



Research Paper

## Outcome Of Screening For Visual Impairment And Ocular Morbidities Among Conference Participants In Calabar, Cross River State, Nigeria

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### ABSTRACT

**Purpose:** To screen participants of an annual conference for visual impairment and ocular morbidities, identify and refer those with vision threatening conditions for appropriate treatment.

**Methods:** Screening for visual impairment and ocular morbidities was conducted among participants of an annual religious conference in the city of Calabar in Cross River State, Nigeria that held between 27<sup>th</sup> to 29<sup>th</sup> May 2022. All the conference participants who consented to partake in the screening exercise were included. Eye examination was done which included visual acuity testing, external eye and anterior segment examination using penlight and magnifying head loupe. Posterior segment examination was done with direct ophthalmoscope. The data obtained were entered into SPSS statistical package and analyzed.

**Results:** A total of 149 participants were screened for visual impairment and ocular morbidity. There were 136 males and 13 females with male to female ratio 10.5:1. The mean age was  $49.4 \pm 10.6$  years while the age range was 22 to 80 years. Ocular morbidity was found in 116 out of the 149 participant giving a prevalence of 77.8%. Presbyopia 105 (70.5%) constituted the major cause of ocular morbidity followed by uncorrected refractive error 51(34.2%) and glaucoma 15(10.1 %), dry eye syndrome and pterygium 9 (6.0 %) cases each. Distance visual impairment was seen in 12(8.1 %) of participants. Only one participant had presenting VA of less than 3/60 (blindness) in the better eye.

**Conclusion:** Vision screening exercises among individual or groups is useful in identifying previously undetected eye disorders. Early detection of visual impairment and ocular morbidity through periodic eye screening and timely intervention to prevent or minimize the burden of eye diseases on individuals or groups is advocated.

**Key words:** screening, ocular morbidity, visual impairment

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### I. INTRODUCTION

It is reported that globally, 1.3 billion people suffer from vision impairment of which 36 million people are blind and about 89% of these visually impaired people live in low and middle income countries<sup>1</sup>. Blindness and visual impairment are caused by some ocular morbidities and this can impact negatively on an individual in several ways. It can have significant impact on the personal, economic and social life of an individual<sup>2,3</sup>. Early detection of ocular morbidity through appropriate eye screening and timely intervention can help reduce or mitigate the burden it may impose on individuals. Unfortunately, in many developing countries like Nigeria, regular eye checks that aid in early detection of potential vision threatening ocular morbidities are not taken seriously. Visual problems increase as one gets older but this may go unreported for several reasons, including decrease expectations in old age, a belief that nothing can be done to help, failure by the patient to recognize visual loss, and the presence of another handicap that dominates the perception of visual difficulties. Other possible inhibiting factors include cost of routine eye check and the fear about surgical treatment<sup>4</sup>.

It was for the above reasons that visual screening exercise was conducted among participant of an annual religious conference with the view of identifying and referring potential vision threatening ocular morbidities for appropriate treatment.

## **II. MATERIALS AND METHODS**

This screening for visual impairment and eye diseases was conducted among participants of an annual conference of married male adult members of Redeemed Christian Church of God held at the church headquarters in Calabar between 27<sup>th</sup> to 29<sup>th</sup> May 2022. All the conference participants including their spouses (for those that came with their spouse) who consented to partake in the screening exercise were included.

Vision screening was done in a well-lit section of the conference hall. Standard Snellen's chart kept at a distance of 6 meters was used to assess distance visual acuity (VA). Each eye was tested separately with each participant using the palm to cover each eye one after the other. Those whose with VA was < 6/9 underwent a pinhole test to determine if the decrease in vision was due to refractive error. Refractive error was diagnosed when a VA worse than 6/9 improved on pin hole test. Distance visual acuity of 6/6 - 6/12 was considered to be normal, <6/12 to 6/18 was classified as mild visual impairment, < 6/18 to 6/60 was classified as moderate visual impairment and <6/60 to 3/60 as severe visual impairment while visual acuity less than 3/60 was classified as blindness.

Near vision acuity was assessed using Rayner's near acuity chart. The diagnostic criteria for presbyopia were adults 30 years and above who complained of difficulty reading tiny prints and whose near acuity improved with convex lenses ranging from +1.5D to +3.00D. External eye and anterior segment examinations including eyelids, lacrimal apparatus, conjunctiva, cornea, anterior chamber, pupil, iris and lens was done using penlight and 3x binocular magnifying head loupes.

The posterior segment was examined using Heine direct ophthalmoscope. Undilated fundoscopy was performed on every participant while dilated fundoscopy was done where necessary in cases of visual acuity of less than 6/18 which did not improve significantly with pinhole in the absence of obvious identifiable factor. One drop of 1% tropicamide eyedrops instilled three times at intervals of five minutes was used for pupillary dilatation. Glaucoma was diagnosed in those with classical glaucomatous optic atrophy with cup to disc ratio (CDR) of 0.7 and above in at least one eye. Other diagnoses such as pterygium, cataract, pingueculum etc. were based on history, morphologic appearances and anatomic locations

Those with minor eye problems such as presbyopia were treated with eyeglasses while those needing further assessment and evaluation were referred to the University of Calabar Teaching Hospital for further evaluation and management.

