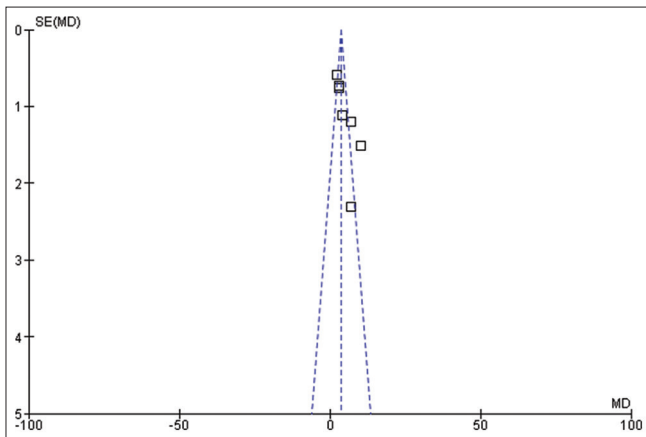


Figure 2: Funnel diagram of studies included in the meta-analysis of educational interventions on maternal competence

### Discussion

The results of this meta-analysis showed that education had a significant effect on the maternal competence of primiparous women. Education has been able to improve maternal competence in the intervention group compared to the control group.

The study by Kordi *et al.*<sup>[19]</sup> (2016) aiming to teach the maternal role on the maternal competence of

primiparous women with unplanned pregnancy showed that the average score of maternal competence in the intervention group was higher than the control group (39.26 vs. 35.91), the content of the educational program in this study was based on Mercer’s theory that he believes that achieving the maternal role is a learnable process. In the study of Jahdi *et al.* (2019) to teach attachment behaviors on maternal competence of primiparous women, the average maternal competence score before the intervention was 25.05, which reached 31.29 after the intervention, and there was a statistically significant relationship between performing attachment behaviors and maternal competence (P < 0.001).<sup>[20]</sup>

Gao *et al.*’s study (2015) showed that with the implementation of an interpersonal psychotherapy program in primiparous women, the average maternal competence score in the intervention group was higher than the control group (35.87 vs. 32.79).<sup>[21]</sup>

Ngai *et al.*<sup>[16]</sup> (2009) in a study to investigate the effect of a childbirth psychoeducation program based on the concept of learned resourcefulness focused on cognitive reconstruction, problem-solving, and increasing self-efficacy concluded that education based on these concepts does not have an impact on maternal competence immediately, 6 weeks and

6 months after delivery. In the study of Gao *et al.* (2012), they showed that the intervention had no effect on maternal role competence 6 weeks after delivery, but it created a significant difference in the maternal role competence score 3 months after delivery in two groups.<sup>[17]</sup>

Azmoude *et al.* (2013) were able to significantly increase the maternal competence score in primiparous women with an educational program based on Bandura's self-efficacy theory (75.5 vs. 68.3).<sup>[14]</sup>

Jamshidbiki's study (2014) showed that with mother and baby care education, the average score of maternal competence in the intervention group was higher than the control group (62.17 vs. 52.65).<sup>[15]</sup>

The study of Kordi *et al.* (2018) showed that the psychological education program during pregnancy based on Rosenbaum's well-known coping theory increases satisfaction with childbirth and improves maternal role competence 6 weeks after delivery in primiparous women.<sup>[22]</sup> Childbirth psychological education programs based on Rosenbaum's theory can improve the appropriate solution-based thinking, improve mothers' ability to deal with stress, improve the maternal role, and increase mothers' satisfaction.<sup>[23]</sup>

Zameni *et al.*<sup>[24]</sup> (2021) found that teaching dialectical behavior therapy techniques in the last trimester of pregnancy combined with lavender aromatherapy in the active phase of labor is an effective intervention to reduce depression and increase maternal competence. Dialectical behavior therapy skills with reduction of depression increase the feeling of competence in the maternal role, as mothers with postpartum depression feel less competent and satisfied with the maternal role.<sup>[25]</sup> Due to the lack of experience and awareness of maternal role behaviors and problem-solving skills, primiparous mothers do not feel good about the maternal role and often have conflict, dissatisfaction, and subsequent tension.<sup>[26]</sup> Given the challenges that primiparous women face, educational interventions are necessary to complement the care provided before and after birth, and they need support for the transition to the maternal role. Implementing educational interventions during pregnancy and after delivery can help primiparous women who are especially at risk of reducing adaptation to the role of mother.<sup>[27]</sup>

