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General Information

The Transactions of the Ophthalmological Society of Nigeria, an Official Journal of the Ophthalmological Society of Nigeria publishes proceedings from the annual congress of the Society. They comprise of peer-reviewed summaries abstracts of presentations during the congress. The scope of articles include clinical, laboratory and community medicine, basic medical sciences, medical technology, as well as the economics and management of health care delivery, especially in the African environment as they relate to the eyes. Articles are considered on the basis of subspecialty of Ophthalmology affected, including but not restricted to cornea and anterior segment, glaucoma, low vision, orbit and oculoplasty, vitreoretinal, neuro-ophthalmology, Paediatric ophthalmology, and public health ophthalmology.

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Contents

Transactions of the Ophthalmological Society of Nigeria

An official publication of the Ophthalmological Society of Nigeria

August, 2024 Volume 9 No. 1 ISSN: 2756-5122

Contents continued

PAPER PRESENTATIONS

Transactions of the Ophthalmological Society of Nigeria

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August, 2024 Volume 9 No. 1

Editorial Comments

It is with great pleasure that we present the proceedings of the 48th Scientific Conference of the Ophthalmological Society of Nigeria in this ninth edition of the Transactions of the Ophthalmological Society of Nigeria. The Conference took place between the 4th and 6th of September, 2024 at the Amadeo Events Centre, Enugu, Enugu State.

The meeting brought together specialists and subspecialists in Ophthalmology from various parts of Nigeria and other countries, and provided a unique opportunity for Ophthalmologists at different levels of training to interact and share ideas with colleagues. The theme of the Conference was "The evolving face of Ophthalmology: implications for education, practice and research". The sub themes were "Rethinking Glaucoma screening and beyond" and "2030 in sight: the future of global eye health".

In line with the major objective of the journal, this edition features peer-reviewed abstracts of the presentations that were made during the 2024 conference of the OSN. These short articles are outputs of various research projects carried out by ophthalmologists of different subspecialities from various public and private institutions in the country and abroad. They cut across various subspecialties including Glaucoma, Retina and Vitreous, Community Ophthalmology, Cornea and Anterior Segment as well as Orbit and Oculoplasty.

In addition, this edition features four full-length articles, comprising two original research articles and two case reports. These are full-length manuscripts from four different presentations made during the conference. We solicit more full-length manuscripts from members of the Society for publication in subsequent issues of the journal. Such submissions can be made at the journal's website: https://tosn.org.ng/. Members are also welcome to view previous editions of the journal and register as reviewers on the website.

Also included in this edition are four review articles, which are based on presentations made during some of the plenary sessions that took place during the conference. One of these review articles is an abbreviated version of the text of the President's lecture which was delivered by Dr. John Sandford-Smith. In addition, there are two review articles based on the presentations delivered during the sub-theme symposium on "2030 in Sight", by Drs. Oteri Okolo and Onyinye Onyia, respectively. The fourth review article is based on a presentation by Dr. Ian Murdoch during the Breakfast symposium on "Raising the next generation of surgeons: mentor-mentee relationships".

We hope that the contents of this edition will be a significant addition to the body of knowledge in Ophthalmology, which should translate to improved diagnosis and management of ophthalmic disorders in the country and beyond. A number of the articles featured in this issue are useful as templates for better patient management and further research, in addition to being evidence for advocacy to policy makers.

The contributions of the various individuals and groups that worked tirelessly in making this issue a reality are well appreciated. Notable amongst them are the OSN executive council, the Editorial board, our publishing consultant and the authors, who have also been charged a moderate publication fee to partly offset the high cost of production of this edition.

Thank you.

The Editorial Team

TRANSACTIONS OF THE OPHTHAMOLOGICAL SOCIETY OF NIGERIA: PROCEEDINGS OF THE 2024 ANNUAL OSN CONFERENCE AT AMADEO EVENTS CENTRE, ENUGU, ENUGU STATE.

NAMED LECTURES

President's Lecture

They need sight and we need vision

Dr. John H. SANDFORD-SMITH, *MBE, D.Sc*
Emeritus Consultant Ophthalmologist at Leicester Royal Infirmary, Leicester, England
Email: jsandfordsmith@gmail.com

Being an abbreviated version of the text of the President's Lecture delivered during the 48th Annual Scientific Conference of the Ophthalmological Society of Nigeria on 5th September, 2024

I feel honoured to give this presidential lecture, and both myself and our family have very affectionate memories of five eventful years lived here in the 1960s and 70s. A quotation from the Danish 19th-century philosopher Soren Kierkegaard is a good starting point to reflect on my life since that formative time in Nigeria. "*You must live life looking forward, but you can only understand life looking backward*". I have spent the last 60 years both teaching and practising ophthalmology in the UK, Nigeria and several other developing countries. As I reflect on these years, I hope I can offer some suggestions to a much younger audience with their work and career in front of them.

The late Sir John Wilson (Figure 1) was the inspiration and founder for both the Royal Commonwealth Society for the Blind, which then became Sightsavers, and later the International Agency for the Prevention of blindness (IAPB), and he has probably done more than anyone else to prevent and alleviate global blindness. Yet he himself had two prosthetic eyes following an accident in the chemistry laboratory at school; a person with no sight and yet immense vision. Nigeria has one of the highest prevalence rates of blindness in the world, and in some parts of the country, there is less than one ophthalmologist per million people. According to a recent report, about 40% of its population are living in absolute poverty.[1] If we are to achieve anything in such challenging circumstances, we also need immense vision. One of the phrases I have heard several times during this conference, both from the podium and from the floor, is that we must be prepared to "***think outside the box***". I hope this presentation will reinforce that and encourage you to do so.

Figure 1: *Sir John Wilson with a rather "glassy" stare*

The Nigeria I came to in 1965 was full of enthusiasm to develop healthcare, education and infrastructure. In the cities, the inequality between the rich and poor was very startling (Figure 2), and in the rural areas, it was mostly subsistence farming. A more subtle inequality was that between the sexes. This is even important for ophthalmology because educating young girls is one of the best ways to prevent xerophthalmia and corneal blindness in young

Figure 2: *Front and back view from a downtown Lagos apartment, 1965*

children. Things are, of course, vastly different now, but the fundamental inequalities and poverty still remain.

I'm hoping in my talk to focus on four different themes, the importance of **community health**, the need for our work to be backed up with **audit** and evidence, the **challenge of cataract** which is still by far the most common cause of avoidable blindness, and **training** - who to train and how to train them.

My first experience of ophthalmology in the developing world was in 1964 as a short-term volunteer in an "*eye camp*" situation in Baluchistan, Pakistan; a very underdeveloped area of the world. Our hospital was admitting about 50 patients with **cataract** a day (as well as smaller numbers of patients with other conditions). The surgery was done without a microscope and without gloves, but that was also current practice then, even in centres of excellence. This was long before the days of intraocular lenses; most of our patients were illiterate, so we would give the patients a choice of either +10 or +12 spectacles, hold up our fingers at the other end of the room, and if the patient could count them, that was recorded as a success. That was our only **audit.**

My own surgical **training** was extremely short, about one week, but intense. On the first day, I watched my mentor, a very experienced surgeon and a household name in Baluchistan, while he explained to me what he was doing. On the second day, he would let me do the beginning and end of one or two operations. By the fifth day, this had increased to me doing the entire operation, and he then left to run the outpatient clinic, telling me not to operate on "only eyes" and to call him if I was in any way worried. A far from ideal start to a surgical career, but it left me with a vision that the ***challenge of cataract blindness could be solved even in the poorest communities with a small but dedicated team working together***. Sixty years later, I still believe that is true, and I am still learning!

Throughout the 1970s, cataract surgery techniques were changing quite rapidly in the developed world. With the use of operating microscopes, it gradually became evident that extracapsular surgery with an intraocular lens fixed in the capsular bag, and the possibility of a YAG laser capsulotomy, gave the best long-term results. In the developing world, even if a hospital could afford the capital equipment, the cost of intraocular lenses remained prohibitively high; so intracapsular extraction and post-operative aphakic glasses remained the standard procedure there. That was about to change thanks to a brilliant **audit** by a memorable American community health doctor, Larry Brilliant!! His detailed study of the epidemiology of blindness in Nepal in 1979-80 showed that less than half of blind people with cataract ever received surgery, and of those who did almost half were still functionally blind; the most common cause being a loss or breakage of their aphakic glasses, and the second most common a post-operative complication.[2]

The purpose of **audit** is not to see our name in print but to learn from our mistakes and to create change. This did indeed eventually create change, specifically the production of low-cost, good-quality intraocular lenses which everyone could afford, and are now often cheaper than a pair of spectacles. This came about thanks to the efforts of a charismatic Australian ophthalmologist, Prof. Fred Hollows, who had the ear of Bob Hawke, the socialist Prime Minister of Australia. He thought that poor people in the developing world should, if possible, have the same rights to modern surgery as those in richer countries, and he put up intraocular lens factories in Eritrea, Nepal and Vietnam. This was closely followed by both charities and entrepreneurs in India. Now, extra capsular extraction with IOL implant is standard throughout the developing world, and the debate is about the most appropriate

technique, manual extraction or phacoemulsification.

The contrast between clinical medicine, which most of us here practice, and community health is shown by the two posters in Figure 3. The picture was taken in 1988 in Uganda at a small rural hospital where a small team of us had gone to support the local ophthalmic nurse and carry out any necessary surgery, mostly cataract extraction. On the right is a simple Snellen chart. It emphasised our skill in measuring the

Figure 3: *Two different posters side by side in a Ugandan eye clinic, 1988*

patient's visual acuity, and as clinical ophthalmologists, we acquire many more sophisticated skills in measuring various parameters (loss of red reflex, intraocular pressure, angle of squint, depth of anterior chamber, optic cup/disc ratio, to mention just a few). We are the important ones, even though we are here to try and help the patients.

On the left is a poster giving advice about the prevention of HIV/AIDS. Uganda was one of the hardest hit countries in Africa at the beginning of the epidemic, and the health ministry responded very positively by campaigns in schools, churches and mosques, and on radio and television. At that time, there was no treatment and many people died, but people did change their behaviour because of the public health campaign, and the prevalence rate and death rate gradually fell. In public health, it is the community and the people who are important; we are merely mouthpieces, trying to advise and persuade them.

In contrast to Uganda, many of the other East African countries tried to play down the seriousness of the HIV/AIDS epidemic. The reason for this was a fear that the very lucrative tourist trade would collapse and affect the economy. About 10 years later, I was in Malawi helping one of my former trainees who had gone to work there. He took me to the general medical ward to see one of his team who was admitted there, and explained that about three-quarters of the patients on the ward were suffering from or dying from AIDS. A telling example of the power of community health. A sensible decision on a major public health issue can lead to thousands or even millions of lives saved.

My second example of the importance of community health is shown by an individual patient (Figure 4). He was a bright young secondary school boy from a small village near Obudu in Cross River State, and during the school holiday became unconscious with some unspecified condition, possibly viral encephalitis. No one in his village had any healthcare knowledge at all; they did not know the importance of closing the eyes or protecting

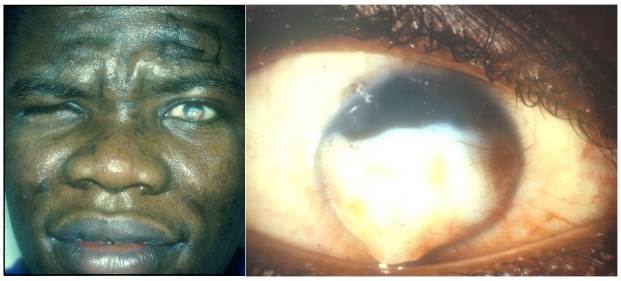

Figure 4: *Full face and left eye of a young school boy with exposure keratitis, following an optical iridectomy. Obudu, Cross River State, 1980*

the corneas of an unconscious patient, and when, after a few days, he recovered consciousness, one cornea had been destroyed completely, leading to phthisis bulbi. The other cornea had a very large scar completely covering the pupil, but fortunately, a small segment of the upper cornea had been protected by the upper lid. I was asked if anything was possible to restore his sight, and at a small rural hospital, I performed an optical iridectomy, and with spectacles to correct the astigmatism, he was able to resume his schooling. Some kind and generous supporters

of the catholic school where he was studying offered to pay for him to come to England for a corneal graft. Unfortunately, the cornea was so vascularised that the graft eventually rejected, but he remained able to see thanks to the optical iridectomy. So here was a young man who would never have developed eye problems if anyone in his village had access to a rural health worker or enough knowledge to close the eyes of unconscious patients. He was greatly helped by a simple operation in a small rural clinic, but could not be helped by the most sophisticated technology of that time. The same story, the importance of community health.

Training. My first experience was as a general surgical registrar in University College Hospital (UCH), Ibadan in 1965. It was then the only teaching hospital in Nigeria, and indeed in the whole of West Africa, and there was a great atmosphere of enthusiasm. I very much enjoyed both learning from my mentors, the consultants, and teaching the medical students. When I returned to Nigeria eight years later as a consultant senior lecturer in ophthalmology at the Ahmadu Bello University (ABU) Hospital Kaduna, there were four teaching hospitals in the country with more in the pipeline. I am told there are now over 40, and the number is still growing. A truly remarkable achievement of which Nigeria can be justifiably proud, as a great deal of dedicated effort and planning is required to create these institutions.
What happens to all these young doctors? When our British National Health Service (NHS) was founded in 1947 by the Labour politician Aneuryn Bevan, he had a doctor GP friend called John Tudor Hart who, like him, came from the deprived industrial valleys of South Wales. He put forward an idea called the "*Inverse care law*", a pun on the well-known "*Inverse square law*" about gravity proposed by Sir Isaac Newton. Dr Tudor Hart's theory was that the more medical care a patient needs, the less they get. It is true of Britain, where we have a free health service, and even more true of countries like Nigeria.
We all like to better ourselves and our families, especially in Africa, where the extended family system is such a vital social and financial support. The result is the "*brain drain*" and educated young Africans with internationally acceptable qualifications leave for richer countries where salaries and living conditions are much better. In the 1970s, when I lived in Nigeria and it was considered a prosperous country, there were many doctors like myself who came from Britain, and also from India and Poland, because the salaries were much better here. As the economy subsequently collapsed, most of these overseas doctors went back home, and Nigerian doctors started emigrating to South Africa, the Middle East, Europe or America. Another medical migration is within the country, from the rural areas and small towns to the big cities where there are better opportunities and more private practice. All this only bears out the truth of the "*inverse care law*", and leaves healthcare systems struggling for manpower and patients not treated.

Vision 2020. Most of us are very familiar with this comprehensive program, put forward in 1999 by the International Agency for Prevention of Blindness to try to eliminate avoidable blindness by the year 2020. One of its aims was to focus on certain blinding diseases which were thought could be either prevented or treated successfully. The main four were Onchocerciasis, Xerophthalmia, Trachoma and Cataract. Now that Vision 2020 has run its course, we can do an **audit** and see how it has succeeded for these four conditions.

Onchocerciasis control has been extremely successful. The areas around Kaduna had a very high prevalence, and I remember seeing many patients with their eyes full of microfilariae, and being treated not very successfully with long courses of diethylcarbamazine tablets followed by suramin injections. Now it is a disease of the past thanks to the mass distribution of ivermectin tablets.
The control of **xerophthalmia** has not been quite so dramatic, but has been steadily declining as a cause of childhood blindness. In 1975, when I examined all the children in Gindiri Blind School in Plateau State, over 70% were blind from corneal scarring or its complications.[3] Now it is a relatively infrequent cause of childhood blindness, mainly thanks to measles

vaccination, but also improved nutrition and education of young mothers.

The control of blinding **trachoma** has likewise been very successful, mainly due to the effective implementation of the SAFE strategy. Even very fragile public health services have shown how effective they can be in controlling these three diseases. We ophthalmic surgeons have not played much of a part in this success story. The fourth cause, **cataract**, is specifically our concern, and sadly, we must confess that as a profession, we have failed. Admittedly, over the years our numbers have increased and more cataract surgery is being done year on year, but we are still woefully short of eradicating cataract blindness, which remains the number one cause of avoidable blindness throughout Africa. According to health economists, cataract surgery is one of the most cost-effective medical interventions; the only other intervention which can match it is advising patients to stop smoking. This, of course, costs very little and if the advice is heeded, can improve both life expectancy and the quality of life.

I will compare the different types of surgical treatment available for cataract to a journey I made about 30 years ago to the northern, very mountainous area of Pakistan for a cataract surgery camp. I flew there in a small plane at a height lower than the surrounding snow-capped mountains, some of the highest in the world. It was a most dramatic and exhilarating journey with incredible views. The plane represented modern technology, and modern technology (i.e. phacoemulsification with a foldable intraocular lens) has made cataract surgery extremely straightforward and successful, with an incredible result as far as the patient is concerned. I myself, like many octogenarians, am a beneficiary. To continue the analogy, air travel is quite expensive, more than poor people can afford, and sadly, most poor people in the developing world cannot afford phacoemulsification with a foldable lens.

For the return journey, the plane could not fly because of bad weather, so I was obliged to spend 24 hours crammed in a minibus taxi for the 1000 km length of the Karakoram Highway. Both the bus and the highway were built using modern but much less sophisticated technology, and the journey was very much cheaper. This represented simpler and cheaper technology, such as extracapsular extraction with a rigid PMMA lens, affordable for almost everyone in Nigeria, but still with very good surgical outcomes.

In the distance across the steep Indus river valley, one could see the old traditional path for a packhorse, a mule or even someone to walk. The journey would take about two weeks; people had travelled that way for hundreds of years, and no modern technology was involved. This represented either treatment by traditional healers (i.e. couching) or no treatment at all and dying with blinding cataract. When I worked in Kaduna in 1975, I saw many patients who had been couched and I can only clearly remember one who had a successful result. Sadly, in Nigeria today, there are still many people growing old and dying blind from cataract, and in the northern areas of the country, one can still see eyes that have been couched.

Training the next generation of ophthalmologists. Nigeria urgently needs more, and many of us here are involved in this; very necessary if we are to begin to tackle the challenge both of cataract blindness and of the ever-increasing scope of ophthalmology and medical and surgical treatments available. Educational psychologists tell us that there are three separate aspects to training: **knowledge, skills** and **attitude.**

Knowledge. The Internet age has created an explosion of it, all readily available, but it is difficult for the student to find a way through this barrage of information, and the guidance of a tutor is essential. Textbooks and manuals are not as important as they used to be, but should still play a significant role in training.

Skills require greater input from the trainer, if possible on a one-to-one basis, and also because the eye is such a small and delicate organ requiring very gentle and precise handling. Mistakes can lead to irreparable damage. Some skills training can be achieved by watching videos on the Internet, and wet lab and simulated training is also very helpful,

but hands-on apprenticeship training is still essential.

Finally, there is **attitude**. At first, this sounds like a rather nebulous concept, but I know of many trainers, including myself, who think it is perhaps the most essential. However, it is something which is caught rather than taught and, to a certain extent, is part of the trainees' personality. To illustrate the importance of attitude, I will first describe two common situations most of us encounter sooner or later, and then I will describe the activities of two colleagues and friends whose excellent attitude has led to enormous change for many people.

Situation 1. What happens when a patient gets post-operative endophthalmitis, or even a post-operative iris prolapse? Hopefully, these are very rare situations, but it is likely to happen sooner or later, even to the most careful and conscientious surgeon. I once had a colleague with what seemed to me a very negative attitude. He would always cast around for someone to blame, the patient for rubbing their eye, the relatives for not putting the drops in properly or even the anaesthetist for making the patient cough whilst waking up! Often we can have a rather neutral attitude: "these things happen occasionally and it's just bad luck". A positive attitude seeks without recrimination to try to analyse exactly what went wrong, and if any lessons can be learnt from it. In the case of infection, to try to find where it came from, the surgeon, the assistant, the irrigating fluid or other possibilities. An iris prolapse or post-operative corneal oedema is almost certainly the surgeon's fault, and we need to acknowledge it, try to analyse it and make sure it doesn't happen again.

Situation 2. Medical ethics teaches us to treat all patients alike with compassion and respect, but sometimes in a busy clinic, this can be very difficult. We may not share a common language or culture with some patients, we may be pressurised by our own friends and relatives, or by a demanding so-called "VIP". Negotiating our way successfully through all these everyday occurrences in clinical practice is what makes us good doctors.

My two icons are Dr Nick Metcalfe, a British ophthalmologist who worked in Malawi, and Dr Hannah Faal, a Nigerian ophthalmologist who worked in the Gambia. I will describe her contribution later.

Nick (wearing the green theatre scrubs in Figure 5) started training in ophthalmology in his late 30s, having previously been a GP. He wanted to work in Africa. With difficulty, I managed to persuade my consultant colleagues to take him on as a trainee at that age, but it was possibly one of the best decisions we ever made. Having passed his diploma but not attempting his

Figure 5: *Nkhoma Eye Hospital, one day's post-operative patients and staff*

fellowship, he went with the CBM to Malawi in 1998 to a single doctor unit that was doing about 500 cataract operations a year. He soon realised that there was a much greater need in the community, and managed to meet this firstly by good leadership, inspiring his staff to be part of a team and involved in all the decisions that the hospital made; and secondly by working very hard himself. He was obsessional about the quality of his surgery and audit; all his post-operative visual acuities were recorded by a nurse so that he would not record them himself and possibly cheat! He encouraged successful patients to become "*cataract finders*" in their community, and teamed up with a community health programme. He persuaded the CBM to send one of his best theatre nurses to Kenya to get trained as a "*cataract surgeon*" and to send his optometrist to the Aravind hospital in India to improve his refractive and spectacle-making skills. Every year, the volume of work increased, and after a few years, he was doing 4500 cataract operations a year, as well as

glaucoma and lid surgery and managing the hospital himself. The work continued to expand, and the CBM decided to make his hospital their flagship unit for East and Southern Africa; and then disaster struck. He developed an unspecified illness complicated by a cardiac arrest from which he was resuscitated, but was left with a significant degree of brain damage and unable to carry on working. However, during his 12 years there, he showed what could be done by someone with the right **attitude**.

