



Evaluation of Visual Acuity among Commercial Motorcyclists (Okada Riders) in the Main Campus of Abia State University Uturu Abia State Nigeria

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The visual ability of road users is fundamental to traffic safety. Despite the high burden of traffic crashes and associated mortality in low-income countries such as Nigeria, evidence for an association between vision function and traffic safety outcomes is scarce. Therefore, the aim of this work was to evaluate the visual acuity of commercial motorcyclists operating within the main campus of Abia State University, Uturu. Two hundred operators who had been on the job for at least one year constituted the test population, while staff and students of Abia State University, Uturu, who were sex and aged-matched and who are not commercial motor cyclists constituted the control group. Data were obtained with the aid of a structured questionnaire and clinical examinations were carried out by standard procedures. Results showed that Snellen's fraction which is a indicator of visual acuity for the left eye of control and test groups was recorded as 0.98+- 0.30 and 0.88+- 0.35

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respectively and for the right eyes 0.99+- 0.10 and 0.87+- 0.50 respectively. Only 38% of test group had normal visual acuity of 6/6 compared to 73% of control. Visual acuity correlated negatively with age for the left ($r = - 0.712$) and right ($r = - 0.740$) eyes as well as with length of service for left ($r = - 0.623$) and right ($r = - 0.632$) eyes of motorcyclist operators. In conclusion, visual acuity was inversely proportional to age and length of service.

Keywords: Commercial motorcyclists; visual acuity; road safety; aging and length of service; Uturu.

1. INTRODUCTION

The operation of commercial motorcycle also known as okada is an integral component of the public transport system in modern day Nigeria. It is critical to meeting people's need for transportation particularly within the rural and urban centers [1,2]. It offers job opportunities to young Nigerian youths and no doubt has been given a pride of place in the Nigerian economic system. Traditionally, okada operators across the nation are registered as members of a union whose leadership pays little or no attention to the functionality of an intending member's sight before incorporation nor periodically probes that of the existing members to substantiate eligibility to sustain operation or otherwise stop. This is particularly important owing to the fact reduced visual acuity appears to be associated with crash risk [3].

Vision testing is the basic test generally recommended for drivers owing to the fact that a good visual acuity in addition to good stereopsis, normal colour vision, satisfactory eye coordination and the ability to adapt to various levels of illumination are essential to avoiding road traffic accident (RTA) which claims an estimated 1.2 million lives annually throughout the world Road safety Nigeria [4].

Owing to the limited number of bed spaces in the students' hostels and staff quarters within the main campus of the University, students and staff opt to rent apartments most of which would require the engagement of the service of the commercial motorcyclist for convenient access to school. Thus underscoring the indispensability of the service rendered by the commercial motorcyclist within the study area.

The urgent need to initiate efforts towards averting the proposed over 50% increase in

Road Traffic Accident (RTA) resulting from visual impairment among drivers in the next 20 years by the World Health Organization [5] is undoubtedly imperative and should be strategically and judiciously pursued with the instrumentality of a goal oriented research like this work.

2. METHODOLOGY

2.1 Sampling

A total of 200 motorcycle operators were randomly selected from the main campus of Abia State University Uturu Abia State and constituted the control and test population respectively.

2.2 Vision Testing

Each participant was seated in a well illuminated room and visual acuity was assessed using Snellen E chart hung on a wall at a distance of 6 meters. Each eye was tested separately and when visual acuity is less than 6/6. Pinhole test was done. Commercial motorcycle operators who met the minimum standard (Visual acuity) of 6/12 in the better eye and 6/36 in the poorer eye stipulated by FRSC for issuance of driving license were considered eligible. Those whose visual acuities were worse than 6/12 on either eye were further examined to find the cause of decreased vision. Anterior segment examination was done using penlight to check for abnormalities such as swelling, growths, discolorations, opacities etc. Fundoscopy was done using direct ophthalmoscope.

2.3 Data Collection

Data was collected using standard examination format from interested participants. Data obtained were analysed using SPSS 16.0.

