



The Effect of Maternal Role Intervention with Increased Maternal Role Identity Attainment in Pregnancy and Infant Growth: A Meta-analysis

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Abstract

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Keywords: Maternal role; Pregnant women; Postpartum; Maternal role identity attainment

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AIM: The study is to investigate the effect of maternal role intervention with increased maternal role identity attainment in pregnancy and infant growth.

METHODS: The authors conducted a meta-analysis of published research articles on the effect of maternal role intervention with increased maternal role identity attainment in pregnancy and infant growth. We published research articles between May 2018-January 2020 in the online database of Pubmed, ProQuest and EBSCO. Weight mean differences were calculated using fixed and random-effect models. The data were analyzed using Review Manager 5 (RevMan 5.3).

RESULT: There were nine studies which conducted systematic review then continued by a meta-analysis of relevant data with the total number of samples was 1474 subjects. The results showed that there was maternal role effect with increased satisfaction of becoming a mother (weight mean difference = -2.24 [95% confidence interval (CI) -4.19 -0.29]) and decreased mother depression (weight mean difference = -1.93 [95% CI -3.09 -0.78]), ($p < 0.05$). Depression and satisfaction variables had homogenous research variation. While, maternal role in supporting infant health, mother competency, and trust in taking care of infants is not associated with maternal role identity attainment ($p > 0.05$).

CONCLUSION: This analysis confirmed an effect of maternal role intervention in pregnancy and postpartum can increasing satisfaction of becoming a mother and decreasing depression

Background

Almost all maternal mortality happened in developing countries. Unplanned pregnancy is among the most troubling public health problems and major reproductive health. The prevalence of unwanted pregnancy has been reported in previous studies approximately 35–42% and revealed that 19% of the pregnancy was improper pregnancy and 16% was an unwanted pregnancy. Women with unplanned pregnancy were exposed to some problems such as mental and emotional problems increased during pregnancy and postpartum which endanger positive interaction between mother and baby as well as maternal role identity achievement [1], [2].

Mercer in 1985 found that maternal role attainment (MRA) is a process in which mother achieves maternal role qualification as a mother. The process of MRA begins during pregnancy and continues 4–6 months after delivery. MRA consists of 4 steps: (1) Waiting (preparation for the birth of a child during pregnancy), (2) official step (role-playing); familiarity and improved attachment to the baby, learning how to care for the

baby, (3) informal step (role achievement); reacting to full possessions of the baby, creating self-induced maternal behaviors and increased self-confidence in taking care of the newborn care, and (4) personal step (maternal role identity); fun correlation between mother-newborn, love of breastfeeding and feeling competent [3].

Maternal role identity might be achieved in 1 month or several months. Factors that have been shown related to the achievement of motherhood are mother, newborn, and the environment. Maternal variables include the age of mother, mother-infant separation, culture, social-economic level, marital status, parental self-confidence, labor experience, premature newborn treatment, stress, social support, personality, understanding the newborn, role conflict, newborn physical appearance, and environmental variables consist of social support by spouse and family member and training by health officers [4].

Various government efforts have been made both through infrastructure development and policies to improve maternal and infant welfare. There are no specific programs intended for young mothers to improve the identity of the maternal role but have not yet been integrated with the general maternal and child

health service programs. There has been no evaluation that assessed the social aspect. Adolescents who have become mothers are seen as adults, so they do not need special intervention [4].

A previous study stated the program promoting maternal role was effective in maternal role achievement in young mothers with unplanned pregnancy [5]. Maternal identity training based on Mercer's theory is associated with creating a maternal role and understanding the child [6]. Another study revealed that maternal role training program for nulliparous women associated interaction between mother, baby, and infant growth [7]. Previous research found that training had no correlation with maternal identity [8]. MRA training cannot be applied thoroughly in African-American women [9].

Therefore, we aimed to determine the effect of maternal role intervention with increased maternal role identity attainment in pregnancy and infant growth by conducting a meta-analysis study in order to draw stronger conclusions.

Methods

Study design and research sample

In this meta-analysis study, we followed the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) Statement [10]. The samples of this research included published research articles which were published from January 2000 to May 2018 in PubMed, ProQuest, and EBSCO of online article databases. The inclusion criteria of this are research on the effect of maternal role intervention with increased maternal role identity attainment in pregnancy and infant growth with randomized controlled trial design, cohort study, and case-control. The exclusion criteria are research which not available in full-text.

