

A Review of Diabetic Admissions in a Tertiary Hospital in Sierra Leone

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Abstract

Background: The burden of diabetes mellitus is on the rise posing significant threats on health systems, health expenditures and the livelihood of affected patients. In Sierra Leone, there has been no data on diabetic admissions. This study intends to close this gap in knowledge and give preliminary data on the profile of patients admitted with diabetes mellitus.

Methods: This is a retrospective review of 250 case notes of patients admitted into medical wards or intensive care unit with diabetes mellitus over a 6-month period.

Results: We estimated an admission burden of 20.1% during the study period; patients were mainly females (62.4%) with type 2 diabetes mellitus. The commonest reasons for admissions were sepsis (60.8%) and hyperglycaemia or poor glycaemic control (17.6%). The commonest comorbidities were systemic hypertension (39.2%) and heart failure (32.8%); 17.2% of admissions were due to acute complications of diabetes mellitus.

Conclusion: There is a significant admission burden of diabetes mellitus, mainly in females with type 2 diabetes mellitus. The main reasons for admission were sepsis and poor glycaemic control.

Introduction

Diabetes mellitus poses a significant burden on health services worldwide [1]. It is a major public health threat with negative outcomes for individuals, communities, and health systems [2]. Diabetes mellitus accounts for an increase in all-cause mortality by 2-3 fold [3]. This may be related to increased mortality from infections, cardiovascular disease, stroke, chronic kidney disease, chronic liver disease, and cancer [4,5]. Over approximately 27 years, the global burden of disease estimated a 102.9% increase in incidence, 129.7% increase in prevalence, 125.5% increase in deaths and a 116.7% increase in disability-adjusted life years attributable to diabetes mellitus [6]. The number of patients with

diabetes mellitus is estimated to increase to 693 million by 2045 [7]. In sub-Saharan Africa, an estimated 19.8 million adults are living with diabetes mellitus, with Nigeria having 3.9 million cases [8]. In Sierra Leone, the prevalence of diabetes mellitus was estimated at 2.4% in an urban population and 0% in a rural population [9]. The authors attributed this to the adverse effects of a western diet and lifestyle.

This article aims to describe the profile of patients admitted with diabetes mellitus into the medical wards of Connaught Hospital in terms of key reasons for admission, underlying comorbidities and pattern of complications. Due to the lack of published data on

DM admissions in our environment, this study will close this gap in knowledge, identify predictors of admissions as well as estimate the burden of hospital admissions. The findings from this study may sensitize the appropriate authorities to intervene and remind the diabetics on the need to participate in an integrated community directed efforts to practice the culture of early reporting in order to avert the impacts of complications to the barest minimum.

Methods

Study Setting

This study was conducted at Connaught Hospital, University of Sierra Leone Teaching Hospitals Complex, located in Freetown, (Sierra Leone). It is a tertiary hospital and also serves as the main referral hospital for medical and surgical cases in the country with a bed capacity of 312.

Study Design, Study Population and Sample Size

This is a retrospective review of case notes of patients admitted into medical wards or intensive care unit with diabetes mellitus over a 6-month period (March – August 2021) who met the inclusion or exclusion criteria. A total of 250 patients were admitted with diabetes mellitus during the study period.

Inclusion and Exclusion Criteria

All patients admitted with diabetes mellitus during the study period. Patients admitted for other illnesses other than diabetes mellitus.

Data Collection

This was done using a well-structured cross-sectional study proforma. Details obtained from the proforma included demographic data, history of DM, reasons for admission, blood

pressure at admission, random blood glucose at admission, presence of co-morbidity, Complications(acute and chronic) at presentation. Patients were included as diabetics if they are already on an antidiabetic drug or previously diagnosed with diabetes mellitus or admitted with a random blood glucose ≥ 11.1 mmol/l (with associated symptoms).

Data Presentation

The collected data was entered into Microsoft excel software and analyzed using Statistical Package for Social Sciences (SPSS) software version 26 and results were presented in the form of tables and figures. Quantitative variables were summarized using mean and standard deviation.

Results

A total of 250 patients were admitted with diabetes mellitus at the medical wards of Connaught Hospital during the study period. The total number of medical admissions during this period was 1209 patients. This gives an admission burden of 20.1%. The study suggests that 90.4% of the participants presented with type 2 diabetes mellitus. 32.8% of the patients were either obese or overweight. The majority of admissions with Diabetes mellitus (82.8%) were due to non- diabetes related causes; 17.2% of admissions were related to acute or chronic complications of Diabetes mellitus. The acute complications were represented as follows: hyperglycaemic hyperosmolar state (50%); diabetic ketoacidosis (31.8%); lactic acidosis (4.6%) and hypoglycaemia (13.6%). The occurrence of chronic complications of diabetes mellitus were distributed as follows: stroke (28.1%); diabetic eye disease (23.1%); diabetic nephropathy (20.2%);diabetic foot, ischaemic heart disease and diabetic neuropathy were each represented as 9.5% (Tables 1 & 2) (Figure 1).

