



# Impact of Socioeconomic Status on Adult Patients with Asthma: A Population-based Cohort Study from UK Primary Care

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## Background

- **Socioeconomic status (SES) is known to affect asthma outcomes such as morbidity, mortality and healthcare utilization**
- Suggested reasons for worse asthma outcomes in deprived populations include poorer living conditions and reduced access to specialist care
- UK guidelines: patients with asthma that remains uncontrolled despite standard therapies should be referred to specialists<sup>2</sup>



## Objectives

1. Describe the **socioeconomic disparities** in a UK primary care asthma cohort
2. Identify the **factors** that influence the impact of SES on asthma outcomes
3. Study the impact of SES on **asthma presentations** (e.g., blood eosinophils), **treatment processes** (e.g., respiratory referrals) and **outcomes** (e.g., asthma control and exacerbations)



Historical cohort study

## Inclusion criteria

- Aged  $\geq 18$  years old
- Asthma diagnosis
- $\geq 3$  years of data available

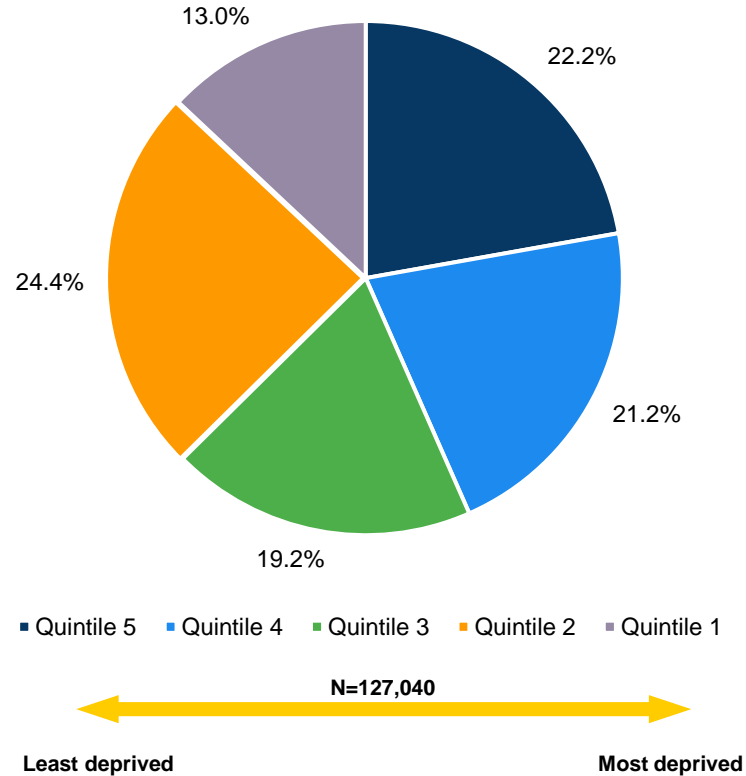
## Deprivation quintiles

- Socioeconomic status derived from UK 2011 Indices of Multiple Deprivation scores\*:
  - Quintile 5: least deprived
  - ↓
  - Quintile 1: most deprived