3. RESULTS

Table 1. Age group of study participants

Age group	Number	Percentage
<20	15	7.5
21-30	20	10
31-40	31	15.5
41-50	118	59.
51-60	16	8.0

Table 2. Visual acuities of the Control (staff and students)

Visual acuity	Better Eye		Second Eye	
	Frequency	Percentage	Frequency	Percentage
6/6 or better	105	52.5	85	42.5
< 6/6-6/9	50	25.0	45	22.5
< 6/9 – 6/12	35	17.5	30	15.0
< 6/12 – 6/18	10	5.0	25	12.5
< 6/18 – 6/24	-	-	14	7.0
< 6/24 – 6/36	-	-	1	0.5
< 6/36 – 6/60	-	-	-	-
< 6/60 -3/60	-	-	-	-
< 3/60	-	-	-	-
Total	200	100	200	100

Table 3. Visual acuities of Motorcyclist Operators in Abia State University

Visual acuity	Better Eye		Second Eye	
	Frequency	Percentage	Frequency	Percentage
6/6 or better	10	5	-	-
< 6/6 – 6/9	50	25	45	22.5
< 6/9 – 6/12	70	35	55	27.5
<6/12 – 6/18	16	8	30	15
< 6/18 – 6/24	24	12	20	10
< 6/24 – 6/36	30	15	50	25
< 6/36 – 6/60	-	-	-	-
< 6/60 – 3/60	-	-	-	-
< 3/60	-	-	-	-
Total	200	100	200	100

