

BRIEF REPORTS

Ethnicity and Quality of Diabetes Care in a Health System with Universal Coverage: Population-Based Cross-sectional Survey in Primary Care

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BACKGROUND: The UK has a universal health care system that is free at the point of access. Over the past decade, the UK government has implemented an ambitious agenda of quality improvement initiatives in chronic disease management.

OBJECTIVE: To assess the quality of diabetes care and intermediate clinical outcomes within a multiethnic population after a sustained period of investment in quality improvement.

DESIGN: Population based cross-sectional survey, using electronic general practice records, carried out between November 2005 and January 2006.

PATIENTS: Seven thousand six hundred five adults (≥ 18 years) with diabetes registered with 32 primary care practices.

MEASUREMENTS: Percentage achievement by ethnic group (black, south Asian, or white) of the quality indicators for diabetes in a new pay-for performance contract.

RESULTS: There were only modest variations in recording of process measures of care between ethnic groups, with no significant differences in recent measurement of blood pressure, HbA1c, cholesterol, micro-albuminuria, creatinine, or retinopathy screening attendance. Blacks and south Asians were significantly less likely to meet all three national treatment targets for diabetes (HbA1c $\leq 7.4\%$, blood pressure $\leq 145/85$ mmHg, total cholesterol ≤ 5 mmol/L [193 mg/dL]) than whites (25.3%, 24.8%, and 32.0%, respectively).

CONCLUSIONS: Our findings suggest that substantial investment in quality improvement initiatives in the UK

may have led to more systematic and equitable processes of care for diabetes but have not addressed ethnic disparities in intermediate clinical outcomes.

KEY WORDS: diabetes; primary care; quality; ethnicity.

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INTRODUCTION

Diabetes is a growing public health concern worldwide. The prevalence of diabetes is increasing rapidly, and diabetes contributes significantly to overall health disparities in many countries.¹ South Asians (people with ancestry in countries from the Indian subcontinent) comprise more than one-fifth of the global population and have a particularly high prevalence of diabetes-related morbidity and mortality.² Minority ethnic groups living in developed countries such as the UK and United States generally have a higher prevalence of diabetes and higher mortality rates than the general population.³

Disparities in access to high quality diabetes care may be an important determinant of variations in health outcomes.⁴⁻⁶ To help reduce such disparities, the UK government has targeted all sectors of the population when implementing new health policies.⁷ Furthermore, considerable investment has been made in the UK since 1997 to improve the quality of clinical services for diabetes and to reduce variations in care.⁸ This investment includes the National Service Framework for Diabetes in 2001⁹ and the implementation of the new family practitioner contract in 2004.¹⁰ Through this contract, the UK government has linked a significant proportion of family practitioners' income to performance against key quality targets.

The structure of primary care in the UK offers some unique opportunities for examining the utilization and quality of primary health care services.¹¹ Through its National Health Service (NHS), the UK government provides universal health coverage, and most health services, including consultations with primary care physicians and specialist physicians, and

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laboratory investigations, are free at the point of care. In addition to this, people with diabetes also receive free prescription drugs for diabetes and any other medical condition they have, and this entitlement is not linked to income or employment. Hence, there are no financial barriers to access for care for people with diabetes in the UK.

In this paper, we present findings from a population-based study that examines diabetes care in an urban multiethnic population. Our primary hypothesis is that the recent investment in quality improvement initiatives in the UK has addressed known disparities in diabetes care between ethnic groups.

PATIENTS AND METHODS

The Wandsworth Prospective Diabetes Study aims to examine the quality and outcomes of care in a diverse ethnic population. Through the study, primary care practices in Wandsworth have established comprehensive primary care-based diabetes registers.¹² Data for the present study were collected from primary care practices between November 2005 and January 2006. The study was approved by Wandsworth Research Ethics Committee.

Setting and Participants

The area covered by the study contained 36 primary care practices with a total registered population of 243,519 patients. Thirty-two of these practices took part in the study, providing 94.3% coverage of the registered population of the study area. The population of Wandsworth is younger than that of England, with 74% being under 45 years (compared with 60% nationally). Around one in five residents (22%) belong to a nonwhite ethnic group, and Wandsworth has higher levels of economic deprivation relative to elsewhere in England.