Operational definition

The variables in this study include independent variables; age of mother, labor experience, mother-infant separation, self-confidence, self-concept, flexibility, health status, anxiety, depression, satisfaction, affection, infant behavior, infant health status, infant characteristics, family function, family support, husband and wife's relationship and culture. A dependent variable which was maternal role attainment.

Research procedure

This study is conducted by gathering data through the identification of published research articles on the effect of maternal role intervention with increased maternal role identity attainment in pregnancy and infant growth (Figure 1).

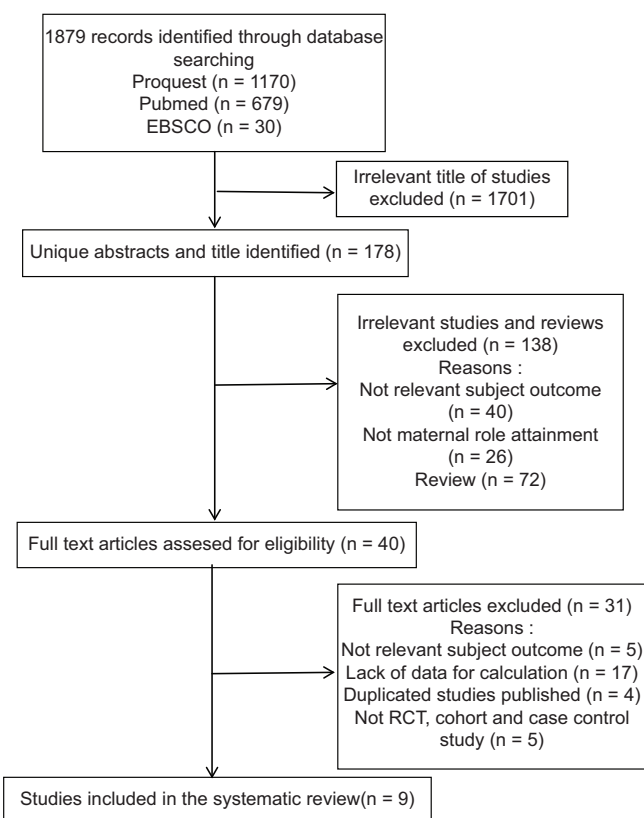


Figure 1: Research procedure

Data collection

Investigation was done using some keywords as follows: ([maternal] AND role attainment OR role identity) AND (maternal age OR birth experience OR early maternal-infant separation OR self-esteem OR self-concept OR flexibility OR childrearing attitudes OR health status OR anxiety OR depression OR role strain OR gratification OR attachment OR infant temperament OR infant health status OR infant characteristics OR family OR family functioning OR social support OR mother-father relationship OR culture)).

Search is limited only research articles in English. The study subject was limited to subjects of human. Publication time limited from January 2000 until May 2018. Articles with potentially relevant titles are reviewed abstract, while irrelevant articles are excluded from the study. Furthermore, the article is reviewed abstract. Articles that have potentially relevant abstracts will then be reviewed in full-text, while irrelevant articles are excluded from the study. The design of the study (randomized controlled trial, case-control, or cohort study).

Data analysis

The analysis held to get the value of weighted mean difference which is the combined mean difference value from the research. The analysis was held to get the value of pooled weighted mean difference which is the combination of weighted mean difference value from each research. A random effect model was used when

significant heterogeneity was observed; otherwise, a fixed effect model was performed. Data are analyzed using Review Manager 5.3 (RevMan 5.3).

Result

Identification on 1879 articles, done through selection and review on the title of the articles, then reviewed abstract, reviewed in full-text. Meanwhile, irrelevant articles are excluded from the study. Study selection conducted nine studies related to the effect

of maternal role intervention with increased maternal role identity attainment in pregnancy and infant growth (Table 1).

Based on the results of the systematic review, there are nine studies (six studies with clinical trial and three studies with cohort study). The research variables analyzed based on the systematic review that has been done are infant health status, maternal competency, depression, self-confidence, and MRA for maternal satisfaction.

Forest plot of infant health status, maternal competency, depression, self-confidence, and maternal role attainment for maternal satisfaction with maternal role identity attainment (Figure 2).

