

LIVED EXPERIENCES OF GLAUCOMA PATIENTS AND GLAUCOMA SECONDARY PREVENTION IN NIGERIA: A QUALITATIVE APPROACH

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Abstract

Due to its destructive and sneaky character, glaucoma can rapidly become complicated without anybody noticing. High patient loads and a shortage of healthcare staff may make the current patient education strategies employed in the majority of hospitals unsustainable because they mostly rely on direct communication with healthcare providers. Therefore, there is a need to assess the live experiences of the patients in order to provide them with the best therapeutic health care and counselling. This study assessed the secondary prevention of glaucoma among patients attending eye clinic at Federal Medical Center (FMC), Abeokuta, Ogun State, Nigeria. This study adopted qualitative research design. The population was 40 glaucoma patients in FMC Abeokuta. Data were collected in eight focus group discussions, and were thematically analysed. Four themes emerged from the analysis: Knowledge of glaucoma, Lived experiences of the glaucoma patients, Health seeking patterns, and Preventive measures. In conclusion, there are insights into the significant life burden that glaucoma patients endure and the factors that impact their ability to manage their health. Misconceptions about the disease and inadequate medication administration methods highlighted inadequate counseling. It is recommended that community-level education on the secondary prevention of glaucoma should be given equal weight to support dietary changes, environmental factors that contribute to emergence of glaucoma.

Keywords: Glaucoma, Glaucoma Secondary Prevention, Medication Administration, Patients.

INTRODUCTION

Glaucoma is a major public health problem and is one of the leading causes of blindness worldwide. Even though the number of persons afflicted by primary open angle glaucoma varies, Afolabi (2018) stated that it was anticipated that by 2010, there would be 60.5 million people globally who have glaucoma, with that figure rising to 79.6 million by 2020. Glaucoma is a common cause of blindness and is typically assumed to start after the age of 40 (forty) years (Bankole et al, 2020; Adewunmi, 2019; World Health Organization, 2018).

The primary open angle glaucoma (POAG), which accounts for up to 74.0% of all glaucoma cases, is one of the most common types (Drew, 2018; Godson-Amamoo, 2017). The quality of life for many people all around the world is significantly impacted by POAG (Bankole et al, 2020).

The World Health Organization (WHO) emphasizes the importance of early detection and management to reduce the prevalence of blindness caused by glaucoma. Secondary prevention, which involves monitoring and managing the condition to prevent further deterioration, is crucial (WH, 2020).

Developing countries face significant challenges in managing glaucoma due to limited healthcare resources, lack of awareness, and inadequate access to eye care services (Adeoti et al., 2021). Over 70 million people worldwide suffer from glaucoma, with Africa and Latin America and the Caribbean having the highest and second highest rates of glaucoma cases, respectively (Ogunleye et al., 2021; WHO, 2018). According to recent predictions, the number of people with glaucoma will rise to 76 million by 2020 and 111.8 million by 2040 as a result of the increasingly aging world population (WHO, 2020).

The continent of Africa is predicted to have the highest increase, with a projected doubling in the number of glaucoma patients. Glaucoma is and will be a serious public health concern due to the huge rise in the predicted number of glaucoma cases over the course of the next several decades (Bankole et al, 2020; Bankole, 2022). The lack of regular eye check-ups and limited access to specialized eye care exacerbate the problem in Africa including Nigeria.

Christian et al. (2024) asserted that Nigeria with its vast population and diverse healthcare needs, faces numerous challenges in providing adequate eye care services. According to Mathiba, Landela and Metsing (2024), glaucoma is the primary cause of irreversible blindness worldwide and the second major cause of blindness in Nigeria.

The primary method of treating glaucoma in Nigeria is medication-based intraocular pressure (IOP) reduction because patients frequently refuse to undergo filtration surgery (Allison et al, 2020). In order to attain goal IOPs and prevent disease progression and visual loss in patients, it is essential that patients take their glaucoma medications consistently as directed by their doctors (Onakoya & Mbadugha, 2019).

The Federal Medical Centre in Abeokuta serves as a crucial healthcare facility for residents of Ogun State and neighboring regions. The eye clinic at FMC Abeokuta is actively involved in the diagnosis, treatment, and management of glaucoma.

Despite the efforts of such institutions, the burden of glaucoma remains high due to factors such as limited healthcare infrastructure, shortage of trained healthcare professionals, and economic constraints. However, the high patient load and limited resources often necessitate innovative approaches to patient education and self-management (Bankole et al, 2020)

The most common form of glaucoma in people of African heritage is open angle glaucoma, which manifests earlier and advances more quickly in this population (Osayamwen & Amosu, 2020). Ages 40 and older in Nigeria have a prevalence of 5.02% (95% CI 4.60% to 5.47%), with open-angle glaucoma accounting for 86% and angle closure glaucoma for 14% of cases respectively (Kyari et al, 2015).

