

**UNIVERSITY OF ILORIN**



**THE TWO HUNDRED AND THIRTY-FIFTH (235<sup>TH</sup>)  
INAUGURAL LECTURE**

**“ILLUSION TO VISION: A SYMPHONY OF  
TRIAL AND TRIUMPH OF CHILD EYE HEALTH”**

By

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**MB, BS (Unilag), MD, FMCoph, FWACS, MDIV, MNIM, Cert. (Computer SA-Unilorin),  
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**THURSDAY, 15<sup>TH</sup> JUNE, 2023**

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***THURSDAY, 15<sup>TH</sup> JUNE, 2023***

**This 235<sup>th</sup> Inaugural Lecture was delivered under the  
Chairmanship of:**

**The Vice-Chancellor**

**Professor Wahab Olasupo Egbewole SAN**  
**LL.B (Hons) (Ife); B.L (Lagos); LL.M (Ife); Ph.D. (Ilorin);**  
**FCArb; Fspsp**

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Hospital,  
The Chairman, Medical Advisory Committee, University of  
Ilorin Teaching Hospital,  
Professors and other members of Senate  
Directors of various Units,  
Head of Department of Ophthalmology,  
Heads of other Departments,  
All other Academic, and Non-Teaching Staff,  
My Lords Spiritual and Temporal,  
Your Royal Highnesses,  
Members of my Nuclear and Extended Families,  
My dear Students of University of Ilorin, and especially of the  
College of Health Sciences and other Students,  
Scholars and Alumni of the University,  
Gentlemen of the Print and Electronic Media,  
Distinguished Ladies and Gentlemen.

### **Preamble**

The Vice-Chancellor Sir, I very much appreciate the opportunity given to me to present this 235<sup>th</sup> inaugural lecture of our better by far University before this distinguished gathering. Please allow me to acknowledge the Trinity of God the father, my Lord Jesus Christ and the Holy Spirit, the counselor and helper. They adopted me in the beloved, adorned my life and path with inspirations, lavished me with resources, strength, and

honour; made rooms for me among the great, called forth help beyond my imagination, prayers, or reach. Very present, trustworthy, faithful, lifter; dependable in all things and always, daily loading me with benefits. All the praise and glory truly belong to this God, our enabler for all round success and my shield and portion for as long as life endures. Dear Lord, please permit the use of “I did” in some parts of this presentation. It is the tradition of men. To you are all praise, glory and honour.

An inaugural lecture is an opportunity to celebrate academic strides and the impact on life and society. It is similarly an opportunity to educate others, and advocate for what we do. It serves to encourage and challenge our youths and co-travelers on the academic way. It gives another opportunity to appreciate God, our family, trainers, benefactors, colleagues, individuals, co-workers, institutions, and organizations who provided the needed support for a successful career.

This inaugural lecture is titled: **Illusion to Vision: A Symphony of Trial and Triumph of Child Eye Health.** I will be presenting my academic stewardship, using various symphonic initiatives of early detection for early interventions at clinical and programmatic levels, to promote eye health of children under the age of 18years, thereby preventing childhood blindness. We converted the **Illusion** (confusion, deception, misconception, myth, and fallacy) of sight as experienced by the kids, families, communities, and eye care workers, to clear **vision** of generational magnitude. Child Eye Health **triumphed** in spite of various **trials** against it.

**This scene of blind persons begging is probably familiar.**



**Figure 2:** Blind persons begging to survive in the community.

In our study on “Psychosocial Characteristics of Totally Blind People in a Nigerian City” (Dupe Ademola-Popoola et al, 2010) we reported that 7 out of 10 blind persons living in a community had been blind from childhood. 8 out of 10 of those blinds from childhood never had an eye examination to treat needless blindness-Figure 3. One in two of such children die within 2 years, and 90% do not go to school. Over 80% of all the causes of blindness are avoidable.



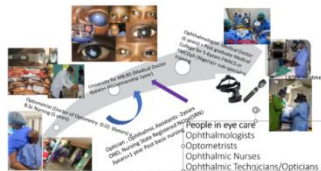
**Figure 3:** Some common causes of eye problems in children

If the blind children survive to become adults, at least one adult, one or two other children every year are shortchanged because they serve as human guides to the blind person- Figure 4 who may live for over 70 years. This typically expands and perpetuates the cycle of poverty accompanied by social, economic, psychological and security challenges to the community.



**Figure 4:** Blind persons with children as guides

**Eye Care Workers:** Members of eye care team work together to prevent needless blindness.



**Figure 5:** Cadres of Eye Care Workers



I am an Ophthalmologist; eighty Percent 80% of my practice is among children.

### **My Early Life and Foundation**

God has a plan and a purpose for our lives. God ensured our favoured birth and to become our best in His unique purpose; the family raised us to flourish. We were born at the right time, at the right place– for me, it was in Ikare Akoko, Ondo State, by the right people, into parentage of my dearly beloved father and earliest friend and cheer leader, Pa Yahaya Ogedengbe of the great Obanla-Ogedengbe family in Okoja, Ikare and Princess Musili Adenike Ogedengbe (Nee Momoh) of Olukare of Ikare Family dynasty. My then living maternal grandparents and the closely knitted extended family, dutifully affirmed, and celebrated us unto greatness.

I grew up at No 1, Okoja Street, at the “garage”, Ikare where my Parents also had businesses; in the neighborhood of the Central Mosque, Saint Stephen School, CMS bookshop and Olukare’s Market and Palace. I attended Moslem Primary School, Okela 1973-1979 and later Ikare Grammar school 1979-1984 to which I was drawn by the well adorned white under brown pinafore starched uniform of first two sets who came top at March past during Independence Day anniversary celebrations. I became the Head Girl and came out on top of my class. My father, not prepared for me to leave home then for the University, requested that I attended Ondo State College of Arts & Science (OSCAS) for A 'levels' from 1984-1986. I got admission through direct entry into the College of Medicine, University of Lagos (Unilag) in 1986. I had visited the University 3 years previously (in the company of my dear *Egbon* of blessed memory-Abiola Ogedengbe (RIP), one of my earliest mentors, a Mass Communication student then, later of Daily Times Newspaper and Shell Development Company). At age 14, my ambitious self then thought the undergraduate were my age mate and couldn't understand why I wasn't yet in the University.

I completed MBBS (Unilag) in 1991, got married in 1994 to Prof. Ademola Alabi Popoola, who I met during our NYSC year. Divine instruction brought us in this direction in 1993 to work, serve and build our careers as a Ministry.



**Figure 6:** At Graduation, University of Lagos, Akoka, Lagos, Nigeria-MBBS, 1991

### **Ophthalmology Training**

My original medical specialty of interest was Paediatrics. I ran away after housemanship because I couldn't bear the avoidable childhood mortality I saw; especially, those attributable to parents who either refused available care or were unable to afford the care. I then considered Epidemiology and Community Health, believing that the root of diseases can be tackled by the community to maintain health and wellness. Somehow, I ended up in Ophthalmology!

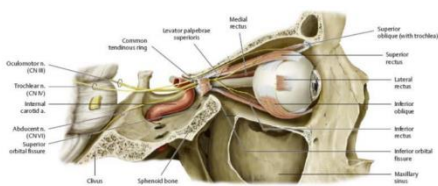
My early Ophthalmology training was suggested by my husband (HOO-Husbands of Ophthalmologists as they are called by Ophthalmological Society of Nigeria-OSN). I started on 6<sup>th</sup> December 1993, as a service, at the University of Ilorin Teaching Hospital (UIITH). This was alongside Prof. F. G. Adepoju and Dr. Kolawole Ogundimu; Prof. J. F. A Owoeye and Dr. Deji Adu were my immediate seniors and Dr Isaac Uyanne was our overall boss. Since UIITH was not accredited for postgraduate residency training in ophthalmology until 2003, my cohort had to go to accredited hospitals across the country before being eligible to write the statutory examinations in our quest to become consultants, lecturers, and trainers.

This took me, to University College hospital, Ibadan in 1996, and to Lagos University Teaching Hospital-LUTH, Guinness Eye Centre GEC, in 1998 under Professor Ajesola

Majekodunmi (Maama as we fondly called her) and my other trainers, Professor Adebukola Adefule-Ositelu, Professor Folasade Akinsola and Prof. Adeola Onakoya. Maama was my academic mentor and Professor Olurotimi Fakeye, the CMD of University of Ilorin at the time whose personal interest in me sustained me at various times when I considered dropping the ball. I completed the Fellowship training of both National Postgraduate Medical College (FMCOPh) and West African College of Surgeons FWACS in early 2001. I joined the services of the University of Ilorin as a Senior Lecturer in 2011 and became a professor of Ophthalmology in 2019.

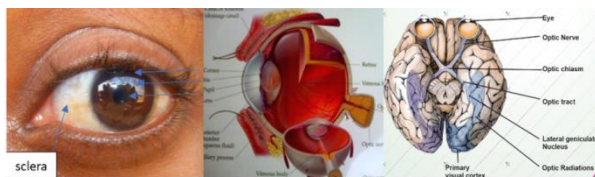
### The Human Eye Position and Parts

The eye is an intricately woven, specialized organ, though small, but mighty. It is an extension of the brain. It sits within the bony orbit just under the brain.



