

INAUGURAL LECTURE SERIES 292

**COMMUNITY EYE HEALTH:
The Good, the Bad, and the Ugly**

By

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Professor of Ophthalmology



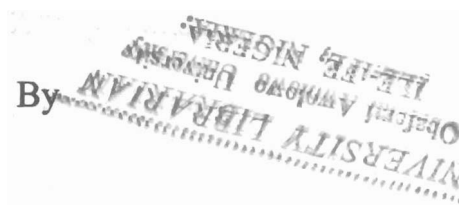
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COMMUNITY EYE HEALTH: The Good, the Bad, and the Ugly.

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On Tuesday 27th September, 2016



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INTRODUCTION

Mr. Vice-Chancellor Sir, distinguished ladies and gentlemen, I give glory to God for the privilege of presenting my Inaugural Lecture today. The inaugural lecture is a means of taking ‘Gown to Town’ by translating research findings as simply as possible to enable members of the community benefit from these findings. This 292nd inaugural lecture series of the University is in part, a compendium of my life’s work as an Ophthalmologist, Teacher, and Researcher.

The topic of my lecture was coined from a 1966 film ‘*The Good, the Bad, and the Ugly*’ starring Clint Eastwood. This provokes a sense of nostalgia in people of my age group. I have often wondered why ‘The Beautiful’ was excluded. Perhaps, according to Ayi Armah’s 1968 novel, “*the beautiful ones are not yet born.*”

My desire to be an Ophthalmologist was stimulated while I was in secondary school - Queens School, Ede. As I accompanied my late cousin, Funmi Olanusi to the Eye Clinic of the University College Hospital (UCH), Ibadan, where she was managed for a recurrent eye condition of which I did not understand anything about then, I would admire the medical students and doctors in white coats moving along the corridors. I began to daydream of how I would be a smart doctor like them, but my cousin’s eye problem bothered me that I wondered why they could not get her cured.

In 1971, I was fortunate to be admitted into the great University of Ife (now Obafemi Awolowo University) as one of the Pioneer Medical students, graduating with a Bachelor’s degree – BSc (Hons) Health Sciences in 1975 and a Medical degree - MB, ChB in 1978. A total of 47 students were in that class, 10 (24%) of whom were females. By the grace of God, I am the only female in that pioneer set of doctors that stayed on in the College of Health Sciences and eventually became the first Professor of Ophthalmology of Obafemi Awolowo University, Ile-Ife.

The pioneer lecturers that motivated me to excel were, Prof T.A.I. Grillo, Prof. Dorothea Baxter-Grillo, Prof. M. A. Bankole, Prof. V.

O. Marquis (my BSc dissertation supervisor), Prof. A. O. Adeyemo, Prof. Banji Ayoola, Prof. Gani Ladipo, Dr. Seinde Arigbede, Dr. Kayode Ojutiku, to mention a few. Prof. Anthony O. Arigbabu, a motivator, facilitator and Surgeon of surgeons, taught me to be surgically confident and instilled in me the courage of a surgeon who does not just “*wait to see*” but “*goes in to see*” what is happening to a patient. Prof. Femi Morakinyo gave me some insight into the mental health continuum with good mental health at one end and severe mental illness on the other end. We all fall somewhere along that continuum. This has made me to understand the feeling of depression experienced by visually impaired persons in the community. A British surgeon, Prof. H. W. Rodgers (O.B.E., FRSC) believed in my surgical ability as a final year medical student during one laparotomy (abdominal surgery) I assisted him with, when I gently shielded a fold of intestines in order to ligate (cut) a suture, he uttered one sentence that resonated in my brain over the years when he said, “*Young lady, you’ll make a fine Surgeon.*” True to his words, I developed a passion for Ophthalmic surgery through the encouragement of the first Ophthalmologist in OAU, Dr. (Mrs) Bukola Kogbe and later, Dr. Femi Soetan who started my training.

Fortuitously, my early residency years were in Internal Medicine where I spent 3 years, before moving to General Outpatient/Staff Clinic for another 3 years while bringing up two sons and twin daughters. The 6years time lag before commencing Ophthalmology residency training prepared me for a better understanding of eye manifestations of systemic diseases and epidemiology of eye disease. When I had to continue my training in UCH, Ibadan, I had to put on a garb of humility, as 3 out of my 6 Ophthalmic trainers were much younger than I. Nevertheless, I received the best ever training in Ophthalmology within the shores of this country from Dr. Toyin Fafowora, Prof. Ronke Agbeja-Baiyeroju, Prof. Idowu Ajaiyeoba, Prof. Yinka Ashaye, Dr. B.G.K. Ajayi and the gentle but firm Prof. Olabopo Osuntokun. At the end of my training in 1993, I was awarded the Fellowship of the West African College of Surgeons (FWACS) and Fellowship of the

National Postgraduate Medical College of Nigeria in Ophthalmology (FMCOPh).

What is a Community?

MacQueen et al (2001), after conducting interviews for evidence-based definition for participatory public health, described a community as “*a group of people with diverse characteristics who are linked by social ties, share common perspectives, and engage in joint action in geographical locations or settings.*”

Whatever the composition of a community, the eye health of all inhabitants is of paramount importance to the Ophthalmologist.

My venture into community work started in Ife medical school, with a curriculum based on Community health care – The Ife Philosophy.

The ‘Ife Philosophy’ is a complex of statements of ideals consisting of

1. *Integrated teaching across departmental boundaries.*
2. *Delivery of health care to the immediate but defined communities through a coordinated network of basic health service set-up, the general and specialist hospitals and the referral medical centres and accepting full responsibilities for such services.*
3. *Training a health team comprising doctors, scientists, nurses and other professionals allied to Medicine to be able to provide comprehensive health care in any community; urban or rural.*

The Ife Philosophy emphasized the word “healthcare,” for preventive, curative and maintenance of health (Soyinka, 2002).

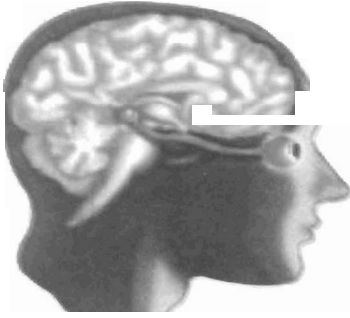
I was brought up with the notion that you had no business visiting other people’s homes uninvited; so community work was initially strange to me as we had to go from house to house administering questionnaires relating to the health status of inhabitants of Ife. Dr. A. Abayomi would accompany the whole class in our ‘Yellow

fever' bus, dropping us off in groups of 3 in different areas of town. I remember my group held sway on Akui Street.

The healthy eye

I agree with Frau Feuerameise who wrote and I quote: "*My eyes are my favorite part of me; not for how they look, but for how they see.*"

Figure 1. Eye and brain



Source: National Institute of General Medical Sciences

The eye is an extension of the brain (Fig. 1). It is a special sensory organ that gives us the sense of sight, which makes us appreciate our environment more than the other four senses (hear, smell, touch and taste). The eyes are not only there to see, but you can view the body through the eyes. They reveal emotions and up to 200 types of illnesses from all parts of the body present with eye involvement. Indeed, the Holy Bible affirms that: "*The light of the body is the eye*" (Holy Bible: Matthew 6: 22).

In order for the eye to see well, it must have normal development, clear media, healthy optic nerves and brain connection. The blood vessels must be healthy to supply blood to all parts of the eye and the brain. Both eyes must be well aligned, with adequate motility for binocular single vision.