Eight percent of cases of glaucoma are secondary. Open-angle glaucoma typically progresses without any noticeable symptoms and first impairs peripheral vision. As a result, many affected people go untreated, only presenting themselves when the disease has already advanced considerably to the point where it is affecting the central vision. Therefore, glaucoma prevention and management suffer from late presentation (Bankole et al, 2020).

It has been established in so many empirical studies that community health nurses equally performed some significant roles in the prevention of glaucoma (Bello et al., 2023; Bankole et al., 2020). One of the methods for timely detection and treatment is by having regular eye screening during adulthood made possible with awareness of glaucoma (Bello et al., 2023; Durowade et al., 2016). Awareness about glaucoma, glaucoma risk factors and prevention has been shown to reduce the chance of functional disability and vision loss (Adewoye et al., 2019).

However, there are no standard guidelines for glaucoma case detection, prevention and management in Nigeria. The clinicians and community health nurses depend on random recurrent opportunistic screening and treatment. In addition, patients pay out of pocket for health care services. The resultant effect is a poorly coordinated treatment, management and follow-up among glaucoma patients which can lead to poorer outcome. Several Nigerian studies have shown that the proportion of glaucoma patients who present late account for a third to half of the total patients attending the glaucoma clinic (Adewoye et al., 2019) with exponentially increase when visual field assessment values are included in its definition.

Government and NGOs have been actively involved in the community eye outreach (CEO) in order to reduce the prevalence of glaucoma among Nigerians (Bello et al., 2023). The community eye outreach (CEO) is one of the practical eye screening models launched to provide eye care screening services in underserved communities, following the global initiative of Vision 2020.

This global initiative had a mandate to eliminate needless blindness by the year 2020 (Adewoye et al, 2019). Although, the eye outreach screening model has been used mainly to deliver cataract surgical services (Onyia et al, 2022), it has also been relevant in glaucoma screening services of high-risk groups (Durowade et al., 2016). These outreach screenings offer opportunities to diagnose glaucoma in its asymptomatic stage (Bello et al., 2023).

Based on the limitations of previous studies, this study aims to find out the lived experiences of glaucoma patients in times knowledge and secondary prevention of glaucoma at the eye clinic, Federal Medical Center Abeokuta, Ogun State, Nigeria.

MATERIALS AND METHODS

Research Design: This study adopted a qualitative approach. It explores and looks for answers to an issue related to lived experiences of glaucoma patients and glaucoma secondary prevention in Nigeria. It is both anchored on positivism, which is a method that relies on existing theory to establish truths and knowledge, and interpretivism, which makes use of the principles and methods of interpretation in its research.

Population: The target population for this study were the patients that have commenced diagnosis and treatment at the eye clinic of the Federal Medical Centre Abeokuta, Ogun State. Federal Medical Centre (FMC) Abeokuta have between 57 and 81 new cases of eyes problem on a monthly basis. Records at the hospital between 2021 and April 30, 2024 revealed a total of 7411 patients with eyes problems.

Sample and Sampling Technique: Thirty (30) patients with glaucoma problem were conveniently recruited for the qualitative study. Here, the researcher assembles a group of individuals to discuss a specific topic, aiming to draw from the complex personal experiences, beliefs, perceptions and attitudes of the participants through a moderated interaction (Tobias et al., 2018).

Instrumentation: The interview guide was adopted from previous qualitative research works of Hyeon et al. (2024), Obasuyi et al. (2024), and Kyari et al. (2016). The interview guide consisted of five (5) semi-structured questions. The interview guide gathered demographic characteristic from the patients (i.e., participants age, education level, financial strength) and other varied characteristics.

Throughout the entire process of an interview from the beginning to the end of the interview, the researcher excluded the researcher's subjective viewpoint or prejudice through 'suspending judgment.' In addition, the researcher will make continuous efforts to understand the essential nature of the participants' experiences through open-ended questions.

Method of Data Collection: An introductory letter was obtained from Babcock University post graduate school to Federal Medical Centre (FMC) Abeokuta in order to gain permission to conduct the study. The researcher made an arrangement with the Medical Director about the period for data collection. The consent of the participants were obtained and the structured test paper was used to collect data in person from the participants. Interview was conducted on the focused group of the glaucoma patients in their different phases in varied demographic characteristics at the selected facility.

