

Original Research Article

Diabetes registry and service in Nigerian suburban-based tertiary healthcare facility

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ABSTRACT

Background: Diabetes register is a clinical tool necessary for patient management including follow-up and referral procedures. In the Bringing Research in Diabetes to Global Environments and Systems that is in progress in Delta State, Nigeria; part of focus is establishment of diabetes register at a tertiary health facility. This phase of the project aimed to establish a diabetes register and to assess the baseline data.

Methods: This was a clinical observational descriptive study at Eku Baptist Government Hospital. The diabetes register developed as in previous report was adopted as a scale-up study. After due clearance from the hospital, patients' hospital record files were screened for cases of diabetes and 70 files were identified. Data were analyzed descriptively using Microsoft Excel Data Analysis ToolPak 2010.

Results: There was a 2/1 female/male ratio, while 6% were below 40 years. 90% of patients had blood glucose levels results that indicated poor diabetes control. There is problem of incomplete data collection, for instance <25% BMI data was available. Capability and opportunity for standard service, e.g. diabetic foot examination, lipid profile, renal and retinal assessment was available at the tertiary health facility to allow management and referral from other hospitals.

Conclusions: This report highlights poor adherence to diabetes care practices by stakeholders. It underscores the need for motivation to improve the quality of clinical data collection *vis-à-vis* documentation that enables assessment of diabetes epidemiology, especially in a facility that has the capacity.

Keywords: Capacity of service, Data collection completeness, Diabetes register, Patient follow-up, Practice opportunity

INTRODUCTION

Diabetes register is a clinical tool, vital to follow the progression of diabetes at local, regional and national levels.¹⁻⁴ It provides a means for quality improvement in diabetes care; and it is also useful for research necessary for public health planning.^{5,6} An expository review of diabetes care in Delta state of Nigeria indicated lack of;

specialist endocrinologist in health facilities within the state; specialist diabetes educator in Ndokwa communities; records of diabetes patients that are referred or specialists' networks. The review also reported that medical officers and nurses had not attended diabetes related conference/workshop in recent years.⁷ This means the epidemiology of diabetes in the state is largely

unknown and there is no existing diabetes register for evaluation.

Given that Eku Baptist Government Hospital (EBGH) is one of the performance where the main diabetes research has been ongoing, it also means the capacity of the tertiary health facility needs to be articulated in terms of diabetes care services that are not available at primary healthcare centres and secondary level hospitals.⁸ This study aims to establish a diabetes register for effective diabetes care i.e. objective of the study is to progress the agenda for a diabetes register at EBGH, in Delta state Nigeria. Specifically, the study aims are to: (i) identify diabetes patients diagnosed in the hospital and enter their data into a register, (ii) assess the state of diabetes care records in terms of demographic data and (iii) assess the level of diabetes cardiovascular disease (CVD) risk and complications, as well as other co-morbidities.

METHODS

Study design

Following the diabetes register pilot study at the Catholic Hospital Abbi; this was a clinical observational study of diabetes care

Study setting

Diabetes care service at EBGH.

Study area

The study area was Eku, located in Ethiope-East Local Government Area of Delta State, with area of 380 Km² and a population of 200 792 at the 2006 census. This research was carried out in Eku Baptist Government Hospital Eku. Delta state has 25 Local Government Areas including Ethiope-East Local Government Area.

Data collection and analysis

This was done alongside other reported pieces of work.^{9,10} Files from the Medical Records from 2014 to 2018 were accessed and data collected was limited to patients diagnosed with type 2 diabetes in the hospital and who consented to attend the clinic on invitation and be entered in the diabetes register being developed. The statistical analysis for this piece was descriptive and frequency evaluations of the cases entered in the diabetes register.

RESULTS

Rate of diabetes related mortality and morbidity

During the period of study, 9 deaths were recorded among the diabetes patients, which included six females and three males. Among them, one had no indicated complication, while 8 (~89%) deaths can be associated with diabetes (Table 1). Age range of the patients that

died was from 40-80 years with an average of 60 years. Diabetes mortality by age group (Figure 1) showed that age group 50-59 years had the highest percentage (44%) of deaths.

Table 1: Diabetes complications among patients that died.