**Figure 7:** The eye in the Orbit and the bony skull

It then connects to the brain through the optic nerve and spreads widely, to the very back of the brain through a complex and extensive “wiring system”. This extensive network makes it to be vulnerable all the way.



**Figure 8:** Parts of the eyes and connection to the brain

<https://doctorlib.info/medical/anatomy/35.html>

All parts of the eye constituting the line of sight are made naturally transparent from the cornea in front, through the crystalline lens, to the vitreous and then the fovea before carrying all information collected using the eye all the way to the back of the head for further processing for sight.

The various parts and components of the eye constitute an area of ophthalmology sub specialization including:

- Orbit, Oculoplasty and Reconstructive surgery,
- Cornea, External Diseases, and Refractive Surgery
- Neuro-Ophthalmology
- Glaucoma
- Uveitis
- Vitreo-retinal
- Ophthalmic Oncology
- Paediatric and Strabismus

### **Development and why there are Two Eyes.**

The first trimester of pregnancy is important for eye development. This development continues after birth but is most rapid in the first year of life and ends at age 21. This explains the concept of critical period for intervention to obtain optimal visual outcome in conditions occurring early in life. The eyes are paired for the good reason of binocular single function. This helps us with wider and clearer vision as well as depth perception. Even the Holy bible says, “The light of the body is the eye: therefore **when thine eye is single, thy whole body also is full of light**; but when thine eye is evil, thy body also is full of darkness.” Luke 11:34 KJV.

<https://bible.com/bible/1/luk.11.34.KJV>

### **Eye Position, Appearance, and abnormalities**

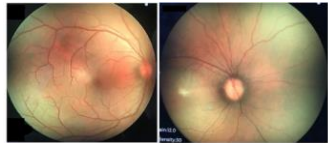


**Figure 9:** Normal Eye Position and Appearance

The normal position is for the eyes to both be equal and normal in size, bright, steady, and centered when in straight ahead gaze-Figure 9.

Small or enlarged, dancing, deviated eyes point to some established anomalies. Similarly, abnormal color of the eye: pale, yellow, brown, bloodshot or red eye point to ongoing problems. Due to immaturity of fusion, the eyes may be slightly deviated or skewed or misaligned on and off in the first 6 months of life. It shouldn't extend beyond that point. Any deviation persisting or occurring after the first 6 months of life is considered significant and should be investigated and treated appropriately.

Conversely, the two eyes may appear normal when in fact they may have severe visual impairment which can only be detected if screening is done. The requirement for optimal vision includes the presence of clear line of sight, normal eye structures and alignment, ability to focus and the ability of the brain to merge images from both eyes to give 3-dimensional vision.



**Figure 10:** Normal Retina of the eyes

### **Functions of the Eyes**

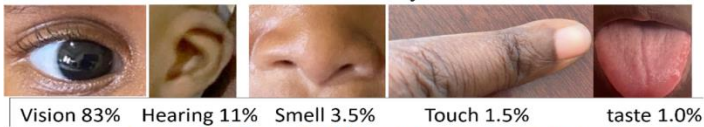
The eyes serve the primary function of vision; this is broadly divided into components of clarity, extent, contrast, colour and depth. We look with our eyes and see with our brains. If anything affects the looking function as you know, “*ojulowo*”, the brain will not see. Similarly, the look will be affected by whatever impacts the seeing in the brain. We see the world through our eyes, the eye provides a live view of its health and wellness as well as for the rest of the body, hence the title of my first book written in simple language for public education - *My Eyes, My Sight, My Health* (Dupe Ademola-Popoola, 2014).



**Figure 11: My Eye, My Sight, My Health.**

The eyes also help to beautify the face, help with recognition of individuals grossly and at micro level; such has now been deployed in iris and retinal recognition, similar to using our fingerprints. They also make us beautiful- the Yoruba people of Nigeria often use the size and brightness of the eyes to describe a beautiful damsel.

Vision drives development especially in early life and it contributes 8 out of 10 requirements from all the senses to learning. Outcome in life is often related to vision in early life.



**Figure 12: Contribution of Different sense Organs to Learning**

There is a critical period in early life when visual function becomes optimized. Children learn to speak, explore the environment, and do things mostly by watching others do those things. Children with significant reductions in vision will have delay in:

- Motor / mobility- crawling or walking unchallenged.
- Expressive and Receptive Language Development, phonation
- Feeding/oral skills
- Other learning skills

When the eyes function correctly, a 6-week-old child would smile and make eye contact with the mother; at 6 months, s/he should reach out to collect things like toys, crawl without bumping into objects and walk at normal times without bumping

into things, play freely with friends, sit at a reasonable distance to watch TV and write in schools. The child will keep both eyes well opened when awake, will keep hands off the eyes. When vision is compromised, especially in both eyes, simple things become difficult including poor handwriting and academic performance which may not be realized even by educated parents. A child is unlikely to complain of vision problems because he may assume that everyone sees the same way he sees.

### **Visual Impairment and Blindness**

Using vision test plates, visual impairment (vision  $<6/18$ ) is when objects normally seen clearly at 18metres away, are only seen at 6metres close while wearing the best vision correction such as eyeglasses, contact lens etc.

Blindness (vision  $<3/60$ ) is when objects normally seen clearly at 60metres away, is seen at less than 3metres close (it is not necessarily a complete loss of vision) while wearing the best vision correction.

### **Childhood Visual Impairment and Blindness**

Childhood blindness refers to a group of diseases and conditions occurring in childhood or early adolescence up till age 17, which if left untreated, results in blindness or severe visual impairment that are likely to be untreatable later in life. The 2 eyes may appear normal when in fact they may have severe visual impairment which can only be detected if screening is done.

### **Unlocking the Concept of Trial of Child Eye Health**

**Trial:** distress / hardship, painfully difficult or burdensome work, toil pain, anguish or suffering resulting from mental or physical hardship.

**Triumph:** celebration, joy, pride, elation, flourishing, growing, robust.

Child Eye Health in Nigeria and very much for most of sub-Saharan Africa has been challenged in many ways:

- **Magnitude:** types, detection, intervention, and impact of child eye problems.
- **Manpower:** in number, distribution, capacity, and access to training.
- **Materials:** publication and consumables
- **Machines, Maintenance, Management:** (detection and intervention) - largely unavailable, expensive and maintenance.
- **Money:** practitioners' remuneration, out-of-pocket payment by parents, relatively poor institutions.
- **Mobility and movement:** Travels to specialist centers are challenged.

**Some Specific Examples of such Trials and Travails of Accessing Child Eye Health include:**

1. Travail of an educated family who birth a child at 28 weeks (about 6 and a half months), spends her earnings in hospital, even educated, within 4 months, the child goes blind from Lagos to Osun to Oyo to Ilorin. That was an avoidable lifelong blindness from retinopathy of prematurity.
2. Travail of educated parents whose child did not do well in school, employed teachers, changed school-sent the child to school for children with special needs, Alas! The 6-year-old child needed only eyeglasses for high myopia as discovered during an annual children outreach.
3. Travail of the rich with several family members with squint, told he could only get treatment in Australia, how many people will he take, can the story of this family be transformed? Yes! Right here in Ilorin.
4. Travail of eye care team hoping to reach communities, taught their schoolteachers, who had forgotten after one month, frustrated. How else do we improve access?
5. A newborn was noticed to have a whitish glow from both eyes, the cousin also had similar disease, it is retinoblastoma, funding for care is limited, and they need to travel from Yobe to Ilorin.
6. An Ophthalmologist realized the need to get trained in Paediatric Ophthalmology and Strabismus. He finds nowhere to train because he has no funding.



To counter the trial and travail of children, family, communities, health workers, eye care workers, specialists in child eye care, a Symphony of initiatives were deployed at clinical and programmatic levels.

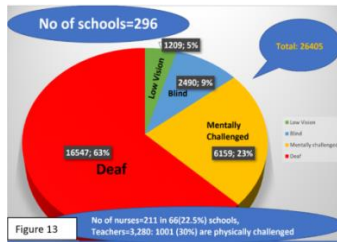
### Magnitude and impact of Childhood Blindness

Worldwide, every second, a child goes blind somewhere; about 1.5 million children (about half the population of Kwara State) are blind and 19million visually impaired.

Nigeria, 7<sup>th</sup> in the world, has a conservative estimate of is 220.9million population (Tuesday, May 30, 2023 - <https://www.worldometers.info/world-population/nigeria-population/>)with 44% being children under 15 years (97.2million). Nigerian national survey of blindness reported 0.6% blindness among children aged 10-15 years (F. Kyari et al, 2007). Among all ages, Key informant studies ( R. Duke et al, 2013; **Dupe Ademola-Popoola et al, 2018**) of childhood blindness reported up to 2/10,000.

**Ademola-Popoola et al, 2019** conducted a national survey of all children, registered schools, eye and ear care centers providing services for children with special needs from being visually / hearing impaired or mentally challenged. The details can be found at <https://specialkidsnigeria.unilorin.edu.ng/center>.

Our findings are summarized in Figure13.



**Figure 13:** Distribution of Disabilities (blind, deaf, low vision and mentally challenged) in schools for children with special needs in Nigeria – 2019.

