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Ethnic inequalities in access to and outcomes of healthcare: Analysis of the Health Survey for England

February 2009

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ABSTRACT

Introduction

Ethnic/racial inequalities in access to and quality of healthcare have been repeatedly documented in the US. Although there is some evidence of inequalities in England, research is not so extensive. We examine ethnic inequalities in use of primary and secondary health services, and in outcomes of care, in England.

Methods

We analyse four waves of the Health Survey for England, a representative population survey with ethnic minority oversamples. Outcome measures include use of primary (GP and dental) and secondary (out-patient, day-care and in-patient) healthcare services and clinical outcomes of care (controlled, uncontrolled and undiagnosed) for three conditions – hypertension, raised cholesterol, and diabetes.

Results

Ethnic minority respondents were not less likely to use GP services. For example, the adjusted odds ratios for Indian, Pakistani and Bangladeshi versus white respondents were 1.29 (95% Confidence Intervals 1.07-1.54), 1.32 (1.10-1.58) and 1.35 (1.10-1.65) respectively. Similarly, there were no ethnic inequalities for the clinical outcomes of care for hypertension and raised cholesterol, and, on the whole, no inequalities in outcomes of care for diabetes. There were ethnic inequalities in access to hospital services, and marked inequalities in use of dental care.

Discussion

Ethnic inequalities in access to healthcare and the outcomes of care for three conditions (hypertension, raised cholesterol and diabetes), for which treatment is largely provided in primary care, appear to be minimal in England. While inequalities may exist for other conditions and other health care settings, particularly internationally, the implication is that ethnic inequalities in healthcare are minimal within NHS primary care.

INTRODUCTION

A large body of research has documented ethnic inequalities in access to and quality of healthcare in developed countries. In the US inequalities appear to be consistent across a range of outcomes and healthcare providers. A recent Institute of Medicine (IOM) study,¹ identified health insurance status as a key determinant of these inequalities (even though the primary focus of the study was on non-access related factors) with ethnic/racial minority groups less likely to be covered and likely to have less comprehensive coverage among those who are covered. However, evidence from the UK also suggests that ethnic minority patients receive poorer care, despite near universal access to the publicly funded National Health Service (NHS), suggesting that factors other than the direct costs of healthcare for the individual may be important determinants of ethnic inequalities in healthcare.

So, while studies in the UK have shown that ethnic minorities on the whole make greater use of primary healthcare services than whites,²⁻⁸ even after adjustment for self-reported morbidity,⁶ this does not appear to be reflected in greater use of secondary care services,⁶ and there are suggestions that the healthcare experience of ethnic minorities is poorer, with higher levels of dissatisfaction with care,^{4,9,10} longer waits for appointments,⁹ language barriers,^{4,6} fewer follow-up services,^{11,12} and poorer intermediate outcomes for those with diabetes.¹³⁻¹⁵ Other evidence suggests that South Asian people with coronary heart disease wait longer for referral to specialist care,¹⁶ are less likely to receive revascularisation procedures,^{17,18} and among those who have suffered an acute myocardial infarction the likelihood of being treated with thrombolysis, or of being referred for exercise tests, is lower.^{19,20}

However, research in the UK is not as extensive as that in the US, covering a limited range of conditions, not including those with undiagnosed disease and often using local rather than national studies. This paper sets out to add to evidence on the nature of ethnic inequalities in healthcare using nationally representative data from England to examine ethnic inequalities in access to primary and secondary healthcare, and inequalities in the outcomes of care received for three specific conditions: hypertension, raised cholesterol and diabetes. To do this, it includes those with undiagnosed, as well as diagnosed, disease.

METHODS

Data source

Data used are drawn from the 1998, 1999, 2003 and 2004 sweeps of the Health Survey for England (HSE), which is a representative national survey.^{7,8,21,22} In 1999 and 2004 the focus of the HSE was on the health of ethnic minority people, with boosted samples of Irish, Black Caribbean, Indian, Pakistani, Bangladeshi and Chinese respondents. Respondents were allocated into ethnic categories on the basis of their response to a question asking about family origins. In 1998 and 2003 the focus of the HSE was on the general population. And in all four years topic coverage focused on cardiovascular disease (CVD) and related risk factors, with only small variations in methods.