Numerous studies have shown that various factors have an effect on prenatal education and care during this period. These factors include: 1. increasing awareness of pregnant mothers with increasing age, 2. high correlation of awareness and acceptance of education with mother's level of education, 3. more acceptance of mothers in second and later pregnancies, to receive education, 4. the

culture that is an effective factor in the care of pregnancy and education of these cares.<sup>[28]</sup>

The results of this meta-analysis showed that education has a significant effect on the maternal competence of primiparous women, but it seems that group education is more effective than individual education. The educations that are currently provided in the health system for pregnant mothers are mainly individual, face-to-face, and sometimes in the form of educational booklets and pamphlets, while group education not only requires less time but also due to having a regular schedule, can convey a large amount of information to mothers.<sup>[29]</sup> The results of the study by Rahimi *et al.*<sup>[30]</sup> (2018) showed that group education for pregnant women made them use each other's experiences and created a familiar and friendly atmosphere, which could increase the impact of the education. In Bastani *et al.*'s<sup>[31]</sup> study (2005), group education for pregnant women is considered a factor in increasing the self-confidence of pregnant women, improving their psychological state, and creating an intimate atmosphere that causes more impact on the education.

Becoming a mother for the first time can increase anxiety and tension in pregnant women.<sup>[32]</sup> Severe anxiety during pregnancy reduces the mother's ability to play the maternal role.<sup>[33]</sup> Akbarzade *et al.*'s<sup>[34]</sup> study (2013) showed that group education for primiparous women is considered a factor to reduce anxiety. Aslani *et al.*'s<sup>[35]</sup> study (2017) showed that group training in stress management with a solution-focused approach significantly reduces the stress perceived by pregnant mothers. Toghiani *et al.*,<sup>[29]</sup> in their study aiming determination of the effect of the group education method on pregnant mothers and based on providing education with scientific instructions showed that group education makes mothers use each other's experiences (under the control of the instructor) that it has reduced anxiety.

Women with a sense of competence in the maternal role have a secure attachment style and have responsible and sensitive parenting behaviors that promote and facilitate the growth and development of the infant. Maternal skills, sensitivity, intellectual reactions, and educational behaviors that promote the infant's health and development also reflect competence in the maternal role.<sup>[4]</sup>

It seems that due to the high stress of primiparous women for the maternal role and their lack of experience in taking care of babies, education can be effective because they make women familiar with taking care of themselves and their babies, reducing stress, increasing self-confidence, and playing a better role as a mother.

It should be noted that in this study, an attempt has been made to select studies with a precise definition of PICOT, to follow a suitable methodology structure, and studies that follow a specific questionnaire with the same scoring are included in the meta-analysis. One of the strengths of this study is that it has been able to provide evidence that can be used in evidence-based medicine. This meta-analysis recommends and strengthens the use of education in improving the competence level of the maternal role of primiparous women.

### Limitation and recommendation

One of the limitations of the present study is the high heterogeneity between the results of the primary study. The difference in the education process may be one of the reasons for this heterogeneity. Due to the small number of primary articles, it was not possible to investigate according to subgroup analysis and meta-regression.

### Conclusions

This meta-analysis results showed that educational interventions during pregnancy and after delivery could increase the maternal role competence of primiparous mothers. One of the causes of infant and maternal health problems is the lack of preparation of prospective parents before becoming parents and playing real roles as parents. Preparing for the transition to motherhood is very important for primiparous women. The findings of the present study provide evidence in support of education in primiparous women.

### Compliance with ethical guidelines

This article is a meta-analysis/systematic review with no human or animal samples. No ethical considerations are taken into account.

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Nil.

### Conflicts of interest

There are no conflicts of interest

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