SOCIODEMOGRAPHIC AND CLINICAL PROFILE AMONG PRIMARY OPEN ANGLE GLAUCOMA PATIENTS ON MEDICAL TREATMENT IN A TERTIARY HOSPITAL IN ENUGU, NIGERIA

ABSTRACT

Background

Glaucoma has been noted to be more prevalent and aggressive in blacks. Treatment of glaucoma involves lowering of intraocular pressure (IOP) to a targeted level where further glaucomatous damage is unlikely. The aim of this study was to determine sociodemographic factors and clinical history among primary open angle glaucoma (POAG) patients on medical treatment at the glaucoma clinic of Enugu State University of Science and Technology Teaching Hospital Parklane (ESUTTHP), Enugu with a view for better patient management.

Methods

The study was a hospital based cross sectional study on POAG patients on medical treatment attending the eye clinic of ESUTTHP, Enugu. Patients were selected by simple random sampling. Their socio-demographics and clinical history were obtained using an interviewer-administered questionnaire. Data analysis was done using SPSS version 20 (U.S.A). Categorical variables were presented in percentages.

Results

A total of 130 POAG patients on medical treatment were interviewed comprising of 56 males (43.1%) and 74 females (56.9%). Their age ranged between 42 and 83 years with mean age of 62.25 ± 9.002. Civil servants made up of 27.7% of the patients while 26.9% were traders, 16.2% were farmers and 9.2% were artisans. One hundred patients were on prostaglandin analogues, 90

patients were on beta blockers, 31 patients were on topical carbonic anhydrase inhibitors, 20 patients were on alpha agonist while 2 patients were on miotics. These drugs were used either singly or in combination. Ninety-five of the patients (72.1%) reported they were using their drugs regularly while 35 (26.9%) reported they were not using their drugs regularly. Out of those that do not use their drugs regularly, 62.9% reported that it was due to forgetfulness, 40.0% reported that it was due to limited finances and none of the patients reported that it was due to the side effects of the drug. Approximately, 66.2% of the patients had used drugs for 1 - 5 years with the mean duration of treatment being 4.5±3.36 years. About half (57.7%) of the patients did not have family history of glaucoma, 30% of the patients had family history of glaucoma while 17.3% were not sure of any family history of glaucoma).

CONCLUSION

The study revealed that greater number of the patients suffering from glaucoma were women and civil servants. Majority of the patients use their drugs regularly and higher number of the patients do not have family history of glaucoma. Women, civil servants and the entire society should check their eyes with ophthalmologists regularly to avert the danger associated with glaucoma.

INTRODUCTION

Glaucoma is a significant public health problem worldwide.[1,2] It is a chronic optic neuropathy with characteristic optic disc changes and corresponding visual field defect.[3] It can be broadly classified into open angle or angle closure glaucoma based on the mechanism by which aqueous outflow is impaired with respect to the anterior chamber angle configuration. It can also be classified into primary (no known cause) or secondary glaucoma (has known ocular or non-ocular cause), congenital or acquired.[4] Primary open angle glaucoma is the most common type of

glaucoma among Africans[5,6,7] and is often but not always accompanied by elevated intraocular pressure.[1,3,5,8,9]

Glaucoma is the second most common cause of blindness and the leading cause of irreversible blindness worldwide.[2, 10,11,12] According to the World Health Organization (WHO) global data on visual impairment 2010, 39 million people are blind out of which 80% are due to avoidable causes and glaucoma is the second commonest cause of blindness accounting for 8% of cases.[10] Quigley et al[9] noted that bilateral blindness was present in 4.5 million people with open angle glaucoma and 3.9 million people with angle closure glaucoma in 2010 and will rise to 5.9 million and 5.3 million people respectively by 2020. Glaucoma accounts for 15% of blindness in Africa.[13] The Nigeria National Blindness and Visual impairment Survey[12] reported that the prevalence of blindness among those aged 40 years and above was 4.2% and glaucoma was the second commonest cause of blindness (16.7%).

