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Demographics and Referral Pattern of Patients with Glaucoma at a Tertiary Eye Hospital in Port Harcourt, Nigeria

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Authors' contributions

This work was carried out in collaboration between both authors. Author EAA designed the study, performed the statistical analysis, did the literature searches and wrote the first draft of the manuscript. Author IOC collated the data and also did the literature searches. Both authors read and approved the final manuscript.

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ABSTRACT

Aims: To assess the demographic characteristics and referral pattern of patients with glaucoma presenting at the University of Port Harcourt Teaching Hospital.
Study Design: A hospital-based cross- sectional study.
Place and Duration of Study: The Ophthalmology department, University of Port Harcourt Teaching Hospital between November 2018 and January 2019.
Methodology: Ninety-four (94) consenting consecutive Primary open angle glaucoma (POAG) patients above 18 years attending the glaucoma clinic of the Ophthalmology department of the hospital were recruited. All patients had a comprehensive eye examination and were diagnosed as POAG patients and were receiving treatment. Patients with secondary glaucoma were excluded from the study. A questionnaire was used to retrieve information on sources of referral, and distance travelled to assess care.
Data analysis employed the Epi Info Version 7.1.4. Significant differences in the comparison of means were determined by independent t-test while the difference in proportions was determined using Chi square statistics. Statistical significance was set at p=.05

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Results: A total of 94 glaucoma patients on treatment at our facility were involved in the study. Mean age was 48.49±11.46years. Age range was 25-78years with M: F ratio =1.6:1. 36.2% had secondary education. Majority of referrals (36.3%) were by fellow patients, and most patients (42.6%) travelled less than an hour to access care. 68.1% had prior awareness of glaucoma before visit to clinic. Majority of patients had advanced glaucoma (45.7%) at presentation.
Conclusion: A large proportion of POAG patients presenting in our facility had advanced glaucoma and most referrals were from patients already accessing care and media. Advocacy to improve awareness and prompt referral of affected patients will help to reduce the problems associated with glaucoma in our environment

Keywords: Demographics; glaucoma; referral pattern.

1. INTRODUCTION

Glaucoma continues to be a real threat to sight and more so in the developing world and maybe responsible for up to 30% of blindness [1]. Available evidence shows that glaucoma needs in our region are largely unmet [2].

The glaucoma-specific blindness prevalence in Nigeria (0.7%,95% CI 0.6-0.9) among those aged >40 years is one of the highest while the all glaucoma prevalence is 5.02%. Independent risk factors for glaucoma in Nigeria included the Igbo (South east) ethnic group [3].

Several studies have shown that patients on presentation already have established visual disability [4] and sources of referral may be from health education, family members, primary / tertiary health care facilities [5], referral from allied health care professionals [6].

The aim of this study was to assess the demographic characteristics and referral pattern of patients with POAG presenting at our facility with the objective of improving on case finding. There is limited data on referral patterns of glaucoma patients in our region. This will provide much needed data

2. MATERIALS AND METHODS

The formula for cross sectional studies was used to determine the minimum sample size for the study. Using the standard normal deviate of 1.96, proportion of referral of 17.2% from a similar Nigerian study [6], precision level of 0.1 and non-response rate of 20% a sample size of 94 was appropriate.

Ninety-four (94) consenting consecutive Primary open angle glaucoma (POAG) patients above 18 years receiving treatment at the glaucoma clinic of the Ophthalmology department of the hospital were recruited. Patients with secondary forms of glaucoma were excluded from this study. All participants signed an informed consent to participate in the study and had dilated slit lamp bio microscopy, gonioscopy and perimetry to confirm diagnosis. A questionnaire was used to retrieve information on sources of referral, and distance travelled to assess care.

Data analysis employed the United States Centers for Disease Control and Prevention (CDC) Epi Info Version 7.1.4. Data presentation involved frequency tables and charts. Numerical variables were summarized as means and standard deviation while categorical variables were expressed as counts and proportions. Significant differences in the comparison of means were determined by independent t-test while the difference in proportions was determined using Chi square statistics. Statistical significance was set at .05

3. RESULTS AND DISCUSSION

Glaucoma affects over 60 million worldwide [7] with a reported global prevalence in above 40 years as 3.54% [8] as compared with that of Nigeria put at 5.02% [3].