Identification of Diabetes Patients

The methods used to develop our disease register for diabetes have been described previously.¹² In brief, all practices in the study area were invited to participate. All people with Type 1 and Type 2 diabetes were identified from computerized family practice records by searching for diagnoses of diabetes or diabetes care. Records were also searched to identify patients receiving medications for diabetes or patients with a HbA1c greater than 7.4%. A total of 389 patients, who were either under 18 years, women with gestational diabetes, or women receiving treatment for polycystic ovarian syndrome rather than diabetes, were excluded.

Study Variables

We examined quality indicators for diabetes from the new UK family practitioner contract¹⁰ in our population between November 2005 and January 2006. Each indicator is based on clinical information recorded on the practice computer within the previous 15 months. Patients self-identified their ethnic group to the primary care practices based on classifications that map to the 2001 UK census,¹³ either at registration or during a consultation at the practice. We categorized ethnicity into three groups (white British, black, or south Asian) for our analyses. Neighborhood socioeconomic

status was assigned to individual patients based on their postcode (equivalent to ZIP code) using the *Index of Multiple Deprivation 2004*.¹⁴ The Index of Multiple Deprivation is the most commonly used method of measuring neighborhood socioeconomic status in the UK and is compiled from a variety of sources, including the 2001 UK census and unemployment and social security benefits records.

Statistical Analyses

Odds ratios with 95% confidence intervals for quality indicators were determined for each ethnic category (with whites acting as reference group), adjusted for age, gender, and neighborhood socioeconomic status. Clustering of patients within general practices was taken into account by estimating robust standard errors,¹⁵ as patients from the same practice are assumed to share some things in common violating the assumption of independence. Statistical analyses were performed using Stata 8.2.

RESULTS

We identified 7,605 adults (≥ 18 years) with diabetes in the 32 participating primary care practices; 3,945 (51.9%) patients were men, and 3,660 (48.1%) were women. The European age standardized prevalence of diabetes was 42.2 per 1,000 population. Ethnicity was recorded in 93.1% of the sample (34.9% were white British, 25.7% black, and 19.8% south Asian).

Processes of Care Recorded

Recording of process measures for diabetes care varied only minimally between ethnic groups. There were no significant differences in recorded measurement of blood pressure, HbA1c, cholesterol, micro-albuminuria, creatinine, or retinopathy screening attendance between the white, black and south Asian groups. Blacks were significantly more likely to be asked about their smoking status and to have their body mass index and peripheral pulses measured than whites, but less likely to be offered smoking cessation advice if they were smokers (Table 1). South Asians were more likely to be asked about their smoking status and to have their peripheral pulses measured than whites.

Achievement of Intermediate Clinical Outcome Indicators

The black and south Asian groups were significantly less likely to meet all three treatment targets (for blood pressure, HbA1c, and cholesterol control) than the white group (Table 2). The black group had significantly poorer blood pressure and HbA1c control than the white group. The south Asian group had significantly poorer HbA1c control, but better cholesterol control, than the white group.

DISCUSSION

We found only modest variations in recording of process measures of care between blacks, whites, and south Asians, with no significant differences in recent measurement of blood

pressure, HbA1c, cholesterol, micro-albuminuria, creatinine, or retinopathy screening attendance. However, we identified considerable ethnic disparities in intermediate clinical outcomes, with blacks and south Asians significantly less likely to meet all three treatment targets for diabetes than whites. These disparities were present—after controlling for age, gender, and neighborhood socioeconomic status—in a health care system that provides universal health coverage and has been subject to an ambitious program of quality improvement over the past decade.

Ethnic disparities in diabetes care and intermediate outcomes have been well documented in U.S. health care settings.^{6,16} Our findings are also in keeping with other UK studies^{17,18} that have found poorer glycemic control among south Asians attending primary and secondary care settings in other areas of the UK. This may be because of differential management of hyperglycemia across ethnic groups, as there is evidence of lower insulin prescribing in minority ethnic patients when compared to whites.¹⁹ In addition, our finding of poorer blood pressure control among black patients is consistent with previous UK and U.S. studies.^{20,21} However, most previous UK studies have had relatively small samples, only included people of European or south Asian origin, or were conducted before the implementation of the new pay for performance primary care contract, which incentivized family practitioners to provide higher quality care.

