

Prevalence and Causes of Ocular Morbidity among Commercial Intercity Vehicle Drivers in Jos, Nigeria

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ABSTRACT

Background: To determine the prevalence and causes of ocular morbidity among commercial intercity vehicle drivers in Jos, Nigeria. **Materials and Methods:** A descriptive cross-sectional survey of registered commercial intercity vehicle drivers at the Bauchi Road Motor Park Jos. The study instrument was a pretested semi-structured questionnaire. Information obtained included demographic data, operational route, and ocular history. Each participant had a detailed ocular examination. The principal cause of visual loss for each eye and for the person was documented in accordance with WHO guidelines. **Results:** Two hundred and sixty eight 268 drivers were recruited and assessed (survey coverage: 82.5%). Their age ranged from 20-90 years (mean: 44.2, SD 9.2). Most 158 (71.5%) respondents had ocular symptoms, the most common were difficulty in reading small prints 78 (35.3%), itching 56 (25.3%), and poor distant vision 17 (7.7%). Eight (3.6%) drivers complained of glare. Ten (4.5%) drivers had a visual acuity of <6/12 and thus did not qualify to possess a driving licence. The prevalence of ocular morbidity was 72.9% (161/221). The most prevalent ocular morbidities were presbyopia (42.5%), allergic conjunctivitis (26.2%), cataract (8.6%), refractive errors and pterygium (2.7%). One (0.5%) respondent had advanced chronic glaucoma. **Conclusion:** A significant number of drivers do not have the minimum visual requirement for driver's licensure. The prevalence of ocular morbidity among the drivers is high. The national policy on eye examination as a precondition for driver's licensure and renewal should be enforced.

Key words: Drivers, Vision, Morbidity

INTRODUCTION

Road traffic injuries are a major but neglected public health challenge that requires concerted efforts for effective and sustainable prevention. Of all the systems with which people have to deal with every day, road traffic systems are the most complex and the most dangerous. Worldwide an estimated 1.2 million people are killed in road crashes each year and as many as 50 million are injured.¹ Projections indicate that these figures will increase by about 65% over the next 20 years unless there is new commitment to prevention.¹

Road traffic injuries is the second leading cause of death after HIV/AIDS among persons aged 15-44 years in low and middle income countries accounting for 21.9% of all deaths in

this age range.² When resultant disability is also taken into consideration, road traffic injuries emerge as an even more important public health problem as many young adults are affected resulting in a large number of years lived with disability. Road traffic injuries are the main injury-related cause of Disability-Adjusted Life Years (DALYs).² This parameter takes into consideration the loss of health from disability among persons with non fatal injuries and the number of years of life lost from premature death.²

The importance of the visual system as the input channel for sensory information necessary when driving cannot be over-emphasized.³ Therefore, the assessment of ocular morbidities of public transport drivers is essential from the preventive point of view. In Nigeria, though there is a minimum legal requirement for visual acuity before a driver's license can be issued,⁴ this is however not adhered to in practice.

The primary purpose of public policy requiring vision testing for driver's license issuance and renewal is to identify individuals

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with functional vision impairments and when necessary, to restrict their driving. This is based on the proven fact that poor vision is causally related to poor driving and traffic crashes.³ The general and ocular health status of drivers is vital among factors that influence safety of passengers making use of the public automobile transport system which remains the sole means of transportation for the majority of the Nigerian populace.

The aim of this study was to determine the prevalence and causes of ocular morbidity among commercial intercity vehicle drivers in a Jos township motor park, north central Nigeria.

MATERIALS AND METHODS

This was a descriptive cross-sectional survey. The target population were all registered commercial intercity vehicle drivers who use the Bauchi Road Motor Park as an operational base. Ethical approval for the conduct of the study was obtained from the Medical Research Ethics Committee of Jos University Teaching Hospital. In addition, an informed written consent was obtained from the Chairman of the National Union of Road Transport Workers, Bauchi Road Motor Park and an informed verbal consent was obtained from all recruited drivers. The study was conducted at the motor park in November 2006 and lasted for one week.

The survey team comprised two consultant ophthalmologists and two trainee ophthalmologists. The study instrument was a pretested semi-structured questionnaire which was administered to each participant on a one-on-one basis with either Hausa or English language. Information obtained during interview included demographic data, operational route, history of involvement in Road Traffic Accidents (RTA), cause(s) of RTA and ocular history. Thereafter, each individual had visual acuity (VA) testing done by a resident doctor. *The VA was assessed unaided, aided with glasses or pin hole using a daylight illuminated Snellen or "E" chart mounted in the open (outdoor) from a test distance of 6 meters. Near VA was assessed with the Jaeger's reading chart held at a distance of 33cm. Ocular examination was conducted by an ophthalmologist. The anterior segment of the eye was examined with pen-torch. The posterior segment was examined with a Keeler direct ophthalmoscope. When indicated, mydriasis was induced with one drop*

of Guttae Phenylephrine (2.5%) and Guttae Tropicamide (1%) for a dilated funduscopy. The principal cause of visual loss for each eye and for the person was documented in accordance with WHO guidelines. The major cause was attributed to the primary disorder. When two primary disorders exist, the preventable or treatable cause of visual loss was selected.⁵ Refraction was done by a resident doctor using a retinoscope, trial frame, trial lens set, snellen chart and Jaeger's reading chart for presbyopic correction. Those who required intraocular pressure measurement, visual field assessment and surgery were referred to Jos University Teaching hospital for further assessment.

