

Association between antibiotic prescribing and deprivation in Wales: A multi-level analysis

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Introduction

The most recent Welsh Antimicrobial Resistance Programme (WARP) report on antibiotic use in primary care found significant variations between Health Boards and hospitals in gross antibiotic use in 2014. The aim of this study was to evaluate the association between socioeconomic deprivation and antibiotic prescribing volumes.

Objectives and Approach

Welsh General Practitioner (GP) antibiotic prescribing data for years 2013 to 2016 for patients' resident in Wales were extracted from the Secure Anonymised Information Linkage GP tables. Deprivation was assessed by linking prescribing events to the Welsh Index of Multiple Deprivation (WIMD) score for the patient's neighbourhood area. The association between deprivation area and antibiotic prescribed (items per 1000 persons per day) was stratified according to the patient's age, sex, prescription year and antibiotic class. A three-level multilevel Poisson regression model of 1.58 million patients nested within 349 GP practices, nested with 67 GP clusters, was specified to assess the associations

Results

Just over 7.97 million antibiotic items were prescribed between 2013 and 2016. Patients in the most deprived WIMD quintile had an overall prescription rate that was 25.2% higher than those in the least deprived WIMD quintile. The final model revealed that residing in the most deprived WIMD quintile (incidence rate ratio [IRR] = 1.1769, 95% confidence interval [CI] 1.1768 to 1.1770, being female (IRR = 1.2699, 95% CI 1.2698 to 1.2700), being aged ≥ 90 (IRR = 2.0687, 95% CI 2.0683 to 2.0690), and prescription year being 2013 were associated with significantly higher rate of antibiotics prescription. There were significant primary cares clustering of antibiotics prescription in Wales.

Conclusion/Implications

This study provides evidence that patients in areas of higher socioeconomic deprivation are more likely to be prescribed antibiotics in primary care in Wales. Population health prevention strategies aimed at reducing high antibiotic prescription rates should consider targeting areas of high deprivation.

