Characterization Of Newly Registered Patients With Diabetes Mellitus In An Out Patient Facility In Nigeria

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ABSTRACT:

Background:

Diabetes mellitus (DM) is a non-communicable disorder that is of public health significance. The burden associated with this all-important disease is unacceptably high. This is more so in developing countries where there is limited health resources. There is a dearth of unpublished data on DM from Nigeria thus this report attempts to bridge this gap.

Methods:

This study was carried out at the Medical out patient department of the Lagos State University Teaching hospital for a 21- month period (April 2004-December 2005).

The subjects recruited for the study were those that were referred to the diabetes out patient of the hospital. These referrals include those with longstanding and recently diagnosed diabetes mellitus. The demographic data, anthropometric indices, biochemical parameters, complications, co-morbidities and other associated clinical features of DM were documented.

Results:

A total of 419 referrals with diabetes mellitus were seen at the Medical out patient of the Lagos State University Teaching hospital during the period of the study. The Male:Female ratio was 1:1.2. The mean age of the study subjects was 54.3±12years and their ages ranged from 17-89 years. Patients with Type 1 DM made up 36 (8.6%) of the study subjects . Chronic complications of DM were with varying rates of occurrence.Hypertension was seen in a third of all the subjects. Eye complications and erectile dysfunction were the commonest chronic DM complications noted. Few of the patients were on herbal medications for the treatment of their DM.

Conclusions;

Proper auditing of DM cases is necessary for data generation purposes as this will make policy makers and care givers involved in DM care to be sensitized on the peculiarities of DM .

Key words: Diabetes mellitus, referrals, demographic data, hypertension

Background:

Diabetes mellitus (DM) is one of the most common non-communicable diseases. DM is assuming epidemic proportions globally and it has a substantial burden to the individual and the society.

The World Health Organization (WHO) using epidemiological information estimated the global burden of DM in 1995 to be 135 million and the projection is that this number will reach the 300 million mark by the year 2025[1]. Diabetes mellitus is a metabolic disorder that is seen in 2.2% of Nigerians[2]. In Africa, DM is one of the prominent causes of mortality of all non-infective, chronic diseases[3].

Over the last two or three decades, there has been an increasing awareness of the magnitude of the problems presented by diabetic complications and the major complications are cardiovascular disease, nephropathy, neuropathy, retinopathy and amputations[4].

There is a paucity of data on the characterization of diabetes in sub-Saharan Africa. In Nigeria there have been scanty reports on diabetes mellitus[5-8]. For optimal management of diabetes, there must be in place an effective documentation and monitoring system amongst other things. As such this study attempts to document the clinical and other associated features of patients with diabetes mellitus newly referred/ registered in a diabetes out-patient facility in urban Nigeria.

Subjects and Methods :

This study was carried out at the Medical out patient department of the Lagos State University Teaching hospital for a 21 months period (April 2004-December 2005).

The subjects recruited for the study were those that were referred to the diabetes out patient of the hospital. These referrals include those with longstanding and recently diagnosed diabetes mellitus. The demographic data, anthropometric indices, biochemical parameters, complications, co-morbidities and other associated clinical features of DM were documented.

The patients were classified into Types 1 and 2 DM based on the following criteria.

1.   Classification of glycaemic control: Glycaemic control was classified as good if the mean FBG levels over a period of three months was ≤120mg% and poor if ≥121mg% [9].

2.   Duration of DM was classified into short term (≤1year), medium term (>1year-10years) and long term >10years.

3.   Obesity is said to be present if the Body Mass Index is>25kg/m -2 10.

4.   Type 1 DM refers to people in whom the diagnoses of DM was made before   the age of 30 years and are on insulin for control of Dm11.

5.   Insulin requiring Type 2 DM: This refers to people in whom the diagnosis of DM was made after the age of 30 years and were initially on diet or diet/oral   hypoglycaemic agents but later placed on insulin therapy for long term   glycaemic control.

The test statistics used included unpaired Student's t test, Chi squared test and correlation. The student's t test was used to test for differences between quantitative variables. The Chi squared test was used to test for associations and comparison of proportions. The level of statistical significance was set at $p \leq 0.05$.

Results:

A total of 419 subjects with diabetes mellitus were newly referred and registered at the Medical out patient of the Lagos State University Teaching hospital within the period of the study.

Demographic data:

There were 188 males and 231 females accounting for 44.8% and 55.2% respectively of the study subjects. The mean age of the study subjects was 54.3±12years and their ages ranged from 17-89 years.