Data collected were analysed using Epi-info version 6.04d, WHO, Geneva, Switzerland. Data entry validation was done through duplicate entry. Frequency tables were then generated.

Some definitions: Visual Impairment: VA <6/18-6/60; Severe Visual impairment: VA <6/60-3/60; Low vision: Presenting visual acuity of <6/18-3/60 in the better eye; Blindness: Presenting visual acuity of <3/60 in the better eye

RESULTS

Of 268 registered commercial intercity vehicle drivers (CIVDs) in the motor park, 221 were recruited and assessed, giving survey coverage of 82.5%. All the drivers were male and their age ranged from 20-90 years (mean age: 44.2, SD 9.2). Majority 214 (96.8%) were within the productive age group of 20-59 years (Table 1) and 162 (73.3%) were aged 40 years or more. All the six geo-political zones of Nigeria including the Federal Capital Territory are covered by drivers operating in the motor park.

Up to 158 (71.5%) respondents had at least one ocular complaint. The most common ocular symptoms were difficulty in reading small prints 78 (35.3%) and itching 56 (25.3%). A total of 17 (7.7%) persons complained of poor distant vision while 8 (3.6%) complained of glare which was worse at night with consequent modification or cessation of night driving (Table 2). Ten (4.5%) drivers had a visual acuity of <6/12 and thus did not qualify to possess a driving licence (Table 3). Up to seven (3.1%) drivers were visually impaired while one (0.5%) had severe visual impairment by WHO definition (Table 3). A total of eight (3.6%) of respondents had low vision.

The prevalence of ocular morbidity in the study population was 72.9% (161/221). The most prevalent ocular morbidities were prebyopia (42.5%), allergic conjunctivitis (26.2%), cataract (8.6%), refractive errors and pterygium (2.7%) [Table 4]. The prevalence of bilateral immature cataract was 6.3% (14/221), while that of unilateral “operable cataract” was 1.4% (3/221). Bilateral “operable cataract” was present in 0.5% (1/221) of the population. All the cases of cataract observed were age-related. Among respondents aged = 50 years however, the prevalence of unilateral “operable cataract” was 4.6% (3/65) while that of bilateral “operable Cataract” was 1.5% (1/65). The estimated cataract surgical coverage (CSC) for persons in the study population was 16.7% while the CSC for eyes was 10%. One (0.5%) respondent had advanced chronic glaucoma.

Table 1: Age Distribution of the study population

Age Group	No	%
20-29	9	4.1
30-39	50	22.6
40-49	97	43.9
50-59	58	26.2
60-69	4	1.8
70-79	2	0.9
80+	1	0.5
Total	221	100

Table 2: Types of Ocular symptoms among the study population, n=221

Eye Symptom	No	%
Difficulty in reading small prints	78	35.3
Itching	56	25.3
Poor distant vision	17	7.7
Glare	8	3.6
Discharge	8	3.6
Pain	6	2.7
Reddening	4	1.8
Poor night vision	1	0.5
Haloed	1	0.5

Table 3: Distribution of visual status of the study population

Category of VA	WHO Category of Vision	No	%
6/6-6/12	No Visual Impairment	211	95.5
<6/12-6/18	No Visual Impairment	2	0.9
<6/18-6/60	Visual Impairment	7	3.1
<6/60-3/60	Severe Visual Impairment	1	0.5
Total		221	100

Table 4: Prevalence and Causes of Ocular Morbidity among the study population, n=221

Ocular Morbidity	No	%
Presbyopia	94	42.5
Allergic conjunctivitis	58	26.2
Cataract	19	8.6
Refractive Error	6	2.7
Pterygium	6	2.7
Inflamed Pingueculum	2	1.0
Bacterial Conjunctivitis	1	0.5
Conjunctival concretions	1	0.5
Trachoma	1	0.5
Uveitis	1	0.5
Unilateral Aphakia	1	0.5
Advanced Chronic Glaucoma	1	0.5
Diabetic Retinopathy	1	0.5
Chloroquine Maculopathy (monocular)	1	0.5

DISCUSSION

This study revealed that close to three-quarter of the CIVDs in the main motor park in Jos metropolis are aged = 40 years similar to what was observed in Ilorin-Nigeria.⁶ Older people comprise the fastest growing sector of the driving population with important implications for road safety as the prevalence of ocular morbidity increases with age.⁷ Older drivers have also been reported to have higher crash rates per distance travelled.⁸ Though, this fact has been disputed by other research findings as older drivers probably seek interventions that could help them drive safely. Older drivers may also place restrictions on their driving by reducing mileage and avoiding high-risk driving situations in an effort to improve safety.^{9,10}

The proportion of respondents who complained of difficulty in reading small prints, itching and poor distant vision is also comparable with the findings from Ilorin.⁶ The eye health seeking behaviour of the CIVDs in this study can be assumed to be poor as majority had at least one eye complaint. The frequency with which CIVDs ignore their poor distance vision and the possibility of reversing the problem make it clear that the ophthalmologist has a role to play in detecting ocular problems among drivers and also informing them.