The data obtained were entered into SPSS (SPSS for Windows, version 26.0; Chicago, IL, USA) statistical package and analyzed. Descriptive statistics were used to yield frequencies, percentages, and proportions.

## **III. RESULTS**

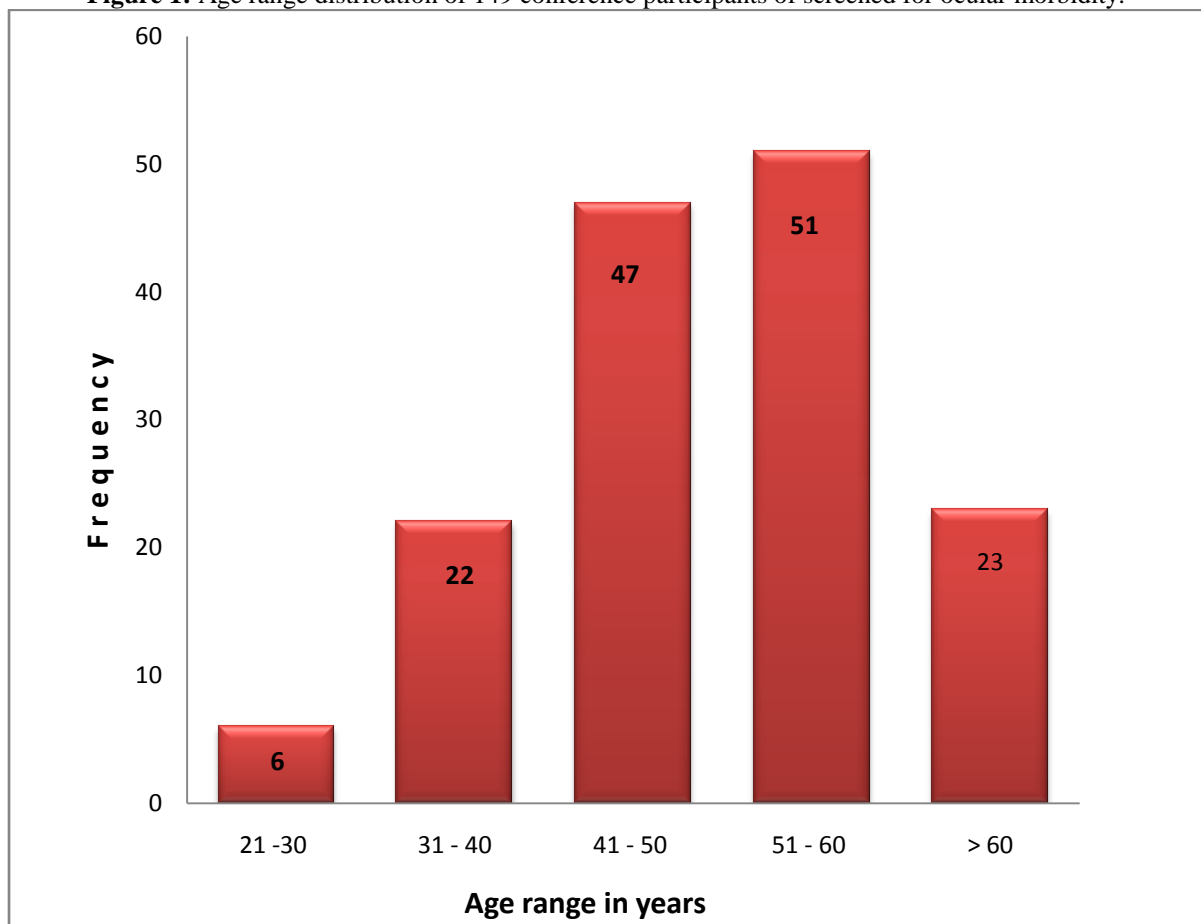
A total of 149 participants were screened for visual impairment and ocular morbidity. There were 136 males and 13 females with male to female ratio 10.5:1. The mean age was  $49.4 \pm 10.6$  years while the age range was 22 to 80 years. The age group with the highest participation was 41 to 50 years with a total of 51 (34.2%) participants. Least common age group was the 21 to 30 years with only 6 (4%) of the study participants falling into this group (Figure 1). Table 1 shows the distribution of presenting distant visual acuities in the better and worse eyes of the study participants. Majority 136( 91.2%) of the participants had normal distance visual acuity (VA) of 6/12 or better in their better eye while only 12(8.1 %) had impaired distance VA of less than 6/12 to 3/60. Among the 8.1% participants with presenting distance visual impairment in their better eye, 5(3.4%) had each of mild visual impairment and moderate visual impairment while 2(1.3%) had severe visual impairment. Only one participant had presenting VA of less than 3/60 (blindness) in the better eye. Similarly most participants 112(75.2% ) had visual acuity of 6/12 or better in their worse eyes while 13(8.7%) had mild visual impairment, 14(9.4% had moderate visual impairment and 6(4.0%) had severe visual impairment. Only 4(2.7%) were blind in their worse eye with presenting distance VA of less than 3/60.

