

## Patterns of chronic complications of diabetic patients in Menelik II Hospital, Ethiopia

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**Abstract:** A total of 283 diabetic patients (112 type -1 and the rest Type -2) were followed between September 1996 and July 1997 at the diabetic follow-up clinic of Menelik II Hospital in Addis Ababa, Ethiopia. The subjects were studied for evidence of chronic complications of diabetes mellitus. One hundred and six patients (37.45%) were found to have chronic complications (33% of Type -1 and 16.9% of Type -2) with diabetic nephropathy showing significant difference between Type -1 and Type -2 patients ( $P < 0.002$ ). Retinopathy and peripheral neuropathy were seen in 31.4% and 35.2% of the subjects, respectively. Fifty nine of 106 diabetics with chronic complications were diabetics for more than 10 years. Macrovascular complications occurred in 3.4% of patients of which 1.7% had cerebrovascular accident. Over seventy five percent of patients with chronic complication had poor control of fasting blood sugar (FBS). Improvement of standard of care of diabetic patients is mandatory to have good control of blood sugar to reduce the development of chronic complications of diabetes mellitus. [*Ethiop. J. Health Dev.* 2000;14(1):113-116]

### Introduction

The chronic complications of diabetes can be divided into three main categories: (a) microvascular disease which is specific for diabetes that involves small blood vessels and is clinically manifested by eye and kidney diseases; (b) macrovascular diseases which involves the large blood vessels and is clinically manifested by coronary, cerebral, and peripheral vascular diseases, and this is similar to that observed in non-diabetics but with a greater tendency to affect the extremities, especially the legs and feet; (c) neuropathy which can affect motor, sensory, cranial, and autonomic nerves. The diabetic is also particularly susceptible to develop ulcers as well as certain skin lesions, especially of the legs, known as necrobiosis lipoidica diabeticorum and diabetic dermopathy (1).

The purpose of this study was to demonstrate the patterns of chronic complications of diabetes mellitus on patients who have follow-up in our diabetic clinic.

### Methods

Adult diabetics of both sexes attending the diabetic referral clinic of the Menelik II Hospital in Addis Ababa were selected and examined for evidence of chronic complications. The records of each patient were studied and prospective records updated at each clinic visit. The study was conducted between September 1996 and July 1997. One hundred and twelve Type -1 and 171 Type -2 patients were included in the study of which 146 were males and 137 were females.

Nephropathy was diagnosed when there was persistent proteinuria in the absence of urinary tract infection and other known renal diseases. Retinopathy was diagnosed by examining optic fundi through dilated pupils. Peripheral neuropathy was considered present by doing vibration test with tuning fork of 128 Hertz and when reduced vibration, deep tendon reflexes, pain, and touch sensation tests by excluding history of exposure to potentially neurotoxic agents. The reduction or absence of pulse volume was checked in both dorsalis pedis and posterior tibialis arteries by palpation for those with gangrene and ulceration of the foot. Diabetic dermopathy was inspected in the lower extremities. All patients had FBS

and urinalysis done at each clinic visit. The degree of control of the diabetes was assessed by FBS determination because haemoglobin A1C, (HBA1C) could not be done due to lack of facilities. For those with diabetic nephropathy and who showed macrovascular disease, renal function tests and total cholesterol was done, respectively.

### Results

Of the 283 diabetics, 39.6% of Type -1 and 13.4% of Type -2 cases presented with poor control with oral hypoglycemic agents and

were transferred to lente insulin during the study period. 23.3% of patients had nephropathy (Table 1). The mean (-/+ 1 SD) duration of development of nephropathy was 14.06(-/+7.98) years. Six patients (9% of those with nephropathy) had derranged renal function test with serum creatinine level of greater than or equal to 2.4 mg/dl. Fifty two patients had hypertension (B/P) >140/90 mm Hg (2). As shown in Table 2, 28.5% of type -2 and 35.7% of Type -1 patients had retinopathy, 9 patients (3.2%) had proliferative changes.

