Abstract Service

Effect of a bicultural community health worker on completion of diabetes education in a Hispanic population.

Corkery E, Palmer C, Foley ME, Schechter CB, Frisher L, Roman SH. Diabetes Care. 1997; 20(3) : 254-7

OBJECTIVE : To determine the effect of a bicultural community health worker (CHW) on completion of diabetes education in an inner-city Hispanic patient population and to evaluate the impact of completion of the education program on patient knowledge, self care behaviors, and glycemic control.

RESEARCH DESIGN AND METHODS: Patients were randomized into CHW intervention and non-CHW intervention groups. All patients received individualized, comprehensive diabetes education from a certified diabetes nurse educator after baseline demographic information, diabetes knowledge, diabetes self-care practices, and glycohemoglobin levels were assessed. Rates of education program completion were determined. Diabetes knowledge, self-care practices, and glycohemoglobin levels were reassessed at program completion and at a later postprogram follow-up medical appointment and compared to baseline. Logistic regression analysis and the Mantel-Haenszel chi 2 statistic were used to determine the effect of the CHW assignment on program completion. Analyses of covariance were performed with end-of-treatment behavior scores, and glycohemoglobin levels as outcome variables, controlling for baseline values and testing for the effect of CHW assignment.

RESULTS: Of 64 patients enrolled in the study, 40 (63%) completed and 24 (37%) dropped out before completing the diabetes education program. Of the patients having CHW intervention, 80% completed the education program, compared with 47% of patients without CHW intervention ($P = 0.01$). "Dropouts" were younger (age 47.5 ± 12.5 years [mean ± SD]) compared with patients who completed the program (55.9 ± 9.9 years) ($p = 0.004$). Dropout status showed no significant relationship to educational level achieved or literacy level. For the program "completers, " knowledge levels and selected self-care practices significantly improved, and glycohemoglobin levels improved from a baseline level of 11.7% to 9.9% at program completion ($P = 0.004$) and 9.5% at the post program follow-up ($P < 0.0001$). The effect of the CHW assignment on program completion, controlling for financial status and language spoken, was extremely robust ($P = 0.007$). The effect of the CHW on knowledge, self-care behavior, or glycohemoglobin outcome variables was not statistically significant.

CONCLUSION: These findings suggest that intervention with a bicultural CHW improved rates of completion of a diabetes education program in an inner-city Hispanic patient population irrespective of literacy or educational levels attained. Our data further suggests that completion of individualized diabetes educational strategies leads to improved patient knowledge, self-care behaviors, and glycemic control.

Theory and practical applications of a wellness perspective in diabetes education.

Klepac MJ. Diabetes Educator. 1996; 22(3) : 225-30.

From a wellness perspective, health is viewed in a broad sense that encompasses interrelationships among physical, mental, social, emotional, and spiritual components. This approach to health is particularly applicable in diabetes management because diabetes effects all areas of a person's life-work, family, social, and recreational. The boundaries of diabetes education need to be expanded to address this holistic view of health. The integration of a wellness approach in an adult-centered diabetes education program is described to offer a new perspective in diabetes management and education. This outpatient, hospital-based program is provided at regular intervals for small groups of 6 to 12 participants, most of whom have Type II diabetes. Support for this wellness direction in diabetes education is discussed in relation to theoretical principles of the wellness model, including similarities and differences with other concepts such as empowerment and self-efficacy. Practical applications of the wellness perspective are clarified using this specific outpatient program as a case example.

Utilizing a 24-hour dietary recall and culturally specific diabetes education in Mexican Americans with diabetes.

Elshaw EB, Young EA, Saunders MJ, McGurn WC, Lopez LC. Diabetes Educator. 1994;20(3) : 228-35.

Two objectives were established for this study: 1) to assess the impact of culturally specific, intensive diabetes education program on dietary patterns, and 2) to assess nutrient consumption relative to the Recommended Dietary Allowances. The study population consisted of elderly Mexican Americans with diabetes living in Harlingen and Brownsville, Texas. The experimental group ($n = 78$) participated in an intense, 2-hour nutrition education session, while the control group ($n = 74$) did not. The education session was conducted for groups of eight subjects via videotapes and interactive discussion. All groups experienced significant weight loss except the women in the experimental group. After the education program, however, the experimental women had increased the percentage of calories consumed daily from carbohydrate. Mean calcium consumption was substantially less than the RDA in all groups, and inadequate amounts of ascorbic acid and vitamin A often were consumed. Intensive, frequent, long-term follow-up appears essential for more sustained results.

Assessment of diabetes education in the teaching hospital, Addis Ababa, Ethiopia

Bahru, Y, Abdulkadir J. Diabetic Medicine. 1993; 10(9):870-3

With the aim of assessing continuing diabetes education and obtaining baseline information, we have evaluated the knowledge of 139 randomly selected diabetic patients from the Diabetes Clinic of Tikur Anbessa Teaching Hospital, Addis Ababa, Ethiopia. Seventy-five Type I (insulin-dependent) and 64 Type II (non-insulin-dependent) diabetic patients, with a mean age of 36 ± 14 (± SD) (range 15-78, median 36) years, and mean duration of known diabetes 6.3 ± 5.5 (range 1-30, median 5) years participated in the study. Knowledge was assessed by a questionnaire which examined three principal areas: general knowledge on diabetes millitus, diet plus self care, and chronic complications. Twenty-eight (20.1%), did not attend any and 59 (42.5%) attended the diabetes education programme more than once. The Adjusted Percentage Score (APSCORE) was 69 ± 1.4 (SEM). Type I diabetic patients had a significantly higher score ($p < 0.001$) for overall knowledge when compared to type II patients. In both groups the knowledge on chronic complications was very poor when compared to the other areas ($P < 0.001$). No sex difference in knowledge was seen. Higher school and diabetes education attendance had a significant influence on the knowledge of diabetes. However, better knowledge about diabetes was not associated with better glycaemic control as measured by the fasting blood glucose concentration. The wide difference in knowledge, the low rate of attendance at diabetes education sessions, and the very low awareness about chronic complications is very worrying. To achieve the intended aim the diabetes education programme needs to be revised.

