

# Pattern of diabetic mortality in a tertiary health facility in south-eastern Nigeria

B U Aguocha, J O Ukpabi, U U Onyeonoro, P Njoku, and A U Ukegbu

### Abstract

Despite an increasing burden of diabetes in Nigeria, access to early diagnosis and quality care has remained a challenge over the years. This study is aimed at highlighting the prevalence and pattern of diabetics in a tertiary healthcare facility in south-east Nigeria. This is a descriptive study of pattern of deaths among diabetics admitted to the Federal Medical Center, Umuahia, between January 2000 and August 2004. Out of 1124 diabetes patients seen in the period, 155 patients died and their data were collated and analysed. The mean age of the patients that died was  $55 \pm 16$  years ( $\pm 1$  SD) and more than half (53%) were males. The majority of them were married (85.0%) and were predominantly traders and farmers. Most were type 2 diabetic patients with a mean age of onset and duration of illness of  $50 \pm 15$  years and  $6 \pm 5$  years respectively. Hyperglycaemic emergencies, diabetic foot syndrome, and hypertension were the leading causes of death. The study emphasises the need to improve access to early diagnosis and treatment of diabetes in developing countries through health education and increased availability of diabetic services.

### Introduction

Recent evidence suggests increasing incidence and prevalence of non communicable diseases (NCDs) including diabetes mellitus worldwide. In most developing countries, including Nigeria, the prevalence of NCDs has almost exceeded the prevalence of communicable diseases.<sup>1,2</sup> Studies indicate that an aging population, coupled with rapid urbanisation, is expected to lead to an increasing prevalence of diabetes in Africa.<sup>3</sup> Diabetes now constitutes the highest morbidity and mortality of all chronic NCDs in Africa.<sup>4</sup> In Nigeria, it accounts for between 3.5% and 15% of medical admissions in most health facilities in the country. The implication of this trend in developing countries is ominous because of

the poor state of health services and associated high prevalence of communicable diseases. These bring the 'double burden' of disease, as emphasised by the World Health Organization (WHO), to the fore.<sup>2,5</sup>

Despite an increasing prevalence of diabetes in most developing countries, including Nigeria, emphasis has remained on the control of communicable diseases. Most developing countries lack data on the burden of the disease; also effective interventions to reduce diabetes-related morbidity and deaths are not comprehensive.<sup>1,4</sup> In Nigeria, few studies in recent times have highlighted the contribution of diabetes to the burden of disease in the country, hence diabetes has not attracted the required attention needed to mobilise resources for its control. Also, there is scarcity of health resources and access to healthcare services.<sup>6</sup> Routine screening for diabetes using urine/blood glucose is rarely done in most healthcare facilities in the country, because most do not have basic and appropriate technology for the screening, diagnosis, and monitoring of diabetes. Consequently, most people with diabetes present late and often with complications.

This situation is further aggravated by a preference for traditional healers in the search for the elusive cure, and its chronic nature also makes people think that the treatment of the disease lies outside orthodox medicine. Hence, diagnosis in most cases is an incidental finding during a hospital visit. Many individuals with the disease do not have access to a regular supply of quality anti-diabetic medications. Hence, the pattern of diabetes-related morbidity and mortality observed in the country still suggest low access to quality diabetic care services.<sup>1,2,6</sup>

This study highlights the prevalence and pattern of diabetic mortality in a tertiary health facility in south eastern Nigeria. The findings of the study will hopefully help initiate measures to increase early case detection and improve management of diabetes in our country.

### Patients and methods

The study was carried out in the Federal Medical Center, Umuahia in south-east Nigeria, between January 2000 and August 2004. The facility serves as a referral centre for primary and secondary health facilities in the region. It was a retrospective study involving the review of records of all diabetic patients who died within the period in the Accident and Emergency, Medical, and Orthopaedic Departments of the hospital. Within the period, a total of 1124 diabetic patients were seen and their files retrieved

*Dr B U Aguocha, Department of Orthopaedics;  
Dr J O Ukpabi, Department of Medicine;  
Dr U U Onyeonoro, Department of Community Medicine;  
and Dr P Njoku, Department of Family Medicine; all at  
the Federal Medical Center, Umuahia, Nigeria.  
Correspondence to: Dr Ugochukwu U Onyeonoro,  
Department of Community Medicine, Federal Medical  
Center, Umuahia, Nigeria.  
Email: hugouche@yahoo.com*

and relevant data collated. Data were collected on their socio-demographic characteristics, admittance diagnosis, onset of illness, admission glucose level, past medical history, and associated risk factors (family history, history of alcohol ingestion, smoking, and ingestion of herbal medication). Diabetes was diagnosed either by a history of previously known diabetes or a fasting plasma glucose of 7.0 mmol/l.<sup>7</sup> Data collated were entered into an Excel proforma, and the data analysed using SPSS version 17.

## Results

A total of 155 diabetic deaths (14%) were reported within the period and comprise 83 males (53%) and 72 females (47%). The mean age at death was 55±16 years, ranging between 16 and 86 years. Most were married (85%), and the remainder were either single (8%) or widowed (7%). They were predominantly traders (16%), farmers (16%), civil servants (14%), retirees (14%), and students (4%).

Most of the deaths were among patients with type 2 diabetics (89%). The mean age of onset of diabetes was 50±15 years. Five (4%) developed diabetes as teenagers, out of which two of them had type 1 diabetes while three had type 2 diabetes. Mean duration of diabetes prior to death was 5±5 years. Fifty-five patients (39%) were diagnosed within 1 year before death, and the same proportion had the illness for more than 5 years.

