Diabetes mellitus: attitudes, knowledge and glycaemic control in a cross-sectional population

A.V. THOMPSON, MB
H.A.W. NEIL, MRCP
M. THOROGOOD, BSc
G.H. FOWLER, FRCGP
J.I. MANN, DM, PhD

SUMMARY. A questionnaire to households in Oxfordshire identified 431 diabetic patients living in the area and 272 of them completed a questionnaire about their attitudes to and knowledge of diabetes, and were subsequently interviewed. Most did not regard diabetes as a serious disease and had little knowledge of possible complications. Patients found dietary compliance the most difficult part of their treatment. Among non-insulin treated patients there was a significant association between difficulty with diet and body mass index and glycosylated haemoglobin values. The results suggest that there is a need for more effective advice on diet and for better education of patients about the nature of diabetes and its complications.

Introduction

There is considerable evidence that good control of blood glucose may prevent the long-term complications of diabetes. However, little is known about patients' perceptions of their disease or of the long-term complications that may arise. Also, while the importance of diet in achieving good glycaemic control is accepted, little is known about diabetic patients' attitudes to diet. As part of a larger study of diabetes in the community, patients were asked about their attitudes to and knowledge of their disease, and how they felt about treatment and about the method of delivery of care.

Method

The prevalence of diagnosed diabetes in a geographically defined population in Oxfordshire was ascertained using a postal questionnaire sent to each household in May 1982, with two reminders sent to non-responding households. The study design is described in detail elsewhere. All diabetic patients aged over 16 years who were identified were contacted, and those who were willing were interviewed and examined by one of us (A.V.T. or H.A.W.N.). Before the interview, they were asked to complete a self-administered questionnaire which had been piloted in a previous study. This explored their attitudes towards having diabetes, their knowledge of the disease and its complications, their perceived difficulties with treatment and their opinions about the type of medical care they were receiving for their diabetes.

A clinical examination was preceded by a structured interview to obtain a medical history and demographic and occupational details. Occupational class was defined by the Office of Population Censuses and Surveys' classification. After the clinical examination, a blood sample was taken and glycosylated haemoglobin levels were estimated using the Corning method (the upper limit of the normal reference range is 7.5%). An analysis of data derived from the clinical examination will be reported elsewhere.

Statistical methods

Computer analyses were performed using SPSS/PC+. Answers were analysed with respect to insulin and non-insulin treatment, age group, type of care, and occupational class (classes 4 and 5 were combined for the analyses). Differences between groups were tested using the chi-squared test for dichotomous variables and, where there were more than two sub-groups and a trend was suspected, the Kendall tau-C test. Analysis of variance was used to test for differences between groups for continuous variables and the Scheffe test was used for multiple comparisons. Results are stated as the mean ± standard deviation. Differences which did not achieve a two-tailed level of significance of 0.05 are not reported.

Results

A response rate of 86% of the population was achieved after three mailings. In a population estimated from the 1981 census figures to be 40 079, 431 patients with known diabetes were identified; the crude prevalence of diagnosed diabetes was thus 1.08% and the age-adjusted prevalence 1.04%.

Of the 294 diabetic patients who agreed to be interviewed and examined 272 completed a self-administered attitude questionnaire: 95 insulin treated and 177 non-insulin treated. Their age and treatment distribution is shown in Figure 1. The mean age of the insulin treated patients was 53.5 ± 17.4 years (median 56.3 years) and for the non-insulin treated patients 68.0 ± 10.9 years (median 70.0 years). The sex ratio in this predominantly elderly diabetic population was the same as the age-matched general population. There was no significant difference in the response rate to the questionnaire according to type of care being received: hospital outpatient clinic, special general practice mini-clinic, regular care in the normal general practice surgery and general practitioner care on demand.

Social and personal effects of diabetes

Three quarters of the patients (205/272) said that they were not worried about having diabetes, and the same proportion (200/266) said that they did not mind if other people knew that they had diabetes. Seventy-nine per cent (196/248) reported that diabetes had had little or no effect on their social life and 77% (183/237) reported that it had had little or no effect on their career. The proportions were almost identical within insulin treated and non-insulin treated groups. There was no relationship to age or occupational class in the proportion reporting some detrimental effect of diabetes on their careers.

Again, a high proportion of patients (78%, 200/253) felt that their disease had had little or no effect on their personal lives. However, among insulin treated patients aged more than 44 years, 34% (20/59) felt that there had been a detrimental effect on their personal lives.
their personal lives, and it may be relevant that the clinical examination showed that 59% of the men in this group were impotent (defined as a reported failure of erection on all occasions).

Perceived benefits and compliance with treatment

Respondents were asked whether they thought their treatment made them feel better; 82% (196/238) felt that it did. They were also asked whether treatment would help to avoid future diabetic complications, and 70% of them thought that it would (162/232). These proportions were not significantly different in different treatment groups.

Patients who were treated with insulin were asked how difficult they found this aspect of their treatment; 15% (14/91) experienced difficulty with their injection. This was not related to visual acuity as measured at the clinical examination. By contrast, only two out of 118 non-insulin treated patients reported any difficulty taking tablets.

Patients were also asked about the assessment of their diabetic control, both by urine testing and by blood glucose monitoring: eight patients said that they had not been advised to test either urine or blood. Twelve of the 192 who tested their urine had experienced difficulty (6%) and 12 of the 56 who tested glucose found home blood glucose monitoring difficult (21%).

The major difficulty that patients experienced was complying with dietary advice: 39% of patients (95/246) reported moderate or great difficulty with their diet. Both the mean glycosylated haemoglobin level and mean body mass index (calculated as weight/height squared) were significantly higher among non-insulin treated patients who reported great difficulty compared with similar patients who did not report such difficulty (F ratio = 4.1, P < 0.01 and F ratio = 8.8, P < 0.001, respectively; Table 1).

