Avoidable maternal and neonatal deaths associated with improving access to caesarean delivery in countries with low caesarean delivery rates: an ecological modelling analysis


Abstract

Background Reducing maternal and neonatal deaths are important global health priorities. We have previously shown that up to a country-level caesarean delivery rate (CDRs) of roughly 19.0%, cesarean delivery rates and maternal mortality ratio (MMR) and neonatal mortality rate (NMR) were inversely correlated. We investigated the absolute reductions in maternal and neonatal deaths if countries with low CDR increased their rates to a range of greater than 7.2% but less than or equal to 19.1%.

Methods We calculated maternal and neonatal deaths in 2013 and 2012, respectively, for countries with CDR 7.2% or less (N=45) with available data from the World Bank Development Indicators. We modelled the expected reduction in deaths in these countries if they had the 25th and 75th MMR and NMR percentiles observed for countries (N=48) with CDRs ranging from greater than 7.2% but less than or equal to 19.1%. This model assumes that if countries with low CDRs increased their rates of caesarean delivery to greater than 7.2% but less than or equal to 19.1% they would achieve levels of MMR and NMR observed in countries with those CDRs.

Findings We estimate 176 078 (95% CI 163 258–188 898) maternal and 1 117 257 (95% CI 1 033 611–1 200 902) neonatal deaths occurred in 45 countries with low CDRs in 2013 and 2012, respectively. If these countries had the 25th and 75th MMR and NMR percentiles (MMR, IQR 36–190; NMR, 9–24) observed in countries (N=48) with a CDR ranging from greater than 7.2% but less than or equal to 19.1%, there would be a potential reduction of 109 762–163 513 and 279 584–803 129 maternal and neonatal deaths, respectively.

Interpretation Increasing caesarean delivery in countries with low CDRs could avert as many as 163 513 maternal deaths and 803 129 neonatal deaths annually. These findings assume that as health systems develop the capacity to deliver surgical care there is a concurrent improvement in the quality of care and in the ability to rescue women and neonates who would otherwise die. Improving access to safe caesarean delivery should be a central focus in surgical care globally.

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Declaration of interests We declare no competing interests.