

# Blindness In Patients With Diabetes Mellitus Attending A Diabetes Clinic At The University Of Maiduguri Teaching Hospital, Maiduguri

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## Abstract

Background: Sight threatening diabetes retinopathy and consequent visual impairment are prevalent and are therefore an important public health problem. Aims: The aim of the study was to document blindness and visual impairment among diabetes mellitus (DM) patients attending the diabetes specialist clinic of University of Maiduguri Teaching Hospital (UMTH). Methods: A Cross sectional observational study of DM patients referred from diabetes specialist clinic to eye clinic of UMTH between January and December 2007, for evaluation. They all underwent ophthalmic evaluation including dilated funduscopy and tonometry. Results: A total of 96 DM patients were evaluated during the study period. There were 49 (51.0%) males and 47 (49.0%) females (MF: 1:1). The mean age There were 11 (11.5%) type 1 and 85 (88%) type 2 DM patients. Blindness was seen in 4 (4.2%) of all the diabetes patients seen while visual impairment was seen in 12 (12.5%). All the bilaterally blind patients had diabetes for 10 years or more. Diabetes retinopathy was the commonest cause of bilateral blindness. Other causes of blindness and visual impairment were macular oedema, cataract and refractive error. Conclusion s: Blindness among diabetes is common. Diabetes retinopathy is a major cause of blindness and visual impairment. It is recommended that laser photocoagulation facility be provided for the major ophthalmic centres.

## INTRODUCTION

Diabetes mellitus is a major cause of visual loss in most of the world<sup>1</sup>. Forty-five million people worldwide fulfil the World Health Organization's criterion for blindness<sup>2</sup>. More than 90% of all blind and visually disabled people live in the developing countries where common causes of bilateral vision loss include cataract, glaucoma, vitamin A deficiency, trachoma, and onchocerciasis. Additional causes of bilateral vision loss, which together comprises nearly one quarter of all blindness, and which affect people of both developed and developing nations, include diabetes and macular degeneration<sup>2</sup>. In the United States, vision loss from diabetes has been the leading cause of blindness in the adult<sup>1</sup>. Ten percent (10%) or more of individuals with diabetes mellitus develop visual impairment within 15 years of diagnosis<sup>3</sup>. In the United States in 1980, about 8% of the individuals who were legally blind were blind from diabetes, while in the population aged 65 years and older, this percentage doubles<sup>4</sup>. In the United Kingdom diabetes mellitus is the commonest cause of visual loss in adult of working age<sup>5,6</sup>. Fifty percent

(50%) of severe visual impairment is preventable when proliferative retinopathy and centrally localized macular oedema is considered<sup>7,8</sup>. Easy observation of the fundus oculi makes retinopathy the most frequently reported chronic complication of diabetes. However, there is no data on the blindness and diabetes in this environment. It is for this reason that the data on diabetes and blindness in Maiduguri is presented.

## PATIENTS AND METHODS

This was a cross sectional observational study of DM patients seen at the eye clinic between January and December 2007. All patients were referred from the diabetes specialist clinic of the UMTH for ophthalmic evaluation. Relevant data were collected including patient's age, type of DM, mode of treatment, presence of hypertension, smoking history and the duration of DM since diagnosis were extracted from the patients' folder and entered into a pre-prepared protocol.

All patients had full ocular examinations including testing

and recording of visual acuity. Those whose visual acuity was 6/9 or worst had non cycloplegic refraction done on them. The lids, conjunctiva, cornea, anterior chamber, iris/pupil and the lens were evaluated with pen torch and slit lamp biomicroscope. The fundus was examined using direct (keeler) ophthalmoscope. Where indicated, medriacyl 1% was used to dilate the pupil. Intra ocular pressure was measured with applanation tonometer. The data was analysed using SPSS for windows version 13 (SPSS 111, Chicago, USA).

