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Title:
INFLAMMATORY BOWEL DISEASE IN UK PRIMARY CARE:
SOCIO-DEMOGRAPHIC TRENDS IN INCIDENCE DURING THE EARLY 21st CENTURY

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Introduction: Previous studies attempting to describe the epidemiology of inflammatory bowel disease (IBD) in the UK have been limited by insufficient statistical power. Here we aim to describe gender-specific relationships between age and onset of IBD. Additionally, we aim to describe the effect of social deprivation and geographical location on incidence of IBD.
Data source: The Health Improvement Network (THIN) database, a longitudinal general practice database containing electronic medical records for >17 million patients in the UK, which is broadly representative of the UK population.
Methods: We undertook a cohort study including all individuals contributing data to THIN during the period 01/01/2000-31/12/2016. Diagnostic Read codes were used to identify the main outcomes of interest: Crohn's disease (CD), ulcerative colitis (UC) and any IBD (CD, UC, indeterminate colitis, microscopic colitis and unspecified IBD). Crude incidence rates per 100,000 person years at risk (95% confidence interval [CI]) were calculated for each outcome. Multivariable mixed Poisson regression was used to estimate incident rate ratios (IRR) (95% CI) adjusting for age, sex, calendar year, geographical location and Townsend Deprivation Score.
Results: 10,762,479 individuals were included. 26,457 incident cases of IBD, 9,312 of CD and 13,588 of UC were identified.
For CD, incidence was higher in males than females at ages <20 years: 17.1 (16.2-18.1) vs 12.8 (12.0-13.7)/100,000 person-years IRR 1.34 (1.23-1.46). However, in adulthood, incidence was higher in females aged 20-50 years: 19.1 (18.4-19.8) vs 14.5 (13.8-15.1)/100,000 person-years, IRR 1.32 (1.24-1.39). For UC, incidence was similar between males and females at ages <45 years, but was higher in males for ages 45-80 years: 28.1 (27.2-29.0) vs 22.5 (21.7-23.3)/100,000 person-years, IRR 1.25 (1.19-1.31). See Fig.1.
For CD, we observed minimal effect of Townsend Deprivation Score on incidence of disease. However, for UC we observed lower incidence in areas of greater social deprivation. Least deprived vs most deprived: 21.2 (20.5-21.9) vs 16.7 (15.8-17.6)/100,000 person-years, IRR 0.81 (0.76-0.87).
For CD, we observed the highest incidence in Northern Ireland and Scotland: 16.5 (15.0-18.1) and 16.1 (15.3-17.0)/100,000 person-years respectively. For UC, we observed the highest incidence in London: 22.7 (20.5-25.0)/100,000 person-years.
Conclusion: This is the largest study to describe the epidemiology of IBD in the UK. Novel observations include: higher incidence of CD in male than female children and higher incidence of UC in men than women aged 45-80 years. Although it is established that CD is commoner in women than men in the UK, we found this gender-specific difference to be most pronounced for those aged 20-50 years. The association between social deprivation and incidence of IBD warrants further research.