INDICATIONS FOR AND OUTCOME OF DIABETIC ADMISSIONS AT THE UNIVERSITY OF UYO TEACHING HOSPITAL, UYO.

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ABSTRACT:

BACKGROUND AND OBJECTIVES: *The morbidity and mortality pattern in persons with Diabetes mellitus(DM) is not well documented in Uyo. This study therefore set out to determine the morbidity and mortality pattern amongst patients with Diabetes Mellitus at the University of Uyo Teaching Hospital Uyo, Nigeria over four consecutive years (June 2004 to June 2008).*

Methods:

This study was a retrospective study. Data were obtained from the records in the medical wards registers. The records included admission and discharge records as well as outcome of the individual cases. Data extracted included age, sex, indication for admission and outcome.

Results:

A total of 407 patients with diabetes mellitus (DM) were admitted during the period under review. Uncontrolled DM was the commonest indication for admission accounting for 253(62.2%) of the total admissions. Hyperglycaemic emergencies (diabetic ketoacidosis and hyperglyceamic hyperosmolar state) accounted for 76(18.7%) of the total admissions.
The overall mortality rate in the diabetic patients was 33(8.1%). Hyperglycaemic hyperosmolar state(HHS) was the commonest cause of death accounting for 8(24.2%) of the total deaths recorded. The fatality rate for HHS was 8(30.3%) and for Diabetic ketoacidosis was 5(10.2%,).

Conclusion:

D*iabetes mellitus is an important cause of morbidity and mortality in Uyo. Adequate diabetic education needs to be given to diabetic patients to enable them cope with their illness to prevent the poor outcome associated with the disease.*

Keywords: *Diabetic admissions, outcome, Uyo*

INTRODUCTION

Diabetes mellitus is an important cause of morbidity and premature mortality in persons with the disease and accounts for at least 10% of total health care expenditure in most countries[1]. People with diabetes are at increased risk of death from causes specific to diabetes like diabetic ketoacidosis; from cardiovascular disease like ischaemic heart disease and from such other causes as infectious diseases[2,3]. The World Health Organization estimates that diabetes was responsible for 1.7% of the total world mortality in the year 2002[4]. Its morbidity and mortality profile are associated with its role in the development of renal, cardiovascular, neuropathic and eye complications. The leading causes of death in diabetics in the developing world include infections and acute metabolic complications, in contrast to coronary artery disease and cerebrovascular disease in the developed world.[5,6]

This study therefore analysed the outcome of diabetic admissions at the University of Uyo Teaching hospital between June 2004 and June 2008.

MATERIALS AND METHODS:

This was a retrospective study carried out in the University of Uyo Teaching Hospital, Uyo. Uyo is the capital of Akwa Ibom State in the oil rich Niger Delta region of Nigeria, the hospital is a tertiary centre and caters for patients from Akwa Ibom, Abia, Cross Rivers

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TABLE 1: INDICATIONS FOR ADMISSION FOR DIABETIC PATIENTS

INDICATION	No	%
HHS	27	6.0
DKA	49	12
Uncontrolled DM	253	62
Cerebrovascular Disease	11	2.7
Uncontrolled hypertension	15	3.6
Hypoglycaemia	13	3.1
DM Nephropathy	11	2.7
DM Foot Syndrome	17	4.1
Infections	11	2.7
TOTAL	**407**	**100%**

❖ **HHS** - Hyperglycaemic hyperosmolar state
❖ **DKA** - Diabetic keto Acidosis
❖ **CVD** - Cerebrovascular disease
❖ **INFECTIONS** - Septicamia,pneumonia,retroviral disease, etc.

and other neighbouring states. Medical records of patients admitted on account of diabetes were analysed. Data were obtained from the records register in the medical wards which included admission and discharge records. The diagnosis of each patient was

standard deviation was used to summarize qualitative variables while quantitative variables were summarized using percentages. Data analysis was done using statistical package for social sciences (SPSS) version 13. Results are presented in tabular

TABLE 2: MORTALITY PATTERN OF DIABETIC PATIENTS

Cause of Death	No	%
HHS	8	24.2%
DKA	5	15.1%
Uncontrolled DM	4	12.1%
CVD	2	6.0%
Uncontrolled hypertension	3	9%
Hypoglycaemia	3	9%
DM Nephropathy	2	6.0%
DM Foot Syndrome	3	9.0%
Infections	3	9.0%
TOTAL	**33**	**100%**

❖ **HHS** - Hyperglycaemic hyperosmolar state
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made by a consultant physician after reviewing the patient admitted into the ward by the resident doctors.