The last issue I want to tackle is ***"who does what in healthcare "***, something which is quite fluid and changing and is also controversial, sometimes very controversial. Throughout the 20th century, most of the professional roles in healthcare in Britain were fairly well defined. Our National Health Service has been a victim of its own success. Thanks to good community health and sophisticated surgical and medical treatment, we old people are living much longer and so consuming more and more of the health service budget, which continues to increase exponentially. So this century has seen considerable rethinking of who does what and the creation of new roles in healthcare. The founder president of the Royal College of Emergency Physicians wrote an article in the British Medical Journal for the 70th anniversary of the founding of the NHS, saying we needed to give up our "*professional protectionism*".[4] Here are some examples:

- Since I retired in 2000, anti-VEGF injections have been shown to be very effective in controlling age-related macular degeneration. They have to be repeated frequently, the disease is very common, especially in us elderly, and consequently, ophthalmic nurses have been taught to give intravitreal injections, something that didn't happen before.
- Optometrists, who in my day had no clinical role, are now getting involved in patient care. There are so many elderly people with glaucoma that those with stable glaucoma are often reviewed by optometrists and not in hospital. Sometimes patients have their routine post-operative care after cataract surgery carried out by their optometrist.
- A new role, the physician assistant, with a short two-year training, has been created to help do some of the clinical work in GP surgeries.
- In my own teaching hospital in Leicester, there was a big backlog of patients requiring carpal tunnel surgery. Two of the orthopaedic consultants decided to teach a very competent and enthusiastic theatre nurse how to carry out this single procedure. They completely standardised the protocol and gave him a very intensive hands-on training. Previously, the carpal tunnel surgery had been done sometimes by orthopaedic surgeons, sometimes by neurosurgeons and sometimes by plastic surgeons, but subsequently for some years it was all done in Leicester by this one "*carpal tunnel surgeon*". The senior people in the Royal College of Surgeons in London were not at all happy when they heard of it (medical protectionism again), and so a delegation came from London aiming to stop it. However, our local team had carefully audited the results over several hundred cases and not a single complication. They asked the London visitors how that compared with theirs, who, of course, had not done any audit!

All this is an introduction to my key question: ***"who will tackle the burden of cataract blindness in Africa?"***, and this is where I mention the role of my second icon, Dr Hannah Faal, probably Nigeria's most eminent living ophthalmologist, after her years as president of the International Agency for Prevention of Blindness. Her husband was Gambian, so she went there and found she was the only ophthalmologist. She persuaded Sightsavers International to fund her programme of providing low-cost treatment throughout the country with an integrated system of community care, and training "*cataract surgeons*" to do the bulk of the work outside the capital. The results of her pioneering programme are plain when one sees the statistics for cataract surgical rates in West Africa (Figure 6), though admittedly these figures are from the year 2000. I have been unable to find any more recent figures.

I am very aware that there are no plans in Nigeria for such a program. As I understand it, there are two main objections. The first is that

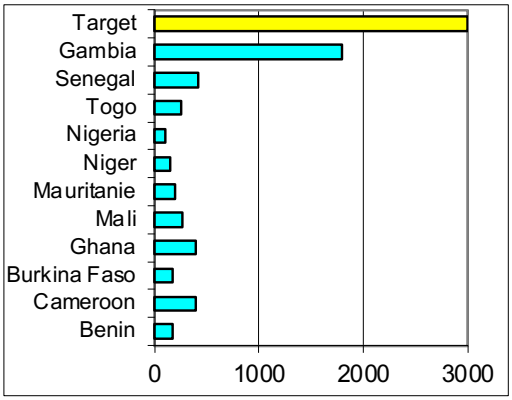

Figure 6: *Number of cataract surgeries per million patients in different West African countries, 2000 A.D*

these "*cataract surgeons*" are second-rate and not well-trained. I have worked extensively in other African countries in their training both as a trainer and a mentor, the Gambia, Senegal, Sierra Leone, Ghana, Benin, Uganda, Tanzania, Ethiopia and Malawi! and I can categorically refute this. They are very well trained but only in a limited sphere, and I have never yet encountered any of them pretending to be an ophthalmologist, although it may happen. Indeed, in one instance, young trainee ophthalmologists from a nearby teaching hospital sometimes prefer to go to the "*cataract surgeon*" for their practical training.

The other objection is about "*professional protectionism*"; are these people a threat to us, and might they take our business? My response to that is that ophthalmology is expanding so rapidly with much more being done in terms of refractive surgery, glaucoma surgery, the treatment of diabetic retinopathy and macular degeneration, etc., that there is likely to be far too much business for us for a good few years yet. Also, as cataract surgical techniques improve, surgical intervention is recommended at an earlier and earlier stage, so the number of patients who could benefit from surgery enlarges exponentially.

I began my talk with a quote from a rather obscure philosopher, and I will finish with a quote from a very famous philosopher, Karl Marx. On his tombstone in London (Figure 7) is the following inscription: "*Philosophers have only interpreted the world in various ways, the point is to change it*". We may not agree with his philosophy, but as privileged professionals in a very needy country, we must do our best to create change and to be prepared to *"think outside the box"*.

Figure 7: *The tombstone of Karl Marx in Highgate Cemetery, London*

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Sub-Theme Symposium: 2030 in Sight: The Future of Global Eye Health

To integrate eye health in wider health care systems as part of universal health coverage

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INTRODUCTION

2030 IN SIGHT is a sector strategy which aims to ensure that by 2030, no one experiences preventable sight loss, and everyone can achieve their full potential.[1] To ensure that eye care and rehabilitation services are accessible, inclusive, and affordable to everyone, everywhere, whenever they are needed (Figure 1), and people understand the importance of caring for their own eye health and demand access to services, free from the weight of any social stigma. Integration helps the eye health sector to advance the direct and indirect sustainable development goals (SDGs) to which it is related, creating a fair, prosperous and sustainable world.[2] Apart from (Universal Health Coverage (UHC), no poverty, zero hunger, gender equality, decent work and economic growth, climate action, partnerships for the goals, The (National Eye Health Programme (NEHP) brings together the WHO World Report on Vision, the WHA resolutions, the Lancet Global Health Commission on Global Eye Health and the Landmark UN resolution, Vision for Everyone and The Nigerian constitution, national regulations, policies, plans and data to achieve this specific sector strategy for all Nigerians.

Figure 1: *Delivery of affordable eye care services to everyone, everywhere, whenever they are needed*

National Framework for Eye Care

The following underpin the National Framework for Eye Care

- The Constitution of the Federal Republic of Nigeria 1999: This affirms the national philosophy of social justice and guarantees the fundamental right of every citizen to life, free from discrimination. It devolves healthcare to the 3 tiers of government, a vehicle for the delivery of UHC.
- The National Health Act 2014: This is the legislative framework for the development and management of the health system, setting standards for health services.
- The National Health Policy (NHP) 2016: This policy directs progress in improving the performance of the health system with Primary health care (PHC) as the bedrock and providing financial risk protection, especially for the poor and vulnerable.
- The National Strategic Health Development Plan II: This operationalises the NHP, providing a roadmap to the national government and sub-national

entities on national health priorities towards the attainment of health and health-related SDGs.
- The National Blindness and Vision Impairment Survey 2005-07
- National Eye Health Policy
- National Health Strategic Development Plan
- All National Eye Health Guidelines

All national eye health documents build on so much work that has been done internationally and nationally, to whom the NEHP and indeed the Federal Ministry of Health and Social Welfare (FMOH & SW) and the nation owe a debt of gratitude. The NEHP stands on the shoulders of many giants, teachers and colleagues and the continued support of the Ophthalmological Society of Nigeria (OSN) in the past and even now. We are encouraged by the promise of OSN's continued support in the future.

How the NEHP is working to **INTEGRATE** Eye Health within the wider sector and the Nigerian Strategy.

The NEHP is developing and strengthening local and international partnerships to work more effectively, efficiently, and collaboratively and to raise the profile of eye health through advocacy within and outside the sector with equity as the underlying consideration. The NEHP aims to achieve this by:
- Increasing political will at all levels
- Improving population and systems awareness (Public and Private, local and International).
- Striving to reduce the funding gap through grants and collaboration.

Sector Strategies

Inclusion of Eye Health in Universal Health Coverage

Eye health is part of the National Health Policy, strategic plan and has its own budget line with a modest increment over the years. Eye Health Policy Documents are in place. The National Eye Health Programme is also part of global conversations to integrate national perspectives and experiences into the global agenda and targets, and share context-specific insights and challenges. The NEHP was represented at the WHO World Health Assembly earlier this year, at the International Agency for the Prevention of Blindness (IAPB conference) in Mexico and will join industry leaders in New York at the UN General Assembly.

Integrated Patient-Centred Eye Care

This involves people-centred policies, plans, interventions, and services organized according to the health needs and expectations of people throughout the life course, rather than based on diseases. This approach consciously adopts individuals' perspectives as participants and beneficiaries of eye care services and empowers them to play an active role in their own eye health.

Integrated: managed and delivered to assure a continuum of promotive, preventive, treatment, and rehabilitative interventions for the full spectrum of eye conditions. This is also coordinated across the various levels and sites (where people live and work) of care within and beyond the health sector.

Life course approach: focusing on not only a full spectrum of eye health diseases but from the cradle to the grave recognizing that we need to do more; the problem is growing from a change in population dynamics and ageing due to improved life expectancy and the possibility of the increase of other chronic eye diseases due to lifestyle changes. Some activities aimed towards this include:
- School Eye Health
- Integration of Primary Eye Health into Primary Health Care
- Guideline development: Diabetic Retinopathy and Glaucoma
- Ongoing process of integrating Eye health data into the DHIS 2
- Plans to develop vision screening and ocular eye examination

Workforce Training

Leadership and governance: for competency-based leadership: via international and local short and long courses, e.g. International Centre for Eye Health (ICEH) and the Global Health Leadership Programme at Harvard. National

coordination workshops for subnational leaders in eye care, partners and pharmaceuticals.

Service Delivery

1. Training of Primary Health Care Workers to build and strengthen the ability of health personnel to manage eye patients at primary-level health facilities (PEC) in Nigeria. For Preservice training, the national training manual has also been included in the curriculum of community health care officers. Empowering PHC workers with knowledge and skills aims to address eye health worker shortages, increase eye care services in rural areas where about 70% of Nigerians live and create clear referral pathways to specialised care when needed.
2. Two Training and sensitization workshops have been organized by the NEHP for health workers based on the Diabetic Retinopathy (DR) screening and management guideline; one in northern Nigeria and the other in the south. The guideline is a paradigm shift towards a nationally effective framework with a cohesive, cost-effective, comprehensive, and patient-centred approach, critical to making the needed impact by increasing the opportunity for prevention and prompt treatment at early stages. These guidelines recommend strategies to strengthen leadership and clinical governance, protocols that standardise care and define care pathways, including strengthening referral mechanisms, financing and sustainability, and research to improve service delivery and patient outcomes in the long run.
3. Training has also been conducted on the Nigeria Glaucoma Guidelines and Toolkit for ophthalmologists from 36 states and the FCT. They are expected to step down the training to other healthcare workers in their states. This guideline outlines collective action, based on an integrated patient-focused model to tackle glaucoma, a chronic but treatable condition which requires lifelong treatment and follow-up. This document aligns strictly with evidence-based practices to define general courses of management, including diagnosis, risk assessment for progression and protocols and models of care/referrals for the Nigerian patient. These guidelines provide clinical and programmatic guidance for glaucoma services which ensure the highest possible outcomes for the Nigerian patient.

Embracing Technology and Research

By leveraging technology and research, Nigeria can overcome some of the significant barriers to eye care access by improving service policy making and service delivery and connecting patients, especially the underserved, to care. Technology can reduce costs associated with transportation, infrastructure, and personnel. Improved patient engagement and empowering patients to take a more active role in their eye care will improve outcomes. Specific technological interventions for the future include:

1. *Telemedicine:* Remote consultations can reach rural areas, reducing geographical barriers. Access to specialist care: Telemedicine can connect patients with specialist eye care professionals, regardless of location. Mobile health (mHealth) apps: Apps can educate patients, provide basic eye care information, and ease appointment scheduling. Peek Vision – provision of programme design, training on use of the Peek software and data intelligence platform for school eye health, community programmes that connect schools and households with PHCs and optometry and hospital referrals. This has been shown to increase impact 16-fold.
2. *Artificial Intelligence (AI)-powered diagnosis and monitoring:* AI can aid screening and diagnosis of eye conditions, increasing accuracy and speed in Diabetic retinopathy (DR) and refractive error services and School Eye Health Programmes. Technology can also enable remote monitoring of patients with chronic eye conditions.
3. *Virtual reality (VR) training:* VR can enhance surgical training for eye care

professionals, improving skills and knowledge. E-learning platforms can provide eye care education and training for professionals and patients. E-learning platforms can be particularly useful for refresher training of Primary Health Workers in Primary Eye Care.

4. *Electronic health records (EHRs):* Digital records can streamline patient data, facilitating efficient care. Data analysis and research: Technology can help data collection, analysis, and research to improve eye care services, providing prompt and exact data for policy making. Recently, the FMOH launched the Digital in Health Initiative to rebuild and reposition the digital health environment to include Data gathering; Data repository; Data servicing and Service regulation. The platform so created would be such that data can be easily validated. The NEHP is also in talks with Peek Vision for the use of its technology in service delivery and eye health population surveys. We have addressed concerns of data protection, and PEEK are fulfilling country legal requirements. We hope to pilot its use in the Joint vision and hearing screening and provision of Assistive Technologyÿþ (AT) devices intervention, enabled by the $5 million grant to Nigeria from ATscale. A National Eye Health Research committee is in place and has had its first meeting where national priorities for eye health research were determined, its first research proposal has also been developed and submitted to the National Health Research and Ethics Committee and there are plans to convene another meeting soon to address country considerations for technology in eye health.

CONCLUSION

By integrating eye health into the wider health and health-related sectors, we can ensure eye health is part of universal health coverage, creating a more cohesive, effective, and patient-centered healthcare system, which will ensure that no Nigerian experiences preventable sight loss, and everyone can achieve their full potential in an equitable manner.

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Sub-Theme Symposium: 2030 in Sight: The Future of Global Eye Health

To Activate Consumer Demand and Market Change by Raising Public Demand to Ensure Markets are Responsive, Remove Barriers to Care and Make Services Available and Affordable

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SUMMARY
The International Agency for the Prevention of Blindness (IAPB)'s 10-year mission, 2030 In Sight, recognizes the hurdles that need to be overcome and presents the eye health sector with a new approach to ELEVATE, INTEGRATE and ACTIVATE. The Activate Strategy is the key to translating the overarching goals of this initiative into actionable outcomes at national and global levels. To activate this strategy successfully, adopting a multifaceted approach that includes eye health campaign reforms, financial mobilization, equity-focused actions, and active community participation is essential. Increased funding and collaboration across stakeholders, as well as robust monitoring and evaluation frameworks, will be key to ensuring that the global burden of preventable sight loss is reduced. Community engagement and public awareness are vital to seeking care early and adhering to treatment regimens. Public eye health campaigns also play a critical role in breaking down stigma and empowering individuals to take charge of their eye health. Ensuring equitable access to eye care is crucial for success, and financial models that reduce costs for underserved communities will improve outcomes and increase demand for services. This review explores the key components of the 2030 In Sight Activate Strategy, the critical actions required to implement it, what has been done so far, the challenges that need to be addressed for successful activation, and proffers suggestions about what we can do locally to drive consumer demand for eye care services. In conclusion, with concerted effort, 2030 In Sight can achieve its goal of significantly improving eye health outcomes worldwide, particularly for the most vulnerable populations.
Keywords: 2030 In Sight, Activate, Preventable Sight Loss, IAPB.

BACKGROUND
The International Agency for the Prevention of Blindness (IAPB) launched the 2030 In Sight vision as a global framework aimed at reducing the burden of avoidable blindness and visual impairment by the year 2030. This strategic vision targets key areas such as equitable access to eye care, sustainable service delivery, financial mobilization, integration of technology and innovation to improve eye health worldwide.[1] The Activate strategy is central to turning this vision into concrete, actionable steps at local, regional, and global levels. Historically, all eye health development strategies have a bearing on existing global health development plans (Figure 1).
According to the World Report on Vision (WRV) 2019[2] and the Lancet Global Eye Health (Lancet) Report 2021,[3] the end of VISION 2020 and its successes made a new set of challenges evident. The gains of nearly eliminating preventable transmissible eye diseases and improving services for avoidable blinding eye conditions are challenged by the emergence of non-communicable eye diseases, lifestyle conditions affecting eye health and

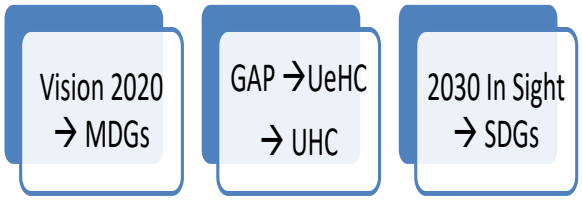

Figure 1: *Global eye health action plan versus health and development targets*

Keys: *MDGs: Millennium Development Goals; GAP: Global Action Plan; UeHC: Universal eye Health Coverage; UHC: Universal Health Coverage; SDGs: Sustainable Development Goals.*

increasing ageing populations. The impact of the three action plans of Vision 2020[1] was summarized into -

- A decrease in the prevalence of blindness from 4.8% to 3.1% over thirty years.
- Trachoma and Onchocerciasis, the two biggest infectious diseases that cause blindness, could be eliminated within the next ten years.
- 90 million people worldwide have had their vision impairment treated or prevented since 1990.

Conversely, the challenge has grown with 1.1 billion people living with sight loss around the world projected to 1.8 billion by 2050 if unchecked (Figure 2).[1,4] A growing myopia epidemic affects the younger generation at an alarming rate, such that half of the world's population is estimated to have myopia by 2050.[5] Above all, the challenge is not borne equally because of the inequity of eye care in under-resourced communities and the fact that eye care is unaffordable for many, because 90% of those affected with sight loss reside in low and middle-income settings. For example, in 2020, rates of blindness were up to nine times higher in western sub-Saharan Africa than in North America.[1] In addition, women, rural populations, those with low incomes, older people, persons with disabilities, indigenous people and ethnic minority groups are the most likely to suffer from sight loss and its negative implications.[6,7]

The WRV document key recommendations were to:

- Include eye care as a fundamental component of universal health care.
- Implementing integrated people-centered eye care (IPEC) in health systems will result in eye care services that are people-centered, that is, services delivered based on people's expectations and health requirements throughout their lives. This method actively embraces the health consumers' view as users and recipients of eye care services and gives them the tools they need to actively manage their own eye health. While integration guarantees that services are managed and provided to guarantee a continuum of preventive, treatment, rehabilitation, and promotion actions to tackle vision disorders. Additionally, this is coordinated amongst the various care levels and locations both inside and beyond the health sector.
- Make eye care an integral part of universal health coverage.
- Support the body of research on effective eye care practices by promoting a high-quality action plan and pertinent health systems studies.
- Monitor advancements and evaluate the uptake of integrated people-centered eye care.
- To raise awareness of the importance of eye care and to empower both individuals and communities.

Lancet defines eye health as "maximized vision, ocular health, and functional ability, that contributes to overall health and well-being, social inclusion, and quality of life. Poor eye health and impaired vision have a negative effect on quality of life and restrict equitable access to and achievement in education and the workplace."[3] Its key messages are:

- Good eyesight should be projected as a development issue since it is crucial to achieving the Sustainable Development Goals.
- Since everyone might need eye care services due to a vision impairment at some point, it is important to address the

Figure 2: *Challenges of visual impairment and benefits of sight restoration*

Source: 2030 In Sight Ending Avoidable Sight *Loss:* A Strategic Initiative. https://www.iapb.org/learn/resources/2030-in-sight-strategy-document/

constantly expanding demand for eye health services

- Eye healthcare should be incorporated into the planning, fundraising and provision of healthcare, since it is a crucial part of universal health coverage
- Many people are unable to receive high-quality eye care; therefore, coordinated efforts are required to enhance quality and offer of timely, safe, equitable, effective and people-centered care
- A higher, financially improved budget towards eye health is necessary because affordable vision-restoring procedures have the potential to improve the individual and the nation's economy
- Implementation with newer tools to enhance eye health provided by advancements in technology and therapy is required for an optimized and enhanced coverage, accessibility, quality, efficiency and affordability
- In poorer nations, the workforce providing eye care cannot keep up with the demands of the populace; a significant increase in service capacity is necessary through staff task sharing, improved training and supportive work conditions under capable leadership.

An elaborate connection between eye health and the 17 SDG goals was postulated by the Lancet Global Eye Health Report. The authors concluded that the resultant effect of increasing the reach of eyecare delivery positively boosts the achievement of several Sustainable Development Goals, as shown in Figure 3.