Glaucoma in Sub-Saharan Africa is a public health problem and is characterized by advanced disease at presentation in most cases [4,9,10].

To win the war against glaucoma there is a need to strengthen case finding and launch wide spread awareness programs to encourage early presentation. This can be done through opportunistic eye examinations in first degree relatives [11] as well as improved referral systems.

Our study revealed more males than females' accessed care for glaucoma which is in keeping

with several other studies [12,13] and emphasizes the need for more gender based advocacy programs. Health campaigns should be taken to more female based groups like age group meetings, and markets to encourage female uptake of services.

Poor health seeking habits may also be associated with educational level and awareness [14,15]. It is known that the higher the educational status, the better health seeking behavior. Majority of our respondents [36.2%] had secondary level of education closely followed by those with tertiary education [31.9%]. This is similar to findings reported by Adekoya et al. [16] in a multicenter study involving newly diagnosed glaucoma patients.

Majority of the study group (68.1%) were aware of glaucoma before presentation even though this did not reflect in early presentation, while 53.2% had no family history of blindness.

Referral to the clinic was from varied sources with referral by other patients contributing the highest number [36.3%] closely followed by print/ news media [21-3%]. This contrasts with a study in South-West, Nigeria where most of the patients were self-referred [16].

Increased referral of patients to the facility indirectly gives a vote of confidence in the health facility and is a viable source of case finding. We can leverage on this by improving on patient knowledge of glaucoma so that they act as secondary case finders when they return to their community. Patient education may be in form of formation of glaucoma patients association, provision of glaucoma -related educational materials, and media campaigns.

Table 1. Demographics of study population

Total number of patients	Mean age of study group	Median age	Age range	Male / Female ratio
94	48-49±11.46years	46 years	25-78years	1.6:1

Table 2. Comparison of mean age among males and females in the study

Variable	Sex		t test	p-value
	Male Mean ± SD	Female Mean ± SD		
Age in years	51.47±11.73	44.53±10.67	2.884	0.005*

