

Eye Care Practices, Knowledge and Attitude of Glaucoma Patients at Community Eye Screening Outreaches in Nigeria.

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Abstract

Purpose: To assess the eye care practices, knowledge and attitudes of glaucoma patients identified at community eye outreaches (CEO) in Nigeria.

Methodology: This was a mixed method study. The quantitative component was a cross sectional survey of patients with suspected glaucoma identified at routine CEO in South West Nigeria. Surveys were administered by trained personnel and gathered information on knowledge and attitudes toward glaucoma. The qualitative component consisted of structured interviews with providers to assess their knowledge and perspectives of glaucoma patients' attitudes and behaviors.

Results: A total of 1881 patients were screened at 24 outreaches in South West Nigeria, among which 120 glaucoma cases/suspects were identified. Fifty-six (46.7%) of the glaucoma patients were aware of glaucoma and only 39 (32.5%) patients could answer at least one knowledge question correctly. Predictors of awareness of glaucoma were minimum of secondary school education (adjusted odds ratio [OR] 9.76; 95% confidence interval [CI] 3.18-29.92) and having had an eye check-up in the past (adjusted OR 6.22; 95% CI 1.96 – 19.78). More than half 55.8% had attended an eye outreach in the past and 34.2% did not follow up at the main hospital. Patients said cost and 'not knowing the disease was serious' were reasons for not following up at the main hospital. Health workers interviewed said cost and poor knowledge were the main reasons glaucoma patients frequently attended free screening outreach events rather than seeking definitive care.

Conclusion: Although community eye outreaches improves access to eye care, provision of appropriate health education programs and strengthening of the health insurance scheme are needed to improve its impact in glaucoma care.

Introduction

Glaucoma is the leading cause of irreversible blindness globally¹ and in Nigeria². Tham et al³ projected that by the year 2040, 118.8 million people will be living with glaucoma, and this will disproportionately affect Africa and Asia. The prevalence and incidence of glaucoma is highest in Africa¹. The Nigerian National Blindness Survey, in a country-wide study, reported a prevalence of 5.02%.⁴ A study carried out in South West Nigeria reported a higher glaucoma prevalence of 6.9% in the region.⁵

About 90% of people with glaucoma remain undiagnosed in most developing countries. In Nigeria, the rate of previous diagnosis was as low as 5.6%,⁴ compared with 8% in other developing countries and 26% globally.¹ Glaucoma in Africans often occur at an early age^{6,7} and often presents late in its clinical course.⁸⁻¹⁰ The high prevalence of glaucoma with associated early onset, aggressive course, and lack of resources for management, leads to a high rate of glaucoma blindness in much of sub-Saharan Africa.

Population-based screenings have not been found to be cost effective in developed countries.^{11,12} Targeted screening of first degree relatives of glaucoma patients, and the integration of glaucoma screening into other eye screening programs in high risk populations have been reported to be a more feasible control strategy for glaucoma.¹¹ These screening programs could provide opportunities to create awareness about glaucoma, provide knowledge on its care, and identify early disease.

The community eye outreach is one of the practical innovative eye screening models launched to provide eye care screening services in underserved communities, following the global initiative of Vision 2020. This global initiative has a mandate to eliminate needless blindness by the year 2020. Although the eye outreach screening model has been used mainly to deliver cataract surgical services, it has also been relevant in glaucoma screening services. These outreaches offer opportunities to diagnose glaucoma in its asymptomatic stage. A previous study in Ibadan reported that patients identified by community eye outreach were more likely to present with mild to moderate glaucoma, compared with patients referred from other sources.¹³

The WHO recommends the integration of primary eye care into primary health care.^{14,15} However, this has not been successfully executed in many parts of Nigeria. Primary health care in Nigeria has been fragile, fragmented and almost non-existent as a result of inadequate resources and gross underfunding. Hence, the community eye outreach performs some functions of the primary eye care program by providing preventive and some curative eye care services to the underserved. It has also been used to refer glaucoma patients to the main hospitals.^{13,16} It is important, however, to ensure that these outreaches are well implemented and asymptomatic glaucoma cases are counseled, diagnosed and referred to the hospital for care.