Figure 3: *Access to eye health services' contributions to the Sustainable Development Goals*

Source: 2030 In Sight Ending Avoidable Sight *Loss:* A Strategic Initiative. https://www.iapb.org/learn/resources/2030-in-sight-strategy-document/

This narrative review explores the key components of the 2030 In Sight Activate Strategy, the critical actions required to implement it, what has been done so far, the challenges that need to be addressed for successful activation and what we can apply locally.

What is 2030 In Sight Initiative?

Ultimately, the International Agency for the Prevention of Blindness (IAPB), through the 2030 In Sight Initiative, set ambitious goals (Elevate, Integrate and Activate) to eliminate avoidable blindness and visual impairment worldwide. 2030 In Sight is a global action plan initiated by the highest coalition of organizations working in eyecare and drawn from the findings of the WHO World Report on Vision, the Lancet Global Health Commission on Global Eye Health and the landmark UN Resolution, Vision for Everyone. It aims to provide equitable and accessible eye care through collaboration, innovation, and sustainable models. Key components of the vision include:

- Universal Eye Health: Ensuring that all individuals, regardless of geographic or socio-economic status, have access to affordable and effective eye care services.
- Equity and Inclusion: Addressing disparities in access to eye care among women, children, rural populations, and those with disabilities.
- Global Partnerships: Engaging governments, international organizations, private sector partners, and communities to improve eye health systems globally.
- Financial Mobilization: Securing sustainable funding to ensure long-term success.

In addition, the Activate plan of this strategy is the key to translating the overarching goals of this initiative into actionable outcomes at national and global levels. According to available working documents,[1,9] the 2030 In Sight initiative encourages all to build a world where:

- No one experiences unnecessary or preventable sight loss, and everyone can achieve their full potential.
- Eye care and rehabilitation services are accessible, inclusive, and affordable to everyone, everywhere, whenever they are needed.
- People understand the importance of caring for their eye health and demand access to services free from the weight of any social stigma.

So, with the future in sight, how does the eye health sector need to change to effect the expected change? In other words, what do we need to do differently and collectively as a sector to drive positive change? Ten areas of priority were postulated for the next 10 years from 2021, which include:

1. Develop leadership
2. Secure new forms of funding
3. Strengthen partnerships with private sector
4. Develop the workforce
5. Improve accountability
6. Advocate differently
7. Embrace technological solutions
8. Create new allies
9. Prove our case
10. Influence the widest audience

Core 2030 In sight priorities that address the "Activate" Strategy

The ultimate goals of the Activate strategy are shown in Figure 4.

Figure 4: *Goals of the Activate strategy of 2030 In Sight*

Almost every person will need help with their vision at some point in their life.[1] It is an inevitable occurrence, and there is a need to activate universal demand. We need to educate and empower people to force change by making people more aware of what they can do to look after their own eyes. (Figure 5a & e)

Figure 5: *Core 2030 In sight priorities that address the "Activate" Strategy*

Public-Private Partnerships (PPPs): Collaboration with the private, corporate and business sectors can help improve access to affordable treatments, innovative technologies, and supply chain solutions. PPPs have been instrumental in improving healthcare infrastructure in low-resource settings.[10] The Activate Strategy emphasizes the need for substantial financial investment in eye care through global and international funding mechanisms, including donor support and multilateral financing, which will be necessary to ensure equitable access to eye care in low and middle-income countries (LMICs). The role of the private sector in providing effective and efficient markets with affordable products and services can be a big part of the solution. This can create the right market environment, break down regulatory and financial barriers to help expand access to affordable eye health services. (Figure 5c & d)

Equity and inclusion, addressing disparities in rural areas and marginalized groups, such as women, children and the disabled, often face significant barriers to eye care access.[6,11] This calls for targeted interventions to address these disparities, such as community outreach programs and awareness campaigns.[3] Gender-sensitive studies show that women are more likely to suffer from visual impairment than men, particularly in developing countries.[7] The Activate Strategy advocates for gender-sensitive programs to ensure women have equal access to services.

Leveraging Technology and Innovation (Figure 5b) as a powerful tool for scaling up eye care services. The Activate Strategy highlights the role of digital solutions and innovative technologies in transforming eye care:

- Telemedicine and Teleophthalmology: The use of telemedicine for remote consultations and diagnosis has shown promise in providing care in underserved areas. For example, teleophthalmology programs are increasingly used for diabetic retinopathy screening and retinal imaging.[12]
- Mobile Health (mHealth): Mobile applications for eye care education, reminders for follow-up visits, and remote diagnostic services can greatly increase accessibility in remote areas.[13]
- Artificial Intelligence (AI): AI has shown potential in improving diagnostic accuracy, especially for conditions such as glaucoma and diabetic retinopathy.[14] AI tools can support healthcare workers in resource-poor settings by providing decision support for diagnoses.

How to Activate?

According to the 2030 In Sight initiative document,[1] a proposed 4-step implementation roadmap is outlined below:

1. *Campaign on a new level*
   To assist individuals and communities around the world to make their vision a priority, understand the link with their wider health, grasp the social and economic impacts of inaction and take the steps needed. From childhood, individuals should be exposed to all the

information they need to protect their eyes, ranging from reducing screen time to seeking help for any ailments or discomfort. This level of awareness and demand should flow through every single person's education pathway and employment environment. Individuals should continue to demand protective measures, equipment and safer working environments that prevent sight loss or harm to their eyes. This will create an enabling situation where everyone knows how and where to get help with the treatment of any eye issues or sight loss, demanding access to affordable services and glasses if needed, as well as complaining and campaigning if that does not happen.

2. *Tackle negative stereotyping*
Negative stereotyping for the rights of people who are blind or have serious sight loss currently affects 43.3 million people around the world. They are often stereotyped, excluded and silenced. There is a need to highlight and tackle the unacceptable level of discrimination that still exists and create a world where those with sight loss are fully engaged in society and enjoy the same opportunities and legal rights. Societal attitudinal change towards stereotyping and name-calling (nerdy) of spectacle wearers, particularly girls and vulnerable children. This weeps up self-consciousness that necessitates reluctance to use glasses, sabotaging good vision and progressive development. In some parts of the world, wearing glasses is seen as a weakness and could impact social standing, employment prospects and future life plans.

3. *Build Public-Private partnerships*
Eye health cannot be addressed, nor will services be scaled up without a major contribution from the private sector. There are already strong examples of good public-private partnerships, such as with the pharmaceutical sector on tackling onchocerciasis and trachoma. Extending this experience and concept to other areas, such as working with the private sector on tackling conditions such as diabetic retinopathy or creating sustainable, affordable, accessible markets for glasses, especially for communities in LMICs. Part of the solution would be the integration of vision tests and prescribing glasses within mainstream health systems, especially in primary care, in line with IPEC. NGOs and the private sector can work together to leverage their respective strengths, relationships, reputations, skills, resources and funding to find solutions and apply the collective power to deliver change. This will mean jointly developing sustainable business models and investments based on the principle of affordability.

4. *Create the right regulatory environment*
In many parts of the world, regulations stipulate that glasses are only sold by registered eye health professionals. This can result in a lack of open competition, poor quality products, inflated prices and a market that is not driven by consumer need. Creating an open supply chain can lead to a situation where consumers can purchase glasses affordably, particularly reading glasses. Secondly, there is a need for governments to cut the taxes and duties on glasses, especially in LMICs. This additional cost for an essential assistive product risks making glasses a luxury item, unaffordable and out of reach for many people. Thirdly, regulation of quality should be embedded within procurement and distribution systems. For example, global standards should be adhered to, enforcing that glasses meet ISO standards or an acceptable equivalent.

What has been activated globally to drive consumer demand as outlined by the IAPB?

Glasses are now part of the World Health Organization's assistive products list, and this

is being used as leverage with governments that adopted the United Nations General Assembly (UNGA) resolution on vision. With this resolution, governments are encouraged to cut taxes and duties on glasses because of the resultant additional cost and unaffordability risk. Similarly, they are to ensure feasible global standards for spectacles as well as enforce the regulation of quality embedded within procurement and distribution systems of eye products and services.

A range of alliances with other coalitions and sectors has resulted in successful and impactful cross-sectoral awareness campaigns, linking eye health directly with wider health, lifestyle issues with fundraising initiatives. Increased funding is critical for scaling up eye care services. The cost-effectiveness of eye care interventions such as cataract surgery and trachoma control demonstrates that investment in eye health yields significant economic returns.[3,15] Such fundraising awareness initiative is a yearly exhibition to mark World Sight Day tagged "a picture is worth a thousand words" (Figure 6) endorsed by Friends of Vision, the World Health Organization

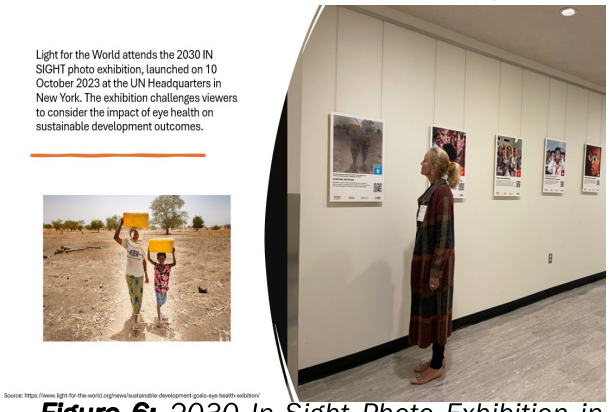

Figure 6: *2030 In Sight Photo Exhibition in New York 2023.*

and the International Agency for the Prevention of Blindness (IAPB) highlights the importance of achieving this goal. According to H.E. Ambassador Walton Webson, permanent representative of Antigua and Barbuda to the United Nations and Founder & Co-chair of the UN Friends of Vision Group, "This immersive exhibition makes it clear that reaching our Sustainable Development Goals is in sight if eye health lies at the heart of our transformative efforts to ensure a better future for all."

The annual World Sight Day (WSD), observed every first Thursday in October, has evolved into a critical platform for global advocacy, rallying governments, organizations, and communities to recognize the importance of eye health. This annual event has become a cornerstone and an ongoing effort to build awareness that eye care must become accessible, affordable, and available to everyone, aligning with the United Nations' promise to leave no one behind. World Sight Day "Love your Eyes" (Figure 7) campaigns are directed at a change in consumer awareness and behaviour, keeping pressure on

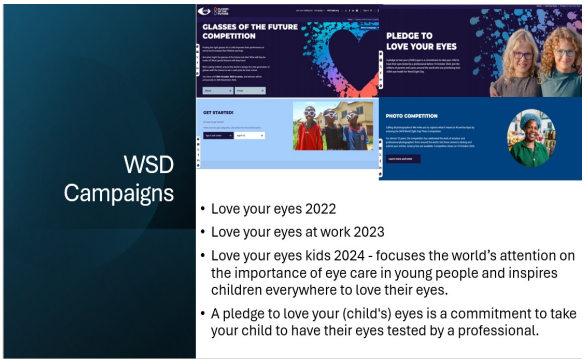

Figure 7: *World Sight Day yearly "Love your eyes" campaigns*

governments, suppliers, businesses and service providers. Launched by the International Agency for the Prevention of Blindness (IAPB) in 2021, this campaign has played a pivotal role in driving momentum toward a world where eye care is recognized as vital to health, development, education and economic growth. The campaign has garnered significant global attention from world leaders, policymakers, corporate businesses and the public. Resources on the "love your eyes" yearly theme and how to participate can be found at the IAPB website.

IAPB 2030 In Sight Live events – This is a meeting of an overarching alliance for the global eye health sector with more than 180 members in over 100 countries, creating a platform for leaders, innovators and change-makers in the eye health sector to create radical change. The LIVE events rotated through different cities and continents (Figure 8) give attendees exclusive learning opportunities and insights featuring global key opinion leaders.

As of 2020, over half of the world's population (4.1 billion) was digitally online,[16] with proper

Figure 8: *2030 In Sight Live 2021 Launch in Dubai*

technology, this creates a fast and wide modality of eye health awareness creation. Technological developments have created a disruptive force within the private sector and have resulted in new businesses, products and services reaching more people. The possibility of technology to support and possibly lead to sustainable outcomes and economic growth for government, enterprises and citizens is enormous. Examples include the use of the Internet, big data, AI, immersive technology in Telemedicine, telesurgery and information sharing; social media movements using hashtags, content creation, online engagement, celebrity influencers and digital wellbeing using mobile and personal devices serve as trainers and health information reminders. The online space can be leveraged to market and bring eye health screening programs and delivery services into the homes of the consumer, as seen in the home, food and pharmacy sectors. Mobile and internet-based applications such as Peek acuity, WHOeyes, and eyeonic vision test (Visual field analysis, Figure 9) can be used as platforms for driving change in consumer behaviour. A review paper of 25 mobile apps evaluated from 22 enrolled studies showed evidence that mobile app–based visual acuity tests can be useful to drive on-demand visual impairment detection.[17]

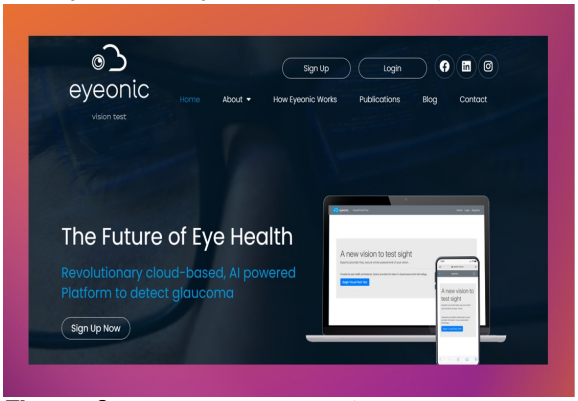

Figure 9: *Web homepage for eyeonic vision test platform.*

How can we activate within the National Context?

A lot can be learnt from advocacy strategies such as the "See Now" campaign in India using celebrity influencers (e.g. Shri Amitabh Bachchan) to tackle negative stereotyping by deploying messaging strategically via radio, television, print, social media, WhatsApp and SMS. The campaign has successfully provided information on local eye services and how to access them. Similarly, in the United States, the Disney challenge was inspired by the emotional story of a young girl, Lowri Moore, who stated, "When I was 9 I asked my mam if I could write a letter to Disney. I wanted to ask if they could make a film with a princess who wears glasses. I love Disney but didn't feel children with glasses were represented fairly. My mam posted a picture of my letter on her Facebook page, and we were blown away by the response. I received letters and comments from all over the world, from people who felt the same way I did. I was invited to speak on lots of TV and radio programmes and became an ambassador for Clearly." According to this review author, suggested ways to Activate locally in Nigeria are depicted in Figure 10.

Figure 10: *Suggested In-country Activate action plan*

Challenges to Activating the Sight 2030 Strategy

While the Activate Strategy presents a clear path forward, several challenges must be addressed to ensure successful activation:

- Limited Infrastructure in Low-Resource Settings - Many LMICs lack basic healthcare infrastructure, making the implementation of eye care services difficult. Inadequate facilities, shortages of trained personnel, and lack of access to essential equipment hinder the delivery of effective eye care services.[18]
- Financial Constraints - Despite the growing recognition of the importance of eye health, many countries, especially in the Global South, do not allocate sufficient resources to eye care. Mobilizing sustainable funding from government and private sector sources remains a major challenge.[8]
- Cultural and Social Barriers - In some regions, cultural beliefs and social stigma related to blindness or visual impairment can discourage individuals from seeking care. Community engagement and awareness campaigns will be essential to overcome these barriers.[1]
- Political Will and Policy Integration - The integration of eye care into broader healthcare policy frameworks often requires significant political will and commitment. In some cases, eye care may be overlooked in favor of more immediate health concerns.[19]

Monitoring, Evaluation, and Accountability

Efficient monitoring and evaluation (M&E) systems internationally and regionally are crucial components of the Activate Strategy. These systems are crucial instruments to guarantee that objectives are fulfilled and resources are utilized effectively. Progress may be monitored, and opportunities for improvement can be identified with the aid of transparent reporting and routine data collection. To ensure goals are met, indicators including the prevalence of cataract surgery, the precise causes of visual impairment, screening uptake, the coverage of eye health services, and patient outcomes can be routinely tracked.[3]

CONCLUSION

2030 In Sight Vision provides a comprehensive and actionable roadmap for achieving universal access to eye care and reducing the burden of avoidable blindness. However, its success hinges on an effective implementation at both the local and global levels. Promoting equity, mobilizing financial resources, and leveraging technology are essential components of the Activate Strategy. Despite specific challenges, a collaborative approach involving governments, NGOs, private sector partners, and communities can make this a reality.

2030 In Sight ACTIVATE key messages

Through concerted effort over the next decade, the following is achievable.

- Eye health included in national health promotion schemes to increase awareness and promote care-seeking behaviours.
- A range of alliances with other coalitions and sectors resulting in successful and impactful cross-sectoral awareness campaigns, linking eye health directly with wider health and lifestyle issues.
- With global campaigns including World Sight Day, a direct change in consumer awareness and behaviour, keeping pressure on governments, suppliers, businesses and service providers is possible.
- Governments will ensure the tax system is not a barrier for the provision of affordable glasses for low-income countries.
- Regulatory frameworks dictating who can prescribe glasses will be modernized to improve affordable access to eye care services.
- Commercial providers of eye health can respond to market demand, and vision care and aids are competitively and fairly priced with easy access.
- Technological developments can create a disruptive force within the private sector

and result in new businesses, products and services reaching more people.

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Raising the Next Generation Surgeons: Mentor-Mentee Relationships

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Being the text of a presentation delivered at the breakfast symposium of the 48th Annual Scientific Conference of the Ophthalmological Society of Nigeria on 4th September 2024

BACKGROUND

This is the title given to me (IM) for the 2024 Ophthalmological Society of Nigeria conference. The concept of mentor-mentee relationships in medicine is as old as the profession itself. The original derivation of the word "mentor" relates to a person. Mentor was a friend of Odysseus in Greek mythology. When Odysseus went to fight the Trojan War, he left Mentor with two jobs. The first was to oversee his palace, and the second was to look after and teach his son Telemachus. Thus, the first mentor we know about was Mentor himself, and Mentor advised and trained Odysseus's son; a deeper commitment than simply being a teacher.

Definitions

Mentor:[1-4]

- A seasoned individual who provides guidance, support, and encouragement to a less experienced person.
- A mentor offers expertise, advice, and feedback to help mentees develop their skills and advance their careers.
- A mentor serves as a role model and inspires mentees to reach their full potential.

Mentee:[1-4]

- A person who receives guidance, support, and encouragement from a more experienced individual.
- A mentee is actively engaged in the mentoring relationship, seeking advice, asking questions, and applying the mentor's insights.
- A mentee is committed to personal and professional growth and is open to learning from the mentor's experience.

Approaches to Mentorship

Mentoring can take many forms, from traditional one-on-one relationships to group, peer, or reverse mentoring, where a junior colleague mentors a senior one. In ad-hoc mentoring, there's no formal structure; mentees directly approach potential mentors.

While the ideal mentor-mentee relationship is often seen as a mutually beneficial friendship, the medical field often assigns these pairings based on rotations rather than personal choice. This can make it necessary to establish a strong foundation for the relationship from the start.

Exercise

Reflect on your current mentoring relationship. What words come to mind when you think of it? Now, consider the best mentoring relationship you've ever experienced. What words describe that relationship?

Compare the two. Are there similarities? Are there differences? Figure 1 provides a list of words that can be used to describe mentoring relationships. Are any of these words applicable to your current relationship? Are there any words you'd like to add?

The goal of this exercise is to identify the positive and negative aspects of your current mentoring relationship. By focusing on the positive and working to improve the negative, you can foster a more productive and rewarding relationship.

Figure 1: *One example of a group's feedback in words of their concept of mentorship.*

Practical Tips For a Successful Mentorship Relationship

What defines success in a mentoring relationship can vary widely. As a glaucoma specialist, I (IM) begin each mentorship by asking the mentee what they hope to achieve. For those new to glaucoma, the goal might be a better understanding of diagnosis and management. Others with a foundational knowledge may seek exposure to complex cases and decision-making processes. Some may focus on specific surgical techniques, while others may prioritize exam preparation.

Tailoring the clinical experience to meet these diverse needs is crucial. It is possible to tailor the exposure in the clinic so that the beginner gets exposure to new/routine cases to grasp the basics, whilst more complex cases get 'funnelled' towards the mentee seeking advanced knowledge. For exam-focused individuals, providing practice questions and discussing ideal answers can enhance their preparation.

Some find thinking of mentorship in stages helpful:[5]

- The initiation stage- where the relationship is established.
- The cultivation stage- where trust is built.
- The separation stage- where the mentee gains independence from the mentor.
- The redefinition stage- where the mentor provides ongoing support.

It may also be beneficial to evaluate the effectiveness of any mentorship programme using feedback, mentor-mentee surveys or goal setting.[4]

All the above takes a rare commodity from us all: Time![2] How can one carve out sufficient time to build a successful mentorship relationship at work? We all take drink/meal breaks, so perhaps going for coffee, tea or lunch together might be one way. Another way might be to schedule a set period in your diary purely for the mentorship.

