

## Prevalence and types of eye diseases identified by routine screening of medical practitioners in Kano, Northwestern Nigeria

Usman Abubakar Mijinyawa,<sup>1</sup>  
Lawan Abdu,<sup>2</sup> Musbahu Sani Kurawa,<sup>2</sup>  
Zayyad Farouq<sup>3</sup>

<sup>1</sup>Department of Ophthalmology, Murtala Muhammad Specialist Hospital Kano;

<sup>2</sup>Department of Ophthalmology, Faculty of Clinical Sciences, College of Health Sciences, Bayero University Kano;

<sup>3</sup>Department of Ophthalmology, Aminu Kano Teaching Hospital, Kano, Nigeria

### Abstract

Ocular screening can identify both non-blinding and potentially blinding conditions. Asymptomatic eye conditions could be detected early and be refer for further reevaluation if identified during screening. Programmed Data generated during CME in Kano were collated and analyzed. Visual acuity was done, and near vision was tested with N-chart. All the participants that needed the screening had slit lamp examination, fundoscopy, and refraction. A total number of 92 participants were examined. Age ranges from 20 to 70 years with mean age of 45±2SD, and male to female ratio of (M:F = 1:0.2). Emmetropia was seen in 34.8%, while presbyopia was seen in 23.9% of cases. Findings were corneal opacity, cataract, and allergic conjunctivitis. Vertical cup disc ratio of  $\geq 0.5$  was seen in 12.0% and 9.8% of cases in right and left eye respectively, while 1.1% of the eyes had macula hole. Refractive error for distance, presbyopia and some anterior and posterior segment findings were identified. Majority had normal vision in both eyes with visual acuity of 6/6 to 6/18.

### Introduction

Screening is often aimed at detecting diseases some of which are asymptomatic. It could lead to early disease recognition that needed an immediate form of intervention or prompt referral for further management. Eye conditions such as cataract, refractive errors, allergy, optic disc changes that are suspicious of glaucoma were identified in other studies.<sup>1,2</sup> In an outreach program conducted in Abuja, it was found that major causes of ocular morbidity were

refractive error (40.4%), Allergic conjunctivitis (18%), and cataract (3.0%).<sup>3</sup> A Study in Sokoto on prevalence of blindness reported that cataract was the leading cause of unilateral blindness accounting for 53.8%, non-trachomatous corneal opacity in 12.9%, and uncorrected aphakia in 10.5%.<sup>4</sup> In Imo Nigeria, an outreach program identified that common causes of ocular morbidity were refractive error 31.6%, glaucoma 23.5%, presbyopia 17.0%, and cataract 12.5%.<sup>5</sup> There were 27.7% glaucoma suspect, and refractive error accounted for 29.6% of those with visual impairment in a study reported from Benin.<sup>2</sup> In ECWA eye hospital Kano, most common causes of blindness were cataract 40.5%, glaucoma 29.3%, and corneal opacity 14.3% of cases of bilateral blindness.<sup>6</sup> Screening done during world glaucoma week in Osun reported that 91.9% had normal disc, 7.3% had cup disc ratio  $>0.6$ , pale disc non cupped in 0.8%, while 98.8% had normal macula.<sup>7</sup>

Medical doctors most times don't have time to go for screening as such asymptomatic eye conditions could be detected early and be refer for further reevaluation if identified in screening.

### Materials and Methods

This was a cross sectional study of Medical doctors that attended the 1<sup>st</sup> quarter Continuous Medical Education (CME) Program in Kano 2018. Ethical approval obtained from the Ethical Review Board of the State Hospitals Management Board and adhered to the tenants of Helsinki declaration. Permission was granted by the Nigerian Medical Association (NMA) Kano Branch. Programmed Data generated during the CME were collated and analyzed. All Medical doctors with registered phone contact from the database of the association were informed via text messages on the need for voluntary eye screening exercise. Screening was done in a nearby room which ensured smooth flow of participants from the waiting area to first stage assessment and refraction, then to the ophthalmologist for further examination and provision of any available intervention where needed.

The Ophthalmic nurses carried out the unaided and pinhole visual acuity using the Snellen's lettered chart and near vision using the N-Chart after informed verbal consent. The Optometrist refracted all the participants using manual retinoscope, while the Ophthalmologist carried out the slit lamp examination and fundoscopy (Welch-Allyn). Those found to have minor treatable eye conditions were treated in the venue, while those that needed reevaluation

Correspondence: Usman Abubakar Mijinyawa, Department of Ophthalmology, Murtala Muhammad Specialist Hospital Kano, Nigeria.  
Tel.: +234.8035558591.  
E-mail: usmanmijinyawa78@gmail.com

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were referred to the participating based hospitals. Data obtained included age, gender, refractive status, anterior segment findings, and vertical cup disc ratio which were all documented. Data was analyzed using a computer based statistical package for the social science (SPSS) version 16.0 (Chicago, USA). The qualitative variables are presented as bar charts, pie charts, and percentages. The non-parametric test  $\chi^2$  was used appropriately to compare proportions. A confidence interval of 95% was used, and a P-value of  $\leq 0.05$  was considered statistically significant.

