

Maternal deaths following C-section 50 times higher in Africa compared to high-income countries

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C-sections account for one in three operations on average in Africa, and neonatal mortality rate after C-section is double the global average.

The maternal mortality rate following a caesarean section (C-section) in Africa may be 50 times higher than that of [high-income countries](#), according to an observational study of more than 3,500 mothers from 22 African countries, published in *The Lancet Global Health* journal.

The study found the maternal mortality rate appears to be substantially higher than expected at 5.43 per 1,000 operations (based on 20 deaths after C-section, out of the 3,684 African mothers studied), compared to 0.1 per 1,000 operations in the UK.

One in six [women](#) developed complications during surgery (17.4%, 633/3,636 women) - nearly three times that of women in the USA (6.4%, 85,838/1,339,397 women experienced a complication). Severe intraoperative and postoperative bleeding was the most common complication for women in Africa, and occurred in 3.8% of mothers (136/3,612).

The findings highlight the urgent need for improved safety of the procedure. Mothers who had preoperative placental complications, ruptured uterus, bleeding before birth, severe obstetric bleeding during surgery, and anaesthesia complications, were more likely to die after C-

section.

Professor Bruce M Biccard, University of Cape Town, South Africa, who led the study says: "Improvement of C-section surgical outcomes could substantially improve both maternal and neonatal mortality, which would lead to key global health gains. Our findings could potentially inform interventions to improve the safety of C-sections for both mother and baby. Areas that should be targeted include early risk identification (eg, risk of bleeding), consideration of a lower threshold for the use of drugs used to treat post-partum haemorrhage, especially where availability of blood is low; improvement of access to blood and blood products with long shelf lives, and novel methods of training of non-physician anaesthetists, including online support and mobile-based applications."

Previous research into C-sections and maternal mortality in Africa used small data sets, and did not study the associated [risk factors](#) needed to inform interventions to improve C-section safety. This study aimed to fill these gaps by recording maternal mortality and complications for 3,792 women who had elective and non-elective caesarean deliveries.

This study forms part of the African Surgical Outcomes Study (ASOS), a large cohort study measuring the surgical outcomes of all patients who received surgery during a 7-day period in 183 hospitals across 22 countries in Africa. In the first study, C-sections were found to be the most common surgery, accounting for a third of all surgical procedures (33%, 3,792/11,422 patients).

A previously published Series in *The Lancet* also highlighted that C-section rates remain too low in many low income countries. In the new study, three-quarters of C-sections recorded were classed as emergency surgery (78.2%, 2,867/3,668 women), with mothers arriving at surgery with an already high preoperative risk due to pregnancy-related

complications, including pre-eclampsia or eclampsia (12.2%, 450/3,685 women), or a major preoperative bleeding risk (5.9%, 216/3,685 women) due to placenta praevia, placental abruption, uterine rupture, and antepartum haemorrhage. The authors highlight the need to improve access to caesarean delivery for women who need it, alongside making surgery safer. Providing earlier access to surgery could help to reduce the risks.

"Paradoxically, while many countries are aiming to reduce the caesarean delivery rate, increasing the rate of caesarean delivery remains a priority in Africa. In sub-Saharan Africa, the caesarean delivery rate is static at 3.5%, despite an increasing pattern in rates globally. Improving access to surgery might allow patients to present earlier and prevent complications and deaths but it is vital that this improvement occurs in parallel with programmes aimed at improving patient safety during caesarean delivery," says Professor Biccard.

Importantly, the study also underlines the scarcity of specialist care available, which amounted to an average of 0.7 specialists per 100,000 population. Hospitals surveyed had an average of three specialist obstetricians, three specialist surgeons and two specialist anaesthesiologists. Almost one in four women received anaesthesia from a non-specialist, and since 10% of the deaths recorded happened after anaesthesia complications, the authors highlight the need for safer anaesthesia for women during caesarean delivery.

The study also found that the neonatal mortality rate (deaths in the first 28 days of life) after C-section in Africa was double the global average. The global average for all deliveries in 2016 was 19 per 1,000 deliveries, while the rate recorded in the study was 44 per 1,000 births (based on 153 deaths out of 3,506 livebirths).

Commenting on the generalisability of their findings to Africa as a

whole, the authors note that the study included fewer than half of the countries in Africa and two thirds of the study population were from middle-income countries, whilst several of the continent's poorest countries were not included. The authors also note that their study includes a disproportionate number of government hospitals, compared with district ones. Government hospitals tend to provide a higher level of care and be better resourced than district hospitals, which typically act as the first providers of care for mothers when giving birth. These factors may mean the maternal mortality rates in the study are conservative.

Writing in a linked comment, Dr. Anna J Dare, University of Toronto, comments on the importance of improving C-section provision in Africa: "Despite persistently low reported caesarean section rates in sub-Saharan Africa, [caesarean section](#) was still the most common surgical procedure performed in the larger ASOS cohort, making up a third of all operative procedures... As such, a strong argument can be made for coordinated efforts to improve and standardise the quality of care around caesarean delivery, while simultaneously working to improve access... Substantial progress has been made over the past 20 years in reducing maternal mortality, including in Africa, yet global disparities persist across all levels of obstetric care. As the present study highlights].

More information: David Bishop et al. Maternal and neonatal outcomes after caesarean delivery in the African Surgical Outcomes Study: a 7-day prospective observational cohort study, *The Lancet Global Health* (2019). [DOI: 10.1016/S2214-109X\(19\)30036-1](https://doi.org/10.1016/S2214-109X(19)30036-1)

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