Table 1: Systematic review of the effect of maternal role intervention with increased maternal role identity attainment in pregnancy and infant growth

Author, year	Number of sample	Subject	Subject Characteristics	Design	Objective	Result (meaningful variables)
Cooke et al. [11]	449	All women who were registered to deliver at three Sydney public hospitals within one area health service, during a 1-month period	Subject was aged between 16 and 45 years. Almost all women married and employed during the pregnancy	Cohort study	To investigate the relationships between maternal distress, breastfeeding cessation, breastfeeding problems, and breastfeeding maternal role attainment	MRA implementation increased the duration of breastfeeding
Barlow et al. [12]	53	American Indian adolescents	Subject aged 12–19 years at conception and at 28 weeks' or earlier gestation	RCT	To investigate the effect of paraprofessional-delivered home-visiting training to promote child care knowledge, skills, and involvement among pregnant American Indian adolescents	A paraprofessional-delivered, family-strengthening home-visiting program significantly increased mothers' child care knowledge and involvement
Ngai et al. [13]	184	Women in two regional public hospitals in Hong Kong that provides routine childbirth education programs with similar content and structure	Women with primiparous, singleton, and uneventful pregnancy, at gestation between 12 and 35 weeks, and did not have a past or familial psychiatric illness	Quasi-experimental	To determine the impact of a childbirth psychoeducation program based on the concept of learned resourcefulness on maternal role competence and depressive symptoms in Chinese childbearing women	The childbirth psychoeducation program appears to be a very promising intervention for promoting learned resourcefulness and minimizing the risk of perinatal depression in 1 st -time Chinese childbearing women
Hyun-Ju et al. [14]	54	Women in Postpartum Centre in Sanhujoriwon, Korea	Mean of age in experimental and control group was 33.4 and 33.0 years, level of education between two groups was university or more	A non-equivalent control group non-synchronized design	To investigate the effects of education and practice of the maternal role and becoming a mother using the concepts of self-confidence in caring, maternal attachment, and maternal identity	The experimental group showed significant increases in self-confidence in caring ($t=-3.31$, $p=0.02$) and maternal identity ($t=-2.16$, $p=.036$) compared to the control group
Ozkan et al. [6]	120	Primiparous women visiting clinic in maternal hospital of Nene Hatun	Almost respondents were 17–25 years and high school education level	Pretest-posttest quasi-experimental	To assess the effect of maternal identity development education on the maternity role attainment and my baby perception of primigravidas	The training of identification development given for the mothers increased score averages taken from the scales of Myself as Mother, My Baby and the Pharis Self-confidence Scale
Srisomboon et al. [5]	58	Nulliparous women referring to health centers in the city of Mashhad	The mean age in the intervention and control groups was 24.03 and 24.19 years	Quasi-experimental	To determine the impact of maternal role training program on attainment of role and role satisfaction in nulliparous women with unplanned pregnancy	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
Ngai et al. [15]	184	Subjects were pregnant women in Hong Kong Chinese residents	Participants were pregnant women 18 years of age or above, Hong Kong Chinese residents, nulliparous with a singleton and uneventful pregnancy, and without a past or family psychiatric history were enrolled between 12 and 35 weeks gestation	Cohort	To explore changes in the level of stress and maternal role competence and satisfaction from pregnancy to 6 weeks and 6 months postpartum, examine the relationship between stress and maternal role competence and satisfaction across the perinatal period, and identify the stressors	Maternal stress increased and role competence declined during early motherhood, which highlighted the potential influence of stress on maternal role competence and satisfaction in the perinatal period
Kordi et al. [16]	67	Nulliparous women with unplanned pregnancies	The mean age of subject units was 24.10 ± 4.3	Clinical trial	To determine the impact of maternal role training program on attainment of role and role satisfaction in nulliparous women with unplanned pregnancy	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
Bagherinia et al. [17]	305	The 4 th postpartum month	The mean age of the participants was 23.8 (4.0) years and half of the women (55.1%) were aged <25 years	Longitudinal study	To investigate the correlation between mothers' competence and self-confidence in postpartum period	This study found maternal competency and self-efficacy a significantly positive correlation

Figure 2 showed that there was maternal role effect with increased satisfaction of becoming a mother (weight mean difference = -2,24 [95% confidence interval (CI) -4,19, -0,29]) and decreased mother depression ([weight mean difference = -1,93 [95% CI -3,09, -0,78]), (p < 0.05). Depression and satisfaction variables had homogenous research variation. While, maternal role in supporting infant health, mother competency, and trust in taking care of infants is not associated with maternal role identity attainment (p > 0.05).

