

# INPLASY

## Effect of perinatal intervention on attachment relationship between mother and young child: A systematic review and meta-analysis

INPLASY202420029

doi: 10.37766/inplasy2024.2.0029

Received: 06 February 2024

Published: 06 February 2024

Akter, F<sup>1</sup>; Altman, R<sup>2</sup>; Samin, S<sup>3</sup>; Golob, A<sup>4</sup>.

### Corresponding author:

Fahmida Akter

fakter@email.sc.edu

### Author Affiliation:

University of South Carolina.

### ADMINISTRATIVE INFORMATION

**Support** - There was no external financial support for this review.

**Review Stage at time of this submission** - Data analysis.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY202420029

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 06 February 2024 and was last updated on 06 February 2024.

### INTRODUCTION

**Review question / Objective** RQ1: What is the overall impact of perinatal interventions on the attachment relationship between mothers and children under two years of age?

RQ2: Does the impact on maternal attachment with young children vary between interventions that begin during the prenatal or postnatal periods?

RQ3: What are the moderators of the effect of prenatal and postnatal intervention on the attachment relationship between mother and young child?

**Rationale** Attachment during infancy has a long-term impact on cognitive and socioemotional development, later child interactions with friends, family, and romantic partners, as well as impacts on taking care of their own infant once they

become parents. To improve maternal-child attachment, researchers have explored various interventions, both with pre- and postnatal onset. While research in this field is expanding, some interventions showed significant impacts, whereas others reported no significant impacts. The evidence on the effect of perinatal interventions is varied and conflicting, with a significant gap in the understanding of the overall impact of interventions on maternal-child attachment. One study conducted a meta-analysis of the effect of interventions on maternal-fetal attachment but not any attachment relationship after birth (Abasi et al., 2021). Understanding efficiency, preventative, and coping power of perinatal interventions in enhancing maternal-child attachment is crucial given the significance of attachment for the psychosocial development of children. Therefore, this research aims to systematically evaluate the literature on the influence of perinatal interventions

on maternal-child attachment and investigate any potential mechanisms through which these interventions might have an effect.

**Condition being studied** Maternal-child attachment is a complex phenomenon that describes the emotional connection between mother and child. An attachment connection starts during pregnancy and continues after birth and is an essential part of healthy development for child and mother (Bowlby, 1969). Secure maternal attachment has been associated with improvements in maternal mental health, enhanced maternal sensitivity and responsiveness, and better infant socioemotional development. Attachment during infancy has a long-term impact on cognitive and socioemotional development of children. Poor attachment can have detrimental effects, such as maternal depression, subpar child development, and challenges later in life.

According to the attachment theory of John Bowlby, a baby is born with a natural tendency toward social interaction as a strategy for survival and adaptation. Correspondingly, because they are unable to defend themselves, infants are driven to seek closeness with the primary caregiver, especially when threat or danger is anticipated. As a result of the child's attachment to their primary caregiver, they develop an internal working model. According to Bowlby's internal working model, it is crucial for a child's development that they establish a strong attachment with one caregiver, often the mother.

Bowlby's research presumes that a child's attachment to their mother begins to form during the first year of life, and it is further shaped by the quality of their everyday interactions. Typically, pregnancy marks the beginning of a strong, loving relationship between a mother and her child. There is a cooperative interaction between the pregnant woman and her fetus; she may think about, visualize, and converse with her fetus, sharing whatever she feels. The growth of this relationship is vital since it contributes to the formation of attachment after birth. Research has shown that a mother's emotional attachment during pregnancy affects how she interacts with and feels about the child after birth.

## METHODS

**Search strategy** Databases: PubMed, web of science, ERIC (EBSCO interface), and Google Scholar.

The search strategy includes the following key terms, found anywhere in the title and/or abstract: "maternal child attachment," "maternal infant attachment," "maternal infant bonding," "mother

infant attachment," "mother infant bonding," "mother baby relationship," "maternal infant relationship," "mother baby bonding," "postpartum bonding", and either of the following terms: "intervention," "promotion."

Publication year was not restricted.

**Participant or population** Pregnant women and mothers of young child who were assessed for maternal attachment with infant(s) or young children after childbirth.

**Intervention** Any educational, sensory, or health promotional intervention for the caregivers that started either during the prenatal period or the postnatal period and interventions that were provided either in-person or virtual, individual or group based.

**Comparator** Pregnant or postnatal women, who were not provided any educational, sensory, or health promotional intervention and received only the standard prenatal and/or postnatal care.

**Study designs to be included** The studies included in the review used multiple study designs such as randomized controlled trials, quasi-experimental designs, and pre-post study designs.

