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Inequalities in maternal health: national cohort study of ethnic variation in severe maternal morbidities

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STUDY QUESTION Do ethnic differences exist in the incidence of specific "near miss" maternal morbidities in women giving birth in the United Kingdom?

SUMMARY ANSWER Severe maternal morbidities occurred more than 1.5 times more often among non-white women than in white women, more than twice as often among women of black African or black Caribbean ethnicity, and 1.5 times more often in Pakistani women. This pattern is similar to reported ethnic differences in maternal death rates. These differences may be due to the presence of pre-existing maternal medical factors or to factors related to care during pregnancy, labour, and birth; they are unlikely to be due to differences in age, socioeconomic or smoking status, body mass index, or parity. This highlights to clinicians and policy makers the importance of tailored maternity services and improved access to care for women from ethnic minorities.

Participants and setting

The study took place in all 229 hospitals with consultant led maternity units in the UK and included the entire cohort of women giving birth in the UK.

Design, size, and duration

We used the UK Obstetric Surveillance System (UKOSS) to identify cases of specific severe maternal morbidities (acute fatty liver of pregnancy, amniotic fluid embolism, antenatal pulmonary embolism, eclampsia, and peripartum hysterectomy) occurring in women giving birth between February 2005 and February 2006. In order to calculate the incidence, we estimated denominator births in each ethnic group by using maternity hospital episode statistics. Maternal ethnicity was the main exposure examined. To investigate the potential factors underlying ethnic differences in severe maternal morbidities, we used a logistic regression analysis comparing information about women with severe maternal morbidity with information on comparison women also collected through UKOSS, as national data did not have sufficient information on potential confounders.

Main results and the role of chance

In an estimated cohort of 775 186 women giving birth, we identified 686 women with severe maternal morbidity; 74% of these women were white, and 26% were non-white. The estimated risk of severe maternal morbidity in white women was 80 cases per 100 000 maternities, and in non-white women it was 126 cases per 100 000 (table). Black African women and black Caribbean women had the highest risk. The risk in non-white women remained high after adjustment for differences in age, socioeconomic and smoking status, body mass index, and parity (odds ratio 1.50, 95% CI 1.15 to 1.96).

ESTIMATED RISKS (95% CI) OF SEVERE MATERNAL MORBIDITY IN DIFFERENT ETHNIC GROUPS

Ethnic group	Morbidity risk per 100 000 maternities	Risk difference per 100 000 maternities	Risk ratio
White	80 (73 to 87)	0 (reference)	1.0 (reference)
Pakistani	119 (83 to 165)	39 (0.3 to 79)	1.49 (1.06 to 2.09)
Black African	188 (110 to 301)	108 (18 to 197)	2.35 (1.45 to 3.81)
Black Caribbean	196 (143 to 261)	116 (59 to 172)	2.45 (1.81 to 3.31)
Any non-white	126 (108 to 146)	46 (27 to 66)	1.58 (1.33 to 1.87)

Bias, confounding, and other reasons for caution

Denominator information on maternal ethnicity was estimated from data that covered 75% of the women studied; this method of estimation may slightly underestimate the number of women from ethnic minority groups but is unlikely to affect the estimated relative risks significantly. We did not attempt to collect comprehensive information on all severe maternal morbidities but concentrated on major conditions causing direct maternal death in the UK. Existing evidence suggests that this approach is unlikely to have appreciably affected the estimates of the risk ratio between ethnic groups.

Generalisability to other populations

The results are generalisable to countries with low rates of maternal death, high resource settings, and large ethnic minority populations.

Study funding/potential competing interests

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