Table 1: Prevalence of chronic complications of diabetes in Nigerian and Ethiopian patients,

Types of chronic disease/compliations	Present study 283	Mengistu, M. (4)* 306	A:Adetyibi, A. (3)* 52	Osuntokun (9) 832
Nephropathy	23.3%	23.1%	25.8%	19%
Retinopathy	31.4%	31.2%	13.8%	4.6%
Cataract	9.2%	10.8%	25.8%	8.7%
Peripheral neuropathy	35.2%	52%	69.6%	48%
Impotence	21.9%	55%	10.8%	-
Gangrene and ulceration of foot	1.7%	-	3.8%	3%

\*

Peripheral neuropathy was encountered in 35.2% of patients. Thirty two male patients (21.9%) were found to have impotence; three patients were seen at initial visit to the clinic with thrombotic stroke and three patients

developed gangrene and ulceration of foot which resulted in below-knee amputation. The total cholesterol level done for these patients ranged between 230 mg/dl and 250 mg/dl

Table 2: Patterns of complications in relation to sex and type of diabetes,

Types of chronic complications	Types of Diabetes					
	Male	Type -1 Female	Total (%)	Male	Type -2 Female	Total (%)
Nephropathy	23	14	37(33)	17	12	29(16.9)
Retinopathy	23	17	40(35.7)	31	18	49(28.5)
peripheral neuropathy	18	7	25(22.3)	44	31	75(43.9)
Gangrene and ulceration of foot	-	-	-	1	2	3(1.7)
Cerebrovascular accident	-	-	-	1	2	3(1.7)

### Discussion

This study highlights the magnitude of chronic complications among diabetic patients

at Menelik II Hospital. Diabetic nephropathy was found in 23.3% of the subjects. In Adetyimbi's 1976 (3) and Mengistu's 1987 (4)

studies, the report was 25.8% and 23.1% subjects, respectively, with 95% confidence interval CL (-0.083 to 0.033)  $P=0.2005$  and 95% CI (-0.05 to 0.055)  $P=0.468$ , which is not statistically significant to the present finding whereas higher than other reports in the country (5, 6). Type -1 patients were found to have more diabetic nephropathy than Type -2 patients in 33% and 16.9%, respectively, showing significant difference ( $P<0.002$ ). Fifteen of the 66 nephropathy patients had hypertension which is 22.7%. Most patients with nephropathy were diabetic for more than 10 years.

Though the overall prevalence of retinopathy was 31.4%, only 3.2% of patients had proliferative retinal changes which is similar to 2.6% and 2.8% reported by Awan AM, Mongla Em and Steel J (7) and Mengistu (4). Seventy five patients (43.9%) of type -2 had peripheral neuropathy, whereas the overall prevalence in both types of diabetes was 32.2%, similar to the DRW and Haddock report of 31% (8) and is less than other reports from elsewhere in Africa (3,9) and from this country (10). The latter, however, used nerve conduction tests in-addition to the parameters used to assess peripheral neuropathy.

Macrovascular complications of diabetes mellitus were found in type -2 patients with three patients (1.7%) with cerebro-vascular accident and three patients (1.7%) with gangrene and ulceration of the foot, mainly of vascular occlusion proved by the absence of palpable arterial pulsation though they also had evidence of neuropathic feet. Diabetic ischemic vascular change is uncommon in Africans (8).

Seventy five percent of 106 diabetics with chronic complication had poor control of FBS ( $>200$  mg/dl), whereas the rest had fair control with FBS of 150 to 200 mg/dl. The most successful strategy of preventing complications of diabetes is intensive treatment of hyperglycemia. The Diabetes Control and Complications Trial (DCCT) demonstrated the value of this approach. Most of our patients are illiterate and economically poor to adhere

to DCCT recommendations because it suggests self-monitoring of blood glucose at least four times per day (11, 12). Thus, it is recommended to increase the frequency of follow up visit in diabetic follow-up clinics to improve the standard of care of patients and to have good control of blood sugar to reduce the development of chronic complications.

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