Respondents were recruited from addresses selected from a sample of postcode sectors that were stratified to cover different regions and socioeconomic profiles. For the ethnic minority samples postcode sectors were also stratified on the basis of their ethnic composition. The Chinese population is more geographically dispersed than other groups, so was sampled by

screening addresses where the electoral register indicated that a resident had a Chinese origin name. Full details of the sample design can be found in the survey reports.^{7,8,21,22}

Data collection was performed in two parts, an interviewer visit followed by a visit from a nurse, who measured blood pressure, took a blood sample and recorded use of prescribed medicines. Ethical approval for the HSE was obtained from the London Multi-Centre Research Ethics Committee.

Outcome measures

Use of Health Services

Respondents were asked if: they had visited a GP in the last two weeks; they visited a dentist for regular or occasional check-ups (1999 HSE only); and, in the last twelve months, they attended hospital as an outpatient, day patient, or at A&E, or had been in the hospital as an inpatient (overnight or longer). When modelling differences in the use of services, we adjusted for self-assessed general health (very good, good, fair, bad and very bad) and the presence of a limiting longstanding illness, on the assumption that these reflect self-perceived need and consequent motivation to consult.

Hypertension

Respondents were asked if they had been diagnosed as hypertensive by a doctor (excluding pregnancy) and their medicines were checked to see if they included anti-hypertensives.

Blood pressure was directly measured using the Dinamap 8100 (in 1998/9) or an Omron HEM 907 (in 2003/4) monitor. A calibration study provided equations to convert Dinamap to Omron readings. Three sitting blood pressure readings were taken on the right arm after five minutes rest. The mean of the second and third measurement was used in the analysis.

Hypertension was defined as a blood pressure $\geq 140/90$ mmHg. Combining the data on diagnosis of, treatment for and measured hypertension, four categories were defined:

1. Measured normotensive, no diagnosis/treatment (Normotensive)
2. Measured normotensive, diagnosed hypertensive and/or treated (Hypertensive controlled)
3. Measured hypertensive, diagnosed and/or treated (Hypertensive uncontrolled)
4. Measured hypertensive, no diagnosis/treatment (Hypertensive undiagnosed)

So, the first category contains those who do not have the condition, the second those who have the condition, but well controlled; the third those who have been diagnosed, but the condition is not controlled; and the fourth those who have a condition, but have not been diagnosed.

Cholesterol

At the nurse visit a non-fasting blood sample was obtained and used to measure total cholesterol on an Olympus 640 analyser using the DAX Cholesterol Oxidase assay method.

Raised cholesterol was defined as ≥ 5.0 mmol/l, following the Joint British Societies Recommendations.²³ Respondents were asked if they were told by a doctor that they had high cholesterol and their medication was checked to see if it included drugs to lower cholesterol.

Using these data the following categories were defined (mirroring those described above for hypertension):

1. Normal cholesterol, no diagnosis/treatment of high cholesterol (Normal cholesterol)
2. Normal cholesterol, diagnosed with high cholesterol and/or treated (Raised cholesterol controlled)
3. Raised cholesterol, diagnosed and/or treated (Raised cholesterol uncontrolled)
4. Raised cholesterol, no diagnosis/ treatment (Raised cholesterol undiagnosed)

Diabetes

Glycated haemoglobin (HbA1c) was measured using a non-fasting blood sample (only in the 1999, 2003 and 2004 HSE), on a Tosoh HLC- (BHbV) A1c2.2 or a Tosoh G7 analyser. In the management of diabetes, the UK National Institute of Clinical Excellence recommends a target value of 6.5% to 7.5% for glycated haemoglobin and the Joint British Societies' statement on reducing cardiovascular risk gives an audit standard of $\leq 7.5\%$.²³ Here we take a value of $>6.5\%$ to indicate likely need for treatment, and a value of $>7.5\%$ to indicate uncontrolled disease. Respondents were asked if they had been diagnosed by a doctor with diabetes (excluding pregnancy) and their medication was checked to see if it included drugs to manage diabetes. Consistent with those for hypertension and cholesterol, the following categories were defined:

