

ORIGINAL ARTICLE



AWARENESS OF OCULAR INVOLVEMENT IN DIABETES MELLITUS AND EYE HEALTH-SEEKING BEHAVIOUR OF TYPE 2 DIABETIC PATIENTS IN A TERTIARY HOSPITAL IN SOUTH- SOUTH NIGERIA: A CROSS- SECTIONAL STUDY



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Abstract

Background: Diabetes mellitus is a chronic metabolic disorder. It could lead to ocular complications such as cataract and diabetic retinopathy which are visually impairing and blinding.

This study is aimed at determining the level of awareness of eye involvement amongst patients with diabetes and their eye health seeking behaviour attending clinic at the University of Calabar teaching hospital (UCTH)/LIONS diabetic centre. Information obtained would guide the development of interventions aimed at improving their eye health seeking behaviour and subsequently prevent avoidable blindness.

Methods: - A cross- sectional descriptive study was conducted among adult diabetic patients, accessing treatment and support at the University of Calabar Teaching Hospital (UCTH)/ Lions diabetes centre. A total of 200 diabetic patients who met the inclusion criteria were recruited into the study using systematic sampling technique. Information was obtained from participants using an interviewer administered questionnaire and a protocol form. Data were summarised using frequencies, mean and standard deviations. Ethical approval was obtained from the ethical review committee of UCTH.

Results: Two hundred participants were recruited into the study comprising of 49 males and 151 females giving a ratio of 1:3. The mean age of respondents was 53.8 ± 11.7 years ranging from 21 – 79 years. The level of awareness of eye involvement was high 88%,

although less than one-fifth (14%) had undergone routine eye check. Eye health seeking behaviour amongst participants was poor at 30% in the study.

Conclusion: A high level of awareness of eye involvement was reported in this study, however this did not reflect in the eye health seeking behaviour and referral patterns of patients for diabetic eye screening. Intensive education is needed for both patients and diabetic care givers at every level to improve attitude towards eye care and uptake of routine diabetic retinopathy screening.

Keywords: Diabetes Mellitus, Ocular awareness of diabetes, diabetic retinopathy, routine eye screening, Eye health seeking behaviour.

Introduction

Ocular involvement is a growing problem among diabetes mellitus (DM) patients worldwide. The International Diabetes Federation (IDF) in 2019, estimated that globally 463 million adults aged 20-79 years were living with DM; and by 2045, this figure is expected to rise to 629 million.¹ An estimated 19.4 million adults aged 20-79 years have DM in the Africa Region, representing a regional prevalence of 3.9%.¹ Some of Africa's most populous countries have the highest numbers of people with DM, including South Africa (4.6 million), Nigeria (2.7million), Democratic Republic of Congo (1.8 million), and Ethiopia (1.7 million). More than half (55.8%) of all adults aged 20-79 years with DM in the region live in these four countries.¹

Diabetes mellitus is a chronic disease, with over 75% of these patients having a ten-year or more history of DM.² The long duration of the disease has been shown to be a significant risk factor for the development of diabetic retinopathy (DR).^{3,4,5} Cataract also occurs earlier in patients with DM compared to persons without DM. Some studies have shown a two-fold risk of development of cataracts in patients with diabetes when compared with those without it.⁶

Cataract and especially sight threatening diabetic retinopathy (STDR) might have a subsequent negative effect on the psychological well-being and quality of life of the diabetic patient.⁷⁻⁸ Therefore the need for an increased level of awareness of ocular involvement in diabetes and its role as one of the leading causes of blindness globally cannot be over emphasized.²

The aim of this study was to determine the level of awareness of the effect of diabetes mellitus in the eye and their eye health-seeking behaviour amongst adult diabetic patients attending the endocrinology clinic in UCTH with the view of improving their eye health seeking behaviour and hopefully prevent avoidable blindness.

Methodology

Study area

University of Calabar Teaching Hospital (UCTH)/ Lions diabetes centre was established in 2014. It is situated in UCTH which is a tertiary health institution located in Calabar metropolis, capital of Cross River state, Nigeria. The UCTH/LIONS diabetic clinic runs on a weekly basis every Wednesday. This clinic is run by a team of doctors, nurses and a dietician; they offer health education, care and treatment to patients that attend.

