Caesarean section use has almost doubled globally since 2000

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Globally, the number of babies born through caesarean section (C-section) almost doubled between 2000 and 2015—from 12% to 21% of all births—according to a Series of three papers published in *The Lancet* and launched at the International Federation of Gynecology and Obstetrics (FIGO) World Congress in Brazil. While the life-saving

surgery is still unavailable for many women and children in low-income countries and regions, the procedure is overused in many middle- and high-income settings.

C-section is a life-saving intervention for women and newborns when complications occur, such as bleeding, foetal distress, hypertensive disease, and babies in abnormal position. But, the surgery is not without risk for mother and child, and is associated with complications in future births.

It is estimated that 10-15% of births medically require a C-section due to complications, suggesting that average C-section use should lie between these levels. However, the Series authors estimate that more than one in four countries in 2015 had lower levels (28%, 47/169 countries), while most countries used C-section above the recommended level (63%, 106/169 countries). In at least 15 countries C-section use exceeds 40%.

"Pregnancy and labour are normal processes, which occur safely in most cases. The large increases in C-section use—mostly in richer settings for non-medical purposes—are concerning because of the associated risks for women and children. C-sections can create complications and side effects for mothers and babies, and we call on healthcare professionals, hospitals, funders, women and families to only intervene in this way when it is medically required," says Series lead Dr. Marleen Temmerman, Aga Khan University, Kenya and Ghent University, Belgium. "In cases where complications do occur, C-sections save lives, and we must increase accessibility in poorer regions, making C-sections universally available, but we should not overuse them."

Disparities in global C-section use

The Series tracks trends in C-section use globally and in nine regions based on data from 169 countries from WHO and UNICEF databases.

Globally, C-section use has increased by 3.7% each year between 2000-2015—rising from 12% of live births (16 million of 131.9 million) in 2000, to 21% of live births (29.7 million of 140.6 million) in 2015.

However, the pace of change varied substantially between regions. The South Asia region has seen the most rapid increase in use (6.1% per year), with C-section being underused in 2000 but being overused by 2015 (increasing from 7.2% of births via C-section to 18.1%). However, improvements have been slow across sub-Saharan Africa (around 2% per year), where C-section use has remained low (increasing from 3% to 4.1% of births in West and Central Africa, and from 4.6% to 6.2% in Eastern and Southern Africa).

C-section continues to be overused in North America, Western Europe and Latin America and the Caribbean, where rates increased by around 2% per year between 2000-2015. C-section use increased from 24.3% to 32% between 2000-2015 in North America, from 19.6% to 26.9% in Western Europe, and from 32.3% to 44.3% in Latin America and the Caribbean.

The authors found that the global increases in C-section use are attributed both to more births taking place in health institutions (about two-thirds of the increase) and to greater frequency of intervention through C-section in health facilities (one-third of the increase).

Looking at trends in Brazil and China where there is high use of C-section, the authors found that most C-sections were in low-risk pregnancies and in women who had previously had a C-section. In Brazil, particularly high levels of C-section use were seen in women who were highly educated, compared with less educated women (54.4% of births vs 19.4%). The Series is accompanied by a linked Comment from Gilberto Magalhães Occhi, the Minister of Health of Brazil which sets out the country's strategies to optimise C-section use (see link at end of

press release).

In the 10 countries with the highest number of births in 2010-2015, there were large differences in C-section use between regions—for example, differences between provinces in China ranged from 4% to 62%, and inter-state differences in India ranged from 7% to 49%. The USA, Bangladesh, and Brazil reported C-section use in more than 25% of births nationally, but some regions within these countries used C-section around twice as much as others.

There were also significant disparities within low- and middle-income countries, where the wealthiest women were six times more likely to have a C-section compared with the poorest women, and where C-section was 1.6 times more common in private facilities than public facilities. The authors suggest that this could be explained by persistent issues with shortages in health facilities and staff in vulnerable and rural populations.

In addition, in the UK C-section use has increased from 19.7% of births in 2000 to 26.2% in 2015 (country-level data is available in links at the end of the press release).

Harms associated with C-section overuse and underuse

C-section improves maternal, newborn and child survival when complications arise, and can also lower the risk of incontinence and prolapse.

However, there are short and long-term risks associated with C-sections for mothers and children, and there are no benefits of C-section in cases without a medical indication. In these instances, women and children can

be harmed or die from the procedure, especially when there are not sufficient facilities, skills, and health care available.