1. HbA1c ($\leq 6.5\%$), no diagnosis/treatment of diabetes (Not diabetic)
2. HbA1c ($\leq 7.5\%$), diagnosis and/or treatment of diabetes (Diabetic controlled)
3. HbA1c ($>7.5\%$), diagnosis and/or treatment of diabetes (Diabetic uncontrolled)
4. HbA1c indicative of diabetes ($>6.5\%$), no diagnosis/treatment (Diabetic undiagnosed)

Statistical Methods

Analysis was carried out using Stata 9.1. All analyses included sample weights that account for the unequal probabilities of selection. Account was also taken of the stratified and clustered sample design. Analyses included sample year as a covariate and were adjusted for age and gender. Analyses were also stratified by gender to explore the possibility that ethnic differences varied by gender (models not shown, but reported where relevant).

Multiple logistic regression was used to analyze the relationship between ethnic origin and access to health care and to assess the relationship between ethnic origin and the presence of diagnosed or measured hypertension, cholesterol and diabetes. To analyze ethnic differences in outcomes of healthcare for those with one of these conditions, multinomial logistic regression was performed. To adjust for potential explanations for the pattern of findings we included income (equivalised total household income quintiles), on the assumption that those of poorer socioeconomic position might receive poorer care, and cardiovascular risk, by applying the Framingham risk equation to estimate 10 year risk of cardiovascular disease (CVD),²⁴ on the assumption that practitioners might treat those at higher risk more aggressively and that the Framingham risk equation encapsulates those risk factors a practitioner would consider when making treatment decisions.

RESULTS

Analysis was restricted to respondents aged 16 to 74. Table 1 shows estimated response rates to various elements of the survey. Fuller details and the methods for estimation are reported elsewhere.^{7,8,21,22} Overall, two cautions are worth noting. First, the lower response rates for the ethnic minority samples. Second, the fall in response to the more invasive elements of the survey between 1998/9 and 2003/4. Non-response survey weights were used to correct for biases this may have introduced.

Table 1: Estimated response rates to the Health Survey for England

	Cell per cents					
	1998	1999 General Sample	1999 Ethnic Minority Sample	2003	2004 General Sample	2004 Ethnic Minority Sample
Response rates						
Household	74	76	67	73	72	66
Individuals interviewed	69	70	60	66	66	63
Blood pressure measured	58	n/a	40	50	n/a	32
Gave blood sample	47	n/a	32	38	n/a	21

Table 2 shows age and gender adjusted odds for ethnic minority groups compared with the white group to utilize health services. Caribbean, Indian, Pakistani and Bangladeshi respondents were all more likely to have visited their GP compared with their white counterparts. In contrast, all of the ethnic minority groups were less likely to have had a regular or occasional check up with a dentist, with particularly low rates for the non-white minority groups. Pakistani, Bangladeshi and Chinese respondents were also less likely to have attended the hospital as an out-patient or day-patient, while Caribbean respondents were more likely. Fewer differences were found for in-patient attendance, with Pakistani respondents more likely and Chinese respondents less likely to have attended the hospital as an in-patient.

Table 3 shows these odds with adjustment for self-assessed health and limiting longstanding illness. With this additional adjustment for ethnic differences in perceived need, the differences between the ethnic minority and white groups reduced for GP visits, but remained significant. On the other hand, ethnic differences for hospital visits increased in most cases.