## RESULTS

A total of 96 DM patients were evaluated during the study period. There were 49(51.0%) males and 47(49.0%) females (MF: 1:1). There were 11(11.5%) type 1 and 85(88%) type 2 DM patients. The mean age was 44.8 years. The most frequent age group was 41-50 (32%) of the patients (Table 1). Sixty six (68.8%) of the patients had DM for 5 years or less, while 17 (17.7%) for 10 years or more (Table 2). Twenty five (26.0%) of the patients had concurrent hypertension however none of the patients with concurrent hypertension had retinopathy. Of the 96 diabetes patients evaluated, 80(83.3%) had normal (6/6-6/18) visual acuity while 12(12.5%), and 4(4.2%) had visual impairment (6/24-3/60) and blindness (<3/60) respectively (Table 3). Of the 4 bilaterally blind 2 had proliferative diabetes retinopathy, 1 had vitreous haemorrhage and 1 had complicated cataract. All the bilaterally blind patients had diabetes for 10 years or more. Ten (10) patients had some degree of lenticular opacity while significant macular oedema was seen in 2 patients. Three (3) of the 4 bilaterally blind were type 1 diabetes patients. There were 36(37.5%) patients with refractive errors.

**Figure 1**

Table 1. Frequency distribution of patients by age group

Age in years	Number of patients (%)
0—10	0(0%)
11—20	01(1.0%)
21—30	07(6.7%)
31—40	23(22.1%)
41—50	32(30.7%)
51—60	27(25.9%)
61—70	04(3.8%)
> 70	01(1.0%)
Total	96 (100%)

**Figure 2**

Table 2. Distribution of patients by duration of diabetes since diagnosis

Duration of diabetes in years	Number of patients
1	29(27.8)
2	16(15.4%)
3	6(5.8%)
4	8(7.7%)
5	7(6.7%)
6	4(3.8%)
7	2(1.9%)
8	7(6.7%)
9	0(0.0%)
10	4(3.8%)
11	2(1.9%)
12	2(1.9%)
13	1(1.0%)
14	1(1.0%)
15	3(2.9%)
>=16	4(3.8%)
Total	96(100%)

**Figure 3**

Table 3 Distribution of patients by visual acuity

Visual acuity	Number of patients
Normal VA (6/6-6/18)	80(83.3%)
Impaired VA 6/24-3/60)	12(12.5%)
Blind (<3/60)	4(4.2%)

## DISCUSSION

Achieving near normal levels of blood glucose provides empirical though powerful tools for clinicians to delay the onset and progression of diabetes retinopathy. Photocoagulation has provided a remarkably effective means of stopping progression of diabetes retinopathy. Nonetheless retinopathy remains a leading cause of blindness among the diabetes and there is little evidence that diabetes related visual loss is decreasing. Figures for the incidence of diabetes blindness in a diabetes population are difficult to obtain<sup>6,9</sup>. In 1990, the St Vincent declaration recognised

diabetes and diabetes retinopathy to be a major and growing European health problem, at all ages and in all countries<sup>10</sup>.

Nwosu<sup>11</sup> in a study on low vision in Nigerians with diabetes mellitus reported 18% of his series had bilateral blindness, and monocular blindness was seen in 26%. No reason was given for this relatively high prevalence of blindness. Age of the patients, duration of the diabetes and other co-existing ocular pathology might have contributed to the high prevalence. In this study bilateral blindness was seen in 4.2% of the patients, while 12.5% had bilateral visual impairment. This compares very well with Magulike<sup>12</sup>.

The causes of low vision and blindness in diabetes patient include diabetes retinopathy<sup>11, 12, 13</sup>, significant macular oedema<sup>8, 14</sup>, cataract<sup>11, 12, 14</sup>, refractive errors<sup>14</sup> and glaucoma<sup>11, 14</sup>. In this study the causes of blindness and visual impairment include diabetes retinopathy, vitreous haemorrhage, cataract and refractive errors.

All the bilaterally blind patients in this study had diabetes for 10 years or more. Age<sup>15, 16</sup> and long duration<sup>15</sup> of diabetes has been widely reported as risk factor for developing diabetes retinopathy and its subsequent visual complications. Other risk factors for developing diabetes retinopathy reported include hyperglycaemic control<sup>15, 17</sup>, hypertension<sup>18</sup>, pregnancy, and anaemia<sup>18</sup>.

## CONCLUSIONS

Blindness among diabetes is common. Diabetes retinopathy is a major cause of blindness and visual impairment. It is recommended that a laser photocoagulation facility be provided for the major ophthalmic centres.

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