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Original Research Article

Compliance to glaucoma topical therapy and barriers to glaucoma surgery acceptance in a tertiary hospital, Nigeria

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ABSTRACT

Background: Glaucoma is a leading cause of irreversible blindness globally. Intraocular pressure (IOP) is the only modifiable factor in the management of glaucoma patients in order to slow down the disease progression. Poor compliance, uncontrolled IOP despite adequate topical therapy and patients' preference were indications for surgical intervention. The aim of the study is to determine compliance to topical glaucoma therapy, acceptance of glaucoma surgery and its barriers with a view to improve glaucoma surgery acceptance.
Methods: This was a hospital-based longitudinal study. Ninety-six primary open angle glaucoma patients were surveyed for compliance to medication and acceptance of glaucoma surgery. Morisky Medication Adherence Scale item 8 (MMAS-8) and visual analogue scale (VAS) was used as tool in assessing the compliance level. A pretested semi-structured interviewer administered questionnaire was used to assess the socio-demographics, compliance to medication, glaucoma surgery awareness and barriers to glaucoma surgery acceptance. All participants were counseled and also grouped based on gender for group discussion as means of intervention. Results were presented in frequency tables, figures and charts. The statistical significance level was set at $p<0.05\%$.
Results: At baseline, 35.40% of the participants were compliant to medications with MMAS-8 (VAS; 51%). With intervention (counseling and group discussion), at 180 days 76.00% of the participants were compliant to antiglaucoma medications. At baseline and 180 days, 18 (19%) and 25 (26.04%) participants were willing to undergo glaucoma surgery respectively, 5 (20%) out of 25 (26.04%) participants willing to undergo glaucoma surgery accepted trabeculectomy. Fifty-one out of 96 participants have heard of glaucoma surgery at baseline.
Conclusions: There was an improvement in compliance to medication, willingness to undergo glaucoma surgery and acceptance of trabeculectomy following counselling and group discussion.

Keywords: Compliance, Intraocular pressure, Trabeculectomy acceptance

INTRODUCTION

Glaucoma is an important public health problem and second leading cause of blindness worldwide, and a leading cause of irreversible blindness globally.[1] Most individuals with glaucoma are unaware of symptoms until it becomes advanced. However, blindness from glaucoma can be avoided by early diagnosis and sustained effective treatment.[2]

The Nigeria National Blindness and Visual impairment survey reports a prevalence of glaucoma and glaucoma blindness of 5.02% and 0.7% respectively among Nigerian population aged 40 years and above, with primary open

angle glaucoma (POAG) more common and one in every five persons with glaucoma was blind.[3]

Glaucoma is not curable though treatable surgically and or through the use of antiglaucoma medication, treatment aim at preventing progressive loss of vision, blindness and disability. The major modifiable risk factor for glaucomatous progression is raised intraocular pressure; research has shown that lowering it reduces progression in individuals with glaucoma.[4,5]

Most patients and clinicians prefer topical glaucoma medications as first-line treatment for they are effective, safe, available and relatively simple to administer. However, their limitations include ocular and systemic adverse effects, preservative toxicity, cost, difficulty with self-administration for some older individuals and fatigue of daily instillations of eye drops.[6]

Nevertheless, trabeculectomy as a form of surgical therapy has been recommended as primary treatment in Africa due to delay in presentation, problems encountered with medical therapy among Africans and poor long term followup.[7-9] However many Nigerian glaucoma patients are reluctant to have glaucoma surgery due to fear of surgery and the fact that no visual improvement is expected with surgery.[10,11] This study was conducted to determine the compliance to glaucoma topical therapy, glaucoma surgery acceptance and its barrier among glaucoma patients attending a tertiary hospital. The findings would be useful in understanding the patient perspective in the management of glaucoma and how to tackle it as an ophthalmologist.

METHODS

Ethical clearance (UATH/HREC/PR/2019/035) was obtained from the institutional health research ethics committee, and the study followed the principles outlined in the Helsinki declaration. The study was longitudinal hospital-based study carried out at the University of Abuja Teaching Hospital Gwagwalada, Nigeria from December 2019 to October 2020 with a pause due to COVID 19 lockdown. consecutive patients, at least age 18years with primary open angle glaucoma on antiglaucoma medication for at least three months who presented at the outpatient clinic within the study period and gave written informed consent were enrolled.

Patients who were excluded from the study include those with other types of glaucoma, mental disabilities or medical condition that can compromise participant's cooperation with study processes, POAG patients with visual acuity worse than 6/60 or has previous trabeculectomy done, ocular comorbidities obscuring fundal view and anterior chamber angle assessment.

The minimum sample size was calculated to be 96 participants, a semi-structured pretested interviewer administered questionnaire were used to obtained information on sociodemographic.