Some of the risk factors for developing glaucoma include advancing age, raised intraocular pressure, black race, positive family history of glaucoma in first degree relatives, thin central corneal thickness and other conditions like diabetes mellitus, myopia and vascular diseases.[1,7,14,15] Of all these, raised intraocular pressure (IOP) is the only modifiable risk factor.[16]

IOP has a diurnal variation[17] with the peak occurring early in the morning at 8 – 11 a.m.[18] Dynamic balance between aqueous inflow and outflow facility determines the circadian fluctuations in intraocular pressure. Primary open angle glaucoma is usually asymptomatic[1,19,20] unlike the acute form of primary angle closure glaucoma which causes pain and decreased vision[14] and often occur as an ocular emergency.[1] Most of the people with glaucoma are unaware of their visual problem because central vision is preserved till the late stage,[14,20] causing majority of these patients to present late to the hospital.[3,19] Treatment of glaucoma, which can be medical

or surgical, is aimed at reduction and diurnal stabilization of the intraocular pressure to a targeted pressure at which further progression of the disease is unlikely.[2,4] The risk factors for glaucoma progression include high peak intraocular pressure, high intraocular pressure fluctuations, low ocular perfusion pressure, older age, large cup-disc ratio, beta-zone peripapillary atrophy, thin corneal thickness and pseudoexfoliation syndrome.[21,22] In Nigeria, the independent risk factors for open angle glaucoma include increasing age, raised IOP and Igbo ethnicity.[23]

This study was done to determine the socio-demographics and clinical history of POAG patients on medical treatment at the glaucoma clinic of Enugu State University of Science and Technology Teaching Hospital Parklane (ESUTTHP), Enugu for better management of the patients.

MATERIALS AND METHOD

STUDY DESIGN

The study was a hospital-based cross sectional study on POAG patients on medical treatment presenting at the glaucoma clinic of ESUT Teaching hospital Parklane Enugu over a three months period between August and October 2017.

STUDY AREA

The study was carried out at ESUT Teaching hospital Parklane Enugu. ESUT Teaching hospital Parklane is a state tertiary hospital in Enugu state, located within the heart of Enugu town, in Enugu-North Local Government Area.

STUDY POPULATION

The study population consisted of all adult follow-up POAG patients aged 40 years and above on medical treatment attending the Friday glaucoma clinic in the Eye clinic of ESUT Teaching

hospital Parklane Enugu during the period of the study.

SAMPLE SIZE CALCULATION

The sample size was calculated using the formula for population less than 10,000:

$$nf = \frac{n}{1 + (\frac{n}{N})}$$

where,

nf = desired sample size when population <10,000

N = estimated size of the population = 672 (from the clinic records, average of 56 POAG patients (83% of all glaucoma patients) are seen on each glaucoma clinic giving 672 POAG patients in 3 months).

$$n = \frac{(z_\alpha + z_\beta)^2 pq}{d^2}$$

n = desired sample size when population >10,000

z_α= standard normal deviate; corresponds to 95% confidence level (z=1.96)

z_β = standard normal variate for power = 0.84 at 80% power

p= proportion of target population with the characteristics (prevalence of POAG = 73.4% of 6.5 = 4.8% = 0.048).[5]

q= 1- p

d = precision = 5%

n will be

$$n = \frac{(1.96 + 0.84)^2(0.048)(0.952)}{(0.05)^2}$$

n = 143

Substituting for n,

$$nf = \frac{143}{1 + (\frac{143}{672})}$$

nf = 118

Correcting for an attrition rate of 10%, the minimum sample size was 130.

INCLUSION CRITERIA

1. Consenting adult (≥40 years) POAG patients on medical treatment attending the glaucoma clinic of ESUTTHP Enugu.
2. No previous glaucoma surgeries or laser treatment.

EXCLUSION CRITERIA

1. Angle closure glaucoma.
2. Normal tension glaucoma.
3. Secondary glaucoma.
4. Media opacity negating view of the fundus in both eyes.
5. Lack of consent.
6. Previous glaucoma surgery or laser.

