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Rising caesarean deliveries in Latin America: how best to monitor rates and risks

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Rising caesarean deliveries in Latin America: how best to monitor rates and risks

More and more women worldwide are delivering by caesarean section and a significant proportion of these surgical interventions are being performed without there being a clear medical indication. Many epidemiological studies have attempted to evaluate the risks (and benefits) associated with elective caesarean section, but a clear causal relationship between elective caesarean delivery and maternal complications has not been convincingly demonstrated. The rising rate of elective caesarean deliveries suggests that, in high- and middle-income countries, both health-care workers and their clients perceive the operation as a safe procedure. However, potential risks aside, the additional cost of medically unnecessary caesarean sections needs to be considered from a public health standpoint.

The WHO Global Survey

In 2004, the World Health Organization launched a Global Survey on Maternal and Perinatal Health. The first part of this survey was conducted in Latin America in 2004–2005. Later, the survey was extended to Africa and Asia. A total of 120 randomly selected hospitals in eight countries (Argentina, Brazil, Cuba, Ecuador, Mexico, Nicaragua, Paraguay and Peru) participated in the Latin American component of the survey. Data on institutional characteristics such as type of hospital, and type of professionals attending births were collected in addition to individual characteristics of women, mode of delivery and outcomes of births for the mother and the baby. Data on 97 095 deliveries were collected and represent one of the largest datasets on maternal and perinatal health for the region. Because most deliveries in the eight included countries occur in health-care facilities, these facility-based survey results are believed to represent to a large extent the current state of care during childbirth in those countries.

Latin American countries included in the Global Survey

Key findings

- **One in three women delivers by caesarean section.** The overall caesarean section rate in the survey was 35.4%.
- **Socioeconomic factors influence caesarean section rates.** Rates of caesarean deliveries were higher in private hospitals. Women delivering in private hospitals were more likely to have an elective caesarean delivery. Women who were single, young and less educated were more likely to deliver vaginally.
- **Delivery by caesarean section may be independently associated with additional risk of maternal morbidity and mortality.** Compared with women who delivered vaginally, women who delivered by elective (i.e. without medical indication) or intrapartum caesarean section were found to be at greater risk of death or of developing a severe complication requiring admission to the intensive care unit, hysterectomy and blood transfusion. Also, these women had longer hospital stays and received more postpartum antibiotics.
- **Women whose last delivery was by caesarean section are at increased risk of severe maternal morbidity, regardless of the mode of delivery in the current pregnancy.**
- **Delivery by caesarean section improves perinatal outcome in breech presentation.** Among women whose babies were in breech position at the time of delivery, those who delivered by elective or intrapartum caesarean section experienced a greatly reduced risk of intrapartum fetal death compared with those who delivered vaginally. Both elective and intrapartum caesarean section in breech presentations were not associated with higher risk of newborn death or admission of newborns to an intensive care unit indicating a net beneficial effect on infant outcomes.

Further analysis of results – tracking the high risk populations

The above findings suggest that caesarean section rates need to be monitored closely, especially when caesarean sections are performed without a clear medical indication. However, monitoring the overall caesarean section rate may not be a practical way of improving the quality of care or reducing unnecessary caesarean sections. One potentially useful strategy could be to identify and target subgroups of women in whom caesarean deliveries could be avoided without compromising the health of the women and of their newborns. In line with this idea, a secondary analysis of the Latin American data was conducted to identify subgroups of women who could be monitored for potential interventions. Table 1 presents those subgroups (based on different obstetric factors) and their relative contribution to the overall caesarean section rate.

The classification used in the Table 1 identifies groups of women in whom relatively high or low rates of caesarean delivery could be expected. By classifying women in this way, subgroups requiring closer monitoring can be identified for more in-depth analyses.