Other data collected included assessment of compliance, glaucoma surgery awareness, willingness to undergo glaucoma surgery and barriers to acceptance of glaucoma surgery.

Assessment of compliance to medication

Participants' level of compliance was assessed at baseline using the visual analogue scale; compliant (VAS =10) and non-compliant (VAS<10), and eight item Morisky Medication Adherence Scale graded in this study into compliant (MMAS= 8) and non-compliant (MMAS <8).12

Intervention

Participants were counseled based on the deficit noted during participants' interview at baseline and also had a onetime focused group discussion involving participants grouped into two group based on gender where issues surrounding their perspective about glaucoma and glaucoma surgery were discussed.

Eye examination

Ocular examinations; central visual field, gonioscopy, fundoscopy and tonometry was done by a single ophthalmologist. Anterior chamber angle was assessed using gonioscopy or Van Herick method with the aid of slit-lamp bio-microscope; grade 3 and 4 was considered open angle to confirm the diagnosis of POAG. The IOP was measured using Goldmann applanation tonometer after staining with fluorescein strip under topical anesthetic agent (amethocaine) instillation. The IOP was observed for control using European Glaucoma Society 2003 recommendation on target IOP for POAG.

The recommended target IOP for POAG; IOP<18 mmHg for early glaucoma, <15 mmHg for moderate glaucoma, <12 mmHg for advanced glaucoma and <10mmHg for end stage glaucoma.

Optic nerve head was also assessed for signs of glaucoma using the Slit lamp Indirect Ophthalmoscopy with the use of 78D hand held non-contact lens.

Glaucoma severity grading

The severity of POAG was graded based on the level of optic disc appearance and CVF print out using the new glaucoma staging into mild, moderate and severe stage. The staging of the disease was done considering the worst eye.

New glaucoma staging [International Classification of Diseases Tenth Revision (ICD-10)]

Mild or early stage (365.71)-glaucomatous optic nerve abnormalities consistent with glaucoma but no visual field abnormalities on white-on-white visual field test.[13]

Moderate stage (365.72)-glaucomatous optic nerve abnormalities with visual field abnormalities in one hemifield and not within 5 degrees of fixation.[13]

Severe / Advanced / End stage (365.73) - glaucomatous optic nerve abnormalities with visual field abnormalities in both hemi fields and or loss within 5 degrees of fixation in at least one hemifield.[13]

Indeterminate (365.74) –visual fields not performed yet or patient incapable of visual field testing.[13]

Study definition

Participants with POAG were said to be compliant when they conform to recommendation on day-to-day treatment by the provider with respect to dosage, timing and frequency (participants who scored 8 on MMAS-8, 10 on Visual Analogue Scale).

Participants with POAG were said to be non-compliant when they do not conform to recommendation on day-to-day treatment by the provider with respect to dosage, timing and frequency (participants who scored <8 on MMAS<10, 0 on Visual Analogue Scale).

Poorly controlled IOP is IOP not in keeping with European glaucoma society recommended target pressure of IOP ≥18 mmHg in early glaucoma, IOP ≥15 mmHg in moderate glaucoma, IOP ≥12 mmHg, and IOP ≥10 mmHg in end stage.

Participants with POAG were said to be willing to undergo trabeculectomy with patient preference or poor medication adherence/IOP control as indication when agree to have trabeculectomy.

Participants with POAG were said to have glaucoma surgery acceptance when they had trabeculectomy done.

Statistical analysis

Data were collected on standardized form with strict regulations and confidentiality. Analyzed with Statistical Package for the Social Sciences (SPSS) software (IBM corp., SPSS statistics for windows version 25.0; SPSS Inc., Chicago, Illinois USA). Results were presented in frequency tables, figures and charts. The level of statistical significance was set at P value <0.05.

RESULTS

Ninety-six participants were recruited for the study and all were followed up for a period of 6 months giving 100% response rate. Participants were aged between 28 and 75 (mean; 53.26±12.7) years with male to female ratio of 1.6:1. Majority were 40 years and above, educated, married and had monthly income of at least eighteen thousand Naira (#18000) (exchange rate; 1 USD to about four hundred naira at the study period).

Table 1: Socio-demographic profile of the participants.

Variables	Frequency N (%)
Gender	
Female	37 (38.5)
Male	59 (61.5)
Total	96 (100)
Male–female ratio	1.6:1
Age group (years)	
<40	18 (18.8)
≥40	78 (81.3)
Total	96 (100)
Mean age± SD (years)	53.26±12.70 years
Educational status	
Primary	24 (25)
Secondary	14 (14.6)
Tertiary	53 (55.2)
None	5 (5.2)
Total	96 (100)
Marital status	
Single	10 (10.4)
Married	80 (83.3)
Widow	6 (6.3)
Total	96 (100)
Occupation	
Skilled	27 (28.1)
Semi-skilled	19 (19.8)
unskilled	50 (52.1)
Total	96 (100)

*SD – standard deviation.

