

# Asian diabetics attending a British hospital clinic: a pilot study to evaluate their care

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**SUMMARY.** A questionnaire survey of 40 Asian and 31 British non-insulin dependent diabetics attending a hospital clinic showed that both groups remembered receiving education about diabetes (90%) but Asian diabetics knew less about glucose monitoring and diabetic complications. Asians also had a more negative attitude towards the clinic, feeling they were made to wait longer than the British. They were frustrated by a lack of communication with the staff. Forty per cent of both Asian and British diabetics felt that diabetes prevented them from leading a normal lifestyle. Twenty seven per cent of both Asian and British diabetics used herbal or alternative medicines, but Asians differed in that they used these medicines specifically for diabetes. A further sample of 50 Asians had poorer glycaemic control than a sample of British diabetics matched for age, sex and type of diabetes.

It is concluded that despite receiving the same education as British diabetics, Asians did not understand it as well. The education was often not relevant to their diets or customs. This may contribute to their poorer glycaemic control. Diabetic clinic facilities need to be improved for Asian diabetics, to improve their understanding of diabetes.

## Introduction

NON-INSULIN dependent diabetes mellitus is commoner among immigrants originating from the Indian sub-continent (referred to here as 'Asians') than in the indigenous population in Britain. The Southall diabetes survey<sup>1</sup> showed an age adjusted prevalence of known non-insulin dependent diabetes four times higher in Asians than in British people. The Coventry diabetes study<sup>2</sup> screened for diabetes in a house-to-house survey and found it in 11.2% of Asian men and 8.9% of Asian women compared with only 2.8% of British men and 4.3% of British women. Surveys in other countries including the Indian sub-continent have also shown a similar high prevalence of diabetes among Asians.<sup>3,4</sup>

Most diabetes in Asians is non-insulin dependent and what is particularly worrying for health care planning is that the age at onset is lower than in Europeans and over 60% of the present Asian population in the UK are under 30 years old;<sup>5</sup> an increase in prevalence is therefore to be expected as this population ages.<sup>6,7</sup> The prevalence of complications among Asians (both microvascular and macrovascular) is already as high as in the older British diabetic population.<sup>6</sup>

Glycaemic control is significantly worse in Asians than in British diabetics and the lack of appropriately targeted services may contribute to this.<sup>8</sup> This may be due to poor or inappropriate education (Asian patients answering a questionnaire felt that advice on diet was inappropriate),<sup>9</sup> poor understanding of diabetes and different attitudes to health.

This study aimed to find out if Asian diabetics in Nottingham have poorer glycaemic control than British diabetics, and if so, whether this is because they receive less education, know less,

or have negative attitudes to diabetes and rely on traditional medicines. These factors were assessed using a standardized questionnaire, comparing Asian and British diabetics.

## Method

Forty four Asian diabetics were randomly selected from the diabetic register at Nottingham University hospital using random number tables. This register includes all diabetics seen at the two main hospitals in Nottingham, and contains basic personal information, ethnic origin, family history, smoking and alcohol history, a medical history summary and laboratory results. In addition, all patients are reviewed annually for diabetic complications. The annual review includes examination for hypertension, peripheral vascular disease, peripheral neuropathy and retinopathy.<sup>10</sup>

The Asians were matched with British diabetics for age, sex, and type and duration of diabetes. The cooperation of both groups was sought by letter or telephone and interviews took place at home, at work or in the clinic. A structured interview was administered by the author and an interpreter fluent in Punjabi and Urdu was available when needed. Additional data were obtained from the diabetic register: haemoglobin A1 levels (as an index of glycaemic control), smoking and drinking habits, presence of diabetic complications, and attendance record.

Because of the small sample size of matched pairs which were ultimately obtained a further sample of 50 pairs of Asian and British diabetics matched for age, sex, and type and duration of diabetes was selected to obtain values of haemoglobin A1 for comparison. These levels had been measured by electroendosmosis; the normal range for patients on this diabetic register is 5.0–8.5%.