This study also revealed that most (96.4%) of the drivers are not visually impaired, similar to reports from Ife where 96.7% of commercial drivers were found to have no visual impairment.¹¹ We found that 4.5% of drivers did not qualify to possess a driver's licence. This is

less than what was documented by Lass¹² whose study was among intra-city drivers in Jos. Adekoya et al⁶ reported a higher proportion (11.5%) of drivers who do not qualify to hold a driver's licence because a cut-off of VA of 6/9 was used. In this study, we used a cut off VA of 6/12. Nevertheless, the proportion of respondents who do not have the visual qualification to hold a driver's licence in this study is a source of great concern. They are unfit for driving an automobile and thus pose great danger to road safety.

Presbyopia, the most common ocular morbidity observed in this study, is responsible for the most common ocular symptom that was found in the study. This is an ocular condition that is characterized by a gradual decline in the accommodative amplitude of the eye with onset from about the age of 40 years in emmetropes.¹³ A higher proportion of respondents had presbyopia compared to findings from Ilorin and Ife.^{6,11} This is not surprising as a higher proportion (73.3%) of this study population were aged =40years.

Allergic conjunctivitis, characterized by itching, foreign body sensation, tearing, reddening, photophobia and occasional mucoid discharge due to the presence of allergens like pollens, smoke, animal dander and dust¹⁴, was also a common cause of ocular morbidity in this study. This condition could orchestrate road traffic accident due to poor vision on the part of the driver.

Cataract can markedly impair many aspects of driving performance. The prevalence of cataract (8.6%) observed in this study is comparable to findings from Ilorin where a prevalence of 7.8% was documented,⁶ but lower than 14.4% reported in Ife.¹¹ The prevalence of operable cataract among the elderly population in this study is similar to findings from a population- based survey in the state where prevalence of unocular and binocular blinding cataract of 5.9% and 2.1% were observed respectively.¹⁵ Cataract is about the most important cause of glare. The most subjective measure of sensitivity to glare is related to cessation of night driving.¹⁶ People with cataract experience more problems when driving; they drive shorter distances and avoid challenging driving situations.¹⁷ Despite limiting their driving exposure, it has been documented that drivers with cataract have 2.5 times more

crashes than those without cataract.¹⁷ Cataract surgery is an intervention that can potentially improve the performance of older drivers. Crash rates have been shown to halve after cataract surgery, suggesting that cataract surgery can result in tangible benefits to road safety.¹⁸ Bilateral cataract surgeries do result in marked improvement in sign recognition, ability to detect and avoid hazards, and overall driving score.¹⁹ Cataract surgery can thus be considered to be an important intervention for road safety for older people with cataracts, and potentially has the effect of usefully prolonging the period over which older people can drive, resulting in improved mobility. Cataract surgery will result in marked improvement in driving performance, quality of life and higher scale of activity of daily vision scale particularly for night driving.^{18,20} The CSC (persons) and CSC (eyes) observed among the drivers is much lower than 53.5% and 36.4% observed in the state respectively.¹⁵

Pterygium, a degenerative conjunctival lesion characterized by a wing shaped fibrovascular overgrowth of the conjunctiva which encroaches on the cornea in the interpalpebral space, could eventually lead to loss of vision.¹⁴ It was a cause of ocular morbidity in a smaller proportion of respondents compared to findings from similar studies in the country.^{6,11} The prevalence of pterygium tends to increase with ageing. Exposure to sunlight, dry and windy conditions are also important risk factors.¹⁴

Glaucoma, an eye disorder that gradually decreases both peripheral and central vision affects millions of older adults worldwide.⁷ It could result in inability to perform familiar tasks including driving an automobile.²¹ Advanced chronic glaucoma was identified as a cause of ocular morbidity in 0.5% of respondents, similar to Nwosu's finding in Oyo,²² but lower than the findings from Ilorin.⁶ Visual field defects due to glaucoma are common, increasing with old age. Mandatory eye examination with assessment of the visual field among drivers is becoming more and more important in a continuously ageing and increasingly mobile population. Current vision screening for driver's licensure, based primarily on visual acuity assessment is not enough to detect other important causes of visual impairment. The legal requirements for driving a motor vehicle in Nigeria should be modified to include visual field examination.

In conclusion, there is a high prevalence of ocular morbidity among drivers in our setting, with a significant number of drivers lacking the minimum visual requirement for driver's licensure. It is of a great concern since drivers whose vision may have been improved with simple optical devices do not access these services. There is an urgent need, therefore, for relevant authorities to ensure compliance with the national policy which directs mandatory comprehensive eye examination as a precondition for driver's license issuance and renewal.

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