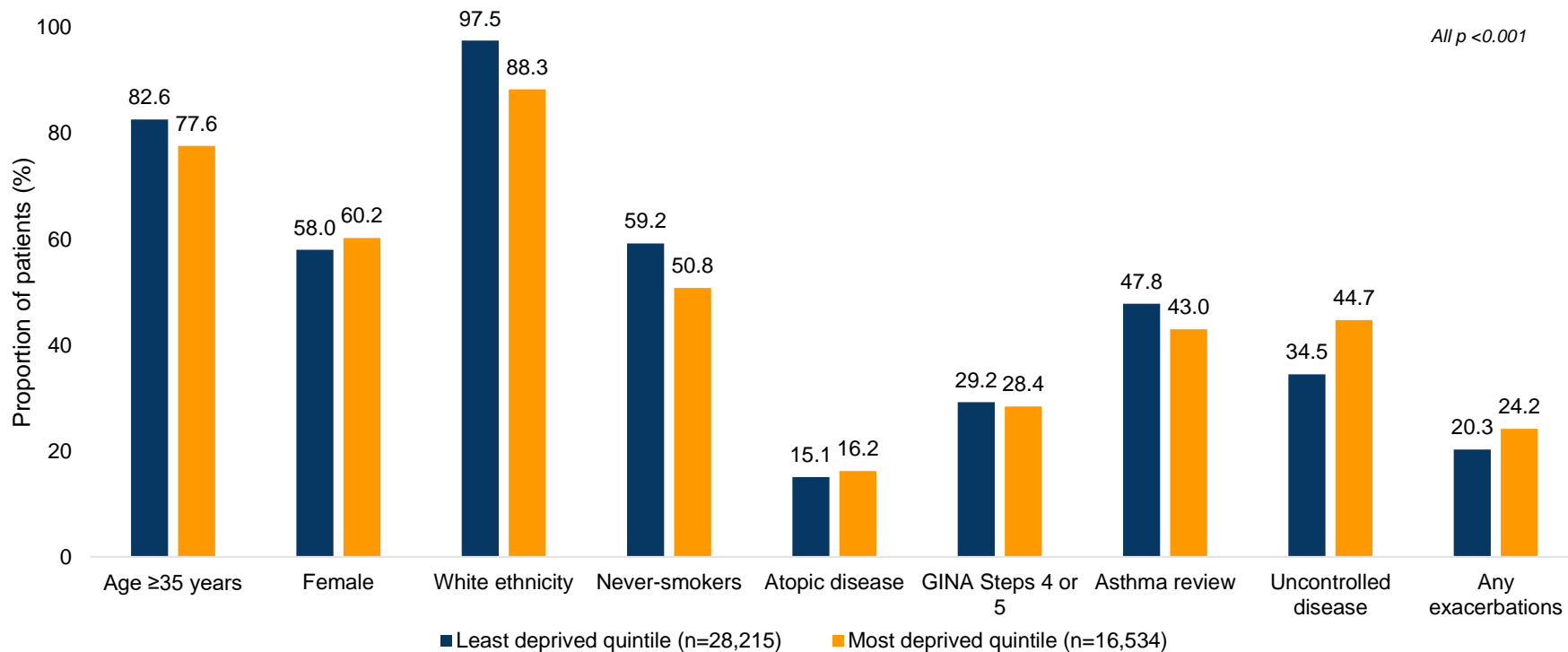
1-year follow-up

## Analyses

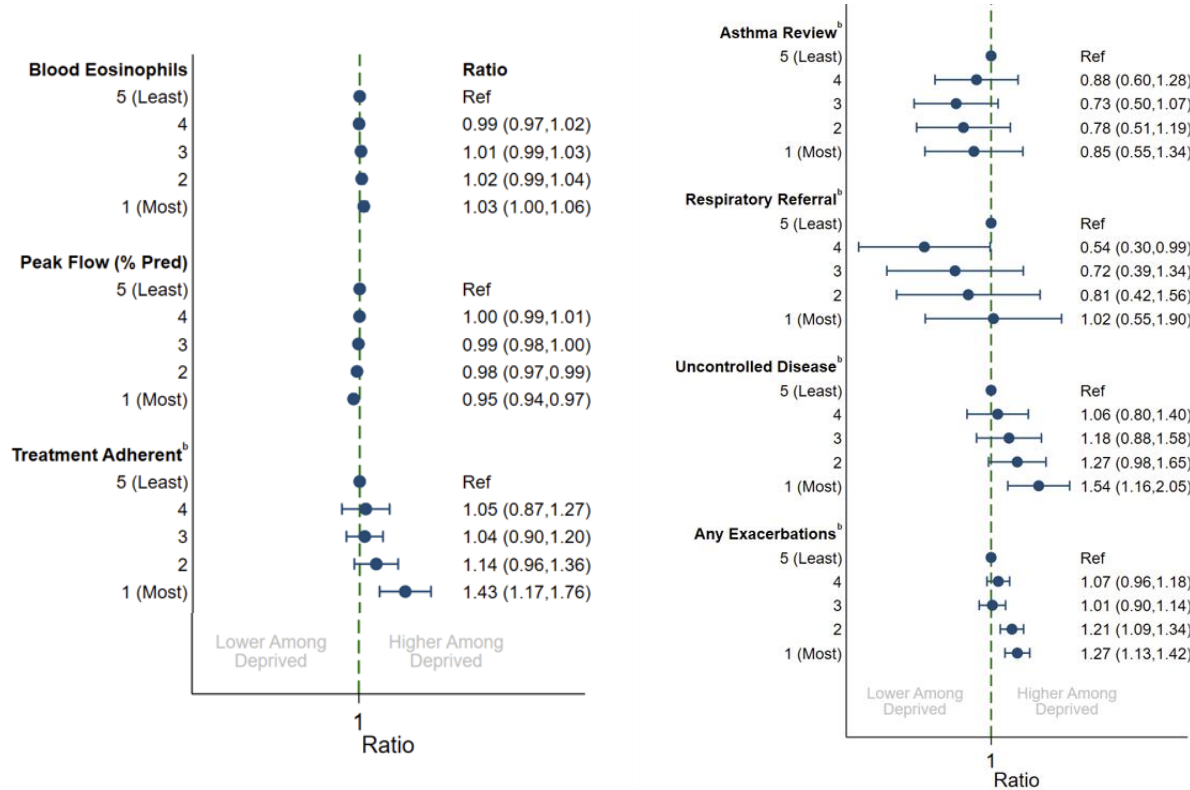
- **Asthma presentations**
  - Blood eosinophils
  - Peak flow
- **Treatment processes**
  - Medication adherence
  - Asthma reviews
  - Respiratory referrals
- **Clinical outcomes**
  - Asthma control
  - Exacerbations
- **Sensitivity analyses:**
  - Impact of demographic factors and asthma severity ( $\geq 2$  exacerbations) on clinical outcomes