The mean age of the males- 55.2±13years- was higher than that of the females-53.8±11.9- but this difference was not statistically significant (p =0.2).

There were 36 (8.6%) of subjects with Type 1 DM. Females made up 16(44.4%) of these subjects while males made up 46%.

Of the 383 subjects with Type 2 DM, 215(56.1%) were females and 168(43.9%) were males.

The mean age of the subjects with Type 1 DM was 38.7±13.9years and that of the subjects with Type 2 DM was 55.6±11.6.

140(33.9%) of the study subjects had some form of basic education .

A first degree family history of diabetes mellitus was noted in 123 (29.3%) of the study subjects. Of these 11 (8.9%) were people with Type 1 and 112 (91.1%) had Type 2 DM. Thus 30% of all subjects with Type 1 DM had a first degree family history of DM while this was noted in 29% of subjects with Type 2 DM.

Anthropometric and glycaemic indices

The mean values of the anthropometric indices of all the subjects are as shown in Table 1. There was a high positive correlation between the weight and body mass indices of all the subjects (r=0.8).

The mean weight and BMI of the females and males were 70.3±15.5kg,30.7±5.8 kg/m 2 and 60.9±14.2kg, 26.3±5.3 kg/m 2respectively. This difference was not statistically significant (p=0.2)

The mean waist circumference of the females-93.1±20.2 cm- was higher than that of the males90.5±25.7 cm and this difference at a p value of 0.4 was not statistically significant.

Though the mean weight and Body Mass Index (BMI) of the subjects with Type 2 DM were higher than in those with Type 1 DM, these differences were not statistically significant. The p values for the weight and BMI were 0.51 and 0.4 respectively. There was however a documented statistically significant difference between the mean waist circumference of subjects with Type 2 and Type 1 DM, (p=0.04)

141 (37%) of the subjects short term DM duration, 212 (51%) had medium duration and 106 (22%) had long duration of diabetes mellitus. The mean duration of DM was higher in subjects with type 1 DM than those with Type 2 DM and this difference was statistically significant (p=0.03).

The mean Fasting Plasma glucose (FPG) of all the study subjects was in the poor glycaemic range and there was a low correlation (r=-0.02) between duration of DM and glycaemic control in the study subjects. These results are shown in Table 1.

Table 1 : Anthropometric and glycaemic indices in the study subjects

*Waist circumference, §Duration of diabetes mellitus, ‡Fasting plasma glucose

Co-Morbidities/Complications of DM

Systemic arterial hypertension was present in 165(39.4%) of all the study subjects of which 73(44.2%) were males and 92(55.8%) were females.

65(39.3%) of the patients with hypertension had the diagnosis made before that of DM, 45(27.3%) had the diagnosis made as at the time DM was diagnosed while 55 (33.4%) were only diagnosed after the diagnosis of DM was made.

22 (30.1%) of the males developed systemic arterial hypertension before the diagnosis of DM was made in them, 21(28.8%) as at diagnosis of DM and 30(41.4%) after the diagnosis of DM.

43 (46.7%) of the females developed systemic arterial hypertension before the diagnosis of DM was made in them, 26(28.3%) as at diagnosis of DM and 24 (25%) after the diagnosis of DM.

The presence of hypertension was noted in 7(19.4%) of all the subjects with Type 1 DM. The mean age of these patients was 41.8±11.8years. 158(41.3%) of all the subjects with Type 2 DM had hypertension and their mean age was 55.8±12.3years. Thus Type 2DM accounted for a large majority (95.8%) of all the subjects with hypertension. A comparison of the anthropometric indices and DM characteristics of subjects with and without hypertension are shown in Table 2.

Table 2: Comparison of anthropometric indices and DM characteristics DM subjects with and those without hypertension

*Waist circumference, §Duration of diabetes mellitus

Erectile dysfunction was present in 73 (38.3%) of all the males had erectile dysfunction. A large percentage of these subjects (60%) with erectile dysfunction had not discussed this problem with their care givers and only 8 (11%) were on phosphodiesterase 5 inhibitors.

The commonest reason for referral from other departments of the hospital was eye complications of DM which often led to the screening and detection of DM. 35 (11%) were referred on account of eye complications from the ophthalmologic clinic and the diagnosis of DM was made in them at presentation to the DM clinic. The eye complications necessitating referral were as follows:

Glaucoma-4 (11.5%)

Retinopathy 12(34%)

Cataract-15 (43%)

Blindness- 4(11.5%)

Other complications and co-morbidities associated with the study subjects are shown in Table 3

Table 3: Complications/Co-morbidities in newly referred/registered subjects with DM

*diabetes mellitus foot syndrome, ‡tropical diabetic hand syndrome, §cerebrovascular accident

Treatment

168(40%) of all the subjects had foot care education.

