



December 2016 – SUPPORT Summary of a systematic review

Do non-clinical interventions reduce unnecessary caesarean section rates?

There has been an increase in caesarean section rates globally. As much as caesarean sections might be life-saving, some are unnecessary, they predispose the mother to potential harms, such as haemorrhage, and they have high costs. Non-clinical interventions may reduce unnecessary caesarean section. This includes interventions such as providing education to health professionals and mothers, mandatory second opinions, financial interventions, and other guideline implementation strategies.

Key messages

- Interventions that may reduce unnecessary caesarean sections include: nurse-led relaxation training, birth preparation classes, education of local opinion leaders, and review of each delivery that does not meet guideline criteria + a 24-hour in-house coverage system.
- A mandatory second opinion and post-caesarean section presentation of cases may reduce repeat caesarean section rates.
- Interventions that may have little or no overall effect on caesarean section rates include: a prenatal education support programme for vaginal birth after caesarean sections, intensive group therapy for women with fear of childbirth, decision aids, a mandatory second opinion and post-caesarean section presentation of cases, audit and feedback, childbirth education classes for primary care nurses, changes in fees for vaginal deliveries or caesarean sections, and mandatory peer review.
- To the extent that reducing unnecessary caesarean sections is a priority, interventions to achieve this goal should be evaluated in randomised trials or interrupted time series studies and the cost-effectiveness of effective interventions should be evaluated.



Who is this summary for?

People seeking to reduce unnecessary caesarean sections in low-income settings

! This summary includes:

- **Key findings** from research based on a systematic review
- **Considerations about the relevance of this research** for low-income countries

X Not included:

- Recommendations
- Additional evidence not included in the systematic review
- Detailed descriptions of interventions or their implementation

This summary is based on the following systematic review:

Khunpradit S, Tavender E, Lumbiganon P, et al. Non-clinical interventions for reducing unnecessary caesarean section. Cochrane Database of Systematic Reviews 2011, Issue 6. Art. No.: CD005528.

What is a systematic review?

A summary of studies addressing a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise the relevant research, and to collect and analyse data from the included studies

SUPPORT was an international project to support the use of policy relevant reviews and trials to inform decisions about maternal and child health in low- and middle-income countries, funded by the European Commission (FP6) and the Canadian Institutes of Health Research.

Glossary of terms used in this report:
www.supportsummaries.org/glossary-of-terms

Background references on this topic:
See back page

Background

Caesarean section is a medical procedure to reduce complications related to child birth. However, not all caesarean sections are necessary. Unnecessary caesarean sections include those performed in the absence of medical indications such as substantial maternal risk factors, fetal anomalies and pregnancy complications. Non-clinical interventions (those applied independent of a clinical encounter between provider and patient) can be used to reduce unnecessary caesarean sections. These include mandatory second opinion by an obstetrician on caesarean section decisions, health professional education, patient and community education, audit and feedback, clinical practice guidelines, quality improvement strategies, and financial incentives.

How this summary was prepared

After searching widely for systematic reviews that can help inform decisions about health systems, we have selected ones that provide information that is relevant to low-income countries. The methods used to assess the reliability of the review and to make judgements about its relevance are described here: www.supportsummaries.org/how-support-summaries-are-prepared/

Knowing what's not known is important

A reliable review might not find any studies from low-income countries or might not find any well-designed studies. Although that is disappointing, it is important to know what is not known as well as what is known.

A lack of evidence does not mean a lack of effects. It means the effects are uncertain. When there is a lack of evidence, consideration should be given to monitoring and evaluating the effects of the intervention, if it is used.

About the systematic review underlying this summary

Review objective: To determine the effectiveness and safety of non-clinical interventions for reducing unnecessary caesarean section rates