**Eligibility criteria** Inclusion: Mothers who were assessed for maternal attachment with their infants or young children, pregnant women who were assessed for maternal attachment with infant(s) or young children after childbirth. Exclusion: Premature babies, women with psychological issues, studies not available in English language.

**Information sources** Electronic databases were used for literature review. The used databases were PubMed, web of science, ERIC (EBSCO interface), and Google Scholar. Besides, primary authors were contacted for additional information regarding data in some of the selected articles.

**Main outcome(s)** The primary outcome of the review was the pooled effect size of perinatal interventions on mother and child attachment outcomes. Another outcome of this review and meta-analysis was the effect of prenatal and postnatal intervention on maternal attachment outcome. We wanted to determine the significance of intervention onset, whether prenatal or postnatal, on maternal attachment outcomes. Additionally, we aimed to identify potential moderators (such as maternal age, intervention mode, and intervention type) of the effect of prenatal and postnatal interventions on maternal attachment.

---

**Quality assessment / Risk of bias analysis** In order to assess the quality of selected studies, the 25-item Consolidation Standards of Report Trials (CONSORT) checklist was used. All studies were evaluated for issues including bias, study design, and methodological quality. Two reviewers independently reviewed and scored the studies. The potential risk of bias was assessed through sensitivity analysis and funnel plot. Funnel plot was used to identify any publication bias, whether the accuracy of the estimated intervention effect increases with the study's size.

**Strategy of data synthesis** All potentially eligible studies were reviewed by two reviewers, beginning with titles, then by abstracts, and finally by full articles to ascertain which to include in the final systematic review and meta-analysis. Eligible studies were coded independently by two reviewers and discussed until mutual inclusion/exclusion agreement. All were reviewed at least twice per reviewer. Data extraction tables were created in Microsoft excel based on the study information: study type, publication year, country, intervention type, intervention duration, sample size, ages of mothers, study design, bonding evaluation tool, outcomes, and effect sizes. The effect size was the main summary measure. Most studies provided the mean and standard deviation and thus provided comparable analyses. For those which did not, authors were contacted, or data were converted to the mean and standard deviation (SD). The outcome mean and SD were used to calculate effect size for each intervention. Comprehensive Meta-Analysis software (CMA) Version 4 was used for data analysis. Heterogeneity was assessed through both I-squared and Cochrane's Q, which favored the use of the random effects model in the analysis. A quantitative data analysis was performed where the principal summary measure was the pooled effect size of interventions. Subgroup analyses were conducted to identify any variation in effect size based on the intervention period. In addition, meta-regressions were performed to identify any moderators and/or confounders to the pooled effect size and the significance of impact.

**Subgroup analysis** The literature review showed variable effects of the interventions on maternal attachment outcome. Given this high variability, we conducted subgroup analysis to identify potential moderators of the effect of the interventions. The heterogeneity analysis revealed a high heterogeneity which also favored the subgroup analysis. The subgroups included in the meta-regression were, maternal age, intervention mode

(in-person or virtual), and intervention type (education or sensory).

**Sensitivity analysis** Sensitivity analysis was conducted to identify if there is any significant variation on the pooled effect size with any single study excluded in the analysis. Therefore, the effect size was analyzed repeatedly with each study excluded to test for sensitivity.

**Language restriction** Only studies available in English language were included in the review.

**Country(ies) involved** United States.

**Keywords** Systematic review; meta-analysis; prenatal intervention; postnatal intervention; maternal attachment; perinatal.

**Dissemination plans** A paper will be submitted in peer reviewed journal for publication of this review and meta-analysis. In addition, the findings might be presented at national or international conferences.

#### **Contributions of each author**

Author 1 - Fahmida Akter - Author 1 conducted the literature search, reviews, data extraction, data analysis, quality assessment, and drafted the manuscript.

Email: [fakter@email.sc.edu](mailto:fakter@email.sc.edu)

Author 2 - Rochelle Altman - Author 2 assisted in data analysis, quality assessment, and manuscript writing.

Email: [rraltman@email.sc.edu](mailto:rraltman@email.sc.edu)

Author 3 - Sharraf Samin - Author 3 assisted in data analysis and manuscript writing.

Email: [ssamin@email.sc.edu](mailto:ssamin@email.sc.edu)

Author 4 - Adam Golob - Author 4 assisted in literature review, data extraction, and conducted quality assessment. He also provided feedback on final manuscript writing.

Email: [tgolob@gulfcoast.edu](mailto:tgolob@gulfcoast.edu)