## Statistical analysis

The Statistical Package for the Social Sciences was used in data analysis. The two ethnic populations were compared using the Mann-Whitney U test. Multiple regression (stepwise entry) was used to determine relationships between glycaemic control, education received, and knowledge of and attitudes to diabetes. The Oxstats statistical package was used to analyse haemoglobin A1 data by analysis of variance.

## Results

### Patients seen

Four Asians and four British patients did not attend clinic appointments, two British patients were untraceable, and three had been discharged. A further three British patients refused to take part. Thus 40 of the 44 Asian diabetics were interviewed, together with 32 of the British diabetics. However, one British diabetic did not complete the interview, leaving 31 patients for analysis.

Table 1 show the demographic and clinical features of the patients. There were eight vegans and vegetarians who were all Asians. More than half the Asians and British had a family history of diabetes in either first or second degree relatives. The prevalence and type of complications were similar for the two groups.

Table 2 shows the language abilities of the Asians. Fourteen patients needed an interpreter during the interview. Six of the Asian women and one British man could not read any language

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**Table 1.** Demographic and clinical features of patients.

|                                  | Number of patients |         |
|----------------------------------|--------------------|---------|
|                                  | Asian              | British |
| <i>Sex</i>                       |                    |         |
| Men                              | 13                 | 16      |
| Women                            | 27                 | 15      |
| <i>Marital status</i>            |                    |         |
| Single                           | 1                  | 5       |
| Married                          | 33                 | 23      |
| Divorced or widowed              | 6                  | 3       |
| <i>Treatment</i>                 |                    |         |
| Diet                             | 11                 | 7       |
| Tablets                          | 29                 | 23      |
| Insulin                          | 0                  | 1       |
| <i>Habits</i>                    |                    |         |
| Smoking                          | 7                  | 9       |
| Alcohol                          | 13                 | 18      |
| <i>Relatives</i>                 |                    |         |
| First degree relative diabetic   | 18                 | 15      |
| Second degree relative diabetic  | 5                  | 6       |
| <i>Complications of diabetes</i> |                    |         |
| Retinopathy                      | 8                  | 11      |
| Cataract                         | 8                  | 3       |
| Peripheral neuropathy            | 5                  | 9       |
| Peripheral vascular disease      | 5                  | 5       |
| Proteinuria                      | 3                  | 1       |
| Nephropathy                      | 0                  | 1       |
| Impotence                        | 2                  | 5       |
| Ischaemic heart disease          | 3                  | 0       |
| Other                            | 4                  | 5       |

While 80% of the Asians spoke Punjabi as their mother tongue, only 13% could read it.

#### Treatment preferences

Both groups of diabetics said they preferred tablets or dietary control to insulin injections (Table 3). Some diabetics currently on tablets would prefer to be controlled by diet alone but none on diet alone wanted to be treated with tablets or injections. This contrasted with our prejudice that Asians felt dissatisfied unless they were given some sort of medication.

#### Glycaemic control

The mean haemoglobin A1 level over five years for each patient was taken as a measure of glycaemic control. When the 31 matched pairs of patients in the interview sample were compared there was no significance at the 5% level between Asian and British diabetics, although there appeared to be a trend

**Table 3.** Patients' preferences for treatment.

| Form of treatment | Number of patients |         |
|-------------------|--------------------|---------|
|                   | Asian              | British |
| <i>Diet</i>       |                    |         |
| Present           | 11                 | 10      |
| Preferred         | 14                 | 15      |
| <i>Tablets</i>    |                    |         |
| Present           | 29                 | 20      |
| Preferred         | 21                 | 14      |
| <i>Insulin</i>    |                    |         |
| Present           | 0                  | 1       |
| Preferred         | 1                  | 1       |
| <i>Don't know</i> |                    |         |
| Present           | 0                  | 0       |
| Preferred         | 4                  | 1       |

( $P = 0.056$ ). When the HbA1 levels were compared for the larger sample of 50 matched pairs, the mean HbA1 level for Asians was significantly higher (11.41%, 95% confidence interval 10.97–12.01%) than in the British diabetics (10.34%, 95% CI 9.78–10.71%) ( $P < 0.05$ ).

