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New cases of diabetes mellitus in England and Wales, 1994–1998: Database study

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Summary *Objective*: The objective of this study was to estimate the annual rate of diagnosis of new cases of diabetes mellitus in England and Wales, and the number of new cases in each year.
Study design: Cohort study.
Method: Analysis of electronic patient records from the General Practice Research Database, using 208 general practices with a total list size of 1.3 million patients.
Results: We estimate that the national rate of diagnosis of new cases of diabetes in England and Wales was 17.5 [95% confidence intervals (CI) 16.6–18.4] per 10,000 person-years in 1994 and 22.1 (95%CI 21.2–23.0) per 10,000 person-years in 1998. We estimate that there were 87,642 new cases of diabetes mellitus in England and Wales in 1994 and 111,345 in 1998.
Conclusions: We estimate that the rate at which new cases of diabetes were diagnosed rose by about 26% in England and Wales from 1994 to 1998. This conclusion was unchanged when we took account of the ageing of the national populations between the beginning and end of the study period. We estimate that the number of new cases of diabetes diagnosed each year in England and Wales also increased by one-quarter over the same period. If the number of cases and the rate at which they are diagnosed continues to increase, this will need to be considered by those planning services for people with diabetes.

Introduction

Diabetes mellitus is a major public health problem. About 2% of the population are currently known to have diabetes and its prevalence is increasing.[1] However, it is unclear whether the increase in prevalence is due to improved survival in people with diabetes (i.e. people with diabetes are living longer) or to an increase in the rate at which new cases of diabetes are being diagnosed, e.g. through increased screening. Some sections of the UK population are at an increased risk of developing

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diabetes, particularly older adults, people who are obese, and adults of South Asian and Afro-Caribbean origin.[2] Changes in the number and proportion of the population made up by these groups, the distribution and prevalence of risk factors in the population, and the detection of diabetes are all likely to affect the number and rate of new cases that are diagnosed each year.

It is important to monitor the number of new cases that are diagnosed and the rate at which they are diagnosed in the population to assist in planning future services for people with diabetes. Sex- and age-specific rates also highlight groups that are at higher risk of being diagnosed with diabetes than the general population. Now that an increasing number of general practices are holding their clinical data in computerized format, primary care data are one possible source of this information.

There is, however, no widespread routine reporting of diagnoses of diabetes, and even large population-based surveys capture too few new cases to allow precise age-specific rates to be estimated.[3] Furthermore, local studies cannot easily be generalized to the national population because the risk of diabetes is influenced by various factors including socio-economic status and the distribution and prevalence of risk factors in the population.[4,5] Our aim was to use routine data from primary care to estimate the number and rate of new cases of diabetes mellitus that were diagnosed in England and Wales over a 5-year period.

Methods

We used data from 208 general practices in England and Wales that contributed up-to-standard data to the General Practice Research Database continually from 1994 to 1998. The distribution and coverage of these practices has been described previously.[6] We excluded three of the practices used in this earlier publication because of queries about their data. Inner city areas and single-handed practices were under-represented.

We counted the number of cases arising and the population at risk in each year from 1994 to 1998. Patients were eligible for inclusion in a particular year if they were permanently registered at their practice on the first day of the year and for at least 2 years before that date. A patient was defined as a newly diagnosed case of diabetes in a given analysis year if the first mention of a relevant Read or OXMIS code (two clinical coding systems used in the UK) in their patient record was in that year. We required patients to be registered before the analysis year to avoid the possibility that the first mention of diabetes was the reporting of a historical event at their initial consultation.

We developed case definitions and lists of Read and OXMIS codes that identified prevalent cases of diabetes mellitus in an earlier study.[1] In a pilot for this study, we refined the case definitions further to identify newly diagnosed cases of diabetes. We reviewed by hand the electronic patient records of 143 of the possible new cases from 1996, looking for supporting and contradictory information related to their diabetic status in the diagnostic, treatment and contemporary free-text sections of their computerized medical records. This was stratified by age and sex, and represented half of the possible new cases aged under 25 years, 20% of those aged 25–44 years and 5% of those aged 45 years and over. There was strong supporting evidence for 12 of the possible cases, usually in the form of a comment indicating that they were newly diagnosed. There was no evidence of treatment or monitoring activity in prior years, and no comments which suggested that the diagnosis was made in an earlier year in 115 of the possible cases (each patient was required to be registered at their practice for at least 2 years before inclusion in the study). A further 13 cases were possibly or definitely diagnosed in the preceding year. The three remaining cases did not have type 1 or type 2 diabetes mellitus: one had an insulinoma, another had a comment saying that they had 'borderline' diabetes (which we took to mean impaired glucose tolerance or impaired fasting glycaemia), and the remaining case had the diabetes code recorded when they were screened during an out-of-hours home visit.

In the full study, we excluded women for whom the only mention of diabetes was within 1 year of pregnancy and people with cystic fibrosis. We also excluded people with codes for other specified types of diabetes, e.g. diabetes due to haemochromatosis or malnutrition, and neonatal, secondary or 'latent' diabetes. As a result of the findings in the pilot study, we also validated by hand the records of people aged under 25 years whose first code for diabetes was in one of the analysis years, but who had no prescription for antidiabetic medication. We excluded 13 of the 57 such people because there was evidence that they did not have diabetes mellitus.

We estimated the rate of diagnosis of new cases of diabetes in males and females in each year by adjusting our crude rates using direct age and sex standardization. The crude rates were not directly applicable to England and Wales because the age distribution of the study population differed from