



## Blindness among Drivers in University of Maiduguri

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### Abstract

**Background:** *Although the causes of Road Traffic Accidents are multifactorial, good vision is an important component of safe driving.*

**Objective:** *The objective of the study was to determine the visual status of motor vehicle drivers of the University of Maiduguri.*

**Materials and Methods:** *This was a cross sectional study carried out at the Sick Bay of the University of Maiduguri and the department of Ophthalmology, University of Maiduguri between December, 2015 and January, 2016. The study was carried out as part of an eye health screening exercise organized by the University for all drivers under its employment. A structured protocol was designed. A detailed ocular examination using pen torch and direct ophthalmoscope was done on each participant by two ophthalmologist and all the findings entered into the structured protocol. Those who were found to have evidence of glaucoma, cataract, refractive errors and or visual acuity of less than 6/18 were further evaluated at the department of Ophthalmology, University of Maiduguri Teaching Hospital by the same examiners using Slit Lamp Bio Microscope, Goldmann tonometer and auto refractor for further evaluation and management.*

**Results:** *A total of 112 respondents were examined. All were males. The most common age group was 30-35 years (24.1%). Best corrected Visual Acuity (BCVA) of 6/6-6/12 (normal) was seen in 106 (94.6) right and 107 (95.5%) left eyes of the drivers respectively, while 2 (1.8%) had visual acuity of less than 3/60 (blind) in both eyes. Refractive errors were the commonest condition seen in 42 (37.5%) of respondents.*

**Conclusion:** *There was low prevalence of visual impairment and blindness amongst the drivers of the University of Maiduguri which may be due to compliance of the Institution to road safety standards for drivers before employment.*

### Introduction

Good vision is a fundamental component of safe driving, being one of the most important sensory factor for this activity<sup>1</sup>. Other abilities required for

driving include mental ability, motor ability and compensatory abilities.

The causes of road traffic accidents are multifactorial; poor maintenance of roads and

vehicles, absence of appropriate road signs and poor driving skills. In addition, deplorable habits of drivers from inadequate training, inattentiveness, alcoholic intoxication, drug intake, excessive speeding, wrong over-taking, poor knowledge of traffic regulations, and physical disability, an example of which is poor vision<sup>2</sup>.

Recent studies have shown an increase in the rate of road traffic accidents (RTA) in many developing and developed countries<sup>3</sup>. In Nigeria, many lives are lost daily through motor vehicle accidents<sup>4</sup>. Comparison of the rates of RTA in Nigeria with those of developed countries (such as United Kingdom, Sweden and Australia) as well as other developing countries (such as Zambia, Tanzania, Uganda and Kenya) showed that Nigeria had the highest mortality and morbidity<sup>5</sup>. Asogwa<sup>3</sup> in 1978, analyzed an eight-year period RTA data in Nigeria obtained from the office of the Inspector General of Police. He observed a rising trend in the incidence of RTA over the study period.

Indeed due to the ever increasing rate of road traffic accidents globally, the year 2004 was dedicated as "Road safety year" by World Health Organization<sup>6</sup>. The increase may, among other causes, be due to the increasing number of vehicles in our cities and inadequate visual test of vehicle drivers. Good vision is required for road safety and enhanced driving performance<sup>6</sup>. Vision is the most important source of information during driving and many driving related injuries have been associated with visual problems<sup>7</sup>.

One of the most important and frequently used visual function tests is visual acuity. Visual acuity is therefore the most widely used criterion for determining eligibility for driving<sup>8</sup>. In Ghana, a visual acuity of 6/9 is specified as the criterion for driving as indicated on the Drivers and Vehicle Licensing Authority form<sup>8</sup>. In Nigeria the Federal Road Safety Commission which was established by decree 45 of 1983<sup>9</sup>, stipulated the minimum visual requirement for issuance of driving license as visual acuity of 6/12 in the better eye and 6/36 in the worst eye for private motor vehicle drivers

while visual acuity of 6/9 in the better eye and 6/24 in the poorer eye was adopted for commercial motor vehicle drivers with or without glasses<sup>10</sup>. Introduction of compulsory eye test before issuance of license<sup>11</sup> has not been strictly enforced by the relevant authorities such as the Federal Road Safety Commission.

In spite of the concerted efforts at reducing the rate of RTA, Nigeria still ranks among the highly affected Nations of the world (Agunloye, 1988)<sup>12</sup>. It is even more disturbing to note that the young adult groups, the economic backbone of a Nation, is most affected by the ravaging menace (Asogwa, 1980)<sup>13</sup>. Visual assessment for driving is thus a major health issue. This study is therefore conducted to assess the visual profile of vehicle drivers in university of Maiduguri, Nigeria.

### Materials and Methods

This was a cross sectional study, carried out at the Sick bay of the University of Maiduguri and the department of ophthalmology university of Maiduguri teaching hospital over a 2months period between December 2015 and January 2016. Subjects for the study were 112 out of 130 motor vehicle drivers employed by the University of Maiduguri. The study was carried out as part of an eye health screening exercise organized by the University of Maiduguri for all drivers under its employment.

A structured protocol was designed to capture the age, sex and educational levels of the respondents. Other information's sought for were history of eye test before obtaining driver's license, history of accident related to and number of years of driving. Visual acuity was measured using the standard Snellen's test type and color vision was tested with Ishihara chart by a trained ophthalmic nurse. Detailed ocular examination using pen torch and direct ophthalmoscope was done on each participant by a consultant ophthalmologist at the sick bay of the University of Maiduguri. Intra ocular pressure was measured using handheld Perkin's tonometer. All findings were entered into a structured protocol.

