

EP14.30 The impact of socioeconomic deprivation on placental insufficiency-related perinatal outcomes

Dr Thomas Hanton^{1,2}, Dr Basia Chmielewska¹, Professor Asma Khalil¹

1. Fetal Medicine Unit, St George's University Hospitals NHS Foundation Trust, 2. Division of Experimental Medicine, University of Cambridge

Background

Socioeconomic deprivation is a major, recognised driver of adverse pregnancy outcomes and widening health inequalities. However, the specific impact of deprivation on placental insufficiency-related outcomes remains poorly characterised in contemporary populations. Clarifying this association is critical for understanding the underlying pathways of maternity inequalities and improving targeted care.

Objectives

To assess the association between socioeconomic deprivation and composite placental insufficiency in a routine obstetric population.

Methods

Retrospective cohort of 21,578 singleton pregnancies delivered at a large UK tertiary maternity unit (1st January 2020 - 31st January 2025) with a UK postcode recorded. Area level deprivation was classified using the Index of Multiple Deprivation (IMD) 2019, and were grouped as Q1–2 (most deprived), Q3, and Q4–5 (least deprived). Primary outcome (placental insufficiency): composite of preterm birth <37 weeks, birthweight (BW) <3rd centile (World Health Organization (WHO) BW Chart), hypertensive disorders of pregnancy (HDP), and stillbirth.

Statistical Analysis

Statistical analysis was performed using R-studio. Multivariable logistic regression adjusted for maternal age, ethnicity and smoking status.

Results

Composite placental insufficiency occurred in 16.1% of the analysed population. Composite placental insufficiency occurred in 18.7% of women in Q1–2 (n=6,984), 14.8% in Q3 (n=6,842), and 14.9% in Q4–5 (n=7,752) (see figure 1).

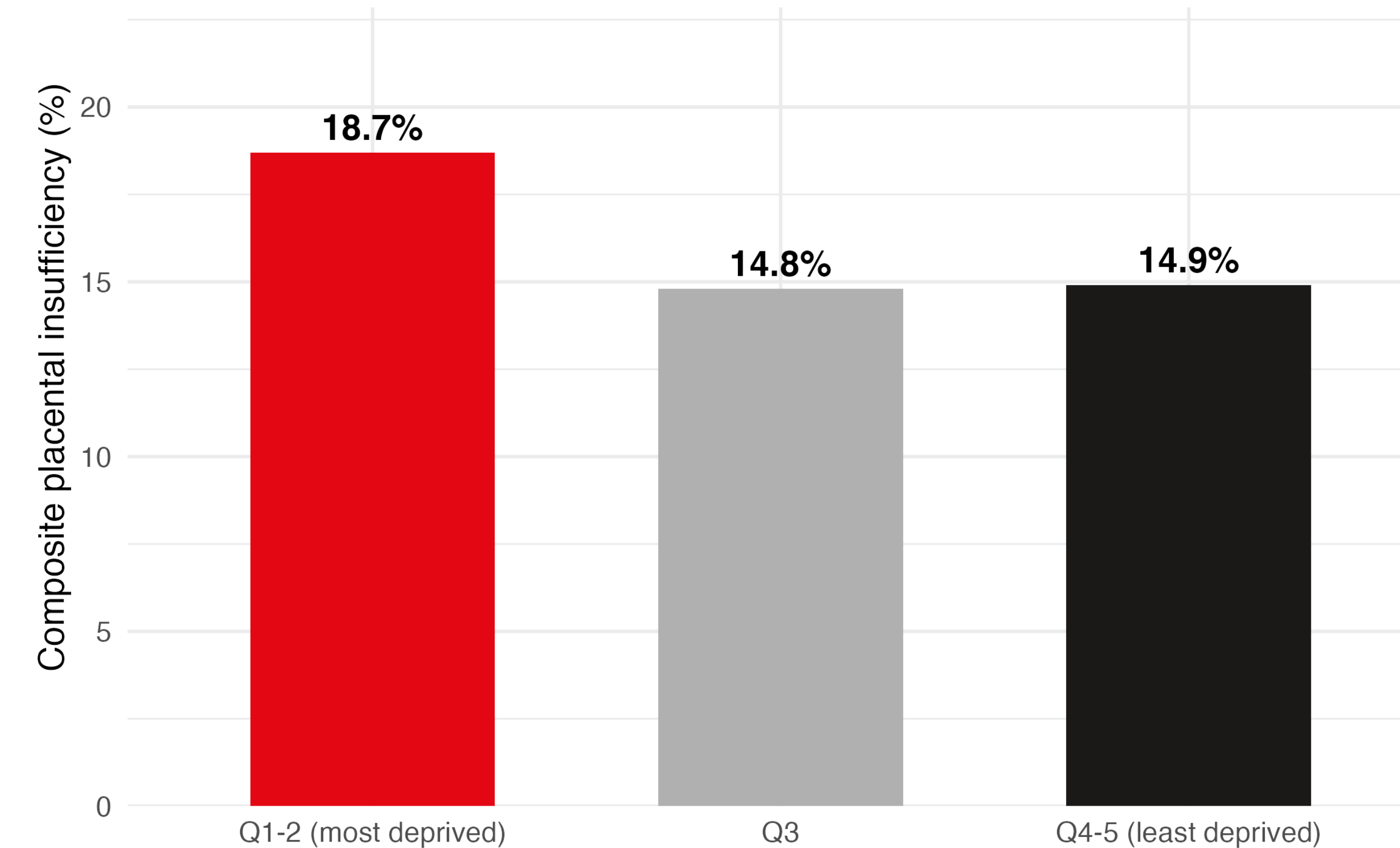


Figure 1. Prevalence of composite placental insufficiency by IMD deprivation quintile group.