The cost of training a visually challenged child is about six times the resources needed to train a sighted child.

One third of the total economic cost of blindness is from childhood blindness. Childhood blindness programme has been a priority of WHO, also a United State Congressional directive since 1991. Some causes of visual loss like retinoblastoma (where survival is less than 50% compared to 98% in countries where childhood sight is actively protected) directly threaten life and so contribute to under-5 mortalities.

### **Delayed detection and intervention**

Early detection and treatment of childhood eye diseases is important to prevent/ reverse vision loss and eye morbidities. The causes of childhood vision impairment / blindness are different from causes in adults. Children's eyes are not small adult eyes, when diseased, they require different strategies, specific equipment and long term follow up to prevent and manage complications such as amblyopia (Lazy Eye).

Screening at the early stages of life is the most cost-effective way to detect causes that may be irreversible. Most children with eye problems of the children in our environment are brought very late for treatment when the expected outcome is poor. When they come, they cannot pay.

Delay or absence of treatment in the early stages leads to conditions which are not treatable or not easily treatable in adults, such as amblyopia.

### **Manpower at Specialist Level and Task Sharing/Shifting**

Paediatric care requires specific training, knowledge, skills, and equipment which are expensive. There are 35 Paediatric Ophthalmologists distributed across the country as shown.



**Figure 14:** Map of Nigeria showing the distribution paediatric Ophthalmologists in red stars.

My original sub-specialization of interest in Ophthalmology was Vitreo-Retinal or Oculoplasty, but then the **travail** of child eye health stared me in the face as I saw heart breaking presentation and outcome of some clinical conditions like Paediatric Cataract, Glaucoma and Retinoblastoma and there was nowhere in Nigeria at the time where I could be trained.

This life changing idea to pursue sub-specialization in Paediatric Ophthalmology was fired up in 2006 and to super specialize in Paediatric Retina-ROP and Retinoblastoma; perhaps the most challenging ophthalmic burden anyone would carry. These took me to train and build capacity at several institutions across the world: Paediatric and Strabismus at LV Prasad Eye Institute, Hyderabad, India in 2007, International Council of Ophthalmology ICO funded Ophthalmic Oncology at Eye and Laser World Centre -Giza, Egypt in 2009,



**Figure 15:** Training and research at Eye and Laser world Centre, Giza and Rod El Farag Cairo, Egypt 2009.

Did some Paediatric Ophthalmology at Children Mercy Hospital- Kansas City, Kansas-USA; Early intervention and low vision with Dr. Lawrence Eye Centre-Salina, Kansas, USA in 2010. The need to resolve the shock of refractive surprises after cataract surgeries took me to Millan, Italy-2012 and Emory University, Atlanta Georgia, USA-2013 to train in Ultrasonography under Rhonda Waldron and Bryan her husband.



**Figure 16:** Training in Ophthalmic Ultrasound in Milan, Italy.

I was back at LV Prasad Eye Institute -Bhubaneshwar, India 2019. I stopped by at Royal London Hospital, London, UK for retinoblastoma and several others across the world as part of my learning experience.

It is amazing how destiny brought me into all I thought I had run away from, Paediatric, Community Medicine, Retinal and Oculoplasty through Paediatric Ophthalmology, Strabismus and Ophthalmic Oncology. Those of us in Paediatric Ophthalmology who trained earlier had to go to India, Canada, US, UK, Pakistan etc. It was not always possible for those who came after us. We therefore got together and developed a curriculum for Nigeria and began to train in-country, now we are training for West African Sub-region, I am privileged to take on board Dr. Dadjo Amouzu, our first trainee from a Francophone country-Togo.

I did several other trainings including:

1. Advance Leadership Development, Haggai Institute, Maui, Hawaii, 2011.USA,
2. Medical Educators by International Council of Ophthalmology, 2013.
3. Foundations of Business Strategy. University of Virginia, USA
4. Advanced Competitive Strategy. Ludwig-Maximilians-Universität München (LMU), Munich, Germany
5. Statistical Reasoning for Public Health: Estimation, Inference, & Interpretation. Johns Hopkins University, USA
6. Healthcare Innovation and Entrepreneurship. Duke University, USA
7. Data Management for Clinical Research. Vanderbilt University, USA,

Research and ethics were not left out, thanks to West African Bioethics Training Program that provided the platform for me to do:

1. Good Clinical Practice Course
2. Nigerian National Code for Health Research Ethics.
3. Responsible Conduct of Biomedical Research.
4. Essentials of Research Administration.
5. Clinical Research Coordinator (CRC).

In addition, giant strides were made in the field of research and development of technology for home management.

I did not leave out religion as I did a Master Program in Divinity at the United Missionary Church of Africa Theological College-UMCATC, affiliated with University of Ibadan, 2013-2015.

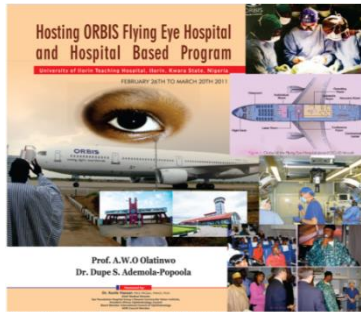
### **Training Others and Team Development**

As an academic eye surgeon, I have been involved in training post graduate resident doctors and medical students and research since 1998. I have supervised dissertations of 22 resident doctors who are now specialists in various hospitals.

I was on the team that developed the curriculum for sub-specialization in Paediatric Ophthalmology for International Council of Ophthalmology-ICO, for West African College of Surgeon and Nigerian Paediatric Ophthalmology & Strabismus Society. In 2010, I invited and organized the ORBIS Flying Eye Hospital on DC-10 air-craft converted to an eye hospital (at the Ilorin International Airport) and Hospital Based Program at the University Ilorin Teaching Hospital (UITH) for 3 weeks from February 26 to March 20<sup>th</sup>, 2011, to perform surgeries on people in need and to train Resident doctors, Consultant, Nurses, Anaesthetists, and Biomedical engineers. We had 52 volunteer faculties from 13 countries who did a lot of teaching, and skill transfer. A.W.O Olatinwo and **Dupe Ademola-Popoola** documented it in a book, 2015 to serve as reference on program development.



**Figure 18:** Participants and volunteers.



**Figure 19:** Orbis Flying Eye Hospital in Ilorin, Governor Bukola Saraki was on Inspection.

Subsequently, I organized other international workshops focused on specific Child eye disease for team members especially for Retinoblastoma and Retinopathy of prematurity care.



**Figure 20:** Training workshops for others.

I participated in the development of massive online open courses (MOOCs) under the auspices of the Queen Elizabeth Jubilee Trust. I have been a part of RB-MDT of RB NET, ROP-NET London School for Tropical Hygiene and Tropical Medicine-LSTHM; as well as a contributor to Paediatric Ophthalmology curriculum for surgical simulation training in Accra, Ghana as part of the Zeiss Surgical Simulation Center.

### **Task Shifting/Sharing Initiatives**

Task-shifting/sharing in Detection of Childhood visual impairment is important because there are few trained health

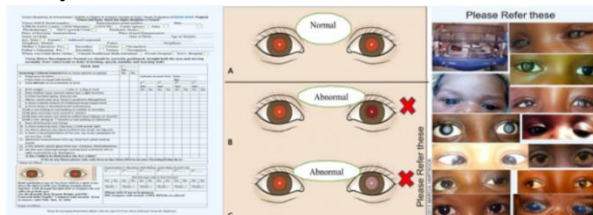
workers in child eye care. Children are everywhere. This took us to the town, to train and equip non-eye care, health workers from year 2016 (**Dupe Ademola-Popoola et al, 2020**), teachers and key informants in the community to actively identify, refer and participate in the specialized eye treatment provided by the expert eye care team right in the schools and community and refer those who need further care to our super specialized unit in the hospital.



**Figure 20:** Various task-shifting/sharing effort, training nurses, community, health workers, and key informants in the community and teachers in schools.

**Machines, Maintenance, Management:** (detection and intervention) –were largely unavailable, expensive, and challenging to maintain.

**Dupe Ademola-Popoola et al, 2016** also deployed standardized Low-cost vision screening “Yes” card-figure 21, instrument vision screener and large community directed pictorial information panels to Immunization clinics in rural and urban settings, this empowered the community health workers and nurses to screen and refer preverbal children with eye problems early.



**Figure 21:** Vision screening cards for preverbal and older children.

In addition, I developed the patented “Teacher Led Vision Screener - **TELVIS**” (Dupe Ademola-Popoola, 2016)

**TELVIS** is a comprehensive kit designed for accurate vision screening of children and adults, by non- professional eye care workers such as teachers, key informants, and volunteers. Adaptable to **all resource settings irrespective of availability** of electricity or computer Using **TELVIS**, hundreds of teachers and key informants were trained across Nigeria, they screened over 140,000 children and referred over eleven thousand children including those at the schools for children with special needs.

Thereafter, our specialist eye care team members went to the schools and communities to provide further evaluation and treatment.



**Figure 22 a:** TELVIS –Teacher Led Vision Screener (a kit)

This allowed our team to document the most cost-effective strategy to reach the largest number of children with eye care (Dupe Ademola-Popoola et al, 2021). Each day, 8 eye care team members supported by volunteers were able to provide in Kwara and in one state from each of the other geopolitical zones of Nigeria, further evaluation and on-site treatment of outreach to about 400 children who were referred by teachers/key informants.