Maternal death and disability is higher after C-section than vaginal birth. In particular, C-sections have a more complicated recovery for the mother, and lead to scarring of the womb, which is associated with bleeding, abnormal development of the placenta, ectopic pregnancy, stillbirth and preterm birth in subsequent pregnancies. The authors say that it is important to note that these are small but serious risks, but each of these risks increases as a woman has more C-sections.

There is emerging evidence that babies born via C-section have different hormonal, physical, bacterial and medical exposures during birth, which can subtly alter their health. While the long-term risks of this are not well-researched, the short-term effects include changes in immune development which can increase the risk of allergies and asthma and alter the bacteria in the gut.

"Given the increasing use of C-section, particularly cases that are not medically required, there is a crucial need to understand the health effects on women and children. Greater understanding of this is important to help inform decision making by families, physicians, and policy makers. C-section is a type of major surgery, which carries risks that require careful consideration. The growing use of C-sections for non-medical purposes could be introducing avoidable complications, and we advocate that C-section should only be used when it is medically required." says Professor Jane Sandall, King's College London, UK.

Tackling overuse of C-section

Common reasons why women request C-sections include past negative experiences of vaginal birth, or fear of labour pain or of the effects of labour such as pelvic floor damage, urinary incontinence, reduced

quality of sexual functioning. To address this, the authors recommend further research to study relaxation training, childbirth training workshops, educational lectures and brochures, and meeting with health professionals to promote supportive relationships, collaboration and respect.

For healthcare professionals, improved education, guidelines and communication, and second-opinion policies may also be helpful to address influences such as women's requests, convenience, financial incentives, and fear of litigation. In particular, in some regions C-sections are seen as protective, and physicians are less likely to be sued if complications occur, than during vaginal delivery.

The authors warn that in many settings young physicians are becoming experts in C-section, while losing confidence in their abilities to assist in vaginal birth.

Clinical interventions are needed to reduce unnecessary C-sections, but there is a lack of research and investment in this area. Early evidence suggests that offering vaginal breech delivery to carefully selected women, and attempting vaginal birth for women who have previously had C-sections may be helpful in reducing C-section use. In addition, some evidence suggests that reducing the number of interventions involved in pregnancy may help reduce C-section use, and this could be achieved by midwifery-led care, planning labour in birth centres, or offering continuous labour support.

"Although there is almost universal consensus that C-section use has increased beyond the reasonable level of need in many countries, effective interventions to optimise use have proven elusive. Interventions should recognise previous birth experiences, consider the health effects of C-section, and provide emotional support. Interventions should provide a sense of empowerment for women, and will require

meaningful conversations with health professionals, policymakers and advocacy groups to influence the discussion around maternity care." says Dr. Ana Pilar Betran, World Health Organization, Switzerland.

Also published in *The Lancet*, a new position paper of FIGO: How to stop the Caesarean section epidemic. This linked Comment proposes six recommendations to reduce unnecessary C-sections, including informing women of the benefits and risks of C-sections, matching costs for C-section and vaginal birth in private and public hospitals, and ensuring hospitals publish their annual C-section rates. Emeritus Professor Gerard Visser, University Medical Centre, the Netherlands, and Chair of FIGO's Committee Safe Motherhood and Newborn Health at FIGO writes: "Worldwide there is an alarming increase in caesarean section (CS) rates. The medical profession on its own cannot reverse this trend. Joint actions with governmental bodies, the health care insurance industry, and women's groups are urgently needed to stop unnecessary CSs and enable women and families to be confident of receiving the most appropriate obstetric care for their individual circumstances."

A *Lancet* editorial published alongside the Series says: "What is left unresolved are the tensions generated when women's agency in choosing a caesarean section go against medical directives to intervene against them. Although the Lancet Series says that women's demand is not a substantial driver of the current problem of overuse, efforts to reduce caesareans must, nevertheless, strongly respect women's rights to choose the circumstances of birth. NICE guidance in the UK, for example, states that a woman should be offered a planned caesarean section if she so wishes. But it also says that practitioners can decline to provide one, and the new WHO guidance urges avoidance when caesarean is not indicated. What then? With this new Series we hope to spark more debate and research about implementing recommendations to reduce caesarean section use."

More information: *The Lancet* (2018). www.thelancet.com/journals/lan … (18)31928-7/fulltext