

The carbon footprint of different modes of birth in the UK and the Netherlands: an exploratory study using life cycle assessment

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July 18, 2023

Abstract

Objective: To compare the carbon footprint of caesarean and vaginal birth. *Design:* Life cycle assessment. *Setting:* Tertiary maternity units and home births in the UK and the Netherlands *Methods:* A life cycle assessment, including: equipment use, energy, analgesia, hospital stay, waste, sterilisation and laundry, was conducted using primary data combined with data from published sources. *Main Outcome Measures:* 'Carbon footprint' (in kgCO₂e) *Results:* Excluding analgesia, the carbon footprint of a caesarean birth in the UK was 31.21 kgCO₂e, compared with 12.47 kgCO₂e for vaginal birth in hospital and 7.63 kgCO₂e at home. In the Netherlands the carbon footprint of a caesarean was higher (32.96 kgCO₂e), but lower for vaginal birth in hospital and home (10.74 and 6.27 kgCO₂e respectively). Emissions associated with analgesia for vaginal birth were: 0.08 kgCO₂e (opioid analgesia), 0.75 kgCO₂e (remifentanyl), 1.2 kgCO₂e (epidural) and 237.33 kgCO₂e (nitrous oxide with oxygen). Differences in analgesia use resulted in a lower average carbon footprint for vaginal birth in the Netherlands than the UK (11.64 vs. 193.26 kgCO₂e). *Conclusion:* The carbon footprint of a caesarean is higher than for vaginal birth if analgesia is excluded, but this is very sensitive to the analgesia used; use of nitrous oxide with oxygen multiplies the carbon footprint of vaginal birth 25-fold. Alternative methods of pain relief or nitrous oxide destruction systems would lead to a substantial improvement in carbon footprint. Although clinical need and maternal choice are paramount, protocols should consider the environmental impact of different choices.

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