**Figure 22 b:** Working in different Nigerian states and Communities.

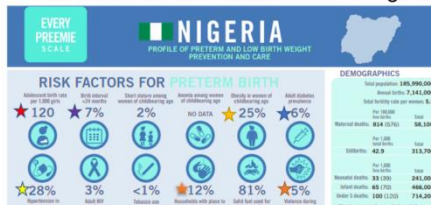
Common Eye Conditions causing visual impairment addressed by our symphonic interventions include:

**Premie Children Eye Problems- Retinopathy of Prematurity**

Nigeria has the 3rd largest number of children who are born premature after India and China. Retinopathy of prematurity is a potentially blinding though avoidable eye condition associated primarily with being born premature at earlier than 34 weeks(8month) of pregnancy.

The risks associated with premature birth are: Adolescent pregnancy, hypertension in pregnancy, use of solid fuel like firewood, charcoal for cooking, birth interval <24 months, obesity in women, and violence in pregnancy.

**Risk Factors for Preterm Birth in Nigeria**



**Figure 23:** Risk Factors for Premature Birth in Nigeria.

<http://www.everypremie.org/wp-content/uploads/2019/07/Nigeria.7.5.19.pdf>

## Survival of Babies Born Premature & Development of ROP

Survival of these babies born prematurely improved over the years. This happened because of the several interventions from the government, training institutions and technological advancement. Survival is not enough; they need to thrive. In children afflicted by ROP, there is no disease at birth, it sets in from the second week and the child if not detected and treated becomes blind before 6 months with unacceptably long blind years. They must therefore have eye examination within 30 days of life even if they are in the incubators.



**Figure 24:** Blinding Eye Problem of children born premature.

## Epidemic of ROP related Blindness

The experience of the international community showed that as it happened in high income countries in 1940s, 1950s and the second epidemic in 1970s, and the 3<sup>rd</sup> epidemic in the 1980s and 90s in low and middle income of Eastern Europe and latin America, to East and South Asia in 2000/2010s. ROP which was previously considered rare in Nigeria (A. Baiyeroju-Agbeja, 1981) this trend continued up till when I started a program for ROP (**Dupe Ademola-Popoola et al, 2007**).

However, in the last decade of late 2010s and 2020s an epidemic of childhood blindness began to loom over Africa

I became alarmed by 3 children who had become blind from ROP and were referred to me from 3 States within 3 months, October-December 2016. The children were born to tertiary level educated, parents with good jobs, Our (**Dupe Ademola-Popoola et al, 2017**; Clare Gilbert et al, 2019) research showed that there was an increasing number of children becoming blind from ROP.

We participated at conferences of Nigerian Society for Neonatal Medicine-NISOMN to call attention to the emerging problem and to advocate for ROP blindness prevention practices- We then studied the knowledge base of stakeholders about ROP, especially among neonatologists (A. Adio et al, 2021).

Thereafter, I coordinated a nationwide drive to prevent ROP blindness; this led to the first nationwide publication on ROP with 48 authors (**Dupe Ademola-Popoola et al, 2021**). We reported that among Nigerian children who are born prematurely at less than 34 weeks (8 months) of pregnancy and with birth weight less than 1.5Kg become blind from ROP. About 13 of every 100 children screened had ROP, 4 of these were at risk of blinding ROP. It further described the journey towards the now established Nigeria ROP screening guidelines. We highlighted the need for oxygen blenders to ensure that only the appropriate mixture of oxygen-air combination gets to the babies since oxygen should be measured and use as though a medication that it is. We documented the unavailability at most hospitals, of Anti-VEGF and lasers for treating identified children who at risk of blindness. Most of the hospitals only have oxygen but do not have medical airlines, air compressors nor oxygen blenders which are required to safely deliver appropriate concentration of oxygen to the babies at risk.

The lack of personnel to reduce the 60% of babies missing screening was reported in another study (**Dupe Ademola-Popoola et al, 2021**) on “Retinopathy of Prematurity Program in Ilorin, Nigeria 2019-2021: Changes, Outcome and Perspectives on Missed Screening”.

In another study, “Case series of ROP Blindness in Nigeria: A wake-up Call...” (**Dupe Ademola-Popoola et al, 2021**) we highlighted the role of private hospitals as the place of birth and care for 6 (33%) of 18 children who were reported blind from ROP and about 90% of these babies did not undergo ROP screening.

By the grace of God, Dupe Ademola-Popoola in various collaborative works did a great amount of work to elevate the

infrastructure, networks, and skill-base of colleagues and trainees aimed at mitigating this needless blindness in retinopathy of prematurity. I was invited to join several international consortium efforts, the great work of **ROP-NET** of Commonwealth Eye consortium of London School of Hygiene & Tropical Medicine- **LSHTM**. There, South-south partnerships were established to plan and implement programmes to meet some of the specific needs of African countries. We organized international workshops and town hall meetings, trained hundreds of stakeholders: specialist, postgraduate resident doctors, administrators in Ilorin and in Abuja that the children may thrive, and we triumph over insufficient knowledge of the disease (by eye care specialist) in Nigeria with Dr. Tapas Pandhi, a vitreo-retina specialist from LV Prasad Eye Institute and Dr. Jagdish Prasad Sahoo, neonatologist from IMS & SUM Hospital, Bhubaneswar, India.

At Stop Infant Blindness (**SIBA**) of Children Eye Foundation-CEF of American Academy of Pediatric Ophthalmology & Strabismus-AAPOS, International Pediatric Ophthalmology and Strabismus Council-IPOSC since 2020, I have been a co-chair, meeting weekly and member steering committee to provide equipment and trainings for stakeholders in Africa.

In the world **ROP** expert committee review and consensus driven work of March 2019 and January 2020 in United States.

**Thirty-four (34) of us** representing 17 countries, we were 12 women on board-Figure 25. I was one of the 14 pediatric ophthalmologist and 20 retinal specialists.



**Figure 25:** International Classification of ROP-ICROP-3 Authors in Chicago, 2020

This work was published as the International Classification of Retinopathy of Prematurity-**ICROP-3**, in July 2021. It was the most read ophthalmology paper for some months.

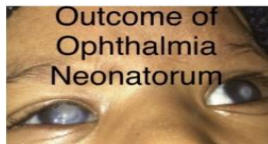
I was a collaborator in the development of the UNICEF, NEST 360 and LSHTM, London “Targeted Product Profile for Imaging Retinopathy of Prematurity 2022”

We have also emphasized the need for life-long care from the higher risk of squint, myopia and glaucoma among children born premature.

Mr. Vice-Chancellor sir, our efforts have saved hundreds of children from a lifetime of blindness- Living and thriving. The work continues.

### **Ophthalmia Neonatorum**

Ojuti o n t’aaro se ipin” purulent eye discharge in the first month of life. This is no longer as common due to better Obstetric care. The infection is typically contracted by the baby while passing through the birth canal of an infected mother.



**Figure 26:** Scarred cornea from blinding Ophthalmia Neonatorum

Not promptly managed, it results in blindness by causing scarring of the naturally transparent and glassy corneal tissue. We advocate treatment of women with vaginal discharge in pregnancy, wipe of babies eyes immediately after birth with 1% Povidone Iodine and immediate presentation to eye clinics if eyes still produce discharges in the first few days of life for intensive antibiotic therapy that the child may thrive and triumph over ophthalmia neonatorum. Avoid using harmful traditional eye medications- ”oju lowo“

### **Vitamin A deficiency**

This used to be a common cause of blindness in children, both eyes are usually affected. This is found in cases of acute

malnutrition following measles infection, diarrhea, vomiting, and poor feeding.



**Figure 27:** Dry and Ulcerated cornea from Vitamin A

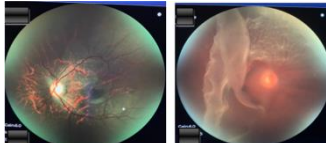
There will be loss of eye lustre from dryness, ulceration of the eyes and in an ill child. Measles immunization and Vitamin supplementation have significantly reduced the number. Nevertheless, we still see an average of 2 new such cases every year in our clinics. The most recent was in March 2023.

### **Refractive errors**

Inability to see objects placed at a defined distance clearly compared to what a normal eye would see caused by changes in optical system and functions of the eyes that can often be corrected with a pair of eyeglasses or contact lenses. It may be from short (myopia), Long (Hyperopia) sightedness or astigmatism. This may occur at all ages. Age-related difficulties with reading also occur. The need to wear eyeglasses in children may occur from soon after birth and shouldn't be denied the child. Children in Special need school-might have been wrongly placed, and disability tend to run together. A simple intervention may be translational for many children.