Visual impairment and blindness

According to the World Health Organization (WHO), 'low vision' is defined as visual acuity of less than 6/18 but equal to or better than 3/60 (Counting Fingers at 3 meters), or a corresponding visual field loss to less than 20° of fixation, in the better eye with the best possible correction. Blindness is a visual acuity of less than 3/60, or a corresponding visual field loss to less than 10° of fixation, in the better eye with the best possible correction.

Magnitude of visual impairment and blindness

Figure 2 shows the magnitude of visual impairment worldwide, from World Health Organization estimates.

The key facts are, that:

- Worldwide, 285 million people are visually impaired: 39 million of these are blind in both eyes and 246 million have low vision.
- About 9 out of 10 people who are visually impaired live in low-income settings.
- Eight out of 10 people living with blindness are aged 50 years and above.

Figure 2. Global vision loss and blindness (WHO, 2015).



Source: Information is from the World Health Organization
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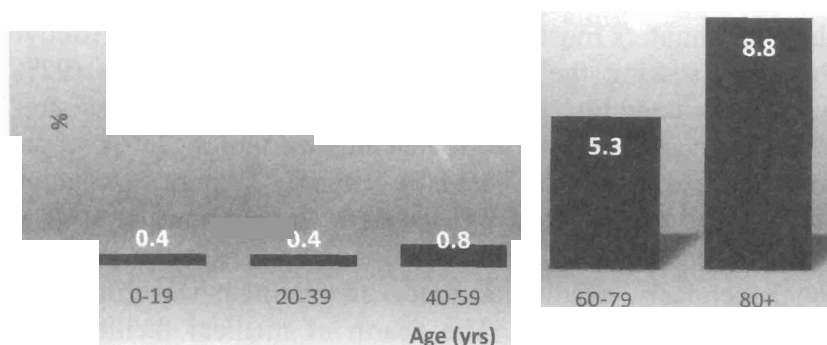
- 80% of all visual impairment is avoidable (i.e. can be prevented or cured).
- Every 5 seconds, someone becomes blind.
- Every 1 minute, a child becomes blind (WHO, 2015)

In Nigeria, according to the reports of the National survey on blindness conducted on adults aged 40 years and above, at least 4 out of 100 (4%) people are blind. Extrapolation from that study estimates that at least 1 million Nigerians are blind, and another 3 million are visually impaired (Kyari et al, 2009).

Eye disease and Blindness in various communities

When Residency training in Ophthalmology commenced at the Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife (OAUTHC), there were no baseline data on blindness and visual impairment in the communities served by the hospital. So, in 1990, I carried out a survey of blindness in rural communities of Ife North Local Government Area (LGA) (Adeoye, 1993). With the assistance of 2 young secondary school leavers, I travelled through rough, untarred, and precarious roads of the villages. After enumeration of the chosen towns (Ashipa, Akinlalu) and villages (Aba Oke, Aba Igbira, Aiyetutu, Baje, Eiyentanle, Eleeru, Aba Store, Oduranyin, Olooyo and Onikan), eye tests were carried out on members of each chosen household. Oftentimes, when asked if there was any blind person in the house, the response was "*Olorun ma je!*" (*God forbid!*). But as we turned to go, seeing that we gave free eye drops to those in need, they would say "*Oh, there is one old woman in the house!*" Out of the 2,921 inhabitants examined, 27 (0.9%) were blind in both eyes. That is, about 1 in every 100 persons was blind, and blindness increased with age, especially after the age of 59years (Fig. 3).

Figure 3. Blindness in Ife North Local Government Area (Adeoye, 1993)



Three quarters of the blindness was due to Cataract and aphakia (48%), Onchocerciasis or River Blindness (15%) and Glaucoma (11%), as shown in Table 1.

Table 1. Distribution of causes of blindness by gender in Ife North LGA (Adeoye, 1993)

Causes	Male	Female	Total	Percentage of all blindness
Cataract	7	5	12	44.3
Aphakia(Couched lens)	1	-	1	3.7
Onchocerciasis	3	1	4	14.8
Glaucoma	2	1	3	11.1
Retinal disease	2	1	3	11.1
Optic atrophy	1	1	2	7.4
Phthisis bulbi	-	1	1	3.7
Corneal scar	-	1	1	3.7
Total	16	11	27	100.0

Three out of every 4 of the blind believed that extraneous forces beyond their control caused their blindness. This perception is

consistent with the African world view of strong belief in magic and witchcraft, as documented by Odebiyi and Ekong (1982).

Blindness from Onchocerciasis was significant in these rural communities because of proximity to River Opa, making farmers, traders, and hunters most likely to develop the condition (Adeoye, 1996). In assessing the inhabitants' perception, majority (92%) identified the condition as "Inarun", "Kuruna", "ko'mo bus stop" or "ifon" but erroneously attributed impure blood (23%), eating food like "garri"(smoked cassava grains), kolanut, groundnut (21%), poor hygiene (20%), drinking impure water (12%), bacterial infection (8%), and alcohol intake (2%) to the causation of onchocerciasis. Traditional mode of treatment was commonly considered the most ideal. The dearth of medical facilities and personnel in remote areas continues the hold of traditional medicine in these areas as no other alternative is presented. Traditional healers have long been an integral part of the Yoruba culture, representing a strong cultural force with a significant clout in rural communities where they live and work (Adeoye, Ashaye, 2010).

Since the OAUTHC covers both Ife and Ijesa communities, my colleagues and I conducted a study on the prevalence of blindness and visual impairment in Atakumosa West LGA. Out of the 1,248 respondents screened, 1% were blind and 6% were visually impaired; occurring more in females. The major causes of blindness were cataract (57%), glaucoma (14.3%), and congenital childhood blindness (14%). In 9 out of 10 cases, blindness was avoidable (Onakpoya, Adeoye et al, 2007).

The common eye diseases in Modakeke-Ife (Adeoye, 2002) and Ilesa (Adeoye & Omotoye, 2007) were refractive error, cataract, allergic conjunctivitis, glaucoma, eye injury and uveitis.

Children and young adults

To further assess the ocular health status of specific members of the community, we shifted our focus to children and young adults, including those in a rehabilitation school. One out of every

hundred students was visually impaired. Major causes of visual impairment are shown in Table 2.

Table 2. Blindness in children and young adults

Study	No studied	Blindness (%)	Visual impairment (%)	Causes of visual impairment
Ilesa East LGA (Ajaiyeoba, Isawumi, Adeoye et al, 2005, 2007).	1,144	0.2	1.0	Refractive error Cataract Corneal opacity(vitamin A deficiency)
Ekiti State Special Education School (Onakpoya...Adeoye 2011).	177	17.5		Cataract (27%) Glaucoma (20%) Retinitis pigmentosa (17%) Post-traumatic phthisis bulbi (7%)

Prisoners

The prison population is an underserved section of society and, as a result, their health problems are often neglected (Bellad et al, 2007). Prisoners need good vision to function adequately and achieve gainful employment when released. Out of the 415 prisoners examined in Ilesa medium security prison, 41(10%) had visual impairment and 4 (1%) were blind in both eyes.

Uncorrected refractive error (46%), traumatic cataract (25%), and glaucoma (10%) were the main causes of poor vision. Factors such as malnutrition, infections, overcrowding and injury from assault, fights, and brutality from law enforcement agents were found to promote occurrence and worsening of eye disorders in prisoners. (Ajite, Adeoye et al, 2010).