#### Teaching received and knowledge of diabetes

Most patients had had some teaching about diabetes (90% of both the Asians and British) (Table 4) but significantly fewer Asians had received teaching directed at the household cook (26% of Asians and 67% of British,  $P = 0.025$ ). The wives of Asian men had had no teaching at all, therefore, as Asian men have little to do with cooking, the dietary advice was of little use.

Despite the teaching given to all diabetics when they join the clinic, knowledge about management of diabetes was poor. A few Asian patients did not understand the purpose of the questions despite using an interpreter. Around a quarter of both groups said they would see a doctor if they felt ill, but only a few would have done so if their urinary or blood sugars were high (Table 5). Only 68% of the British and 58% of the Asian diabetics felt regular check-ups were worthwhile. All Asians claimed to be able to do urine tests but only 68% knew that urinalyses should aim for a low or negative result compared with 77% of the British diabetics. Fifteen per cent of Asians and 10% of the British had no idea why they did urinalyses; 33% of the Asians did not know why it was necessary to keep blood sugars low compared with 16% of the British; 72% of the Asians did not know that good control might prevent or delay complications, compared with 55% of the British. Only 42% of Asians could name one complication of diabetes, compared with 90% of the British. Dietary knowledge of foods containing sugar was high in the two groups. Knowledge of fatty foods was worse, with one third of both Asian and British diabetics getting less than seven out of 12 questions right.

**Table 2.** Language abilities of Asian patients.

| Race                           | Number of patients (% of total) |         |         |         |          |         |         |         |         |          |
|--------------------------------|---------------------------------|---------|---------|---------|----------|---------|---------|---------|---------|----------|
|                                | Speak                           |         |         |         |          | Read    |         |         |         |          |
|                                | English                         | Hindi   | Punjabi | Urdu    | Gujurati | English | Hindi   | Punjabi | Urdu    | Gujurati |
| Indian ( $n = 11$ )            | 8                               | 10      | 9       | 5       | 2        | 8       | 8       | 3       | 2       | 2        |
| Pakistani ( $n = 20$ )         | 13                              | 2       | 17      | 20      | 0        | 10      | 0       | 1       | 13      | 0        |
| Asian/other origin ( $n = 9$ ) | 7                               | 7       | 6       | 3       | 4        | 4       | 5       | 1       | 3       | 4        |
| Total ( $n = 40$ )             | 28 (70)                         | 19 (48) | 32 (80) | 28 (70) | 6 (15)   | 22 (55) | 13 (33) | 5 (13)  | 18 (45) | 6 (15)   |

**Table 4.** Teaching about diabetes received by patients.

| Teaching received          | Percentage of patients |                     |
|----------------------------|------------------------|---------------------|
|                            | Asians<br>(n = 40)     | British<br>(n = 32) |
| Any                        | 90                     | 89                  |
| Leaflets                   | 45                     | 70                  |
| Talk                       | 75                     | 82                  |
| Video                      | 30                     | 19                  |
| Demonstration              | 10                     | 11                  |
| Directed at household cook | 26                     | 67                  |
| Other                      | 0                      | 11                  |