**Myopia** (short sightedness) and the attendant complications- glaucoma, retina breaks, and detachment have become an epidemic in many parts of the world because of the dynamics of life- It can result in severe blinding changes in the eyes. Insufficient outdoor play by children, Excessive close reading, including from phones and tablets, high-rise buildings and schools are risk factors. Our schools, homes and communities must be deliberately structured with ample outdoor play to protect children's eyes. Our community-based works "Strategy and Outcome of Large-Scale School and Community-Based Vision Care for Children" (**Dupe Ademola-Popoola et al, 2019**) and in our work "Prevalence of refractive

errors and the impact of its correction on academic performance of primary school children in Nigeria” (S.O Akinremi et al, 2021), found that 3% (3 out of 100 children) would require eyeglasses. There is a critical period in early life when the damage can be reversed if appropriate and timely treatments are used.



**Figure 28:** Retina changes in myopia.

### Ocular injury

Ocular injury is the most common emergency in eye care and the commonest reason for blindness and loss of one eye. It mostly affects the male gender, often accidental and avoidable. In children, it occurs mostly at unsupervised play in homes and schools where use of cane by significant others -staff and seniors are the culprits. About 4 of every 10 cataract surgeries done on children are trauma related, hence avoidable. Objects responsible are often cane, sticks, plant, wood, stone and play materials. Adults need to deliberately supervise children at home, during play, keep away offending objects, take away rubber lines, sticks, and sharp objects from children. Once one eye is lost, the risk of visual loss, increase for the other eye increases.



**Figure 29:** Objects and situations often associated with Eye injuries. (Courtesy: My Eye, My Sight, My Health)

## Retinoblastoma

Retinoblastoma (RB) is the most common ocular cancer. It is a reason for childhood mortality in ophthalmology. It is responsible for about 3%–5% of all childhood cancers, it occurs in about 1:16,000–18,000 live births or 11/1 million children under 5 years. Although 90% of children affected by RB are <5 years, few cases in older children and adults up to 45 years old have been reported.

Worldwide, 8000 cases are presented to hospitals yearly, 89% of these are in medium-resource countries. Whereas, most RB treatment centers are in high-resource countries with survival >95 and less than 50% in low resourced countries. Each year, 1500 new cases are seen in India, 200–300 in the United States, 40–50 in the United Kingdom, 35 in Canada. Our work (Didi Fabian et al, 2017) showed that about 431 cases are expected yearly in Nigeria.

A key issue in retinoblastoma care is for all persons to know that effective treatments with dramatic impact on survival rates in retinoblastoma are available.

Our current challenge is not technological but rather social. It is ensuring that children who live in developing low-income regions have access to adequate medical care for the diagnosis and treatment of retinoblastoma (Grossniklaus HE, 2014).



**Figure 30:** Retinoblastoma Presentations and Progression

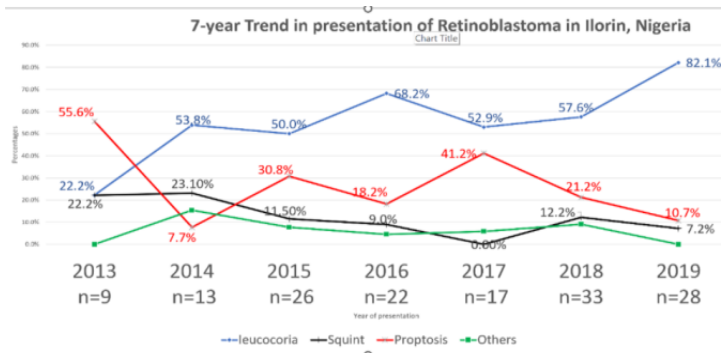


In our 12-year review from January 1989 to December 2000 we had only 20 patients (Owoeye et al, 2005). We currently see about 32 new cases every year in our clinic. Over time, as reported in the “the contemporary management of retinoblastoma” (Dupe Ademola-Popoola et al, 2019) and in the “7-year (2013-2019) trend of RB” Dupe Ademola-Popoola et al 2022; advanced disease leading to protrusion (Proptosis with chemosis) of the eye and spread to other parts of the body as in figure 31 decreased from 84.6 % in 2005, to 56% of our 9 Cases in 2013 to about 11% of the 28 new cases in 2019.



**Figure 31:** Advance retinoblastoma, before and during treatment.

Manageable stages increased over the same period-Figure 32. Less than half of the 45.6% of cases that were discovered in the first week of life were presented to hospitals during the period.



**Figure 32:** Changing Trend of Retinoblastoma Presentation in Ilorin 2013 – 2019.

**Table 1: The age symptom was noticed, age at presentation, and lag time by laterality of retinoblastoma**

Age (months)	Age symptoms first noticed(months)			Age at presentation to hospital (months)		
	Unilateral	Bilateral/trilateral	Total	Unilateral = 74;	Bilateral/trilateral	Total
	n = 74; n (%)	n = 74; n (%)	n = 148; n (%)	n (%)	n = 74; n (%)	n = 148; n (%)
<1	5 (6.8)	17 (23.0)	22 (14.9)	0 (0.0)	3 (4.1)	3 (2.0)
>1-6	20 (27.0)	24 (32.4)	44 (29.7)	5 (6.8)	13 (17.6)	18 (12.2)
>6-12	9 (12.2)	7 (9.5)	16 (10.8)	6 (8.1)	11 (14.9)	17 (11.5)
>12-18	8 (10.8)	11 (14.9)	19 (12.8)	6 (8.1)	10 (13.5)	16 (10.8)
>18-24	8 (10.8)	5 (6.8)	13 (8.8)	20 (27.0)	11 (7.4)	31 (20.9)
>24-30	7 (9.5)	4 (5.4)	11 (7.4)	7 (9.5)	7 (9.5)	14 (9.5)
>30-36	8 (10.8)	4 (5.4)	12 (8.1)	14 (18.9)	10 (13.5)	24 (16.2)
>36	9 (12.2)	2 (2.7)	11 (7.4)	16 (21.6)	9 (12.2)	25 (16.9)
Range	0-74	0-48	0-74	3-120	1-94	1-120
Median	17	6	12	24.5	20	24
IQR	5.5-30	2-17.5	3-24	19-36	8.5-32.5	13-36
	<i>P</i> -value	0.39		<i>P</i> -value	0.63	

Mr. Vice-Chancellor sir, our modest efforts at community education, media engagement, advocacy, training and retraining across the country changed the narratives for the disease.

Our retinoblastoma work in Nigeria was enhanced since year 2007. We advanced from just removing eyes, saving lives to using chemotherapy, diode 810nm **LASERS** and Cryotherapy to salvage eyeballs and vision. Half of our cases involve both eyes of the children. My dedicated team that has provide personalized, tender and loving care to patients who come from as far away as can possibly be imagined, in all geopolitical zones of Nigeria where colleagues give us the privilege of co-managing their patients.

I joined the **RB-NET** of Commonwealth eye Consortium, **LSHTM**. We established an international Multidisciplinary Team - **MDT** meetings, professional chat and tele consultation groups, organized two international workshops in Ilorin, Nigeria in 2018 and 2023 and have participated in several international meetings and publications. I got support of Moor fields Lions Korle Bu Trust to provide some funds for the care of children with eye problems.

Again, we decided to go to the highest level of care currently available in the world! Intra Arterial Chemotherapy-IAC that allows the eyes to be reached directly with chemotherapy delivered through the ophthalmic artery in the brain accessed through the groin (Femoral) artery.

This eye-focused treatment allows more eyes afflicted by retinoblastoma to be salvaged. We did it!



**Figure 33:** Nigeria-Israel collaboration to provide the first intra-arterial Chemotherapy.

Thanks to the support of RB-Net, Dr. Hammed Ninalowo, interventional radiologist, Iridoc Nigeria and Shema Medical Center Team from Israel. The first of its kind in Nigeria in January 2023, the event was widely publicized locally, nationally and internationally.

Children who develop this eye cancer, retinoblastoma now live, see with the eye affected and thrive in Nigeria.

### **Childhood Cataract**

Whitish reflex is noticed in one or both eyes associated with poor vision. Not unusual for presentation for the first time at the age of 18 years for a problem detected at 6month.The treatment is usually surgical operation which we do when required from about 6weeks of life of affected children. This could be combined with the implantation of artificial lens and or wearing of eyeglasses or contact lenses. Treatment is surgical operation.



**Figure 34:** Vision loss from Cataract  
*Courtesy- My Eye, My Sight, My Health*

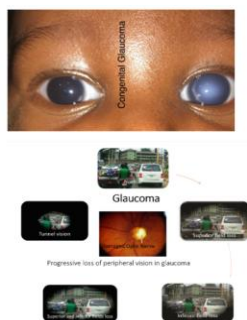
## Childhood Glaucoma

Glaucoma is the commonest cause of irreversible loss of vision. It shows watery eyes, light sensitivity, enlarged eyeballs and loss of sheen from the front most part of the eye, the cornea, whereas it is often painless with progressive loss of vision in older children and adults starting from the sides and gradually involves the straight-ahead vision. In the commonest type, the pressure in the eyes is elevated to such a level that it gradually destroys the vision carrying optic nerve. Being black and having someone affected in the family are risk factors. The treatment includes surgery especially in children, Lasers and medications can also be helpful in some cases. Childhood glaucoma was found in 12.1% of children referred from our school and community-based work and it's the second most common surgical case presentation in our clinics.

I pioneered in Nigeria in 2010, I reported several possible examination positions, confirmed the usefulness of I Care tonometer for IOP check in children, saving hundreds of anesthesia in terms of cost and safety of children (**Dupe Ademola-Popoola et al, 2014**).

