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EVALUATION OF VISUAL SCREENING OF EXECUTIVE DRIVERS OF DELTA STATE UNIVERSITY, ABRAKA

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ABSTRACT
In clinical practice, eye examinations are often performed to diagnose and treat the eye and its related ailments. Current Studies investigated the prevalence of visual impairment amongst executive staff drivers of the delta State University (Delsu), Abraka, Delta State, Nigeria.Sixty eight(68) executive drivers were sampled from expected seventy three staff drivers of Delsu. In any case, participants were tested for various visual impairments [Refractive Errors, Amblyopia, Low Vision, Glaucoma, Cataract and Uveitis]. After data collection and sorting, statistical measures of dispersion and central tendencies were performed to obtain the percentage prevalence of the various visual impairments. Following data analysis and careful observations, we found about 10.3% had substandard driving vision due to refractive error (Figure III) which could be corrected to standard vision with lens prescription (spectacles or contact lenses). About 2.9% drivers had a visual acuity of $^{6}/_{12}$ which is substandard but vision did not improve with pinhole so may not benefit from spectacle prescription. No apparent cause was found for this vision (Ambyopia). Again, of the 68 sampled drivers, 11(16.1%) were observed to be glaucoma suspects (Figure II) and would require further tests to confirm their eye status. One driver had a mature cataract in one eye though the other eye had standard driving vision of $^{6}/_{9,}$ and was booked for a cataract surgery to correct it.Further sophisticated studies are recommended for other indicators of visual impairments to confirm their protective potential in prevention of global increase in visual dysfunctions.

KEYWORDS: Visual impairment, Drivers, Eye.

INTRODUCTION
Visual function is a measure of activities of daily living affected by vision.In humans, not only is vision concerned with the ability to see objects.[1] It also involves seeing clearly, the features of any object(s) in focus. Such features as color, shape, size, details, depth, and contrast.[2] This exclusive visual capability is achieved via the intricate interactivity of the eyes and brain to form pictures of the world within the immediate environment; and begins with light rays bouncing off the surface of any object in focus; reflecting light rays into the eye, with subsequent transduction into electrical signals by the intrinsic help of photoreceptors in the eye.[3&4] Millions of signals per second are known to leave the human eye through the optic nerve, travelling into the visual cortical area of the brain for integration, providing us as such with sight.[5]

In clinical medicine, Eye examinations are often performed to diagnose and treat the eye and its related ailments. The examination of becomes imperative with reduction in the ability to see, determining if a subject has distorted vision that can be corrected with eyeglasses or contact lenses, such as nearsightedness, farsightedness, and astigmatism.

There is a wide range of growing evidence(s) on the effects that various occupations has on vision at variable ages and gender.[6&7] It has been asserted that constant exposures to different intensities of light as seen in weathers will most likely damage the visual pathway, impeding in any instance the functional capacity of the eye.

Generally, Eye diseases are known to adversely affect quality of life of an individual, with moderate to severe effects traceable to geographical, occupational and socioeconomic status.[8] By standards of the international classification of Eye diseases established by the World Health organization(WHO), the vision of humans (best corrected visual acuity in the better eye) is seen to be categorized into: no visual impairment (6/6 to 6/18), visual impairment (<6/18 to 6/60), severe visual impairment (6/60 to 3/60), and blindness (<3/60 to no perception of light).[9&10] Furthermore, the table below

summarizes the prevalence of selected visual impairments in selected countries;

Table I: Percentage Prevalence of visual impairment in selected countries

Country	Percentage Visual impairment Prevalence
Kenya	2.5%
Saudi Arabia	25.6%
Mongolia	8.1%
India	29.4%
Finland	10.1%
Turkey	1.9%
Bulgaria	0.83%
Ethiopia	1.7%
Nigeria	1.7%
Singapore	15.2%
Malaysia	5.6%

A 2006 Eye Survey in Malaysia reported a prevalence rate of visual impairment to be 2.7%, high in rural (2.9%) than urban centers (2.5%).[11] Meanwhile, visual impairment in urban areas was reported to be statistically higher, with 8.2% visually impaired subjectspursuing treatments at eye clinics (University Malaya Medical Centre) in rural than urban villages. This rural population was reported to be visually impaired, with statistics from Sepang district stood at 18.9%.[12] However, with no data available for government/private hospitals in Across Africa, and Nigeria in particular, this study was undertaken to evaluate prevalence of possible visual disease and/or impairment amongst executive drivers, who are staff of the Delta State University, Abraka, Nigeria.