*SD – Standard deviation; P=.005; *Statistically significant*

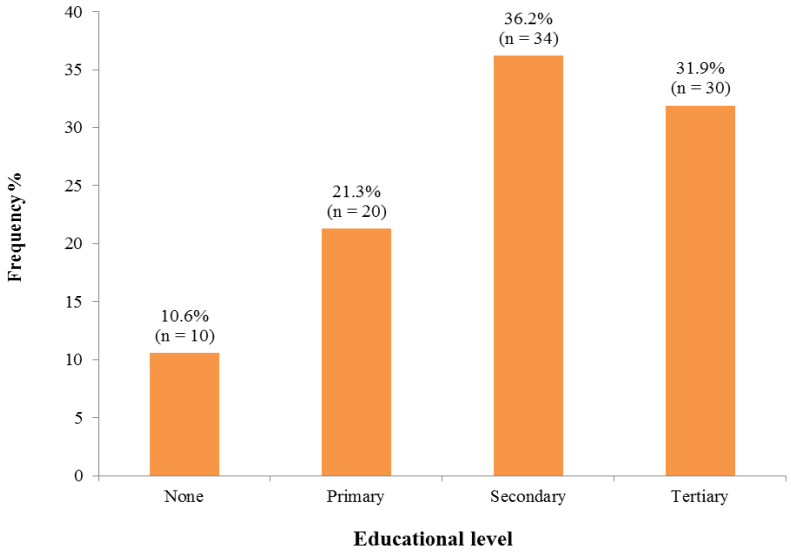

Fig. 1. Distribution of educational level of respondents

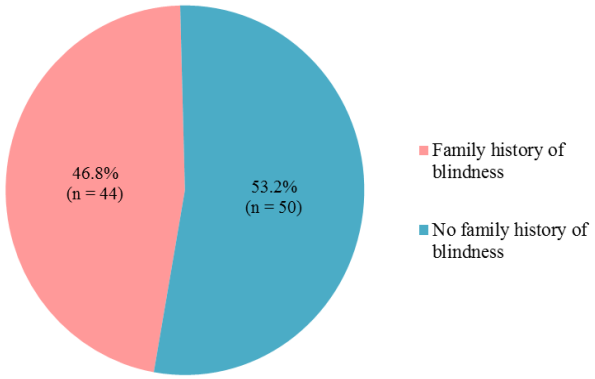

Fig. 2. Family history of blindness among respondents

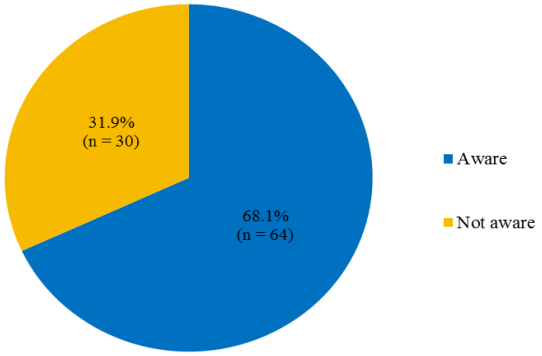

Fig. 3. Distribution of respondents with prior awareness of glaucoma before visit to clinic

Other sources of referral were outreaches, other health workers [16,17,18] however; referrals by other Ophthalmologists were negligible in our study. This may be because most uncomplicated POAG patients would be managed by their ophthalmologists and the only referral from them would be poorly controlled cases or secondary glaucoma's which were excluded from this study.

Most of the patients referred had secondary education, same as those that accessed care after listening to media/ health awareness talks and this was statistically significant (p=.0001)

A large proportion of our patients presented at late stages of the disease (45.7%) in spite of having heard about glaucoma. This presumes knowledge is not enough incentive to access care and there may be barriers which have to be elucidated. It also stands to reason that since most of them came via referrals from patients the disease would have to be advanced for patients to recognize its symptoms.

Table 3. Source of referral versus educational level of respondents

Source of referral	Educational level				
	None	Primary	Secondary	Tertiary	Total
	n (%)	n (%)	n (%)	n (%)	
Patients	3 (8.8)	25 (73.5)	4 (11.8)	2 (5.9)	34 (100.0)
Print and news media	0 (0.0)	0 (0.0)	18 (90.0)	2 (10.0)	20 (100.0)
Optometrists	0 (0.0)	0 (0.0)	8 (80.0)	2 (20.0)	10 (100.0)
Medical doctors (Non-ophthalmologists)	0 (0.0)	0 (0.0)	8 (80.0)	2 (20.0)	10 (100.0)
Other health workers	2 (20.0)	3 (30.0)	4 (40.0)	1 (10.0)	10 (100.0)
Churches/Outreaches	0 (0.0)	1 (20.0)	4 (80.0)	0 (0.0)	5 (100.0)
Ophthalmologists	0 (0.0)	1 (20.0)	1 (20.0)	3 (60.0)	5 (100.0)
Total	**5 (5.3)**	**30 (31.9)**	**47 (50.0)**	**12 (12.8)**	**94 (100.0)**