Studies done in hospital settings among routine glaucoma follow up patients in Nigeria have reported a high level of awareness of glaucoma ($\geq 80\%$), but knowledge level has been reported to be lower.^{17,18} Achigbu et al¹⁷ reported a good knowledge of glaucoma in 46.3%, while another study reported a fair to good knowledge perception in 58.2% of glaucoma patients.¹⁸ A high level of awareness (65.5%) was also reported among glaucoma patients seen at an urban community eye outreach. This outreach program was however preceded by mass media awareness, campaigns and publicity.

This study assessed the level of awareness, knowledge, attitudes, and eye care practices of glaucoma patients identified at several routine community eye screening outreaches in South West Nigeria. To the best of our knowledge, this is the first study to report eye care practices among glaucoma patients identified at routine community eye screening outreaches in South West Nigeria. This information will provide evidence for the development of appropriate eye health education programs for glaucoma management in Nigeria. It will also provide further evidence for the need for urgent strengthening of the health insurance scheme in Nigeria.

Methods

This was a cross sectional descriptive study conducted at community eye outreaches routinely organized by the University College Hospital, Ibadan, Nigeria, between March and September 2018. These outreaches were held in several communities in Oyo State and Osun States of South West Nigeria. Ethical approval was obtained from the ethical review board of the University of Ibadan and the University College Hospital, Ibadan. The study was conducted in accordance with the tenets of the declaration of Helsinki.

The study had both quantitative and qualitative components. The quantitative portion consisted of data collected via interviewer-administered surveys from consecutive participating patients who attended the community eye outreach centers (CEOCs) and were diagnosed as glaucoma patients or glaucoma suspects. The qualitative portion consisted of data collected via structured interviews with public health nurses who conduct the screenings at the CEOCs.

Quantitative Patient-Based Data Collection

Questionnaires were administered to patients with confirmed or suspected glaucoma by trained facilitators to assess sociodemographic characteristics such as age, sex, place of residence, educational status and occupation. Patient's knowledge and awareness of glaucoma after routine counselling by health care practitioners was ascertained. Ocular history and ocular examination were also conducted.

Eye care practices: Questions were asked about community outreach/hospital attendance in the past, uptake of care at hospitals, adherence to follow up and medication adherence in the past before the current outreach.

Awareness and knowledge: Patients were asked if they were aware of glaucoma or had ever heard of glaucoma at any time (Yes/No). If the answer to this question was 'Yes', then they were asked where they had heard of the disease and what glaucoma was, to determine their basic knowledge about the disease. Questions asked had a 'Yes' or 'No' or 'Don't know option'. The following questions were asked to assess their knowledge: "Glaucoma causes blindness," 'blindness from glaucoma is irreversible' "it is gradually progressive," "One may have it and not know it," "It can be inherited," "The nerve of vision is damaged," "Africans have a higher chance of glaucoma" and "Chance of glaucoma increases with age." Patients were assigned one score for every correct answer. A patient was deemed to be knowledgeable about the disease if he had a score of 4 and above, fair knowledge if he scored 2-3 and poor knowledge if he scored less than 2. Trained research assistants conducted a face-to-face interview using a semi-structured questionnaire. The questionnaire was initially prepared in English. It was translated to Yoruba, which is the major language spoken in South West Nigeria, and back translated to English to check for consistency in meaning. The interview was conducted in either Yoruba or English languages depending on which language each participant preferred.

Ocular Examination: All patients had a visual acuity test (unaided and aided) using standard illuminated Snellen's chart or illiterate E-chart (where necessary). Pen torch examination of the anterior segment and funduscopy of the two eyes was done by resident doctors in Ophthalmology. Visual fields test could not

be performed at the outreach site due to logistic reasons. However, patients who were diagnosed as suspects or glaucoma patients were referred to the main hospital for visual field tests, intraocular pressure measurement and stereoscopic examination of the optic disc. The proportion of patients with glaucoma or glaucoma suspects at the outreach center was determined using the International Society of Geographical and Epidemiological Ophthalmology (ISGEO) criteria¹⁹ for glaucoma in prevalence surveys and the Nigerian normative study data for defining glaucoma²⁰.