61(36 females and 25 males) of all the subjects used insulin for long term glycaemic control

Of the insulin requiring subjects, 36 (59%) had Type 1 DM and 25 (41%) had Type 2 DM.

Insulin usage for long term glycaemic control was used by 11(6.5%) of all the subjects with Type 2 DM ,

4 (1%) of the subjects with Type 2 DM were on a combination of oral hypoglycaemic agents and insulin and these were all females. 5 (1.4%) were solely on dietary control only for their glycaemia and 6 (1.6%) were on herbal medications and usage of a traditional waist bands for glucose control.The large majority -

343 (96%) of the subjects with Type 2 DM were on varying combination of Oral hypoglycaemic agents viz, sulfonyl ureas, thiazolidinediones and Biguanides.

Discussion

This report has shown as is generally known that Type 2 DM is the prevalent form of diabetes12 as this was seen in 91% of the study subjects with the onset occurring in the 5th and 6th decade and present more in females. Both forms of DM are associated with generalized obesity though centripetal obesity was noted more in subjects with Type 2DM. Only about a third of patients with DM in Nigeria have some form of basic education. This supports a recent report on diabetes carried out in one of the Teaching hospitals in South West Nigeria13. Glycaemic control was generally poor and the same picture obtained both in patients with Type 1 and those with Type 2DM. Glycaemic control was however poorly correlated with duration of diabetes. The reasons for these may be due to poor motivation, inadequate finance. Health insurance facilities are lacking in Nigeria thereby necessesitaing "out of pocket" payment for much needed medical attention.

The proportion of our patients with Type 1 DM and those with Type 2 DM that had a first degree family history of diabetes mellitus was about equal. This unusual finding may have been due to lack of optimal criteria for characterization of DM. (Proper laboratory techniques for diagnosis of Type 1 DM are lacking in Nigeria hence clinical criteria were used for diagnosis of Type 1 DM).

A third of the cases of DM recently diagnosed most of which were detected during routine screening there is an .on-going government initiated routine screening programme for DM and Eye complications of DM in Lagos-was about 37%. The major part of the burden of people with diabetes is their reduced quantity and quality of life and this is due to the acute and chronic complications of DM14-15. Long term complications of diabetes mellitus are known to set in sometimes at presentation and in this report eye complications were the reasons for 35 (11%) of the referrals and these subjects were not previously known to have diabetes mellitus. The commonest eye complications necessitating referral were the presence of retinopathy and cataract which were often the initial findings preceding the diagnosis of DM.

One complication that was consistently sought out for in the males was erectile dysfunction but unfortunately over half of the subjects with ED had not sought for medical management of their condition and the reasons given for this ranged from shyness, ignorance and an erroneous belief that there is no treatment for it.

Arterial hypertension is a common cardiovascular disease in Africans and carries high mortality and morbidity rates. All the subjects that had cerebrovascular disease had hypertension also.

There is a notable consistency in reported hypertension rates in Nigerians with diabetes mellitus13,16 Some Nigerian studies on the subject of DM and hypertension have reported prevalence rates ranging from 29%-40%. This study has reported a prevalence rate of hypertension of 39.4% of the subjects with DM and this was documented more in females than in males. Age and weight were significantly associated with the development of hypertension and about 60% of the subjects developed hyperetension at or after the diagnosis of diabetes mellitus was made. In this report as opposed to that by Oli et al16, the duration of DM was not associated with the development of DM.

The large majority of the subjects (96%) with Type 2 DM were on oral hypoglycaemic agents for long term glycaemic control. However 6.5% of the subjects with Type 2 DM used insulin and this goes to emphasize the fact that people with Type 2 DM may resort to use of insulin with progressive waning of beta cell function17. The use of herbs and 'waist bands" for management of glucose shows that there are still some deeply entrenched erroneous traditional views regarding the management of DM. This group of patients all had long complications of DM as not surprising, their glycaemic control was poor.

Conclusions; The diagnosis and management of diabetes mellitus in Nigeria is still sub-optimal. More in-depth studies on screening, characterization and detection of diabetes mellitus in the general populace are needed. The need for patient education and proper funding of the health sector towards the making and implementation of patient oriented policies cannot be overemphasized.

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