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Maternal Factors During Pregnancy, the Early-life Environment, and Childhood Asthma/Wheeze at 12 Months: Findings from a Southeast Queensland Birth Cohort

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Background: Asthma is a common chronic childhood condition, with Australian children having the highest prevalence rates globally. The aim of this study was to investigate the association between maternal factors during perinatal period and asthma/wheeze diagnosis in children at 12 months of age.

Methods: Data, obtained from 2,166 mother–child dyads enrolled in the Environments for Healthy Living (EFHL) longitudinal birth cohort (2007 -2011) across south-east Queensland and northern New South Wales, Australia. Maternal demographic, socioeconomic, health and lifestyle factors in perinatal period were correlated to childhood asthma/wheeze diagnosis at 12 months. Univariate and multivariable logistic regression analyses were conducted in R statistical software. Multiple Imputation by Chained Equations was used to account for missing data, with pooled estimates generated across 30 imputed datasets.

Results: Pre-regression analyses identified significant associations between childhood asthma/wheeze and maternal education, maternal smoking during pregnancy, recreational substance exposure, infant chest infection and the presence of older siblings in the household. Following adjustment, infant chest infection (AOR 3.94, 95% CI 2.90–5.36, FDR $p<0.001$), maternal asthma (AOR 2.58, 95% CI 1.58–4.20), maternal smoking during pregnancy (AOR 2.11, 95% CI 1.48–3.01), maternal education at secondary/trade level (AOR 2.22, 95% CI 1.39–3.53), and older siblings in the household (AOR 1.62, 95% CI 1.17–2.24) remained independent predictors of asthma/wheeze at 12 months (all FDR $p\leq0.01$).

Conclusions: Perinatal environmental factors were independently associated with increased odds of asthma/wheeze at 12 months. Targeting modifiable maternal and early-life risk factors may help reduce the burden of childhood asthma.