The Good

1. Refractive error

My first visit to the Optician's for an eye check was in my 3rd Form in 1967. My teacher had noticed I was not copying my notes correctly from the blackboard and my grades had dropped. She advised my father to take me to Western Chemist/Dispensing Opticians, Ibadan. On hearing that I needed spectacles, Dad retorted, "*How many books has she read to warrant the use of spectacles?*" But after careful explanation by the Optician, I got my first pair of eye glasses; a beautiful pair of pink rimmed spectacles. I was the cynosure of all eyes when school opened the following term. Of course, my vision improved, my grades went up and I got into Medical school. The rest unfolded from there. Without those spectacles, I might never have made the right grades to enter Medical school, and Nigeria would have been robbed of yet another Ophthalmologist.

Refractive error is an eye disorder that causes poor vision without the use of spectacles, contact lens or refractive surgery. High degrees of error may result in blindness. The four major types are:

- 1) Myopia (short-sightedness) is a defective vision of distant objects.
- 2) Hypermetropia (far-sightedness) is a defective vision of near objects.
- 3) Astigmatism causes blurred vision from irregularity in the corneal curvature.
- 4) Presbyopia, which usually starts in middle age, is due to loss of elasticity of the lens, causing reduction in accommodation and ability to focus sharply for near vision.

The good thing about refractive error though, is that the poor vision is treatable or reversible. The treatment is probably the simplest and most effective form of eye care delivery.

Magnitude of refractive error

The WHO estimates that 153 million people worldwide live with visual impairment due to uncorrected refractive errors. This figure does not include the people living with uncorrected presbyopia. With this magnitude of refractive error, it was considered as one of the priorities of the global initiative for the elimination of avoidable blindness by year 2020 (VISION 2020 — The Right to Sight, WHO, 1999).

Hypermetropia, myopia, and astigmatism tend to present at an early age and if left untreated, may lead to serious problems that could affect academic performance and personality of such children. From the studies we conducted on children in both Ife and Ilesa, it was found that 22% and 14% of the children in Ife and Ilesa respectively, had refractive errors, especially between the ages of 11 and 15years, occurring more in females than males. Astigmatism (52%) was the commonest type seen, followed by hypermetropia (29%), then myopia (17%). Myopic astigmatism was the commonest astigmatic error, recording a peak at 12-15years of age. The prevalence of uncorrected visual acuity of 6/12 dropped from 18% to 2% after correction with spectacles (Adegbehingbe, Adeoye et al, 2005) (Ajaiyeoba....Adeoye et al, 2007) (Onakpoya, Adeoye, 2009). This underscores the importance of early diagnosis and prompt correction with optical devices to prevent amblyopia (disordered visual development as the eye fails to achieve normal visual acuity).

“You can't buy happiness; you can buy new glasses (which is almost the same thing)”... Anon.

Fluctuations in the refractive state of an individual's eyes may occur in diabetics with changes in blood glucose level (Badmus...Adeoye et al, 2015). Sometimes, refractive errors alone are not responsible for all the visual impairment and blindness of many individuals. We examined the ocular co-morbidity that may occur in patients with refractive errors. Out of a total of 724 new patients seen in the eye clinic, 235 (33%) had refractive errors (93 males and 142 females). In more than half (54%) of the patients,

associated ocular co-morbidities were documented. The vision-impairing diseases were cataract (21%), glaucoma (16%), diabetic maculopathy, amblyopia, corneal opacities, and Cytomegalovirus retinitis. Non vision-impairing disorders were conjunctivitis (39%), pterygium (5%), meibomean cyst (4%), dry eye syndrome, and episcleritis (Adegbehingbe, Adeoye et al, 2011).

2. Cataract

Cataract is opacification or clouding of the crystalline lens (Fig. 4). The word “cataract” stems from the Greek word for “waterfall,” because prior to the 1700s, people believed that cataracts were composed of an “opaque material flowing, like a waterfall, into the eye”. It may be congenital or acquired.

Figure 4. Bilateral, matured age-related cataract



How common is cataract?

Cataract is the commonest cause of visual impairment and blindness worldwide. According to WHO 2010 assessment, cataract is responsible for 51% of world blindness, accounting for 20 million blind people. As people in the world live longer, the number of people with cataract is anticipated to increase (WHO). Cataract was found to be the leading cause of blindness in all the surveys we conducted in various communities (Table 3). In both Atakunmosa West and Ife North LGAs, cataract accounted for half

of the blindness, while in the special education school and among prisoners, it represented a quarter.

Table 3. Cataract blindness in communities.

Community	Cataract blindness	Study
Atakumosa West LGA (number of blind persons = 14)	57%	Onakpoya, Adeoye et al, 2007
Ife North LGA (number of blind persons = 27)	48%	Adeoye, 1996
Nigerian blindness and visual impairment survey (number of blind persons = 570)	43%	Abdull et al, 2009
Special education school (number of blind persons = 30)	27%	Onakpoya,Adeoye, 2011
Prisoners (number of blind persons = 4)	25%	Ajite, Adeoye et al, 2010

Risk factors for developing cataract

Several risk factors have been identified to predispose to cataract formation. These include advancing age, female gender, heredity, steroid drug use, smoking, sunlight exposure and high body mass index (Mukesh et al, 2006).

The prevalence of cataract is higher in diabetics compared to their age-matched counterparts in the same environments. Cataract was the leading cause of blindness (60 %) and visual impairment (59%) in patients with Diabetes Mellitus, according to our study (Onakpoya.....Adeoye et al, 2015).

We conducted a case control study on dietary and lifestyle patterns of 62 subjects made up of 31 patients with cataracts and 31 control subjects without cataracts. The study showed that higher percentages of controls than patients had adequate intakes of fruits and vegetables. Vitamin supplement usage was also higher in the controls than in patients with cataract. We demonstrated a strong

association between past history of smoking, alcohol consumption and cataract (Ojofeitimi.....Adeoye et al, 1999).

This brings us to the question, “*Can cataract be prevented?*” Currently, no study has absolute proof of cataract prevention or slowing of its progression. However, lifestyle changes that take care of the modifiable risk factors may be helpful. These include:

- 1) Stop smoking
- 2) Reduce alcohol intake
- 3) Wear sunglasses
- 4) Control diabetes
- 5) **Maintain a healthy weight and**
- 6) Eat a healthy diet rich in colorful fruits and vegetables which have many antioxidants to maintain healthy eyes.

The good thing about cataract is that blindness from this condition is treatable and therefore, reversible. Surgery is the only form of treatment for cataract. Fortunately, this type of surgery is considered to be the most cost effective of all surgical interventions in eye care, in view of the great returns in good vision, if meticulously performed.

Cataract surgery

“The only real voyage of discovery consists not in seeking new landscapes, but in having new eyes...” Marcel Proust.

Before 2000 BC, there was no specific record of eye surgery, but it is possible that Babylonians used digital pressure on the eyeball to dislocate the lens from its zonular attachments (Fig. 5).

Figure 5. Couching of left eye cataract in progress.