Complications	N
Hypertension	1
glycaemic coma	1
foot ulcer	2
nephropathy	0
uncontrolled DM	2
no indicated complication	1
hypertension & nephropathy	2
total cases	9

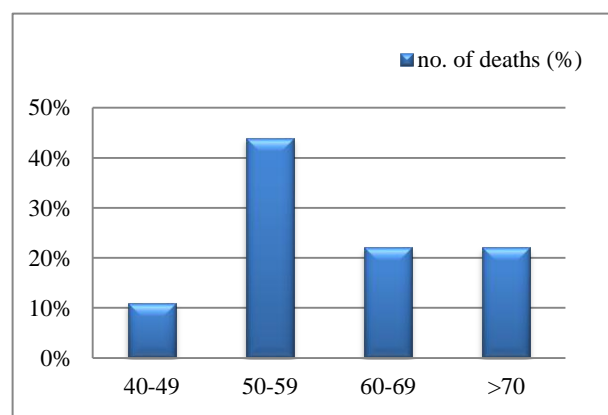


Figure 1: Diabetes mortality by age group.

Statistics of diabetes patients identified and entered into the registry

In the development of diabetes register at EBGH—as part of first objective, 70 cases were identified and registered from September 2018 to December 2018. The patients include 44 females and 23 males, with three patients not delineated into any gender class. The ages ranged from 28 to 85 years with average of 59 and 60 in the females and males, respectively (Table 2).

Table 2: Descriptive statistics of the cases entered into the register.

	Females	Males
Mean	59	60
Standard error	2	3
Median	59	63
Mode	45	42
Standard deviation	11.9	14.2
Minimum	34	28
Maximum	85	85
Count (N)	43	23

Among the 'n=70' identified cases entered in the register, the names seem complete and a review names of the cases of missing gender indicate they were, by the

traditional naming system, females and this makes up 67% of the diabetes registry (Figure 2).

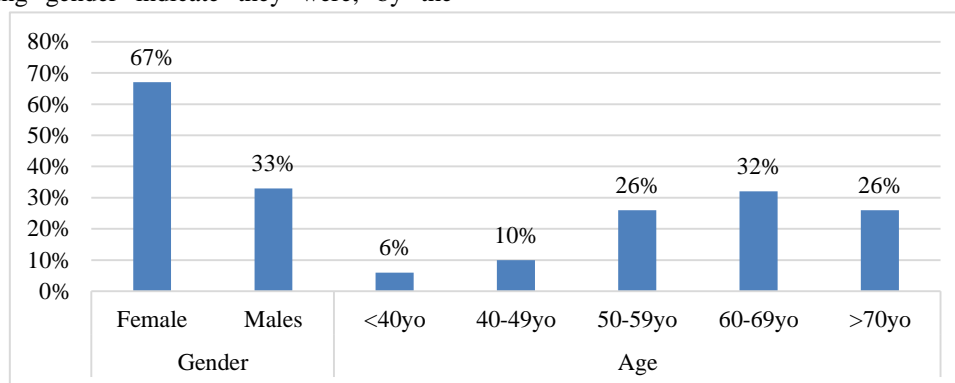


Figure 2: Distribution of the cases registered into age and gender groups.

Table 3: Proportions of patients' information available in developed register (n=70).

	SN	N	% absolute Hz	% relative Hz
Dates	Entry	64	91	7.702
	Follow up	0	0	0.000
Client	Name	70	100	8.424
	Medical record ID	60	86	7.220
	Address	64	91	7.702
	Phone #	55	79	6.619
Next-of-Kin	Name	42	60	5.054
	Phone #	11	16	1.324
	Relationship	42	60	5.054
Demographics	DOB	66	94	7.942
	Sex	67	96	8.063
	Marital status	0	0	0.000
	Occupation	41	59	4.934
	Religion	33	47	3.971
Medical history[†]	Height	16	23	1.925
	Weight	16	23	1.925
	BMI	16	23	1.925
	Other illness	27	39	3.249
Blood sugar management[‡]	FBS	34	49	4.091
	RBS	29	41	3.490
	HbA1c	1	1	0.120
CVD risk	Blood pressure	61	87	7.341
	Lipid profile	0	0	0.000
Complications monitoring	Renal function	3	4	0.361
	Retinal exam	2	3	0.241
	Foot exam	11	16	1.324

Data missing on all patients' records: [†]Medical history: alcohol, smoking, medications and type of diabetes; [‡]Blood sugar management: data of diagnosis, carer, and private GP clinic.

Extent that available data can be used for patient follow up and intervention

All other necessary data were incomplete at varying degrees of frequencies. For instance, more than 90% of the entries had home address, data-of-birth and gender information; whereas only about two-third had data on

next-of-kin, and less than a quarter had the indices to determine body mass index (Table 3). Further, information on cigarette smoking as a key lifestyle determinant was missing on all cases. Other necessary information missing on all case included the type of diabetes, date diagnosis and lipid profiles. A graphical summary of frequencies of missing demographic and medical history data is presented (Figure 3).

