

Standards of Care of Diabetic Patients at a Peri-urban Hospital in the Eastern Cape

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Abstract

Background: Recent studies have reported a high prevalence of diabetes among black South Africans. In the last decade emphasis has been placed on improving structures for the care of diabetic patients. This study was designed to assess the structure, process and outcome of diabetic care in a peri-urban hospital in the Eastern Cape.

Methods: All case notes of diabetic patients over a 3-month period were examined.

Results: The records of 307 patients were reviewed. Only 11 (48%) of the 23 standards for structure were

achieved. Blood glucose and blood pressure measurements were carried out in 85% of patients while smoking history recorded in 37%. All patients underwent urine analysis. Serum creatinine and cholesterol were estimated in 78% and 67% of patients respectively. There was no record of eye or foot examination. Hypertension was present in 26.5% and hypercholesterolaemia in 22.3% of cases.

Conclusions: Standards of medical care for diabetic patients were not optimal. Glycaemic control was generally poor. The practice of regular foot and eye examination needs to be introduced and emphasised.

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Introduction

Diabetes is a chronic illness that requires continuing medical care and education to prevent acute complications and to reduce the risk of long term complications. The process for providing structural care for these patients varies among hospitals and practices¹⁻³. However, in the last decade emphasis has been

placed on improving structures for the care of diabetic patients.^{1,4}

Recent studies have reported a high prevalence of diabetes mellitus amongst black South Africans.⁵ The prevalence of diabetes mellitus in the Transkei region of the Eastern Cape, home to the Xhosa, is not known, but the general

impression is that it is quite high. As part of good clinical practice it is important to evaluate both structure and process criteria to enhance diabetic patient management and care. We therefore carried out this study to assess the quality of the medical care given to diabetics attending the outpatients of the Umtata General Hospital.

Methods

This study was carried out at the Umtata General Hospital, Umtata. This facility is both a secondary care centre and the major referral hospital within a radius of 100 km. The diabetic clinic cares for approximately 500 patients and is run weekly. Patients are seen at monthly or bimonthly intervals. In accordance with international guidelines the evaluation was based on the development of a structured questionnaire, process and specific outcome criteria.

Structure questionnaire

A questionnaire regarding the structure of diabetic care was compiled using criteria recommended for the British Diabetic Association and the Royal College of General Practitioners.^{6,7} This questionnaire was pre-tested and modified accordingly and comprised 23 questions.

Process criteria

The case records of all active patients who attended the Diabetic Clinic at Umtata General Hospital during the three-month period from September to November of 1996 were examined. Newly referred or diagnosed patients and defaulters were excluded from the study. An active patient was defined as a diabetic patient living in the geographic area, was enrolled at the

clinic and was seen on a regular basis for care. Case notes were examined for outcome criteria (see below) for a minimum of 10 clinic visits.

Outcome criteria

The outcome criteria used were clinical and laboratory measurements that included a likelihood of developing short or long term complications to evaluate the probability of developing complications. These were blood glucose, glycosylated haemoglobin levels, serum creatinine, cholesterol, urine analysis (glucose and protein), blood pressure measurements, eye and foot examination. Hypertension was defined as blood pressure >160/90 mm Hg, proteinuria: urine protein higher than 0.3 g/L, chronic renal failure: serum creatinine level higher than 150 µmol/L, hypercholesterolaemia: serum cholesterol >6.5 mmol/L and poor glycaemic control: fasting blood sugar >10.0 mmol/L. Glycosylated haemoglobin was only estimated in a limited number of patients as this test was only introduced at a later date in the study.

Analysis of data

Data obtained from each case note were introduced into a database and the Epi-Info statistical package was used for data analysis.

Results

Over a 3-month period 340 case notes were available. Of this number 25 were new referrals and another 8 had incomplete data leaving 307 patients for the study. The majority of the patients were in the age range 41 to 60 years (49.5% of total) followed by the group aged from 61 to 80 years (35.5%). Only 13.3% of patients were under 41 years and 1.6% were aged over 80 years. Most of the patients were female (70.4%). This preponderance of female sex was present in all the age groups. The overall male to female ratio was 1:2.4

Table I: Structure Questionnaire Analysis

Structure Criterion	YES/NO
Age/ sex register	YES
Diabetic register	YES
Register patients under hospital follow up	YES
Register patients under GP follow up	NO
Appointment system	YES
Recall system for follow up	NO
Nurse visit	NO
Urinalysis facilities	YES
Venepuncture facilities	YES
Height measurements facilities	YES
Weight measurements facilities	YES
Separate nurses room	YES
Snellen Chart for visual activity	NO
Optometrist for eye examination	NO
Use of Primary Care chiropody services	NO
Ophthalmoscope in practice	NO
Sphygmomanometer in practice	YES
Nurses with diabetic training	NO
Dietician	NO
Medical Practitioner with postgraduate- Diabetic training	YES
Diabetic education programme	NO
Diabetic Association	NO
Links with other diabetic clinics	NO