Listening is critical since mentors need to shape their instruction to the mentees' needs and also guide the mentees if they are going astray. Mentees, on their part, need to be willing to accept both praise and correction. When done in a nurturing environment, mentees experience rapid growth, and the mentor's encouragement propels them towards excellence.[2]

After listening and forming a learning/ development plan, the help towards the mentee can be in a multitude of forms. Again, using glaucoma as our example, some may require case allocations so they can perform gonioscopies and have the findings discussed on a one-to-one basis. Others may benefit from exposure to rare cases, which they then read up on and return to present. Yet still, others may wish for a research project. This needs a separate article to outline its approaches. Additionally, there are ways to assist mentees in learning more. Mentors typically have a wide range of links to colleagues and resources they can share to assist them.

As with all relationships, mentor-mentee relationships cannot fit all bills. This is generally a professional interaction, and hence advice on personal relationships and finance, for example, is not usually part of the plan. The parameters of the relationship, therefore, need to be set in the initial meeting. These parameters can, of course, be changed as the relationship develops, but it is helpful to have boundaries defined. Likewise, sometimes, the relationship is not practical since personalities or goals are immiscible. It is better to accept this openly and discuss alternative mentors rather than soldier on with a dysfunctional relationship that benefits no one. This, however, is rare and hence not hugely disruptive in the bigger scheme of things.

CONCLUSION

It is a wonderful fact that we are not all clones, and the world of ophthalmology is full of a wide range of personalities with very varied approaches. The task of the mentees is to accept the guidance and work in the relationship with their mentors to gain the most out of their wisdom and experience. The task as mentors is to enable their mentees to grow into professionals with skills that exceed their own so that when we, or our children, develop cataract/glaucoma/age-related macular degeneration etc, they can provide us (and the rest of the population) with world-class care.

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Pattern of refractive error among staff of a tertiary health facility in Northwest Nigeria

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ABSTRACT

Background: Globally, uncorrected refractive error is a major cause of blindness, visual impairment and low vision. Healthcare providers require optimal vision to function effectively; therefore, it is essential to determine their refractive state and provide appropriate intervention when necessary.

Aim: To determine the refractive status and pattern of refractive error among staff of a tertiary health facility.

Methods: A descriptive cross-sectional study conducted among staff of the Federal Teaching Hospital Birnin Kebbi between May and June 2018. Clinical and sociodemographic data, including level of education, tribe, department/ unit, refractive state, and usage of corrective spectacles, were collected using a questionnaire designed for the study. Visual acuity was assessed using a Snellen chart; those with visual acuity less than 6/6 were further assessed using a pinhole. Streak retinoscopy at a working distance of two-thirds of a meter was performed in the eye clinic for those with features of refractive error. The data was analyzed using IBM SPSS version 21.

Results: A total of 507 staff were examined; 113 (22.3%) had refractive error, 105 (20.7%) had presbyopia, and 289 (57.0%) did not have any refractive error. There were 347 (68.5%) males and 160 (31.5%) females. Seventy-one subjects (14.0%) had myopia, 24 (4.7%) had hypermetropia, while 18 (3.6%) had astigmatism. The commonest presbyopic correction was +1.00D.

Conclusion: Refractive error is fairly common among the staff of this health facility. Health care workers are advised to regularly check their eyes and obtain refractive correction, if necessary, for optimal vision and effective function.

Keywords: prevalence of refractive errors; hyperopia; myopia; adult refractive state; Nigerian public health.

INTRODUCTION

Globally, uncorrected refractive error (RE) is a major cause of blindness, visual impairment and low vision. It is the second leading cause of avoidable/treatable blindness, and it is estimated that 153 million people are either blind or have low vision from uncorrected RE. The three main types of refractive errors, myopia, hypermetropia, and astigmatism, present with blurring of vision for far, near, or both, and other complaints depending on the type of RE the individual has.[1-14]

The global burden in terms of annual economic loss is reported to be very high, and uncorrected RE is of public health importance.[1] If left untreated, RE can result in low productivity and impaired quality of life. Healthcare providers require optimal vision to function effectively; thus, there is a need to know their refractive state and provide appropriate intervention where required. Prescription of appropriate corrective lenses is the treatment of choice, which, in the form of spectacles, is one of the most cost-effective interventions in eye health. There is paucity of data on the pattern of RE, especially among healthcare providers in Nigeria. To the best of our knowledge, no study has been conducted

on the pattern of RE among health facility staff in our facility in the past. The aim of this study was to determine the pattern of Refractive Error and to determine the type of presbyopic correction among the respondents.

METHODS

This was a descriptive cross-sectional study conducted among the staff of Federal Medical Centre Birnin Kebbi, between May and June 2018. Approval from the Ethics and Research Committee of the institution and consent from individual respondents were obtained. Data on the biodata, level of education, tribe, department/unit, refractive state, and usage of corrective spectacles were collected with the use of a questionnaire designed for the study. Questions were asked about past ocular examination. Distance visual acuity was assessed using a Snellen chart placed at 6 meters, for the right eye first, while the left eye was covered and then, vice versa. Eyes with visual acuity less than 6/6 were further assessed using a pinhole to check for improvement in visual acuity. Near vision was assessed using a near vision chart.Streak retinoscopy at a working distance of two-thirds of a meter was performed in the eye clinic for those with features of refractive error. Those with corrective spectacles were also refracted, and their current refraction results compared with their spectacles; where a significant difference between the two was observed, they were advised to obtain new spectacles based on the current refraction prescription.

For this study, refractive error was defined as unaided visual acuity of less than 6/6, with significant (more than two lines) improvement using a pinhole. Myopia was defined as any RE of –0.5DS and above. Hyperopia was defined as any RE of +0.50DS and above. Astigmatism was defined as any RE which required a cylindrical correction of –0.5DC and above. Presbyopia was defined as unaided near vision worse than N4 at a reading distance of 30cm. All staff on duty in all the departments /units during the study period in the hospital were included in the study. Staff with cataract, glaucoma, or corneal disease were excluded from the study. Data was analysed using the IBM SPSS version 21. Descriptive statistics, including frequencies and means, were generated, and further analysis was done.

RESULTS

A total of 507 respondents were examined, and the age of the participants ranged from 20 to 60 years. The mean age was 39.40 ± 4.21 years. There were 347 (68.5%) males and 160 (31.5%) females, with a male-to-female ratio of 2.2:1. Table 1 shows the age and sex distribution of the respondents.

Table 1: Age and sex distribution of respondents

Age (in years)	Sex		
	Male	Female	Total (%)
20 – 29	41(8.1)	16(3.2)	57(11.2)
30 – 39	154(30.4)	92(18.1)	246(48.5)
40 – 49	139(27.4)	49(9.7)	188(37.1)
50 – 59	12(2.4)	3(0.5)	15(3.0)
≥ 60	1(0.2)	0(0)	1(0.2)
Total	347(68.5)	160(31.5)	507(100)

A significant proportion of staff, 371 (73.2%), had visual acuity of 6/6 in their right eyes (Table 2). A total of 113 (22.3%) respondents had refractive error, 105(20.7%) had presbyopia, and 289 (57.0%) did not have any refractive error. Only 16 (3.2%) staff were found to have visual acuity of less than 6/24 (Table 2) in the better eye. Out of the 105 (20.7%) respondents with presbyopia, 40 (38.1%) had near vision of N6 without correction binocularly, 15 (14.3%) had near vision of N8 without correction binocularly, while only 1 (1.0%) respondent had near vision of N12 without correction binocularly. A total of 150 (29.6%) respondents had spectacle correction already (88 participants for distance only, and 62 were using bifocal lenses). More than 60% of respondents had never had any eye examination (Table 2).

The frequency of uncorrected refractive error was as follows: myopia- 71(14.0%), hyperopia- 24(4.7%) and astigmatism- 18 (3.6%) (Table 3). The commonest presbyopic correction was +1.00D (Table 4).

Table 2: Unaided visual acuity distribution of the participants

VA	Right eye (%)	Left eye (%)
6/6	371(73.2)	360(71.0)
6/9	84(16.6)	96(18.9)
6/12	19(3.7)	19(3.7)
6/18	19(3.7)	16(3.2)
6/24	6(1.2)	8(5.6)
6/36	6(1.2)	6(1.2)
6/60	2(0.4)	2(0.4)
Total	507(100)	507(100)

Near vision	**N4**	**N5**	**N6**	**N8**	**N9**	**N10**	**N12**
Frequency	402	31	40	15	13	5	1

Past history of eye examination	YES (%)	NO(%)	TOTAL
	170(33.5%)	337(66.5)	507 (100)

VA – visual acuity

Table 3: Refractive status of the participants by age

Age	E(%)	M(%)	H(%)	A(%)	P(%)	TOTAL(%)
20 - 29	44(8.7)	6(1.2)	4(0.8)	3(0.6)	0(0)	57(11.2)
30 - 39	172(33.9)	35(6.9)	16(3.1)	8(1.6)	15(3.0)	246(48.5)
40 - 49	73(15.4)	27(5.3)	2(0.4)	5(1.0)	69(13.6)	176(34.7)
50 - 59	0(0)	3(0.6)	2(0.4)	2(0.4)	16(3.2)	23(4.5)
≥ 60	0(0)	0(0)	0(0)	0(0)	5(1.0)	5(1.0)
TOTAL	**289(58.0)**	**71(14.0)**	**24(4.7)**	**18(3.6)**	**105(20.7)**	**507(100)**

E- emmetropia, M-myopia, H-hyperopia, A-astigmatism, P-presbyopia

Table 4: Presbyopic correction of the respondents

NV	N4	+1.0DS	+1.50DS	+1.75DS	+2.00DS	+2.50DS	+3.00DS	+3.50DS	TOTAL
N4	402	0	0	0	0	0	0	0	402
N5	0	17	14	0	0	0	0	0	31
N6	0	14	12	13	1	0	0	0	40
N8	0	0	1	5	5	4	0	0	15
N9	0	0	0	4	3	3	3	0	13
N10	0	0	0	0	2	3	0	0	5
N12	0	0	0	0	0	0	0	1	1
TOTAL	**402**	**31**	**27**	**22**	**11**	**10**	**3**	**1**	**507**

NV- Near vision

DISCUSSION

The study showed that more males were examined than females. This is probably due to the sociocultural nature of the study environment, where more males are engaged in government employment. This observation is similar to reports from past studies.[3-7]

Participants' ages ranged from 20 to 60 years, age of 60 years being the retirement age of civil servants in Nigeria. This was an anticipated finding as most civil servants in developing countries are expected to remain in government jobs till age 60.

Less than 50% of the respondents actually knew their refractive state or had ever checked their eyes. This shows poor eye health practices despite having an eye department in the hospital.

More than 50% of the study population did not have any refractive error. Myopia was the most common type of RE in this study; this observation is similar to the report from a study done in Osogbo[14] in Nigeria and those reported by other authors.[3-13] Although many of these studies[3-13] were prevalence studies.

In a study from Ghana[16] and a rural south Indian population study[17], hyperopia was recorded as the highest prevalent refractive error, followed by myopia and astigmatism.

Hyperopia was observed to be more common in the 30-39 years age group, contrary to the study in India[17] that reported the highest frequency of hyperopia in the 51-55 years age group.

Almost one-third of the respondents already had corrective spectacles. This observation compared well with other previous studies [2,6,8,9] in Nigeria; however, our study was not a prevalence study like those reports.

CONCLUSION

Refractive error is not uncommon among healthcare staff; myopia accounts for the majority of cases. Staff are advised to regularly check their eyes and get their refractive error treated for optimal vision and effective function.

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Is iCare rebound tonometry as accurate as Goldmann applanation tonometry in the measurement of intraocular pressure?

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ABSTRACT

Background: Intraocular pressure (IOP) measurement is an important examination in ophthalmic practice, especially in the diagnosis of optic nerve disease.

Aim: To compare intraocular pressure measurements obtained using the Goldmann applanation (GAT) tonometer with the iCare rebound tonometer (RBT) and evaluate the suitability of the iCare tonometer for routine clinical use.

Methods: A total of 410 eyes of 205 patients were studied. Using GAT measurements, patients were classified into three groups: Group A (7–15 mmHg), Group B (16–22 mmHg) and Group C (≥23 mmHg). The RBT measurements were compared with the GAT measurements using Student's paired t-test and Pearson's correlation. Statistical significance was set at $p<0.05$, while a difference of ±3 mmHg between the two instruments was considered clinically significant.

Results: There were 140 (34.2%) eyes in Group A, 206 (50.2%) eyes in Group B and 64 (15.6%) eyes in Group C. Overall, the mean difference in IOP values between GAT and RBT was 2.505±0.99 mmHg ($p=0.096$), while for Group C only, there was a statistically significant difference in the mean values of IOP obtained by GAT versus RBT (2.20±3.5 mmHg, $p<0.01$). There was a statistically significant correlation ($r=0.84$) between GAT and RBT measurements.

Conclusion: iCare significantly underestimated IOP at high IOP levels compared with GAT. Nevertheless, differences in the overall mean IOP values obtained by GAT and RBT were statistically insignificant. This suggests that the two instruments may be used interchangeably, but with caution in glaucoma patients when elevated IOP values are anticipated.

Keywords: Goldmann applanation, iCare rebound tonometer, intraocular pressure.

INTRODUCTION

Accurate intraocular pressure (IOP) measurement is an important aspect of examination in the ophthalmic clinic, as it is a crucial component in the diagnosis and management of several ocular conditions, especially glaucoma. IOP was first measured in 1865, when Von Graefe developed the first tonometry instrument [1]. Since then, many devices have been developed to measure IOP, including the Maklakoff tonometer, the Goldmann tonometer, the Perkins tonometer, rebound tonometers (RTs) and noncontact tonometers. Goldmann applanation tonometry (GAT) is still considered the gold standard for IOP measurement.[1-3] There are about 5 different models of iCare tonometers: the iCare TAOi, iCare Pro, iCare ic100, iCare ic200, and the iCare Home; however, each seems to have its own characteristics and IOP value tendency. The iCare tonometer ic100 (TA011) device is portable, easy-to-use and does not require the use of topical anesthesia. It measures the IOP by striking the central cornea with a probe and gives an average of 6 measurements displayed as the IOP value. The GAT (KAT SL Vnyals 131), on the other hand, is mounted on a slit lamp microscope (Topcon SLD301), requires the use of topical anesthesia and its accuracy is dependent on examiner expertise. The objective of this study was to compare

intraocular pressure (IOP) measurements obtained using the Goldmann applanation (GAT) tonometer with the intraocular pressure measurements obtained using the iCare rebound tonometer ic100 (RBT).

METHODS

Approval was obtained from the Ethics and Research Committee of Federal Teaching Hospital Birnin Kebbi, and informed consent was obtained from each patient before inclusion into the study. The study was conducted at the Ophthalmology Department, Federal Teaching Hospital, Birnin Kebbi, between August and September 2023. All consecutive patients who attended routine clinical appointments during the study period were eligible for inclusion. Exclusion criteria were failure to consent, corneal pathologies, active ocular infection and recent intraocular surgery. Relevant demographic data such as age, sex, occupation and tribe were recorded. The iCare tonometer was used first to measure the patient's IOP, then GAT was used to measure IOP after instilling a drop of amethocaine hydrochloride 0.5% and 5% fluorescein. In order to minimize patients' discomfort, only one measurement was obtained with each tonometer (GAT and iCare) in each eye by the same examiner. Data was analyzed using IBM SPSS version 27. Using the measurements obtained with GAT, patients were classified into three groups: Group A if IOP was 7 – 15 mmHg; Group B if IOP was 16 – 22 mmHg and Group C if IOP was $\geq$23 mmHg. The mean values for both instruments were compared using paired samples T-test. Pearson's correlation coefficient was used to explore the correlation between the IOP measurements using the 2 tonometers. Any p-value less than 0.05 was considered statistically significant. A difference in IOP of ± 3 mmHg between the two instruments was considered clinically significant.[4,9,11]

RESULTS

A total of 410 eyes of 205 patients aged between 9 and 76 years, with a mean age of 34.36 ± 1.397 years, were examined. A hundred and eleven (54.3%) subjects were female. The male-to-female ratio was 1:1.2. Table 1 shows the age and sex distribution of the patients.

The intra-ocular pressure measurements with RBT ranged between 8 and 35 mmHg, with a mean of 12.18 ± 4.62 mmHg in the right eyes. While the range of measurements obtained with GAT in the right eyes was 6 to 37 mmHg, with a mean of 14.68 ± 4.81 mmHg (Table 2). There were 140 (34.2%) eyes in Group A, 206 (50.2%) eyes in Group B and 64 (15.6%) eyes in Group C. The measurement difference between GAT and RBT in 258 eyes (62.9%) was $\leq$ ±2 mmHg, while

Table 1: Age and sex distribution of the patients

Age in years	Sex		
	male	female	Total
1 - 10	0	1	1
11 - 20	0	1	1
21 - 30	6	10	16
31 - 40	8	25	33
41 - 50	20	36	56
51 - 60	30	20	50
61 - 70	18	18	36
> 70	12	0	12
TOTAL	**94**	**111**	**205**

Table 2: Intraocular pressure measurements using both tonometers

Variables	N	Minimum (mmHg)	Maximum (mmHg)	Mean (mmHg)	Standard deviation (mmHg)
iCare IOP RE	205	8	35	12.18	4.624
iCare IOP LE	205	8	41	12.13	4.919
GAT IOP RE	205	6	37	14.68	4.810
GAT IOP LE	205	8	44	14.50	5.028

IOP- intraocular pressure, RE- right eye, LE- left eye, GAT-Goldmann applanation tonometer

the difference was > ±3 mmHg in 152 eyes (37.1%). For Groups A and B, the mean measurement difference between GAT and RBT was -0.12±2.77 mmHg and 0.04±2.86 mmHg, respectively. These differences were not statistically significant. However, for the eyes in Group C, the RBT measurements were significantly lower than those obtained with GAT (-1.66±3.87 mmHg). This difference was statistically significant (t=-2.84, p=0.007).

The overall mean difference in IOP values between iCare and GAT was -2.51±0.99 mmHg (p=0.096); however, the iCare significantly underestimated IOP at values ≥ 23 mmHg compared with GAT (GAT minus iCare = 2.20 ± 3.5 mmHg, P<0.01). Table 3 shows the comparison of the mean differences in IOP values when the analysis was performed for right and left eyes separately.

Table 3: Paired samples test

	Paired Differences					T	Df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
iCare IOP LE - GAT IOP LE	-2.365	1.337	0.131	-2.625	-2.105	-18.042	205	0.0964
iCare IOP RE - GAT IOP RE	-2.505	0.906	0.099	-2.702	-2.308	-25.270	205	0.0978

DISCUSSION

Only a few studies have compared the iCare ic100 tonometer with the GAT. We set out to address this gap by comparing IOP measurements obtained by this model of the iCare tonometer with the gold standard, GAT.[3,4-13] Our study found the iCare ic100 generally undermeasures IOP compared to GAT, with a mean difference of 2.51±0.99 mmHg between the iCare and GAT. This mean difference in IOP is considerably larger than the mean difference of 0.44±4.4 mmHg reported by Wong *et al*[3] in their study of 74 eyes. It is also larger than the mean difference of 1.5±2.8 mmHg reported by Nakakura *et al*[5] in a small study of 45 eyes. Ashano *et al*[6] in their study in Southwest Nigeria reported a statistically significant difference in the mean values of IOP obtained by the GAT and RBT similar to the observation in our study although the type of iCare used in their study was not stated and also their sample size (132 eyes) was smaller than this study. However, they considered corneal thickness in their study. Our findings showed that the iCare underestimated the IOP measurement more so at the higher IOP ranges (i.e ≥23 mmHg). This finding is similar to the study by Wong *et al*[3] who reported that the largest mean differences in IOP measurement were among eyes with ocular hypertension. Similarly, in a study of 672 eyes using an earlier version of iCare (TA01i) Gao *et al*[4] reported that the only subgroup with a statistically significant difference in IOP was the group of eyes that had IOP ≥23 mmHg. Within the IOP subgroups, the mean difference was 2 mmHg and above (for IOPs ≥23 mmHg).[10-14] Exceptions to this were evident in patients with IOP 15 mmHg and below, where the mean difference was less than 2 mmHg.

CONCLUSION

iCare significantly underestimated IOP at high IOP levels compared with GAT. Nevertheless, differences in the mean IOP values obtained by GAT and RBT were statistically insignificant. This suggests that they can be interchanged but with caution for routine use in a glaucoma clinic, especially when IOP values are likely to be higher than 22 mmHg.

Limitation: Our study is limited by the fact that it was hospital-based, which limits the generalizability of the results.

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Penetrating ocular trauma with a retained fishing hook: A case report

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ABSTRACT
Ocular trauma, a major cause of vision loss, may occur from diverse circumstances and agents. The outcome of ocular trauma is dependent on the cause, severity, and the immediate care given. This case report of a 10-year-old boy with sudden loss of vision following a fishing hook entry into his left eye aims to present a safe surgical technique for fishing hook removal and also highlight the need for early intervention following ocular injuries from a fishing hook.

Keywords: ocular trauma, fish hook, corneal perforation, cut-it-out technique

INTRODUCTION
Ocular trauma is a major cause of vision loss, and the circumstances and agents implicated in such injuries are diverse. Fishing is a popular outdoor activity for people of all ages all around the world, and is seen as a source of income, especially in riverine areas. Fishing is generally considered safe, but is a potential cause of ocular trauma, which could involve the eyelid[1], and/or cornea[2], or even the retina.[3] These injuries can be associated with subsequent traumatic cataract, vitreous hemorrhage and even retinal detachment.[1] In certain circumstances, they can lead to endophthalmitis with partial or complete loss of vision and loss of the eye.[1] Several previous studies have reported good visual prognoses in patients with corneal fishhook injury following prompt and proper treatment.[2] Treatment of these injuries depends on their location, involved ocular structures, and the type of hook involved. The objectives of this article are to present a safe surgical technique for fish hook removal and to highlight the need for early intervention following ocular injuries from a fishing hook.