Low literacy : a problem in diabetes education.

Overland JE, Hoskins PL, McGill MJ, Yue DK. Diabetic Medicine. 1993; 10(9) : 847-50.

Eighty-five diabetic patients who were proficient in English were studied to assess the impact of educational material of varying literacy levels on patient comprehension. Two samples of available diabetes foot care material of Grade 11 and 9 readability (measured by SMOG formula) and purposely written in-house material of Grade 6 readability were used. Patients were randomized to read information of either Grade 6 and Grade 11 or Grade 6 and Grade 9 readability. Socio-demographic data and reading habits were collected to allow for identification of literacy markers. The main CLOZE score (a measure of comprehension) was better in patients who read the Grade 6 information than for both the Grade 11 and Grade 9 information (59.5 ± 11.8, 46.8 ± 22.0, 45.8 ± 2.2 respectively, $p < 0.001$). When evaluated in terms of percent of patients that could independently understand the material. Grade 6 information outperformed the Grade 11 and Grade 9 information (60%, 19%, 21% respectively, $p < 0.001$). For the Grade 11 and Grade 9 information, poorer comprehension was associated with a non-English speaking background, early school leaving age, infrequent reading habits, and preference for tabloids ($p < 0.02$). Comprehension when patients read the Grade 6 information was no longer dependent on two of the four identified literacy markers. We conclude that reducing literacy demands of health literature improves patients' comprehension. Attention to socio-demographic data and reading habits can assist educators in assessing patients' literacy status and ensuring patients are given literature of compatible readability.

The effectiveness of a primary-care-based diabetes education service.

Redhead J, Hussain A, Gedling P, McCulloch AJ. Diabetic Medicine. 1993; 10(7) : 672-5.

The efficacy of structured education for 158 Type II diabetic patients in primary care (80 male, mean age 63 yr., median diabetes duration 3 yr) was assessed with respect to change in knowledge of diabetes, weight, and haemoglobin A1 over a 6-month period. The programme supplemented a primary care initiative in our semi-rural population. Teaching was carried out by a Diabetes Nurse Educator within primary care health centres (141 patients) and a hospital diabetes clinic (17 patients). For all patients mean baseline questionnaire score (maximum possible 12) was 6.2 rising after the programme to 10.5 ($p < 0.01$). At 6 months mean score fell to 9.5 ($p < 0.01$) compared to end of the programme), but still significantly better than baseline ($p < 0.01$). For patients on primary care-based programme mean haemoglobin A1 at baseline was 10.7% (normal range 6%-9%) decreasing after 6 months to 9.6% ($p < 0.01$). No significant changes were found in mean weight. Unlike many previous studies, these results demonstrate a highly beneficial effect not only on knowledge but also on metabolic control in patients who received their education in the primary-care setting. These results have obvious implications for patients residing in rural or semi-rural populations.

Diabetes education: an Asian perspective.

Wilson E, Wardle EV, Chandel P, Walford S. Diabetic Medicine. 1993; 10(2) : 177-80.

Asian diabetic patients often lack knowledge about diabetes and self-management of the disease due to difficulties in communication. The introduction of a diabetes education programme specifically for Asian patients has resolved many of the communication problems, provided education which Asian patients could understand, and raised awareness of diabetes within the Asian community. Forty-eight percent of Asian patients were unable to read, while only 26% spoke and 20% read English, emphasizing the need for education in Asian languages using oral and visual teaching methods. Cultural differences were identified such as the use of alternative therapy to supplement treatment (33%) and the large number of vegetarians (61%). Public awareness of diabetes in the Asian community was increased by providing health education at social venues. The provision of diabetes education designed for the needs of Asian patients is essential to improve the quality of life and life expectancy of these patients.

Evaluating diabetes education. Are we measuring the most important outcomes?

Glasgow RE, Osteen VL. Diabetes Care. 1992; 15(10) : 1423-32.

This article reviews the published literature on diabetes education evaluations and makes recommendations for outcome measures to be used in the future research. We conclude that program evaluations to date have focused too narrowly on assessing knowledge and GHb outcomes to the exclusion of other important variables. To reflect the changing emphasis and conceptual basis of diabetes education, we recommend that future evaluations do the following: 1) report on the program's target population, recruitment methods, and representativeness of participants; 2) collect measures of self-efficacy and patient-provider interaction; 3) include quality of life and patient-functioning outcomes; and 4) use more standardized and objective measures of diabetes management behaviors. We close by providing practical examples of feasible collection measures for most settings and references to studies that have done so.

Diabetic education, special consideration of Oriental patients.

Tuchinda C, Vanaprapa N, Nirapik S, Wongarn R, Vannasaeng S. Indian Journal of Pediatrics. 56 Suppl 1989; 1 : S87-91.