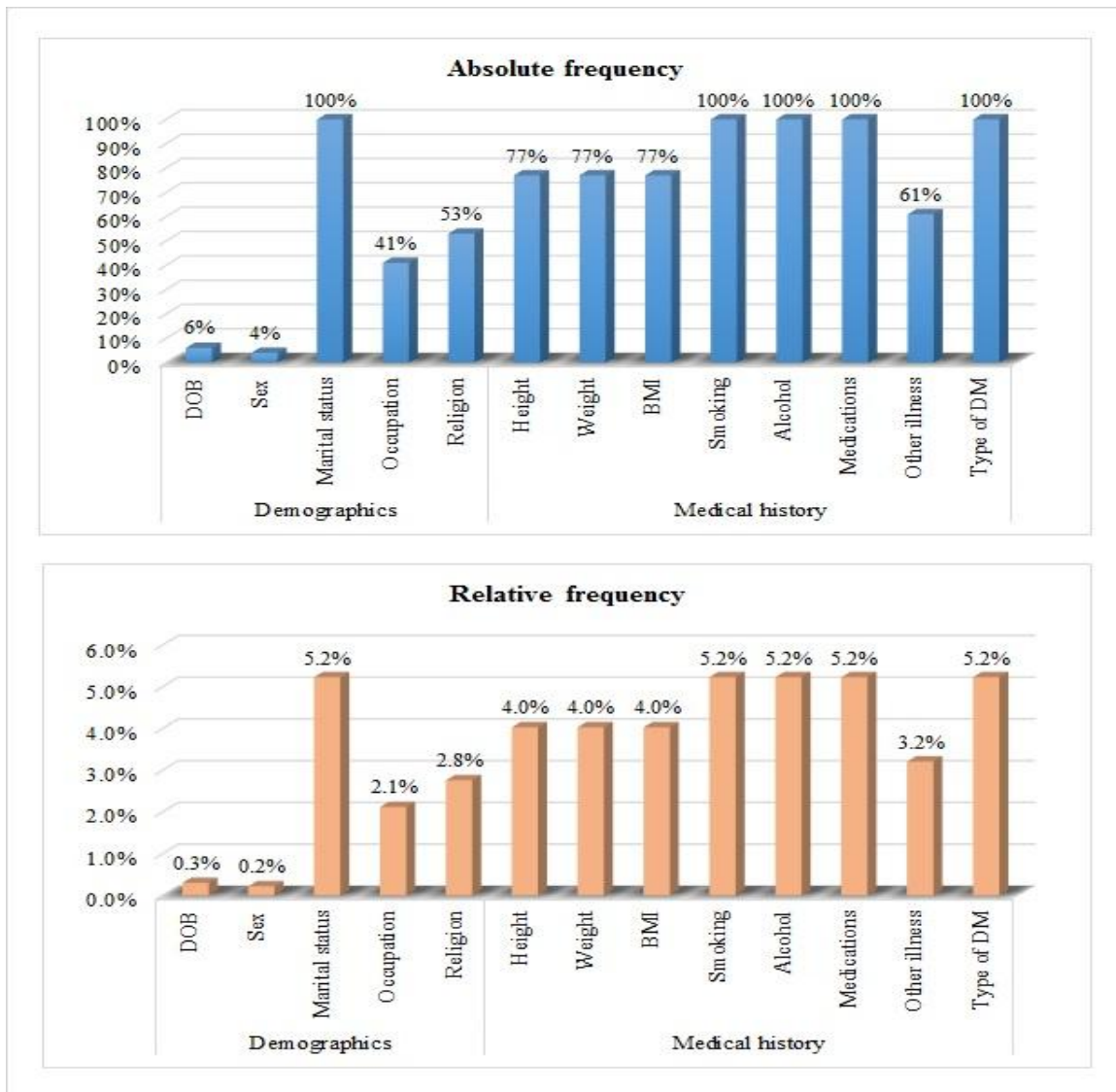


Figure 3: Absolute and relative frequencies of missing data.

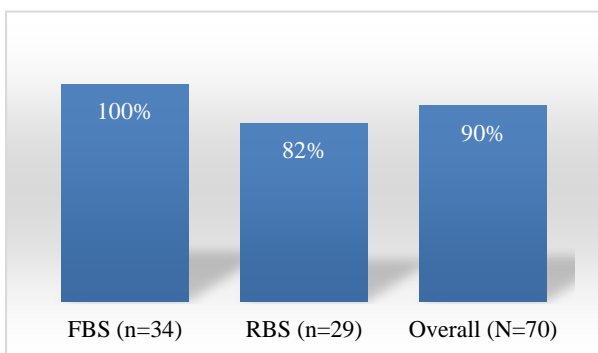


Figure 4: Proportions of abnormal blood glucose records.