Table 2 shows the ocular morbidities found among the study participants. Ocular morbidity was found in 116 out of the 149 participants evaluated in this study giving a prevalence of 77.8%. Presbyopia 105 (70.5 %) constituted the major cause of ocular morbidity followed by uncorrected refractive error 51( 34.2%) and glaucoma 15(10.1 %), dry eye syndrome and pterygium 9 (6.0 %) cases each. Others include cataract, glaucoma suspect, retinitis pigmentosa, pingueculum, diabetic retinopathy, cornea opacity, phthisis bulbi and age related macular degeneration . Among the 15 persons diagnosed of glaucoma, only 6(40%) person's were previously aware of their eye condition and are already on glaucoma therapy while 8(60%) persons were previously unaware.

**Table 1:** Distribution of visual acuities for better and worse eyes of study participants

Visual acuity	Better eye Number (%)	Worse eye Number (%)
6/12 or better	136 (91.2)	112 (75.2)
<6/12 to 6/18	5 (3.4)	13 (8.7)
<6/18 to 6/60	5 (3.4)	14 (9.4)
< 6/60 to 3/60	2 (1.3)	6 (4.0)
< 3/60 to NPL	1 (0.7)	4 (2.7)
<b>Total</b>	<b>149 (100)</b>	<b>149 (100)</b>

**Figure 1:** Age range distribution of 149 conference participants of screened for ocular morbidity.



**Table 2.** Ocular morbidities found in the study participants

Type Of Ocular Morbidity	Number	Prevalence (%)
Presbyopia	105	70.5
Refractive error	51	34.2
Glaucoma	15	10.1
Allergic conjunctivitis	6	4.0
Cataract	5	3.4
Dry eye syndrome	9	6.0
Glaucoma suspect	5	3.4
Retinitis pigmentosa	1	0.7
Pingueculum	6	4.0
Pterygium	9	6.0
Cornea opacity	2	1.3
Diabetic retinopathy	2	1.3
Age related macular degeneration	3	2.0
Pthisis bulbi	1	0.7

Note that majority of the study participant had more than one ocular morbidity.

#### IV. DISCUSSION

The higher preponderance of males in this study is because the conference was essentially for married adult males. The few females that participated in this study are among those that accompanied their spouses to the conference.

The mean age in this study was 49.4 years. This is similar to the average age reported among group of workers in Ibadan (48.3 years) and in Enugu (49.7 years)<sup>5,6</sup>. The predominance of presbyopia (70.5%) as an ocular morbidity in this study is largely due to the characteristic of the study population which was predominantly in the middle age group that presbyopia is usually a challenge. It is for similar reason that a study in Enugu found presbyopia (81.4%) as the most common ocular morbidity among drivers who are above 40 years in age<sup>6</sup>.

The 8.1% prevalence of distance visual impairment in the better eye seen in this study is higher than the 3.3% reported by Oladehinde et al<sup>7</sup>. This difference in prevalence may be due to differences in study areas and definitions of visual impairment. For instance, in their study, visual impairment which was defined as visual acuity of less than 6/18 to 3/60 would tend to produce lower prevalence of visual impairment when compared with present study

Cataract was seen in only 3.4% of our study contrary to 12% reported by Okoye et al<sup>8</sup>. It is likely that dilated slit lamp examination may reveal additional findings like posterior subcapsular cataract which could influence the prevalence of cataract in our study.

Glaucoma is one of the common ocular diseases found in this study accounting for 10.1%. This is similar to a study in Lagos by Akinsola et al<sup>9</sup> where glaucoma was seen in 11.9% of patients and 8.8% reported by Obi-Fortune et al<sup>10</sup> in Port Harcourt, Nigeria. Glaucoma is reported to be the second most common cause of blindness or visual impairment worldwide<sup>11</sup>. It is the leading cause of irreversible blindness in West Africa and it has been estimated that 20% of people older than age 40 in West Africa may be at risk from the disease<sup>9</sup>.

Refractive error was seen in 34.2% of the participants in this study. This is lower than the 41.6% reported by Megbelayin et al<sup>4</sup> and 76.6% reported by Asimadu et al<sup>6</sup> in South Eastern Nigeria but higher than the 23.1% reported by Obi-Fortune et al<sup>10</sup> in a study done in same geographical zone as present study. Variations in reported prevalence of refractive errors may be attributable to differences in genetic, geographical and environmental factors as well as varied diagnostic criteria in different studies.

#### V. CONCLUSION

This study shows that a significant number of participants in this annual conference have ocular morbidity. The commonest ocular morbidities were presbyopia, refractive errors and glaucoma. Ocular morbidity screening programs can identify previously undetected eye disorders in any population group. Early detection and timely management of these diseases would help reduce the burden of ocular morbidity. Increased awareness and appropriate sensitization programs on the need for routine eye checks among individuals or groups with the view to identifying treatable eye diseases at early stages so that timely intervention or treatment can be instituted is recommended.

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