The patients were classified as glaucoma cases if they had glaucoma category 2 (structural damage, visual field was not performed): vertical cup to disc ratio (VCDR) ≥ 0.75 (99.5th percentile) or VCDR asymmetry ≥ 0.2 (99.5th percentile); or glaucoma category 3 (no view of fundus and no visual field): VA $<3/60$ + evidence of glaucoma filtering surgery or currently on anti-glaucoma medications or medical records showing visual glaucomatous morbidity. Category 1 of the ISGEO classification was not used since visual fields were not performed at the outreach. Patients were considered suspects if they had VCDR ≥ 0.7 (97.5th percentile) or VCDR asymmetry ≥ 0.1 (97.5th percentile).

All glaucoma cases or glaucoma suspects who consented to the study at the CEOC were included until the minimum sample size was completed. A minimum sample size of 100 glaucoma patients or suspects was calculated based on a proportion of 14.5% of persons who had glaucoma at an outreach in Nigeria¹⁶, a precision of 7.5% and an alpha of 5% using the Kish formula. A total of 120 patients participated in the study.

Qualitative Provider-Based Data Collection

Face-to-face in-depth interviews were conducted with the four public health nursing staff in charge of the outreach program (total number of staff in charge of program). Interviews were conducted to assess their knowledge of glaucoma and to understand their perspectives on the eye care practices of glaucoma patients identified at the outreaches. Interviews were audio recorded, transcribed verbatim and validated. Inductive and deductive coding, and thematic analysis was done using NVivo 11 (Qualitative data analysis software; QSR International Pty Ltd. Version 11, 2015).

Data Management: Data underwent quality control review and were entered into the Redcap software package. Analysis was done using SPSS version 23. Quantitative variables were summarised using means and standard deviations. Continuous variables were compared with the independent samples T test. Categorical variables were summarised using frequencies and proportions. Bi-variate analysis and chi square statistics were used to determine associations. A P value of <0.05 was considered significant.

Results

A total of 1881 patients were screened at 24 outreaches in South West Nigeria, among which 120 glaucoma cases/suspects were identified. There were more males (56.7%) than females (43.3%). More than half of the patients (53.7%) had no education or only primary school education, while less than a

third (21.9%) had tertiary education. Forty percent of the patients had no personal earnings and depended solely on family, relations and friends, while 60 % had some personal earnings. About 36.5% of the patients were either retired or unemployed. Table 1 shows the socio-demographic characteristics of the patients. At the outreach, 113 (94.2%) patients had eye complaints, of whom 85 (75.2%) had visual blurring. Sixty-nine (57.5%) patients had an eye check-up at an eye care outreach or hospital prior to the current study, while 51 (42.5%) patients had never had an eye check-up in the past. About one quarter of the patients (25.8%) knew someone who was blind and 22 (18.3%) said that the person was a relation.

Patients' eye care practices: More than half of the patients (67 55.8%) had attended one or more eye outreach in the past, and 16 (23.8%) had previously attended 2 or more eye outreaches. Despite being referred for further evaluation for possible glaucoma, 41 (34.2%) had failed to do so. At these outreaches, the patients said they were examined, given spectacles or eye drops at a cost. These outreaches were organized by different clinics, hospitals, and political aspirants who sponsored some of the outreaches as part of their political/electoral campaign. Two patients who had attended an outreach sponsored by some political aspirants said "we were not examined because the crowd was large but some of us got free eye drops." One patient had attended up to 15 different outreaches and had also been to several hospitals in the past. Also, another respondent had attended 10 outreaches in the past but did not follow up at any hospital. Reasons for not following up for further glaucoma evaluation included the following: 29 (24.2%) patients did not think that the eye problem was serious, 15 patients (36.6%) said they prayed and believed they did not have any serious eye problem, 7 patients (17.1%) said they were not told to visit a hospital, while 7 patients (17.1%) said they did not have money to visit the hospital and elected instead to attend a future free outreach.