Source: <http://www.mrcophth.com/Historyofophthalmology/>

Early Hindu references to Couching were by Susruta, using sharp needle knives to displace the lens from the pupil into the vitreous cavity (Garg, Das, 2013). This procedure was performed by itinerant surgeons in Europe, Arabia, and Asia. It is still being performed in 21st Century Nigeria by fake eye 'surgeons' originally from the North, but now from any part of the country and other West African countries (Osuntokun, 2001). Couching could be successful if the whole cataract is dislodged from the pupil, giving a brighter, but unfocussed image of the object viewed. However, if the lens is ruptured, severe inflammation and infection often lead to blindness. A great breakthrough occurred in

the 1940s in England when Harold Ridley invented the intraocular lens (IOL). The IOL is a small, special plastic lens implanted inside the eye to replace the cataract that was removed, making it possible for the operated eye to see clearly after surgery.

In 1995, with the support of Prof. R.O.A. Makanjuola as the Chief Medical Director of OAUTHC, I organized and led the ophthalmic team to conduct the first ever surgical eye camp in rural areas of Imesi-Ile and environ (Fig. 6). The aim was to promote awareness of the community to eye disorders through health education, publicize eye care facilities available in OAUTHC, provide cheap surgical intervention and train community health officers to recognize common eye disorders for early referral. This pilot eye camp metamorphosed into a robust Community outreach programme of the Ophthalmology Department.

In 1999, after attending a skill-acquisition course in intraocular microsurgery at the National Eye Centre, Kaduna, I attracted a collaboration between Sight Savers International and OAUTHC.

Figure 6. Prof. Adeoye operating during an outreach eye camp.



This international non-governmental organization donated sets of ophthalmic instruments and consumables for our outreach programmes. Consequent on these outreaches, the Federal Government of Nigeria designated OAUTHC a regional centre for the National Prevention of Blindness Programme.

Audit of cataract surgery

The outcome of cataract surgery often speaks for itself. After surgery, patients return to their communities to show off their new sight and this success encourages more people with poor vision to visit that particular hospital. Cataract extraction constitutes over half (53%) of all elective eye surgeries performed at OAUTHC (Adeoye et al, 2003). Up till the late 1990s, the main types of cataract surgery performed were Intracapsular cataract extraction (ICCE) and Extracapsular cataract extraction (ECCE), after which the patients had to use special, thick aphakic spectacles. The common intraoperative complications were vitreous loss, especially in ICCE (28%), and hyphema (4%). Three months after surgery, 80% of the patients had their sight restored.

A larger study was conducted in 2009, several years after upgrading cataract surgery to ECCE with intraocular lens implantation. The visual outcome was significantly better in patients that had IOL implantation than those that did not have IOL but used spectacles after surgery. Co-morbidities that militated against good visual outcome were glaucoma, optic atrophy, maculopathy and corneal opacity (Isawumi....Adeoye et al, 2009).

One of the potentially blinding complications of cataract surgery is postoperative infection. Possible sources of causative organisms include bacterial flora around the eyeball, contaminated intraocular surgical instruments and solutions, and contaminated environment. We conducted a study to determine the bacterial species around the eye (adnexa) in order to make evidence-based choice of prophylactic antibiotics before and after cataract surgery. The conjunctival bacterial culture positivity was higher (52%) in patients aged 50 years and above, compared to patients less than 50 years old (15%). The reduced personal hygiene of elderly persons

with poor vision, as well as reduced immunity, could be responsible for this finding, as immune function decreases with normal aging (Cannizzo, 2012). *Coagulase negative staphylococcus* (CNS) was the most frequently isolated organism (50.0%). This organism had a high sensitivity rate to specific antibiotics like amoxycillin, gentamicin and cloxacillin but displayed a high resistance rate (67%) to chloramphenicol, which was the most widely used antibiotic for pre-operative management (Omotoye, Adeoye et al, 2011).

The Bad

1. Glaucoma

Glaucoma is a group of eye diseases that cause irreversible damage to the optic nerve which carries visual impulses to and from the brain so that one can have good vision. There are many types of glaucoma and oftentimes, the pressure inside the eye rises to a level higher than is healthy for the eye. Glaucoma may result in blindness if not treated. It is the second most common cause of blindness worldwide, especially in many countries in West Africa (Ashaye, Adeoye, 2008). The incidence of glaucoma is estimated to be 5.5/1000 persons/year in Blacks (Dandona, 2001); therefore, in Nigeria, we expect additional 180,000 new cases every year (Ashaye, 2010).

Glaucoma was responsible for 11% of blindness in Ife North LGA, 14% in Atakumosa West LGA, 10% in prisoners and 20% among students of special education school (Adeoye, 1996; Onakpoya, Adeoye...., 2007; Ajite, Adeoye, 2010; Onakpoya....Adeoye, 2011).

The bad thing about glaucoma is that it causes irreversible blindness. The disease creeps in painless and unnoticed until it has blinded at least one eye such that the Yorubas call it "*Adake f' oju*" (blinds in a quiet manner).

Prevention of glaucoma blindness hinges on early detection, compliance with medication and life-long follow-up. Important

challenges in glaucoma management, resulting in progressive loss of vision are non-compliance with medication and drop-out from follow-up. We examined the clinical characteristics of patients who drop out in the first year of follow-up from a glaucoma clinic. The dropout rate was high at 61%. Patients who were more likely to drop out were younger patients, males, those who travelled far distances to the clinic, those with mild to moderate glaucoma, those with no family history of blinding eye diseases, and patients using 2 or more eye drops. Patients who seem to perceive their problems as not serious, dropped out of follow-up. These findings have great implications in planning future studies and intervention to improve the follow-up of glaucoma patients (Ashaye & Adeoye, 2008).

Another reason why patients might stop coming to the hospital is, not observing an improvement in their vision due to irreversible optic nerve damage. Some believe it is a spiritual attack, hence, it needs spiritual management.

A 40-yr-old carpenter who still had some vision in both eyes was diagnosed with glaucoma and appropriate eye drops were prescribed. He attended one follow-up clinic only to default for about 6 months. He returned to the hospital with total blindness in both eyes. On further questioning, he admitted to seeking prayers from one prophet on a mountain top who asked him to lie face up, open his eyes and gaze directly at the sun until sunset for 7 days! Of course, the sun burnt out the macula, which is the most sensitive part of the eye for seeing (Solar retinopathy). Indeed, as Martin Luther King Jr. put it, *"Nothing in the world is more dangerous than sincere ignorance..."*

Optic atrophy

Other non-glaucomatous causes of optic atrophy leading to blindness that we observed in the communities include trauma, intracranial tumours, optic neuritis, Leber's hereditary optic neuropathy and compressive optic atrophy in patients with

Burkitt's lymphoma (Adeoye et al, 2007; Adegbehingbe... Adeoye, A.O et al, 2005).

2. Gender issues

The bad aspect relating to gender is that two-thirds of blindness and visual impairment occur in women (Clayton & Davis, 2015). Even in this 21st century, women still have to depend on their husbands for decision-making regarding their eye health care. In a recent study we conducted, we found that males that fully self-funded their eye care services were significantly more than females (52% vs 28%) while monthly average personal income was not significantly different between the genders. The study also showed that more females consider their spouses the most influential individual involved in the process of taking health-related decisions (Adeoye, Awe, 2016).

What are the causes? It is known that cultural patterns and social factors within the household and community favour males. Also, women have a low level of control over household resources. Poverty and visual impairment have long been reported to be closely interrelated such that either acts as a cause and effect of the other (Jaggernath et al, 2014). In Nigeria, a significant proportion of the population lives below the poverty threshold, thereby limiting their access to healthcare and other basic needs. Also, women's child care responsibilities may make it difficult for them to leave home. These issues underscore the importance of outreach programmes to bring eye care closer to the people.

