

# Compliance with topical glaucoma medications in Owo, Nigeria

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## ABSTRACT

**Introduction:** Poor compliance with medications is a major challenge in the management of primary open angle glaucoma as it can lead to deterioration of eyesight. This study assessed the compliance with glaucoma medications among patients attending an Eye Clinic in Nigeria. We also assessed the problems encountered during the applications of topical medications. **Materials and Methods:** This study was conducted over a period of one year (October 2011 to October 2012) at the Eye Clinic of the Federal Medical Centre, Owo, Ondo State, Nigeria. Informed consent was obtained and all consecutive patients with glaucoma presenting to the Clinic during the study period were interviewed with the aid of a semi-structured questionnaire. The study was approved by the Health Research Ethics Review Committee of the hospital. The data obtained was analysed with SPSS 15.0.1 statistical software version. **Results:** One hundred respondents (60 males and 40 females) with an age range of 22 to 88 years old were interviewed. The majority of the respondents (66%) complied fully with their medications, whilst the remainders (34%) were either partially or fully non-compliant. Most respondents (83%) understood the importance of their medication while the remaining 17% did not. The most common problems encountered during applications of medications were eye drops falling on the cheeks (51%) and too many drops falling out (35%). **Conclusion:** Most respondents complied fully with their glaucoma medication. The problems encountered by patients in applying glaucoma medication should be holistically addressed to overcome them so as to enhance compliance with glaucoma medication.

**Keywords:** Glaucoma, compliance, complications, topical medication

## INTRODUCTION

Glaucoma is an eye disorder where there is increase in the intra-ocular pressure resulting in progressive damage to the optic nerve which leads to the loss of sight.<sup>1</sup> Treatments

of primary open angle glaucoma are targeted at reducing the intraocular pressure and these include medical treatment, surgery or laser treatment.<sup>1</sup> As glaucoma cannot be cured nor the damage to the optic nerve reversed, treatments are instituted to slow or prevent disease progression.<sup>2</sup> Patients with glaucoma, just as patients with other chronic medical

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disorders often expect some benefits from their medications; either in form of improved vision or comfort. However, this is not achieved in some, if not most cases due to problem with compliance. Compliance is a major problem similar to other chronic disorders. Therefore, glaucoma is a challenging disease to manage.

Compliance is defined as the degree to which patients adhere to their doctor's prescriptions and non-compliance refers to varying degrees of deviation from the intended treatment plan. The methods of detecting non-compliance are; a) patient interview which is practical but it is not always reliable, b) calculation of number of bottles used per month or tablet count, and c) clinical outcomes through monitoring. In glaucoma patient, clinical monitoring involves monitoring of intraocular pressure control at each clinic visit, evaluation of optic nerve changes as well as visual field changes and this can be tasking on the work load.

Compliance is an important issue in Ophthalmology.<sup>3</sup> Despite this, there is currently no established gold standard for the assessment of compliance.<sup>4,5</sup> Non-compliance or poor compliance with treatment is a major obstacle to effective medical management of glaucoma.<sup>6,7</sup> Studies have shown that non-compliance with eye drops is high among glaucoma patients.<sup>3,8-10</sup> It is not uncommon for patients to omit eye drop or at times interrupt treatment for few days.<sup>1</sup> This study was designed to assess the compliance of glaucoma patients with their topical medications at the Eye Clinic of Federal Medical Centre, Owo, Nigeria. We also assessed the problems encountered during applications of topical eye

medications. It is hoped that our findings would help in evolving strategies to improve compliance with medical treatment amongst patients with glaucoma.

## MATERIALS AND METHODS

This study was conducted over a period of one year between October 2011 and October 2012 at the Eye Clinic of the Federal Medical Centre, Owo, Ondo State, Nigeria. Ethical clearance was obtained from the Health Research Ethics Review Committee of the hospital prior to carrying out this study. Informed consent was obtained from each of the respondents.

All consecutive consenting patients with glaucoma presenting to the Eye Clinic during the study period were interviewed by the authors with the aid of a semi-structured questionnaire. The information obtained from the respondents included their demographic details. The degree of compliance with topical eye medication was assessed using a modified study instrument (questionnaire) developed by Sleath *et al.* carried out in India.<sup>10</sup> Problems encountered by the patients were also established with the aid of the study instrument. Some of the problems established included difficulty in paying for their medication, difficulty in instilling eye drop, difficulty in opening eye drop bottle and difficulty in squeezing the eye drop.

The questionnaire was modified to suit the aims of this study and also to conform with the peculiarities of our own environment.

The data obtained with the aid of the study instrument (questionnaire) was collated and analysed with SPSS 15.0.1 statistical software version. Chi-square test was used to

assess the categorical variables. Statistical significance was set as  $p < 0.05$ .