Data collected included age, sex, indication for admission and outcome. The study was approved by the Ethical Committee of the University of Uyo Teaching Hospital. Descriptive statistics such as means and

forms.

RESULTS

A total of 407 diabetic patients were admitted during the period under review comprising 219 males and 188 females, giving a male to female ratio(M:F) of 1.17:1. The gender difference in admissions (219 males vs 188

females) is statistically significant (p<0.05). The age range of the subjects was between 18 and 91years with a mean age of 43.5±13 years. The majority were aged between 30-50 years 193(47.3%). Patients aged < 30 years accounted for 76(18.6%), patients aged 51 – 60years 73(17.9%) and > 61 years 65(15.9%). By implication, patients aged between 30 and 60years, the most productive age bracket accounted for 65.2% of cases. This is depicted in figure 1 in the form of a bar chart.

Uncontrolled Diabetes mellitus accounted for 253(62.2%) of the admissions, and occured in 55.7% of males and 69% of females, while

The indication for admission, mortality pattern and outcome of the diabetic admissions are both shown in Tables 1, 2 and 3 respectively.

DISCUSSION

Diabetes mellitus (DM) is a leading cause of morbidity and mortality worldwide and with its increasing incidence and prevalence, these are bound to also be on the increase. It is the leading cause of end stage renal disease, blindness and non-traumtic lower extremely amputation[7-9,]

The main causes of morbidity and mortality in

TABLE 3:   OUTCOME OF DIABETIC ADMISSIONS

EVENT	NUMBER	%
Death	33	8.1%
Discharged	364	89.4%
DAMA	10	2.4%
Total	**407**	**100%**

❖   DAMA – Discharge against medical advice.

hyperglycaemic emergencies (diabetic ketoacidosis and hyperglycaemic hyperosmolar state) accounted for 76(18.7%) of the total admissions (20.2% in females and 17.3% in males).The total number of deaths in this period was 33 (21 males and 12 females) giving a mortality rate of 8.1% overall (9.5% for males and 6.3% for females).The gender difference in diabetic deaths (21 males vs 12 females) is statistically significant (p<0.05).

The commonest cause of death was hyperglycaemic hyperosmolar (HHS) accounting for 8(24.2%) of all deaths. It was also the commonest cause of death amongst the male gender 6(28.5%) while diabetic ketoacidosis (DKA) was the most common cause in females 4 (33.3%).

The fatality rate for DKA in the study was 5(10.2%) (16.6% for females; and 4% for males p>0.05), while the mortality for HHS was 8(30.3%) (15.3% for females and 45.4% for males, p<0.05). The mortality associated with DM foot ulcer was 3(17.6%).

Out of the 407 patients admitted 33(8.1%) died, 364(89.4%) were discharged and 10(2.4%) took their discharge against medical advice.

Nigerian diabetics include acute metabolic complications, cardiovascular diseases, cerebrovascular diseases and nephropathy[10,11].

In this study, significantly more males than females were admitted; the reason(s) for this may not be apparent but could be related to the fact that the true incidence and prevalence of the disease in males are higher than in the females. It could also be related to the fact that the males are more economically empowered than females and therefore more likely to seek medical attention than their female counterparts. This is similar to findings in other studies in which male preponderance among admissions for other non communicable diseases was also observed[12,13]. Other reasons adduced for this include the low priority accorded to girls and women well being during their life span in African societies, low level of education and literacy, limited access to and control over resources which limit their ability to access health care services[14,15]. On the other hand, as this study addresses the matter of admissions and by extension disease severity, it may imply that more males present late with their disease while the female may actually be the ones

