A comparison of clinical officers with medical doctors on outcomes of caesarean section in the developing world: meta-analysis of controlled studies

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CRD summary
The authors tentatively concluded that mortality did not differ in caesarean sections carried out by clinical officers compared with medical doctors, but that wound dehiscence and wound infection were significantly more frequent in caesarean sections carried out by clinical officers. Given the variability between (and methodological shortcomings within) the included studies, the reliability of these conclusions is uncertain.

Authors' objectives
To review the effectiveness and safety of clinical officers (healthcare providers trained to perform tasks usually undertaken by doctors) carrying out caesarean section in developing countries compared with doctors.

Searching
MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials (CENTRAL), CINAHL, BioMed Central, the Reproductive Health Library, and the Science Citation Index were searched from inception to August 2010; search terms were reported. Reference lists of reviews were manually searched. No language restrictions were applied.

Study selection
Controlled studies in a developing world setting that compared clinical officers and medically trained doctors for caesarean section were eligible for inclusion. Studies had to report clinically relevant maternal or perinatal outcomes. In the included studies, the outcomes comprised maternal and perinatal mortality, wound infection, and wound dehiscence (splitting). All studies were conducted in African countries: Zaire, Mozambique, Malawi, Burkina Faso, and Tanzania. Training details for clinical officers varied between countries, as did the duration of training and specification. The study population comprised pregnant women requiring caesarean section in a range of urban and rural health care settings; the average age of this population was 25 years (where stated).

Two authors undertook the selection process.

Assessment of study quality
Study quality was assessed using the Newcastle-Ottawa Scale for representativeness, selection, comparability of the cohorts, ascertainment of the intervention and outcome, and the length and adequacy of follow-up. Star ratings were assigned to each study. The risk of bias was considered to be low if a study obtained four stars for selection, two for comparability, and three for ascertainment; bias was considered medium in studies with two or three stars for selection, one for comparability, and two for exposure; and bias was considered high if a study scored one or zero stars for selection, comparability, or exposure.

The authors did not state how many reviewers performed the quality assessment.

Data extraction
Odds ratios (OR) and 95% confidence intervals (CI) were extracted for the outcomes of interest (maternal mortality, perinatal mortality, wound infection and wound dehiscence).

The authors did not state how many reviewers performed the data extraction.

Methods of synthesis
Odds ratios and 95% confidence intervals were pooled using a random-effects model. Heterogeneity was assessed using...
the I² and X² statistics.

Results of the review
Six non-randomised controlled cohort studies (n=16,018 women) were included in the review. Most studies had a medium risk for selection bias and medium to high risk for comparability and outcome assessment.

There was no statistically significant difference in maternal mortality (six studies; I²=60%) or perinatal mortality (five studies; I²=88%) in caesarean sections carried out by clinical officers compared with doctors.

Compared with doctors, clinical officers were associated with a higher incidence of wound infection (OR 1.58, 95% CI 1.01 to 2.47; two studies; n=4,436 women) and wound dehiscence (OR 1.89, 95% CI 1.21 to 2.95; three studies; n=6,507 women). There was no significant heterogeneity for these comparisons.

Authors' conclusions
The authors tentatively concluded that there was no statistically significant difference in maternal or perinatal mortality in caesarean sections carried out by clinical officers compared with doctors, but wound dehiscence and wound infection were significantly more frequent in caesarean sections carried out by clinical officers.

CRD commentary
The review question was clear and supported by potentially reproducible inclusion criteria. The search strategy appeared to include a number of relevant sources and was not restricted by language, which reduced the possibility of language bias. It did not appear that specific searches were undertaken for unpublished studies, so some potentially relevant data may have been missed. Study selection was conducted in duplicate, but it was unclear whether similar methods to reduce error and bias were used for quality assessment and data extraction.

Study quality was assessed using an appropriate tool and results were reported. Adequate details of primary studies were provided. Combining the results in meta-analyses may not have been appropriate given the variability of the studies and the statistical (and clinical) heterogeneity in the some of the meta-analyses.

The authors' conclusions reflect the evidence presented, but given the variability between (and methodological shortcomings within) the included studies, together with poor reporting of the review process, their reliability is uncertain.

Implications of the review for practice and research
Practice: The authors stated that there may be a particular training need for clinical officers in light of the increase in wound infection and dehiscence compared with doctors.

Research: The authors did not state any implications for further research.

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