Table II: Care Analysis

Process Criterion	Percentage in whom investigation was carried out
Weight	100
Blood Glucose	85
Hb A1c	24
Creatinine	78
Cholesterol	67
Urinalysis	100
Blood pressure	85
Eye examination	0
Foot examination	0
Record of smoking habit	37

Structure and Care Analysis

Only 11 (48%) of the 23 standards for structure were achieved (Table I). Blood glucose and blood pressure measurements were carried out on 85% of patients while smoking history was recorded in 37%. Glycosylated

haemoglobin was estimated in 24%. All patients underwent urine analysis while serum creatinine was estimated in 78% (Table II)

Glycaemic control was found to be poor in 69% of patients. The prevalence of hypertension and

hypercholesterolaemia in-patients in whom these measurements were carried out was 26.5% and 22.3% respectively. Proteinuria was present in 13.0% and chronic renal failure in 2.1% of patients. There was no record of eye or foot examination.

Discussion

The structure of the diabetic clinic was not satisfactory (Table I). The most glaring examples were the lack of ophthalmoscopes and Snellen charts, probably the main contributory factor to the virtual absence of eye examination at the clinic. Several organisations recommend annual eye examination to check for retinopathy and visual acuity. However because of time constraints it is unlikely that even in the presence of ophthalmoscopes routine eye examination would be feasible on all patients. A recent study from Khayelitsha, Cape Town⁸ found that despite the presence of ophthalmoscopes in the clinic, funduscopy was rarely carried out. One solution is to refer patients in small numbers to the ophthalmologist. Alternatively retinal photography can be considered as a screening procedure. As a result of this audit all diabetics are now being referred to the ophthalmologist.

Blood glucose and blood pressure were measured in 85% of patients, whilst urinalysis was carried out in all patients (Table II). These results are encouraging despite the patient load and inadequate staff and compare favourably with other centres. A study from Britain found that blood pressure and plasma glucose were measured in 82% of diabetics attending general practitioners' practices.¹ The high prevalence of hypertension and proteinuria observed in our patients despite treatment was worrying and emphasises the need for regular blood pressure measurements on all diabetic patients.

There was no systematic format for patient education nor was a dietician present to advise patients on the choice

of local foods (Table I). Whilst the poor metabolic control observed in our patients may have multifactorial causes it is likely that the absence of a diabetes education program may be one contributory factor. Programs, such as those designed by Boehringer Mannheim can be purchased. However this may not be sufficient, rather a commitment by the health authorities to implement and monitor such a program. Workshops to educate both patients and health personnel can also be organised. Regular visits by community health workers should be encouraged and a recall system that is linked to the primary health care clinics could be developed to enhance regular clinic attendance. This would assist in monitoring control such that patients with poor control could be identified at an early stage. Such community visits could also be linked with advice on diet and exercise.

Though serum cholesterol levels were estimated in 67% of patients, regular screening should be carried out in all diabetic patients. The incidence of coronary heart disease (CHD) has often been reported to be extremely low in black Africans, however it is likely that this pattern is changing.⁹ The adverse effects of smoking have been well documented more so in diabetes where the two interact to produce excess macrovascular and microvascular morbidity and mortality.¹⁰ As smoking habits were recorded in only 37% of patients, physicians need to be reminded about its importance in the care of diabetics.

Examination of the feet and the use of a tuning fork or pinprick sensation to assess sensory function were rarely carried out (Table II). Inspection of feet of patients with diabetes is vital in detecting ulcers characteristic of diabetes foot disease.¹¹ The high prevalence of hypertension¹² and poor metabolic control¹³ amongst our patients may particularly predispose them to the development of foot lesions and ulcers.¹⁴ Several studies have found that the age adjusted rate of lower extremity amputation in diabetic populations is 15 times that of non-diabetic populations,^{4,11} and others have demonstrated that risk of amputation in diabetic patients increases considerably with age reaching a value of 95% in those who are over 45 years old.¹¹ Because of the large proportion of this high risk group in our study (>75% of total) we need to educate all health personnel including doctors to carry this out at periodic intervals. However, the possibility that feet were inspected but not recorded in the case notes can not be ruled out.

Whilst acknowledging the limitations of this retrospective study the results suggest that certain areas need attention to improve the standards of diabetic care delivered to our patients. As a result of this audit we have organised diabetes education workshops for both patients and health personnel, developed clinic guidelines and emphasised the importance of foot examination and good record keeping. A further audit to evaluate the implementation of these recommendations is planned.

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