FIGURE 1: AGE DISTRIBUTION OF PATIENTS WITH DIABETES MELLITUS
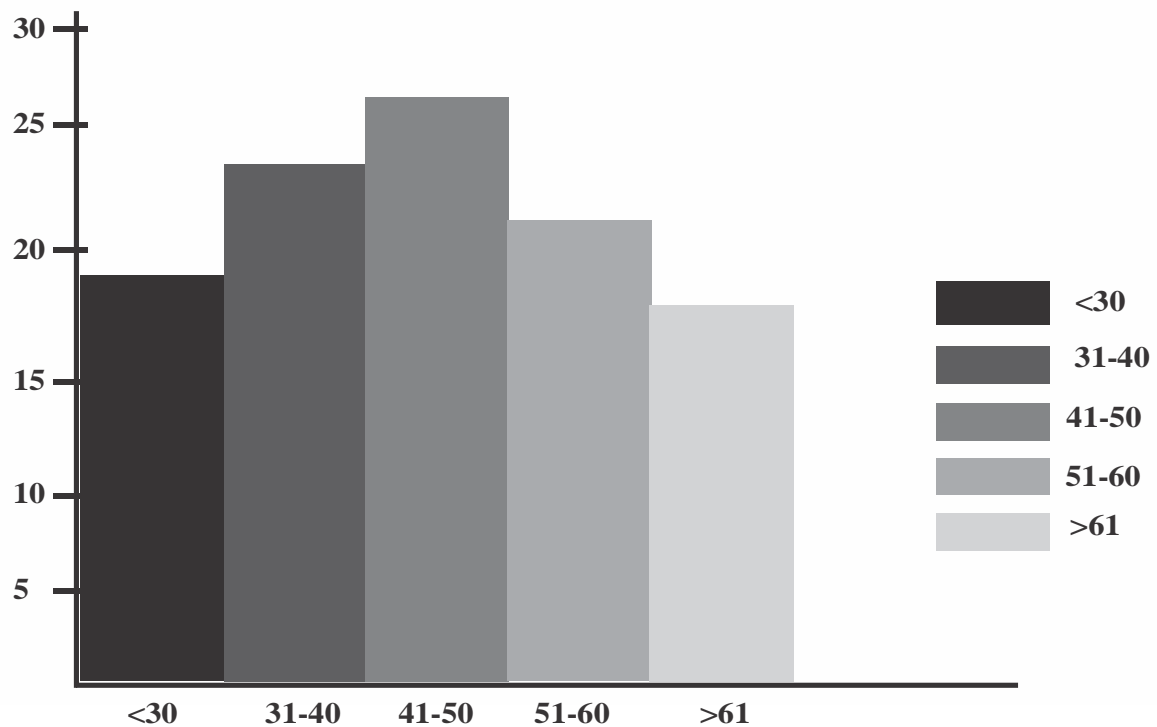
more compliant with routine management. Uncontrolled diabetes mellitus accounted for majority of the admissions. Many studies have highlighted poor glycaemic control amongst persons with DM[16,17]. Poor glycaemic control would therefore necessitate admitting these patients for effective control of their hyperglycaemia. This may arise from the fact that in our environment, most patients do not readily accept the fact that diabetes is a chronic illness and treatment lifelong. Poor drug compliance, lack of financial wherewithal, poor access to medical facilities may all contribute to this problem. Adequate health education is therefore an imperative to patients on the long term implication of hyperglycemia usually resulting from non compliance with medications.

Hyperglycaemic emergencies (diabetic ketoacidosis and hyperglycaemic hyperosmolar state) accounted for close to a quarter of the total admissions. This is also a reflection of poor-metabolic control, and consequently present as diabetic emergencies. This reinforces the need for adequate health education of these patients.

HHS is usually a complication of type 2 DM and has been shown to account for about 10% of all hyperglycaemic emergencies[18]. It usually carries a high mortality since most of the patients are elderly and often have concurrent co-morbidities. In our study Hyperglycaemic hyperosmolar state (HHS) was the commonest cause of death and accounted for 61.5% of hyperglycemic emergencies and with a case fatality of 24.2%. This high mortality is comparable to that in another study with a mortality of 30.3%[18]. In a similar study in South Africa, a much higher figure of 44% was reported[19]. Early recognition and prompt treatment at peripheral clinics before subsequent referral will reduce the high mortality seen. The observation of more male deaths than females in our study is similar to report from other centers. This may be related to the relatively higher number of male admissions and/or occurrence of more severe disease in the males than their females counterparts.