Table 2: Ethnic differences in use of health services*Odds ratios and 95% confidence intervals compared with white, adjusted for age and gender*

	White	Irish	Caribbean	Indian	Pakistani	Bangladeshi	Chinese
Visited GP in last two weeks	1	1.10 (0.90-1.33)	1.36 (1.16-1.61)	1.45 (1.21-1.73)	1.58 (1.33-1.87)	1.78 (1.46-2.17)	0.79 (0.60-1.02)
Visits dentist at least occasionally	1	0.82 (0.70-0.96)	0.55 (0.48-0.64)	0.38 (0.33-0.43)	0.37 (0.32-0.43)	0.17 (0.14-0.21)	0.40 (0.34-0.48)
Out- or day-patient hospital visit in last year	1	1.05 (0.91-1.21)	1.16 (1.01-1.33)	0.94 (0.81-1.09)	0.78 (0.67-0.91)	0.82 (0.68-0.99)	0.62 (0.50-0.76)
In-patient hospital visit in last year	1	1.08 (0.86-1.35)	0.94 (0.74-1.18)	1.01 (0.81-1.26)	1.43 (1.15-1.79)	1.10 (0.85-1.44)	0.47 (0.31-0.71)
<i>N for GP and dentist visits</i>	<i>7,102</i>	<i>1,160</i>	<i>1,251</i>	<i>1,248</i>	<i>1,255</i>	<i>1,090</i>	<i>654</i>
<i>N for hospital visits</i>	<i>7,354</i>	<i>1,545</i>	<i>1,646</i>	<i>1,581</i>	<i>1,516</i>	<i>1,288</i>	<i>794</i>

Table 3: Ethnic differences in use of health services, with adjustments for self assessed health and limiting long-standing illness

Odds ratios and 95% confidence intervals compared with white, adjusted for age, gender, self assessed health and limiting longstanding illness

	White	Irish	Caribbean	Indian	Pakistani	Bangladeshi	Chinese
Total							
Visited GP in last two weeks	1	1.03 (0.84-1.26)	1.18 (1.00-1.41)	1.29 (1.07-1.54)	1.32 (1.10-1.58)	1.35 (1.10-1.65)	0.80 (0.61-1.05)
Visits dentist at least occasionally	1	0.84 (0.72-0.99)	0.58 (0.50-0.67)	0.41 (0.36-0.48)	0.41 (0.35-0.47)	0.20 (0.16-0.24)	0.42 (0.35-0.50)
Out- or day-patient hospital visit in last year	1	1.02 (0.88-1.18)	1.03 (0.88-1.20)	0.83 (0.71-0.97)	0.59 (0.50-0.70)	0.56 (0.46-0.69)	0.64 (0.51-0.80)
In-patient hospital visit in last year	1	1.04 (0.83-1.31)	0.79 (0.61-1.01)	0.85 (0.68-1.08)	1.04 (0.81-1.33)	0.72 (0.54-0.96)	0.47 (0.30-0.72)
<i>N for GP and dentist visits</i>	<i>7,102</i>	<i>1,160</i>	<i>1,251</i>	<i>1,248</i>	<i>1,255</i>	<i>1,090</i>	<i>654</i>
<i>N for hospital visits</i>	<i>7,354</i>	<i>1,545</i>	<i>1,646</i>	<i>1,581</i>	<i>1,516</i>	<i>1,288</i>	<i>794</i>

For the three conditions used for the outcomes of care assessment Table 4 shows the distribution of the sample across categories, together with age and gender adjusted odds for having the condition. Caribbean respondents were more likely to be hypertensive compared with white respondents, while Chinese respondents were less likely. For cholesterol, Caribbean, Indian, Pakistani and Chinese respondents were less likely to have raised levels (although analyses stratified by gender (not shown) suggested that this was not the case for Indian men). All ethnic minority groups, except Irish, had markedly higher odds for diagnosed diabetes or raised HbA1c.

Table 5 shows findings from the multinomial regression analysis examining ethnic differences in the outcomes of care for those with the condition. Relative risk ratios for being in the uncontrolled and the undiagnosed categories compared with the controlled category are shown for each ethnic minority group compared with whites, adjusted for income and CVD risk (although the adjustments for income and CVD risk made very little difference to the findings reported here).

Few differences were found in treatment and diagnosis of hypertension, with the relative risk ratios suggesting outcomes were at least as good for the ethnic minority groups as those for the white group. The only significant difference was the lower risk of being undiagnosed for Caribbean compared with white respondents (Relative Risk Ratio 0.43; 95% Confidence Intervals 0.29-0.63), indicating better quality care for this group.