Funnel plot of infant health status, maternal competency, depression, self-confidence, and maternal

role attainment for maternal satisfaction with maternal role identity attainment.

Figure 3 shows that depression and satisfaction variables have a variation of homogenous research for maternal role identity attainment. This is because the plot is symmetrical based on the vertical line means that if the analysis is done on the population, time and place, and different conditions, then the results will be consistent. This is different from infant health status, maternal competency, and self-confidence in caring.

Subgroup analysis based on the effect of maternal role intervention with increased maternal

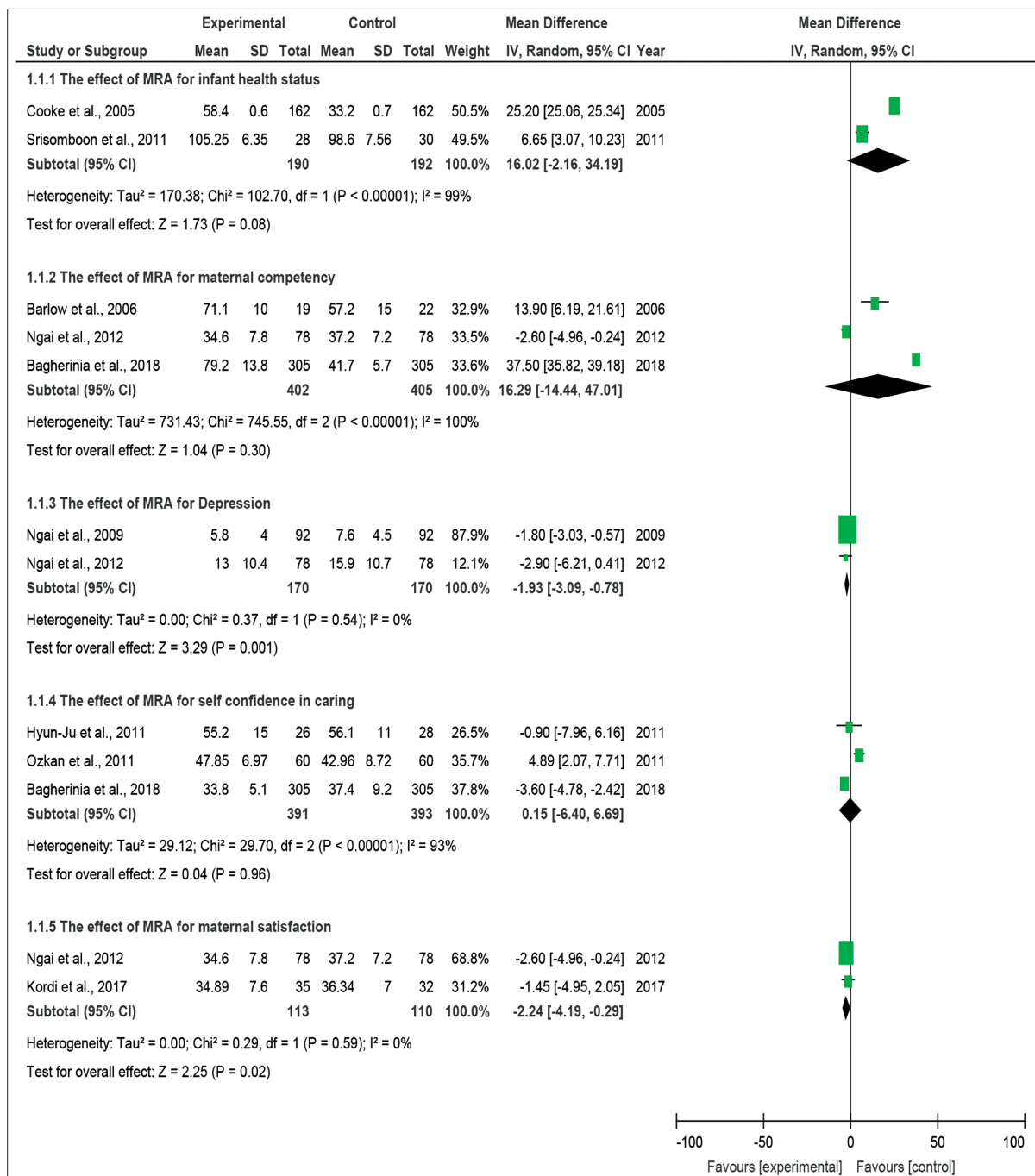


Figure 2: Forest plot of infant health status, maternal competency, depression, self-confidence, and maternal role attainment for maternal satisfaction with maternal role identity attainment

