The effect of an intensive education programme on the glycaemic control of type I diabetic patients

C. J. SMITH, M. J. ABRAHAMSON, P. A. HENSHILWOOD, F. BONNICI

Summary

The effect of patient education on glycaemic control in insulin-dependent diabetes mellitus was assessed in 20 patients selected from the Diabetes Clinic, Groot Schuur Hospital. Education in all aspects of self-care was given to small groups of between 5 and 7 patients. Biochemical tests including measurement of fasting blood glucose (FBG) and glycosylated haemoglobin (HbA1c) were performed during a 6-week 'control' period before the educational course, and again during a 6-week 'test' period after it. The mean HbA1c fell from 10.05 ± 0.43% at the end of the control period to 8.47 ± 0.25% at the end of the test period (P < 0.001). FBG levels dropped from 13.53 ± 0.84 mmol/l at the commencement of the study to 10.83 ± 1.29 mmol/l before the educational course, and to 9.41 ± 0.72 mmol/l at the completion of the study. We therefore conclude that intensive education of this nature is of benefit in improving glycaemic control, at least in the short term.

Subjects and methods

Twenty subjects (9 women) with insulin-dependent diabetes mellitus (IDDM), all under the age of 45 years (33.1 ± 7.4 years) and assessed as being able to cope with the programme, were selected from patients at the Diabetic Clinic, Groot Schuur Hospital. No other selection criteria were applied, but the patients had to be able to take leave from work in order to attend the education course and for the initial and follow-up visits. The mean weight of the patients was 70.0 ± 9.6 kg, and they had had diabetes for a mean period of 12.7 ± 9.1 years.

Microvascular complications of diabetes were present in 4 patients, these problems included background retinopathy (4 patients), nephropathy (3 patients), peripheral neuropathy (3 patients) and autonomic neuropathy (1 patient).

Protocol

Three education courses were held during 1984, the patients attending in small groups of 4–7 per course. Each group was seen for a total of 3 months, the first 6 weeks being a control or reference period, the following 3 days comprising the actual education course, and the 6 weeks thereafter being the test period. Patients were seen on an equal number of occasions before and after the education course. During the control period no attempt was made to alter patients' treatment regimens or to give them any education whatsoever, and they continued seeing their usual physicians.

The education team included diabetologists, a therapeutic diettian and a diabetes education sister. The course comprised informal lectures, demonstrations and group discussions held in a relaxed atmosphere, and covered all aspects of diabetes care. Topics covered during the 3-day educational course included: physiology of diabetes; complications of diabetes; rationale for good control; insulins (types, regimens, administration); adjustment for insulin dosage; foods and calculation of meal plans; urine testing; home blood glucose monitoring; and effect of exercise on glycaemia.

Patients were given meals and snacks for each of the 3 days they were at the course. They monitored their blood glucose levels during this time, weighed and measured the foods consumed, and calculated their intake of carbohydrates and energy from food tables with which they were provided. All insulin injections, blood glucose readings and details of food intake were recorded on charts which the patients kept daily for the next 6-week period. At follow-up visits these records were evaluated and discussed with them.

Venous blood was taken for measurement of fasting blood glucose (FBG), glycosylated haemoglobin (HbA1c), routine biochemical values and serum lipid levels at the commencement of the study, at the end of the control period (before the education course), and at the end of the test period (i.e. completion of the study).

Analytical methods

FBG was measured by the glucose oxidase method using a Beckman glucose analyser. HbA1c was measured by a standard chromatographic method, using short-column ion exchange chromatography.

All data are expressed as the mean ± SEM. Student’s t-test for paired samples was used for all statistical comparisons. P < 0.05 was considered significant.

Education of the diabetic patient is not a new concept. Attempts have been made for some years to educate patients in various aspects of diabetes care, but have often proved unsuccessful for a variety of reasons, ranging from poor planning and structure of education courses to poor patient understanding or motivation and inadequate communication between patient and therapist.

More recently a multidisciplinary approach has been adopted in many centres in an attempt to improve patient knowledge, and thus metabolic control. This approach has had some success. Being aware of the importance of this aspect of diabetic therapy, and realising the need for improved and effective patient education, we developed an intensive educational programme and assessed its efficacy in achieving improved glycaemic control.

Department of Medicine, University of Cape Town and Groote Schuur Hospital, Cape Town

M. J. ABRAHAMSON, M.B. CH.B., F.C.P. (S.A.)
P. A. HENSHILWOOD, R.N., (DIAB. ED.)
F. BONNICI, M.MED. (PAED.), F.C.P. (S.A.)

Reprint requests to: Dr M. J. Abrahamson, Dept of Medicine, University of Cape Town, Observatory, 7925 RSA.
Results

Of the 20 patients selected, 15 completed the study. Two showed no interest in attending, and 3 were unable to attend for socioeconomic reasons.

There was no statistically significant change in body mass during the study. The mean FBG levels improved throughout the study, declining from 13.53 ± 0.84 mmol/l to 10.83 ± 1.29 mmol/l at the end of the control period and to 9.41 ± 0.72 mmol/l at the end of the study. However, the change from the end of the control period to the end of the study was not statistically significant (Fig. 1).