Most deprived patients were more likely to have atopic disease and uncontrolled asthma than least deprived patients



# Impact of SES on asthma presentations, treatment processes and clinical outcomes in UK primary care<sup>a</sup>



Most deprived patients had more uncontrolled asthma and greater likelihood of exacerbations than least deprived patients, but rates of respiratory referrals remained comparable



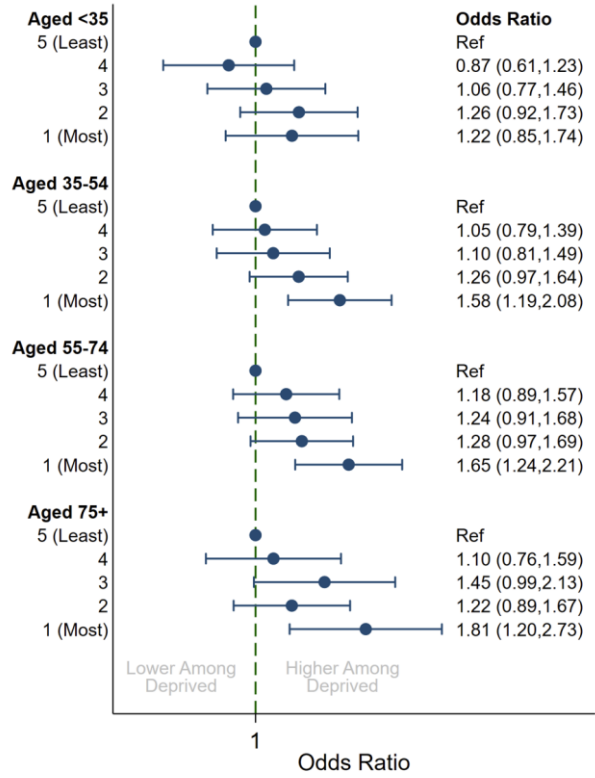
Sensitivity analysis: Similar rates of respiratory referrals between most and least deprived patients remained among those with ≥2 exacerbations



Clinical implication: More deprived patients may have greater need for specialist reviews and phenotype-targeted treatments like biologics

<sup>a</sup>Adjusted for year, age (5-year groups) and sex; <sup>b</sup>Odds ratio. Patient numbers: n=45,761 for blood eosinophils; n=71,291 for peak flow; n=102,712 for treatment adherent; n=127,040 for asthma review; n=127,040 for respiratory referral; n=40,078 for uncontrolled disease; n=127,040 for any exacerbations  
 SES = Socioeconomic status  
 Busby J, Price D et al. *J Asthma Allergy* 2021; in press.