The Ugly

1. Orbito-ocular deformities and masses

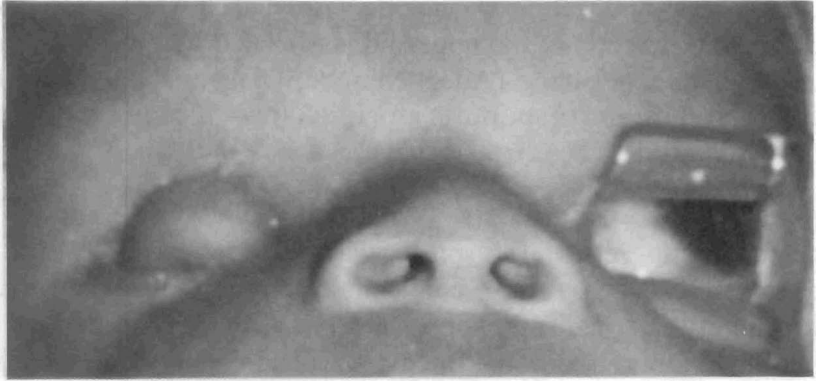
The face, including eyes, is first viewed as a person approaches. Abnormal growths and deformities of the eye and orbit may be congenital (i.e. developmental defect before birth) or acquired (disorders that develop after birth). They can make an individual look ugly and provoke a negative attitude from members of the community, as Yorubas believe in the "normal" and "perfect" and

abhor the “abnormal” and “imperfect”, avoiding sustained social interaction with them. (Togonu-Bikersteth & Odebiyi, 1985).

Cases seen and reported include, isolated bilateral congenital coloboma (defects) of the upper lid, associated with symblepharon in a 5-month old baby (Adegbehingbe, Olabanji, Adeoye, 2005) congenital bilateral sporadic aniridia (absent/ rudimentary iris) in a 5-year old girl (Adeoti, Ashaye, Adeoye, 2010).

A case of Goldenhar’s syndrome, otherwise known as oculoauriculo-vertebral dysplasia was documented in a 3-day old neonate. This is a rare congenital complex of abnormalities involving the eyes, ears, spine, and jaw (Fig 7). The mother had ingested some traditional medicine concoction when she was 3months pregnant as a prophylaxis against recurrent abortion. The baby was born with right anophthalmos (absence of eyeball). The empty orbital space was filled with a soft, solid mass with skin protruding from the socket and attached to the tarsal conjunctiva of the lower lid. The left eyeball was normal but had a limbal dermoid cyst on the temporal aspect. He had abnormal skin tags in front of both ears and small, maldeveloped lower jaw. The aetiological factor was presumably the traditional medication as it has been reported that maternal drug ingestion within the first trimester of pregnancy may predispose to Goldenhar’s syndrome. The importance of health education to pregnant women in order to prevent congenital abnormalities in the newborn can not be overemphasized (Adeoye, 2002).

Figure 7. A 3-day-old male with right lipodermoid and anophthalmos.



Limbal squamous cell carcinoma is an uncommon malignancy which usually invades locally, causing visual impairment. In its early stages, it may resemble the common benign limbal mass called pterygium. A high index of suspicion and histological examination of benign limbal lesions will prevent blindness (Olasode, Bankole, Adeoye, 1996).

2. Eye injuries

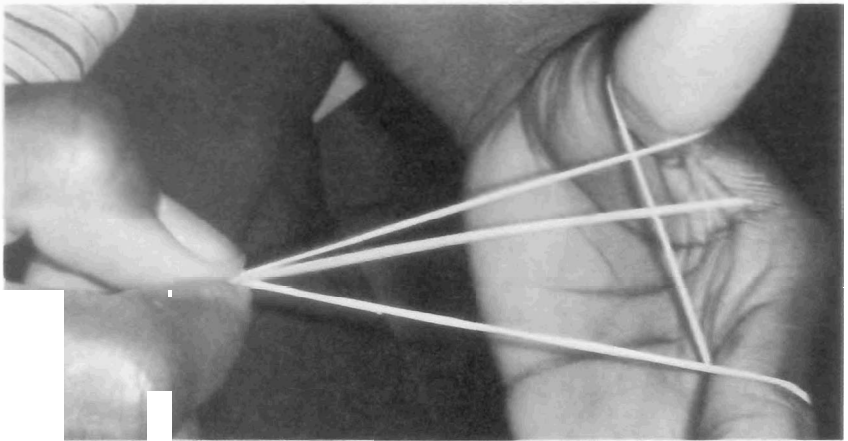
Despite the protected position of the eyes within the bony orbits, they are still vulnerable to injury because of their anterior exposure. Eye injury is by far the commonest cause of blindness and visual impairment in at least one eye. It is the leading cause of eye removal (Adeoye & Onakpoya, 2007; Awe, Adeoye et al, 2016). There is a general assumption that eye injuries are accidental and out of human control; but, they are preventable by taking extra care. Globally, it is estimated that injuries were responsible for 1.6 million people blind in both eyes and 19 million people blind in one eye (Negrel, 1998). Our studies revealed that eye injuries were responsible for 55% of all emergency eye consultations in OAUTHC (Onakpoya & Adeoye, 2008).

Eye injuries in the young

The studies we conducted on children and young adults showed that 1 in every 5 children presented to the Eye clinic with eye injury, which was more common in males (Adeoye, 2002). Injuries occurred with increasing frequency after the age of 4 years and children were commonly injured at play (50%), during corporal punishment (10%), assault (9%), and street hawking (9%). The causative agents were mostly sticks and twigs, followed by missiles and falls (Adeoye, 2002; Onakpoya & Adeoye, 2009).

A common form of missile in schools these days is the catapulted broomstick with sharpened point, slung and propelled with a rubber band (Fig. 8), which usually causes penetrating eye injury with retained bits of broomstick in the eye. The broomstick being an organic matter, provokes a fungal eye infection that may completely destroy the eye.

Figure 8. Catapulted broomstick with sharpened end.



Visual prognosis was best in patients with closed-globe injuries (48%) and worst in those with open-globe injuries (31%).

Severe open-globe injuries with globe rupture often necessitate eye removal. Figure 9 shows the eye of a 40-year old man who attempted to inspect his car engine while the engine was running, during repairs. The fan blade came off its hinge and hit his left eye

and nasal bridge, resulting in a completely disorganized eyeball with loss of eye contents. This necessitated an emergency eye removal (Fig 10).

