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Associations of household smoking with current childhood asthma: retrospective cohort study using linked primary care and housing records

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Objectives

Second-hand tobacco smoke (SHS) is associated with adverse health outcomes in children. United Kingdom (UK) legislation prohibits smoking in enclosed public spaces, but many children remain exposed to SHS in their homes. We aimed to investigate if children sharing households with adult smokers were more likely to have current asthma.

Conclusion

One in three children share households with at least one adult smoker. Children living in smoking households are more likely to have current asthma than those in smoke-free households. SHS exposure in the home is a modifiable risk factor for childhood asthma. Future analyses will examine associations with asthma severity.

Methods

We linked electronic healthcare records (EHR) of children (7-17 years), registered with all north-east London general practices, UK, on 21/03/2021, to property data, using pseudonymised Unique Property Reference Numbers (pUPRNs). Household was defined as people sharing the same pUPRN on the study date. The primary outcome was current child asthma: asthma diagnosis and asthma medication within 12 months before 21/03/2021. We estimated adjusted odds ratios (aOR) and 95% confidence intervals (CI) of childhood asthma in a smoking household (≥ 1 smoker aged ≥ 26 years), adjusting for age, sex, ethnicity, and household overcrowding from logistic regression models with robust standard errors.

Results

We identified 90,387 children (44,161; 48.9% girls) with 34.6%, 32.2% and 16.8% respectively from White, Asian and Black ethnicity. They lived in 55,965 households with 118,543 adults, of whom 28,313 (23.9%) were EHRs-coded as current smokers and 84,342 (71.1%) as ex-smokers or non-smokers within seven years before the study date, resulting in 38.9% (35,163/90,387) children living in smoking households.

Current asthma was EHR-recorded in 5.1% (4,633/90,387) of children. After adjustment for age, sex and ethnicity, children living in a smoking household were more likely to have current asthma: aOR [95%CI]: 1.10 [1.02,1.18]. This association did not change after adjusting for household overcrowding: 1.11 [1.03,1.18].



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