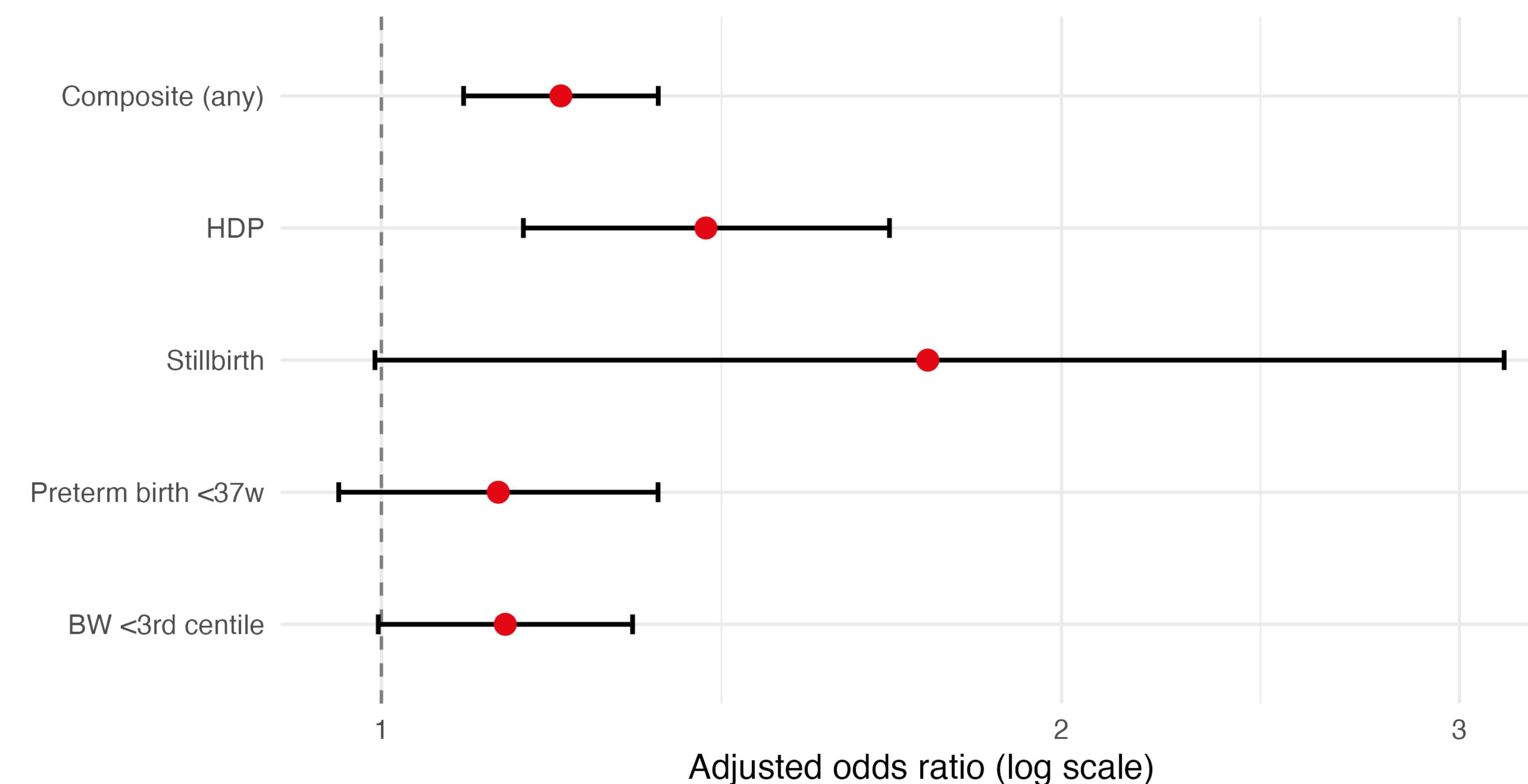


Figure 2. Adjusted odds ratios for components of placental insufficiency, Q1–2 (most deprived) vs Q4–5 (least deprived).

Results (continued)

Compared with Q4–5, women in Q1–2 had increased adjusted odds of the composite outcome (aOR 1.20, 95% CI 1.09–1.33; p<0.001) and of HDP specifically (aOR 1.39, 95% CI 1.16–1.68; p<0.001), independent of maternal age, ethnicity and smoking. Stillbirth (aOR 1.75, 95% CI 0.99–3.14; p=0.056) and FGR (aOR 1.13, 95% CI 1.00–1.29; p=0.056) showed a similar direction of effect, approaching significance.

Discussion

Greater socioeconomic deprivation was independently associated with a graded increase in placental insufficiency risk, driven predominantly by hypertensive disorders of pregnancy. This gradient persisted despite universal access to routine third-trimester ultrasound screening, suggesting deprivation-related risk is not fully mitigated by standard surveillance pathways.

Strengths and Limitations

Strengths include a large, contemporary, well phenotyped cohort (n=21,578) with routinely recorded postcodes and routine, first, second and third-trimester ultrasound. Limitations include unmeasured residual confounding (e.g. BMI) and use of area-level rather than individual-level deprivation measures.

Conclusion

Socioeconomic deprivation is independently associated with increased odds of placental insufficiency, particularly hypertensive disorders of pregnancy. Targeted surveillance or risk-stratified pathways for deprived populations may help narrow this outcome gap.