The WHO fact sheet of October 2011[7] on visual impairment and blindness stated that globally, 285 million people had one visual ailment or the other, with 39 million reportedly blind,and 246 million suffering from low vision.About 90% of the world's visually impaired lived in developing countries; with uncorrected refractive errors being the main cause.[13] Cataracts remained the leading cause of blindness in middle- and low-income countries; while the number of people visually impaired from infectious diseases had greatly reduced in the last 20 years. Thus, 80% of all visual impairment cases could have been avoided or cured. In the light of this, our study provided data on the spectrum of visual acuity test and/or impairment amongst executive driver staff of the Delta State University, Abraka, Nigeria.

MATERIALS AND METHODS

Resources and Sources

Humans

A total of 68 drivers (sample size) were screened for proper visual acuity, out of 73 drivers on the supposed list to be screened where ethically recruited from Abraka, Ethiope East Local Government Area of Delta State.

Snellen Letter Chart

An active Snellen's letter chart with specifics; Scalae Typographicae Birkhauseri, BirkhauserVerlag, Basel, containing both Landolt C and two-digit number stimuli in 10 different font sizes corresponding to Snellen acuity ratios of. 1 to 10 was obtained from the Department of Human Physiology, College of Health Sciences, Delta State University, Abraka, Delta State.

Meter Rule

A longmeter rulewas purchased from local stores in Abraka. A pen, pencil, eraser and other relevant materials were purchased as well to accurately obtain subjects' distance from charts' distance prior to recording.

Pen Torch

External eye examination was done using the Pen torch to examine the external structures of the eyes one eye after the other, to check if there are any abnormalities. Diagnosis was determined based on the anatomical and aetiological considerations. Conjunctivitis was defined as conjunctival injection, brownish colouration with or without limibal follicles and recurrent itching.

Ophthalmoscope

The Heines direct ophthalmoscope was used for fundoscopy to examine the internal structures of the eye.

Tonometer

Intraocular pressure was determined using the keeler TelePursair Tonomerter

Mydriacyl Eyedrop

Dilation of the pupil for proper fundoscopy was done for those with miotic pupil.

Inclusion Criteria

Participants who were confirmed to be executive bus drivers, and staff of the Delta State University, Abraka, Delta State.

Exclusion Criteria

Subjects with eye make-ups, systemic conditions such as hypothyroidism, diabetes mellitus were excluded as these have been shown to impair visual acuity under any circumstance.

Ethical Considerations

Ethical approval was sourced from the Research and Ethics committee of the College of Health Sciences, Delta State University (Delsu), Abraka, Delta State. Also, written consent was gotten from the university health center management as well as subjects before actual investigation. Consent forms were administered to seek participants' permission. Only subjects who consented were actually investigated. Also, beforeactual investigation,consent formswere administered toseek participants' permission.

Procedure

Visual acuity was assessed by means of a near-vision snell's letter chart held at a distance of approximately 20 m in a room with normal (uncontrolled) ambient illumination. The assessment consisted of asking research participants to read the numbers or state the direction of the gap in the C with each type of stimulus, first with the left eye covered and then again with the right eye covered. The Snellen ratio corresponding to the smallest font size at which this could be accomplished with fewer than two errors out of the 8 to 16 items at each font size was identified as the visual acuity estimate. Defected Participants were allowed to use any corrective lenses they had available during the testing, but we had no information about the recency or accuracy of their optical correction.

In other to determine if the participant has refractive error, participants with VA of 6/12 or worse will be made to look through the pinhole to determine if the poor vision is as result of refractive error. In addition, those who failed the test with be refracted using retinoscopy and or autorefractor. Presbyopia will be defined as presenting VA of N8. All those who failed will be refracted at distance and near

Analytical Approach

Results obtained from the study were expressed as Mean ± SEM (Standard Error of Mean). With P-value of less than 0.05 ($p < 0.05$) considered to be statistically significant, a one-way analysis of variance (ANOVA) was used to determine the mean differences for variables between groups.