Table 1 shows that the mean duration of admission prior to death was 16±15 days and about 55% of them died within 14 days of hospital admission. Most common reasons for admission were hyperglycaemic emergencies

(57%), diabetic foot syndrome (22%), and hypertension (16%). Forty-three (78.2%) out of 55 of those diagnosed within 1 year died of hyperglycaemic emergencies resulting from poorly controlled glucose levels.

Half of the patients (49.7%) had previous hospital admission, and 16 (10.3%) had a history of ingestion of local herbs. Prevalence of associated risk factors among the patients were as follows; positive family history 30 (19.4%); alcohol ingestion 16 (10.3%); and only one of them smoked cigarettes.

## Discussion

The study showed that the prevalence of diabetic deaths within the period was 14% and the slight majority of those that died were males (53%). A greater preponderance of male diabetic patients was reported in Port Harcourt, Ilorin, and Ado-Ekiti.<sup>2,6,8</sup> Most of these deaths occurred at about the same peak of occurrence of diabetes, which is the productive age of life. Although most deaths occurred in patients greater than 60 years of age, one-third of the deaths occurred in those less than 40 and some were aged less than 30 years. Most were farmers and traders, reflecting the predominant economic activity in the state.<sup>9</sup> Consequently, failure to prevent and control diabetes negatively impacts on the economic well being and productivity of both individuals and communities.

Most of the patients had type 2 diabetes and the mean age of onset was 50±15 years. However, some of the patients developed diabetes while still adolescent. Type 1 diabetes is known to be one of the most common life-threatening illnesses in adolescence globally. However, the increasing prevalence of type 2 diabetes in the young now poses a challenge to physicians, who will have to distinguish the two so as to administer appropriate treatment for each patient. The rise in the prevalence of type 2 diabetes in adolescence is largely attributable to increasing prevalence of obesity, consequent upon increasing adoption of Westernised lifestyles.<sup>10,11</sup> Earlier reports have highlighted the need for interventions targeted at younger people with diabetes because they are less likely to receive the desired attention and hence are more likely to develop complications earlier and die from the illness. Interventions to reduce the burden of diabetes should target this group, including strategies for early detection and treatment. Such measures will help reduce the development of diabetic complications, improve quality of life, and ensure normal growth and development.<sup>1,10</sup>

Duration of diabetic illness prior to death was relatively low. Most (63%) died within 5 years of onset of illness and within 2 weeks of hospital admission. A study in a tertiary facility in mid-western Nigeria reported a mean interval between admission and death of 7±7 days.<sup>12</sup> It is evident that most of these patients were either not diagnosed early or had poor diabetic control. Late presentation is a common feature among diabetic patients in our environment, as observed in this study. Thus, early detection and appropriate treatment are crucial to the prevention of

A. Duration of admission (prior to death)	
Mean duration	16±15 days (±SD)
1–7 days	36 (23%)
8–14 days	50 (32%)
15–21 days	40 (26%)
22–28 days	12 (8%)
>29 days	17 (11%)
B. Reason for admission	
Hyperglycaemic emergencies (HHS and DKA)	88 (57%)
Diabetic foot syndrome	34 (22%)
Hypertension	25 (14%)
Cardiovascular disease	13 (8%)
Hypoclycaemia	11 (7%)
Neuropathy	8 (5%)
Fever	5 (3%)
Heart failure	5 (3%)
Nephropathy	4 (3%)
Others	11 (7%)
Notes: DKA = diabetic ketoacidosis. HHS = hyperglycaemic hyperosmolar states. Some patients had more than one reason for admission.	

Table 1 Admission and mortality details (n=155)

the early development of complications and deaths due to diabetes.<sup>13</sup>

Indications for admission showed that hyperglycaemic emergencies accounted for about half (52%), followed by diabetic foot syndrome (22%), hypertension (17%), cardiovascular disease (CVD) (8%), and hypoglycaemia (7%). A similar pattern was also reported in Port Harcourt and Ilorin, where hyperglycaemic emergencies, diabetic foot syndrome, renal failure, hypoglycaemia and CVD were the most common reasons for admission.<sup>2,6</sup> In south-western Nigeria, diabetic patients were more likely to be admitted for chronic complications, i.e. diabetic foot syndrome and hypertension rather than for acute complications.<sup>8</sup> On the other hand, this is at variance to what has been reported in most developed countries where they only account for 3 to 6% of causes of deaths in diabetic patients. Most common causes of diabetic deaths in our environment are acute, but preventable, hence a reflection of the poor attention patients receive both at the household/community levels and at institutional levels.<sup>6</sup>

Reasons for poor treatment outcomes among diabetic patients include poor health literacy, non-compliance to medication, low access to quality healthcare services, lack of access to diabetes information and services, weak referral systems, absence of routine screening for diabetes, poverty, and belief in alternative remedies.<sup>1-2,14-16</sup> Also, most lower levels of healthcare lack the capacity for the management of diabetes.

The study underlies the need to improve the quality access to diabetes services in low-income countries through increased awareness of the disease, increased access to screening services through the provision of affordable and appropriate technology, building the capacity of care providers in the lower levels of healthcare to provide quality diabetic services, and empowering diabetic patients with relevant health information to improve self-care. Improving access to diabetic care will require active participation of the patients/households, communities, media, non-government organisations, government, and health workers to overcome difficulties encountered by patients.

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