| Types of | What the review authors searched for | What the review authors found |
|--|--|--|
| Study designs & Interventions | Randomised trials, quasi-experimental studies, non-randomised trials, controlled before-after studies, and interrupted time series studies that evaluated interventions targeting patients, interventions targeting healthcare providers; financial, organisational and regulatory interventions | 16 studies, including cluster-randomised trials (5), patient randomised trials (6), and interrupted time series studies (5) targeting patients (6) and healthcare providers (10), of which 2 were financial interventions and 3 were regulatory interventions. |
| Participants | Pregnant women and their families, healthcare providers who work with expectant mothers, communities and advocacy groups | Pregnant women (6), physicians/obstetricians (6), public health nurses (1), hospitals or departments (3) |
| Settings | Healthcare settings in low, middle and high-income countries | North America (6), Latin America (1), Taiwan (2), Iran (2), UK (1), Netherlands (1), Australia (1), Finland (2) |
| Outcomes | <i>Primary outcomes:</i> the rate of caesarean sections and the rate of unnecessary caesarean sections <i>Other outcomes:</i> maternal, fetal or neonatal complications, cost and financial benefits, patient and provider satisfaction | Caesarean section rates (16 studies) and complications (11 studies) |

Date of most recent search: March 2010

Limitations: This is a well-conducted systematic review with only minor limitations, but the last search for studies was conducted in 2010.

Khunpradit S, Tavender E, Lumbiganon P, et al. Non-clinical interventions for reducing unnecessary caesarean section. Cochrane Database of Systematic Reviews 2011, Issue 6. Art. No.: CD005528.

Summary of findings

This review found sixteen studies that assessed the effects of interventions to reduce unnecessary caesarean sections. A variety of interventions were used in the sixteen studies. Six studies evaluated interventions targetting patients and ten studies targetted healthcare professionals. Thirteen of the sixteen studies were from high-income settings and three were from middle-income settings.

1) Interventions targetting pregnant women to reduce unnecessary caesarean sections

- Nurse-led relaxation training may reduce caesarean section and low birth weight rates. The certainty of this evidence is low.
- Birth preparation classes may reduce caesarean section rates and the number of women with back or pelvic pain, but may increase the number of women with headache. The certainty of this evidence is low.
- A prenatal education support programme for vaginal birth after caesarean section, intensive group therapy for women with fear of childbirth, and decision aids may have little or no effect on caesarean section rates. The certainty of this evidence is low.

About the certainty of the evidence (GRADE) *

⊕⊕⊕⊕

High: This research provides a very good indication of the likely effect. The likelihood that the effect will be substantially different† is low.

⊕⊕⊕○

Moderate: This research provides a good indication of the likely effect. The likelihood that the effect will be substantially different† is moderate.

⊕⊕○○

Low: This research provides some indication of the likely effect. However, the likelihood that it will be substantially different† is high.

⊕○○○

Very low: This research does not provide a reliable indication of the likely effect. The likelihood that the effect will be substantially different† is very high.

* This is sometimes referred to as 'quality of evidence' or 'confidence in the estimate'.

† Substantially different = a large enough difference that it might affect a decision

See last page for more information.

| Interventions to reduce unnecessary caesarean sections targeted at pregnant women | | | |
|--|--|---|--|
| People | Pregnant women | | |
| Settings | Hospitals and community settings in high and middle-income countries | | |
| Intervention | Interventions targetting pregnant women | | |
| Comparison | Standard care | | |
| Outcomes | Impact | Number of Participants (Studies) | Certainty of the evidence (GRADE) |
| Caesarean section and vaginal births after previous caesarean section rates | <p>One small study of a nurse led relaxation training programme for primagravid women in Iran reported a reduction in caesarean section rates (15 per 100 versus 40 per 100, difference = 25 fewer caesarean section per 100 women; 95% CI: 42 to 8 fewer).</p> <p>Another study of birth preparation sessions also reported a reduction in caesarean section rates (3 per 100 versus 10 per 100, difference = 7 fewer caesarean sections per 100 women; 95% CI: 14 to 0 fewer).</p> <p>Studies that evaluated a prenatal education support programme for vaginal birth after caesarean section (1 study), intensive group therapy (1 study), decision aids (2 studies) reported little or no difference in caesarean section rates.</p> | 6 studies | ⊕⊕○○ Low |
| Maternal and neonatal complications | <p>The study of a nurse led relaxation training programme for primagravid women in Iran reported a reduction in low birth rates (6 per 100 versus 27 per 100, difference = 21 fewer newborns with a low birth weight per 100 births; 95% CI: 35 to 8 fewer), but little or no difference in preterm birth rates or gestational age.</p> <p>The study of birth preparation sessions reported a reduction in maternal back or pelvic pain (46 per 100 versus 66/100 per 100, difference = 20 fewer women with back or pelvic pain per 100 women; 95% CI: 33 to 7 fewer), but an increase in women with headache (12 per 100 versus 3 per 100, difference = 9 more women with headache per 100 women: 95% CI: 2 to 16 more) and little or no difference in other complications.</p> <p>The study that evaluated prenatal education support programme for vaginal birth after caesarean section reported little or no difference in maternal and neonatal complications.</p> | 3 studies | ⊕⊕○○ Low |
| GRADE: GRADE Working Group grades of evidence (see above and last page) | | | |