### Results

A total number of 173 doctors that were registered by the NMA attended the CME program, and 92 (53.2%) participants were examined during the screening program. Age ranges from 20 to 70 years with mean age of 45±2SD. There were 76 male and 16 females: (M: F=1:0.2). Of 184 eyes, 1 (1.1%) had macula hole, 3 (3.3%) eyes could not be accessed due to cataract, and 88 (95.7%) were normal.

### Discussion

Ocular screening can identify both non-blinding and potentially blinding conditions. Despite the wide age range, most of the participants are in the third to fourth decade of life (Table 1). At these age people are more energetic. Few were in the sixth to

seventh decade, perhaps as older doctors have retired and need not to attend the CME activity. There were more male doctors than females that attended the program in line with the general educational trend in the part of the country the study was conducted partly due to cultural reasons. Due to the relatively young age of the participants, one third were emmetropic and only one fourth had presbyopia (Table 2). Distant Refractive error occurred about equal as

**Table 1. Age distribution of 92 participants.**

Age (years)	Frequency, n (%)
20-30	16 (17.4)
31-40	38 (41.3)
41-50	16 (17.4)
51-60	18 (19.6)
61-70	4 (4.3)
Total	92 (100)

**Table 2. Refractive status.**

Refractive status	Frequency, n (%)
Presbyopia only	22 (23.9)
Presbyopia with Distance refraction	18 (19.6)
Distance refraction only	20 (21.7)
Emmetropia	32 (34.8)
Total	92 (100)

**Table 3. Anterior segment findings.**

Anterior segment findings	Right eye Frequency, n (%)	Left eye Frequency, n (%)
Normal	52 (56.5)	50 (54.3)
Corneal opacity	1 (1.1)	1 (1.1)
Cataract	10 (10.9)	10 (10.9)
Allergic conjunctivitis	29 (31.5)	29 (31.5)
Other findings	0 (0)	2 (2.2)
Total	92 (100)	92 (100)

**Table 4. Vertical Cup Disc in 184 eyes of 92 participants.**

Cup disc ratio	Right eye Frequency, n (%)	Left eye Frequency, n (%)
≤0.4	79 (85.9)	82 (89.1)
≥0.5	11 (12.0)	9 (9.8)
No red reflex	2 (2.2)	1 (1.1)
Total	92 (100)	92 (100)

**Table 5. Vision status of 92 participants.**

Cup disc ratio	Right eye Frequency, n (%)	Left eye Frequency, n (%)
Normal vision	90 (97.8)	89 (96.7)
Moderate visual impairment	0 (0)	1 (1.1)
Blindness	2 (2.2)	2 (2.2)
Total	92 (100)	92 (100)

presbyopia. In Imo refractive error accounted for 31.6% of cases, while presbyopia accounted for 17.0% of cases.<sup>5</sup> Refractive error accounted for 29.6% of those with visual impairment in a study reported from Benin.<sup>2</sup> The age of the participants could have accounted for the variation between the studies. More than half of the participants examined had normal anterior segments. Our study showed that allergic conjunctivitis, lens opacity, and corneal opacity were the frequent anterior segment findings (Table 3). Similarly, in an outreach program conducted in Abuja, it was found that major causes of ocular morbidity were refractive error (40.4%), allergic conjunctivitis (18%), and cataract (3.0%).<sup>3</sup> In Imo<sup>5</sup> cataract was responsible for 12.5% of cases which was nearly similar to our findings (Table 3). In ECWA eye hospital Kano, most common causes of blindness were Cataract 40.5%, glaucoma 29.3%, and corneal opacity 14.3% of cases of bilateral blindness.<sup>6</sup> Most of the participants had vertical cup disc ratio of ≤0.4 (Table 4), comparable to a screening study done in Osun were 91.9% had normal disc, 7.3% had cup disc ratio >0.6.<sup>7</sup> In Imo glaucoma was identified in 23.5% of cases.<sup>5</sup> In Benin, 27.7% cases of visual impairment were found to be glaucoma suspects.<sup>2</sup> In this study normal macular was seen in 95.7% of cases, similarly to the study in Osun<sup>7</sup> were 98.8% of cases had

normal macula. In our screening only one case of macular hole was identified, and in 3.3% of cases the macular could not be accessed due to cataract. Unilateral blindness was only seen in 2.2% of right eye, while 97.8% had normal vision in the right eye. In the left eye 96.7% as well had normal vision, while 2.2% had unilateral blindness. Moderate visual impairment was seen in 1.1% of cases (Table 5).

## Conclusions

From the study, eye conditions such as refractive error for distance, presbyopia and some anterior segment findings (corneal opacity, cataract and allergic conjunctivitis) were identified. Some of the participants had a vertical cup disc ratio of ≥0.5. while unilateral blindness was seen in 2.2% of cases, and about 90% of the participants had normal vision in both eyes. Of the 184 eyes examined, only 1.1% had macula hole.

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