A diabetes eye screening clinic is also situated in the UCTH/LIONS diabetes centre. It runs concurrently with the diabetes clinic every Wednesday. The screening team from the department of ophthalmology comprises the ophthalmologist, ophthalmic nurse, diabetic retinopathy screener/grader and the counsellor. Service rendered include; visual acuity assessment, eye examination which includes a dilated funduscopy, fundal photography as well as counselling and referral to the retina clinic when the need arises.

Study design:

A cross-sectional descriptive study was conducted among 200 adult patients receiving treatment and care at the diabetes clinic at the UCTH/Lions Diabetes Centre.

Eligibility Criteria

Inclusion criteria: -

(i) All consenting patients diagnosed with DM, 18 years of age and above (using the WHO standard criteria adopted by the centre⁹) attending the weekly clinic from September 2014 to January 2015.

(ii) Diabetics with or without hypertension

Exclusion criteria: -

(i) Diabetic less than 18 years of age

(ii) Acutely ill attendees

Sampling

A Sample size of 171 was obtained using the Leslie Kisch formula for single proportion.¹⁰ Allowing for a little above 10% attrition, this was made up to 200 patients. Systematic sampling technique was used to select the 200 study participants. They were chosen at regular intervals from the sampling frame which was the clinic list for each day. The sampling interval was calculated using the formula $K = N/n$, which was approximately 5. Using the balloting method, 5 pieces of paper of equal sizes with "yes" written on one and "no" written on the remaining 4 were folded up, put in a non-transparent bag and shuffled. Participants with serial number 1-5 on the clinic list for that day were made to pick blindly from the bag. The study participant among the 5 who picked "yes", met the study criteria for recruitment and consented to participate was regarded as the starting point. Subsequently every eligible fifth participant was selected until the desired sample was obtained.

Also, to avoid interviewing the same participants more than once during each visit, if a selected participant had been enrolled into the study the previous week, he/she was skipped and the next eligible person chosen. Approximately 10-15 eligible participants were selected weekly to make up the sample size of 200 in four months.

Sample interval $K = N/n$ ¹⁰

Where;

$N =$ population size (60 patients per week \times 4 weeks \times 4 months) = 960

n= Sample size = 200

$$K = \frac{960}{200}$$

$$K = 5$$

Data collection/management

Information on socio-economic status of each participant was obtained. Medical history, awareness of the effects of diabetes on the eye, sources of information on awareness and eye health seeking behaviour of participants were obtained using semi-structured interviewer-administered questionnaire.

Statistical analysis of the data collected were performed using Statistical Package for Social Sciences (SPSS) for Windows (version 20, SPSS inc Chicago IL, USA). Descriptive statistics performed included frequencies, mean and standard deviations.

Ethical clearance

Ethical approval was obtained from the Health Research Ethics Committee of the University of Calabar Teaching Hospital.

Results

Socio-demographic Pattern of Study Population with Diabetes Mellitus

A total of 200 participants were studied with an overall mean age of 53.8 ± 11.7 years (age range 21 to 79 years). A higher proportion of the respondents 151(75.5%) were females, of the Ibibio tribe 54(27%); civil servants or traders (63%) and had formal education (n=181; 90.5%) with 54% having at least a secondary education.

Table I: Socio-demographic Pattern of Study Population with Diabetes Mellitus

Level of awareness amongst the study population about the effects of Diabetes Mellitus on the eye