Multiparous women who have a singleton fetus in the normal cephalic position, who have not had a caesarean delivery before and who enter labour spontaneously at term, usually constitute the largest group among all delivering women. Compared with other subgroups, these women are less likely to have obstetric indications for caesarean delivery. Hence, the caesarean section rate in this group can be expected to be low. If a rise in caesarean section rate is observed in this group, it could indicate that caesarean sections are being performed without there being a medical reason or that women are being misclassified with regard to their history of caesarean delivery.

The second largest subgroup among delivering women would be nulliparous women with a singleton fetus in the normal cephalic position entering labour spontaneously at term. In this group too, women are less likely to have medical indications for caesarean delivery, but may require a caesarean section for obstetric events such as dystocia (abnormal or difficult labour) or fetal distress. The caesarean section rate in this group can be expected to be relatively low. However, the caesarean section rate in this group is the key indicator of the caesarean section rate in the same women in future pregnancies.

Caesarean section rates by country

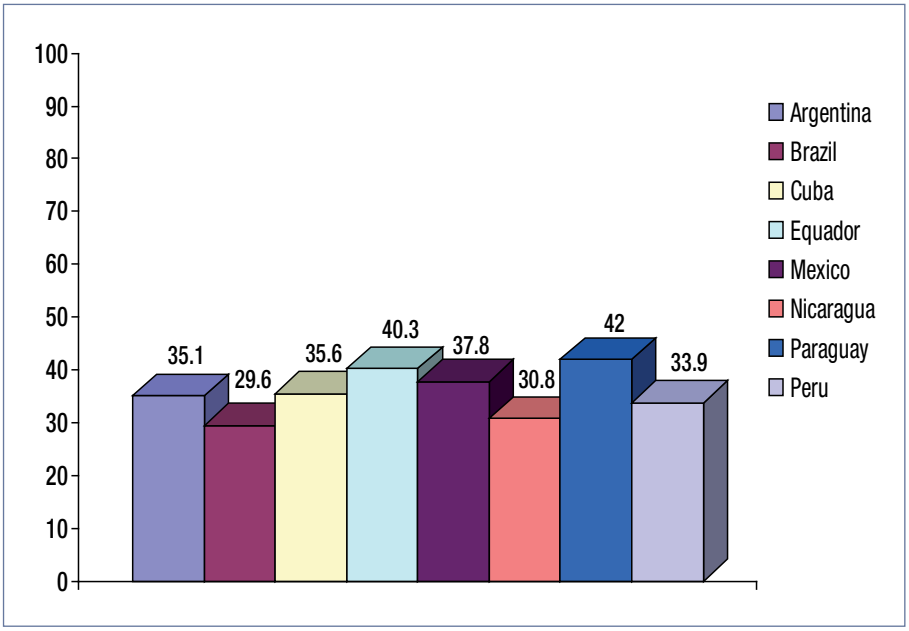

Table 1. Relative contribution of women with different obstetric factors to the overall caesarean section rate in the Latin American region

Obstetric factors (group)	Proportion of all women delivering	Caesarean section rate in the group	Proportion of all caesarean sections	Comments
1. Multiparous women without previous caesarean delivery with a singleton fetus in cephalic position entering labour spontaneously at term	32.3%	9.9%	9.0%	Expect low rate; any jump in rate would suggest increase in unnecessary caesarean deliveries or misclassification
2. Nulliparous women with singleton fetus in cephalic position entering labour spontaneously at term	27.7%	23.2%	18.1%	Expect low rate; this rate is key indicator of the expected rate in the same women in future pregnancies
3. Nulliparous and multiparous women without history of caesarean section with a singleton fetus in cephalic position at term who had labour induced or were delivered by caesarean section before onset of labour	15.7%	52.8%	23.7%	Critical group for follow-up; may include both medically necessary and unnecessary caesarean sections
4. All women with a history of caesarean section with a singleton fetus in cephalic position at term	11.4%	83.0%	26.6%	Critical group for follow-up, although reducing the rate in this group is likely to be difficult
5. Women with a singleton fetus in cephalic position delivering before term, including women with scars from previous caesarean deliveries	7.1%	43.0%	8.5%	Low rate not expected, but low contribution to the overall rate
6. Women with obstetric conditions such as multiple pregnancies, breech presentation, transverse or oblique lie, regardless of the previous caesarean section status	5.8%	85.5%	14.1%	Expect high rate, but low contribution to the overall rate
Overall	**100.0%**	**35.4%**	**100.0%**	