2) Interventions targetting healthcare professionals to reduce unnecessary caesarean sections

- Education of local opinion leaders or review of each delivery that does not meet guideline criteria + a 24-hour in-house coverage system may reduce caesarean section rates. The certainty of this evidence is low.
- A mandatory second opinion and post-caesarean section presentation of cases may have little or no effect on overall caesarean section rates, but may decrease repeat caesarean sections. The certainty of this evidence is low.
- Audit and feedback or childbirth education classes for primary care nurses may have little or no effect on caesarean section rates. The certainty of this evidence is low.

| Interventions to reduce unnecessary caesarean section targeted at health professionals | | | |
|---|---|----------------------------------|-----------------------------------|
| People | Healthcare providers who work with expectant mothers, communities and advocacy groups | | |
| Settings | Hospitals and community settings in high and middle-income settings | | |
| Intervention | Interventions targetting health professionals | | |
| Comparison | Standard care | | |
| Outcomes | Impact | Number of Participants (Studies) | Certainty of the evidence (GRADE) |
| Caesarean section and vaginal births after previous caesarean section (VBAC) rates | <p>A study of a mandatory second opinion for emergency caesarean sections reported a small reduction in caesarean section rates (RD = 19 fewer caesarean sections per 1000 women; 95% CI: 38 to 1 fewer).</p> <p>A 3-arm study of audit and feedback and local opinion leader education reported an increase of 168 more VBACs per 1000 women (95% CI not reported) compared to both audit and feedback and routine care.</p> <p>A study of a mandatory second opinion and post-caesarean section presentation of cases reported little or no change overall in caesarean section rates, but a decrease in repeat caesarean sections (64 fewer repeat caesarean sections per 1000 women after 2 years of follow-up (95% CI: 97 to 31 fewer).</p> <p>A study of implementation of labour management and caesarean delivery guidelines with review of each delivery that did not meet guideline criteria + a 24-hour in-house coverage system reported a reduction of 66 caesarean sections per 1000 women after 2 years of follow-up (95% CI: 101 to 32).</p> <p>A study of childbirth education classes for primary care nurses reported a small increase in caesarean section rates (3 more per 100; 95% CI not reported).</p> | 5 studies | ⊕⊕○○ Low |
| Maternal and neonatal complications | The reported complication rates were low in all of these studies and there was little or no difference in maternal and perinatal mortality or morbidity. | 4 studies | ⊕⊕○○ Low |
| GRADE: GRADE Working Group grades of evidence (see above and last page) | | | |

3) Financial and regulatory interventions

- Changes in fees for vaginal deliveries or caesarean sections may have little or no effect on caesarean section rates. The certainty of this evidence is low.
- Mandatory peer review may have little or no effect on caesarean section rates. The certainty of this evidence is low.

| Financial and regulatory interventions to reduce unnecessary caesarean sections | | | |
|---|---|----------------------------------|-----------------------------------|
| People | Healthcare providers who work with expectant mothers, communities and advocacy groups | | |
| Settings | Hospitals and community settings in high-income settings | | |
| Intervention | Financial and regulatory interventions | | |
| Comparison | Standard care | | |
| Outcomes | Impact | Number of Participants (Studies) | Certainty of the evidence (GRADE) |
| Caesarean section and vaginal births after previous caesarean section (VBAC) rates | <p>A study of a small reduction (2%) in fees for caesarean sections reported little or no overall difference in caesarean section rates.</p> <p>Another study of an increase in fees for vaginal births to that for caesarean sections (90%) also reported little or no overall difference in caesarean section rates.</p> <p>A state-wide peer review programme to reduce caesarean section rates reported little or no overall difference in caesarean section rates.</p> <p>Another study of mailed peer review information also reported little or no difference in caesarean section rates.</p> <p>A third study of legislation mandating dissemination of caesarean section practice guidelines to obstetric physicians and establishment of peer review boards also reported little or no difference in caesarean section rates.</p> | 5 studies | ⊕⊕○○ Low |
| Maternal and neonatal complications | The study of mailed peer review information reported little or no difference in neonatal neurological examination rates. | 1 study | ⊕⊕○○ Low |
| GRADE: GRADE Working Group grades of evidence (see above and last page) | | | |