The importance of patient education program in the management of diabetes has been widely recognized. We studied to find out in general what the patients and their parents know about diabetes and their self-care by using a questionnaire. Then, the diabetic education was given by one-to-one basis to every patient. Thirty four insulin-dependent diabetes mellitus patients attended the diabetic clinic at Siraraj Hospital, Bangkok. Age ranged from 4 to 22 years with peak age at 11 to 15 years. Male to female ratio was 1:1. Majority came from low socioeconomic families. 23.5 percent from separated families, one patient lived with neither her mother nor father. Only one patient had home glucose monitoring. Fourteen cases (41.2%) had been hospitalized with diabetic ketoacidosis (DKA) over the past year, however, there was no statistically significant difference between admission with DKA and low socioeconomic status. In addition to insulin, there were 8 patients taking herbs to cure diabetes. Only 6 patients were able to follow their meal plan and only one case ever used the food exchange list. Most patients accepted being diabetic and attended the clinic regularly mainly to get financial supports. The situation in our country is different from that in western countries as the patients are low in literacy and socioeconomic status. A well planned educational programme is essential to cater to the need to the oriental patients.

The Diabetes Education Study : a controlled trial of the effects of intensive instruction of internal medicine residents on the management of diabetes mellitus.

Mazzuca SA, Vinicor F, Cohen SJ, Norton JA, fineberg Ns, Lineberg SE, Duckworth WC, Kuebler TW, Gordon EE, Clark CM Jr. Journal of General Internal Medicine. 1988; 3(1) : 1-8

The Diabetes Education Study was a controlled trial of the effects of physician and patient education. This article describes an educational program for internal medicine residents and its effects on ambulatory diabetes management practices. Forty-five of 86 residents practicing in the general medicine clinic of a university-affiliated city/county hospital were assigned randomly to receive a multifaceted program intended to 1) provide specific care recommendations, 2) teach necessary skills, and 3) make the professional and institutional environment more supportive. During the subsequent 11 months, 323 diabetic patients were interviewed and their records audited for evidence of changes in care. Experimental residents utilized fasting blood glucose determinations more often than controls (i.e., during 40% of visits vs 31%, p = 0.004). Experimental residents also engaged more frequently in a variety of recommended dietary management recommendations. Isolated differences in monitoring/management of chronic complications also were found (e.g., lipid screening: 70% of experimental residents' patients vs. 58%, p = 0.016). Intensive, multifaceted programs of this nature are concluded to result in improvements in diabetes care, over and above that which is attainable through routine methods of clinical training for residents.

Evaluating the costs and benefits of outpatient diabetes education and nutrition counseling.

Kaplan RM, Davis WK, Diabetes Care. 1986;9(1) : 81-6

The board of Directors of the American Diabetes Association (ADA) recently endorsed a resolution recommending third-party payment for outpatient education and nutritional counseling. One of the major rationales for the statement was that education and nutritional counseling will lead to reductions in health care costs. This article critically reviews the 13 studies cited in support of the ADA Policy Statement. Among these studies, only 2 compared a treated group with a control group. Both of the studies with control groups failed to randomly assign patients to treatment condition. Only 4 of the studies showed an accounting of program costs. Upon close inspection, it appears that some of the programs actually increased, rather than decreased, health care expenditures. Attrition from programs was reported in only a minority of cases, and was large when reported. The effect of the programs upon diabetes control was inconsistent across studies. It is suggested that the rationale for education and nutritional services be based on improved health status. In addition, the execution of systematic experimental study to evaluate these services is urged.

The diabetes education study : a controlled trial of the effects of diabetes patient education.

Mazzuca SA, Moorman NH, Wheeler ML, Norton JA, fineberg NS, Vinicor F, Cohen SJ, Clark CM Jr. Diabetes Care. 1986; 9(1) : 1-10

The Diabetes Education Study (DIABEDS) was a randomized, controlled trial of the effects of patient and physician education. This article describes a systematic education program for diabetes patients and its effects on patient knowledge, skills, self-care behaviors, and relevant physiologic outcomes. The original sample consisted of 542 diabetes patients from the general medicine clinic at an urban medical center. Patients were predominantly elderly, black women with non-insulin-dependent diabetes mellitus of long duration. Patients randomly assigned to experimental groups (N = 263) were offered up to seven modules of patient education. Each content area module contained didactic instruction (lecture, discussion, audio-visual presentation), skill exercises (demonstration, practice, feedback), and behavioral modification techniques (goal setting, contracting, regular follow-up). Two hundred seventy five patients remained in the study throughout baseline, intervention, and postintervention periods (August 1978 to July 1982). Despite the requirement that patients demonstrate mastery of educational objectives for each module, postintervention assessment 11-14 months after instruction showed only rare differences between experimental and control patients in diabetes knowledge. However, statistically significant group differences in self-care skills and compliance behaviors were relatively more numerous. Experimental group patients experienced significantly greater reductions in fasting blood glucose (-27.5 mg/dl versus –2.8 mg/dl, P less than 0.05) and glycosylated hemoglobin (-0.43% versus + 0.35%, P less than 0.05) as compared with control subjects. Patient education also had similar effects on body weight, blood pressure, and serum creatinine. Continued follow-up is planned for DIABEDS patients to determine the longevity of effects and subsequent impact on emergency room visits and hospitalization.

Diabetes education and insulin therapy: when will they ever learn?

Muhlhauser I, Berger M, Journal of Internal Medicine. 1993;233(4) : 321-6.