Table 4: Prevalence and treatment outcomes for hypertension, raised cholesterol and diabetes

Per cents and odds ratios with 95% confidence intervals compared with white, adjusted for age and gender

	White	Irish	Caribbean	Indian	Pakistani	Bangladeshi	Chinese
Hypertension							
Normotensive	67.1	66.4	64.4	71.6	79.1	80.8	79.6
Hypertension controlled	10.6	10.6	13.9	10.9	8.4	8.3	6.4
Hypertension uncontrolled	9.8	10.4	12.3	7.7	5.7	5.3	5.8
Hypertension undiagnosed	12.6	12.7	9.4	9.7	6.7	5.6	8.2
Odds ratio (95% CI) for being hypertensive (controlled, uncontrolled or undiagnosed)	1	1.04 (0.89-1.22)	1.53 (1.29-1.81)	1.05 (0.92-1.21)	0.96 (0.79-1.16)	0.84 (0.64-1.11)	0.69 (0.56-0.85)
<i>N</i>	<i>17836</i>	<i>1260</i>	<i>1067</i>	<i>1370</i>	<i>1041</i>	<i>712</i>	<i>701</i>
Cholesterol							
Normal cholesterol	31.4	33.1	48.4	40.3	47.3	45.9	45.3
Raised cholesterol controlled	2.0	1.7	1.6	4.1	3.5	3.9	0.8
Raised cholesterol uncontrolled	8.2	8.8	6.0	6.5	5.2	3.2	4.8
Raised cholesterol undiagnosed	58.4	56.4	43.9	49.1	43.9	47.0	49.1
Odds ratio (95% CI) for having raised cholesterol (controlled, uncontrolled, undiagnosed)	1	0.87 (0.73-1.04)	0.54 (0.46-0.64)	0.81 (0.70-0.95)	0.79 (0.66-0.94)	0.86 (0.68-1.09)	0.70 (0.57-0.86)
<i>N</i>	<i>16161</i>	<i>1223</i>	<i>962</i>	<i>1249</i>	<i>866</i>	<i>565</i>	<i>531</i>
Diabetes							
Not diabetic	96.3	96.2	89.7	89.1	88.5	83.1	94.1
Diabetic controlled	1.6	1.0	2.9	4.1	3.1	5.4	1.1
Diabetic uncontrolled	1.2	1.2	4.0	2.6	4.7	5.5	2.1
Diabetic undiagnosed	0.8	1.6	3.3	4.1	3.7	5.9	2.7
Odds ratio (95% CI) for being diabetic (controlled, uncontrolled, undiagnosed)	1	1.03 (0.69-1.54)	3.91 (2.91-5.26)	4.83 (3.75-6.24)	7.41 (5.45-10.06)	12.62 (8.58-18.58)	2.73 (1.94-3.86)
<i>N</i>	<i>7005</i>	<i>1229</i>	<i>922</i>	<i>1232</i>	<i>852</i>	<i>555</i>	<i>532</i>

Table 5: Treatment outcomes for hypertension, raised cholesterol and diabetes: multinomial regression relative risk ratios compared with white (only those with the condition)

Relative risk ratios with 95% confidence intervals compared with white, adjusted for age, gender, CVD risk and income