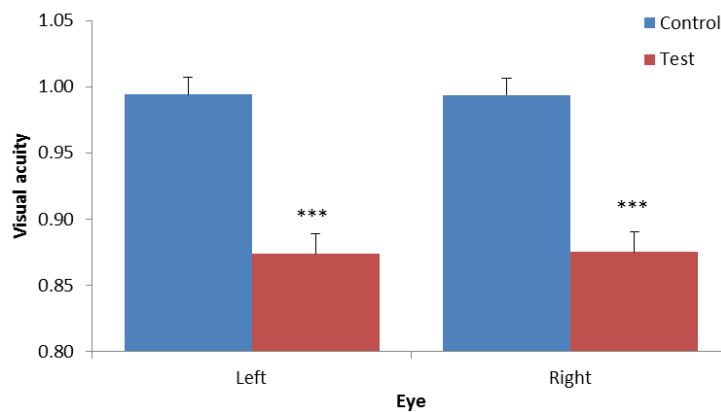


Fig. 1. Visual acuity of both left and right eyes of motorcyclists

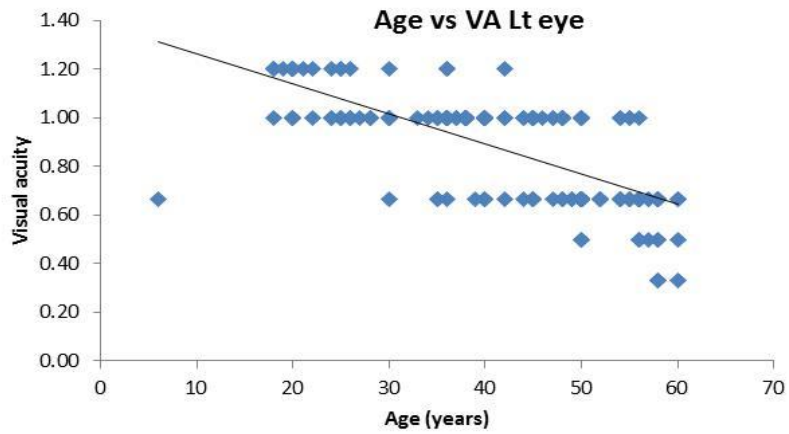


Fig. 2. Relationship between age operators and left eye visual acuity

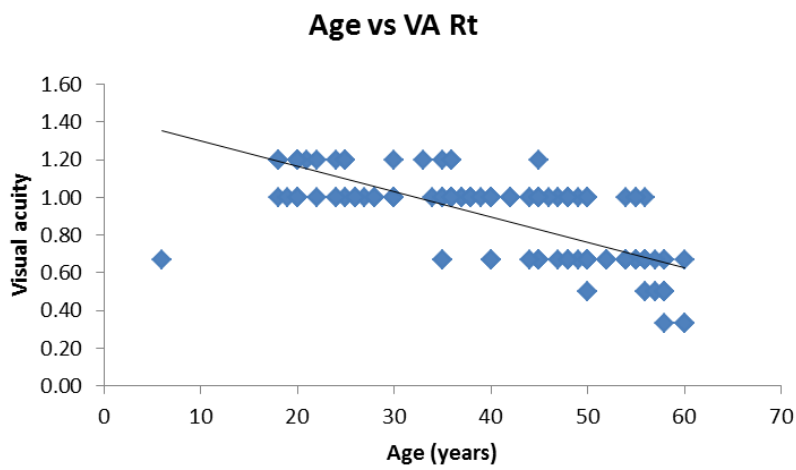


Fig. 3. Relationship between age operators and right eye visual acuity

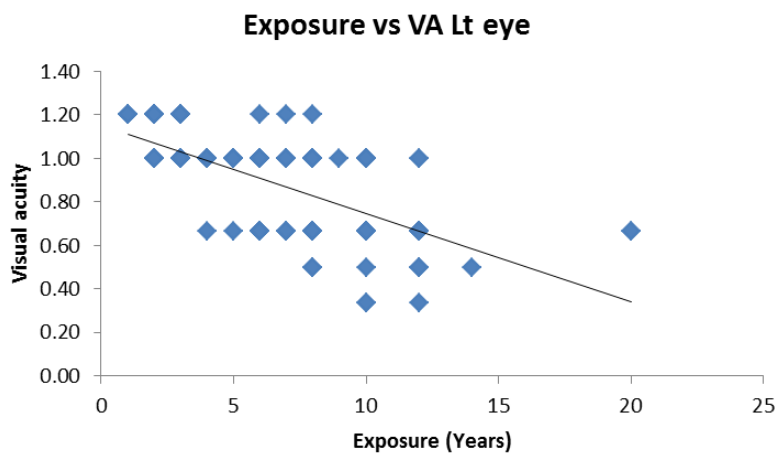


Fig. 4. Relationship between exposure period and left eye visual acuity

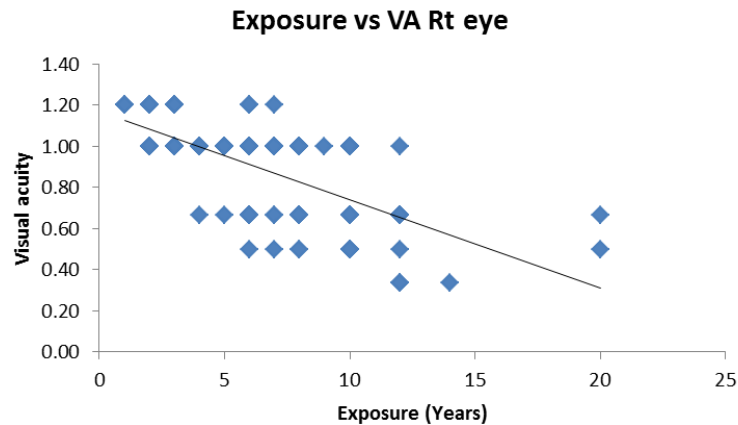


Fig. 5. Relationship between exposure period and right eye visual acuity

4. DISCUSSION

Road traffic accidents is the world's leading cause of death [6]. Motorcycle operators are one of the most vulnerable road users to death resulting from road traffic accidents [7]. The results of this study showed that Snellen's fraction which is a marker of visual acuity for the left and right eyes of commercial motorcycle operators was less than that reported for their control counterpart. Thus, indicating obvious visual loss among motorcycle operators within the main campus of Abia State University. This could be attributed to exposure of the eyes to numerous injurious factors such as dust and ultraviolet rays. This result is consistent with the finding of Owoaje et al. [8] who reported visual loss among commercial motorcycle operators. Vision is considered the main sensory apparatus without which a vehicle cannot be driven [9, 10]. Aging is associated with series of changes in the ocular structures and include a considerable loss of lens transparency which results to considerable increase in light scattering by the eye's optical media [11]. There was a linear negative correlation between age and visual activity of the left and right eyes of commercial motorcyclist operators. This is a physiological phenomenon in which the eye lens progressively becomes unable to change shape when acted upon by the ciliary muscle at about the age of 40 and above [12]. This is consolidated by the finding of this study since about 59% of commercial motorcyclists were 40 years and above. The findings from this work is consistent with the work Sonia-ortiz et al. [13] which established that older drivers experienced declined visual acuity, poorer contrast sensitivity and were also influenced more by glare and halo.

It further indicated that the aforementioned group showed a significantly ($P < 0.05$) higher stray light level. The general impairment of visual function had been reported in previous studies [14, 15]. There was also a linear negative correlation between length of service and visual acuity of the left and right eyes of commercial motorcyclist operators with significant decrease in Snellen's fraction with increased years of service.

5. CONCLUSION

This study substantiates that age and number of years an individual commits to the vocation (okada riding) contributes to loss of visual acuity. Therefore, efforts to reduce or avoid Road Traffic Accident (RTA) among this category of road users must unreservedly reawaken policies to ensure that okada riders give the use of protective wears while at work a pride of place, and also ensure that members of the motorcyclist union retires from work after a certain number of years and age.

CONSENT

As per international standard or university standard, Participants' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

Ethical approval was obtained from the Abia State College of Medicine Ethical Committee.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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