Compliance to topical antiglaucoma medication of participants at baseline and at 180 days using the self-reported adherence measures; MMAS-8 and VAS. Level of compliance to topical antiglaucoma medication was higher with VAS compared to MMAS-8 at baseline. The observed difference in compliance level between MMAS-8 and VAS at baseline was statistically significant (p= 0.048, Table 2).

Following intervention (counseling and group discussion), compliance to medication increased from 34 (35.42%) at baseline to 76 (79.20%) participants at 180 days using MMAS-8 (Table 2).

Intraocular pressure control at baseline decreased from 63 (66%) to 29 (30.2%) participants at 180 days (Figure 1).

Participants who heard of glaucoma surgery at baseline were 51 (53%) and 45 (47%) never heard of glaucoma surgery (Figure 2).

Table 2: Compliance to antiglaucoma medication of participants at baseline and 180 days with intervention.

Adherence scale	Study group	Adherent frequency N (%)	Non-adherent frequency N (%)	P value
MMAS-8	Baseline	34 (35.42)	62 (64.58)	0.048*
	180 days	76 (79.20)	20 (20.83)	
VAS	Baseline	51 (53.10)	45 (46.90)	
	180 days	86 (89.58)	10 (10.42)	

*p<0.05 indicate statistical significance, MMAS-8 -eight item Morisky Medication Adherence Scale, VAS - Visual Analogue Scale.

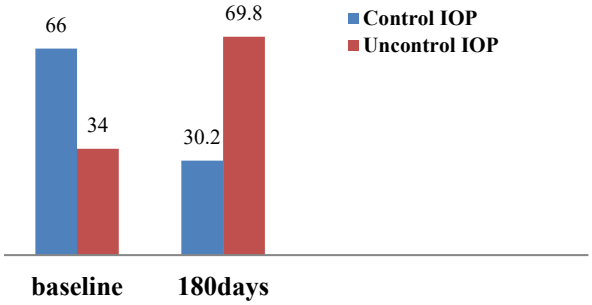

Figure 1: Comparison of Intraocular pressure control at baseline and 180 days.

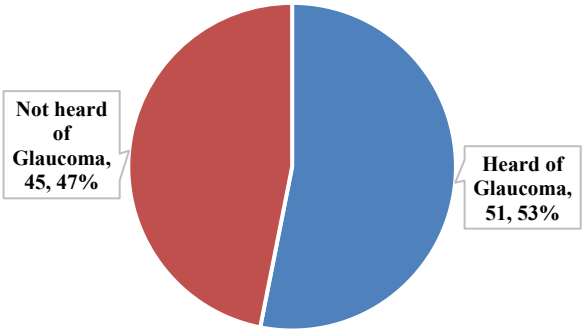

Figure 2: Over-all percentage of participants who heard of glaucoma surgery at baseline.

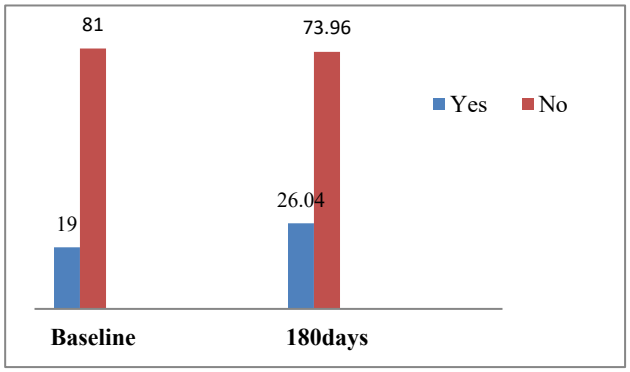

Figure 3: Willingness to undergo surgery among participants.

At baseline, 18 (19%) participants were willing and 78 (81%) participants were not willing to undergo glaucoma surgery.

At 180 days, 25 (26.04%) participants were willing and 71 (73.96%) participants were not willing to undergo glaucoma surgery (Figure 3).

Among participants at baseline not willing to undergo glaucoma surgery, reasons for refusal were fear of going blind 33 (34.30%), fear of surgery 29 (30.20%), no vision improvement 16 (16.70%), cost of surgery 6 (6.30%), prefer drug 6 (6.30%) and too young or old 6 (6.30%) (Figure 4). Out of the 25 (26.04%) participants who had willingness to undergo glaucoma surgery, 5 (20%) participants accepted trabeculectomy at 180 days (Figure 5).