Twenty-four (20%) patients diagnosed with glaucoma followed up at a hospital prior to the current outreach. They were prescribed medical therapy, none of whom were using glaucoma medical therapy at the time of the current screening. Of these, two patients said they never bought the prescribed glaucoma medications, while the remaining had stopped using them prior to the current outreach. Common reasons reported for discontinuing therapy included depletion of dispensed medications, inability to purchase additional medications, and belief that the medication was unnecessary.

Patients' awareness and knowledge about glaucoma

Fifty-six (46.7%) patients were aware of glaucoma, of whom 39 (69.6%) patients could correctly describe the disease by answering at least one question assessing knowledge correctly. A majority of the patients (66.1%) heard about glaucoma from a health care provider at an outreach center or hospital. Other sources of information were the media or from friends and neighbors. Ten (8.3%) patients gave a positive family history of glaucoma. The determinants of glaucoma awareness are shown in table 2. In the bivariate analysis, the patients were more likely to be aware of glaucoma if they had a minimum of secondary school education, were of the male gender, were civil servants, had a positive family history of glaucoma or blindness and had an eye check in the past. All of these variables were statistically significant (Table 2). However, on multivariate logistic regression analysis, having a minimum of

secondary school education (OR 9.7, 95% CI 3.18 – 29.92) and having an eye check in the past (OR 6.2, 95% CI 1.96 – 19.78) remained statistically significant. The patients who had a minimum of secondary school education were 9 times more likely to be aware of glaucoma than those who had no education or had only a primary school education. The patients who had an eye check up in the past were 6 times more likely to be aware of glaucoma than those who did not have an eye check up in the past after controlling for other variables (Table 3). Only 7 patients (5.8%) had a good knowledge, with a minimum score of four, while 12 patients (10%) had a fair knowledge. The other patients had a poor knowledge, with only 32.5% being able to answer at least one question correctly.

Providers' knowledge of glaucoma

Four nursing staff who worked at the outreach units were interviewed on their knowledge about glaucoma. They showed good knowledge about glaucoma, as evidenced by their responses: *"Glaucoma is the major cause of irreversible blindness all over the world, because it does not present with symptoms at the early stage"* (J.O, 58 years, 10 years' nursing experience at the outreach). *"Glaucoma is a hereditary condition, is a painless eye disease which will cause serious impairment to the vision"* (M.O, 48 years, 8 years' experience). *"Glaucoma is an eye disorder that is characterized by impaired vision, especially the peripheral visual field, then increase intraocular pressure, then damage to the optic nerves"* (B.O, 34 years, 8 years' experience).

They were also asked about their opinion on glaucoma patients' approaches to accessing eye care, specifically the common practice of attending serial screenings rather than seeking definitive continuity of care. One theme that appeared consistently was a recognition of patients' financial constraints, which may prevent patients from using their medications or even presenting at hospitals after attending the outreaches. *"You know when you tell them that when you're coming even with your referral letter you have to pay for a card, you have to be registered to be seen by the consultant and it will cost you money, some people will say haaaahaaa (exclamation)..., I don't have money... you understand, that is the major reason, why they are not coming"* (Mrs C, 46 years, female, 10-year experience). Another theme was poor knowledge and awareness among the patients. One of the nurses said: *"Then ignorance at times, because some of them still believe they can still go to a traditionalist and they can still treat their ailments locally"* (Mrs C).

The nurses felt that phobia of large institutions like a tertiary hospital was a major barrier to glaucoma patient care, as the patients preferred to be managed at smaller health care facilities closer home. They also expressed belief that patients were more likely to seek proper hospital care after being referred if they possessed a good knowledge of glaucoma and were financially able to pay for care.: *"Patients who come to hospital are financially ready, and all the taboo has been dispelled and they know that they will receive adequate treatment when they get to the tertiary hospital, because it is filled with specialists"* (J.O.).