## RESULTS

One hundred respondents were interviewed; 60 males and 40 females. The mean age was 62.5 years  $\pm$  14.3 years while the mode age was 65 years (range 22 to 88). There were 90 Yorubas, three Ibos, three Hausas and the other ethnic groups accounted for the remaining four. The breakdown of occupations of the respondents is shown in Table 1.

Most of our patients had bilateral primary open angle glaucoma. Enquiry into the duration of the disease revealed that 35 had glaucoma for less than one year, 29 for one to two years, 21 for two to five years and 15 for more than five years.

With regards to compliance, 66% complied fully with their topical eye medication whereas the remaining 34% did not. Among the 34% who were not fully compliant with their medications, 31% admitted to missing two or less doses per week, while 3% missed more than two doses per week. Most respondents (90%) were aware that non-compliance could be detrimental.

Problems during applications of medications are shown in Table 2. Difficulty in paying for medications was reported by 22%.

Being single or alone significantly affected the compliance of respondents ( $p < 0.001$ ). However, the number of glaucoma medications did not significantly affect compliance ( $p = 0.257$ ). The factors associated with non-compliance are shown in Table 3.

**Table 1: Occupations of respondents.**

Occupations	Frequency (%)
Civil service	32 (32)
Pensioner	23 (23)
Trading	20 (20)
Farming	10 (10)
Unemployed	5 (5)
Artisan	4 (4)
Schooling	3 (3)
Banking	2 (2)
Clergy	1 (1)

## DISCUSSION

The peak age incidence of our respondents is comparable with what is expected of primary open angle glaucoma. Most of our patients were of Yoruba ethnicity which is consistent with the demographics of the study community. Most of our respondents had bilateral primary open angle glaucoma and this is expected given that primary open angle glaucoma is commonly bilateral.

Patients' awareness of the blinding nature of glaucoma is a major determinant of compliance. Patients are more likely to comply with their medication if they had severe the visual loss.<sup>11</sup> Measures to improve compliance include complete and effective labelling of medications, increased supervision or counselling, medication calendars and reduction of

**Table 2: Problems encountered during application of medications.**

Problems	Frequency (%)
Drops falling on the cheek	51
Too many eye drops come out	35
Side effect	12
Difficulty in remembering doses	12
Difficulty in opening eye drop	11
Inconvenient dosage	8
Difficulty in squeezing eye drop	8
Difficulty in instilling eye drop	6

**Table 3: Marital status and compliance with glaucoma medication.**

Marital Status	Frequency of application			Total
	Always	Most of the time	Sometime	
Single	1	4	0	5
Married	57	23	0	80
Widowed	8	4	3	15
<b>Total</b>	<b>66</b>	<b>31</b>	<b>3</b>	<b>100</b>

medication induced adverse effects.<sup>11</sup> Use of different sizes or shapes will also help patients to discriminate between the different medications.<sup>12</sup> Assistance from family members<sup>13</sup>, simplification of treatment regimen and interactive health education can improve compliance.<sup>14</sup> Modification of the treatment regimen to fit with a patient's lifestyle may promote compliance.<sup>15</sup>

In our study, most respondents (66%) were fully compliant with their medication. This finding is likely related to the fact that the majority of the respondents understood the need for glaucoma medication and most knew that missing their medication is detrimental to their eye health. It is important for eye care providers to ensure that glaucoma patients are well informed as this would most likely enhance their compliance.

Various degrees of compliance with glaucoma medications have been reported. In a study by Deokule *et al.*, 77% of their glaucoma patients reported compliance but only 52% could identify their medications and the frequency of use.<sup>16</sup> However in this study, compliance assessment was based on patients' reporting which may be subject to recall and hence less reliable. Kass *et al.* reported that most patients tended to overestimate their compliance and importantly physicians were also unable to determine which patients

adhere to prescribed therapy.<sup>17, 18</sup> Rotchford *et al.* reported that 24% of 86 patients interviewed admitted to omitting their glaucoma treatment frequently or occasionally.<sup>19</sup>

Reduction in the frequency of application of topical medications may promote compliance. In a study by Schenker *et al.*, they reported that 71% of their study subjects preferred the use of timolol gel once daily to timolol solution twice daily ( $p < 0.001$ ) with 92% indicating that the once daily regimen was the reason for their preference.<sup>20</sup> The patients also reported significant fewer missed doses when using gel preparation ( $p = 0.005$ ), suggesting that patients appreciate having their therapy simplified.<sup>20</sup> However in this study the number of glaucoma eye drops used did not significantly affect compliance with glaucoma medication ( $p = 0.257$ ).

Apart from the treatment regime, level of understanding and the type of medications, financial factor is also important. Some of our respondents experienced difficulty in paying for their medications and this should be addressed by making medications more affordable and available. A National Health Insurance Scheme in Nigeria should be made operational so that more patients with glaucoma could benefit.