The Diabetes Education Study Group of European Diabetes Association was founded in 1979 with its major goal to make effective patient training an integral part of any diabetes therapy. However, even today, many places diabetes education is not an obligatory part of treatment, but is regarded as an optional service to the patient which is frequently fragmentary and haphazard. On the other hand, many physicians still subject their patients to rigid dietary instructions and obedience training, approach which is mistaken for diabetes education. Several misconceptions about diabetes education keep counteracting the spread and hence the availability of effective treatment and teaching programmes for all Type I diabetic patients. One such misconception is that diabetes education could compensate for deficiencies of inappropriate insulin treatment regimens. Studies failing to demonstrate the impact of diabetes education on metabolic control, typically used an insulin treatment regimen with only one or two insulin injections per day, the predominant use of intermediate acting insulin preparations, and without (day-to-day) adjustment of insulin dosages by the patients themselves. A further reason for a lack of success of diabetes education is an unstructured approach which is frequently mistaken for individualized care. The deleterious effects of putting patients on intensified insulin therapy without offering them sufficient and systematic training have manifested themselves at various places by an excessive increase in the risk of severe hypoglycaemia, and ketoacidosis during therapy with continuous subcutaneous insulin infusion. The effective and safe performance of insulin therapy requires both a rational system of insulin substitution and intensive training of the patients to carry it out. The injection of regular insulin before main meals and the use of intermediate or long-acting insulin preparations for the substitution of basal insulin requirements combined with daily metabolic self-monitoring and (day-to-day) adaptation of insulin dosages by the patients themselves allow a substantial improvement of glycaemic control without an increase in the risk of severe hypoglycaemia and the adoption of a more flexible life style largely freed from forcing and directive dietary and other impositions. Each diabetes centre should continuously evaluate the quality of care offered to their patients as a basis for a specific and systematic improvement of its treatment and education programmes. Such quality control measures must include a recording of the patients' degrees of metabolic control and the frequencies of severe hypoglycaemia and ketoacidosis.

Diabetes education in a Mexican-American population: pilot testing of a research-based videotape.

Brown SA, Duchin SP, Villagomez ET. Diabetes Educator. 1992; 18(1) : 47-51

A diabetes education videotape was designed and pilot tested in a sample of 30 Spanish-speaking Hispanic diabetic adults in a rural Texas-Mexico border community. The videotape provided an overview of diabetes, with emphasis on the concept of blood glucose; relationships between food, medications, exercise, and blood glucose levels; and blood glucose monitoring. Outcomes of videotape effectiveness were based on a 20-item knowledge test and interview data to assess acceptability of videotapes as a learning tool. Comparison of the knowledge test scores of the experimental group (those who viewed the tape before taking the knowledge test) with the control group (those who took the test before viewing the tape) produced a positive, moderate effect size of 0.61. Interviews with subjects indicated enthusiastic acceptance of the videotape as a means of transmitting diabetes information.

Participation in outpatient diabetes education programs: how many patients take part and how representative are they?

Glasgow RE, Toobert DJ, Hampson SE. Diabetes Educator. 1991;17(5) : 376-80.

Little research has been conducted on the role of participation in programs that teach diabetes self-management skills. This paper reviews recent studies on diabetes educational programs to determine what is known about participation, and then reports our experience in recruiting patients for a program that teaches diabetes self-care skills to persons age 60 and older. Few studies have reported data on participation rates in such programs, and only one study provided information on characteristics of patients who participated versus those who did not. In our study, patients over age 70, and those with whom we initiated contact by means of a letter from their health care provider, were less likely to participate than were younger patients and those who initiated contact with us. It is recommended that future research include information on the percentage and representativeness of patients who participate in diabetes education programs. Studies should also describe their target population procedures used to recruit participants, and program characteristics that might affect participation.

Differential effect of diabetes education on self-regulation and life-style behaviors.

Rubin RR, Peyrot M, Saudek CD. Diabetes Care. 1991; 14(4) : 335-8.

OBJECTIVE : To examine the effect of diabetes education on self-regulation and life-style behaviors.

RESEARCH DESIGN AND METHODS : Participants in an outpatient diabetes education program completed protocol measuring several self-care behaviors and glycemic control at entry (n = 165) and 6 (n = 124) and 12 (n = 89) mo after the program.

RESULTS : improvement was noted at 6 mo for most self-care behaviors and glycemic control. AT 12 mo, lower glycosylated hemoglobin levels were maintained (P less than 0.001) without increases in perceived hypoglycemia. Improvement was not maintained for those self-care behaviors that requires change in life style, i.e., diet and exercise. However, self-care behaviors that allow patients to self-regulate their glycemic control – self-monitoring of blood glucose and insulin dose self-adjustment – were improved at 12 mon over preprogram levels (p less than 0.001). Frequency of insulin self-adjustment continued to increase during the period between follow-ups.

CONCLUSIONS: The findings suggest that diabetes education is effective in promoting self-regulation behaviors, although it has less effect on traditional regimen behaviors such as diet and exercise.

Diabetes education in the USSR: how to begin ?

Starostina EG, Antsiferov MB. Diabetic Medicine. 1990; 7(8) : 744-9.

To determine patients' attitudes diabetes education in the Soviet Union, a questionnaire was distributed throughout the country. From 10,000 completed forms, returned from all regions of the USSR, 2000 were analysed in detail. Responders presented all age and social groups, but patients with shorter duration of diabetes, and women, responded more readily. More than 41% of patients were unaware of the type of diabetes they had, the actual proportions of Type I and Type II diabetes among respondents being 31% and 63%. Rates of chronic complications derived from patients' answers suggest a high rate underestimation by local physicians. Only 17% of Type I and 8% of Type II diabetic patients believed that they knew enough about diabetes, and 99.9% of all respondents wanted to learn more about their disease. Independently of the type of diabetes and educational level, patients would accept the information on diabetes from periodicals (63-68%), television (48-63%), booklets for patients (29-31%), as well as attending diabetes courses or classes (30-38%). They expressed preference for teaching conducted by physicians (74-85%) rather than nurses (1-4%). The main areas of interest of Type I diabetic patients were technical devices, (artificial pancreas and insulin pumps (85%)] and late diabetic complications (78%), and for patients with type II diabetes late complications (84%) and diet (72%). Some respondents (20-25%) expected the use of herbs and other 'non-traditional' methods to be effective in treatment and curing of diabetes. The least requested topics were acute complications (18-34%) and metabolic self-monitoring (0.025%).