The youngest child I operated for glaucoma was a 19-day old baby; we succeeded in rescuing her from a lifetime of blindness. I have similarly used LASER to control the pressure, provide comfort from light sensitive, watering eyes in several other children and to preserve vision in adults.

Because visual loss from glaucoma is mostly painless and progressive, we advocate for a yearly comprehensive eye examination to ensure early detection.



**Figure 35:** Progressive vision loss in glaucoma.

*Courtesy, My Eye, My Sight, My Health*

## Squint/Strabismus

Squint or strabismus is when there is an abnormal alignment of the eyes. One or both eyes would not be straight while looking straight ahead. It was responsible for 1-4% of childhood eye problems in our various community-based works. The deviation of the eye may be intermittent or constant; it may be present at birth, in infancy, early life and in adulthood. It may be associated with some notable events like tiredness, trauma to the eye/ head during an accident, some other eye or health challenges. It may set in insidiously or suddenly.

It may result from a 'Lazy eye', poor vision in one or both eyes; it can be caused by immaturity of fusion in children, abnormalities during development in utero.

It is important; it may point to an eye cancer - retinoblastoma, or even cataracts in children, or excessive strain. It is well known that people with strabismus are discriminated against leading to chronic depression and negative self-esteem. They also have less job opportunities, from difficulties in acquiring and keeping employment as well as dating problems.

The outcome of treatment ranging from eye glasses, exercises, to surgery we provided for hundreds of children with squints has been restorative, functional and life changing.



**Figure 36:** Strabismus before and after surgery.

**Microphthalmos-Small size eye & Rubella:** Some abnormalities during development in the womb in early pregnancy may make a child not have eyes or have abnormally small eyes. A common reason is infection in the womb like Rubella which can be prevented with vaccination of children. Toxoplasmosis may be from poorly cooked meat, Cytomegalovirus, Herpes Simplex.

**Machines, Maintenance, Management:** (Equipment for detection and intervention) - largely unavailable, expensive and maintenance. Basic functional equipment ranges from \$6500 to \$66,000. The equipment is delicate to handle and maintain. We succeeded in getting several of them.



**Figure 37:** Various Ophthalmic Equipment.

**Money:** Direct and indirect cost to caregivers is often an issue. Eye care is generally more expensive for children than for adults because of the need for anaesthesia where surgery is required, excessive bodily reactions that demand specialized equipment and techniques, and the need for timely intervention. Even their eyeglasses are different. Children eyes tend to be more reactive and inflamed requiring longer drug use. When LASERs and cameras are required, the cost is prohibitive.

We constantly must seek funding through grants, corporate and individual donations.

**Materials and Infrastructural development:** Publication and consumables. Publications were said to be few from Africa. Typically, at meetings, it would be said no data from Africa. We changed the narratives in very deliberate ways.

## **Eye Complex Building**

As a Head of Ophthalmology Department 2009-2011, the need for a purpose built one stop eye building was conceived. The plan and advocacy were marshalled, under Prof. A.W.O Olatinwo as Chief Medical Director and Barrister Olajumoke Anifowose as Board Chairman; it's been in use since 2021. Under Prof. Dalsilva Yussuf and Chief Olorogun Otega Emerhor Leadership. This has enabled us to provide same day surgeries if required. The research and special investigation wings remain outstanding.



## **Educational Materials:**

Ignorance was a major reason for late presentation and failure to follow intervention through. We produced several information materials including Direct Imaging, calendars, large format prints, Flyers and contributed chapters to textbooks for patients, the public, and stakeholders.

## **A Symphony of other Interventions for Child Eye Health to Thrive and Triumph**

### **Advocacy**

We created and used every opportunity to advocate for children's eye health, we engaged the public, professional colleagues, political who is who, traditional rulers and anyone who would listen.



**Figure 39:** Advocacy through media, professional colleagues, and Traditional Rulers’ engagement.

**Legislative Intervention: Kwara Childhood Sight Protection Law 2013.**

Prior to the signing of the law into effect in January 2014, it wasn’t unusual for parents to refuse care which was frustrating to Eye health workers. I discussed the frustration with my mentor and friend (Dr. Linda Lawrence of Salina, Kansas, USA, she encouraged my plan to push for a law to promote child eye health in Kwara State and to make it a development plan in 2010. I promptly drafted the technical details and invited other distinguished stakeholders. This “Kwara State Childhood Sight Protection Law 2013” is the first of its kind in Nigeria.





It states that every child shall be entitled to receive free sight screening from birth until the age of five.

Access to sight screening and no child shall be denied access to

- (a) early detection; and
- (b) early optical, medical or surgical management, of congenital or childhood cataract or other sight disorders.

It became a strong advocacy tool for us, and we did our best to support its implementation as much as it laid with us. It helped us in the course of the various initiatives towards early detection and intervention for childhood eye conditions.

### **Technology and Innovation**

I began started telemedicine using ORBIS Cyber Sight E-learning, and E-Consultation in 2007. I also set up a few professional platforms to provide on-the-go and scheduled tele-ophthalmology support for colleagues in sub-Saharan Africa.

Apart from TELVIS kit, that has been used for vision screening of thousands students by hundreds of teachers and key informants, 2016, she developed a web searchable mapping (the first of its kind in Nigeria) of Schools for Children with Special needs, Child eye and ear care units to provide improve accessibility -<http://specialkidsnigeria.unilorin.edu.ng/>

Making the best of what is available where the standard retina camera isn't available made me develop dexterity in the use of Smartphone and lenses to take retina images for documentation, training, patient's education, and E-consultation.

**Dupe Ademola-Popoola** and **Victoria Olatunji** 2017 reported in "Retina Imaging with Smartphone" that just about

any Smartphone can be used to take retina images. **Incorporation of AI** into this technology in a compact device is our work in progress.



**Figure 40:** Use of Smartphone, and Convex lens mounted on Paxocope Adapter for Retinal Imaging

I saw an eye training model in 2006 and realized the value and the need of a wet lab for safe surgery training of resident doctors; I developed a manually operated prototype animal eye holder in my kitchen in 2010. I later realized that it was already copied for use in some other eye units in the country. I later reported (**Dupe Ademola-Popoola, 2022**) the several upgrades to bring it up to a refined and motorized version which has now been used for training and exams by hundreds of surgical trainees across Nigeria since 2017.

Responding to COVID-19 pandemic, American Academy of Ophthalmology advised that we continue to provide essential services while keeping safe. I produced stylish protective face shields and aprons for use.



The description of “How to make a protective face shield or visor” was an invited article published by the prestigious,

LSHTM, London based Community Eye Health Journal (**Dupe Ademola-Popoola and Lloyd.F, 2020**).

Dr. Yetunde Folajimi of Wentworth University, Boston, United States and I won the Carnegie African diaspora fellowship in 2022 and organized a workshop on AI and Machine learning with learning.



**Smartphone mobile App has just been developed.** The first one is now available on play store and App store. They support vision screening by anyone, referral to experts by anyone, and enhance communication between professional stakeholders, aid photo documentation, transmission, and E-consultation.



### **My contribution to Administration**

Internationally, I have by the grace of God, been a great value multiplier for the world. I was part of the team that developed the curriculum for Post graduate Fellowship training in Paediatric Ophthalmology for West Africa and for International Council of Ophthalmology- ICO, headquartered in United States. In the United States, I have been a liaison and ambassador for United States' interests in ophthalmology internationally. I served on various committees at the American



Academy of Ophthalmology and was awarded in 2017, awarded the American Academy of Ophthalmology Secretariat Award, in American Academy of Ophthalmology Achievement Award in 2019. These awards were in recognition of her outstanding service to the American Academy of Ophthalmology Committees on: Ophthalmology News and Education (ONE) Network and on Global Education and, for the instrumental guidance I provided to the Academy in crafting out its global vision. I did this as an advisory board member of the Global ONE program, where the efforts led to better ophthalmological understanding of sub-Saharan Africa from a data-driven perspective. Still at AAO, in December 2019, I was appointed to the Academy's Regional Advisors Committee and a year later in 2020 as a Global advisor. I have also been a co-chair since COVID of the largest African wide ROP target intervention in Africa-the SIBA project. I coordinate several professional chat groups for Teaching, Learning and telemedicine. There is even an international ROP journal review group. I review for several scientific journals.

### **Nationally**

In Nigeria, I served in various capacities including the Treasurer, Secretary and Chairman, Nigerian Paediatric Ophthalmology and Strabismus Society-**NIPOSS**.

I have been an examiner at Part 1 and 2 of the Fellowship National Postgraduate Medical College-NPMCN.

I served as the Secretary, Faculty of Ophthalmology 2017-2020 alongside Professor Adeola Onakoya, the Chairman of Faculty with many successes recorded. My roles included day to day running of the faculty, planning, conducting implementation of assessment, certification, and accreditation of training centers as deliberate efforts directed at improving the quality of infrastructure for service and training. We encouraged top notched postgraduate research to provide translational data for the country.

We were the first in March 2020 to introduce faculty wide use of E-technology for update courses, and examinations. We also coordinated the decentralization of hands-on training.