Those who were found to have evidence of glaucoma, cataract, refractive errors and or visual acuity of less than 6/18 were further evaluated at the department of ophthalmology, University of Maiduguri Teaching Hospital using slit lamp bio-microscope, Goldman tonometer and auto-refractor for management. The data obtained was analyzed using SPSS version 21.

**Results**

A total of 112 male respondents that verbally consented to the study were examined. The most common age group was 30-35 years constituting 24.1%. The age distribution of the respondents is as shown on table I Most of the drivers 44 (39.4%) had secondary school certificate. The distribution of the drivers seen by their level of education is as shown in table II. A total of 26 (23.2%) respondents have some form of ocular complaints. The most frequent complaint were itching, difficulty in near vision and foreign body sensations in the eyes. The frequency distribution of ocular complains by the drivers is as shown in table III. Best corrected visual acuity of 6/6-6/12 (normal) was seen in 106 (94.6%) right and 107 (95.5%) left eye of the drivers, while 2 (1.8%) had visual acuity of less than 3/60 (blind) in right and left eyes. The distribution of visual acuity is as shown in table IV. Except for one (0.9%) driver who was complete color blind all the remaining 111(99.1%) drivers had normal color vision. Refractive errors were seen in 42(37.5%) conjunctivitis 12(10.7%) and pterygium 3(2.7%) of the respondents. The distribution of ocular morbidity seen is as shown in table V.

**Table I:** Age Distribution Drivers

Age group(years)	Frequency(number)	Percent(%)
24-29	8	7.1
30-35	27	24.1
36-41	18	16.1
42-47	15	13.4
48-53	16	14.3
54-59	21	18.6
60-65	7	06.3
Total	112	100

**Table II:** Level of Education of Drivers

Educational level	Number	Percent
Primary	24	21.4
Secondary	44	39.3
Tertiary	14	12.5
Qur'anic	9	8.0
None	21	18.8
Total	112	100

**Table III:** Ocular Complaints

Serial Number	Complaint	Number	Percent
1	Blurred vision	3	2.7
2	Difficulty in near vision	4	3.6
3	Eye discharge	2	1.8
4	Ocular trauma	1	0.9
5	Foreign body sensation	4	3.6
6	Had cataract extraction	1	0.9
7	Itching	8	7.1
8	A known glaucoma	1	0.9

**Table IV:** Visual Acuity

Visual acuity	Number Right (%)	Number left (%)
6/6-6/12	107(95.5)	106(94.6)
6/18-6/36	2(1.8)	3(2.7)
6/60-3/60	1(0.9)	1(0.9)
<3/60	2(1.8)	2(1.8)
Total	112(100)	112(100)

**Table V:** Ocular Morbidity

Ocular morbidity	Number	%
Refractive errors	42	37.5
Anterior segment		
-Conjunctivitis	12	10.7
-Pterygium	3	2.7
-Corneal opacity	1	0.9
-Cataract	1	0.9
Posterior segment		
-Glaucoma	2	1.8
-Optic atrophy	1	0.9
-PeripapillarySheathing	1	0.9

**Discussion**

Road traffic accidents are causing increasing number of morbidity and mortality<sup>6</sup>. Each year, an estimated 1.2 million people are killed in road accidents and as many as 50 million suffer various forms of injuries<sup>14</sup>. To reverse this trend a firm commitment to road safety and accident prevention must be developed.

The age groups 30-36 and 36-41 years constitutes 40.2%.

Oyemade<sup>4</sup> reported 72% of his series were drivers less than 30 years of age. He associated reckless driving and negligence to younger age groups. Bekibele<sup>5</sup> observed increase in the prevalence of RTA among old aged drivers. This he observed may be related to increasing visual impairment with old age.

39.4% had secondary school level education and a further 12.5% had tertiary level education. This is a clear indication of high level of literacy, a very important factor in good driving skill. This high level of literacy is not surprising because these are drivers employed by a university. Emerole and Nneli<sup>6</sup> reported private vehicle drivers were significantly better educated than commercial vehicle drivers.

Visual acuity refers to spatial resolution or the measure of one's vision with respect to clarity, sharpness or sight ability. This ability results from the coherent focus of light from the region of the cornea on to the retina of the eye<sup>15</sup>. Good visual acuity is paramount to safe driving practice at any time. Visual acuity is the only parameter currently measured by the federal road safety commission in Nigeria<sup>16</sup>.

In this study moderate visual impairment was seen in right 1.8% and left 2.7% eyes while severe visual impairment was seen in 0.9% both right and left eyes of the drivers. Prevalence of low visual impairment amongst drivers may be because of compliance of the authority to road safety standards for drivers before employment. Similar low level of visual impairment amongst commercial drivers in Uyo (1.7%) was reported by Abraham and Umana<sup>10</sup>, Bassey<sup>17</sup> in Enugu (1.6%). However, Nwosu reported (3.1%) in Ibadan, visual impairment amongst government motor vehicle drivers.

Refractive error was seen in 42 (37.5%) of the drivers, most of them were presbyopic. Distance vision is more important for driving. These drivers are government employee and therefore need good near vision to sign documents and registers.

Pepple and Adio<sup>2</sup> reported 26.7% of their series had presbyopia and further 10% had refractive errors.

The conjunctiva is one of the most exposed part of the eye ball. It is often expose to irritants dust and wind while driving. Conjunctivitis was seen in 12 (10.7%) of the drivers in our study.

Color blindness was seen in 0.9% of our study. This is lower than most Nigerian studies<sup>2, 18</sup> reported.

### Conclusion

There was low prevalence of visual impairment and blindness amongst the drivers of the University of Maiduguri which may be due to compliance of the Institution to road safety standards for drivers before employment. For safe driving, this is a valuable standard that need to be maintained.

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