VARIABLE	(YEARS)
AGE – GROUP	
21-30	9 (4.5)
31-40	16 (8.0)
41-50	57(28.5)
51-60	63(31.5)
61-70	44(22.0)
71-80	11(5.5)
SEX	
Male	49 (24.5)
Female	151(75.5)
ETHNIC GROUP	
Annang	12(6.0)
Ejagham	16(8.0)
Ekoi	23(11.5)
Efik	43(21.5)
Ibibio	
Others(Igbo, Yoruba, Hausa)	54(27.0)
	52(26.0)
EDUCATION	
None	15(7.5)
Vocational	4(2.0)
Primary	58(29.0)
Secondary	40(20.0)
Tertiary	70(35.0)
Additional(Post graduate)	13(6.5)
OCCUPATION	
Professional	3(1.5)
Artisan	4(2.0)
Driving	4(2.0)
Farming	14(7.0)
Civil servant	61(30.5)
Trading	65(32.5)
Others**	49(24.5)
MARITAL STATUS	
Single	19(9.5)
Married	142(71.0)
Widowed	34(17.0)
Separated/divorced	5(2.5)

Others include: - Tailor, Hairdresser, Housewife

Participants who strongly agreed or agreed had a score of 704(88%) on the Likert scale and were classified as

having high awareness of the effect of diabetes mellitus on the eye (Table 2), while those who did not know, disagreed or strongly disagreed 96(12%) were classified as having low awareness.

Table II: Awareness of Diabetes effects on the eye amongst Study participants

	Strongly agree	Agree	Don't know	Disagree	Strongly disagree
1) Diabetes mellitus can affect the eyes	187	9	3	0	1
2) Diabetes mellitus can cause blindness	183	10	6	0	1
3) Control of blood sugar can reduce the effect of diabetes mellitus on the eyes	171	18	9	2	0
4) There is treatment for eye problems caused by diabetes Mellitus.	105	21	62	6	6
Total	646	58	80	8	8
	704 (88%)		96 (12%)		

Eye Health seeking behaviour among Patients with diabetes studied in the UCTH/LIONS diabetes clinic in Calabar

Of the 200 participants interviewed, 64 (32%) had never examined their eyes following the diagnosis of diabetes. Sixty (30%) indicated poor vision as the reason for going for an eye check as shown in

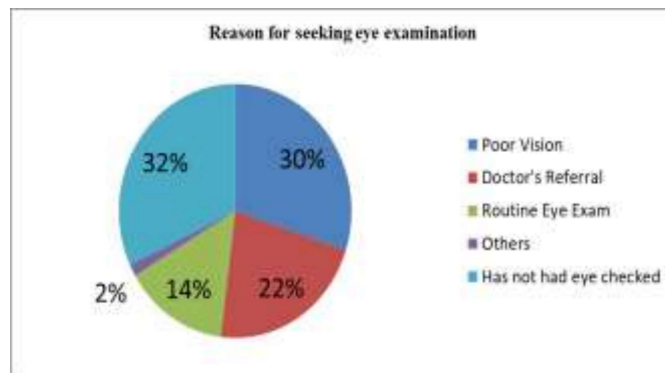
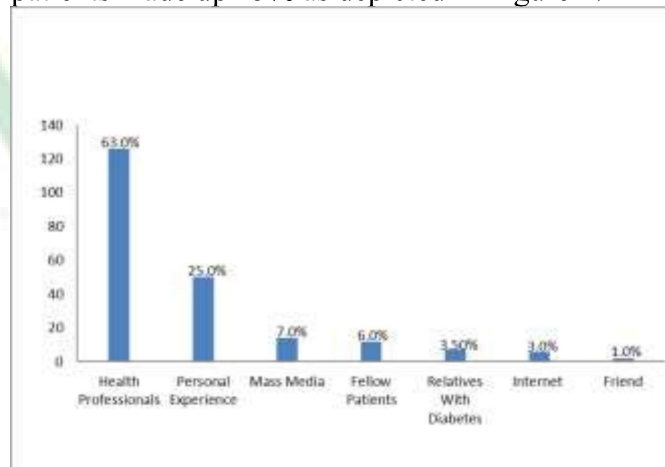


Figure 1: Eye Health seeking behaviour amongst Study participants

Source of information for participants' awareness of effect of Diabetes Mellitus on the eye

The leading source of information on diabetes mellitus and the eye in the study population was from the health professionals 126(63%). Personal experience of patients made up 25% as depicted in Figure 2.



NOTE: - Some participants had more than one source of information.