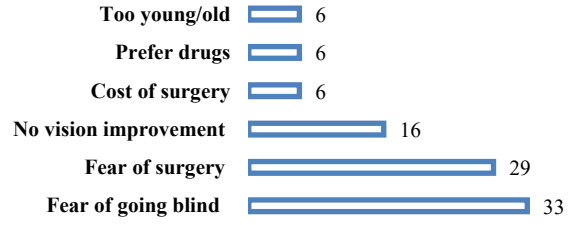

Figure 4: Barriers to willingness to undergo glaucoma surgery among participants.

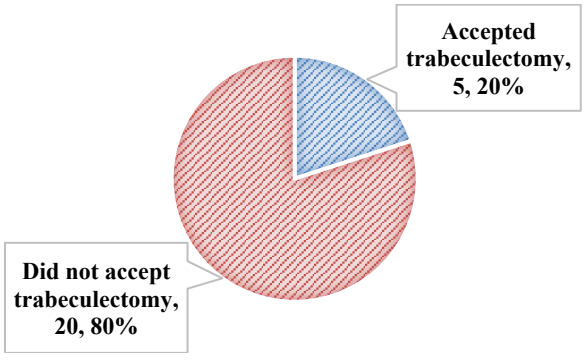

Figure 5: Trabeculectomy acceptance among participants.

DISCUSSION

This study assessed compliance to antiglaucoma medication and trabeculectomy acceptance among 96 participants with POAG.

All participants were followed up for 6 months given a 100% response rate which was considered a strength of the study. Compliance to medication and acceptance of trabeculectomy was influenced by the intervention; counseling and focus group discussion.

In this study at baseline, 34 (35.40%) participants were compliant with medications similar to previous studies, this relates with studies that have indicate poor level of compliance to glaucoma medication among glaucoma patients.[14-17]

Also, the level of compliance to glaucoma medication increases to 76 (79.20%) participants at 180days with intervention; counseling and focus group discussion.

Improvement in compliance to glaucoma medication following intervention have been reported by studies done by Sleath et al and Newman Casey et al. using self-reported measures in assessing medication compliance similar to this study.[18,19]

Compliance to medication can be measured using various techniques; these include clinical interview, self-report surveys, pharmacy claims data analysis, electronic monitoring systems and direct observation of drop instillation technique.[20,21]

In this study, visual analogue scale which is a measure using self-report survey was noted to have overestimated the level of compliance to medication compare to eight item Morisky Medication Adherence Scale which is a standardized scale. This could be attributed to the inability to re-call missed dose on the part of the participants. However, the reliability of MMAS-8 in chronic illness has been validated by researchers.[22,23]

On the other note, trabeculectomy is now advocated as first line of surgical treatment in Africa due to antiglaucoma medication not readily available, poor long term follow up and possibility of non-compliance to medication.[24,25] Despite this recommendation, rates of glaucoma surgery remain low in Nigeria.[26]

Research has shown that initial trabeculectomy with the use of antifibrolytic agent is more effective compared to medical therapy in the control of intraocular pressure in blacks.[26,27]

In this study, Intraocular pressure control at baseline of 63 (66%) decreased to 29 (30.2%) participants at 180 days (Figure 1) despite improvement in compliance to glaucoma medication. This could be attributed to the inadequate instillation technique adopted by the participants.

However, poor compliance, uncontrolled IOP despite adequate topical therapy and patients' preference were indications for surgical intervention.[28]

At baseline, 45 (47%) out of 96 participants never heard of glaucoma surgery during their course of clinic visit. This could be attributed to oversight on the part of the Ophthalmologist in explaining the possible means of glaucoma treatment to the patients.

Also, in this study at baseline 18 (19%) participants were willing to undergo trabeculectomy similar to a study done by Abdull et al and Omoti et al, however improvement to 25 (26.04%) participants was noticed at 180 days with intervention; counseling and focus group discussion.[29,30]

Five (20%) participants out of 25 that agreed to surgery accepted trabeculectomy in this study, similar to what was noted in a study by Abdull et al. where 5 participants agreed but only one underwent surgery.[29]

Notable reasons for refusal of surgery in this study were fear of going blind, fear of surgery and no vision improvement with surgery. This is similar to studies done by Omoti et al. and Adekoya et al.[10,30]

The findings in this study may not be a true reflection of the general population being a hospital-based study.

CONCLUSION

In conclusion, the study assessed compliance to glaucoma topical therapy, willingness to undergo surgery, acceptance of trabeculectomy and its barriers among patients with POAG and found that compliance to glaucoma topical therapy, willingness to undergo surgery and acceptance of trabeculectomy improved with counseling and focus group discussion.

Proper counseling of glaucoma patients on treatment modalities and engagement in group discussion exploring knowledge, opinions, motivations and experiences surrounding glaucoma and its treatment will enhance patients' positive perspective about glaucoma and trabeculectomy acceptance.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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