CASE PRESENTATION
A 10-year-old male primary one pupil presented to our facility via the accident & emergency unit with a complaint of sudden loss of vision following a fishing hook entry into his left eye. The incident was said to have occurred about 3 hours before presentation. The patient went fishing with a friend, who inadvertently swung a fishhook backwards into his left eye while standing behind him. On examination, visual acuity was 3/60 in the left eye. There was normal lid anatomy, and the conjunctiva was injected. A rusty fishhook had penetrated the nasal cornea at the 8 o'clock position (Figure 1), engaging the iris inferiorly, and remained in

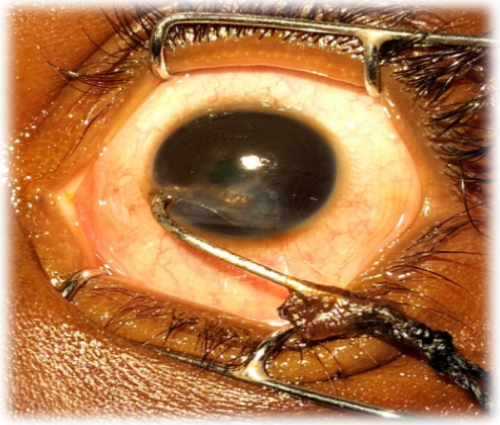

Figure 1: *Penetrating ocular trauma with retained fishing hook*

the anterior chamber. The anterior chamber was shallow with minimal cells but no hyphema. The pupil was irregular and dilated, while the crystalline lens showed early opacification. Posterior segment examination was deferred. A diagnosis of left penetrating ocular injury with retained intraocular foreign body was made, and an ocular trauma score of 3 was assigned.

Intervention: Preoperative preparation: the patient was immediately placed on parenteral and topical antibiotics, and intramuscular tetanus toxoid vaccine was also administered. He was then prepared for an emergency surgical intervention involving wound exploration, foreign body removal and corneal repair under general anesthesia.

Surgical Procedure: Fishing hook removal was by the 'cut-it-out' technique as follows: A paracentesis was made at 2 o'clock, and the anterior chamber was reformed with viscoelastic. Using a size 15 surgical blade, the entry wound was extended along the axis of the barb of the hook to facilitate its smooth removal (Figure 2). The wound was then sutured with four interrupted 9-0 nylon sutures (Figure 3), and the side-port was hydrated. Intracameral Ceftazidime and Intravitreal ceftazidime/vancomycin were administered intraoperatively.

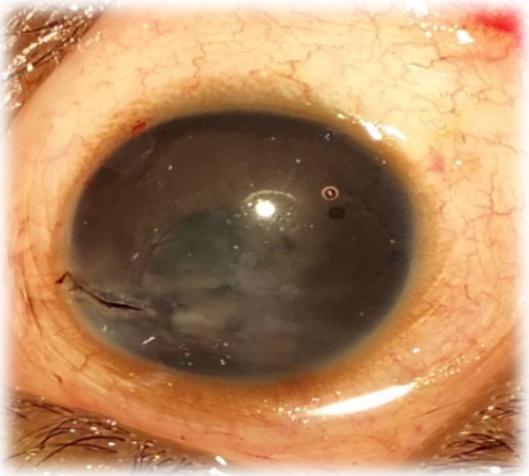

Figure 2: *Showing corneal laceration after removal of hook*

Postoperative management: the patient was continued on both parenteral and topical antibiotics, topical steroids and cycloplegic eyedrops postoperatively. On the first postoperative day, visual acuity improved to 6/36. Corneal sutures were intact and the anterior chamber was well formed with an air bubble in situ. At his most recent follow-up visit (1 month after injury), the left visual acuity was 6/18. Dilated fundus examination showed mild lens opacification, clear vitreous and attached retina with normal disc and macula. Informed consent was obtained for this case report.

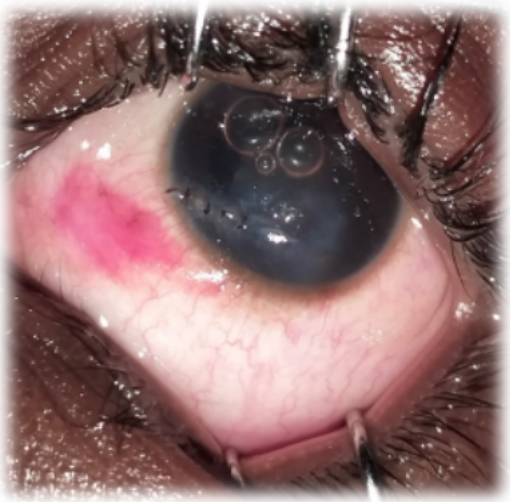

Figure 3: *Post-operative photo of the eye after corneal repair*

DISCUSSION

Fishhook injury is a rare but potentially devastating ocular injury. The hooks can be deeply embedded, and the barb prevents an easy removal, thereby posing a surgical challenge. Several techniques for the removal of fishhooks embedded in ocular tissues have been reported.[3-6] These include the cut-it-out technique, the advance-and-cut technique, and the back-out technique. The cut-it-out technique, which was described above in our index patient, is used when the fish hook is barbed.[5,7]

The advance-and-cut technique is the most useful technique in anterior segment fishhook injuries.[7] The technique involves pushing the hook through a surgical incision to the exterior of the globe, a sterile wire cutter is used to transect the hook beyond the level of the barb, and the barbless hook is then removed via the entry wound.[7] The back-out technique refers to passing the hook out through the entrance wound. It is primarily useful for barbless hooks.[7]

CONCLUSION

Timely intervention, as well as good knowledge of the uniqueness of fish hook injuries and various surgical techniques, is necessary in the management of fish hook-related ocular trauma. Furthermore, raising awareness and promoting preventive measures such as the use of protective goggles is important in reducing the incidence and severity of such injuries.

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Case Report

Digital ocular massage to the rescue of failing blebs after filtering surgery

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ABSTRACT

Modalities for the prevention and treatment of early bleb failure include augmentation with antimetabolites like mitomycin C, an intensive regimen of topical steroids, and various forms of bleb manipulation such as massage. Digital ocular massage involves application of gentle, controlled pressure with a finger on the eye through the upper eyelid to encourage aqueous flow through the bleb and prevent scarring. This article reports the outcomes of massage and other interventions in 3 patients after trabeculectomy.

All patients had mitomycin C (MMC) augmented trabeculectomy (0.4mg/ml MMC applied for 3 minutes); cases #1 and #2 underwent fixed sutures technique, while case #3 had releasable sutures technique. Patients were instructed to massage by applying gentle pressure to the globe using the thumb through the upper eyelid.

Case # 1 was a 6-year-old female noticed to have intraocular pressure (IOP) elevated to 22 mmHg 4 weeks post-operatively; and IOP reduced to 5 mmHg by the 9th post-operative week. Case #2 was a 10-year-old male noticed to have an IOP of 40 mmHg 6 weeks after surgery; he received 5-fluorouracil (5 FU) injections in addition to the massage, and IOP reduced to 13 mmHg by the 8th week after surgery. Case #3 was a 24-year-old male whose IOP increased to 23 mmHg 3 weeks after surgery. The patient had 5FU injections, needling and with ocular massage IOP reduced to 6 mmHg. Bleb fibrosis can be managed in the early post-operative period with ocular massage along with other interventions to improve bleb function.

BACKGROUND

Scarring leading to early bleb failure is the commonest known complication of trabeculectomy.[1] Intraoperative modalities for the prevention of scarring include creating a large scleral flap not cut to the limbus, placement of releasable sutures, very wide and posterior conjunctival flap dissection to create a large treatment area with anti-fibrotics such as mitomycin C (MMC). These surgical modifications, combined with meticulous tissue handling, are meant to reduce the severity of wound healing; however, these measures are often insufficient, especially in those with high-risk criteria.[2]

Postoperatively, modalities for the prevention and treatment of early bleb failure include an intensive regimen of topical steroids, subconjunctival 5-fluorouracil injections and various forms of bleb manipulation such as massage and needling.[3] Ocular massage has long been recognized as a therapeutic intervention in the management of failing blebs.[4] It has also been found to have a useful role in the management of the hypertensive phase after Ahmed glaucoma drainage device surgery. A case series of patients undergoing Ahmed valve surgery documented 50% of patients achieving a 20% drop in intraocular pressure (IOP) with massage.[4] Digital ocular massage as described in this report involves application of gentle controlled pressure with a finger on the eye through the upper eyelid to encourage aqueous flow through the bleb, improve bleb function and prevent scarring, with the technique applied by the clinician and taught to the patient. This article reports the outcomes of massage and other interventions in 3 patients following trabeculectomy.

CASE PRESENTATION

All patients had MMC augmented Moorfields safer surgery system trabeculectomy (0.4mg/ml MMC applied for 3 minutes). All cases were performed by a single surgeon; cases #1 and #2 had fixed sutures technique while case #3 had releasable sutures technique. Patients were instructed to massage by applying gentle pressure to the globe using the thumb through the upper eyelid; massage was applied 3 times a day, and each time, the pressure was applied 10 times. Two of the patients had 5 fluorouracil injections, and 1 patient had bleb needling. Informed consent for publication was obtained from the adult patient and from the parents/legal guardians of the children included in this report.

Case # 1 was a 6-year-old female operated in the left eye 13 weeks prior to this report; IOP was 8 mmHg on the 1st post-operative day (POD 1), 2 mmHg at 1 week, and 3 mmHg at 2 weeks. IOP rose to 10 mmHg at 3 weeks, and by 4 weeks it was 22 mmHg. Massage done in the clinic reduced the IOP to 18 mmHg. The parents were taught to massage at home, and by the 6th post-operative week, IOP had reduced to 8 mmHg and 5 mmHg by the 9th week (Figure 1).

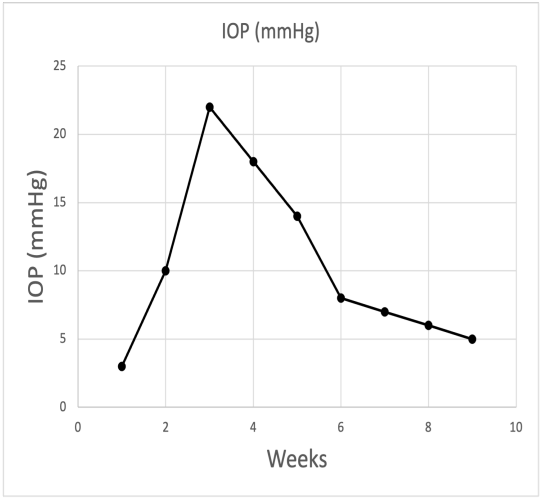

Figure 1: *Time course of IOP changes in case #1*

Case #2 was a 10-year-old male operated in the left eye 9 weeks prior to this report; IOP was 3 mmHg on POD 1, and it remained at 2 mmHg through the first 3 post-operative weeks. The IOP increased to 40 mmHg at 6 weeks, at which point he was noted to have a localized bleb and was started on alternate-day 5FU injections. A total of 7 injections, each 0.1 mL of a 50 mg/mL solution, were given over a 2-week period. The parents were instructed on how to massage after the second dose of 5FU. The IOP was observed to reduce to 13 mmHg by 8 weeks PO and was 8 mmHg at 9 weeks (Figure 2).

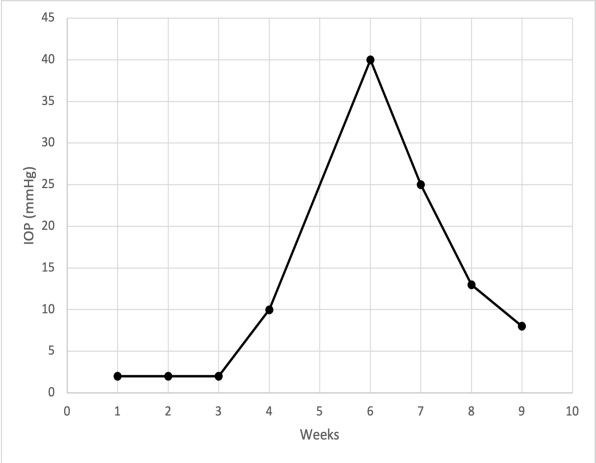

Figure 2: *Time Course of IOP changes in case #2*

Case #3 was a 24-year-old male who was operated 7 weeks prior to this report. Surgery was done in the left eye; IOP was 8 mmHg on POD 1, 4 mmHg at 1 week, rose to 7 mmHg at 2 weeks, at which point 1 releasable suture was removed, with IOP reduction to 6 mmHg after suture removal. The IOP at the 3rd postoperative week was 16 mmHg, at which point the second releasable suture was removed, with IOP paradoxically rising to 23 mmHg after suture removal. The patient was started on alternate-day 5FU injections, each 0.1 ml of a 50mg/ml solution, and had a total of 7 doses. He also had bleb needling done 4 weeks PO, while 5FU injections were ongoing. Intraocular pressure on the first day after needling was 11 mmHg, which rose to 18 mmHg 6 days after needling. Ocular massage was started at 5 weeks postoperatively, which led to a progressive reduction in IOP to 9 mmHg at 6 weeks, and 6 mmHg by the 7th postoperative week (Figure 3).

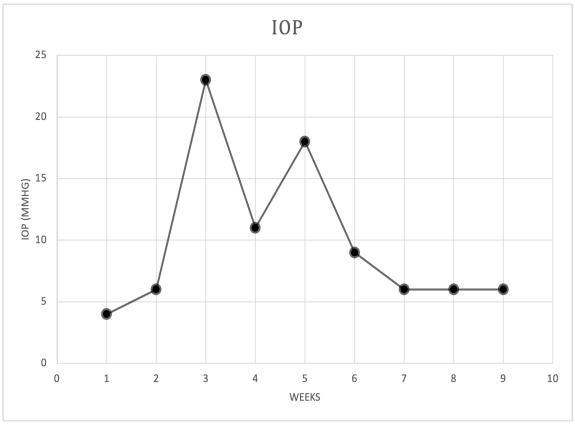

Figure 3: *Time course of IOP changes in case No. 3*

DISCUSSION

In the weeks following a trabeculectomy, scar tissue forms and causes resistance to outflow. Continuous aqueous production by the eye fills the limited bleb, backs up into the eye and causes raised IOP. It has been documented that a natural peak of resistance to outflow usually occurs in the weeks immediately after a trabeculectomy, which then resolves with remodelling. This peak is said to occur between 3 to 6 weeks post-surgery in African patients.[3] Close follow-up of patients in this period is critical, when interventions like massage are most likely to be effective. During this period of active bleb management, especially within the first 3 months, elevation of IOP to the mid-teens may be a warning sign of early failure. This is based on personal observation. Urgent mechanical re-establishment of flow is critical to success, using a combination of different modalities such as massage, removal of releasable sutures, cutting of fixed sutures and bleb needling. The cases presented in this report showed the value of including ocular massage along with other modalities for treating scarring in the early post-operative period.

Different techniques of massage have been described, with some practitioners advocating massage through the lower eyelid. A study comparing finger massage with a novel ocular massage device showed that there was greater ease of use and lower pain scores with the massage device.[5] It has also been shown that health education videos help patients perform massage better.[6]

A few reports of potential complications exist in the literature, such as corneal abrasions, hypotony, flat anterior chamber, hyphema, and iris incarceration into the sclerostomy.[7] Massage must therefore be used judiciously, and patients must be carefully instructed and closely followed up.

In conclusion, bleb fibrosis and failure can be successfully managed in the early post-operative period with ocular massage along with other interventions to prevent scarring and improve bleb function.

Conflict of Interest: The authors have no conflict of interest

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GLAUCOMA

Occurrence of indapamide-induced acute angle closure in a predisposed patient calls for increased physician ophthalmologist collaboration: a case report

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Background: Drug-induced Acute Angle Closure (AAC) is a sight-threatening ophthalmic emergency that occurs more commonly in predisposed patients. Acute angle-closure glaucoma occurs when the circulation of aqueous humor from the posterior to the anterior chamber is blocked, causing the pressure inside the eye to rise rapidly.[1] This is an ocular emergency because if it is not treated quickly, it can lead to permanent loss of vision.[2] Risk factors include anatomical factors such as shallow anterior chamber (AC) depth, short axial length, and plateau iris configuration. Demographic factors include female sex, Asian ethnicity, family history, and advanced age. In addition, some medications known as trigger drugs include adrenergic agonists, anticholinergics, cholinergics, sulfonamides, supplements, and serotonergic medications.[3]

Objectives: The purpose of this case report is to draw the attention of ophthalmologists, physicians and general practitioners to the seriousness of drug-induced Acute Angle closure; to highlight the need to know the inciting classes of drugs and the need for physicians to collaborate with ophthalmologists to rule out predisposing eye conditions in patients before commencement of such medications.

Case Presentation: A 56-year-old male civil servant, a known hypertensive and diabetic, was recently placed on oral indapamide by his physician. He developed sudden, very severe ocular pain in his left eye (LE), soon after taking the first dose of oral indapamide 2.5mg. By the second dose, ocular pain became severe with profound diminution of vision, and seeing haloes around light.

Ocular examination revealed visual acuity (VA) of counting fingers, conjunctival congestion, corneal haziness, shallow anterior chamber and mid-dilated, unreactive pupil. The left eyeball was notably hard, and intraocular pressure (IOP) was greater than 70 mmHg.

He had recently been diagnosed with Primary Angle closure suspect based on shallow AC and occludable angles on gonioscopy in the same eye. He procrastinated the recommended urgent Laser peripheral iridectomy (LPI). He had previously undergone trabeculectomy in the right eye on account of primary angle-closure glaucoma.

He was immediately advised to stop taking the indapamide and was treated with intravenous 20% Mannitol 250mls over 20 mins, Eye drops Pilocarpine 4% thrice daily, Dorzolamide/timolol fixed drug combination twice daily and oral Acetazolamide 250mg thrice daily. He was scheduled for immediate LPI, but this was delayed due to persistent hazy cornea with IOP above 45 mmHg. The cornea eventually cleared after discontinuation of Acetazolamide. The LPI was subsequently performed with good outcome as VA improved to 6/9 while IOP reduced to 10 mmHg.

Discussion: This case report flags indapamide as a trigger for drug-induced AAC in a predisposed patient. Indapamide is a derivative of benzolsulphonamide, hence a sulphonamide.[4] It is also noteworthy that whereas Diamox (acetazolamide) was indicated as an IOP-lowering agent to help this patient, it appeared to worsen his symptoms, also being a sulphonamide. Sulphonamide-induced angle closure glaucoma was first described in 1962.[5]

Indapamide is a very useful drug, growing in popularity as an effective antihypertensive treatment, especially among diabetic patients, probably because it is a thiazide-like diuretic without glucose or lipid disturbances.[6] It is indicated for the treatment of hypertension and edema due to Congestive cardiac failure.[4] However, like some other sulphonamides, it has been implicated as a trigger for drug-induced acute angle closure.

The proposed mechanisms for sulphonamide-induced angle closure glaucoma include:

- Osmotic Disturbance within the crystalline lens leading to hydration of the lens and subsequent thickening with anterior displacement of the lens-Iris diaphragm[5]
- Induction of ciliary body edema with subsequent supraciliary effusion resulting in forward rotation of the ciliary body and mechanical angle closure[5]
- Accommodative spasm of the ciliary muscles[7]

A case report of a multimodal imaging study of indapamide-induced choroidal effusion showed evidence supporting the second of the three mechanisms described above.[7]

Conclusion: Indapamide, an effective thiazide-like antihypertensive treatment among diabetics, has been flagged as a potential trigger for acute angle closure in a predisposed patient. It is therefore recommended that physicians and ophthalmologists should be aware of this potentially sight-threatening adverse effect of Indapamide and other medications that can precipitate Acute Angle closure and educate patients about the warning symptoms, and the need for early presentation to an ophthalmologist if symptoms occur. It is also recommended that physicians collaborate with ophthalmologists to rule out predisposing eye conditions before the prescription of such medications.

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Social media as a frontier for creating glaucoma awareness: strategies, prospects and challenges

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Background: Social media, across various platforms, has introduced innovative methods for disseminating information through the use of compelling videos and graphics, thereby enhancing the capacity for information absorption and comprehension.[1] Through the years, traditional ways of creating glaucoma awareness, including radio, television broadcasts and community outreach programs, which are limited by geographical boundaries, have been employed. Despite this, awareness and knowledge about glaucoma remain low, particularly in developing countries.[2] Social media platforms present an opportunity to reach a global audience with crucial glaucoma health information and allow feedback and engagement. We hereby present the results of a social media awareness campaign carried out during the 2024 World Glaucoma Week (WGW).

Methods: We conducted a retrospective analysis of social media content and engagements created using the social media handles of the Ophthalmology department of the University of Ilorin teaching hospital, Ilorin, on four social media platforms during the 2024 World Glaucoma Week. The platforms used were Facebook, Instagram, YouTube and Twitter. Core patient information messages were put together by selected members of the eye care team of the Hospital. Graphic designs of patient information flyers were made. Patient information videos were created to give enough content for the awareness campaign, and these were uploaded daily throughout the WGW. Student and staff volunteers were named as glaucoma awareness ambassadors who worked to share and repost the social media posts and create engagement. Attempts were also made to contact the celebrities on social media pages in Nigeria, but no tangible responses were received from them.

