Compliance with diabetic retinopathy screening in a Nigerian tertiary hospital

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Abstract

There is little information on default rates and reasons for retinal screening in diabetes. We prospectively studied 179 type 2 diabetic patients referred for screening at a tertiary Nigerian medical centre. Defaulting occurred in 100 patients, i.e. over half (56%). Defaulting was associated with not having had a previous eye examination (p=0.027) and either a short (<1 year) or medium (6–10 year) duration of diabetes (p=0.001). Location of residence, level of education, diabetes treatment, age and gender did not correlate with screening compliance. We recommend that screening be carried out as soon as possible after diagnosis, which may improve future compliance.

Introduction

There is a global increase in the prevalence of diabetes, and the global burden of 171 million patients in the year 2000 is projected to reach 366 million in the next three decades, with developing countries being the most affected.[1] The prevalence of diabetes in Nigeria is reported to be 4.9%.[2] Diabetic retinopathy is a potentially blinding retinal vasculopathy and accounts for 0.02% of national blindness in Nigerian adults.[3] A retinopathy prevalence rate of 4.6% was reported in 1969 by Osuntokun, and it was then considered to be a rare problem in Nigerian diabetic patients.[4] However, retinopathy prevalence rates of between 15 and 42% have been reported in Nigeria in more recent times.[5–9] Laser photocoagulation and intravitreal pharmacotherapy, as well as vitrectomy, are useful modalities in the treatment of various stages of diabetic retinopathy, along with strict metabolic control.[10]

Since diabetic retinopathy is largely asymptomatic in the early stages, screening for the disease remains a very important part of management as it detects early treatable stages allowing for prompt treatment and prevention of visual loss.[11] Default rates from retinopathy screening of up to 50% were reported in the USA[12] and more than 60% in the Korean National Health and Nutrition Examination Survey.[13] Ashaye et al reported that 43% of the type 2 diabetes patients did not present for scheduled retinopathy screening in Ibadan.[9] Factors that prevent diabetes patients from attending retinopathy screening may differ from community to community. Age, sex, educational level, and self-reported health status are some factors reported to affect compliance.[13,14]

A national retinopathy screening protocol has yet to be developed in Nigeria and studies on the utilisation of diabetic retinopathy screening are scarce. Are there modifiable characteristics of persons who default from scheduled diabetic retinopathy screening? This study set out to review some characteristics of diabetic patients who defaulted from scheduled eye screening, in order to guide the development of a local diabetic retinopathy screening protocol.

Patients and methods

A cross-sectional analytical prospective study was carried out in the Endocrinology Outpatient Clinic and the Ophthalmology Outpatient Unit of the Wesley Guild Hospital, Ilesa, Nigeria; a tertiary referral centre and part of the Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife. The study population was made up of type 2 diabetes patients who attended the Endocrinology Outpatient Clinic between July 2010 and November 2010. All attendees during this period were informed of the study, and consent was subsequently obtained. Consecutive patients were enrolled. Ethical clearance was obtained from the Ethical Committee of the Obafemi Awolowo University Teaching Hospital, Ile-Ife.

Study participants had a questionnaire administered, following which a jointly scheduled date for retinopathy screening in the Ophthalmology Outpatient Unit was fixed. The questionnaire was used to obtain information on patients' age, sex, educational level, residential address, duration of diabetes, current management modalities, and awareness of possible damage of diabetes to other parts of the body including the eye. Residency status was graded as living: in the same town; outside the town but within the same state; and outside the state in which the hospital was located. Participants were also asked if they had had a dilated eye examination since the diagnosis of diabetes was made, and if they had eye complaints. Each participant was educated on the need for diabetic retinopathy screening for the prevention of blindness and visual impairment from the disease. Screening at the Ophthalmology Clinic included visual

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acuity assessment for each eye using Snellen's chart or Tumbling E chart as well as dilated funduscopy with a +78DS lens and Haag Streit slit lamp biomicroscope.

The outcome measure was attendance at retinopathy screening. Those who attended were recorded as compliant, while those who did not attend were recorded as defaulters. Data obtained were analysed with SPSS version 16 for univariate and multivariate analysis. Variable comparison was achieved with Chi Square, Fisher's Exact and Student's t test as appropriate, and statistical significance was chosen as $p<0.05$.

Results

A total of 179 patients were recruited. Mean (+SD) age was 61+12 years, and 91 (51%) were male. Diabetes duration was <1 year in 23 patients (13%), 1–5 years in 87 (49%), 6–10 years in 44 (26%), and >10 years in 25 (14%). There were 2 patients (1%) on diet control alone, 158 (88%) on oral hypoglycaemic agents (OHA), 14 (8%) on OHA plus insulin, and 5 (3%) on insulin alone. Forty patients (23%) had no formal education, 54 (30%) had primary education, 40 (22%) secondary, and 45 (25%) tertiary; 100 patients (56%) had no eye complaints, and most (79%) knew that diabetes could damage the eye. No dilated eye examination had been done on 122 (68%) since diagnosis.

Defaulting from retinal screening referral occurred in 100 patients (56%) with the other 79 (44%) being complaint. The characteristics of these two groups are shown in Table 1. Mean ages of defaulters (61+12 years) and attendees (62+12 years) were similar. Those with a diabetes duration of <1 year and of 6–10 years were more likely to default ($p=0.012$), see Figure 1. The default rate was also higher in those who had not had an eye examination since diagnosis (62%), compared with those who had (44%), $p=0.027$. There was no statistically significant difference between the groups in terms of gender, education, treatment, place of residence, eye complaints, or retinopathy awareness (see Table 1).