A project in diabetes education for children.

Bloomfield S, Calder JE, Chisholm V, Kelnar CJ, Steel JM, Farquhar JW. Diabetic Medicine. 1990; 7(2): 137-42.

Forty-eight families with children less than 13 years old attending paediatric diabetic clinic volunteered for a 2-year randomized crossover trial to determine whether an informal education programme (diabetic club) could improve diabetic control. Group A attended the diabetic club for 10 afternoons of informal education in the first year, while Group B continued at the routine clinic (5 visits per year). For the second year Group A returned to the clinic, Group B attended the club. Glycosylated haemoglobin (HbA1) remained stable while attending the club but rose significantly (p less than 0.01) while attending the clinic in both groups (HbA1 at baseline, 1 year, and 2 years: Group A, 9.6 (SD 1.2), 9.6(1.4), 10.7 (2.1)%; Group B 8.9 (1.3), 10.4(1.4), 10.5(1.4)% (normal reference range 4.7-7.9%)). Other indices of control were unchanged. Diabetic problem-solving scores of parents improved (p less than 0.01) but their knowledge of diabetes did not correlated with their child's HBA1. Dietary intake showed a reduction in percentage of energy taken as fat (40% vs 37.7%, p less than 0.05) during club attendance. The percentage of parents reporting helpful social contact between families increased during their club year (Group A 50 to 78%, Group N 32 to 57%, p less than 0.001). Psychological measurements remained unchanged. An education programme for diabetic children may stabilize diabetic control in the short term but this effect is not sustained. The main benefit was the support provided by increased social contact with families of other diabetic children within the informal framework of the diabetic club.

Knowledge and attitude change as predictors of metabolic improvement in diabetes education.

Dunn SM, Beeney LJ, Hoskins PL,Turtle JR. Social Science & Medicine. 1990; 31(10) : 1135-41.

Randomized trials of formal diabetes education have proven that education in isolation from other aspects of diabetes care has limited impact on metabolic control through the simple transfer of information. Comprehensive programme evaluation requires assessment of the process by which knowledge and attitude change affect subsequent control of diabetes. This study examined the impact of a formal diabetes education programme on diabetes-specific knowledge and attitude, and the relationship between these characteristics and metabolic control of the disease over a 15 month period. Knowledge and attitude were assessed using parallel form of the DKN and ATT39 scales presented randomly as pre-test and post-test to 309 patients, attending a 2-day diabetes education programme. Mean knowledge scores increased by 25% (P less than 0.001) and standardized ATT scores showed a small but significant positive – shift after the programme (P less than 0.01) and remained stable in a subset of 177 patients of 3-month follow-up. ATT scores showed a marked convergence towards normal during the intervention (ANOVA, P less than 0.0001). Glycosylated haemoglobin (HbA1C), a medium-term measure of blood glucose control, was recorded in 209 cases for 6 months preceding the programme, and for 15 months following, at intervals of 3 months. The mean HBA1c improvement, from 11.3 to 9.0% (P less than 0.001), was predicted by stepwise regression from initial diabetes control (57% variance) and psychosocial factors (17% variance) including attitude scores and personality characteristics. Diabetes knowledge did not predict improvement in the control of diabetes.

Development, validation and application of computer-linked knowledge questionnaires in diabetes education.

Meadows KA, Fromson B, Gillespie C, Brewer A, Carter C, Lockington T, Clark G, wise PH. Diabetic medicine. 1988; 5(1) : 61-7.

Multiple choice questionnaires (MCQs) capable of being marked manually or by a newly developed optical mark reader, or by use of an inexpensive inter-active microcomputer system have been developed for the separate assessment of insulin-dependent and non-insulin-dependent patient knowledge. Forty-six insulin-related and non-insulin-related multiple choice questions covering six main areas of knowledge were constructed for inclusion into draft questionnaires. From the responses of a total of 180 completed questionnaires piloted in 18 randomly selected clinics in 14 Regional Health Authorities in England, psychometric analysis was performed to determine reliability, discrimination coefficients, and facility indices. Seventy-three per cent of insulin-dependent diabetic patients (IDDM) and 92% of non-insulin-dependent diabetic patients (NIDDM) MCQ correct options had facility indices within the acceptable range of 30 90%. 82% IDDM and 93% NIDDM correct options had discrimination coefficients exceeding 0.2. Questionnaire reliability (internal consistency) using the Kudor-Richardson (KR20) formula was IDDM 0.87 and NIDDM 0.82. Evidence in support of the IDDM questionnaire's criterion validity was based on significant differences (p less than 0.05) identified between a number of knowledge area scores stratified according to HbA1 levels. Prescriptive correction for screen display and automatic hard copy feedback was designed for both incorrect and omitted question options, providing both educational (patient) and analytical (clinic) documentation. Both technical and psychometric properties of these knowledge assessment instruments should be acceptable for diabetic knowledge evaluation and instruction.

A survey of patient's acceptability of diabetes education programmes in Italy.