More than half of the respondents

complained that eye drops fell on their cheeks and about a third complained that too many drops came out at the same time. Eye care providers should educate patients on how to apply their medication. Demonstration of the appropriate ways of applying topical medications can be done during health education sessions by nurses in the eye clinics.

Healthcare service delivery is still evolving in Nigeria and the need to render quality and affordable eye care to glaucoma patients must be emphasised. Most respondents who were single did not comply fully with their medication. This finding is in tandem with that of the study of Sleath *et al.* in India.<sup>20</sup> Patients who are single should be given adequate social support to fully comply with their medication.

The main limitations of our study are that it was clinic based and relied on information provided by respondents. Thus there is need to interpret the findings of this study with caution. Further similar community based studies should be carried out to get more revealing findings.

In conclusion, our study showed that most complied fully with their glaucoma medication. The majority of single respondents did not fully comply with their medications. The problems encountered included issues related to the applications of medication and difficulty with payment.

#### REFERENCES

- 1: Regnault A, Viala-Danten M, Gilet H, Berdeaux G. Scoring and psychometric properties of the eye drop satisfaction questionnaire (EDSQ), an instrument to assess satisfaction and compliance with glaucoma treatment. *BMC Ophthalmol* 2010;10:1.
- 2: Disease and conditions. Glaucoma. Available from [http:// www.mayo clinic.com/health/ glaucoma/DS00283](http://www.mayo.clinic.com/health/glaucoma/DS00283) (Accessed 20<sup>th</sup> August 2010).
- 3: Olthoff CM, Schouten JS, Borne van de BW, Webers CA. Non compliance with ocular hypertensive treatment in patients with glaucoma or ocular hypertension as an evidence-based review. *Ophthalmology* 2005; 112:953-96.
- 4: LaFleur J, Oderda GM. Methods to measure patient compliance with medication regimens. *J Pain Palliat Care Pharmacother* 2004; 18:81-7.
- 5: World Health Organization: Adherence to long-term therapies: evidence for action. Geneva, WHO 2003.
- 6: Tsai T, Robin AL, Smith JP. An evaluation of how glaucoma patients use topical medications: a pilot study. *Trans Am Ophthalmol Soc* 2007; 105:29-35.
- 7: Sclar DA, Skaer TL, Cin A, et al. Effectiveness of C cap in promoting prescription refill compliance among patients with glaucoma. *Clin Ther* 1991; 13:396-400.
- 8: Friedman DS, Quigley HA, Gelb L, et al. Using pharmacy claims data to study adherence to glaucoma medications: methodology and findings of the Glaucoma Adherence and Persistency study (GAPS) *Invest Ophthalmol Vis Sci.* 2007; 48:5052-7.
- 9: Schwartz GF, Quigley HA. Adherence and persistence with glaucoma therapy. *Surv Ophthalmol.* 2008; 53:S57-68.
- 10: Sleath B, Robin AL, Covert D, Byrd JE, Tudor G, Svarstad B. Patient-reported behaviour and problems in using glaucoma medications. *Ophthalmology* 2006; 113:431-61.
- 11: Asburn FS, Goldberg I, Kass MA. Compliance with ocular therapy. *Surv Ophthalmol.* 1980; 24:237-48.
- 12: Weintraub M. Promoting patient compliance: role of health professionals, government and pharmaceutical industry. *NY State J Med* 1975; 75:2263-66.
- 13: Zimmernan TJ, Zailta AH. Facilitating patient compliance in glaucoma therapy. *Surv Ophthalmol.* 1983; 28:252-57.
- 14: Sclar DA. Improving medication compliance: a review of selected issues. *Clin Ther* 1991;13:436-40.

**15:** Weintraub M. Compliance in the elderly. *Clin Geriatr Med* 1990; 6:445-52.

**16:** Deokule S, Sadiq S, Shah S. Chronic open angle glaucoma: patient awareness of the nature of the disease, topical medication, compliance and the prevalence of systemic symptoms. *Ophthal Physiol Opt* 2004; 24:9-15.

**17:** Kass MA, Gordon M, Meltzer DW. Can Ophthalmologists correctly identify patients defaulting from pilocarpine therapy? *Am J Ophthalmol* 1986; 101:524-30.

**18:** Kass MA, Meltzer DW, Gordon M, Cooper D, Goldberg J. Compliance with topical pilocarpine

treatment. *Am J Ophthalmol* 1986; 101:515-23.

**19:** Rotchford AP, Murphy KM. Compliance with timolol treatment in glaucoma. *Eye* 1998; 12:234-6.

**20:** Schenker H, Maloney S, Liss C, et al. Patient preference, efficacy and compliance with timolol maleate ophthalmic solution in patients with ocular hypertension or open-angle glaucoma. *Clin Ther* 1999;21;138-147.

**21:** Sleath BL, Krishnadas R, Cho M, et al. Patient-reported barriers to glaucoma medication access, use and adherence in southern India. *Indian J Ophthalmol* 2009; 52:63-8.

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