SAMPLING TECHNIQUE

A simple random sampling method using a table of random numbers was used to select the patients for the study. The list of POAG patients that present to the glaucoma clinic every Friday was used as the sampling frame. Patients who were selected but refused to give consent to participate in the study were replaced by other patients who were willing to take part in the study. About 12-15 patients were selected on each glaucoma clinic. This was done until the minimum sample size (130) was obtained.

STUDY PROCEDURE

The researcher gave a talk to POAG patients on the aim of the study. Patients for the study were then selected by simple random sampling using a table of random numbers. Selected patients who met the inclusion criteria and were willing to participate in the study signed or thumb printed the written consent form. An interviewer-administered questionnaire divided into 2 sections A and B consisting of bio data and clinical history of the patients respectively was used for data collection.

DATA ANALYSIS

Obtained data was cleaned, coded and double entered into a computer. Data entry and analysis was done using Statistical Package for Social Sciences (SPSS) version 20 for windows (U.S.A).

The demographic data of the patients was analysed and presented in frequency tables and percentages. A p value of ≤ 0.05 was used to define statistical significance corresponding to a 95% confidence interval.

RESULTS

A total of 130 POAG patients on medical treatment were interviewed comprising of 56 males (43.1%) and 74 females (56.9%). Their age ranged between 42 and 83 years with mean age of 62.25 ± 9.002 (Table 1).

Table 1: Sociodemographic characteristics of the study participants

Characteristics	Male Frequency (%)	Female Frequency (%)	Total Frequency (%)	Mean (S.D)

Age				
41-50	2(3.6)	15(20.3)	17 (13.1)	
51-60	14(25.0)	27(36.5)	41 (31.5)	62.25
61-70	24(42.9)	25(33.8)	49 (37.7)	(9.002)
71-80	14(25.0)	7(9.5)	21 (16.2)	
81 years and above	2(3.6)	0(0.0)	2 (1.5)	
Total	**56(100.0)**	**74(100.0)**	**130(100.0)**	
Marital Status				
Single	0(0.0)	1(1.4)	1 (0.8)	
Married	49(87.5)	43(58.1)	92 (70.8)	
Divorced	0(0.0)	1(1.4)	1 (0.8)	
Widow	7(12.5)	29(39.2)	36 (27.7)	
Total	**56(100.0)**	**74(100.0)**	**130(100.0)**	
Education status				
None	0(0.0)	12 (16.2)	12 (9.2)	
Primary school	19(33.9)	26 (35.1)	45 (34.6)	
Secondary School	22(39.3)	12 (16.2)	34 (25.2)	
Tertiary	15(26.8)	22 (29.7)	37 (28.5)	
Postgraduate	0(0.0)	2 (2.7)	2 (1.5)	
Total	**56(100.0)**	**74(100.0)**	**130(100.0)**	
Occupation				
Civil servant	16(28.6)	20(27.0)	36 (27.7)	
Trading	9(16.1)	26(35.1)	35 (26.9)	
Farming	4(7.1)	17(23.0)	21 (16.2)	
Artisan	7(12.5)	5(6.8)	12 (9.2)	
Unemployed	2(3.6)	3(4.1)	5 (3.8)	
Driver/motorcycle	4(7.1)	0(0.0)	4 (3.1)	
Paramilitary/ Military	2(3.6)	0(0.0)	2 (1.5)	
Others	12(21.4)	3(4.1)	15 (11.5)	
Total	**56(100.0)**	**74(100.0)**	**130(100.0)**	

The patients were on different anti-glaucoma drugs which were used either singly or in combination. Ninety-five of the patients (72.1%) self-reported they were using their drugs regularly (Table 2).