Similarly, Diabetic ketoacidosis (DKA) is also a common diabetic emergency and has been shown to carry with it, a relatively high mortality ranging from 25-33% in a series reported from East Africa[21]. The mortality rate

in our series is 10.2%, which is still slightly higher than the accepted mortality rate of 5 – 10%. Lack of access and high cost of insulin, delays in seeking medical attention, misdiagnosis and poor diabetic may all be contributory factors to this attendant high mortality.

In our study, as an aggregate hyperglycemic emergencies accounted for most of the deaths 39.3%, and followed by infections which accounted for 18% of deaths. This finding is similar to those reported from East Africa, where most deaths were due to infections and hyperglycaemic emergencies.[22,23]. The high mortality associated with Hyperglycaemic emergencies in our study is similar to other reports from Nigeria and other places in Africa. [24,25,26]. Although most of these deaths were probably potentially preventable, the reasons for their occurrence are likely multifactorial ranging from personal, traditional/cultural to that of our health facilities. Education of patients, demystifying myths about DM and provision of facilities for early diagnosis and monitoring of blood glucose and electrolytes at the emergency centres will result in a reduction in the attendant mortality due to hyperglycaemic emergencies.

Diabetes Mellitus foot syndrome is the leading cause of non-traumatic amputation and contributes significantly to diabetic morbidity and mortality[27]. Possible aetiology include peripheral neuropathy, vasculopathy, autonomic neuropathy and infections[28,29]. In this study 9% of the total death was associated with it. Most of these deaths can be prevented with good diabetic foot care services and education. Diabetes Mellitus is an established risk factor for CVD, and in conjunction with other risk factors like hypertension, dyslipidaemia, obesity and the fact that our patients are blacks significantly increase the risk of CVD. In this study CVD was responsible for 6% of the deaths. In addition to proper DM management interventional strategies must be put in place to address each of these risk factors in order to reduce the risk of CVD and the consequent mortality in these patients.

With the increasing incidence and prevalence of diabetes mellitus, and the fact that diabetes is an important cause of chronic kidney disease, the contribution of diabetic nephropathy cannot be under-estimated. It was responsible for 6% of the total deaths in this study. However, in a resource poor setting like ours, with apparent lack of facilities for renal replacement therapy, and its high cost if available, our strategy should be primary prevention with emphasis on adequate control of diabetes mellitus, hypertension and other risk factors for renal disease.

Hypoglycaemia was a cause of death in 3% of the cases. Hypoglycemia is a serious complication of treatment in patients with diabetes. This is usually due to sulphonylurea or insulin therapy. In a South African study the major cause precipitating hypoglycaemia included a missed meal, alcohol use, gastro intestinal upset and inappropriate treatment[30]. In a Nigerian study hypoglycaemia was responsible for 10.2% of the total deaths reported among diabetic patients[31]. Proper Diabetic education programme is likely to reduce the numbers of hypoglycemic episodes and its associated fatality.

In about 21.1% of cases the exact cause of deaths could not be ascertained and could probably be multifactorial.

The limitation of this study stems from the fact that data on the diagnoses were obtained from the wards registers. Some patients may have developed other complications which could have been responsible for their deaths but were not reflected in the ward register.

CONCLUSION:
Diabetes Mellitus is a major cause of morbidity and mortality and contributes significantly to the burden of disease in Nigeria. Uncontrolled DM is the commonest cause of morbidity, while hyperglycaemic emergencies and infections are the commonest causes of death in patients with diabetes in Uyo.

RECOMMENDATION
We recommend adequate health education of

diabetic patients to reduce the morbidity and mortality associated with this disease. Facilities for adequate management of diabetes and its complications should also be provided for improved outcome. Medications used for its treatment should be made more affordable and available.

There is also need to ensure that the care and treatment of diabetes is covered by the National Health Insurance Scheme.

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