Porta M, Rudelli G, Colarizi R, Santoro F, Molinatti GM. Diabete et Metabolisme. 1988; 14(3) : 247-52.

When planning diabetes education programmes it would be useful to know in advance the patients' demands and expectations. To this purpose, a questionnaire was circulated throughout Italy. Eight hundred and forty-five forms were returned from 487 men and 358 women of age 49 ± 18 (SD) residing in all regions of Italy. Fifty percent were on insulin, 37% on oral agents and 13% on diet only. Forty-seven percent believed they had a satisfactory knowledge of diabetes, 49% thought it fair or poor and 4% judged it non-existent. Such knowledge derived from diabetic clinics, mass media, specialized publications and family doctors. Only 11% had previously attended education programmes. The vast majority (83%) believed that better information would help to improve their diabetes care and were willing to attend education courses. Printed material and group learning were preferred to audiovisual aids and individual education. Doctors were preferred as teachers (83%) to other patients or paramedical staff. Patients were mostly interested in learning about complications (84%), diet (74%), control (63%), intercurrent illnesses (61%) and inheritance (59%). The least requested subjects were CSII (20%), the artificial pancreas (22%), insulin preparations (22%), pancreatic transplant (26%) and oral agents (31%).

The impact of diabetes education and peer support upon weight and glycemic control of elderly persons with noninsulin dependent diabetes mellitus (NIDDM)

Wilson W, Pratt C. American Journal of Public Health. 1987; 77(5) : 634-5

We assessed diabetes education and peer support interventions as facilitators of weight loss and glycemic control in a community sample of 79 elderly persons with noninsulin-dependent diabetes mellitus (NIDDM). Different groups received: education only, education and peer support, and no treatment. Peer support was higher in groups where it was actively facilitated. Weight loss and reduction in level of glycemic control occurred within groups receiving both diabetes education and peer support.

Auditing paediatric diabetes care and the impact of a specialist nurse trained in paediatric diabetes.

Cowan FJ, Warner JT, Lowes LM, Riberio JP, Gregory JW. Archives of Disease in Childhood. 1997; 77(2): 109-14

AIMS : To define outcome measures for auditing the clinical care of children and adolescents with insulin dependent diabetes mellitus (IDDM) and to assess the benefit of appointing a dedicated paediatric trained diabetes specialist nurse (PDSN).

METHODS: Retrospective analysis of medical notes and hospital records. Glycaemic control, growth, weight gain, microvascular complications, school absence, and the proportion of children undergoing an annual clinical review and diabetes education session were assessed. The effect of the appointment of a PDSN on the frequency of hospital admission, length of inpatient stay, and outpatient attendance was evaluated.

RESULTS : Children with IDDM were of normal height and grew well for three years after diagnosis but grew suboptimally thereafter. Weight gain was above average every year after diagnosis. Glycaemic control was poor at all ages with only 16% of children having an acceptable glycated haemoglobin. Eighty five per cent of patients underwent a formal annual clinical review, of whom 16% had background retinopathy and 20% microalbuminuria in one or more samples. After appointing the PDSN the median length of hospital stay for newly diagnosed patients decreased from five days to one day, with 10 of 24 children not admitted. None of the latter was admitted during the next year. There was no evidence of the PDSN affecting the frequency of readmission or length of stay of children with establishing IDDM. Non-attendance at the outpatient clinic was reduced from a median of 19 to 10%.

CONCLUSIONS: Outcome measures for evaluating the care of children with IDDM can be defined and evaluated. Specialist nursing support markedly reduces the length of hospital stay of newly diagnosed patients without sacrificing the quality of care.

Patient education in the management of diabetes mellitus.

Tan As, Yong Ls, Wan S, Wong ML. Singapore Medical Journal. 1997;38(4) : 156-60

AIM: A patient education programme in the management of diabetes mellitus (DM) was piloted in a government polyclinic. This study aimed to evaluate the effectiveness of the education programme in improving knowledge of DM and skills in self-care in order to achieve long term control of DM.

METHOD : The study was carried out on an intervention group of 183 diabetic patients who completed the education programme and a control group of 95 diabetic patients who attended the clinic during the period of the study. The patients were assessed on their knowledge of diabetes and their practice for good control of the disease (dietary practice, compliance, home monitoring) through a questionnaire. Long term control was assessed by their glycosylated haemoglobin levels. The education programme comprised individual counseling using a diabetes education guide, talks, videoshows and food displays.

RESULTS : The intervention group showed a significant and greater improvement in the knowledge of the disease and self-care and in the dietary practice (taking more unpolished rice/high fibre food, reducing calories intake and cutting down oil/fatty food) when compared to the control group. Compliance with medication and the mean HbA1c levels were also improved in the intervention group.

CONCLUSION : In this study the educational intervention was observed to have improved the diabetic patients' knowledge of the disease and self-care and the long term control of the disease. Patient education is thus an important component in the management of diabetes mellitus.

Effect of a bicultural community health worker on completion of diabetes education in a Hispanic population.

Corkery E, Palmer C, Foley ME, Schechter CB, Frisher L, Roman SH. Diabetes Care, 1997;20(3) : 254-7.

OBJECTIVE : To determine the effect of a bicultural community health worker (CHW) on completion of diabetes education in an inner-city Hispanic patient population and to evaluate the impact of completion of the education program on patient knowledge, self-care behaviors, and glycemic control.