	White	Irish	Caribbean	Indian	Pakistani	Bangladeshi	Chinese
Hypertension							
Hypertension controlled	ref cat	ref cat	ref cat	ref cat	ref cat	ref cat	ref cat
Hypertension uncontrolled	1	1.11 (0.82-1.50)	0.99 (0.73-1.35)	0.83 (0.61-1.14)	0.89 (0.56-1.39)	0.88 (0.56-1.38)	1.04 (0.66-1.64)
Hypertension undiagnosed	1	0.94 (0.62-1.44)	0.43 (0.29-0.63)	0.73 (0.47-1.12)	0.74 (0.44-1.27)	0.37 (0.11-1.25)	0.69 (0.34-1.43)
<i>N</i>	6064	424	392	430	217	133	149
Cholesterol							
Raised cholesterol controlled	ref cat	ref cat	ref cat	ref cat	ref cat	ref cat	ref cat
Raised cholesterol uncontrolled	1	1.02 (0.61-1.70)	1.09 (0.55-2.17)	0.38 (0.25-0.60)	0.39 (0.20-0.75)	0.25 (0.13-0.48)	1.10 (0.38-3.15)
Raised cholesterol undiagnosed	1	0.89 (0.55-1.45)	1.08 (0.55-2.11)	0.33 (0.23-0.49)	0.30 (0.18-0.51)	0.37 (0.20-0.67)	1.24 (0.50-3.12)
<i>N</i>	11390	824	674	769	441	292	297
Diabetes total							
Diabetic controlled	ref cat	ref cat	ref cat	ref cat	ref cat	ref cat	n/a
Diabetic uncontrolled	1	1.49 (0.64-3.46)	1.71 (0.83-3.52)	0.82 (0.45-1.47)	1.95 (1.03-3.68)	1.23 (0.60-2.51)	n/a
Diabetic undiagnosed	1	2.89 (1.23-6.78)	2.15 (0.96-4.81)	1.47 (0.73-2.94)	1.54 (0.68-3.49)	0.72 (0.26-2.02)	n/a
<i>N</i>	326	50	96	137	103	93	36

For raised cholesterol, Indian, Pakistani and Bangladeshi respondents appeared to have better quality of care than white respondents, with lower risks to be both uncontrolled and undiagnosed. No differences were found for the Irish, Caribbean and Chinese groups compared with the white group.

For diabetes small numbers of respondents with the condition meant that confidence intervals are wide and data could not be presented for the Chinese group. Nevertheless, the relative risk ratios again indicate few differences across ethnic groups. Relative risk ratios for the Indian and Bangladeshi group were close to 1 and not significant, suggesting similar outcomes of care compared with the white group. The relative risk ratios for the Pakistani group were large, and significant for 'uncontrolled diabetes' (Relative Risk Ratio 1.95; 1.03-3.68), suggesting poorer outcomes of care. A similar pattern was found for the Irish group, although the significant difference here was for 'diabetic undiagnosed'. While for the Caribbean group relative risk ratios were quite large, but not statistically significant.

DISCUSSION

Using data from nationally representative surveys conducted in England we have been able to examine the extent of ethnic inequalities in access to health care, and in the outcomes of that care for three conditions (hypertension, raised cholesterol and diabetes). The analysis shows that ethnic minority respondents are not less likely to access primary care (GP) services and in some cases are more likely to use these services. This might be interpreted as reflecting an inequality in access for white people, but differences in use of services can only be understood in the context of levels of need. Adjustments for self-perceived need (self-

reported morbidity) reduced the observed differences in use of primary care, with the implication that the greater use by ethnic minority people reflects their greater need and not inequalities in access for white people. For outcomes of care (undiagnosed or poorly controlled disease) there is no evidence of ethnic inequalities in the case of hypertension and raised cholesterol, with, in some cases, indications of better care for ethnic minority respondents. For diabetes there were also few differences, although some evidence of poorer outcomes for the Pakistani and Irish groups. In contrast, there were inequalities in access to hospital services and marked inequalities in access to dental services.

The findings on utilization rates reflect those of other studies in the UK.^{4,6} The difference between high GP utilization rates and lower use of hospital services may reflect: differences in threshold for consultation across ethnic groups (although we do not know of good evidence to support this possibility); differences in thresholds for referral by GPs (although recent studies utilising vignettes suggest that this is not the case in either the UK or the US,^{25,26}), or ethnic differences in the use of private healthcare, with white people far more likely to use private hospital care.⁶ The low use of dental services may reflect the difficulty of finding an NHS dentist, or the fees the user pays directly for these services in the English NHS.