**Table 5.** Patients' knowledge about diabetes.

|   | Number (%) of patients <sup>a</sup> |                  |
|---|-------------------------------------|------------------|
|   | Asians (n = 40)                     | British (n = 31) |
| <i>When to see doctor</i>                                 |                                     |                  |
| Regularly   | 23 (58)                             | 21 (68)          |
| When blood/urinary sugars high                            | 3 (8)                               | 2 (6)            |
| When ill  | 11 (28)                             | 8 (26)           |
| Don't know  | 4 (10)                              | 2 (6)            |
| <i>Target of urinalysis</i>                               |                                     |                  |
| 0 g/100 ml  | 27 (68)                             | 24 (77)          |
| 0.5 g/100 ml  | 5 (13)                              | 1 (3)            |
| 1 g/100 ml  | 1 (3)                               | 0 (0)            |
| 2 g/100 ml  | 0 (0)                               | 0 (0)            |
| Don't know  | 6 (15)                              | 3 (10)           |
| <i>Reason for controlling blood sugar</i>                 |                                     |                  |
| Prevent complications                                     | 11 (28)                             | 14 (45)          |
| Prevent coma  | 2 (5)                               | 5 (16)           |
| Feel better   | 15 (38)                             | 4 (13)           |
| Don't know  | 13 (33)                             | 5 (16)           |
| Other   | 0 (0)                               | 3 (10)           |
| <i>Number of diabetic complications listed by patient</i> |                                     |                  |
| 0   | 23 (58)                             | 3 (10)           |
| 1-2   | 12 (30)                             | 15 (48)          |
| 3-4   | 5 (13)                              | 6 (19)           |
| 5-7   | 0 (0)                               | 5 (16)           |

<sup>a</sup>Some patients gave more than one answer.

Thirty three of the Asians interviewed wanted more education about diabetes. British diabetics were not asked this question.

### Attitudes to the clinic

More Asians (44%) waited two hours or more in the clinic than did British patients (26%). Many felt that British patients received preferential treatment. Feelings of anger or fear were reported equally by a substantial proportion of both groups (38%). Most attributed their negative feelings to fear of needles, hospitals in general and that a new complication or even a new disease might be discovered. Asians reported frustration with communication. Some Moslems were distressed that long waiting times clashed with prayer times. Significantly more Asians felt the dietary advice given was not applicable to the food they ate — 30% of Asians compared with 7% of British ( $P = 0.05$ ).

About half the patients (54%) attending the hospital clinic would prefer to see their own general practitioner. Reasons given by those who preferred the hospital clinic included greater trust of hospital 'specialists' and less trust of general practitioners who were felt to be too busy to listen or examine patients properly. Some patients felt their general practitioner was not interested in diabetes (eight Asians and two British) and knew little about it.

### Effect of diabetes on lifestyle

Both Asians and British felt their lifestyle had been altered since developing diabetes (Table 6). This included dietary restriction, socializing, travel abroad and sports. Three British men wanted to discuss impotence but none of the Asians voluntarily raised the subject. Many Asians had reduced the amount of exercise they took. Moslem patients mentioned difficulties in getting to the mosque and praying on the floor. In some cases this was due to peripheral neuropathy but some Asians restricted their activities because they had lost confidence since developing a health problem.

**Table 6.** Effects of diabetes on patients' lifestyle.

|                                 | Number (%) of patients |                     |
|---------------------------------|------------------------|---------------------|
|                                 | Asians<br>(n = 40)     | British<br>(n = 31) |
| Makes small change in lifestyle | 21 (53)                | 17 (55)             |
| Stops normal activity           | 10 (27)                | 16 (52)             |
| <i>Affects</i>                  |                        |                     |
| Diet                            | 11 (28)                | 10 (32)             |
| Exercise                        | 12 (30)                | 3 (10)              |
| Social life                     | 12 (30)                | 7 (23)              |
| Other aspect                    | 16 (40)                | 11 (35)             |

### Worries about diabetes

Fifty five per cent of British and 70% of Asians worried about diabetes but only five patients mentioned eyesight specifically (four of them British). Most patients had non-specific worries about future ill-health and many felt frustrated that they had developed diabetes despite keeping to a healthy lifestyle.

### Traditional remedies

Twenty seven per cent of both British and Asian groups used herbal and traditional remedies. This may be an underestimate since some may not have disclosed the use of alternative medicines for fear of offending the doctor. There appeared to be a difference in the use of alternative medicines between the two groups — the British used them for unrelated conditions but the Asians used them mainly for diabetes. The remedies used by the Asian patients are shown in Table 7. Four Asian patients had consulted a hakim or traditional healer, either by visiting him on holiday in Pakistan or by letter.