RESULTS

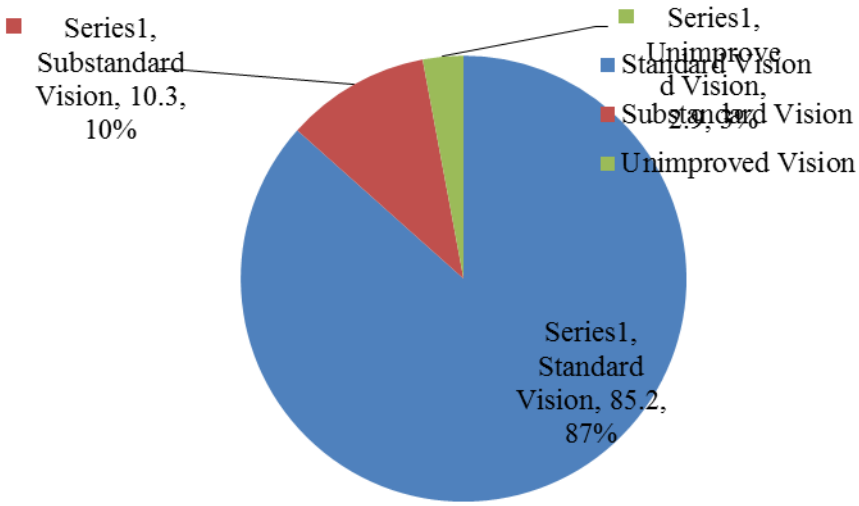

Figure I: Showing Percentage Vision Status of Sampled Delsu Executive Drivers.

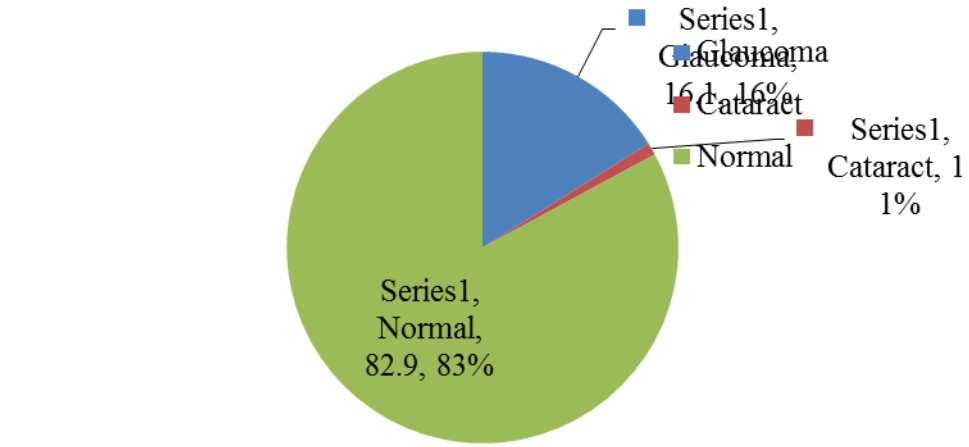

Figure II: Showing Percentage of Delsu Executive Drivers with Selected Eye Disease.

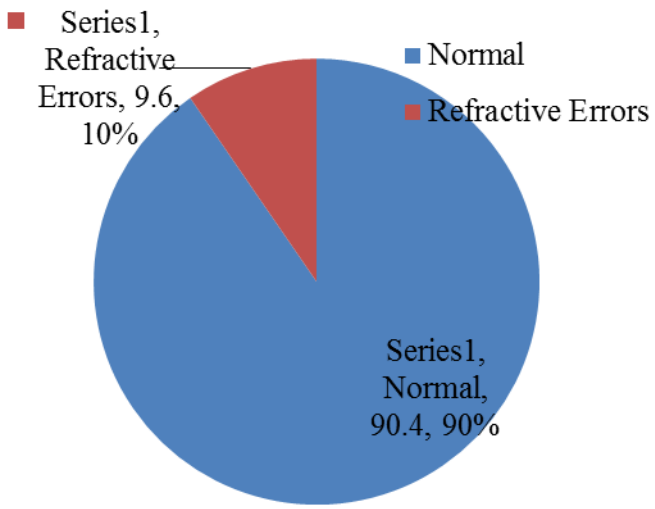

Figure III: Showing Percentage of Delsu Executive Drivers with Refractive Error.

Table I: Showing Average Visual Acuity Before and After Refraction for Subjects with Refractive Error.

