

Maternal haemoglobin levels and adverse pregnancy outcomes: individual patient data analysis from two prospective UK pregnancy cohorts

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Abstract

Objective To estimate the shape and magnitude of associations between maternal Hb levels in the first and third trimesters of pregnancy, and pregnancy outcomes in a high-income setting. **Design** Prospective cohort studies **Setting** Two population based pregnancy cohorts from the UK Population The Avon Longitudinal Study of Parents and Children(ALSPAC) and Pregnancy Outcome Prediction Study(POPS). **Methods** We used multivariable logistic regression models to examine the relationship between Hb and pregnancy outcomes, adjusting for maternal age, ethnicity, BMI, smoking status and parity. **Main Outcome Measures** Preterm labour, low birth weight, small for gestational age(SGA), pre-eclampsia(PET), and gestational diabetes mellitus(GDM). **Results** There was no strong evidence of associations between a higher Hb (1g/dL) in the first trimester and preterm birth (1.07: 95% CI 0.96,1.21), low birth weight(1.09: 0.96, 1.24) and SGA (1.05; 0.96, 1.14). Higher Hb in the third trimester was associated with preterm birth (1.43:1.28,1.61), low birth weight(1.68: 1.48,1.90) and SGA (1.41:1.30, 1.53). Higher Hb in the first and third trimesters were associated with PET in ALSPAC(1st trimester- 1.38:1.07,1.76, 3rd trimester- 1.57: 1.28,1.94) but not in POPS(1st trimester- 1.10: 0.92, 1.30, 3rd trimester- 1.10: 0.92, 1.31). In ALSPAC(1st trimester- 1.37:0.96,1.95, 3rd trimester- 1.35:0.97,1.78) and POPS(1st trimester- 0.94:0.77, 1.17, 3rd trimester- 0.85: 0.69, 1.01), there were no associations with GDM. **Conclusion** Higher maternal Hb, in late pregnancy, may indicate a suboptimal increase in blood volume and therefore, women at risk of adverse pregnancy outcomes. Further research is required to investigate if this association is causal, and to identify underlying mechanisms.

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Table 1-Characteristics_%28n_%28%25%29%29_and_outcomes_of_women_with_haemoglobin_-_Hb_measures_in_the_ available at <https://authorea.com/users/736315/articles/712061-maternal-haemoglobin-levels-and-adverse-pregnancy-outcomes-individual-patient-data-analysis-from-two-prospective-uk-pregnancy-cohorts>

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