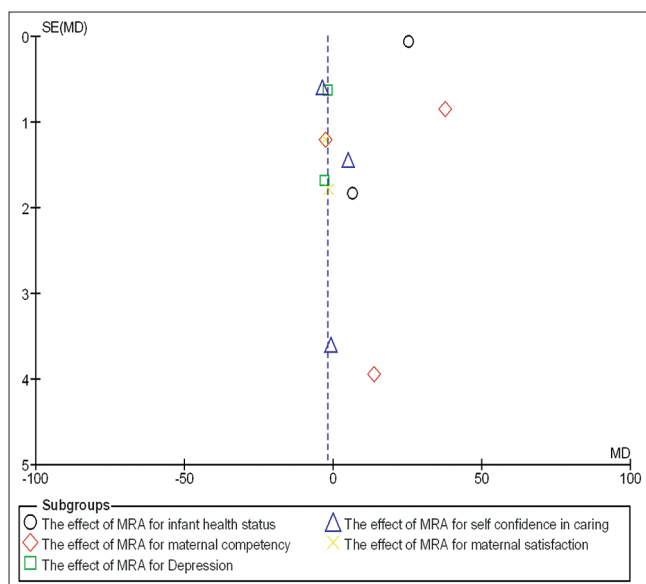


Figure 3: Funnel plot of infant health status, maternal competency, depression, self-confidence, and maternal role attainment for maternal satisfaction with maternal role identity attainment

role identity attainment in pregnancy and infant growth (Table 2).

Table 2: Subgroup analysis based on the effect of maternal role intervention with increased maternal role identity attainment in pregnancy and infant growth

Subgroup	Number of studies	Pooled risk relative (95% CI)	p-value	Heterogeneity test	
				p value	I ² (%)
Study design					
Clinical trial	6	1.59 (1.17–2.32)	<0.001	<0.001	49.00
Cohort	3	1.19 (0.70–1.98)	<0.001	<0.001	54.56
Sample size					
<100	4	1.15 (1.12–2.47)	<0.001	<0.001	58.95
≥100	5	1.76 (1.61–3.25)	<0.001	<0.001	63.67

Table 2 found that there is a high pooled risk relative of clinical trial study design for identified maternal role identity attainment, pooled risk relative 1.59 (1.17–2.32), heterogeneity test in these studies (Pheterogeneity ≤0.001; I² = 49%). While sample size <100 and ≥100 are associated with identified maternal role identity attainment but have a variation of heterogeneous research.

Discussion

This study confirmed an effect of maternal role intervention in pregnancy and postpartum can increasing the satisfaction of becoming a mother and decreasing depression. A previous study stated maternal role promotion activity elevated maternal role satisfaction 6 weeks after delivery month after labor [18]. Some studies have found that women with role satisfaction of becoming a mother have an increased MRA [4], [19]. The maternal role satisfaction

increased with their positive feelings on their role competency. High satisfaction with proper nurture is predicted to contribute to the MRA [13], [14].

Stress was positively associated with anxiety. Financial anxiety is a known risk factor for postpartum stress. A previous study in China revealed that women in China feel worried of financial and work problems. Raising children is expensive to compare no children because parents will have spent much money than before. The financial problem is one of the main life stress sources in family in China and Hongkong [20], [21].

There is little consistent evidence that confinement practices decrease postpartum stress in Chinese. Specific components of confinement actions might decrease psychological distress in Chinese mothers of newborns, but these cannot be discerned from the existing evidence. The role of husbands in a mother’s confinement process either as a provider of instrumental or emotional support, a buffer against mother-in-law tension, or a contributor to poor mental health through critical coercion or lack of support requires scrutiny [22].

Based on the results of the research discussion, one of the causes of infant and maternal health problems is the lack of readiness of prospective parents before marriage and before becoming parents and taking real roles as parents. Therefore, it is important to prepare for the transition period to become a mother. Empowering and making mothers to be ready to play their roles as a mother and have access of healthy reproductive organs as well as support infant growth and development.

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