Patients' knowledge about diabetes

Patients were asked to list any 'medical problems caused by diabetes' which they knew about. The answers to this question revealed very rudimentary knowledge. Nearly half of the 269 patients (47%) were unable to name a single correct complication, 14% named one, 16% two, 9% three, 8% four and 6% five or more complications. The proportion unable to give correct complications did not vary significantly with treatment group or occupational class, but increased progressively with age from 20% in patients aged less than 40 years to 70% in patients aged 80–89 years (Kendall's tau = 0.33, P < 0.001).

When asked 'Do you feel you have enough information about your diabetes?' 36% of patients (96/264) felt that they did not. However, this proportion decreased significantly by 10 year age group with increasing age (Kendall's tau = 0.12, P < 0.05).

Medical care

Table 2 shows the response to the question 'Who, apart from yourself, do you think should be looking after your diabetes?'. A total of 80% of patients, including those attending a hospital clinic, thought their general practitioner should participate in their care and treatment. The proportions were the same regardless of the type of care the patient was currently receiving.

Discussion

Apart from the pilot study for this survey, previous studies of the attitudes and beliefs of diabetic patients have been based on selected populations. The results reported here are from an unselected population of adult patients in a defined geographical area.

It is notable that most patients were not worried about having diabetes. This may be an unconscious rejection of a threat, or may reflect a lack of knowledge of the implications of diabetes for their health. Our findings suggest that many patients are poorly informed and more than a third of patients feel that they have not been adequately informed.

Table 1. Attitude to diet according to body mass index and glycosylated haemoglobin levels among 177 non-insulin treated diabetic patients.

<table>
<thead>
<tr>
<th>Reported difficulty with diet</th>
<th>Body mass index</th>
<th>Glycosylated haemoglobin (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(95% confidence limit)</td>
<td>(95% confidence limit)</td>
</tr>
<tr>
<td>Not at all difficult</td>
<td>n  Mean (24.3–26.4)</td>
<td>n  Mean (8.3–9.4)</td>
</tr>
<tr>
<td>Not very difficult</td>
<td>55  25.3</td>
<td>54  8.9 (8.3–9.4)</td>
</tr>
<tr>
<td>Moderately difficult</td>
<td>39  25.5</td>
<td>41  9.6 (8.9–10.4)</td>
</tr>
<tr>
<td>Very difficult</td>
<td>34  26.8 (25.7–28.0)</td>
<td>33  9.6 (8.9–10.2)</td>
</tr>
<tr>
<td>All patients</td>
<td>151  26.4 (25.8–27.1)</td>
<td>149  9.5 (9.1–9.9)</td>
</tr>
</tbody>
</table>

*P < 0.05 versus all other groups, †P < 0.05 versus 'not at all difficult' group.

n = number of patients responding and with data complete.

Table 2. Type of medical care patients thought they should receive.

<table>
<thead>
<tr>
<th></th>
<th>Number (%) of respondents (n = 265)</th>
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<tbody>
<tr>
<td>GP and hospital</td>
<td>151 (57)</td>
</tr>
<tr>
<td>GP only</td>
<td>61 (23)</td>
</tr>
<tr>
<td>Hospital only</td>
<td>50 (19)</td>
</tr>
<tr>
<td>No one</td>
<td>3 (1)</td>
</tr>
</tbody>
</table>

n = total number of respondents to this question.
It appears that diabetic patients do not feel their disease to be a social stigma although nearly a quarter felt it had adversely affected their career. As suggested by Lister, these people might usefully be directed towards an occupational health service where one exists, although Hutchinson and colleagues in an uncontrolled study have suggested that the employment prospects of patients with diabetes do not differ from those of the general population.

The clinical findings indicate that impotence is common, and this is consistent with other evidence. It is therefore important to consider the possibility of such a problem during consultations with male diabetics. Although treatments are available for impotence secondary to diabetic neuropathy, these are inappropriate for the majority of patients. Many men and their partners may, however, benefit from counselling and support.

The major implications of the study for diabetic care arise from two findings. First, although most patients believed that treatment would make them feel better and avoid further complications, nearly half of them were unable to describe a single complication. Secondly, difficulties with diet correlated strongly with both weight and glycaemic control. Diabetics can little motivation to comply with dietary advice in order to achieve good control or to attend for regular checks for early detection of treatable complications, if they are not well enough informed to appreciate the importance of regular care. Moreover, compliance with dietary advice can only be improved by spending more time on individual dietary education and by the availability of appropriate teaching material. There is a need for diettitians to spend more time on the education of diabetic patients.

The majority of patients felt that their general practitioner should be involved in their care. Many of the deficiencies of care which have been shown could easily be remedied in general practice. The inclusion of dietitians in the primary care team would give patients easier access to dietetic advice.

It is clear that many patients are poorly informed about diabetes and fail to appreciate the importance of regular care. It should be possible to strike a balance between informing patients realistically about risks and causing them needless anxiety. The treatment of diabetes can only be really successful when there is a partnership between the patient and the professionals. The knowledge that primary care teams have of patients and their families, and the fact that patients clearly feel general practitioners should be involved in their diabetic care, make general practitioners particularly well qualified to help to rectify the deficiencies which have been shown.

References
8. Loebert L. (The knowledge diabetics have about their disease.) Deutsche Medizinische Wochenschrift 1972; 97: 1055-1057.

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Copies of the questionnaire used are available from the authors.

Address for correspondence
M. Thorogood, Department of Community Medicine and General Practice, Radcliffe Infirmary, Woodstock Road, Oxford OX2 6 HE.

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