### Analysis of variables

The following variables were tested for an effect on glycaemic control: race, age, sex, duration of diabetes, education received, knowledge about diabetes and attitudes to diabetes. To

**Table 7.** Herbal and traditional remedies used by the 40 Asian patients.

|                                     | Number of patients |
|-------------------------------------|--------------------|
| Karela (bitter gourd)               | 11                 |
| Jamun (tree)                        | 3                  |
| Gula (banyan)                       | 1                  |
| Vijesal (tree)                      | 1                  |
| Kakachia (bitter dal)               | 1                  |
| Methi (fenugreek)                   | 3                  |
| Mushrooms                           | 1                  |
| Cucumber                            | 1                  |
| Spinach                             | 1                  |
| Herbal tea                          | 1                  |
| Raw garlic                          | 2                  |
| Lecithin granules                   | 1                  |
| Powders of spices, herbs and metals | 4                  |

obtain a single variable for each of the last three items the questionnaire data was transformed to give a composite figure (Appendix 1).

If 'education received' was the dependent variable, there was a significant difference between the sexes ( $P = 0.023$ ) with men receiving more education than women in both the Asian and British groups. There was a trend towards British patients receiving more education than Asians ( $P = 0.07$ ). Patients' knowledge, as expected, depended on the education received ( $P = 0.022$ ). Asians knew less about diabetes ( $P = 0.005$ ). This variable included knowledge of a diabetic diet, complications and the purpose of good control. In part, this was due to Asians receiving less education than British diabetics but may also be due to problems in understanding the information given. Asian diabetics had a more negative attitude to the clinic and diabetes ( $P = 0.016$ ). This variable included waiting times in clinic, perceived attitudes of hospital staff and effect of diabetes on lifestyle. Attitude did not depend on sex, age, duration of diabetes or education received.

## Discussion

It has been shown here that a sample of Asian diabetics had significantly worse glycaemic control than a matched sample of British diabetics. There are many possible reasons for this difference. One reason may be the delivery of diabetic preventive care. For instance, a study in Hastings<sup>11</sup> showed that despite 'extensive discussion', fundamental principles were still not fully understood by diabetics. As in our study, a large proportion of patients (94%) tested urine or blood glucose at home but 13% of these were unsure how to interpret the results.<sup>11</sup> Patients who do not understand their condition are less motivated to monitor it and alter their eating habits. We are offering the same education to Asian and British patients but it may be presented in a way the Asians cannot understand or accept. For example, although 80% of Asians spoke Punjabi as their mother tongue only 13% could read it. Instead, they read Urdu or English. The reason for this is that Moslem Pakistani Punjabis read the Arabic script, Urdu being written in this script. The Punjabi (or Gurmukhi script) is very different in appearance and most Moslems would be unable to read it. We had previously assumed that Punjabi speakers would also read and write in Punjabi. Some patients had been given diet sheets in the wrong script and were too polite to refuse them. This study has shown that Asian patients know less about diabetes than their British counterparts, in particular about the different complications and the importance of glycaemic control. Their attitude towards diabetes is also more negative ( $P = 0.016$ ) and this may influence compliance with treatment.

Patients' control of HbA1 levels can be improved by education, especially if presented imaginatively.<sup>12</sup> McCulloch and colleagues<sup>12</sup> in Nottingham showed an improvement in glycaemic control in insulin dependent diabetics after practical lunchtime demonstrations and videotape education, but not in a control group who were lectured by a dietician. Kronsbein and colleagues<sup>13</sup> used paramedical staff to teach groups of diabetics in general practice, which resulted in a significant reduction in the use of oral hypoglycaemic agents, loss of weight and lower triglyceride levels but unchanged glycaemic control. Their control group showed no change in these indices and 10% started insulin treatment. If Asian diabetics were to receive more education along these lines their glycaemic control ought to improve, at least to the levels of the British diabetics. They would need appropriate dietary advice, access to interpreters, and handouts or videos in the correct languages.

Communication and teaching facilities need to be improved. A questionnaire sent to consultants running diabetic clinics

found that 40% of the clinics with over 50 Asian patients had no adapted diet sheets, and 34% had no hospital interpreter.<sup>14</sup> In the study reported here Asian women were more likely to be illiterate than men, and they also received less diabetic education. Special efforts should be made to reach this subgroup, using female interpreters and pictorial flashcards as already used in third world community projects.