*Chi Square = 72.750; p-value = .0001**

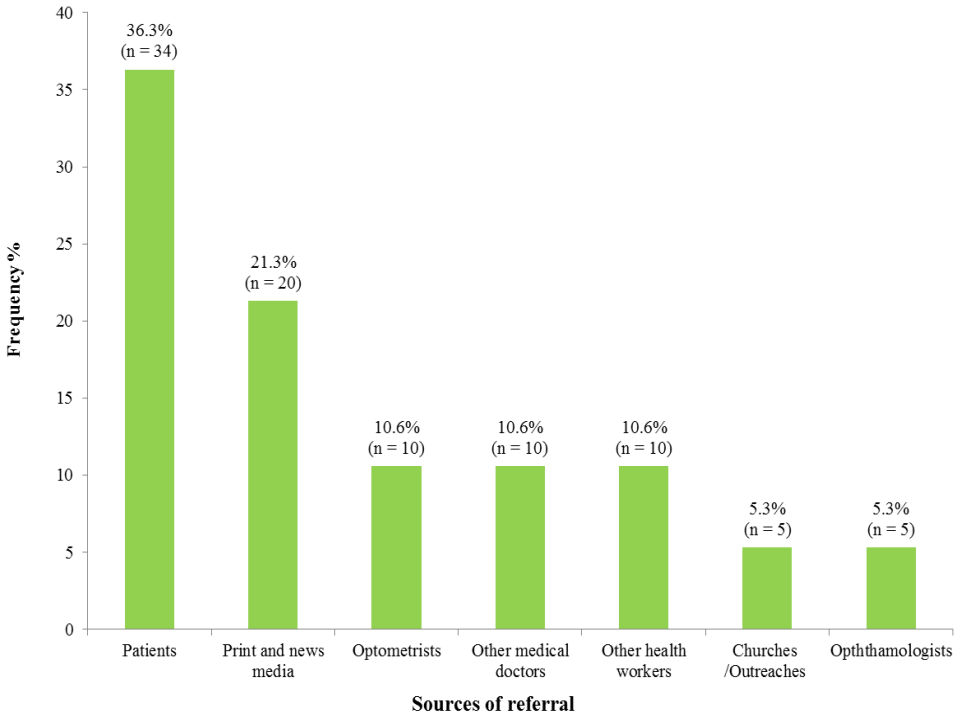

Fig. 4. Sources of referral to eye clinic

Table 4. Source of referral versus severity of glaucoma at presentation

Source of referral	Severity of glaucoma			Total
	Early n (%)	Moderate n (%)	Advanced n (%)	
Patients	6 (17.6)	10 (29.4)	18 (53.0)	34 (100.0)
Print and news media	2 (10.0)	12 (60.0)	6 (30.0)	20 (100.0)
Optometrists	0 (0.0)	2 (20.0)	8 (80.0)	10 (100.0)
Medical doctors (Non-ophthalmologists)	0 (0.0)	8 (80.0)	2 (20.0)	10 (100.0)
Other health workers	0 (0.0)	6 (60.0)	4 (40.0)	10 (100.0)
Churches/Outreaches	0 (0.0)	2 (40.0)	3 (60.0)	5 (100.0)
Ophthalmologists	0 (0.0)	3 (60.0)	2 (40.0)	5 (100.0)
Total	**8 (8.6)**	**43 (45.7)**	**43 (45.7)**	**94 (100.0)**

Chi Square = 20.190; p-value = .064

Table 5. Travel time taken by respondents to eye clinic

Travel time to eye clinic	Frequency	Percentage
Less than1 hour	40	42.6
1 hour to less than 3 hours	34	36.2
3 hours to less than 8 hours	10	10.6
8 hours to less than 24 hours	10	10.6
More than 24 hours	0	0.0
Total	**94**	**100.0**

Noteworthy is the fact that majority of the patients referred from outreaches and optometrists presented with advanced disease. Several optometrists will initiate therapy for glaucoma before referring to an ophthalmologist [6.17,18]. Patients who presented at out reaches may also have initiation of therapy giving patients a false confidence that something has been

done. It should be stressed that outreaches should focus on patient awareness of disease process and prompt referral/ follow up processes set up to ensure newly diagnosed patients are followed up.

Upon referral from the different sources up to 36.2% had to travel between one to three hours to get to the facility while 10% traveled up to 8 hours and 24 hours to access care. No patient had to travel more than 24 hours. Distance to access care is a barrier to access / care [13.19] and efforts should be put in place to improve glaucoma referral.

An ideal glaucoma referral system should have well developed subspecialty services at the tertiary level, while the secondary level should be able to act as a bridge between the primary care centers and referred patients at the tertiary level [20].

Our study is limited by the fact that it is hospital based and very little data exists as a basis of comparison. It is however very important because it has brought to light a very important source of referral of patients, "other patients themselves" There is a need to leverage on this to improve on glaucoma case finding

4. CONCLUSION

Glaucoma has been referred to as the silent thief of sight. A lot of patients are unaware that they have the disease and consequently present late.. A large number of our patients were referred by other patients which emphasizes the importance of improved knowledge base of our patients on glaucoma. An incentive to refer more patients can even be developed.

Mass media is also a very important means of creating awareness and improving case finding. Advocacy and collaborations with allied health care professionals should also be encouraged to improve on early / prompt referrals of patients diagnosed with glaucoma.

CONSENT

All participants signed an informed consent to participate in the study and had dilated slit lamp bio microscopy, gonioscopy and perimetry to confirm diagnosis.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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