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International caesarean section rates – the rising tide

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Historically, the introduction of caesarean section (CS) was associated with an improvement in maternal and perinatal health outcomes. The World Health Organization (WHO) has stated that there is no empirical evidence for an ideal caesarean rate, but 'what matters most is that all women who need caesarean sections actually receive them'.[1] In areas of very high mortality such as Africa, lack of availability of CS contributes to significant maternal and perinatal morbidity and mortality.[2] Conversely, in many developed countries there is concern about high rates of CS, as increasing CS rates show little evidence of further improvement in perinatal outcomes.[3] CS has its own risks for maternal and infant morbidity and for subsequent pregnancies.[1] At some point, these risks will outweigh the potential benefits from relaxing the threshold at which CS becomes indicated. The skill required to make a balanced clinical decision for an individual woman may be greater than the skill required to undertake the procedure.[4]

The Vogel et al study[5] provides much needed data to inform the debate about the worldwide rise in CS rates. The results show not only the large jump in the CS rate as countries move from lower to higher Human Development Index (HDI) categories but also that CS rates are consistently rising even within HDI categories. As acknowledged by the authors, the data are not necessarily representative of the population CS rates in the included countries. The sample populations are drawn from large hospitals (>1,000 deliveries per annum) and almost 70% of the hospitals were urban. However, 54% of the world's population lived in urban areas in 2014 and this is expected to rise to 66% by 2050.[6] The study results are a signpost for the future of maternity care as country incomes and urbanisation rise, unless changes to birth management can be achieved which will safely reduce the propensity to resort to caesarean delivery.

This study[5] adds depth to the comparison of international CS rates by utilising the Robson Classification.[7] The Robson Classification is a widely accepted, risk-based classification system developed specifically for assessing CS rates. It allows comparison of clinically

meaningful maternity population subgroups and the associated CS rates across institutions, countries, development groups and time. This helps account for some of the population variations that can occur (e.g. populations with lower fertility rates will have relatively more nulliparous births). In most countries and HDI categories obstetric intervention (both caesarean sections and labour inductions) increased.[5] Japan's small decline in CS rates, including a decline in CS rates for nulliparae at term in spontaneous or induced labour, was a notable exception and warrants exploration for lessons to be learnt. The marked variation in CS rates within HDIs is also noteworthy and probably indicates some underuse of appropriate CSs as well as likely overuse.

This study[5] raises as many questions as it answers. It is not clear to what extent the CS rate increases are due to changes in pregnancy management, availability of maternity services and patient/provider expectations. Efforts to explain variation in Australian CS rates within Robson groups showed that patient factors explain most of the variation in prelabour CS rates but not after labour inductions, and that adjusting for private obstetric care, labour and delivery practices actually increased the amount of unexplained variation in intrapartum CS rates.[8] Concerns about high CS rates in private obstetric care settings also exist in lower HDI countries, with countries such as Bangladesh reporting CS rates of 73% in private facilities.[9] Another important question is whether the different rates of CS are associated with variation in maternal and infant morbidity. In particular, it would be useful to know whether there have been improvements in perinatal mortality corresponding to each country's change in CS rate.

Ideally, assessment of obstetric interventions and outcomes is based on high quality, recent data from the entire population or a representative sample. A key feature of the Robson classification is utilisation of information that is available at the onset of labour/delivery, routinely collected (although this is not necessarily so even in high income countries)[4] and reliably reported.[7] Data validity is unknown for this study and the increase over time in

maternal records that could not be classified (an indicator of data quality) and the higher than expected relative size of Group 9 (which has been suggested as a self validation group within the Robson classification)[10] is of concern.

The Vogel et al study[5] represents an important step in exploring and understanding how obstetric intervention rates are increasing but also vary widely between countries and levels of development. In the absence of country-specific information on maternal and child health outcomes, caution is needed in recommending strategies aimed at modifying practices. This is not to suggest that any efforts to improve the availability of a skilled workforce and health services should be stalled.

Disclosure of Interests

The authors declare that they have no competing conflicts of interest. The manuscript represents the views of the named authors only.

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Contribution to Authorship

Christine Roberts and Tanya Nippita planned the response. Christine Roberts wrote the first draft. Christine Roberts and Tanya Nippita were both involved in critical revision of the intellectual content and approved the final manuscript.

Ethics Approval

Not required

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