Results: A total of 24 posts, including 11 videos, 5 infographics and pictures, were made and shared across all 4 platforms. The 11 Instagram videos got a total of 1,753 views and 194 likes, the 11 Facebook videos got a total of 2,351 views, the 11 YouTube videos got 795 views, and the 11 Twitter videos got 380 views, 5440 impressions and 203 likes. The same videos were shared across all platforms. A total of 45 glaucoma awareness ambassadors worked throughout the glaucoma week to share the social media content. The absence of a dedicated social media manager posed significant challenges, requiring team members to spend additional time outside their regular professional schedule to manage content and engagement. Also, limited technical skills in digital media management hindered the optimal utilization of the social platforms. The specific limitations included the need for continuous posting of content, tracking insights made by the social media platforms, ensuring impressions on viewers' comments, technical skills of continued creation of infographics/carousels, monitoring of growth metrics on the social media pages, and a lack of familiarity with paid social media tools. The prohibitive cost of engaging social media influencers was also a limitation, as well as sustainability, as social media requires dedicated and consistent effort over time to yield results.

Conclusion: Social media is a frontier for creating glaucoma awareness and education to encourage early detection, which should be explored more by the eye care community.

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Bilateral Morning Glory Syndrome: a case report

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Introduction: The term Morning Glory Syndrome (MGS) was first described in 1970 by Peter Kindler and derived its name from its resemblance to a morning glory flower.[1] MGS is a rare congenital malformation of the optic nerve which is frequently associated with midline abnormalities of the brain and skull.[2] It is characterized by an enlarged, funnel-shaped excavation in the optic disc with peripapillary, chorio-retinal pigmentary changes, radial vessels and overlying central white glial tuft.[3,4] The prevalence of MGS has been reported to be 2.6 per 100,000 with rare bilateral cases.[5] It affects both sexes but females more commonly, and is rare in Africans.[6]

Aim: To report a rare case of bilateral Morning Glory Syndrome in a 6-year-old girl.

Case Report: A 6-year-old girl presented with poor distance vision and poor speech, observed one year before presentation. There was a positive history of use of herbal medications by the mother during pregnancy, on account of 9 years of infertility. Mother, who was 38 years old at the time of pregnancy, had a first-trimester febrile illness. The neonatal period was eventful with episodes of fever and jaundice. General examination showed a plump child, well-oriented, with left head tilt. Ocular examination showed visual acuity of 3/60 bilaterally, 30 degrees of alternating exotropia, and round pupils with pupillary reaction. Enlarged pale optic discs, predominantly radial vessels, and a surrounding hypopigmented cuff within an excavated area were seen on dilated fundoscopy. Visual acuity improved to 6/36 with -1.50 DS in both eyes after cycloplegic refraction. Oto-rhinolaryngology review showed pre-auricular sinus, bilateral impacted earwax, no septal deviation or cleft palate. Bilateral ear syringing and referral for speech therapy were done. Ultrasonography, Optical coherence tomography (OCT) and brain magnetic resonance imaging (MRI) were requested, but her father declined due to personal reasons.

Figure 1: *Fundus photography showed pale discs with surrounding hypopigmented area in both eyes*

Consent for this report was obtained from her parents.

Discussion: MGS is a rare congenital optic disc anomaly associated with ocular and non-ocular abnormalities.[7] It presents in early childhood with decreased vision, strabismus, cleft lip/palate or basal encephalocele.[8] Visual acuity is usually poor. Occlusion therapy or refraction may help improve the vision of the affected eye(s).[9] Other ocular associations include: Nystagmus, Amblyopia, Retinal detachment, Persistent hyperplastic primary vitreous (PHPV), Congenital Cataract, microphthalmia, leucoma, optic nerve glioma, drusen, eyelid hemangioma.[10] Our patient presented with some of the ocular and non-ocular features of MGS, including speech defect, alternating exotropia, myopia and poor vision in both eyes. Fundus photography revealed fundoscopic features seen in MGS. Ultrasonography, OCT, Fundus fluorescein angiography (FFA), CT scan, and MRI are the investigative approaches for the diagnosis of MGS and detection of the associations.[10,11] Management requires an interdisciplinary

approach. Prevention of amblyopia, improvement of vision and management of other non-ocular disorders are the treatment goals. Counselling of parents is essential to help them understand the condition and prognosis. A close differential diagnosis for the index case is optic disc coloboma. Others include optic nerve pit, optic atrophy, optic nerve hypoplasia, and peripapillary staphyloma.[12]

Conflict of interest: The authors declare no conflict of interest

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Relationship between platelet indices and diabetic retinopathy in patients with type 2 diabetes mellitus: a hospital-based prospective study

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Background: Diabetic retinopathy (DR) is the most common microvascular complication of Type 2 diabetes mellitus (T2DM) patients.[1,2] Increased platelet activity is an important pathogenic factor. Platelet count (PLT), mean platelet volume (MPV) and platelet distribution width (PDW) are important indices that reflect platelet activity.[3-6] These indices may serve as measures associated with the development and progression of DR. This study was aimed at determining the relationship between platelet indices and diabetic retinopathy in patients with type 2 diabetes mellitus.

Methods: A cross-sectional study was conducted on 181 T2DM participants under the Tenets of the Declaration of Helsinki.[7] Ethical clearance for this study was obtained from the University of Calabar Teaching Hospital Health Research Ethics Committee, and written informed consent was obtained from each of the eligible participants. After fundoscopic examination, participants were divided into two groups: T2DM with DR and T2DM without DR. Their PLT, MPV and PDW were assayed. Statistical analyses, including Chi-square test, Student T-test, and binary logistic regression, were performed using Statistical Package for the Social Sciences Version 25.0 (Chicago, IL).

Results: The T2DM patients were aged 35 to 80 years, with a mean age of 56.4±10.9 years. There were more females than males, with a ratio of 3:1. The PLT, MPV and PDW were significantly higher among type 2 diabetes mellitus with DR as compared with type 2 diabetes mellitus without DR (Table 1). On regression analysis, elevated PDW was found as an independent determinant for the likelihood of diabetic retinopathy (Odds ratio: 1.259; 95% confidence interval: 1.081-1.466; p = 0.003).

Table 1: Relationship between platelet parameters and diabetic retinopathy among study participants

Variable	Diabetic retinopathy Retinopathy Absent n=155	Retinopathy Present n=26	Total N=181	T-test	p-value
Mean platelet volume (fL)	9.6±4.2	11.1±2.6	9.9±4.1	2.308	0.025*
Mean platelet count (mL)	198.0±81.6	252.1±100.4	205.8±86.4	3.023	0.003*
Mean platelet distribution width (fL)	12.4±3.5	16.2±3.0	12.9±3.7	5.175	<0.001*

**statistically significant*

Conclusion: The study demonstrated that elevated levels of PLT, MPV and PDW were significantly associated with the development of DR. However, PDW appears to be a more likely predictor of DR in T2DM. We hold the view that the utility of these platelet indices as hemorheological markers of DR makes potential sense for early diagnosis and monitoring of DR.

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A case of central retinal vein occlusion associated with retrobulbar optic neuritis

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Background: Central retinal vein occlusion (CRVO) secondary to retrobulbar optic neuritis is a rare manifestation, and we did not find a reported case from Nigeria in the literature. There are very few reported cases of both pathologies co-existing in the same patient.[1-3]

Clinical Presentation: A 58-year-old gentleman, a known glaucoma patient, presented in our clinic with a one-hour history of painless, sudden loss of vision in the left eye. One month prior to the loss of vision, his eye felt heavy, but there was no redness, no pain on ocular movement or reduction in vision. On presentation to the clinic, we examined a middle-aged, healthy-looking man; he had a blood pressure of 130/70 mmHg, and all other aspects of his systemic examination, including the neurological examination, were normal, apart from the ocular examination. Visual acuity was 6/6 in the right eye and counting fingers at 3m (3MCF) in the left eye; intraocular pressures were 20 and 22 mmHg, respectively. His right ocular examination findings were normal. On the left, there was a relative afferent pupillary defect (RAPD), and posterior segment examination revealed a pale disc and cup disc ratio of 0.75, with distinct margins but dilated tortuous venules in all quadrants with mild retinal haemorrhages (Figure 1). Color desaturation was 100:30 and light appreciation was 100:20 in the right and left eyes, respectively. Fundus fluorescein angiography showed a delay in venule filling in all quadrants, worse inferotemporally. There was no area of capillary dropout and no feature suggestive of macula oedema (Figure 2); however, the late images showed hyperfluorescence (Figure 3) in the disc, suggesting an inflammatory process, i.e. retrobulbar neuritis, in the left eye. The optical coherence tomography showed no

significant macula oedema (Figure 4). Brain magnetic resonance imaging (MRI) showed nonspecific white matter changes; the MRI spine did not show any significant white matter changes. A diagnosis of left mild central retinal vein occlusion associated with retrobulbar neuritis secondary to multiple sclerosis (Clinical Isolated Syndrome) was made. He was placed on intravenous methylprednisolone 1g daily for 3 days and continued on 60 mg prednisolone daily, which was subsequently tapered off. His vision on the first day after commencing steroids improved to 6/12, and at 2 weeks, his vision had improved to 6/6, although he still had significant visual field changes (Figures 5 and 6). Over the last 4 months of follow-up, the left visual acuity remained 6/6, but he still had significant visual field changes (Figure 7). The patient consented to this case report, and ethical approval was obtained from the research ethics committee of Asokoro District Hospital, Abuja.

Figure 1a: *Fundus pictures of the right eye,* ***Figure 1b-1d:*** *Fundus pictures of the left eye showing the dilated tortuous vessels and mild retinal dot and blot haemorrhages.*

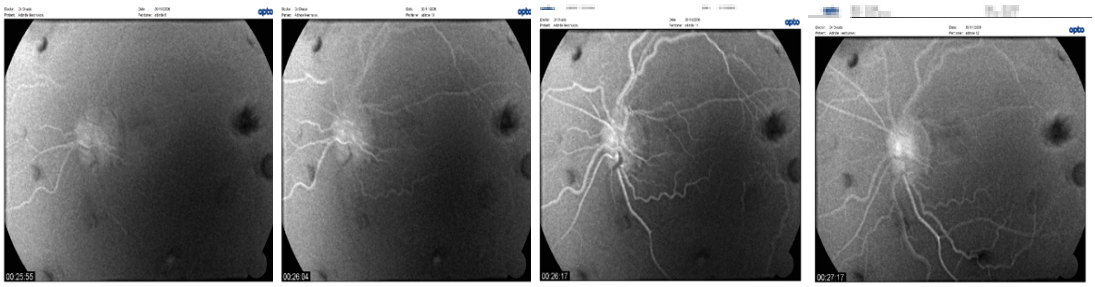

Figure 2: *Delayed fluorescein venous filling more marked intertemporally, mild venous tortuosity, no macula oedema or regions of capillary dropout.*

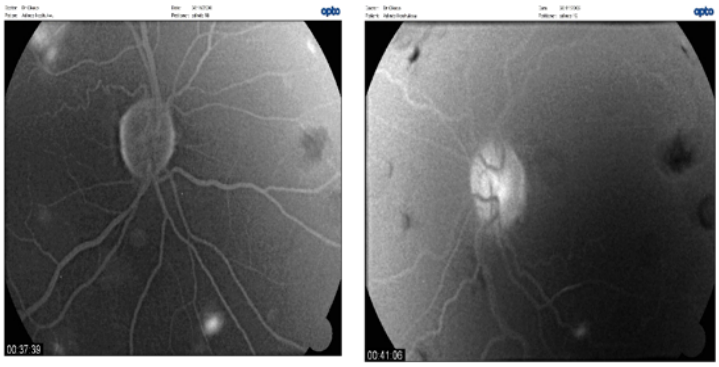

Figure 3: *Late stages of FFA showing hyperfluorescence around the optic nerve head of the left eye as compared to the right.*

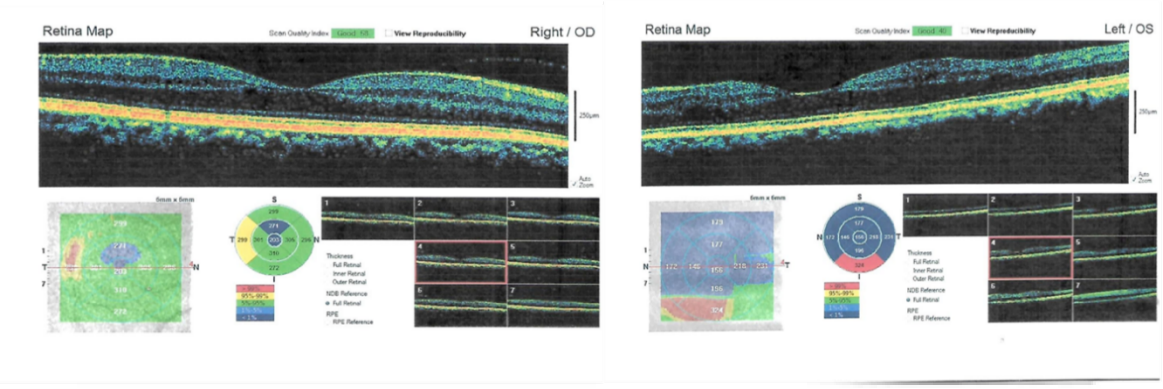

Figure 4: *Optical coherence tomography scans of both eyes. Left eye shows no macular oedema.*

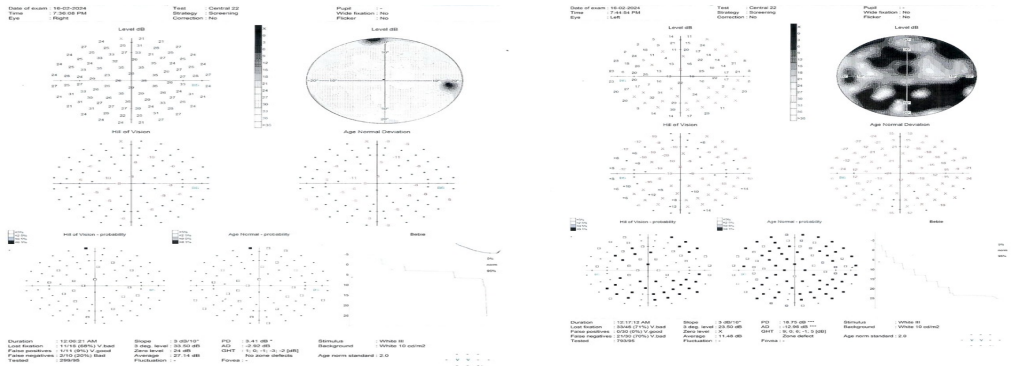

Figure 5: *Central visual field done 7 days after he presented showed barring of the blind spot, inferior altitudinal and superior paracentral, and focal defects in both superior quadrants.*

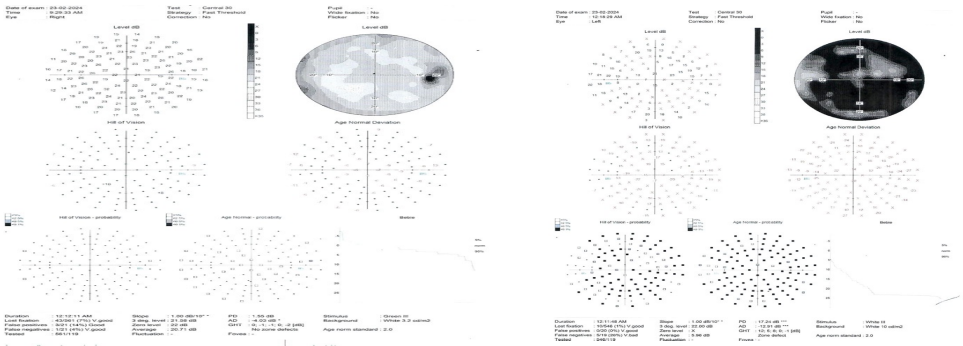

Figure 6: *Central visual field done 14 days after he presented showed barring of the blind spot, inferior altitudinal and superior paracentral, and field defects in both superior quadrants.*

Figure 7: *Central visual field done 3 months after presentation showing reduction in scotoma in the inferior and superior fields.*

Discussion: Although he had features suggestive of a central retinal vein occlusion (CRVO), these could not explain the visual acuity of 3MCF and relative afferent pupillary defect, as the features of CRVO were mild. Retrobulbar neuritis was the main cause of reduced vision because of the visual acuity, RAPD, markedly reduced light appreciation and color desaturation, leakages around the optic nerve head seen in the late stages of FFA and the great improvement on commencing intravenous methylprednisolone.

Conclusion: A high index of suspicion is required to rule out retrobulbar neuritis when it co-exists with a retinal vein occlusion that cannot account for the clinical features seen.

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Hemiretinal cone-rod dystrophy in two male siblings: an unusual presentation

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Introduction: Cone-rod dystrophies are inherited retinal disorders occurring in the first three decades of life and rarely, the fifth decade.[1,2] The prevalence is 1 in 40,000. The ABCA4 gene is the most prominent causal gene known.[3] Symptoms and signs include decreased vision, central scotomas, colour vision loss, photophobia, bone-spicule pigmentation, macular and retinal atrophy.[2-5] Typical findings include bone-spicule pigmentation, macular and retinal atrophy.[5] On multimodal imaging, characteristic electroretinography and visual field abnormalities are seen. [2,3] Hemiretinal variants of rod-cone dystrophies are relatively rare.[6]

Methods: Case reports of two male siblings with hemiretinal cone-rod dystrophy by multimodal imaging. Informed consent was obtained from the patients for this report.

Case Presentation: The first patient is an 18-year-old male who presented with diminished vision since childhood. He had used spectacles for two years with little improvement. Best corrected visual acuity for distance and near was 6/36 and N12 in both eyes. Pendular nystagmus was present. The intraocular pressure was 10 mmHg bilaterally. He had disc pallor and atrophic macula with bull's eye maculopathy bilaterally. Hyperpigmented bone-spicule changes and attenuated vessels were restricted to the inferior and nasal retina bilaterally. (Figure 1a). Fundus autofluorescence showed hypoautofluorescent patches in the inferior and nasal hemiretina and alternating hyper- and hypo-fluorescent pattern at the macula, in a bull's eye pattern (Figure 1b). Optical coherence tomography (OCT) scan revealed retinal thinning with disruption of the ellipsoid layer, typifying photoreceptor loss (Figure 1c). Central visual field showed early ring scotoma pattern, and electroretinography showed reduced amplitudes in the photopic phase, reduced extinguished response in the scotopic phase across the whole retina.

The second patient is a 16-year-old male presenting with defective vision since childhood. Best corrected visual acuity was 6/36 in both eyes. Pendular nystagmus was present. The intraocular pressure was 12 mmHg bilaterally. Pale discs, attenuated vessels, symmetrical retinal pigment epithelium atrophic changes

and pigmentation in the inferior and nasal retina were present. Atrophic elliptical macula lesions were seen (Figure 2a). Hypoautofluorescence was seen in the inferior & and nasal retina (Figure 2b). OCT revealed distorted architecture of the retinal layers, altered foveal contour, atrophy and corrugations (Figure 2c). Central visual field showed peripherally constricted fields. Electroretinography showed extinguished waves with diminished amplitudes in the photopic phase involving the whole retina. Findings were in keeping with atypical hemiretinal cone-rod dystrophy in both patients.