RESEARCH DESIGN AND METHODS: Patients were randomized into CHW intervention and non-CHW intervention groups. All patients received individualized, comprehensive diabetes education from a certified diabetes nurse educator after baseline demographic information, diabetes knowledge, diabetes self-care practices, and glycohemoglobin levels were assessed. Rates of education program completion were determined. Diabetes knowledge, self-care practices, and glycohemoglobin levels were reassessed at program completion and at a later postprogram follow-up medical appointment and compared to baseline. Logistic regression analysis and the Mantel-Haenszel chi 2 statistic were used to determine the effect of the CHW assignment on program completion. Analysis of covariance were performed with end-of-treatment behavior scores, knowledge scores, and glycohemoglobin levels as outcome variables, controlling for baseline values and testing for the effect of CHW assignment.

RESULTS : Of 64 patients enrolled in the study, 40 (63%) completed and 24 (37%) dropped out before completing the diabetes education program. Of the patients having CHW intervention, 80% completed the education program, compared with 47% of patients without CHW intervention ($p = 0.01$). "Dropouts" were younger (age 47.5 ± 12.5 years [mean ± SD]) compared with patients who completed the program (55.9 ± 9.9 years) ($P = 0.004$). Dropout status showed no significant relationship to educational level achieved or literacy level. For the programme "completers," knowledge levels and selected self-care practices significantly improved, and glycohemogalobin levels improved from a baseline level of 11.7% to 9.9% at program completion ($P = 0.004$) and 9.5%

at the postprogram follow-up (P< 0.001). The effect of the CHW assignment on program completion, controlling for financial status and language spoken, was extremely robust (P = 0.007). The effect of the CHW on knowledge, self-care behavior, or glycohemoglobin outcome variables was not statistically significant.

CONCLUSIONS : These findings suggest that intervention with a bicultural CHW improved rates of completion of a diabetes education program in an inner-city Hispanic patient population irrespective of literacy or educational levels attained. Our data further suggests that completion of individualized diabetes educational strategies leads to improved patient knowledge, self-care behaviors, and glycemic control.

Levels and risks of depression and anxiety symptomatology among diabetic adults.

Peyrot M, Rubin RR. Diabetes Care. 1997; 20(4) : 585-90

OBJECTIVE : To determine levels of depression and anxiety symptoms among adults with diabetes and identify factors associated with increased risk.

RESEARCH DESIGN AND METHODS : This study administered self-report symptom inventories to patients at the beginning (n = 634) and end (n = 578) of an outpatient diabetes education program. Subjects (n = 246) contacted by mail 6 months later completed the same instruments.

RESULTS : Rates of disturbance for depression (41:3%; 95% CI:37.4-45.2%) and anxiety (49.2%; 95% CI: 45.3-53.1%) were higher than those typical in the general population (10-20%). Probability of disturbance ranged from 5-7% for those with the lowest risk profile to 82-92% for those with the highest risk profile. Diabetes related complications were the only disease factor associated with the lowest risk profile to 82-92% for those with the highest risk profile. Diabetes-related complications were the only disease factor associated with significantly increased risk of disturbance. Women and those with less education were at much higher risk. Only 13% of those followed for 6 months were disturbed at all three time-points.

CONCLUSIONS : Diabetes is associated with increased risk of psychological disturbance, especially for those with more diabetes related complications. Sociodemographic factors account for much of the risk differential among people with diabetes.

Quality of life and social environment as reported by Chinese immigrants with non-insulin-dependent diabetes mellitus.

Rankin SH, Galbraith ME, Huang P. Diabetes Educator. 1997;23(2) : 171-7.

Non-insulin-dependent diabetes mellitus (NIDDM) has been associated with stressful events such as immigration. The purpose of this paper is to report a pilot study that tested translated and back-translated instruments to ascertain factors related to diabetes management in a group of Chinese immigrants with diabetes. The descriptive, cross-sectional design included a convenience sample of 30 Chinese immigrants who had been diagnosed with NIDDM for at least 1 year. Consenting participants completed paper-and-pencil questionnaires (Diabetes Family-Behavior Checklist II, Diabetes Quality of Life, and MDRTC Knowledge Test) that had been translated and back-translated into Chinese and returned them in stamped, self-addressed envelopes. Results indicated that most of the scale and subscale reliabilities were similar to those published previously. Study participants had received limited diabetes education, reported many problems managing diabetes, especially in terms of social and vocational issues, and reported dissatisfaction with their quality of life. Diabetes-related family supportive behaviors were rated positively indicating the importance of including family members in educational programs.

Views of Pacific Islands people with non-insulin dependent diabetes : a Wellington survey

Mitikulena A, Smith RB. New Zealand Medical. 1996; 109(1035) : 467-9.

AIMS : The aims of the study were: (1) to ascertain the views of Pacific Islands people with diabetes on diabetes services they are receiving, and (2) to identify their perceptions on their health and diabetes related problems.

METHODS : A random sample survey of Wellington and Kenepuru diabetes clinics and the Wellington Pacific Islands community was undertaken using person to person interviews by seven trained Pacific Islands interviewers. The Tokelau Migrant Study questionnaire of Dr. Ian Prior formed the basis for the questions used in this study.

RESULTS : The sample size was 120. Response rate 82.2%. Samoans were the main ethnic group at 62% and women the dominant gender at 75%. Mean age was 46%. Eighty eight percent presented with symptoms at diagnosis and 64% had diabetes of 5 years standing or more. Seventy eight percent were on diet and/or tablets and 73% reported having complications of which visual impairment was the most common. Twenty four percent were not happy with the current service. Fifty nine percent knew little or nothing about diabetes and 78% expressed a desire to know more. Good control was reported by 59%, and 66% reported they followed a diet. Forty five percent admitted having a overweight problem and 57% reported losing weight since diabetes was diagnosed. Forty five percent knew how to test their blood sugar and 26% tested at home. Eighty nine percent favoured a specific service for Pacific Islands people with education being the major emphasis. More than a third preferred service to be near home and run by Pacific Island health professionals.