Discussion

This study assessed the knowledge, awareness, eye care practices of patients with suspected glaucoma identified at the community eye outreaches in South West Nigeria. The results of this study suggest that knowledge, awareness and eye care practices is sub-optimal among glaucoma patients identified at the community outreaches, with many patients opting to attend serial screenings rather than seek definitive continuity of care.

Eye outreach services ideally should provide improved access, an efficient care supported by guidelines and improved health outcomes.^{21,22} It should also provide education, counseling, preventive and basic curative services. This study assessed the community eye outreach as a vital aspect of the glaucoma care pathway in an underserved population. From this study, poor knowledge and awareness of glaucoma, and the inability to afford the cost of services, resulted in poor access.

Access is related to the timely use of services according to need.²³ An important dimension of access is financial accessibility. This examines the relationship between the cost of health care services, and the ability and willingness of users to pay for such services.²⁴ More than a third of the patients in this study were completely dependent on children or relatives for their daily living. This may have contributed to their inability to seek or sustain glaucoma care in the hospital. Poverty is not just about deprivation of income and material assets, it is also a situation in which individuals lack freedom to make a choice and lead a life they have reason to value.²⁴ Dependence on others for daily living can also be seen as a form of poverty, as it leads to the inability to make choices about their health. The main themes from the health workers in the outreach screening also reiterated the role of poverty in seeking health care. According to the health care workers, financial constraint was an important problem that prevented patients from seeking care in the hospitals. When the patients were asked for the reason for not presenting at the main hospital where they had been referred, some mentioned that they were waiting for the next free outreach. Availability and acceptability are also important domains in considering access to health care services.²⁵

Another dimension of access is geographic accessibility, which examines the physical distance or travel time from service delivery point to the user. The community eye outreach in part solves this problem of access. These services are often close to the patients and are free. However, they have not been designed to manage certain diseases such as glaucoma in Nigeria. These services may be adapted to permanent vision centers, where stable glaucoma can be conservatively managed with medications and laser for the underserved population. Other plausible explanations for patients hopping from one outreach to the other may be related to them hoping to get a different message of cure rather than management for their disease. Kyari et al²⁶ also described a process of glaucoma patients hopping from place to place hoping to get a different message, which was described as 'hopping and hoping'.

Despite more than half of the patients having attended more than one outreach, they still had a poor knowledge about glaucoma. Fewer than half of the patients (46.7%) were aware of their disease, and they had a very poor knowledge of the disease process. Awareness of glaucoma and knowledge of disease have been shown to improve health literacy, health outcomes, use of health services and improved

involvement in self-care and disease management.²⁷ Appropriate knowledge of glaucoma influences the patient's utilization of eye care services. Some studies conducted in urban settings in Nigeria have reported that many glaucoma patients are aware of the disease, but they lack knowledge about the disease process.^{18,28-30} Our findings were similar. A majority of the patients only had primary education or no education at all. In a study by Mbadugha et al,¹⁸ it was reported that educated patients were more likely to be aware of the disease. A similar trend was also reported in Ghana,³¹ where higher educational status was reported to be related to knowledge, although this did not translate to accurate knowledge. This trend has also been reported in other studies.^{32,33}

In this study, patients who had an eye check-up in the past were more likely to be aware of glaucoma. On the other hand, attending an outreach in the past was not associated with awareness of the disease. The patients who had an eye check up in the past may be more likely to have had an individualized interaction with care givers, who may have taken more time to explain the disease to them. Although family history was significantly associated with awareness in the bivariate analysis, there was no association between the two variables in the multivariate analysis. The small number of patients who were aware of a family member with glaucoma may account for this finding.

The community outreach centers can be an avenue for the early diagnosis of glaucoma. They can be adapted as permanent vision care centers, which can provide primary eye care services, where stable glaucoma patients can have intraocular pressure monitoring after diagnosis has been established in the hospital. The patients can then visit hospitals once or twice a year to ascertain stability and/or progression of disease. This may be a more appropriate model in underserved communities. It is important to provide adequate and appropriate knowledge about glaucoma at these outreaches. It is also important that health care providers have a standard written knowledge guideline that is adapted to the local context. This will ensure consistency in the minimum standard of knowledge provided to all patients at the outreaches.