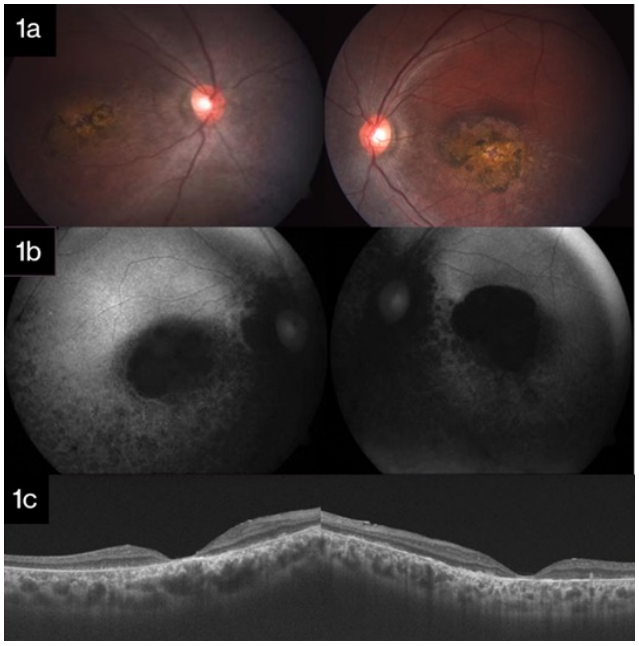

Figure 1a *shows bone spicule pigmentation in the inferior retina and atrophic maculopathy, while* ***Figure 1b*** *shows hypoautofluoresence of bone spicules and* ***Figure 1c*** *shows thinning at the fovea with loss of ellipsoid zone in the first sibling.*

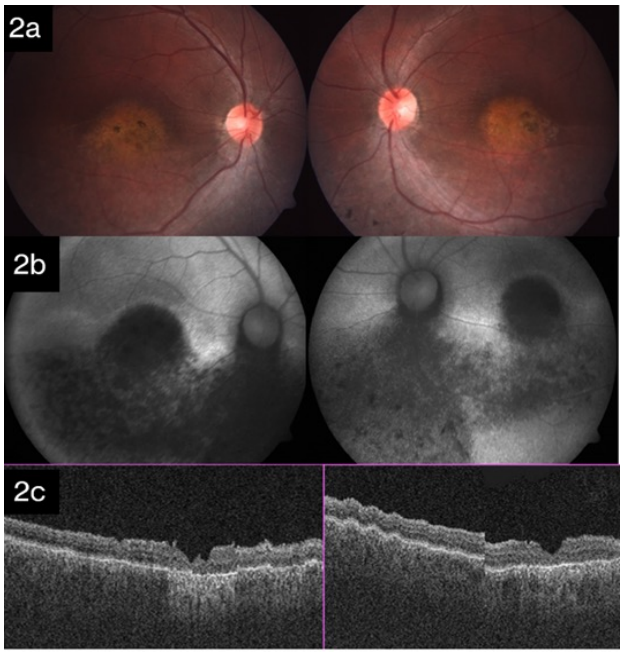

Figure 2a *shows bone spicule pigmentation in inferior retina with atrophic maculopathy, while* ***Figure 2b*** *shows hypoautofluoresence of the bone spicules in inferior retina, and* ***Figure 2c*** *shows thinning at the fovea with loss of the ellipsoid zone in the second sibling.*

Discussion: Hemiretinal cone-rod dystrophy is a rare variant of cone-rod dystrophy with few cases reported in literature. It has been reported in a seven-year-old female with a mutation at C1490Y of the ABCA4 gene.[6] Amelogenesis imperfecta with hemiretinal and bone spicule pigmentation is described in 3 families due to a mutation in CNNM 4.[7,8] The autosomal recessive form of amelanogenesis imperfecta is linked with hemiretinal cone dystrophy.[9]

Our patients had characteristic cone-rod dystrophy symptoms such as decreased vision and colour vision loss and bull's-eye maculopathy.[3,4] Electroretinography findings of cone-rod dystrophy involving the whole retina, despite signs only in the inferior and temporal retina, may be an indication of evolving or early-stage typical cone-rod dystrophy.

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Pattern of eye diseases at a tertiary hospital in Southern Nigeria

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Background: The pattern of eye diseases varies from place to place and time to time. Therefore, it is important to review the pattern periodically to monitor trends. Globally, the commonest causes of visual impairment and blindness are uncorrected refractive error, cataract, age-related macular degeneration, glaucoma and diabetic retinopathy.[1] Studies from developing countries indicate that conjunctivitis, refractive error and cataract were the commonest eye diseases encountered.[2-7] The Nigerian National Blindness and Visual Impairment Survey[8] reported that the causes of blindness were avoidable (preventable and treatable) in 84% of the cases, and glaucoma was more prevalent in the Southern and Eastern regions of the country.[9]
Objective: To determine the pattern of eye diseases among patients attending a tertiary hospital in Southern Nigeria.
Methods: A retrospective hospital-based cross-sectional study was conducted. Data was obtained from the medical records of all consecutive patients who were managed between August 2022 and July 2024 at the Ophthalmology Department of the University of Uyo Teaching Hospital, Uyo. Data extracted included age, gender, presenting visual acuity, slit lamp anterior segment examination, fundal examination and refraction. Any p-value <0.05 was significant. Ethical approval was obtained from the ethical committee of the Hospital.
Results: A total of 6,382 patients were analyzed. There were more female (56.6%) than male (43.4%) patients with a Male/Female ratio of 1:1.3. This difference between the proportions of male and female patients was statistically significant (p=0.047).
The mean age of patients was 43.5 ± 22.8 years. The largest proportion (43.7%) of the patients were aged between 41 and 65 years (Table 1).

Table 1: Sociodemographic characteristics of patients

Gender	n(%)	X^2
Male	2,769 (43.4)	P=0.047
Female	3,613 (56.6)	
Total	6,382 (100)	
Age group in years	**n(%)**	**Mean Age**
0-18	1,194 (18.7)	43.5±22.8yrs
19-40	1,499 (23.5)	
41-65	2,788 (43.7)	
>65	901 (14.1)	
Total	**6,382 (100)**	

Unilateral and bilateral blindness (Visual acuity < 3/60) were reported in 16.8% and 1.8% of patients, respectively. The commonest causes of eye diseases were glaucoma (23%), cataract (12.9%), refractive errors (12.8%) and conjunctivitis (10.7%) (Table 2).

Table 2: Causes of eye disorders

Causes of eye disorders	n(%)
Glaucoma	1,468 (23.0)
Cataract	823 (12.9)
Refractive Error	817 (12.8)
Conjunctivitis	683 (10.7)
Pterygium & Benign Ocular lesions	287 (4.5)
Trauma	262 (4.1)
Retinopathies/Retina Diseases	242 (3.8)
Normal	446 (7.0)
Others	1,354 (21.2)
Total	**6,382 (100)**

Discussion: Glaucoma was the commonest disorder in this study, in other hospital-based studies[2,10], and in a community-based study[11] in Southern Nigeria. The hype in glaucoma awareness campaigns may have contributed to this observation. Cataract, uncorrected

refractive error and conjunctivitis were the second, third and fourth commonest eye diseases observed. These three eye disorders contributed significantly to avoidable visual loss. Conjunctivitis is commoner in the younger populations [7] while presbyopia is commoner in persons above 40 years.[11] Contrary to the index study, cataract was the leading eye disorder in some other studies.[12-13] Improving the cataract surgical services with good outcomes will reduce the contribution of cataract to the burden of visual impairment and blindness.

Conclusion: Glaucoma was the major cause of eye disease in the hospital, emphasizing the need for screening and early treatment of the condition.

Keywords: Eye diseases, Southern Nigeria, tertiary hospital.

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Minimal orbicularis oculi myectomy for treatment of severe benign essential blepharospasm: a case report

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Background: Benign essential blepharospasm (BEB) is a type of dystonia that causes excessive involuntary spasms of the orbicularis oculi muscle.[1] The spasms can have a significant impact on the daily activities of patients by causing visual disturbance or functional blindness, anxiety and depression.[2] The most effective and commonly employed treatment option for BEB is the use of botulinum neurotoxin A.[2] Botulinum toxin, which is expensive and only provides temporary relief of symptoms, was unaffordable to our patient. The successful management of a case of severe BEB by minimal orbicularis oculi myectomy (MOOM) with lasting symptom relief is hereby reported.

Case Presentation: A 60-year-old woman presented to our center with the complaint of inability to open her eyes for 6 weeks due to spasm of her eyelids. This was preceded by a 7-month history of excessive blinking and increasing difficulty keeping her eyes open voluntarily and unusual sensitivity to light. The spasms were worse during the day and forced her to keep her eyelids closed for almost the entire day, with minimal relief at night. There was no associated twitching or spasm of any other part of her body. She was a known diabetic and hypertensive and on oral medication for their control.

On examination, the eyelids were tightly closed and the protractor muscles (orbicularis oculi, procerus and corrugator muscles) were spastic (Figure 1A). Attempts at manual opening of the eyelids were unsuccessful due to spasm of the eyelids. She was unable to keep her eyes open for visual acuity assessment, slit lamp examination and fundoscopy. Systemic evaluation and assessment by a neurologist revealed no other abnormality, and a diagnosis of severe benign essential blepharospasm was made.

Botulinum toxin A (BTA) injection was recommended to her. However, she was unable to afford the cost. Besides, it was not readily available in our locality. We decided to try bilateral MOOM surgery on her under local anesthesia. At surgery, after routine cleaning and draping, the eyelids were infiltrated with local anesthesia (2% lignocaine with 1:1000 adrenaline). The orbicularis muscle of the upper eyelid was exposed through a lid crease incision. A muscle strip, 8 mm wide, was excised starting from above the tarsus about 2 centimeters from the lateral canthal angle up to the superior

Figure 1: *Photograph of patient (A) At presentation showing spastic closure of her eyelids (B) At 3 weeks follow up with eyelids voluntarily opened.*

orbital rim in a diagonal direction upward and laterally (Figure 2). The strip included the orbital, septal and distal part of the pretarsal

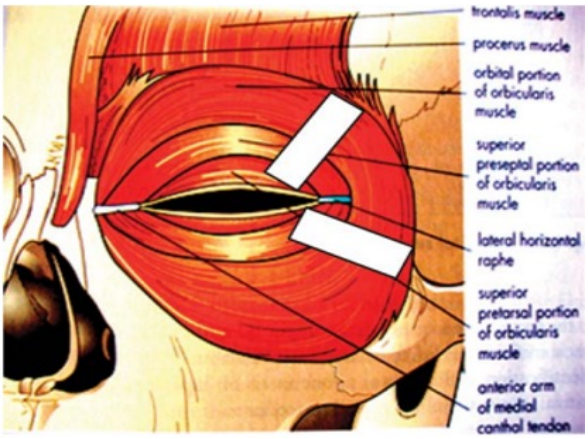

Figure 2: *Diagram showing the principle of minimal orbicularis oculi myectomy.[3] Excision of a block strip of the muscle creates a large gap in the circularly running fibers, such that when the remaining fibers contract, the lid would not close forcibly because of a break in their continuity, hence, spasm is prevented.*

orbicularis muscle. Care was taken to leave the proximal half of the pretarsal muscle intact. The lower eyelid orbicularis muscle was exposed through a sub-ciliary skin incision and an 8 mm wide strip of orbicularis muscle was excised in a similar fashion to the upper eyelid. The same procedure was done on the contralateral eyelids. Incisions were closed with 5/0 Vicryl suture in an interrupted fashion. Pressure dressings were applied for 24 hours. She was prescribed prophylactic antibiotics and anti-inflammatory/analgesic medications.

On the first post-operative day, her blepharospasm had decreased. There was eyelid oedema and ecchymosis. She was prescribed topical methylcellulose eye drops 4 times daily. At 3 weeks follow-up, the blepharospasm had significantly diminished and as well as the eyelid oedema, and she was able to open and close her eyes voluntarily (Figure 1B). Her visual acuity was 6/12 in both eyes and 6/6 with a pinhole. She had sustained significant relief from symptoms at 14 months of follow-up. The patient's consent was obtained to publish this case report.

Conclusion: Minimal orbicularis oculi myectomy was effective in providing long-term significant relief of spasms. This may be a viable option for the treatment of BEB in low-income countries like Nigeria.

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Clinical activity scores and quality of life in thyroid eye disease: a study among Nigerian patients

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Background: Thyroid eye disease (TED) is a rare, debilitating autoimmune disorder associated with orbital inflammation, pain, proptosis, diplopia, facial disfigurement and in severe cases, visual loss. Consequently, limitations in visual and psychosocial functioning could significantly impact the quality of life (QOL) of affected individuals. The clinical activity score (CAS)[1] and the European Group on Graves' Orbitopathy (EUGOGO) questionnaire [2,3] are widely used standardized assessment tools for disease severity and impact on QOL, respectively. Efforts to improve the standard of care in TED prompted the adoption of CAS & EUGOGO QOL. This study aims to utilize these tools to assess the impact of TED among Nigerian patients attending a tertiary health institution, with the goal of improving the standard of care.

Methods: A prospective cross-sectional study of all TED patients attending the Oculoplastics unit of the study tertiary centre from January 2017 to June 2024 was conducted. Data collection was done using the Clinical Activity Score (CAS) of the Graves' Orbitopathy Clinic proforma for new patients and the self-administered GO-QOL EUGOGO questionnaire (English Version). The visual functioning subscale of the GO-QOL questionnaire was used to assess the impact on activities of daily living such as driving, reading, watching TV, and mobility. The psychosocial subscale was used to assess the impact of TED in the domains of appearance changes, emotional well-being, and social functioning. Patients were categorized according to disease activity, severity, and limitations in visual and psychosocial functioning. IBM-SPSS Version 29 was used for data analysis. Ethical approval was obtained from the Institutional Health Rrsearch and Ethics Committee and informed consent was obtained from patients.

Results: Eighty-four patients (aged 17 – 76 years) were studied. There were 71 (84.5%) females. Female-to-Male ratio was 5.5:1. Diagnosis of Graves' disease (hyperthyroidism) was made in 63 (75%), euthyroid in 20 (23.8%) and hypothyroidism in 1 (1.2%). Clinical activity score revealed that 31 (36.9%) had active disease (CAS ≥3/7) and 53 (63.1%) had inactive disease. The associated soft tissue inflammatory changes are as shown in Figure 1.

Seventy-one (84.5%) had mild TED, while 2 (2.4%) had severe TED. Fifty-nine (70.2%)had mild impairment in QOL. There were limitations in visual and psychosocial functioning in 35 (41.7%) and 39 (46.4%) of the study population, respectively. The various domains of limitations are as shown in Tables 1 and 2,

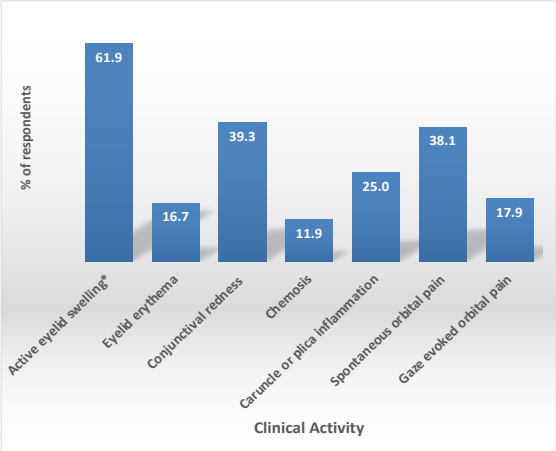

Figure 1: *Clinical activity in thyroid eye disease patients*

with reading, watching TV and hobby being the leading visual limitations, while feeling of change in appearance, being stared at in the street and avoiding photographs were the leading psycho-social limitations.

Figure 2 shows a negative correlation between CAS and QOL, represented by the visual functioning and psychosocial functioning subscales' scores.

Discussion: We observed a high prevalence of inactive disease (63.1%), though a considerable proportion (36.9%) had active disease with mild severity (84.5%). However, our findings highlight negative correlations between disease activity, as measured by CAS, and patient-reported QOL outcomes. As CAS increases, QOL deteriorates, particularly as related to the visual and psychosocial functioning of affected patients. This is comparable to the findings of earlier authors.[4,5,6] Important activities of daily living, such as reading, watching TV and being hindered from something they wanted to do, were the leading limitations in terms of visual functioning of the affected patients. Changes in appearance, feeling of being stared at in the

Table 1: Limitations in Vvisual functioning among thyroid eye disease patients

Visual limitations	Yes, seriously limited*N(84)		Yes, a little limited*N (84)		No, not at all limited	
	n	%	n	%	n	%
Driving	7	8.3	4	4.8	39	46.4
Moving around in the house	7	8.3	16	19.1	59	70.2
Walking outdoors	11	13.1	25	29.8	43	51.2
Reading	21	25.0	25	29.8	33	39.2
Watching TV	17	20.2	25	29.8	38	45.2
Hobby or pastime	13	15.5	22	26.2	44	52.4
	Yes, severely hindered		Yes, a little hindered		No, not at all hindered	
Feel hindered from something you wanted to do because of thyroid eye disease in the past week	16	19.1	26	30.9	40	7.6

**N = Total study population (84 respondents)*

Table 2: Limitations in psychosocial functioning among thyroid eye disease patients

	Yes, very much so		Yes, a little		No, not at all	
	n	%	n	%	n	%
Feel appearance changed	44	52.4	22	26.2	18	21.4
Feel being stared at in the street	33	39.3	25	29.8	25	29.8
Feel people's reaction is unpleasant	12	14.3	24	28.6	48	57.1
Influence on self-confidence	20	23.8	27	32.1	31	36.9
Feel socially isolated	17	20.2	19	22.6	47	56.0
Influence on making friends	17	20.2	11	13.1	48	57.1
Appear less often in photos	33	39.3	22	26.2	26	31.0
Masking changes in appearance	24	28.6	25	29.8	28	33.3

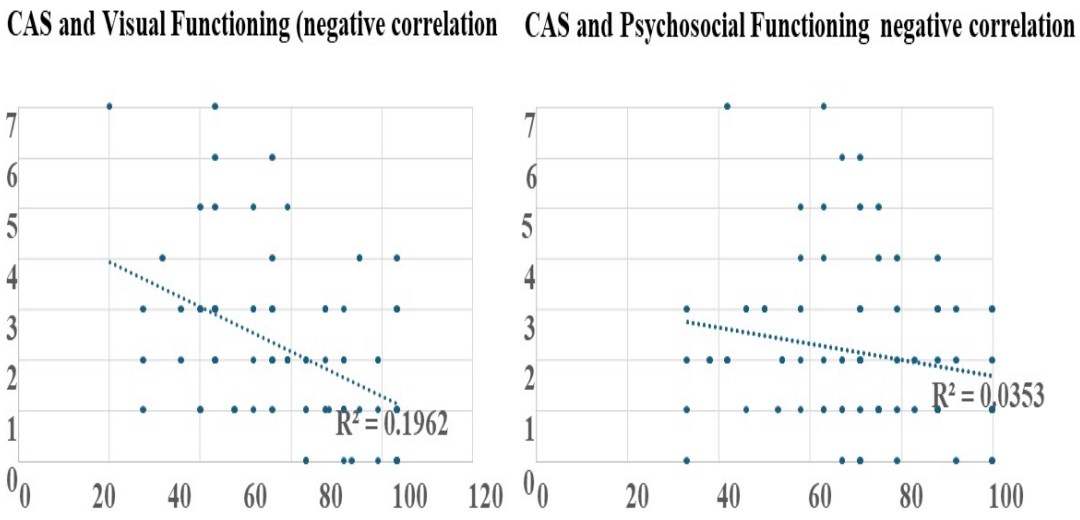

Figure 2: *Correlation between CAS and Quality of Life parameters in Thyroid Eye Disease patients*

streets, need to mask their appearance, reduced self-confidence and appearing less in photos were the leading psychosocial limitations that were very much affected, similar to the findings of Smith et al[7] and Beata et al.[8]

Conclusion: The study revealed that a significant proportion of TED patients exhibit disease activity, though a large number had mild disease. TED also exerted a considerable negative impact on QOL, as indicated by the high prevalence of visual and psychosocial dysfunction among the patients. It is recommended that physicians heighten awareness of these limitations and consider using CAS in conjunction with GO-QOL questionnaires to comprehensively evaluate and therefore improve the standard of care of TED patients.

Keywords: Clinical activity score, visual functioning, psychosocial functioning, Quality of Life, Thyroid eye disease, Thyroid orbitopathy.

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Presenting visual status of patients with corneal pathology

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Background: The cornea serves as a meniscus lens, accounting for up to three-fourths of the total optical power of the human eye.[1] Expectedly, any distortion of the cornea, even at an early stage, will profoundly impact on vision. Corneal disorders, whether infectious or non-infectious in origin, alter the corneal configuration and transparency with resultant visual deterioration and blindness in extreme cases.[2,3] Therefore, this study seeks to determine the visual status at presentation of patients with corneal diseases.

Methods: It was a retrospective hospital-based cross-sectional study in the Eye Clinic, University of Calabar Teaching Hospital (UCTH), Cross River State, Nigeria. The records of patients (≥18 years) with clinical diagnosis of any corneal pathology between January 2018 and December 2022 were retrieved. Information retrieved included demographic characteristics, presenting visual acuity and clinical diagnosis. Data obtained were analysed with STATA/IC version 15.0. The study adhered to the tenets of the Declaration of Helsinki, and ethical approval was obtained from the Institutional Review Board of UCTH.

Results: A total of 462 patients with clinical diagnosis of various corneal diseases involving 498 eyes were identified. The patients' mean age was 41.9±15.1 years, and the male-to-female ratio was 1.6:1. Patients aged 21 to 40 years accounted for 238 (51.3%) of the study population. Only one-fifth 99 (20.0%) of eyes presented with normal vision. The remaining four-fifths presented with vision impairment (VI); slightly over half, 256 eyes (51.4%) presented blind, while 43 (8.6%) eyes had mild VI (Figure 1). Infectious keratitis was the predominant primary disease, accounting for 258 (51.8%) eyes. Most (68.0%) of cases of infectious keratitis were preceded by trauma from vegetative matter.

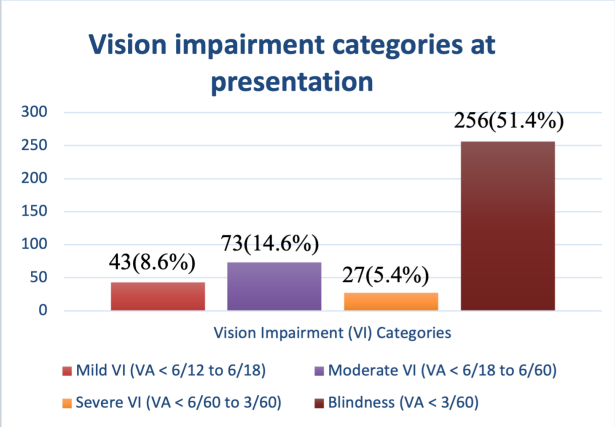

***Figure 1:** Vision impairment categories at presentation*

Conclusion: Corneal diseases grievously distort vision, with most (51.4%) presenting blind. Unfortunately, the young adult male segment of the population, which accounts for the most productive workforce of any economy, is predominantly afflicted. Infectious keratitis, a largely avoidable cause of blindness, is the most implicated.