Table 1. Ethnicity and Recording of Processes of Care (% and AORs)

	White		Black		South Asian	
	%	AOR ^a	%	AOR	%	AOR ^a
BMI measured	85.7	1.00	89.9	1.48 (1.19–1.86)	87.4	1.21 (0.92–1.59)
Smoking status determined	85.7	1.00	89.9	1.88 (1.45–2.42)	87.4	2.24 (1.74–2.88)
Smoking advice provided	87.8	1.00	83.4	0.65 (0.42–0.99)	84.5	0.73 (0.41–1.30)
HbA1c measured	84.7	1.00	86.1	1.14 (0.89–1.47)	82.5	0.90 (0.70–1.16)
Blood pressure measured	96.1	1.00	96.0	0.93 (0.66–1.31)	94.0	0.71 (0.49–1.01)
Retinal screening undertaken	65.6	1.00	62.0	0.91 (0.77–1.07)	62.3	0.92 (0.75–1.11)
Cholesterol measured	83.5	1.00	85.6	1.12 (0.88–1.43)	81.1	0.89 (0.65–1.22)
Micro-albuminuria measured	39.7	1.00	40.2	1.07 (0.94–1.22)	35.6	0.86 (0.68–1.08)
Peripheral pulses measured	35.1	1.00	47.0	1.59 (1.24–2.05)	43.1	1.41 (1.04–1.92)
Creatinine measured	62.8	1.00	64.6	1.11 (0.98–1.26)	60.3	0.95 (0.70–1.28)

^aOdds ratios (95% confidence intervals) have been adjusted for age, gender, socioeconomic deprivation, and practice level clustering; reference group=white

Table 2. Ethnicity and Achievement of Intermediate Outcome Indicators (% and AORs)

	White		Black		South Asian	
	%	AOR ^a	%	AOR ^a	%	AOR ^a
Cholesterol ≤ 5 mmol/L	69.3	1.00	70.2	1.17 (0.97–1.42)	71.6	1.24 (1.02–1.50)
Blood pressure ≤ 145/85	72.7	1.00	64.3	0.68 (0.59–0.78)	71.5	0.94 (0.74–1.21)
HbA1c ≤ 7.4%	48.0	1.00	42.8	0.77 (0.67–0.87)	35.5	0.66 (0.54–0.80)
All three targets met	32.0	1.00	25.3	0.76 (0.67–0.87)	24.8	0.76 (0.59–0.98)

^aOdds ratios (95% confidence intervals) have been adjusted for age, gender, socioeconomic deprivation, and practice level clustering; reference group=white

This is one of the few population-based studies to examine ethnic variations in diabetes management in a multiethnic population using individual patient level data. Some of the variation in care we identified may be because of differences in recording practice, which may underestimate the actual quality of care received. However, data for some intermediate outcome measures (HbA1c and cholesterol) are electronically downloaded from the laboratory into patient records. People with diabetes were identified from computerized records using algorithms based upon diagnostic and diabetes care codes. We have previously shown that computer searches based on diagnostic codes for diabetes alone have a low sensitivity, as they may miss up to a third of cases.¹² We used a more comprehensive search strategy to compensate for this under-recording of diabetes. All but four primary care practices within the study area participated in our survey. Hence, our findings provide a comprehensive and typical picture of the care provided in this ethnically diverse, urban location. Whereas our study provides an informative snapshot of current levels of care, use of cross-sectional data do not permit us to determine whether there is a causal link between quality initiatives and diabetes care. More robust studies using longitudinal data with multiple measurement points and longer term follow-up of patients are required to better evaluate the impact of these initiatives.

In conclusion, our findings suggest that substantial investment in quality improvement initiatives in the UK may have led to more systematic and equitable processes of care for diabetes. However, disparities in intermediate clinical outcomes have persisted, suggesting that access to high quality health care, although important, remains only one facet of an effective strategy to tackle health disparities. Additional strategies targeting ethnic minority groups are therefore required to reduce disparities in chronic disease outcomes.

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Conflict of interest: None disclosed.

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