Relevance of the review for low-income countries

| → Findings | ▷ Interpretation* |
|--|---|
| APPLICABILITY | |
| → The included studies were conducted in high (13 studies) and middle-income countries (3 studies). | ▷ Education of local opinion leaders, and review of each delivery that does not meet guideline criteria + a 24-hour in-house coverage system might be more difficult to implement and consequently less effective in low-income countries. ▷ Changes in fees might be more effective in low-income countries due to differences in economic circumstances. |
| EQUITY | |
| → No data were reported regarding differential effects for disadvantaged populations. | ▷ It is uncertain what if any effect interventions to reduce unnecessary caesarean sections might have on inequities. However, given the high cost of caesarean section, to the extent that interventions reduce unnecessary caesarean sections in low-income populations, they might reduce inequities. |
| ECONOMIC CONSIDERATIONS | |
| → None of the included studies reported data on costs or cost-effectiveness. | ▷ Some interventions, such as mandatory second opinions, entail costs that might be more or less than any savings from a reduction in caesarean sections. |
| MONITORING & EVALUATION | |
| → None of the included studies was conducted in a low-income country and the certainty of the evidence was low for all of the interventions evaluated in the included studies. | ▷ To the extent that reducing unnecessary caesarean sections is a priority, interventions to achieve this goal should be evaluated in randomised trials or interrupted time series studies and the cost-effectiveness of effective interventions should be evaluated. |

*Judgements made by the authors of this summary, not necessarily those of the review authors, based on the findings of the review and consultation with researchers and policymakers in low-income countries. For additional details about how these judgements were made see:

www.supportsummaries.org/methods

Additional information

Related literature

Nair M, Yoshida S, Lambrechts T, et al. Facilitators and barriers to quality of care in maternal, newborn and child health: a global situational analysis through metareview. *BMJ Open* 2014; 4(5):e004749.

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Althabe F, Belizan JM, Villar J, et al. Mandatory second opinion to reduce rates of unnecessary caesarean sections in Latin America: a cluster randomised control trial. *Lancet* 2004; 363:1934-40.

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Conflict of interest

None declared. For details, see: www.supportsummaries.org/coi

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This review should be cited as

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The summary should be cited as

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About certainty of the evidence (GRADE)

The “certainty of the evidence” is an assessment of how good an indication the research provides of the likely effect; i.e. the likelihood that the effect will be substantially different from what the research found. By “substantially different” we mean a large enough difference that it might affect a decision. These judgements are made using the GRADE system, and are provided for each outcome. The judgements are based on the study design (randomised trials versus observational studies), factors that reduce the certainty (risk of bias, inconsistency, indirectness, imprecision, and publication bias) and factors that increase the certainty (a large effect, a dose response relationship, and plausible confounding). For each outcome, the certainty of the evidence is rated as high, moderate, low or very low using the definitions on page 3.

For more information about GRADE: www.supportsummaries.org/grade

SUPPORT collaborators:

The Cochrane Effective Practice and Organisation of Care Group (EPOC) is part of the [Cochrane Collaboration](http://www.cochrane.org). The Norwegian EPOC satellite supports the production of Cochrane reviews relevant to health systems in low- and middle-income countries. www.epocoslo.cochrane.org

The Evidence-Informed Policy Network (EVIPNet) is an initiative to promote the use of health research in policymaking in low- and middle-income countries. www.evipnet.org

The Alliance for Health Policy and Systems Research (HPSR) is an international collaboration that promotes the generation and use of health policy and systems research in low- and middle-income countries. www.who.int/alliance-hpsr

Norad, the Norwegian Agency for Development Cooperation, supports the Norwegian EPOC satellite and the production of SUPPORT Summaries. www.norad.no

The Effective Health Care Research Consortium is an international partnership that prepares Cochrane reviews relevant to low-income countries. www.evidence4health.org

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