The foregoing is quite worrisome as corneal diseases may constitute a snag towards achieving critical Sustainable Development Goals (SDG 1-3, 5, 8, 10, 11). The resultant vision impairment can lead to decreased access to decent work, hinder inclusion and pose a threat to long-term health and wellbeing. Correspondingly, a recent report by the International Labour Organization (ILO) and the International Agency for the Prevention of

Blindness (IAPB) highlighted that eye health significantly affects labour: people with vision impairment are 30% less likely to be employed and productive compared to those without.[4] This underscores the need for coordinated global, national and regional eye health initiatives towards eliminating corneal blinding conditions.

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Comparison of arclight loupe Vs traditional direct ophthalmoscope in evaluation of corneal epithelial defects by General practitioners: a proposal synopsis

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Background: Corneal blindness is the 5th, 4th and 3rd leading cause of blindness globally, in Sub-Saharan Africa and Nigeria, respectively.[1-3] Globally, corneal epithelial defects (CEDs), particularly corneal ulcers, constitute the major cause of corneal blindness.[4] Regrettably, under-resourced areas and low- and middle-income countries (LMICs) with the least capacity to manage corneal lesions bear the greatest burden.[4] Therefore, in order to encourage timely diagnosis of CEDs, the use of the +10 dioptre lens of the traditional direct ophthalmoscope (TDO) along with fluorescein dye has been advocated for use by non-ophthalmologists in the evaluation of suspected corneal lesions.[5] Unfortunately, TDO use by non-ophthalmologists, including the general practitioners (GPs), the first-line physicians, is grossly limited. TDO skills deficiency, its bulk, relatively high cost, and sophistication are largely implicated.[6] Arclight Loupe (AL), a portable, relatively low-cost and less sophisticated multipurpose diagnostic tool consisting of an anterior segment loupe, ophthalmoscope and otoscope, offers a reliable alternative to TDO.[7] However, its utility in CEDs by GPs has not been assessed.

Objective: To compare the utility of AL vs TDO in the clinical examination of corneal epithelial defects by GPs.

Methods: A comparative cross-sectional study shall be undertaken. The study shall adhere to the tenets of the Declaration of Helsinki, and ethical approval shall be obtained from the Institutional Review Board of the University of Calabar Teaching Hospital, Calabar. Ten (10) TDO-exposed GPs will be recruited, trained and subsequently randomly assigned into two groups of 5 GPs each (group 1 & group 2). A cross-over design will be utilised in which group

1 uses the Arclight (Figures 1 and 2) first and subsequently the TDO, while group 2 will use the instruments in the reverse order.
Study subjects (CED+ve vs CED-ve) shall be consecutively recruited and independently examined by the GPs. Three experienced Ophthalmologists (SL1-3) shall work together examining each consecutive subject with the Slit Lamp to establish the CED parameters (presence/location/shape/size/depth) as the "reference standard".

Figure 1: *The Arclight direct ophthalmoscope with selected features highlighted.*[7]

Figure 2: *Anterior segment loupe: blue light and fluorescein to highlight corneal ulcer ©Terry Cooper. Source: Kousha O., Blaikie A. The Arclight and how to use it. Comm Eye Health 2019; 32 (107): 50-51.*

This study will compare the Arclight loupe to the Welch Allyn 11720-VC ophthalmoscope in terms of four measures: (1) accuracy of CED parameters (compared against the "reference standard"), (2) ease of examination (EOE) for the examiners (GPs) using a score of 1–8, (3) ease of use (EOU) for the examiners (GPs) using a score of 1–5, (4) ocular comfort level (OCL) as determine by the level of glare experienced by the subject using a score of 1–4, and (5) length of examination (LOE) as determined by the subject's perceived duration of the assessment using a score of 1–4.

Results: Data obtained shall be entered and appropriately analysed with STATA/IC version 15.0.

Conclusion: The prospective utility in the diagnosis of corneal epithelial defects using AL compared to TDO among GPs in our environment shall be objectively ascertained.

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Early steroid responders post pterygium surgery: case series of adult patients in a tertiary hospital in Nigeria

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Introduction: Intraocular pressure (IOP) elevation can occur with the use of ocular and systemic steroids, particularly among steroid responders. Topical steroids are used to reduce post-operative inflammation following pterygium surgery. About 30-40% of adults are steroid responders[1], and such a response may occur as early as three weeks postoperatively. The mechanism of IOP elevation results from increased aqueous outflow resistance due to morphological changes in the trabecular meshwork.[2] An elevated IOP of a high magnitude and duration may damage the optic nerve and result in visual field loss. Our report aims to increase awareness among ophthalmologists regarding the occurrence of early intraocular pressure elevation in patients on topical steroid therapy following pterygium surgery.

Materials and Methods: This was a single-centre study that evaluated three patients who underwent unilateral pterygium excision and conjunctival autograft at the University of Calabar Teaching Hospital, Calabar, during a one-month period (April-May 2024). Data collected from patient charts included age, gender, date of surgery, number of follow-up visits, IOP measurements in both eyes and past ocular history. Postoperatively, all patients received topical antibiotics (ciprofloxacin eyedrops 3 times a day) and steroid drops (dexamethasone eye drops 4 times a day). Postoperative follow-up visits were at day 1, one week, three months, and six months after surgery. Ocular examination and IOP measurements (using the Goldmann applanation tonometer) were performed at each visit.

Results: A total of 6 eyes of 3 patients were studied. Their ages were 51 years, 44 years and 60 years respectively; two of them were females. The patients' demographic and clinical data are presented in Table 1. Table 2 shows the IOP measurements before and after pterygium surgery. All six eyes had normal IOP (10- 11 mmHg) preoperatively. The 3 operated eyes all had elevated IOP during the post-operative period, with the peak IOP ranging from 20 -30 mmHg.

Discussion: Steroid responders are individuals who experience an IOP rise in the setting of glucocorticoid use. The timeline over which the IOP rise may occur depends on the potency of the steroid, dose and route of administration.[3] In our study, the IOP measurements were similar between both eyes in three patients pre-operatively. However, an increase in the IOP of greater than 6 mmHg was noticed on the first postoperative day in all three patients, necessitating the addition of a topical IOP-lowering medication to their medication regimen. This finding corroborates the study done by Toseafa et al [4] in Ghana, who reported steroid-induced hypertension as a common complication of pterygium excision. Similarly, Wu et al [5] reported the probability of experiencing elevated IOP after pterygium excision among Africans to be 10.91% at 1 week, 16.6% at 1

Table 1: Sociodemographic and ocular history of pterygium surgery patients

PARTICIPANTS	Patient 1	Patient 2	Patient 3
Age(years)	51	44	60
Gender	Female	Female	Male
Race	Africa	Africa	Africa
Family history of Glaucoma	No	No	Yes(First degree relative)
History of POAG*	No	No	Yes
Use of eye medication before surgery	No	No	Yes (Daily Gutt latanoprost both eyes nocte)
Grade of pterygium	III	III	III

**POAG- Primary open-angle glaucoma*

Table 2: Intraocular pressure profile of patients who had unilateral pterygium excision with conjunctival autograft.

	Patient 1		Patient 2		Patient 3	
EYE	RIGHT EYE (operated eye)	LEFT EYE	RIGHT EYE	LEFT EYE (operated eye)	RIGHT EYE (operated eye)	LEFT EYE
Preoperative IOP# (mmHG)	11	10	10	11	10	10
1st day postoperative IOP#	17	12	11	19	**20***	10
1 week post-op IOP#	22	12	11	16	20	10
2 weeks post-op IOP#	20	12	11	**21***	15	10
1-month post-op IOP #	**30***	12	11	15	15	10
3 months post-op IOP#	15	15	10	10	8	10
6 months post-op IOP	11	10	9	11	10	10

#IOP - Intraocular pressure
**Highest IOP measured post-operatively*
Note: *Intraocular pressure measurements were all taken between 8 am -11 am using Goldmann applanation Tonometer*

month, and 34.8% at three months, respectively.

Conclusion: We advocate close IOP monitoring after pterygium excision to enable early detection of steroid responders and timely intervention with IOP-lowering medications.

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COMMUNITY OPHTHALMOLOGY

Challenges of managing rare ophthalmic cases in a resource-poor setting

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Background: Managing ophthalmic cases not seen routinely is fraught with numerous challenges, including non-adherence to investigations, treatment and follow-up. Such challenges are often related to economic constraints and poor information.
Objective: To highlight problems of managing special ophthalmic cases in a resource-poor setting.
Case Reports: Three cases are described. Informed consent for publication was obtained from each patient/ caregiver.
Case I: One-day-old male, born with bilateral upper eyelid eversion and swelling; left eyelid had reverted before presentation. Examination showed a healthy new-born with eversion of the right upper eyelid, chemosis, mild discharge, and mild left lid ecchymosis. A diagnosis of congenital ectropion was made. Tobramycin eye drops and ointment were administered, and the eye was padded with hypertonic saline-impregnated gauze. Mother declined admission due to poor family support and defaulted from follow-up.
Case II: Fourteen-year-old boy with an 11-month history of double vision on lifting and lowering his chin, absent on covering either eye. He reported that images appeared one on top of the other, with mild pain on upgaze; there was a history of previous left blunt ocular trauma. Left ocular examination showed enophthalmos, limitation of elevation and positive forced duction test. The intraocular pressure difference between the primary position and upgaze was 2 mmHg and 6 mmHg on the right and left, respectively. A diagnosis of restrictive ocular motility disorder, possibly Inferior rectus muscle entrapment/fibrosis, was made. Father declined orbital computed tomography scan due to cost and defaulted.
Case III: A two-year-old with a 1-month history of white reflex in the left eye. There was left hazy cornea and leukocoria with normal findings in the right eye. A diagnosis of retinoblastoma was made. Mother was counselled about management, including enucleation, but she defaulted and returned a year later with a protruding fungating left eye mass, right leukocoria and masses on the head. Exenteration was done, he received a course of chemotherapy, defaulted from follow-up and subsequently died at home.
Discussion: These cases highlight challenges of managing relatively uncommon cases in a resource-poor setting, including late presentation, which could be related to ignorance and misinformation in society and limited access to accurate information.[1,2] It is important to scale up activities that promote awareness of eye care among the public in order to improve eye care-seeking behaviour. Another factor is delay in diagnosis, which may be due to poor knowledge among health workers, multiple second opinions and inadequate diagnostic facilities. Nwosu, Okoye and Ulasi[3] bemoaned the adverse consequences of delayed diagnosis of retinoblastoma by health workers. The establishment of a robust primary eye care system and good referral pathways are likely to promote timely diagnosis. Ignorance, poor information, and misconceptions could affect patients' responses to their disease management.[4] Eyecare professionals must dedicate time and resources to counselling and support of patients with these conditions.
Economic factors are barriers to utilising eye care services by patients.[5–9] Rare cases often require specialised, expensive care, with patients paying out of pocket. Expanding coverage of the National Health Insurance Scheme is likely to be beneficial. Active social welfare services and telephone calls could

improve patients' adherence, as was reported by Kizor-Akaraiwe[10] for glaucoma patients during the COVID-19 lockdown.

Conclusion: Financial constraints, ignorance and loss to follow-up hamper management of patients. Education on early presentation and adherence to management plans is vital.

Conflict of interest: The authors declare no conflict of interest

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Community utilization of ophthalmic services: Assessment of Agbowa rural community, Lagos State, Nigeria

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Background: Eye health is a public health concern. Community-based ophthalmic services aim to bring eye care to the people's doorsteps, particularly rural dwellers who are often deprived of essential health care.[1,2] The World Health Organization (WHO) and the International Agency for the Prevention of Blindness (IAPB) promote Integrated Primary Eye Care (IPEC) within existing primary health systems to facilitate eye services delivery.[3,4] Studies have, however, revealed that even where available, community utilization sometimes remains poor.[5,6] Most studies have focused on interviewing people in rural communities to assess their use of eye care services and the barriers they face.[7,8] However, very limited

studies within the study environment have assessed ophthalmic services utilization at the base primary eye care centers. This study aims to assess ophthalmic service utilization at a rural community, determine the prevalence of ocular diseases and identify gaps in service delivery with the goal of suggesting measures for improved and sustainable service.

Methods: A retrospective cross-sectional study was conducted. The study duration was February 2021 (from the inception of the IPEC) to December 2023. All eye clinic attendees in this agro-based (farming and fishing) community were included. Data on demographics, ocular diseases, medical, optical and surgical interventions were obtained from the eye clinic, refraction clinics, and operating theatre records. Data analysis was done using IBM SPSS version 29. Ethical approval was obtained from Ikosi–Ejirin Local Council Development Area and Institutional Health Research and Ethics Committee.

Results: There were 1,102 patient visits, with 735 (66.7%) as new cases. Age ranged from 4 months to 88 years (mean 47.29 ± 22.78 years). Females constituted 54.3%. Utilization of ophthalmic services was most prevalent among females (54.3%); patients in the presbyopic age range, 40-49 years (17.6%); older adults aged 60-69 years (15.7%); and middle-aged 50-59 years (15.1%) (Table 1).

Table 1: Age distribution and frequency of clinic attendance (new and follow-up visits)

Age (in years)	New cases	Follow-up	Total	Test statistics
0 - 9	59 (78.7)	16(21.3)	75 (6.8)	X^2 = 41.520
10 - 19	95 (76.0)	30 (24.0)	125 (11.3)	p = **<0.001**
20 - 29	49 (77.8)	14 (22.2)	63 (5.7)	
30 - 39	60 (64.5)	33 (35.5)	93 (8.4)	
40 - 49	145 (74.7)	49 (25.3)	194 (17.6)	
50 - 59	113 (68.1)	53 (31.9)	166 (15.1)	
60 - 69	98 (56.6)	75 (43.4)	173 (15.7)	
70 - 79	79 (53.7)	68 (46.3)	147 (13.3)	
80 and above	37 (56.1)	29 (43.9)	66 (6.0)	
Total	**735 (66.7%)**	**367 (33.3)**	**1102 (100.0)**	

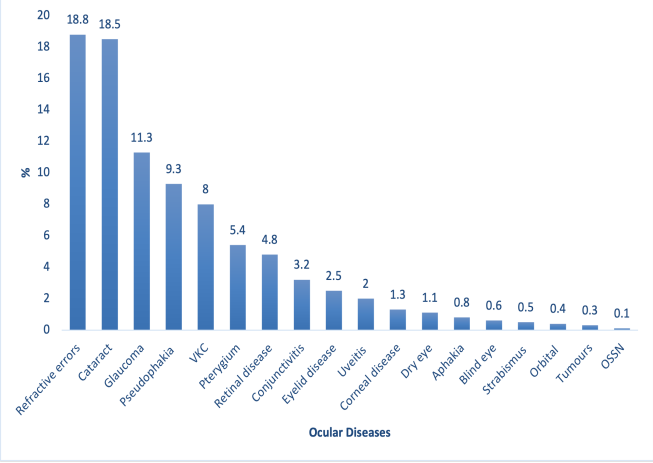

Figure 1: *Prevalence of ocular diseases at the integrated primary eye care centre*
**VKC vernal keratoconjunctivitis*

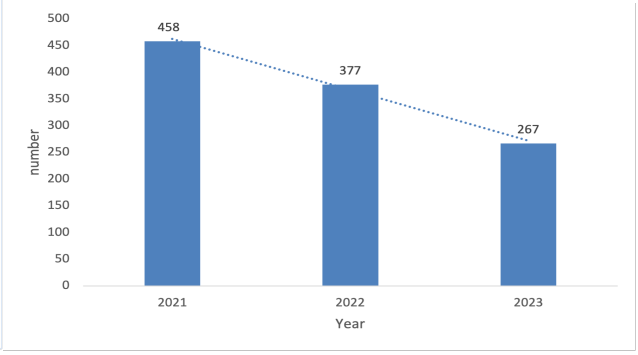

Figure 2: *Yearly clinic attendance at the integrated primary eye care centre*

Follow-up visits were more frequent among patients aged 40 years and above (Table 1). Prevalent ocular diseases (Figure 1) were uncorrected refractive errors (18.8%), cataracts (18.5%), glaucoma (11.3%), vernal conjunctivitis (8.0%), and pterygium (5.4%). A total of 401 (36.4%) individuals benefited from refractive error services, predominantly middle-aged patients in the 4th (28.4%) and 5th decades (18.0%), as well as adolescents aged 11-20 years (17.0%), while 99 (8.9%) had surgery. Figure 2 shows a fall in yearly attendance from 458 to 267 cases - a 17.4% decline in service utilization. Declines in surgical uptake (51.6%) and refraction services (27.4%) were also recorded.

Discussion: In this study, an initial satisfactory ophthalmic service utilization was reported. Females, middle-aged, elderly and adolescents utilized the services more, similar to previous studies[8,9], probably because they are more domiciled in the community. All age groups reported appreciable initial service uptake, followed later by poor uptake similar to an earlier study.[10] The community needs for presbyopic correction, age-related cataract, refractive errors, glaucoma, pterygium, and allergic conjunctivitis are comparable to earlier studies.[11-13] Major identifiable gaps were a decline in ophthalmic, surgical and refractive services uptake. Barriers to clinic utilization may be accessibility, affordability, lack of eye health education, personnel and infrastructure deficiencies. [7,14-16]

Conclusion: Ophthalmic services, though well utilized at inception, suffered a significant decline over the following years. Efforts to improve service utilization and sustainability, such as reinforced community awareness outreach and school eye health programs, are recommended.

Keywords: community utilization, integrated primary eye care, ophthalmic services, rural eye care

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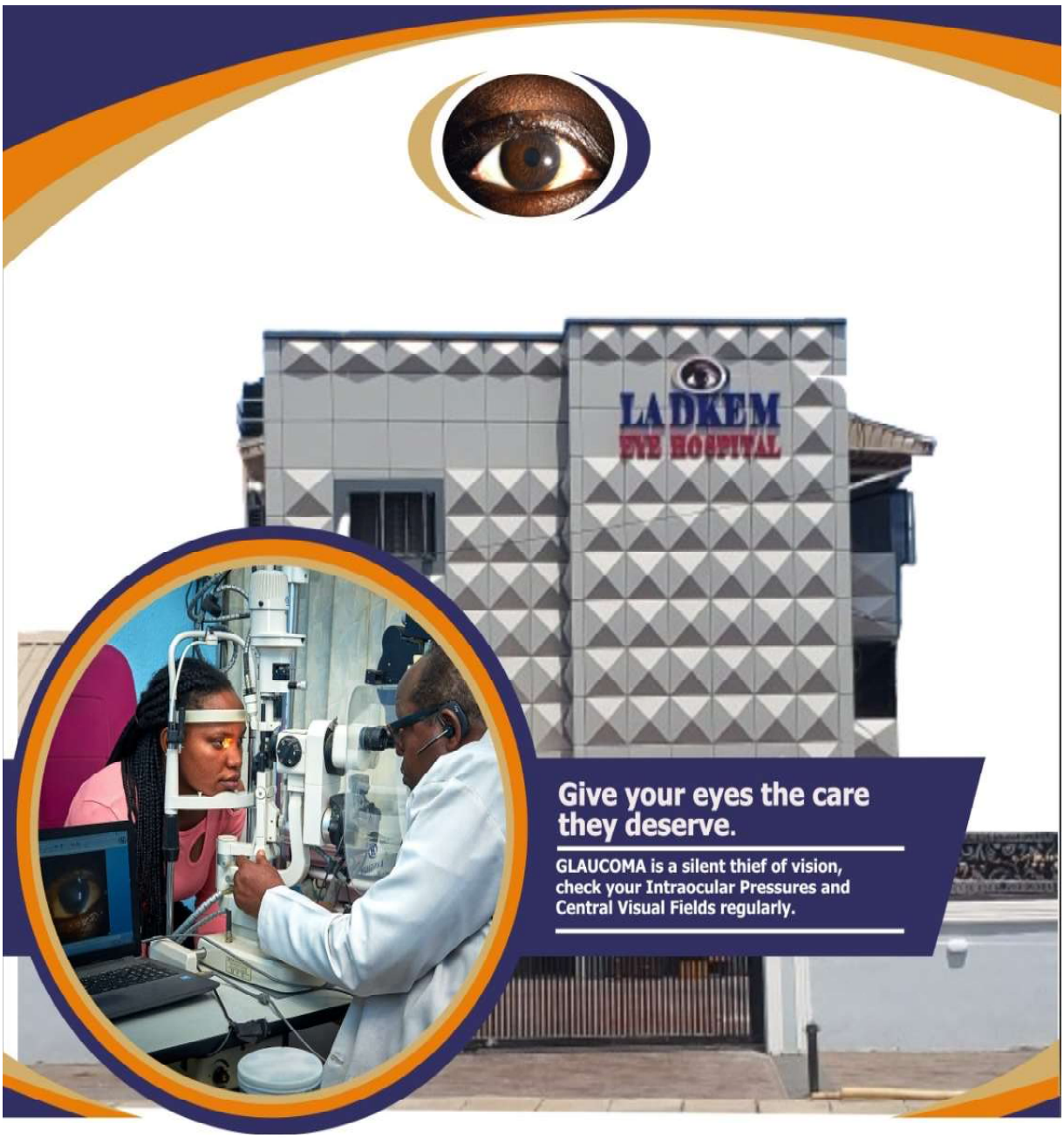

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