Figure 9. Car engine fan blade injury, resulting in left globe rupture and lid laceration

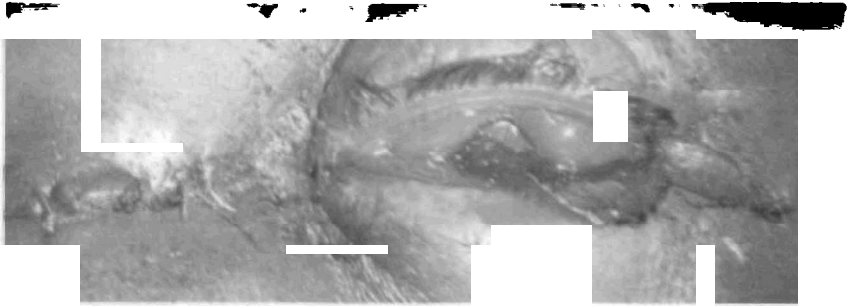
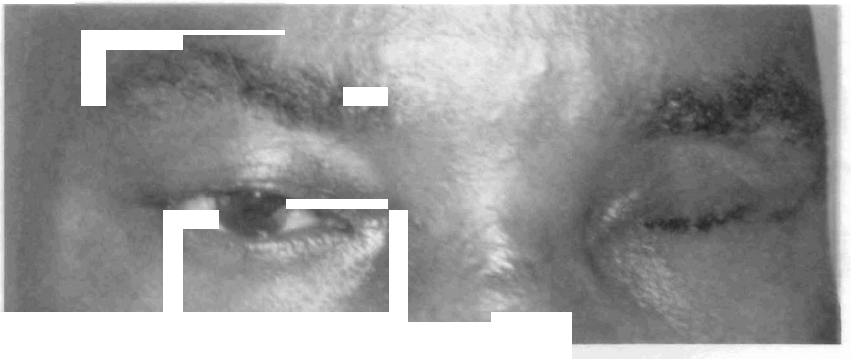


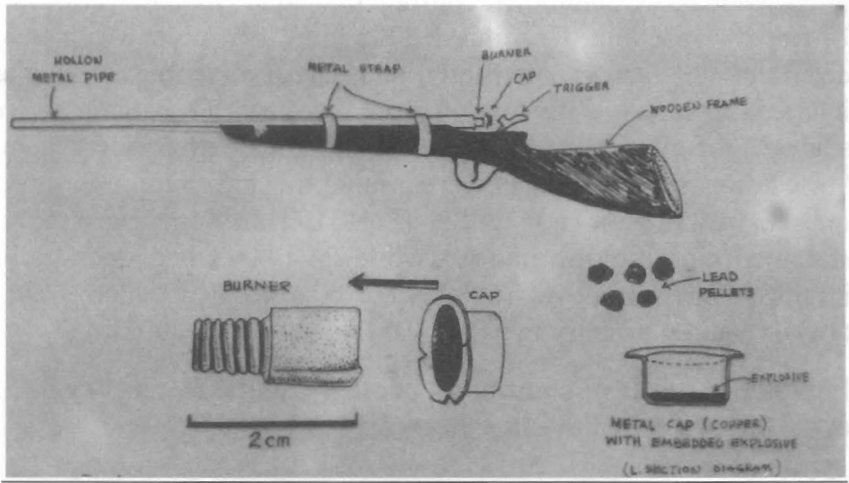
Figure 10. Same patient as in Fig. 9, after removing left injured eye. An artificial eye was later prescribed.



Eye injury in times of peace and conflict

In times of peace, the economic downturn of many families has necessitated game hunting by untrained hands, using crude locally manufactured Dane guns (Fig 11).

Figure 11. Diagram of locally manufactured Dane gun.



I observed from my study, that severe open-globe injuries associated with retained intraocular/orbital foreign bodies resulted from such guns with unstable parts. Loose metallic burner (Fig 12), would come off and hit the aiming eye, often necessitating eye ball removal (Adeoye, 1996).

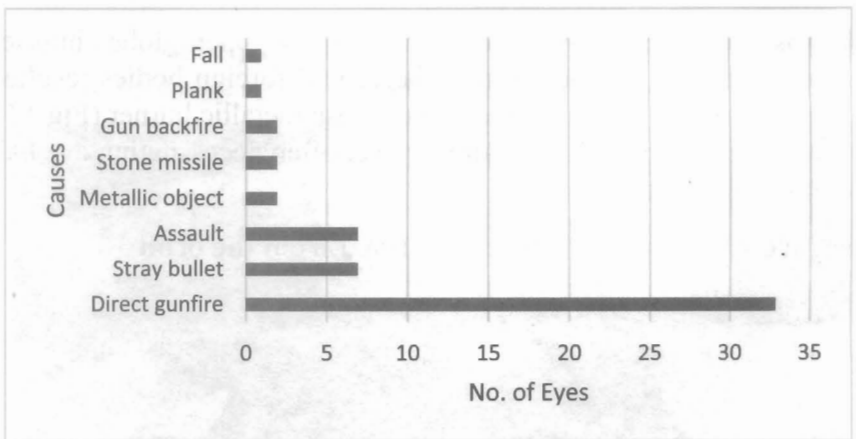
Figure 12. Dane gun burner retrieved from the orbit



The eyes have greater risk of injury in conflict than other body parts due to the preferential exposure of the face in combat. We

conducted a study of all patients with eye injuries resulting from the Ife/Modakeke communal conflict, treated at Obafemi Awolowo University Teaching, Hospital, Ile-Ife and 2 private eye clinics to determine the cause, morbidity and visual outcome of ocular injuries sustained. Fifty-five injured eyes of 54 patients were studied. The mean age was 32 years with a male preponderance of 96%. Forty-two eyes (76%) were injured by gunfire through direct impact, backfire or stray bullet (Fig13). Thirty-one eyes (56%) sustained closed-globe injuries while 24 (44%) had open-globe injuries. Thirty-five eyes (64%) were blind, out of which 9 eyes (16%) required primary eye removal (Adeoye et al, 2002).

Figure 13. Causes of communal conflict-related eye injury in 55 eyes (Adeoye et al, 2002).



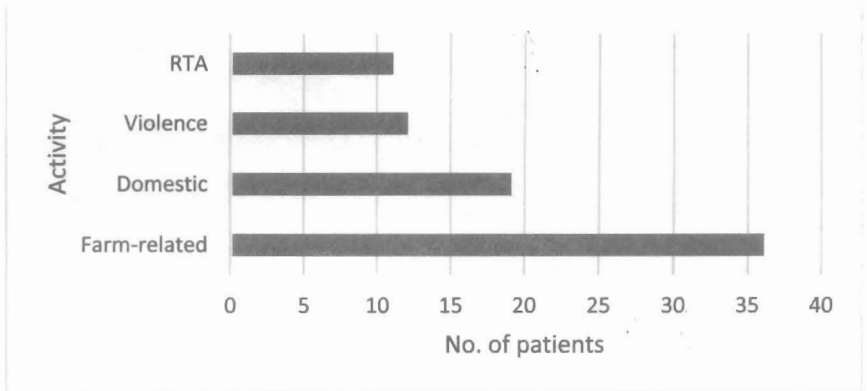
We must remember that *“peace is not the absence of conflict, it is the ability to handle conflict by peaceful means”* – Ronald Reagan. Because *“an eye for an eye only ends up making the whole world blind”* – Mahatma Gandhi

Trauma in the elderly

A multi-center retrospective study of patients aged 65 years and above managed for eye injury at four hospitals was conducted to determine the epidemiology of ocular trauma among the elderly (Fig 14). Seventy eight patients with overall mean age of $70.1 \pm$

5.5 years were studied. Eye injury occurred most commonly on the farm (37%), during farm related activities (36%) with sticks/twigs (41%) as the commonest agent in males, while in females, injury occurred most frequently at home (52%) and during a fight/dispute (26%) (Onakpoya, Adeoye et al, 2010).

Figure 14. Activity at time of eye injury in the elderly (Onakpoya, Adeoye et al, 2010).



Work-related eye injuries

Work-related eye injuries are major public health problems responsible for significant morbidity. Many eye injuries may be minor but serious ones may occur, especially in welding, which has the highest risk of eye injuries. The medical and safety problems associated with welding include skin burns, fume inhalation, electric shock, injuries resulting from explosion of fire, actinic keratitis (welder's flash), ocular foreign bodies, thermal retinal damage, and death.