This study shows that knowledge, awareness of glaucoma and eye care practices among glaucoma patients identified at the community eye outreach is suboptimal. On the basis of our findings, which reinforce prior knowledge, we recommend that adequate eye health education programs should be provided at eye screening outreaches. We also recommend that community eye outreaches should be integrated into the primary health care system. This will reduce the distance to main hospitals and bring glaucoma services closer and more accessible to the community. In addition, this study further provides evidence for the strengthening of the health insurance scheme, as limited financial resources are an oft-cited barrier to seeking definitive health care. The findings of this study provide important evidence and recommendations for glaucoma diagnosis and management in underserved communities.

Declarations

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Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee, and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Ethical approval for this study was obtained from the University of Ibadan ethical review board and informed consent was obtained from all individual participants included in the study.

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Consent for Publication: All authors consent to publication of this manuscript.

Authors contributions: O.O, A.O and O.F conceived and designed the study. O.O collected data which was analyzed by a statistician. O.O and O.F interpreted data. O.O drafted the manuscript. All authors critically revised the manuscript and approved the final version to be published.

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Data Availability: Data and materials are available on request

This submission has not been published anywhere previously and has not been considered for any other publication

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Tables

Table 1: Sociodemographic characteristics of glaucoma cases and suspects (N=120)

Variables	Frequency N (%)
Mean age (SD) years	59.4(12.8)
Sex	
Male	68(56.7)
Female	52(43.3)
Age group	
≤49	22(18.3)
50-59	28(23.3)
60-69	41(34.2)
70-84	29(24.2)
Distance to hospital (mins)	
15-30	23(19.2)
>30-60	93(77.5)
>60	3(2.5)
No response	1(0.8)
Mean distance (minutes)	52.5±17.5
Educational status	
None	23(19.2)
Primary /secondary	70(58.3)
Tertiary/more	26(21.7)
No response	1(0.8)
Source of income	
Does not earn money	48(40.0)
Earns money with support	72(60.0)

Table 2: Bivariate Analysis of predictors of awareness of glaucoma

Characteristics	Ever heard of glaucoma			
	Yes	No	Total	P-value
Age				
<50 years	14 (51.9)	13 (48.1)	27(100)	P= 0.84
51-70	34(45.9)	40(54.1)	74(100)	Pearson Chi Square=0.335
>70	8(44.4)	10(55.6)	18(100)	
Educational status				
None/Primary	17(25.8)	49(74.2)	66(100)	P<0.001
At least Secondary	39(72.2)	15(27.8)	54(100)	Pearson Chi Square=25.76
Sex				
Male	43(63.2)	25(36.8)	68(100)	P<0.001
Female	13(25.0)	39(75.0)	52(100)	Pearson Chi square=17.3
Occupation				
Civil servants	27(71.1)	11(28.9)	38(100)	P<0.001
Retiree/unemployed	8(32.0)	17(68.0)	25(100)	Pearson Chi Square=19.45
Trader	8(23.5)	26(76.5)	34(100)	
Artisans	13(56.5)	10(43.5)	23(100)	
Family History of glaucoma				
Yes				P=0.004
No/Don't know	9 (90.0)	1(10.0)	10(100)	Pearson Chi Square=8.2
	47(42.7)	63(57.3)	110(100)	
Ever had an eye check				
Yes	42(60.9)	27(39.1)	69(100)	P<0.001 Pearson Chi Square=13.1
No	14(27.5)	37(72.5)	51 (100)	

Family History of blindness				P=0.031
Yes				Pearson Chi Square= 4.7
No	17(65.4)	9 (34.6)	26(100)	
	39(41.5)	55(58.5)	94(100)	
Ever attended an eye screening				
Yes				P=0.16
No	35(52.2)	32(47.8)	67(100)	Pearson Chi Square=1.9
	21(39.6)	32(60.4)	53(100)	
Presenting visual acuity (worse eye)				
Not blind $\geq 3/60$				P=0.21
blind $< 3/60$	30(52.6)	27(47.4)	57(100)	Pearson Chi Square=1.55
	26 (41.3)	37(58.7)	63(100)	