The findings showing inequalities in outcomes of care for diabetes for Pakistani and Irish people reflect those of other studies in the UK,¹³⁻¹⁵ although the more detailed analysis presented here shows that such inequalities are not present for all ethnic minority groups. Ethnic inequalities in the outcomes of care for hypertension and raised cholesterol have not, to our knowledge, previously been studied using national data covering the undiagnosed population in the UK, and the lack of inequality that we find is to some extent unexpected. Generally, the findings reported here on access to and outcomes of care are markedly

different from those in the US, despite some similarities in health inequalities and socioeconomic inequalities between the two countries.^{27,28} This reflects work showing that the outcomes for the management of diabetes in the UK match those for the insured population in the US and that both of these groups have considerably better outcomes than the uninsured US population.²⁹

However, some limitations to this study should be noted. We have considered only a subset of conditions, albeit ones very significant in terms of mortality, and conditions that are typically managed in primary rather than secondary care. Response rates for some elements of data collection (particularly the blood analytes) were low suggesting the possibility of sample biases. However, this needs to be considered in relation to four factors. First, this is a cumulative response rate, reflecting three stages of attrition (initial interview; nurse interview; giving a blood sample) and response at each stage is high. Second, we had extensive information on non-responders to the nurse interview and giving a blood sample, which meant that the characteristics of non-response could be modelled and appropriate weights calculated and used. The general consensus is that the use of weights that exploit extensive information on individuals do largely correct for non-response.³⁰ Third, we have no reason to suppose that any biases that remain after applying non-response weights are differentially distributed across ethnic groups, which would suggest that such biases are unlikely to make our ethnic comparisons invalid. Fourth, a general population sample, such as used here, is the only way to examine undiagnosed disease, and it is here that we make a particularly novel contribution to the literature. Indeed a major strength is that we use data from a representative national survey (with statistical adjustments for non-response), rather than regional studies, that this approach allows us to include those with undiagnosed disease, and that we have been able to use biomedical markers to assess outcomes of care.

This paper suggests that for the conditions studied there are few ethnic inequalities in access to and clinical outcomes of health care in the English NHS. The recent IOM review of ethnic/racial inequalities in healthcare in the US identified health insurance status as a key determinant of these inequalities and noted that such inequalities were reduced in the military and Veterans Affairs healthcare systems, where access is not dependent on insurance coverage or ability to pay, and suggested that ‘future research must assess the range of factors that distinguish these health systems ... to better understand how patient race and ethnicity are related to care and care outcomes’ (p. 79).¹ The findings from the analyses presented here suggest that the provision through the NHS of publicly funded primary care with universal access has resulted in greater equality of access to and outcomes of care across ethnic groups. Nevertheless we, and others, show that there are some inequalities in access to, process of, satisfaction with, and outcomes of care in the UK, and these remain to be addressed.

“What this paper adds” box

What is already known on this subject?

A large body of research has documented ethnic inequalities in access to and quality of healthcare in developed countries. Much of the data on this comes from the US, where it is argued that differences in coverage by health insurance explain a significant proportion of this inequality. Despite universal provision through the NHS, evidence from the UK suggests inequalities in healthcare exist here as well, but research in the UK is very limited in comparison with that in the US.

What does this study add?

In the UK Ethnic inequalities do not exist for the use of GP services and the outcomes of care for hypertension and raised cholesterol (undiagnosed disease or uncontrolled disease), and generally for diabetes, although there was some evidence of poorer outcomes of diabetes care for Pakistani and Irish people. However, some inequalities exist for use of hospital services and marked inequalities exist for dental services. In the context of the wider literature, these findings suggest that the provision, through the NHS, of publicly funded primary care with universal access has resulted in greater equality of access to and outcomes of care across ethnic groups.

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[IS THIS KIND OF TEXT REQUIRED FOR JECH?] All authors were involved in the conception and design of the study. Primatesta, Falaschetti and Nazroo were involved in the data collection. All authors were involved in the analysis and interpretation of the data. Statistical analysis was conducted by Falaschetti supported by Nazroo. Nazroo and Falaschetti drafted the manuscript; all authors were involved in critical revision of the manuscript.

Falaschetti had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. Nazroo is guarantor.

Competing Interests

All authors declare that they have no competing interests.

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