Fig. 15 shows the left eye of a 20-year old industrial welder who was accidentally injured by the flare of a heavy duty welding equipment. He sustained deep thermal burns to the eyelids, orbital tissue, conjunctiva, and cornea with tissue loss in most of the lower lid and half of the upper lid.

Figure 15. Thermal injury of left eye from welding flare



Early presentation and prompt co-management with the Plastic surgery team headed by Prof. Kayode Olabanji saved the eye.

Figure 16. Same patient after initial plastic surgery. More surgeries planned.



The mainstay of ocular protection from welding arc radiation is a filter placed within the welder's helmet. The welder's helmet is a headgear used to protect the eyes, face and neck from flash burn, ultraviolet light, sparks, and heat. It includes a window covered with a filter or lens shade, through which the welder can

see to work. Welding goggles may also be used to provide a degree of eye protection.

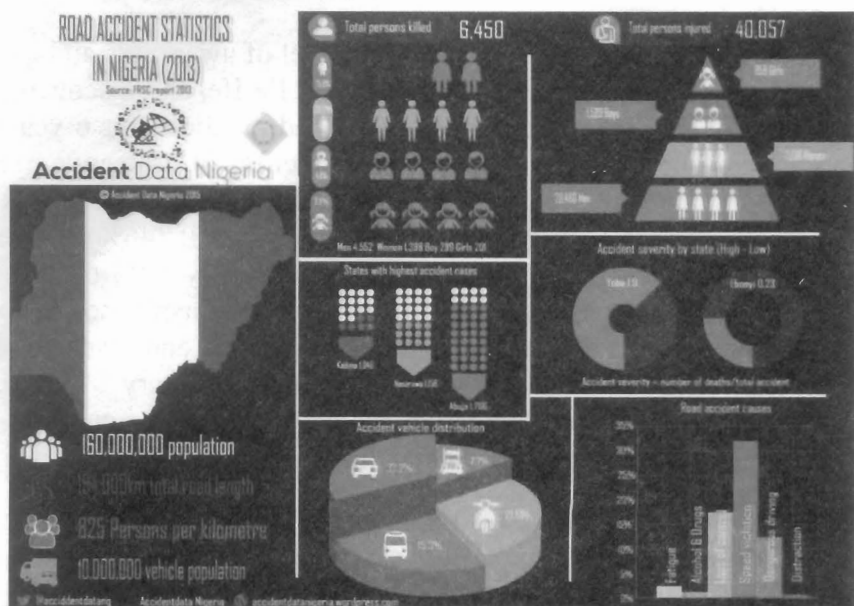
We conducted a study to determine the level of awareness and use of protective eye devices among welders in Ile-Ife, and discovered that 83% of the 405 consenting welders had practiced for 6 years and above. There was a high level of awareness of protective eye devices among the welders (90.6%), being higher among arc welders compared with gas welders. Less than half (46%) of the welders possessed protective eye devices and only 10% of them made use of the devices always. Some of the reasons for not using the devices include discomfort and poor visibility, and inadequate appreciation of the necessity to wear it. One in every 3 of the welders who never used protective eye device had previous work-related eye injury, some of which necessitated surgery (Ajayi, Adeoye et al, 2011).

Eyes on the road

Driving is a highly visual task. It is extremely important that everyone who drives sees clearly enough in the distance for the safety of members of the community and the driver himself.

According to the Federal Road Safety Corps (FRSC) annual report for 2013, using a total population of 160 million people in Nigeria, the total road length of 194,000 kilometres and total vehicle population of 10 million, the number of persons per km of road was 825. The risk of road traffic accidents (RTA) increases with exposure, leading to over 6,000 deaths and over 40,000 people injured in 2013. Motor cars (37%), motorcycles (22%) and buses (15%) were involved in RTA. (Fig. 17).

Figure 17. Infographic of RTA Nigeria, 2013. Source: The Federal Road Safety Corps



We interviewed and conducted full eye examinations including colour vision and full visual field assessment on 215 out of the estimated 270 commercial drivers in the four major motor parks in Ife Central LGA, to determine the effects of their visual functions on the occurrence of road traffic accidents. A large proportion (84%) of the drivers had no eye test before they were issued driving licenses and 22% did not undergo any form of driving test. About 9 out of 10 drivers who had visual impairment in the better eye had been involved in RTA. Refractive error was found in 17% of the drivers, but none of these wear corrective glasses. Cataract (14%) and glaucoma (6%) also contributed to visual impairment. Visual field defect, abnormal stereopsis, and color vision impairment did not have any significant association with RTA (Oladehinde, Adeoye et al, 2007).

Besides visual impairment, there was a significant association between RTA and alcohol consumption, which is common (58%) amongst commercial drivers. Other central nervous system

stimulants like kolanut, marijuana, and cigarette were also associated with increased risk of RTA (Oladehinde,....Adeoye et al, 2009).

Motorcycle (Okada) accidents had been on the rise since its use for commercial purposes in Nigeria about 2 decades ago (Falope, 1991). We conducted a case-controlled study to determine the prevalence and pattern of eye disorders existing among commercial motorcycle riders (CMRs) in Ile-Ife. The observed prevalence of subnormal visual acuity (<6/18-3/60) was 3% (Taiwo,....Adeoye et al, 2014).

Strategies for the prevention of eye injuries are mainly health education, improved supervision of children at play, change in the method of corporal punishment and provision of protective devices at work. As the Yorubas say "*Igi gogoro ma gun mi l'oju, okeere l'a tin wo o*" (to prevent a twig from gouging the eye, you must look at it from afar).

Early diagnosis and prompt management of eye injuries will improve visual prognosis. Vehicle drivers and motorcycle riders should be encouraged to get their eyes checked at least once every two years.

Ensuring good eye health in the Community

Good eye health depends on availability of accessible and affordable eye care services for preservation and restoration of vision in the community. VISION 2020 – The Right to Sight is a global initiative launched in 1999 by the World Health Organization together with the more than 20 international non-governmental organizations involved in eye care, prevention and management of blindness that form the International Agency for the Prevention of Blindness (IAPB). It emphasizes the elimination of blindness from cataract, trachoma, onchocerciasis, refractive error, vitamin A deficiency, and other causes of blindness in children by the year 2020. The goal of Vision 2020 is to enable all

persons to receive eye care and have the right to sight - which is one of their fundamental human rights (Foster, 2008). The core areas of strategy are human resource development, infrastructure and technology development, disease control, advocacy, and partnerships and collaboration among stakeholders in eye health (Foster, 2008). Ten years after commencement, the impact of the initiative has been felt worldwide in a 10 to 13 percent reduction in visual impairment (Ackland, 2012).

Universal Eye Health

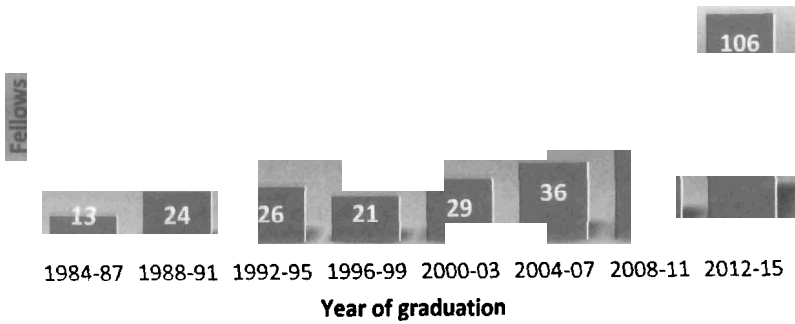
To further improve eye health, in 2013, the World Health Assembly endorsed a resolution tagged “Universal eye health: a global action plan 2014–2019 - ensuring that all people have access to needed promotive, preventive, curative and rehabilitative health services, of sufficient quality to be effective, while also ensuring that people do not suffer financial hardship when paying for these services”.