The mean HbA1c at the commencement of the study was 9.99 ± 0.41%, not significantly different from that at the end of the control period (10.05 ± 0.43%), i.e. before the educational course. However, there was a significant drop in mean HbA1c to 8.47 ± 0.25% at the end of the study (P < 0.001) (Fig. 2). Other biochemical parameters, including serum lipids, remained within the normal range throughout the study.

Discussion

Achievement of optimal glycaemic control in IDDM is difficult. Patient knowledge and management skills often deteriorate after initial teaching if no education is given. Reasons cited include poor communication between therapist and patient, and poor comprehension by the patient. On the other hand, successful management of diabetic patients is not solely due to good communication or patient knowledge, and several studies have shown lack of correlation between knowledge or education received and glycaemic control. The team approach, as adopted in this study, is now thought to produce the best results in terms of glycaemic control, improved patient self-image and quality of life.

The primary aim of this study was to assess objectively the short-term effect of an intensive educational course on glycaemic control. It is well recognised that HbA1c levels provide the best index of overall glycaemic control and that FBG levels in IDDM are poor indices. Thus the significant decline in HbA1c levels noted at the end of the study period confirms the beneficial effect of intensive education, at least in the short term.

Although no formal attempt was made to assess changes in the patients' understanding of their disease, or psychosocial changes following the completion of the study, feedback from our patients confirmed that the programme had improved their self-confidence, understanding and ability to cope with their disease. Furthermore, continued observation of some of these patients at follow-up clinic visits has shown further improvement in HbA1c levels and a persistent positive attitude to all aspects of their disease management.

In conclusion, this study highlights the potential benefits of education of the diabetic patient. We are aware that the selection criteria applied here may be partly responsible for these results but are none the less encouraged by these findings, and are at present investigating ways of adapting this course to meet the needs of the general diabetes clinic population.

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REFERENCES

Geriatric medicine in Grahamstown

P. DE V. MEIRING, G. DE L. WHITE, CELIA JAMESON, R. B. WYLDE

Summary

A developing interest in improved care of the aged by the authorities of Settlers' Hospital in Grahamstown led to an invitation to the Geriatric Unit of the University of Cape Town to visit the hospital.

The impressions gained on this visit indicated a need to expand hospital-based geriatric medicine into total community care of the elderly.

Data were gathered concerning 50 acutely ill and 31 long-stay elderly black patients in Settlers' Hospital. These findings and the recommendations of various committees are discussed against the background of a model for the delivery of better geriatric care throughout the country. The most urgent necessity for Grahamstown appeared to be provision of better care for aged black people in the community.

Part of an outreach into the Eastern Cape by the Geriatric Unit of the University of Cape Town consisted of visits by one of us (P. de V. M.) to Settlers' Hospital in Grahamstown. Inclusion of Grahamstown in this outreach project followed an invitation by the authorities of Settlers' Hospital to investigate the possibility of developing interest and expertise in geriatric medicine in Grahamstown similar to that which the unit had already developed at Frere Hospital in East London. This article describes the materials, methods and results of this investigation and in so doing attempts to generate interest in better care for the aged in smaller communities. This is advocated as a means of passing on expertise in such care to the farthest corners of the country.

Subjects and methods

The first visit to Grahamstown took place on 1 March 1984. Ward rounds were conducted with the Medical Superintendent and members of the medical and nursing staff of Settlers' Hospital in the long-stay wards for both black and white patients. This was followed by a meeting with the Medical Superintendent and senior nursing and administrative personnel to discuss better utilisation of existing facilities for the special needs of elderly patients. It was also resolved to convene a meeting under the chairmanship of the Medical Superintendent, which would comprise municipal nursing sisters, social workers from the hospital and the community, representatives of the Departments of Health and Co-operation and Development, hospital doctors, sisters and matrons, physiotherapists and occupational therapists. The Health Act (Act No. 63 of 1977) makes provision for such inter-agency and multidisciplinary co-operation, and out of this legislation has grown the Health Matters Advisory Committee answerable to the Minister of Health. This committee has, inter alia, a Subcommittee for Care of the Aged to which a developing national network of Regional Co-ordinating Committees reports.

The first meeting of the Grahamstown committee was held on 26 April 1984 at Settlers' Hospital, thus effectively adding Grahamstown to the growing network of administration of care for the aged. Further meetings were held on 22 June and 16 November 1984 with regular meetings scheduled thereafter. At the first meeting it was decided to call a meeting of a subcommittee of the Grahamstown Community Association, entitled the Care of the Aged Work Group. This group consisted of Professor Davies from the Institute for Social and Economic Research and Mrs L. Robertson of the Department of Social Work, both of Rhodes University; Mrs S. Noble, a social worker for the Family and Marriage Society of South Africa; Dr G. White, the Medical Superintendent of Settlers' Hospital, and Canon Sondayazi of the Church of the Province of South Africa. It was envisaged that this particular subcommittee would assist the Regional Co-ordinating Committee by obtaining statistics to identify problem areas and by proposing possible plans and solutions. Minutes of all these meetings were kept and analysed for this report.

As regards clinical geriatric medicine, it was decided to concentrate initially on the needs of black patients. For these patients there is at present a 51-bed long-stay ward and a 30-bed acute medical ward. Data were collected in respect of 50 consecutive admissions to the acute ward of patients aged 65 years and over; a series of 31 patients in the same age range consecutively admitted.