Women who have not delivered by caesarean section before, who have a singleton fetus in cephalic position at term, and in whom labour was induced or women who were delivered by caesarean section before the onset of labour constituted the next largest subgroup in the Global Survey dataset. In this subgroup, nulliparous and multiparous women had caesarean section rates of 61.4% and 42.1%, respectively. These high caesarean delivery rates indicate that a considerable proportion of women either had a high incidence of conditions that required labour induction (such as pre-eclampsia at term) or had elective labour inductions and caesarean sections for the sake of convenience. Clearly, this subgroup would need to be monitored closely and carefully.

All women with a previous delivery by caesarean section and a single fetus in normal cephalic position at term constituted the next important subgroup in the Latin American dataset. This subgroup made the highest contribution to the overall caesarean section rate. Reducing caesarean deliveries in this subgroup is likely to be most difficult because having a previous delivery by caesarean section increases the likelihood of caesarean delivery in the next pregnancy.

The last two subgroups identified in the dataset were: (i) women with a singleton fetus in cephalic position delivering before term, including those with a previous caesarean delivery; and (ii) women with obstetric conditions such as multiple pregnancies, breech presentation, transverse or oblique lie, regardless of their previous caesarean section status. Owing to their obstetric factors, women in these subgroups can be expected to have high caesarean section rates. However, the contribution of the women in these subgroups to the overall caesarean section rate would be low.

The above analysis suggests that more than half of the caesarean deliveries in the Latin America survey were concentrated in two subgroups of women with a singleton fetus in cephalic position at term: (i) those with a previous caesarean delivery; and (ii) those who had not delivered by caesarean section before, but had labour induced or were delivered by caesarean section before the onset of labour. By reviewing the indi-

cations for pregnancy termination and how labour induction was managed in these women, one could identify gaps in the use of evidence-based clinical practices and potentially reduce unnecessary caesarean deliveries in both these subgroups. Nulliparous women with a singleton fetus in cephalic position at term who enter labour spontaneously constitute another priority subgroup owing to the large contribution of these women to the overall caesarean section rate. Other subgroups, despite having higher caesarean section rates, make a relatively smaller contribution to the overall caesarean section rate.

Conclusions

This large survey in Latin America quantified the risks associated with caesarean deliveries for the mother and the baby, and highlighted priority obstetric populations for in-depth analysis and possible intervention. As such, caesarean section is a life-saving intervention when there is a clear medical reason for the operation. When the fetus is in breech position, both data from the Global Survey and the systematic review of randomized controlled trials on this topic indicate that caesarean delivery improves the chances of survival of the newborn. However, if the baby is in the normal cephalic position, unnecessary caesarean sections should be avoided, because elective caesarean delivery may increase the risk of occurrence of a severe complication in the mother. Since unnecessary caesarean sections can be a financial burden for the national health systems, judicious use of labour induction and caesarean delivery, especially before labour, is advisable.

Caesarean section rate in a single healthcare facility (or in a group of facilities within a geographical location) can be monitored by classifying delivering women into subgroups as shown in this policy brief. After such monitoring, the subgroups showing higher than expected rates can be audited further to identify unnecessary caesarean sections and to determine whether deliveries were managed according to the principles of evidence-based medicine. Where inappropriate obstetric practices are identified, reasons for failures should be determined and strategies should be developed and implemented to overcome those failures.

Further reading

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3. WHO. *The WHO Reproductive Health Library.* Geneva, World Health Organization (www.who.int/rhl).

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