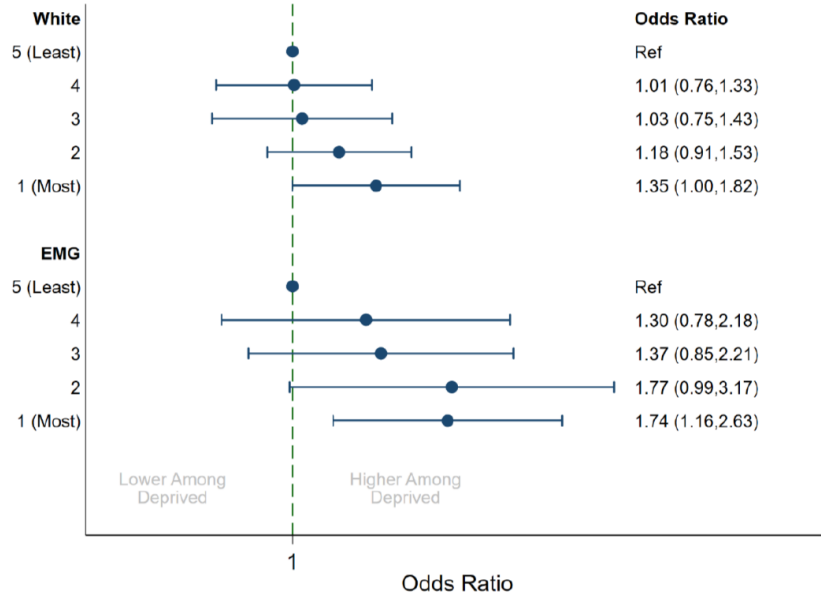
## Uncontrolled asthma



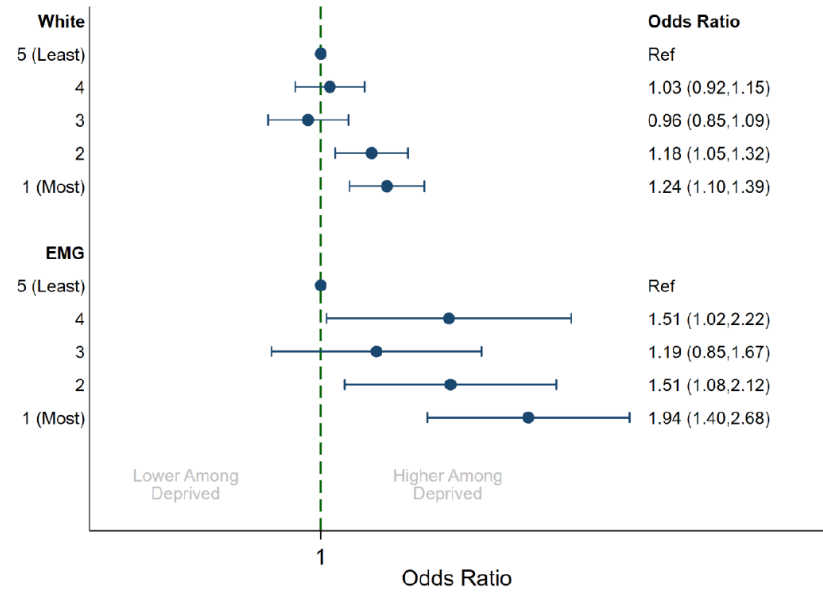
The impact of increased deprivation on asthma control was greater in patients aged ≥75 years than in those aged <35 years

# Ethnicity influences the magnitude of SES's impact on asthma outcomes

## Uncontrolled asthma



## Any exacerbations



The impact of increased deprivation on asthma control and exacerbations was greater in ethnic minority groups than in White patients



## Conclusions

- There was evidence of **socioeconomic disparities** in a UK primary care asthma cohort
- **Socioeconomic deprivation has an adverse effect on asthma outcomes**
  - Most deprived patients were more likely to have worse peak flow, uncontrolled disease or an exacerbation during follow-up than least deprived patients
- **Although more deprived patients had more uncontrolled disease, rates of respiratory referrals were similar to those of less deprived patients**
  - More deprived patients may have greater need for specialist reviews and phenotype-targeted treatments like biologics
- **Age and ethnicity influence the magnitude of SES's impact on asthma outcomes**
  - The impact of increased deprivation on asthma control was more pronounced in older patients versus younger patients, and in ethnic minority groups versus White patients
- **Interventions to resolve socioeconomic disparities should be explored, both in the UK and globally, to improve overall asthma outcomes**

## Acknowledgements

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- OPCRD has been reviewed and ethically approved by the NHS Health Research Authority to hold and process anonymized data as part of service delivery (Research Ethics Committee reference: 15/EM/0150). Ethical approval for this research study was granted by the ADEPT committee (ADEPT0120). The study was designed, implemented and registered in accordance with the criteria of ENCePP (EUPAS32482).