Human resources for eye health

Ophthalmologists and Allied eye care workers are needed to improve eye care services in the community. In Nigeria, Specialist training is provided by accredited training institutions and evaluation conducted by the National Postgraduate Medical College of Nigeria and the West African Postgraduate Medical College.

In 2014, I was elected to the coveted post of the Chairman and Chief Examiner of the Faculty Board of Ophthalmology of the National Postgraduate Medical College of Nigeria. The Faculty oversees the training of Ophthalmologists competent to lead the eye care team for effective eye care delivery. Since 1984, the number of graduating Ophthalmologists has gradually increased to a total of 343 (Fig 18).

Figure 18. Annual turnout of New Fellows (FMCOphth)



This means that for Nigerians, with a population of 182 Million, the College has been able to produce 1 Ophthalmologist to 530,000 Nigerians, as against the WHO target of 1 Ophthalmologist to 250,000 people (IAPB, 2014). We do not have enough Ophthalmologists to manage eye diseases in Nigeria. Achieving the goals of the new WHO Action plan (a 25% reduction in blindness and visual impairment by 2019) for Universal eye health coverage will be impossible without addressing the eye health workforce crisis (WHO, 2013).

By the grace of God, I have contributed to the training of not less than 24 Ophthalmologists while 19 other doctors are currently in training.

Why would you keep your trade to yourself and not pass it on to the next generation?

Incorporating Eye Health Care within the Primary Health Care

The Alma-Ata Declaration of 1978 expressed the need for urgent action by all governments, health and development workers, and the world community to protect and promote the health of all people. In achieving the goals of Universal Eye Health, it is

desirable to incorporate Primary Eye Care (PEC) within the pre-existing Primary Health Care to effectively reach rural communities. In furtherance of this, we conducted a study to assess the human and material resources available for primary eye-care delivery in rural communities. We found that in 27 health facilities available in Atakunmosa LGA, forty-one (42%) community health extension workers, 42 (43%) health assistants, 3 (3%) community officers of health and 11 (11%) registered nurses administered PHC. No worker had training in PEC and none of the centres had all the materials for basic PEC delivery. Although procurement of materials and training of health-workers in basic PEC delivery is required, the healthcare facilities and workers currently available were found to be adequate to commence integration of PEC into the PHC system. (Onakpoya, Adeoye et al, 2009).

It is heartwarming to note that only last month, the Federal Ministry of Health launched the Rapid Result Initiative programme, called: “Better Health for all,” made to produce quick and visible impact on the lives of every Nigerian especially, the most vulnerable and poor in the society. Under this programme, 110 Primary Health Centres all over Nigeria would be revamped within 100 days. It is hoped that by this, health care delivery will be brought closer to the underserved communities.

Conclusion and recommendations

Mr. Vice-Chancellor Sir, in the course of this lecture, I have tried to draw attention to the poor eye health status of communities around us and the inadequacies of eye care services. I, therefore, wish to make the following recommendations:

1. Need to integrate Primary Eye Care into pre-existing Primary Health Care.
2. School screening for eye disorders in conjunction with existing school health programme.
3. Teachers should be more observant of pupils/students visual needs and parents should take affirmative action.
4. Train PEC extension workers.
5. Train more Ophthalmologists.

6. Screen family members of glaucoma patients for early detection.
7. Increase engagement with communities.
8. Encourage Community participation in eye health programmes.
9. Increase period of exposure of Medical students to Community Ophthalmology.
10. Organize more surgical eye camps to rural communities to cover the backlog of unoperated cataract.
11. Increase funding for health care.
12. Encourage eye health insurance.

Mr. Vice-Chancellor Sir, there is a global epidemic of Diabetes mellitus, estimated to occur in 415 million adults worldwide. My colleagues and I continue to research into the blinding effects of the disease in the community.

As a volunteer Eye Surgeon to Pro-Health International, I have been involved in many cataract surgical outreaches to increase cataract surgical rate and reduce the burden of cataract blindness in rural communities. Some of the communities where I was involved in high volume surgery and conducted research include: Ile-Ife, Modakeke-Ife, Ife North Local Government Area (LGA), Moro, Ilesa, Ijebu-Jesa, Atakunmosa West LGA, Imesi-Ile, Ibokun, Osogbo, Ibadan, Ilaro, Ago-Iwoye, Oke-Igbo, Kaduna, Kano, Ekiti and Ondo. As the daughter of the Late High Chief Sasere Adeniyi of Ile-Oluji Kingdom, I also impacted my home town Ile-Oluji positively.

In 2000, at the prompting of Prof. A.O. Arigbabu, the then Head of Surgery Department, I established the eye care services in Wesley Guild Hospital, Ilesa, where I worked peacefully, conducted research, trained residents and taught medical students for 10 years out of the 22 years since I joined the University.

As the first Head of Department of the full-fledged Department of Ophthalmology which was carved out of Surgery Department, I hope to continue to work hard for the upliftment of Obafemi Awolowo University. So help me God.

Acknowledgement

Mr. Vice-Chancellor Sir, permit me to acknowledge the robust education given me by my late father, High Chief Stephen A. Adeniyi, a seasoned researcher in his own right, who led international survey missions at the Food and Agricultural Organization (FAO) of the United Nations (UN) in Rome for many years. I appreciate my late mother, Matron Phebean O. Adeniyi (nee Oteniya) for her affection and support. It was through her I was exposed to hospitals and patient care early in my childhood. To my siblings, Ayodele, Modupe, Onaara, Adewale and Adepeju, thank you for all the support I have had over the years as we grew up together. To the larger Adeniyi and Oteniya families, I appreciate your encouragement.

I am heavily indebted to all my teachers and trainers for the excellent work they did so I could stand before you confidently to highlight my contributions to eye health care.

I thank OAU and OAUTHC for giving me the enabling environment to teach, conduct research and improve on the eye health status of various communities. I am grateful to all my colleagues and staff of Surgery Department, for their support and encouragement. I appreciate all staff of Ophthalmology Department for your cooperation and hard work. I am grateful to my patients for encouraging me to put more effort to their care. I thank my co-researchers for peaceful, intellectual collaboration. To my students, I say *“Come to Ophthalmology!”*

I appreciate all my friends whose genuine affection has sustained and encouraged me. God bless you all.

I want to sincerely appreciate the support and encouragement I received from my husband, Chief Adegboye O. Adeoye. My children, Kayode, Abiodun, Taiwo and Gbenga Dada, Kehinde and Uche Mokolo have supported my work in more ways than one. I thank God for my grandchildren – Oginikachukwu, Tobeckukwu, Derek and Christine – you are a breath of fresh air. Most of all, I

thank the Almighty God for seeing me thus far. Glory be to His Name. Amen.

Mr. Vice Chancellor, Sir. Community members must embrace the various programmes for good eyesight in order to avoid bad and ugly outcomes. Upon all,... *“For beautiful eyes, look for the good in others...” Audrey Hepburn.*

Distinguished ladies and gentlemen, thank you all, for lending me your ears and.....eyes.

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