

Risk factors of stillbirth in multiple compared to singleton pregnancies

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INTRODUCTION

The objectives of this study were:

- Primary: to determine the risk factors associated with stillbirth in multiple and singleton pregnancies.
- Secondary: to elucidate risk factors associated with early (<32) and late (≥32 weeks' gestation) stillbirth.

MATERIALS AND METHODS

This was a retrospective cohort study of women receiving obstetric care and delivering at St George's Hospital.

Pregnancies from June 1999-December 2022 were included. Exclusion criteria included deficient data regarding gestational age at birth, miscarriage or livebirth ≤23+6 weeks, and termination of pregnancy. The four study groups were early and late stillbirths in singleton and multiple pregnancies. Logistic regression analysis assessed association between risk factors and pregnancy outcomes.

CONCLUSIONS

Differences exist in the strength of association between risk factors and stillbirth between multiple and singleton pregnancies. These findings are pertinent when developing individualized risk assessment models for stillbirth in multiple pregnancies.

RESULTS

Among 96,166 singleton pregnancies, 507 (0.53%) were stillborn. Of 3,989 fetuses from multiple pregnancies, 61 (1.53%) were stillborn.

In **singleton pregnancies**, white ethnicity was protective against stillbirth (OR 0.69 [95%CI 0.51–0.94]). Risk factors for stillbirth among singleton pregnancies were BMI ≥30kg/m² (OR 1.84 [95%CI 1.48–2.30]), ≥ one previous stillbirth (OR 5.36 [95%CI 3.57–8.06]), deprived residential area (4th quintile, index of multiple deprivation, OR 1.24 [95%CI 1.03–1.50]), smoking (OR 1.70 [95%CI 1.43–2.03]), pre-existing diabetes (OR 3.25 [95%CI 1.67–6.32]), chronic hypertension (OR 6.26 [95%CI 3.50–11.20]), hypertensive disorders of pregnancy (OR 2.48 [95%CI 1.86–3.31]), placental abruption (OR 19.42 [95%CI 10.08–37.44]), intrapartum haemorrhage (OR 6.38 [95%CI 3.27–12.48]) or pyrexia (OR 2.52 [95%CI 1.75–3.63]), fetal anomaly (OR 10.50 [95%CI 7.85–14.04]), non-cephalic presentation (OR 34.49 [95%CI 27.39–43.43]), birthweight <5th (OR 8.67 [95%CI 7.26–10.34]), <10th (OR 6.31 [95%CI 5.29–7.52]), or >95th centile (OR 1.71 [95%CI 1.22–2.41]). Risk factors for stillbirths among **multiple pregnancies** were maternal age ≥45 years (OR 2.73 [95%CI 1.15–6.46]), monochorionicity (OR 5.53 [95%CI 2.31–13.23]), chronic hypertension (OR 5.03 [95%CI 1.51–16.72]), hypertensive disorders of pregnancy (OR 2.20 [95%CI 1.04–4.68]), epilepsy (OR 16.61 [95%CI 3.45–79.89]), birthweight <5th (OR 23.77 [95%CI 13.44–42.03]) and <10th centile (OR 20.26 [95%CI 11.17–36.75]).

Late stillbirth in **singleton pregnancies** was associated with socioeconomic deprivation (OR 1.38 [95%CI 1.05–1.82]) and pre-existing diabetes (OR 5.05 [95%CI 2.23–11.41]). White ethnicity was protective against early (OR 0.58 [95%CI 0.37–0.91]) but not late (OR 0.80 [95%CI 0.51–1.27]) stillbirth. Risk factors associated with **early stillbirth** were preterm premature rupture of membranes (OR 5.82 [95%CI 3.08–11.01]) and birthweight >95th centile (OR 1.90 [95%CI 1.19–3.04]). Risk factors associated solely with **early stillbirth** in **multiple pregnancies** were nulliparity (OR 2.42 [95%CI 1.08–5.40]), chronic hypertension (OR 10.06 [95%CI 2.94–34.36]), and hypertensive disorders of pregnancy (OR 3.37 [95%CI 1.37–8.25]).