CONCLUSION : The majority of Pacific Islands people developed symptoms before going to see a doctor. It indicated that the majority have suffered from diabetes for a long time before seeking medical care for the first time. Most indicated being happy with the services they are receiving from their family doctors but if given a choice they would prefer a service specifically for themselves. Diabetes education as well as a treatment clinic were services most favoured with the preference close to home and to be delivered by Pacific islands health professionals.

Factors influencing the attitudes held by women with Type II diabetes: a qualitative study.

Dietrich UC. Patient Education & Counseling. 1996;29(1) : 13-23.

Results of formal diabetes education are still considered unsatisfactory but could be improved by being more patient centered. The purpose of this study was to investigate attitudes of people with diabetes toward their disease and its treatment from their point of view and the research question answered was, ‘What are the feelings and beliefs of people with NIDDM about diabetes and its treatment?’ Data were collected through in-depth interviews using the general interview guide approach. Seven interviews with adult Type 2 diabetes from rural Illinois were tape recorded and transcribed. The naturalistic content analysis revealed four categories: physician's reaction at diagnosis; perceived seriousness of diabetes; physician-patient relationship; and self-care. A finding that was not described in any literature reviewed by the researcher was that the reaction and attitude physicians displayed toward patients at the point of diagnosis were crucial in influencing attitudes towards perceived seriousness of the disease and consequently compliance. Newly diagnosed patients showed strong motivation with regard to treatment. However, difficulties in adhering to a treatment plan and inadequate perceived seriousness of the disease were factors contributing to a lack of compliance. Participants reported that when diabetes complications started their compliance improved.

Evaluation of a pharmaceutical care model on diabetes management.

Jaber LA, Halapy H, Fernet M, Tummalapalli S, Diwakaran H. Annals of Pharmacotherapy. 1996;30(3) : 238-43.

OBJECTIVE : To assess the effectiveness of a pharmaceutical care model on the management of non-insulin-dependent diabetes mellitus (NIDDM) in urban African-American patients.

DESIGN : Eligible patients were randomized to either a pharmacist intervention or control group and followed over a 4-month period. Patients in the intervention group received diabetes education, medication counseling, instructions on dietary regulation, exercise, and home blood glucose monitoring, and evaluation and adjustment of their hypoglycemic regimen. Patients in the control group continued to receive standard medical care provided by their physicians.

SETTING: A university-affiliated internal medicine outpatient clinic.

PARTICIPANTS: The study population consisted of urban African American patients with NIDDM currently attending the clinic.

MAIN OUTCOME MEASURES: Primary outcome measures included fasting plasma glucose and glycated hemoglobin concentrations. Secondary outcome endpoints included blood pressure, serum creatinine, creatinine clearance, microalbumin to creatinine ratio, total cholesterol, triglycerides, high-density lipoprotein, and low density lipoprotein concentrations. Quality-of-life assessments were performed in both groups at baseline and at the end of the study.

RESULTS: Thirty-nine patients (17 intervention, 22 control) completed the study. The intervention group consisted of 12 women and 5 men with a mean ± SD age of 59 ± 12 years, total body weight (TBW) of 93 ± 22 kg, body mass index (BMI) of 34 ± 7 kg/m2, and duration of NIDDM 6.8 ± 6.5 years. The control group consisted of 15 women and 7 men with a mean age of 65 ± 12 years, TBW of 88 ± 19 kg, BMI of 33 ± 7 kg/m2, and a duration of NIDDM of 6.2 ± 4.8 year. Significant improvement in glycated hemoglobin ($p = 0.003$) and fasting plasma glucose ($p = 0.015$) was achieved in the intervention group. No change in glycemia was observed in the control subjects. Statistically significant differences in the final glycated hemoglobin ($p = 0.003$) and fasting plasma glucose ($p = 0.022$) concentrations were noted between groups. No significant changes in blood pressure control lipid profile, renal function parameters, weight, or quality-of-life measures were note within or between groups.

CONCLUSIONS : Our data demonstrate the effectiveness of pharmaceutical care in the reduction of hyperglycemia associated with NIDDM in a group of urban African-American patient.

Can patients set their own educational priorities?

Colagiuri R, Colagiuri S, Naidu V. Diabetes Research and Clinical Practice 1995; 30(2) : 131-6.

This study aimed to determine if patients can set their own educational priorities accurately and if the impact of diabetes education on knowledge differed between patients who did and did not set their own priorities. Forty patients referred for individual education were randomly assigned to one of two groups. Prior to education with a diabetes specialist nurse (DSN) patients ranked 10 diabetes care topics in order of perceived importance and relevance to their needs and completed a knowledge questionnaire. Group 1 set their own priorities and the DSN directed education according to the patients stated priorities. In Group 2 the DSN set the educational priorities without seeing the patients priority list. The priority ranking by the two groups of the 10 topics and their pre-education knowledge score were not significantly different. Post-education knowledge scores improved equally and significantly in both groups (Group 1 from 23 to 87%; Group 2 from 21 to 79%); $P < .0001$). In both groups, knowledge scores for the top three priorities were significantly higher than for the three lowest ranked topics. Knowledge is neither dependent on, nor a good discriminator of, patient selected priorities. There may be reasons why it is important for patients to set their own priorities, but education directed solely at those priorities may leave knowledge deficits which could compromise diabetes care.