Figure 2: Respondents who were aware of the effect of diabetes mellitus on the eye

Discussion:

The awareness of the effect of diabetes mellitus on the eye amongst participants in this study was quite high (88%). This compares favourably with 84.3% by Mohammed and Waziri ⁴ in Kano, Nigeria, 83% reported by Mwangi et al ¹¹ in Nairobi, Kenya and 86.1% by Tajunisah et al ¹² in Lumpur, Malaysia. Though it is in contrast to studies in Ogun state, Australia and U.S.A where the level of awareness was

observed to range from (37%- 65%).¹³⁻¹⁶ The high level of awareness of the effect of diabetes mellitus on the eye amongst participants noted in the present study may be due to the fact that it was conducted in a hospital setting where health education sessions on the subject are routinely conducted by ophthalmologists in the endocrinology clinic; as well as on special events like the World Diabetes day. Patients also benefit from health education on the subject by nurses during attendance at the ophthalmology clinics. The above reason is also corroborated by the fact that slightly over three fifths of study participants attributed their source of information on effects of diabetes mellitus on the eye to the health professionals.

Despite the high level of awareness about diabetic eye disease in this study, 32% of the participants reported having not undertaken an eye examination even following a diagnosis of diabetes. A similar poor eye health seeking behaviour (28.9%, 29% and 35%) were reported among diabetic patients in the western part of the Nigeria and Kenya.¹⁶⁻¹⁸ This eye health seeking behaviour is at variance with studies reported among similar patients in Tanzania and Ghana (59.1% and 65.4%).^{19,20} The reason for poor eye health seeking behaviour in this study could be attributed to the fact that most of the participants had mild non-proliferative diabetic retinopathy and were asymptomatic as 30% of respondents that had their eyes checked did so because of poor vision and less than a fifth (14.5%) undertook a routine eye examination. Similar reports were observed in Ogun State, Nigeria¹⁶ and Yangon, Myanmar⁶ where 34% and 36% of respondents respectively had an eye examination on account of poor vision. Less than a fifth (16%) of study respondents in Ogun state, Nigeria¹⁶ had undergone a routine eye examination. This is contrary to the finding in the study done in Yangon, Myanmar that reported 58% participants had routine eye examination on account of diabetes mellitus. The general observation from existing literature indicates a low eye health seeking behaviour among patients diagnosed of diabetes mellitus with lack of awareness of diabetic eye disease as the commonest reason for the poor screening-seeking behaviour. As healthcare providers have knowledge of ocular morbidity and challenges associated with the management of diabetes eye disease, it behoves them to inform the patients of likely

ocular complications of the disease and the need for regular, periodic, routine checks and follow up. Loss of vision has a lot of implication as it affects the quality of life of the patients, the productive capacity and earning ability. Most of the patients with diabetic retinopathy were within the age range of 31 – 60 years. This is about the most productive age bracket in the country and vision is necessary for almost all enterprises whether skilled or unskilled. Impaired vision incapacitates the patients, makes them dependent on others for livelihood as well as medical care, thereby putting an extra strain on the family income and the community. More disturbing is the fact that 88% of the participants were aware of the effect of diabetes on the eye but only 14% have had their routine eye examination following diagnosis. This raises questions on the exact nature of information given during health education. This shows that awareness of a health problem does not always translate to appropriate action in terms of health care seeking behaviour. Attitudinal, behavioural, socio-economic, religious and cultural factors influence people's decisions and actions regarding health care. Interventions on behavioural change communication adapted to the peculiar context of the patients may be helpful in improving eye care seeking behaviour among patients with diabetes mellitus.

Conclusion:

There was a high level of awareness about the effect of diabetes mellitus on the eye amongst the patients attending the diabetes clinic in UCTH, Calabar; which did not appear to reflect in the eye health care seeking behaviour. Intensive and specific education is needed for both patients and diabetes care givers at every level, to improve attitude towards eye care and uptake of routine diabetic retinopathy screening.

Conflict of Interest: The authors wish to declare that they have no conflict of interest in writing this paper.

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