Part of the team when the College transited from manual to full automation of training processes using the website and portals, has been a member of OSCE, Court of examiners and elected the 3<sup>rd</sup> Senate member in 2023.

### **At Home: Service to Community:**

- Head of Ophthalmology 2009-2011. During this tenure, I oversaw the growth and strengthening of the department in terms of clinical care, workflow, infrastructural development and training.
- Deputy Chairman Medical Advisory Committee/ Member, Top Management, UITH.
- Chairman in charge of Hospital equipment for 8 years-I was charged with ensuring maintenance and appropriate utilization of all hospital equipment, especially the massive ones (MRI, CT, C-Arm, Laboratory equipment) supplied through the FG-VAMED project, ours worked all through.
- Co-chair, Inter-religious Committee UITH since 2013.
- Chairman/Member of over 70 process improvement Committees.
- Over 120 Conference Papers and Public Lectures Delivered.
- Church, Chapel of the Light University of Ilorin- Treasurer, Welfare Chairman, Vice Chairman, Representative Unilorin.
- PTA Chairman, Chapel Secondary School.
- Coordinator, MERU Medical Education resources Unit.
- CBT-Commissioner for examination and Member of CBT Committee for years.
- Member, IGR improvement committee, Unilorin.
- The Health Promotion speaker, Centenary celebration of Nigerian Baptist convention 2014.

I have been the Director Computer Services and Information Technology –DCOMSIT since December 2020. The responsibility was to manage the University’s web resources, Portals with student databases, Admissions, Academic programs and records, Payment gateways, and support computer-based examination platforms. The appointment came at a time the University needed to respond to **COVID-19** lockdowns, to continue the more than 110 various programs in the University.

I successfully navigated the challenges such that the University was able to initiate and sustain teaching, learning and research. E-communication was strengthened, and efficiency in service delivery upheld.

Improved internet Network bandwidth from Synchronous Transport Module- STM-2 (310.10mbs) to 14 STM-14 (2Ggbps). Ensured that internet services are available to students and staff via fiber optics and wireless equipment, and Hot spots around campus at various seat-out areas, stadium, CBT, etc. powered by a robust green alternate power supply from solar and lithium-ions battery technology.

I successfully supervised extension of reliable network with direct links at Mini Campus.

Maintained network equipment and infrastructures (Portal, website, Power), Supervised building of Centre for Open and Distance Learning portal.

Regularly interface as a skillful master negotiator with several service providers like Globacom, NgREN, Amazon web services, ICTP, Zoom, Google, NCC, Microsoft, among others.

The University Website was upgraded and secured, with faculties, directorates and units have several pages, 99% of Academic staff has a page with the profile (pictures, self editable citation/CV and Google scholar link to publication of hosted <https://www.unilorin.edu.ng/Optimized> portal usage for Postgraduate School’s admissions, theses, and result management and Institute of Education.

SIWES at COMSIT was refocused.

DCOMSIT Prize was commissioned to encourage innovation.

We improved Transcript application process, for undergraduate and Postgraduate through the University websites.

I processed **TETFUND** interventions- AIPs received for LMS and upgrade to network and power back across campus.

Enterprise Resource Planning **-ERP** was deployed for the university-<https://uildashboard.unilorin.edu.ng/>

Finalized the 2015, initiated bursary automation project.

**FAQ** document is now available on the University website.

A survey of network infrastructure across Nigeria was done and under review for publication. Grateful for the promotion of staff under my watch with 5 Deputy Directors were added to our pack and several others elevated.

## **Summary**

Child eye health as a specialty was not quite familiar. Nevertheless, I pursued this life changing idea of sub specialization in Paediatric ophthalmology and Strabismus and Ophthalmic oncology. I have presented various town to gown initiatives including research, training & teachings, task shifting/sharing, technology and innovations that I nurtured, initiated and deployed alongside other distinguished stakeholders in and beyond eyecare in a symphonic manner. These have served to protect, preserve, enhance, and restore vision in various eye conditions so that the child may live, look, see, and thrive. We have similarly empowered thousands of people in the world out there so that as the trial and travail of childhood visual impairment arise, they may point the people affected to nationally available services that they can thrive and triumph.

The road ahead is to make tangible and non-tangible technology for eye care accessible (available and affordable) to all people who need it. I also look ahead towards a more personalized medicine provided by genetics and new age therapeutics.

## **Recommendations**

**We all can and need to do something.**

### **Executive, Legislative and Judiciary**

1. Legislative and implementation initiatives for early childhood detection and intervention for potentially blinding conditions are advocated. Screening at

- immunization clinics, before school entry, periodically thereafter should be instituted nationally.
2. At least two tertiary level well-equipped child eye care unit should be established in each geo-political zone of the country.
  3. The Federal and State Ministry of health, Local government health departments, education, environment and social development need to provide budget lines and activities for childhood blindness prevention as a continuum of care.
  4. We need an institute of child eye care in Kwara State.
  5. Health Insurance coverage for children's eye health.

### **Media, Corporate and Private Organizations**

Public communication, Information, education, funding of infrastructure, research, technology, innovation, development and services for enhanced child eye health care are worthy social responsibilities.

### **Health & Educational Institutions- Local State and Tertiary**

Training curriculum to include cadre appropriate contents for Child eye health.

Be deliberate at prevention and early detection services for vision, hearing and intellectual challenges.

Every Neonatal intensive care unit needs medical air piping lines in addition to oxygen pipelines as part of infrastructural plan. Oxygen blenders and air compressors are a must have, they save life and save you money.

Cross cutting, multi-disciplinary approaches are required. Training and retraining of Team members.

### **Individuals and Communities**

Some of the ways we all can help to promote eye health include:

1. Stop to take harmful substances from children during play. Supervise them. No beating on the head please.
2. Organize early detection and treatment. Start with your children and grandchildren, then think about your community, associates and interest groups.
3. Request for age appropriate eye exam by your hospitals, immunization clinics and schools before enrolment of children. Support screening of children's eyes, especially before the age of 5 years for vision problems.
4. Help a treatable, visually impaired child to access treatment



5. Create awareness about treatment options and organize screening for different groups in the community
6. Provide donations for the treatment of visually impaired children; you may use part of the money for parties (birthday, retirement, wedding, burial etc.) to help this group of needy children.
7. Support research efforts
8. Subscribe to Health Insurance
9. Help with transfer of the child who is irreparably blind person to a school or vocational facility
10. Provide financial support for education and rehabilitation of children who are blind.

I call everyone to please do something, we all can do something.

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My Nigeria-wide resident Doctors

Members, RB Team Nigeria, Stop ROP Africa Group, RB West Africa Members, NISONM, Opolo Innovations.

My National Research Team members

The Principal Officers and Senate members, NPMCN  
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Staff at UITH DCMAC Office

Nigerian Ophthalmic Nurses Association NONA members

Nigerian Optometrists Association NOA members

Admin Staff, Ophthalmology.

Ophthalmic Technicians/Opticians

Theatre Managers, Pharmacist

Heads of Nursing Department, UITH

Pathologist, Anaesthesia.

Staff of UITH in general

Staff of Unilorin in General

University Scholars

Past Board Chairmen and Chief Medical Directors at the University of Ilorin Professors Olurotimi Fakeye, Prof. S.A Kuranga, A.W. O Olatinwo, and Abdullah Dasliwa Yussuf, and Top Management Committee members.

Past and Present Chairman, MAC-Dr Louis Odeigah

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## References

- Ademola-Popoola D.S** (2016).Teacher–Led Vision Screener- TELVIS. No,001908. RP,NG/P/2015/252. Patent and Design Act, CAP 344 Laws of the Federation of Nigeria 1990.
- Ademola-Popoola, D.** (2021). Simple Technology to Enhance Practice and Training in Ophthalmology, Experience with Automated Dupe A-P Trainer. *Transactions of the Ophthalmological Society of Nigeria*, 6 (1).
- Ademola-Popoola D.S,** Peter Coombs, & Fasina Oluyemi (2013). Retinoblastoma in Sub-Saharan African- AAO, *ONE Network*. American Academy of Ophthalmology, pp 21.
- Ademola-Popoola D.S.** Mosunmola F. Tunde-Ayinmode, & Tanimola M. Akande. (2010) Psychosocial Characteristics of Totally Blind People in a Nigerian City. *Middle East African Journal of Ophthalmology 2010*, 17,335-342.
- Ademola-Popoola D.S.** & Victoria Olatunji. (2017) Retina Imaging with Smartphone. *Nigerian Journal of Clinical Practice*. 20,341-34539.