Table 3: Logistic Regression of factors that predict awareness of glaucoma

Variables	Ever heard of glaucoma before		Chi-Square (P-value)	UOR (95% CI)	AOR (95% CI)
	Yes (%)	No (%)			
Age			0.342 (0.843)		
<=50 years	14 (25.5)	13 (21.0)		1.35 (0.41 – 4.46)	2.06 (0.31 – 13.46)
51 – 70 years	33 (60.0)	39 (62.9)		1.06 (0.37 – 2.99)	1.89 (0.45 – 7.94)
>70 years	8 (14.5)	10 (16.1)		1.000	1.000
Educational Status			26.170 (<0.001)		
None/Primary	17 (30.9)	49 (77.8)		1.000	1.000
At least secondary	38 (69.1)	14 (22.2)		7.82 (3.40 – 17.8)	9.76 (3.18 – 29.92)
Sex			16.10 (<0.001)		1.000
Male	42 (76.4)	25 (39.7)		1.59 (2.20 – 10.9)	2.38 (0.66 – 8.59)
Female	13 (23.6)	38 (60.3)		1.000	1.000
Occupation Status			14.024 (0.003) *		
Civil servant	7 (12.7)	2 (3.2)		1.000	1.000
Retiree/Unemployed	20 (36.4)	22 (34.9)		0.26 (0.05 – 1.40)	0.22 (0.02 – 2.04)
Trader	8 (14.5)	26 (41.3)		0.09 (0.02 – 0.51)	0.31 (0.03 – 3.00)
Artisans	20 (36.4)	13 (20.6)		0.44 (0.08 – 2.45)	0.55 (0.07 – 4.61)
Family history of glaucoma			6.471 (0.011) *		
Yes	9 (16.4)	1 (1.6)		12.13 (1.48 – 99.1)	6.30 (0.34 – 115.30)
No/Don't know	46 (83.6)	62 (98.4)		1.000	1.000
Ever had an eye check			12.075 (0.001)		
Yes	42 (75.0)	27 (42.2)		3.91 (1.78 –	6.22 (1.96 –

				8.57)	19.78)
No	14 (25.0)	37 (57.8)		1.000	1.000
Family history of blindness			4.723 (0.030)		
Yes	17 (30.4)	9 (14.1)		2.68 (1.08 – 6.66)	1.82 (0.44 – 7.53)
No	39 (69.6)	55 (85.9)		1.000	1.000
Ever attended an eye screening before			1.448 (0.229)		
Yes	35 (61.8)	32 (50.8)		1.57 (0.75 – 3.27)	–
No	21 (38.2)	32 (49.2)		1.000	–
Presenting visual acuity (worse eye)			1.607 (0.205)		
Not Blind ($\geq 3/60$)	25 (45.5)	36 (57.1)		1.000	–
Blind ($< 3/60$)	30 (54.5)	27 (42.9)		1.60 (0.77 – 3.32)	–

Key: UOR: Unadjusted odds ratio AOR: Adjusted Odds ratio

Table 4: Respondents knowledge about glaucoma

Questions	Knowledgeable N (%)	Not knowledgeable N (%)	Total N (%)
Glaucoma causes blindness	36 (30.0)	84(70.0)	120(100)
Glaucoma progresses gradually	9(7.5)	111(92.5)	120(100)
One may have glaucoma and not know	5(4.2)	115(95.8)	120(100)
Glaucoma can be inherited	12(10.0)	108(90.0)	120(100)
Glaucoma blindness is irreversible	2 (1.7)	118(98.3)	120(100)
Nerve of vision (optic nerve) is damaged in glaucoma	9(7.5)	111(92.5)	120(100)
Glaucoma is more common in Africans	10(8.3)	110(91.7)	120(100)
Glaucoma prevalence increases with age	4(3.3)	116(96.7)	120(100)
Number who answered any of the above questions correctly	39(32.5)	81(67.5)	120(100)