The reliance of Asians on traditional remedies is well known.<sup>15</sup> These remedies originate from two main classes. The first is Ayurvedic medicine, dating back to the time of the origin of Hindu Vedas and based on plants and herbs. The second is Yunani (Greek) medicine, brought into India by the Moghuls. This class uses powdered medicines made from spices, herbs, the bark of certain trees, and some heavy metals including lead. The latter group may be toxic.<sup>16</sup> Hakims, or traditional healers base their practice on Yunani medicine. None of our patients consulted hakims in England although four consulted hakims in Pakistan, either by letter or when on holiday.

There is some debate over the danger of Asian remedies. Aslam<sup>16</sup> has highlighted the toxicity of the heavy metal based drugs, but Bhopal<sup>15</sup> argues that many Asians living in the UK do not use these medicines. Usage would probably vary between the different Asian communities in Britain, depending on their culture and degree of Westernization. Four of our patients used such medications. Other remedies used by our patients include karela (bitter gourd) and methi (fenugreek). As yet we do not have proof that these have a truly hypoglycaemic action, but a few case reports suggest they might be, especially when combined with oral hypoglycaemic drugs.<sup>17</sup> Infusions of bark from certain trees were also used, in particular the jamun and banyan trees.

Some of our patients described the distress caused by diabetes in their religious lives. For Moslems, clinic times clashed with prayer times and diabetic neuropathy made walking and praying difficult. During Ramadan patients fast in the daytime. This includes not taking medication.<sup>18</sup> These problems will only be discovered by medical staff who look for them; patients are unlikely to volunteer them. Many Asians have chosen to register with Asian general practitioners who come from the same background. These general practitioners should be encouraged to hold mini-clinics for diabetics which will help to overcome the cultural problems. It has been shown that general practitioners providing diabetic care on an organized basis, with access to hospital facilities can achieve a degree of glycaemic control equal to that of a hospital clinic.<sup>19</sup> Above all, patients need time to express themselves and this is often impossible in a busy clinic. 'Protected' time should be set aside together with educational programmes. Thirty three of the 40 Asians interviewed wanted more education, which suggests that their lack of knowledge is not due to indifference.

To prepare for an anticipated increase in demand, diabetic services should be tailored to the special needs of an immigrant population, with provision of interpreters and leaflets in relevant languages. In particular, health care workers need to understand differences in the attitude of Asians to diabetes itself and diet.

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#### Appendix 1. Composite variable structure.

##### Variable: education received

|  |              |
|--|--------------|
| Each item of teaching (eg talk, leaflet) | add 1 point  |
| Household cook taught                    | add 2 points |
| If advice relevant to diet               | add 1 point  |

##### Variable: knowledge

|  |                  |
|--|------------------|
| Knows weight control important                       | add 1 point      |
| Knows to see doctor if sugars high                   | add 1 point      |
| Knows checkups necessary                             | add 2 points     |
| Knows 0% urinalysis is desirable                     | add 1 point      |
| Does not know purpose of urinalysis                  | subtract 1 point |
| Knows purpose of sugar control to feel better        | add 1 point      |
| Knows purpose of sugar control to stop coma          | add 1 point      |
| Knows purpose of sugar control to stop complications | add 1 point      |
| Does not know purpose of sugar control               | subtract 1 point |
| Knows three foods bad for diabetes                   | add 2 points     |
| Knows two foods bad for diabetes                     | add 1 point      |

##### Variable: negative attitudes

|                                    |              |
|------------------------------------|--------------|
| If wait >2 hours in clinic         | add 1 point  |
| If afraid or angry in clinic       | add 1 point  |
| If staff felt to be unfriendly     | add 1 point  |
| If clinic felt to be waste of time | add 1 point  |
| If lifestyle altered               | add 2 points |
| If any activity prevented          | add 2 points |
| If worried about diabetes          | add 2 points |
| If hakim or herbalist consulted    | add 1 point  |

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