S/N	Visual Acuity	After Refraction
1	6/60 6/12	6/9
2	6/12	6/6/9
3	6/18	6/4
4	6/18	6/6(has already)
5	6/12	6/9
6	6/18 6/6	6/6 6/5
7	6/12	6/6

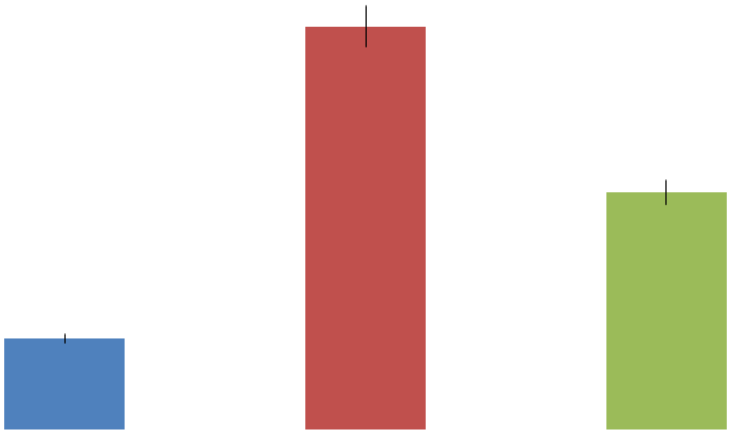

Figure III: Comparative Changes in Selected Defects of Delsu Executive Drivers with Refractive Error.

DISCUSSION

The human Eye is a light-sensitive organ of vision, and varies from simple structures that are capable only of differentiating between light and dark to complex organs, such as those that can distinguish minute variations of shape, color, brightness, and distance.[14]

Structural differences in the size of the eye cause the defects of hyperopia, or farsightedness, and myopia, or near-sightedness.[15] The normal visual acuity of the human eye for discriminating between point sources of light is about 25 seconds of arc. That is, when light rays from two separate points strike the eye with an angle of at least 25 seconds between them, they can usually be recognized as two points instead of one. This means that a person with normal visual acuity looking at two bright pinpoint spots of light 10 meters away can barely

distinguish the spots as separate entities when they are 1.5 to 2 millimeters apart.

Application of a visual function assessment by community based health workers (possibly traditional healers) may assist these workers in recognizing the need for intervention. To this point, this study investigated the prevalence of selected visual impairments in executive drivers of the Delta State University, Abraka, Delta State.

A total of sixty eight(68)drivers were sampled out of the seventy three(73) drivers on the list to be screened. Based on the Standard Driving Vision as recommended by Federal Road Safety Corps, a total of fifty Eight[58(85.2%)] drivers had standard driving vision of $^{6}/_{9}$ to $^{6}/_{4}$(Figure I and II), while about 10.3% had substandard driving vision due to refractive error (Figure III) which could be corrected to standard vision with spectacle prescription. About 2.9% drivers had a visual acuity of $^{6}/_{12}$ which is substandard but vision did not improve with pinhole could not benefit from spectacle prescription. No apparent cause was found for this vision and this type of visual impairment in which no structural is observed is referred to as amblyopia . Again, of the 68 sampled drivers, 11(16.1%) were observed to be glaucoma suspects (Figure II) and would require further tests to confirm their eye status.One driver had a mature cataract in one eye though the other eye had standard driving vision of $^{6}/_{9,}$ and was booked for a cataract surgery to correct it.

Also, Most of the sampled participants had standard driving vision. However, some of these had refractive error that can be corrected with lens prescription (spectacles or contact lenses).Though some others had standard vision for driving, a few drivers were suspected to have glaucoma (due to large cup to disc ratio with/without raised intraocular pressure), needing further evaluation to determine their status. Glaucoma is the leading cause of irreversible blindness, and can be prevented as it occurs in the late stages. Again, two drivers should substandard vision and were required to further evaluate using more sophisticated equipmentto determine the cause.One driver had mature cataract in one eye and this can be treated by cataract surgery.

CONCLUSION

Findings from this study indicate that visual impairment in executive drivers of target population was due to refractive errors and glaucoma on a long run. Curtailing the excesses due to this can be achieved by providing health education and awareness on eye care in primary health care centers and through regular visits to the optometrist and ophthalmologist.

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