Table 2: Clinical History of the patients (n=130)

Variables	**Frequency (%)**	**Mean (S.D)**

Anti-glaucoma drugs used by the patients either singly or in combination		
Prostaglandins	100 (76.9)	
Beta blockers	90 (69.2)	
Carbonic anhydrase inhibitors	31 (23.8)	
Alpha agonists	20 (15.4)	
Miotics	2 (1.5)	
Regularly using drug(s)		
Yes	95 (73.1)	
No	35 (26.9)	
Reasons for not using drugs (n=35)		
Forgetfulness	22 (16.9)	
Finance	14 (10.7)	
Side effects	0 (0.0)	
Duration of using anti-glaucoma drugs (Years)		
Less than 1	9 (6.9)	
1-5	86 (66.2)	
6-10	23 (17.7)	4.5 (3.36)
11-15	7 (5.4)	
16-20	4 (3.1)	
Above 20	1 (0.8)	
Family history of glaucoma		
Yes	39 (30.0)	
No	75 (57.7)	
Don't know	16 (12.3)	

On cross tabulation between duration of treatment and regular use of drug, there was no significant relationship between them (p=0.438).

DISCUSSION

Generally, females are regarded as disadvantaged in terms of health seeking behavior, but greater proportion of the study participants were females. This was a good representation of the study population and may be suggestive of a better health seeking behavior amongst these females

especially as they are less financially dependent in this part of the country. Majority were civil servants, traders and farmers.

A substantial proportion of the study participants had been using glaucoma drugs for 5 years or less. Number of patients reduced with duration of using glaucoma drugs. This could be suggestive of loss to follow-up. The patients were on different anti-glaucoma drugs and greater numbers of them were on 2 drugs either singly or in combination. Greater proportion of patients were on prostaglandin analogues followed by beta-blockers. Some of the patients self-reported they were not using their drugs regularly. This is low when compared to the previous study in Enugu by Chukwuka and Ejimadu[24] where poor compliance to medical treatment was found in 42.2% of POAG patients while the study in Lagos by Onakoya and Mbadugha[25] found that 72.8% of the participants reported <100% adherence. Also in contrast was the study by Bradford et al[26] in India where 64.5% of the glaucoma patients self-reported that they do not use their drugs regularly. The low poor compliance rate to medical treatment in the present study could be due to repeated ocular health education and glaucoma counseling which has become part of the Friday glaucoma clinic routine in the study center. The commonest reasons for not using the drugs regularly were forgetfulness to instill the drugs and limited finances to buy the prescribed drugs. This may have affected their IOP control. Therefore, there is still need for continued awareness on glaucoma as well as on drug adherence both to the glaucoma patients and to the general public to help limit the blinding sequalae of glaucoma. Government should either subsidize the cost of drugs or provide free drugs for glaucoma patients to ameliorate the financial difficulty faced by these patients in procuring drugs since glaucoma treatment is for life.

Although a small proportion of the patients reported they had positive family history of glaucoma, it still supports the fact that POAG may have hereditary predisposition. This is higher

than the findings by Abdull et al[27] in Bauchi, Nigeria where 22% of POAG patients reported they have family history of glaucoma. The reason for this disparity could be because South-East geopolitical zone has a higher prevalence of glaucoma than other geopolitical zones based on the national blindness survey report.[12]

CONCLUSION

The study revealed that greater number of the patients suffering from glaucoma were women and civil servants. Majority of the patients use their drugs regularly and higher number of the patients do not have family history of glaucoma. Women, civil servants and the entire society should check their eyes with Ophthalmologists regularly and also adhere to their treatment to avert the danger associated with glaucoma.

ETHICAL APPROVAL AND CONSENT:

The study adhered to the tenets of the Helsinki declaration and the National code of Health research. Ethical approval was obtained from the ESUT Teaching Hospital Health Research and Ethics Committee before commencement of the study.

A written informed consent duly signed or thumb printed was obtained from each patient in the presence of a witness before being included in the study. Participation was at no financial cost to the subjects. Subjects were also free to withdraw from the study at any time within the course of the study. Information obtained from the study was treated with utmost confidentiality.

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