Level of diabetes CVD risk and complications, and other non-CVD co-morbidity

First, audit shows that all of fasting blood glucose and 82% of random glucose tests results were high (Figure 4).

Among the 16 cases with available BMI measurement, only 1 (6.25%) was obese. The one case review was not associated with any co-morbidity or abnormal blood glucose result. Blood pressure evaluation shows 28/70 (40%) of the patients were within target range of <140/90 mmHg for both systolic and diastolic measurements (Figure 5).

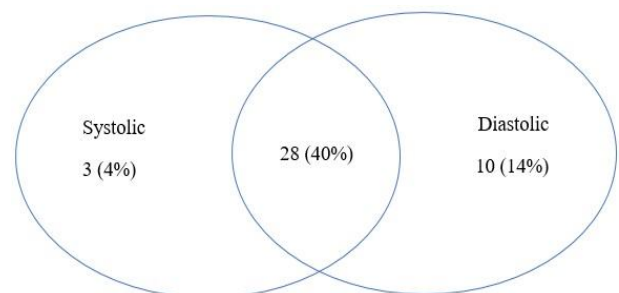


Figure 5: Proportion of patients within blood pressure target range of <140/90 mmHg.

Further, looking at 'other illnesses' i.e., co-morbidities indicated; 27/70 (39%) of the patients were observed (Table 4). Among the 27 cases with co-morbidity, 12 had their last blood glucose readings greater than 11.1 mmol/l (200 mg/dl).

Table 4: Other illnesses among patients.

Co-morbidities	N	Comment
Foot ulcer	11	
Hypertension	10	Includes 'n=5' with addition disease*
Nephropathy	3	all with hypertension
Eye problem	2	Include 'n=1' with hypertension
Uncontrolled	3	Excluding others observed from clinical audit
Ketoacidosis	1	
Malaria	1	

*CVD 1, eye 1, & nephropathies 3.

DISCUSSION

This piece of the study series aimed at three specific objectives. Firstly, to identify diabetes patients diagnosed in the hospital and enter their data into a register. Secondly, to assess the state of diabetes care records in terms of demographic data. Thirdly, to assess the level of diabetes CVD risk and complications, as well as other co-morbidities.

On the first objective

The results indicated that 70 cases were entered into the register being developed. Upon review of the registered cases, it appears the proportion of females (67%) living with diabetes mellitus is double that of males (33%). This observation is in tandem with the preceding piece of the series based on secondary health facility in the State; supported by reports of other cross-sectional studies.^{11,12} A probably more pertinent observation is that there are individuals below the age of 40 years old who are living with diabetes. This is a significant finding, because diabetes screening is recommended mainly for adults who are 40 to 70 years.¹³ The implication is that adoption of such recommendation will miss up to 6% of cases and it also means that individuals below the age of 40 years may not be encouraged to have routine screening. In the low-mid income countries where free screening is neither universal nor affordable; a further implication is that there may be many individuals in this age bracket living with undiagnosed diabetes.¹⁴

On the second objective

The findings from the study showed that other necessary demographic data and information were incomplete at varying degrees of frequencies. Such necessary but incomplete data include; type of diabetes, lipid profiles

and gender information. It is known that incompleteness of necessary patients' information in medical records is common in LMIC health facilities, and this negatively impacts on the quality of healthcare services.¹⁵ This report is the first of its kind on diabetes management at EBGH.

On the third study objective

Results show that approximately 39% of patients were observed to have co-morbidities including hypertension, which poses a risk of CVD complications. Prevalence of hypertension in diabetes patients was reported to be about 54% at the tertiary health facilities in Nigerian State bordering Delta where this study has been conducted.¹⁶

This report contributes additional epidemiological data, especially from one of the two tertiary health facilities in Delta State, Nigeria. The other contribution is the level of incompleteness of data collection by clinicians, which is necessary for patient follow-up.

CONCLUSION

The aim of the study is to develop a diabetes register which will improve the state of diabetes care and help delay or prevent diabetes complications, morbidity and mortality and monitor diseases progression. The results show a substantial good number of cases incompleteness of data at various degrees of frequencies. The study also observed a broader scope i.e. more capacity of diabetes services such as specialist eye care. The need for healthcare professionals' continuous education to improve diabetes care service is imperative.

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