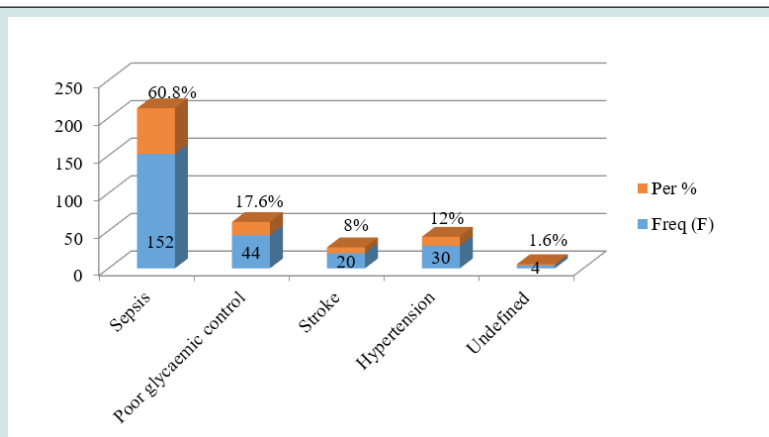


Figure 1: Shows the key reasons for Admission of patients with DM at Connaught Hospital.

Table 1: Age and sex characteristics of patients admitted with Diabetes Mellitus.

		Percent (%)
SEX		
Male	94	37.6
Female	156	62.4
AGE(Years)		
21-30	24	9.6
31-40	40	16
41-50	46	18.4
51-60	52	20.8
61-70	56	22.4
71-80	25	10
81-90	6	2.4
91-100	1	0.4

Table 2: shows the co-morbidities of patients with DM.

Admission Co - Mobility	Freq (F)	Per %
Congestive Heart Failure	82	32.8
Ischemic Heart Diseases	2	0.8
Hypertension	98	39.2
Stroke	30	12
Cancer	15	6
Psychosis	16	6.4
Malnutrition	7	2.8

Discussion

The summary of findings from this study revealed a 20.1% admission burden attributable to diabetes mellitus. Majority of these patients were middle-aged females and were empirically classified as type 2 diabetes mellitus. A significant proportion of these patients were overweight or obese. The key reasons for admissions were sepsis and poor glycaemic control. The commonest comorbidity in patients with diabetes mellitus is systemic hypertension. The admission burden accounted for by diabetes mellitus in this study is significant. This might suggest a rising occult prevalence of the disease which might be due to overt change in our diet and lifestyle over the last 2-3 decades [10]. If unchecked, this rise will lead to untold morbidity and mortality of our population as health facilities may be easily overwhelmed. The female preponderance in this study may be explained by factors such as sedentary lifestyle and obesity which are common in this gender as they approach middle-age. Another study also documented similar findings of 27.8% admission burden of diabetes mellitus, mainly females with type 2 diabetes [11]. In another study, the burden of admission was stated as 40.6% [12]. Studies done in our sub region revealed approximately 10% admission burden attributable to diabetes

mellitus [13,14].

Many of our patients were empirically classified as type 2 diabetes mellitus based on clinical features such as age, body mass index and response to oral antidiabetics. Objectively, these patients should have their C-peptide levels checked or be screened for antibodies against insulin or islet cells. Unfortunately, these facilities are not readily available in the country. Despite this limitations, studies done elsewhere also demonstrated a type 2 diabetes predominance of >90% among admitted patients [15,16]. The commonest reasons for admission of patients with diabetes mellitus were sepsis and poor glycaemic control. The rising burden of antimicrobial resistance in our setting further compounds the treatment of infections in diabetics and such infections are usually severe. The lack of enhanced microbiological laboratory facilities in the country also aggravates the problem. Many of our patients are not compliant with their prescribed medications, making glycaemic control a serious problem in our environment. Issues relating to affordability and alternative medicine may be contributory. Diabetes mellitus potentiates the occurrence of cardiovascular events and infections, and this has been attributed to poorly controlled hyperglycaemia, increased prevalence of

cardiovascular risk factors, decreased immunity and chronic complications of diabetes mellitus [17,18]. The reasons stated for admission of diabetics included acute coronary syndrome, heart failure, pneumonia, chronic obstructive pulmonary disease and stroke [12]. In another study, hyperglycaemic emergencies were the commonest reason for admission [13]. The most common comorbidity is systemic hypertension. Both conditions are related to damage to the vascular endothelium. A study done in Canada also supported this fact [19].

Studies have shown that the burden of hospital admissions attributable to diabetes mellitus can be reduced by early diagnosis, public education, yearly screening for complications and vaccination against common infections [20-23]. The need for public sensitization, prevention programmes and achieving glycaemic treatment targets were also emphasized in another study done in Sierra Leone [10].

Recommendation -In addition to the above, there is need for enhanced manpower development, availability of facilities needed to manage diabetes mellitus and its complications and availability of specialized drugs needed to treat diabetes mellitus.

Limitations of the Study

The study was a single center study and findings may not reflect that from other hospitals. Due to the retrospective nature of the study, some data may be missing. The study was done in the medical wards without data from surgical wards. The lack of facilities to test for antibodies to islet cells or insulin or testing for C peptide makes it difficult to precisely classify patients as type 1 or type 2 diabetes mellitus or other forms of diabetes mellitus.

Conclusion

There is a significant admission burden of diabetes mellitus, mainly in females with type 2 diabetes mellitus. The main reasons for admission were sepsis and poor glycaemic control. There is a need to enhance public education, screening and prevention programs and manpower development in the management of diabetes mellitus.

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