Cesarean childbirth and psychosocial outcomes: a meta-analysis

Authors' objectives
The authors appear to investigate the effect of Caesarean delivery, compared with vaginal delivery, on various psychosocial outcomes of childbirth. However, the authors stress that the review does not inform about causality, but merely identifies the presence or absence of relationships.

Searching
MEDLINE from 1966 to 1993, Health Planning and Administration database from 1975 to 1993, and Psychological Abstracts from 1967 to 1993, were searched for publications in the English language. The keywords used in the search were listed in the paper. Additional citations were generated from the reference lists of retrieved articles, or were referred from other researchers.

Study selection
Study designs of evaluations included in the review
Empirical studies comparing a Caesarean with a vaginal-delivery group were included.

Specific interventions included in the review
Planned Caesarean (without a trial of labour, including repeat Caesareans) and unplanned Caesarean (after a trial of labour not resulting in vaginal delivery).

Participants included in the review
Women giving birth were included.

Outcomes assessed in the review
Twenty-three psychosocial outcomes of childbirth were included in the review. These were grouped into four major conceptual topics:

the mother-infant relationship shortly after birth;
maternal postpartum psychological state in the hospital;
the family at home; and
he family years later.

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the authors performed the selection.

Assessment of study quality
To be included, studies had to meet the following criteria: a psychosocial outcome was measured; the method of delivery for each study participant was clearly identified as Caesarean or vaginal; the sample size was provided; either enough information to compute an effect size was given or, on writing to the authors, such information was subsequently made available. The authors do not state how the papers were assessed for validity, or how many of the authors performed the validity assessment.

Data extraction
Two authors read and abstracted 358 articles.

**Methods of synthesis**

**How were the studies combined?**

Studies with similar outcome measures were grouped according to qualitative and quantitative criteria. The qualitative criteria included outcome definition, measurement issues, study design, and type of Caesarean section. The results were analysed for all Caesarean sections combined, and separately for the type of Caesarean section (planned or unplanned).

The correlation coefficient between method of delivery and a postpartum outcome was reported in each article or computed from the statistics provided. Chi-squared was translated into the phi coefficient. Student's t-values and F-values were translated into point biserial coefficients. Correlations in relevant studies were pooled to estimate the weighted average correlation for each outcome, and the random-effects model of DerSimonian and Laird (see Other Publications of Related Interest) was used to model between- and within-study variation. A 95% confidence interval (CI) was also computed for each outcome. Fisher's Z transformation was used to correct for skewness.

**How were differences between studies investigated?**

A chi-squared test of homogeneity was performed, using a significance level of 0.05 to determine whether the study correlations in each group were similar. If the null hypothesis of homogeneity was not rejected, the correlation coefficients of the studies were combined. If the null hypothesis of homogeneity was rejected, the study characteristics were re-examined. In some cases this led to further grouping; in other cases, a reasonable explanation for heterogeneity was not found and the results were interpreted with caution.

**Results of the review**

Forty-three studies (23,874 women in the Caesarean delivery group and 58,238 in the vaginal delivery group) were included.

Time to first mother-infant interaction: the combined correlation coefficient (r) for vaginal delivery versus unplanned Caesarean was 0.77 (95% CI: 0.70, 0.83); r for vaginal versus all Caesarean was 0.38 (95% CI: 0.23, 0.51).

Mother's initial reaction to newborn (studies were heterogeneous): the r for vaginal delivery versus unplanned Caesarean was -0.11 (95% CI: -0.24, -0.01); r for vaginal delivery versus planned Caesarean was -0.19 (95% CI: -0.31, -0.07).

Decision to breast-feed versus bottle-feed the baby (studies were heterogeneous): the r for vaginal delivery versus all Caesarean was -0.12 (95% CI: -0.18, -0.06); r for vaginal delivery versus unplanned Caesarean was -0.25 (95% CI: -0.36, -0.15).

Maternal anxiety during hospital stay: the r for vaginal delivery versus all Caesarean was 0.08 (95% CI: -0.01, +0.16); r for vaginal delivery versus unplanned Caesarean was 0.06 (95% CI: -0.04, +0.16).

Maternal confidence to mother the baby during hospitalisation: the r for vaginal delivery versus unplanned Caesarean was 0.04 (95% CI: -0.11, +0.19).

Maternal satisfaction with birth experience 1 to 7 days after birth: the r for vaginal delivery versus all Caesarean was -0.21 (95% CI: -0.25, -0.16); r for vaginal delivery versus unplanned Caesarean was -0.31 (95% CI: -0.37, -0.24).

Maternal satisfaction with birth experience 6 weeks to 12 months after birth (studies were heterogeneous): the r for vaginal delivery versus all Caesarean was -0.23 (95% CI: -0.41, -0.04).

Maternal postpartum depression, 1 to 2 months postpartum (studies were heterogeneous): the r for vaginal delivery versus all Caesarean was 0.18 (95% CI: -0.04, +0.39).

Maternal fatigue up to 8 weeks after birth: the r for vaginal delivery versus all Caesarean was 0.17 (95% CI: 0.02, 0.31).

Maternal readiness to return to work 6 to 8 weeks after birth: the r for vaginal delivery versus all Caesarean was -0.14.
Continuation of breast-feeding up to 3 months: the r for vaginal delivery versus all Caesarean was -0.01 (95% CI: -0.08, +0.06); r for vaginal delivery versus unplanned Caesarean was 0 (95% CI: -0.16, +0.16).

Continuation of breast feeding more than 3 months: the r for vaginal delivery versus all Caesarean was -0.06 (95% CI: -0.13, +0.01).

Father caretaking of infant in home (studies were heterogeneous): the r for vaginal delivery versus all Caesarean was 0.29 (95% CI: -0.01, +0.54); r for vaginal delivery versus unplanned Caesarean was 0.29 (95% CI: -0.25, +0.70); r for vaginal delivery versus planned Caesarean was 0.17 (95% CI: -0.13, +0.44).

Maternal subsequent childbearing (population-based studies; studies were heterogeneous): the r for vaginal delivery versus all Caesarean was -0.06 (95% CI: -0.09, -0.02).

Maternal subsequent childbearing (non-population-based studies): the r for vaginal delivery versus all Caesarean was -0.08 (95% CI: -0.15, -0.01).

Maternal voluntary (tubal) sterilisation (population-based studies): the r for vaginal delivery versus all Caesarean was 0.02 (95% CI: 0.01, 0.03).

Maternal voluntary (tubal) sterilisation (non-population-based studies; studies were heterogeneous): the r for vaginal delivery versus all Caesarean was 0.19 (95% CI: -0.11, +0.45).

**Authors' conclusions**
The more robust findings suggested that mothers who had had a Caesarean expressed less immediate and long-term satisfaction with the birth. In addition, they were less likely ever to breast-feed, experienced a much longer time to their first interaction with their infants, had less positive reactions to them after birth, and interacted with them less at home.

**CRD commentary**
The search was reasonably comprehensive, although the literature was restricted to English language publications, and the review methods were well described. The synthesis of the results was described in detail, as many of the studies were not homogeneous and a quantitative synthesis was not always possible.

Given the diverse nature of the studies retrieved, in terms of both the outcomes and patient groups, it might be expected that the studies would also differ widely in scientific quality. Some measure of validity would, therefore, have been useful, and without this, the robustness of the authors' conclusions may be diminished.

When drawing conclusions from this review, it is important to keep in mind the authors' statement that the review does not inform about causality, but merely identifies the presence or absence of relationships. Some possibilities for future research are identified in this review.

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