Discussion

Only 57 patients (32%) had had their eyes examined at least once since diagnosis of the disease – a very low rate despite the fact that most patients (79%) reported knowledge that diabetes could damage their eyes. The rate of previous eye examination is however higher than the 16% and 29% reported in Kano and Ile-Ife respectively.[6,15]

More than half (56%) of patients defaulted from retinopathy screening in this study; higher than the 43% default rate reported by Ashaye et al in Ibadan 9 and the 22% by Gulliford et al in the United Kingdom.[16]

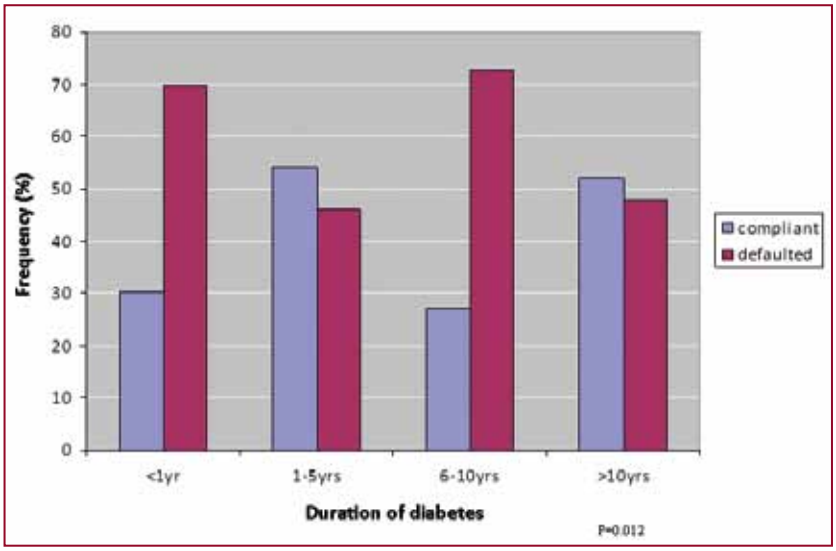

Figure 1. Duration of diabetes and compliance with retinopathy screening

		Attenders (n=79)	Defaulters (n=100)
Gender	Male	44 (56%)	47 (47%)
	Female	35 (44%)	53 (53%)
Education	None	18 (23%)	22 (22%)
	Primary	22 (28%)	32 (32%)
	Secondary	17 (21%)	23 (23%)
	Tertiary	22 (28%)	23 (23%)
Treatment	Diet	2 (3%)	0 (0%)
	OHA	69 (87%)	89 (89%)
	OHA + insulin	6 (7%)	8 (8%)
	Insulin	2 (3%)	3 (3%)
Eye complaints	Yes	49 (62%)	55 (55%)
	No	30 (38%)	45 (45%)
Retinopathy awareness	Yes	62 (78%)	80 (80%)
	No	1 (2%)	3 (3%)
	Unsure	14 (20%)	17 (17%)
Residence	Same town	63 (80%)	70 (70%)
	Same state, different town	9 (11%)	21 (21%)
	Different state	7 (9%)	9 (9%)

Note: OHA = Oral hypoglycemic agent.

Table 1. Characteristics of attenders (n=79) and defaulters (n=100) from diabetic retinopathy screening

Varying socio-demographic and clinical characteristics in individuals can affect utilisation of health services. Although the screening default rate was slightly higher among females compared with males in this study, this difference was not statistically significant.

Patients who do not attend diabetic eye screening are at risk of developing sight- threatening diabetic retinopathy.[17] A statistically significant difference was observed in relation to having had a previous eye examination since diagnosis; the default rate being higher among patients who had not had screening since diagnosis. This may be indicative of a greater level of awareness and perceived benefit from such previous examinations. Thus, initial eye screening as soon as a diagnosis of diabetes is made may be indispensible in enhancing the likelihood of subsequent compliance. Default rates were significantly different depending on the duration of diabetes, being highest among those with a diagnosis <1 year and between 6 and 10 years. The reason for this is not clear; however it is possible that persons who have had diabetes for less than a year may not be sufficiently aware of diabetes complications. This further reinforces the need to encourage and ensure retinopathy screening as soon as the diagnosis is made.

Type 2 diabetes patients who did not know that diabetes could affect the eyes, as well as those who did not reside in the same town as the study, had non-statistically significant higher screening default rates (p=0.45 and p=0.22). Patients with no eye complaints had higher default rates compared with persons with eye complaints, but the differences were not statistically significant (p=0.25 and p=0.34). It appears that the patient's perceived need for eye care probably informed their decision to attend screening. It may also be a reflection of a lack of knowledge and the largely asymptomatic nature of retinopathy in its early treatable stages.

In conclusion, higher rates of default from retinal screening were associated with duration of diabetes diagnosis as well as lack of previous eye examination. Appropriate and efficient screening should include education on diabetic eye complications as soon as a diagnosis of diabetes is made. Every effort must be made in partnership with the physicians caring for patients to ensure screening at diagnosis.

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Author Declaration

Competing interests: none.

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