



Caesarean section without medical indication increases risk of short-term adverse outcomes for mothers

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Background

Caesarean section is one of the most commonly performed surgical operations in the world today. However, in a growing number of cases worldwide, caesarean section is being performed without any medical need. The rising number of such deliveries suggests that both health-care workers and their clients perceive the operation to be free from serious risks.

Many epidemiological studies have attempted to evaluate the risks (and benefits) associated with caesarean section performed without medical indication, but a clear causal relationship between the surgery and maternal complications has been elusive. Between 2004 and 2008, the World Health Organization conducted a Global Survey on Maternal and Perinatal Health. This was a large cross-sectional study spanning three regions of the world: Latin America, Africa and Asia. Analysis of data from each region separately found an association between caesarean section and an increased risk of adverse maternal outcomes. Recently, WHO conducted an analysis of pooled data from the three regions in a bid to investigate the intrinsic risk of caesarean sections, and to take a step further the previous analyses on the relationship between caesarean section and severe maternal outcomes.¹

Study methods

Methodological details of the WHO Global survey have been published elsewhere.² Briefly, the survey was conducted as a multicountry, facility-based survey, in which the facilities and countries were selected randomly. A total of 24 countries took part in the study. In each country, two provinces or equivalent political divisions, in addition to the one where the capital city was located, were randomly selected with probability of selection proportional to the population size of the province. For all women receiving treatment at the selected facilities, data were collected from medical records and participants were not identified.

In order to evaluate the intrinsic risk of caesarean sections, this global analysis involving 373 selected health facilities focused on caesarean sections without medical indications. In addition, subgroup analysis and multilevel adjustments were used to disentangle the intrinsic risk of caesarean section from risks of other associated conditions. The short-term adverse outcomes considered in this analysis were: (i) maternal death, admission to intensive care unit, and blood transfusion or hysterectomy within seven days following delivery (severe maternal outcomes); and (ii) fetal death, neonatal mortality up to hospital discharge limited to the first week of life, and stay >7 days in neonatal intensive care unit (severe perinatal outcomes).



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¹ Souza JP et al. Caesarean section without medical indications is associated with an increased risk of adverse short-term maternal outcomes: the 2004–2008 WHO Global Survey on Maternal and Perinatal Health. *BMC Medicine*, 2010;8(1):71.

² Shah A et al. Methodological considerations in implementing the WHO Global Survey for Monitoring Maternal and Perinatal Health. *Bulletin of the World Health Organization*, 2008 86(2):126-131.

Key Findings

- 25.7% of all deliveries were done by caesarean section, ranging from 2.3% in Angolan facilities and 46.2% in Chinese facilities.
- In 23 countries, the rates of caesarean delivery without medical indication ranged between 0.01% and 2.10%; in China the rate was 11.6%.
- Compared with women who delivered vaginally spontaneously, those delivering by caesarean section without medical indication were more likely to be married, educated (more than 12 years of formal education) and delivering their first baby. They were also less likely to have previously delivered a low-birth-weight baby or report fetal and neonatal death in a previous pregnancy.
- Overall, the incidence rate for severe maternal outcomes associated with caesarean section without medical indications was about three times greater than that associated with spontaneous vaginal delivery (42 cases/1000 and 15 cases/1000, respectively). Compared with spontaneous vaginal delivery, all other modes of delivery showed a trend towards increased risk of short-term adverse outcomes. Specifically, when caesarean section was performed without medical indication before the onset of labour, the risk of short-term adverse outcomes was nearly sixfold compared with spontaneous vaginal delivery (adjusted odds ratio 5.93, 95% confidence interval 3.88–9.05). Moreover, when caesarean section was performed without medical indication after the onset of labour, the risk of short-term adverse outcomes was 14 times above the level of risk for spontaneous vaginal delivery (adjusted odds ratio 14.29, 95% confidence interval 10.91–18.72).
- Overall, adverse outcomes associated with caesarean section (both with and without a medical indication) were seen more frequently in the data from African facilities compared with facilities in Asia or Latin America.

- Compared with spontaneous vaginal delivery, all modes of delivery involving an intervention (operative vaginal delivery, antepartum and caesarean section with indications, and any intrapartum caesarean section) were associated with an increased risk of severe perinatal outcomes. In the subgroup of neonates with breech presentation, caesarean delivery was associated with a reduced risk of severe perinatal outcome.

Conclusions

In the absence of a medical need, delivery by caesarean section carries an increased risk of short-term adverse outcomes for the mother, suggesting that there is an intrinsic risk associated with caesarean section operations. Compared with other facilities, the higher risk of short-term adverse outcomes seen in African facilities may suggest that there is an overall need to make surgeries safer in African facilities.

A number of other concerns have also been expressed about the rising rates of non-medically indicated caesarean deliveries. A major one is the cost of such operations for public-sector services. Another important concern relates to a rise in antibiotic resistance (as a result of routine use of antibiotics during or after caesarean surgery). For example, a study in the United States of America³ found that caesarean sections, together with incidence of mastitis, are key factors behind the rising cost of treating methicillin-resistant *Staphylococcus aureus* (MRSA) infections in American obstetric patients.

Policy implications

1. In all facilities where caesarean sections are performed, health-care providers should be trained to discuss the risks and benefits of caesarean section with the women in their care. This is especially important for caesarean sections without a medical indication.

2. The risk of adverse maternal outcomes was higher in countries known to have weaker health systems and high maternal mortality ratios. Hence, efforts should be made to strengthen the capacity of health services to implement safer surgical procedures in those settings. Moreover, since the same countries also had low overall prevalence of caesarean deliveries, efforts should be made to make caesarean section more accessible to women who have a medical indication for it.
3. In order to reduce non-medically indicated caesarean sections, the reasons for use of the operation should be audited and monitored and, where necessary, appropriate health education and behaviour-change strategies should be developed and implemented.

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³ Beigi RH, Bunge K, Song Y, Lee BY. Epidemiological and economic effect of methicillin-resistant *Staphylococcus aureus* in obstetrics. *Obstetrics and Gynecology*, 2009;113(5):983-991.