- Ademola-Popoola Dupe.** (2014), *My Eyes, My Sight, My Health*. Ibadan, Published Chaadaks Konzept, Ibadan. ISBN, 978-978-49525-0-7.
- Ademola-Popoola D.S.,** Yusuf I.A., Obajolowo T.S., Akinremi S.O, & Gobeh A.S. (2022) Retinoblastoma in a Referral Center in Nigeria, 7- year Review of Changing Pattern of Presentation and Lag Time. *Niger J Ophthalmol.*, 30,56-62.
- Ademola-Popoola D & Lloyd F.** (2020). How to make a Protective face shield or visor. *Community Eye Health*, 33 (109),34-35.
- Ademola-Popoola D. S,** Adesiyun O. O, & Obasa T. O. (2013). Screening Programme for Retinopathy of Prematurity in Ilorin, Nigeria, A Pilot Study. *West African Journal of Medicine*, 32, 281-285.
- Ademola-Popoola D. S,** Odi A. F, & Akande T. M. (2014). Comparison of IOP readings using rebound ICare tonometer and Perkins Applanation tonometer in an African Population. *Journal of the West African College of Surgeons*, 14,17-30.
- Ademola-Popoola D. S,** Olatunji V. A, Obajolowo T. S, Akande T. M, & Mokuolu O. A. (2020). Outcome of vision screening by community health workers at immunization outlets in Nigeria to support access to early visual evaluation in children aged 0-2 years. *Taiwan J Ophthalmol.*, 21, 11 (1),77-85.
- Ademola-Popoola D. S,** Oluleye TS.(2017). Retinopathy of Prematurity (ROP) in a developing economy with improving health care. *Curr Ophthalmol Rep.* 5,114.
- Ademola-Popoola D. S,** Opocher E, & Reddy M.A. (2019). Contemporary management of retinoblastoma in the context of a low-resource country. *Niger Postgrad Med J.*, 26 (2), 69-79.
- Ademola-Popoola D. S,** Fajolu I. B, Gilbert C., Olusanya BA, Onakpoya OH, Ezisi CN et al (2021). Strengthening retinopathy of prematurity screening and treatment

services in Nigeria: a case study of activities, challenges and outcomes 2017-2020. *BMJ Open Ophthalmol.*, Aug 23;6(1):e000645. doi: 10.1136/bmjophth-2020-000645. PMID: 34514173; PMCID: PMC8383855.

- Ademola-Popoola DS**, Onakoya AO, Ezisi CN, Okeigbemen VW, Aghaji AE, Musa KO, Adio AO, Ibrahim YA, Oguego NC. (2021). Case series of retinopathy of prematurity blindness in Nigeria: A wakeup call to policy makers, hospitals, ophthalmologists and paediatricians. *Niger Postgrad Med J.* Oct-Dec;28(4):303-306. doi: 10.4103/npmj.npmj\_595\_21. PMID: 34850760.
- Ademola-Popoola, D. S.**, Mokuolu, O. A., Akande, T. M., Obajolowo, T. S., Saka, E. S., Ezisi, C. N., Okeigbemen, V. W., Badmus, S. A., Ribadu, D. Y., Muhammad, R. C., Oludemi, I. E., Yakubu, A. B., Yakubu, A. B., Ademola-Popoola, T. J., and Ademola-Popoola, O. J. (2021). Strategy and Outcome of Large-Scale School and Community-Based Vision Care for Children. *Transactions of the Ophthalmological Society of Nigeria*, 6 (1).
- Adio A, Aliyu SS, Balarabe AH, Mosudi K, **Ademola-Popoola D.** & Lawal T. (2021). Nigerian neonatologists' perception and experience with retinopathy of prematurity. *J Public Health Afr.* 23, 12 (1), 1289-20.
- Akinremi S.O, **Ademola-Popoola D.S.** (2021) Olatunji F.O, & Ogunmuyiwa S. O. Prevalence of Refractive Errors and the Impact of Its Correction on Academic Performance of Primary School Children in Nigeria. *Niger J Ophthalmol.*, 29, 94-100.
- Baiyeroju-Agbeja A. (1998). Screening for retinopathy of prematurity. *Nigerian J Ophthalmol.*, 6, 23-5.
- Chiang M. F, Quinn G. E, Fielder A. R, et al (2021) International Classification of Retinopathy of Prematurity, Third Edition. *Ophthalmology*, 128 (10), e51-e68. 23.

- Clare Gilbert, Aeesha N.J. Malik, Nazmun Nahar, Sanjoy Kumer Das, Linda Visser, Sarah Sitati, & **Dupe S. Ademola-Popoola.** (2019) .Epidemiology of ROP update – Africa is the new frontier. *Perinatology*, 43,317-322.
- Duke R, Otong E, Iso M, Okorie U, Ekwe A, Courtright P, Lewallen S. (2013) Using key informants to estimate prevalence of severe visual impairment and blindness in children in Cross River State, Nigeria. *J AAPOS*, 17 (4), 381-4.
- DupsypTelEye App on App store and Play station.
- Fabian I. D, Abdallah E, Abdullahi S.U, Abdulqader R. A, Adamou Boubacar S, **Ademola-Popoola D. S.**(2020) A Global Retinoblastoma Study Group. Retinoblastoma management during the COVID-19 pandemic, A report by the Global Retinoblastoma Study Group including 194 centers from 94 countries. *Pediatr Blood Cancer*. 2021 January, 68 (1), e28584. doi, 10.1002/pbc.28584.
- Fabian I. D, Khetan V, Stacey A. W, Allen Foster, **Ademola-Popoola D. S**, Berry J.L, Cassoux N, Chantada G.L. (2021) Global Retinoblastoma Study Group. Sex, gender, and retinoblastoma, analysis of 4351 patients from 153 countries. *Eye (Lond)*.(16). doi, 10.1038/s41433-021-01675-y. Epub ahead of print. PMID, 34272514.
- Fabian I. D, Stacey A.W, Foster A, Kivelä T. T, Munier F. L, Keren-Froim N, Gomel N, Cassoux N, Sagoo M. S, Reddy M. A, Harby L. A, Zondervan M, Bascaran C, Abdallah E, Abdullahi S. U, Boubacar S. A, **Ademola-Popoola D. S.**(2020) .....Travel burden and clinical presentation of retinoblastoma, analysis of 1024 patients from 43 African countries and 518 patients from 40 European countries. *Br J Ophthalmol*. 105 (10), 1435-1443. doi, 10.1136/bjophthalmol-2020-316613.
- Global Retinoblastoma Study Group. (2020) Global Retinoblastoma Presentation and Analysis by National Income Level *JAMA Oncol.*, 6 (5), 1-12.
- Grossniklaus H. E. Retinoblastoma. Fifty years of progress. The LXXI Edward Jackson Memorial Lecture. *Am J*

- Ophthalmol.* (2014) November, 158 (5), 875-91. doi, 10.1016/j. ajo.2014.07.025. Epub 2014 Jul 24. PMID, 25065496, PMCID, PMC4250440.
- Special kids' Schools, Eye and Ear Care Centres:  
<https://specialkidsnigeria.unilorin.edu.ng/>  
 accessed 06/06/2023
- Rb-NET Case Study – Chemotherapy in Nigeria. (2023).  
<https://iceh.lshtm.ac.uk/rb-case-study-chemotherapy-in-nigeria/accessed> 06/06/2023
- IAC Nigeria Publications Mattan Arazi, **Dupe Ademola-Popoola**, Ido Didi Fabian, Oteri Okolo, Richard Bowman, Covadonga Bascaran And Marcia Zondervan. 2023. Establishing an intra-arterial chemotherapy service For children with retinoblastoma in Nigeria for the first time. *Eye News*, April/May, Vol. 29, No (6) www.eyenews.uk.com time accessed 21/05/2023.
- Kwara Childhood Sight protection law 2013, [http://osnig.org/\\_downloads/Childhood%20Sight%20Protection%20Law-Kwara%202013.pdf](http://osnig.org/_downloads/Childhood%20Sight%20Protection%20Law-Kwara%202013.pdf) accessed 21/05/202338.
- Kwara State Facts and Figures .<https://kwarastate.gov.ng/discover-kwara/facts-figures/> Accessed 21/05/2023.
- Muhammad N, Maishanu N. M, Jabo A. M, Rabiou A. M. (2010) Tracing children with blindness and visual impairment using the key informant survey in a district of north-western Nigeria. *Middle East Afr J Ophthalmol.*,17,330-34.
- Olatinwo A.W.O, **Ademola-Popoola D. S.** Hosting ORBIS Flying Eye Hospital & Hospital Based Program. University of Ilorin Teaching Hospital, Nigeria. February 26 to March 20<sup>th</sup> 2011. <https://drive.google.com/file/d/1Een58idMbRuuPcRB0VxVjAj6J1bShyGM/view?usp=sharing>.
- Owoeye J. F. A, Afolayan E. A, **Ademola-Popoola D. S.** Retinoblastoma. (2005). A Clinico - pathological study in Ilorin, Nigeria. *African Journal of Health Sciences*, 12, 94 –100.
- Shija F, Shirima S, Lewallen S, Courtright P(2012). Comparing key informants to health workers in identifying children

- in need of surgical eye services. *Int Health*,4,1-3.
- UNILORIN don performs first cancer-of-the-eye treatment in Nigeria. <https://www.unilorin.edu.ng/2023/01/30/unilorin-don-performs-first-cancer-of-the-eye-treatment-in-nigeria/accessed21/05/2023>.
- USAID Program Fact Sheet [https://2017-2020.usaid.gov/sites/default/files/documents/USAID\\_Child\\_Blindness\\_Program-Fact-Sheet-09.21.2020\\_0.pdf](https://2017-2020.usaid.gov/sites/default/files/documents/USAID_Child_Blindness_Program-Fact-Sheet-09.21.2020_0.pdf)
- World Health Organization, Geneva. 1992. Prevention of childhood blindness.