Method of Data Analysis: Data analysis of the participants in the focus group discussion (FGD) was explored using answers to the interview guide questions transcribed and content analysis done using ATLAS version 9

Ethical Consideration: Ethical approval for this study was obtained from Babcock University Health Research Ethics Committee (BUHREC). A Letter of introduction will be presented to Federal Medical Centre (FMC) Abeokuta, the prospective participants were fully informed about the nature of the study and that their participation is voluntary. The ethical principle of respect for persons, beneficence, non-maleficence and justice was employed. Participants' anonymity was ensured. Participants were encouraged to ask questions while all questions were answered with all sincerity. The outcome of the research will benefit the participants and Federal Medical Centre (FMC) Abeokuta regarding how to adequately helped the glaucoma patients on the self-management of their ailment.

RESULTS

The participants' socio-demographic information. In the 3-focus group discussion (qualitative report), majority (53.3%) of the participants were female while the remaining 14 (46.7%) were males. It was found that 8 (26.7%) of the participants aged 31-40 years, in which 21 (70%) were Yoruba. The educational status of the participants revealed that the majority 12 (40%) had secondary education. The table further revealed that 19 (63.3%) were being diagnosed for their sight health related issues about 3 years and above; and 17 (56.7%) said they were living with other chronic illnesses like high blood pressure, diabetes, and so on

Table 1: Themes and Subthemes on the live experience of people living with glaucoma on its secondary prevention

Themes	Sub-Themes
Knowledge of glaucoma	Awareness
	Causes
	Symptoms
History	Family history
	Challenges
	Improved health
Health Seeking Patterns	Medication adherence
	Timely visits to clinics
Preventive measures	Resources available
	Strategies available

Table 1 describes the analysis of live experience of people living with glaucoma on its secondary prevention into themes and subthemes such as;

Theme 1: Knowledge of glaucoma

Glaucoma patients' knowledge of glaucoma was the first theme that emanated from this study. The participants expressed their knowledge of the subject matter through three subthemes namely: awareness, causes and symptoms. Hereunder are some of the excerpts from the respondents on their awareness, causes and symptoms of glaucoma:

"Mm, glaucoma from the little knowledge I've got for the past years now is damage as in maybe weakening, some weakening of the vein of the eyes that, the vein that hit sites". -

Respondent G

The nerves, yes, the nerves that hit the site of the, of the vision of an eye. So as little I know of it and then, I was told, made to know that it has pressures too. So the pressure is what I do come to check from time to time, to know that my pressure is still between the range that is manageable, that, at least, it's not deteriorating. It may not be able to, to be better off, but at least it can be arrested at a stage. - **Respondent K**

Well, I don't know much about it medically speaking since it's not my field, what I know very well is the common phrase that "prevention is better than cure" because the damages that it might have caused upon detection cannot be reversed and it can only be prevented from getting worse or it's progression. I know it's a medical illness that can cause blindness if not detected early. - **Respondent N**

*I was told that it doesn't have a cure but it can be managed. The treatment will be done to make sure progression is stopped and prevent spread to damaged eye. **Respondent O***

*Yes. The, the symptoms I observed is that I was having blurry vision and difficulties in reading the letterings that are small, most especially on my phone and on textbooks to be precise because it doesn't affect anything from afar. Even people by myself won't know that I'm having any high challenges if I didn't tell them that I, that I have glaucoma and it's just when I want to read something that has a small lettering. **Respondent F***

*The first time was when we discovered my mum had glaucoma, she also didn't voice out early until one eye wasn't seeing properly anymore, she also insisted on not using glasses. When I learnt about mine alongside the counseling was what made me know that it's better to prevent it and also helped me to know that people like me that have glaucoma should bring my children regularly for check up every 6 months. **Respondent R***

I don't even know the cause of glaucoma, so definitely I don't know how it could be prevented. And to manage, I'm only aware of how glaucoma could be managed, which is the application of some drops and the usage of glasses to reduce the stress level of the nerves of the eye. - **Respondent T**

There's a lot of expenses involved in glaucoma management. It is very money intensive. And sometimes that discourages you from getting new medications. There was a time there was high pressure in my eyes. I was using Xalatan then, other medications were added and I was spending a lot. Sometimes I would get an appointment to come in next 3 months but will come after 5 months because I want to buy the drugs first. But as time went on, the pressure reduced. It's still a lot but I am managing. - **Respondent D**

Since I was told it can only be managed and cannot be cured, I use the prescribed drugs. And some herbal drugs too, ehn it is actually some leaves that I rub on my face. I can't

actually remember the name of the leaves because I stopped using it since I came to the hospital. - Respondent H

Theme 2: Lived experiences (Experience due to the symptoms of glaucoma)

Living with glaucoma can involve experiencing gradual vision loss, particularly in the peripheral vision, often leading to difficulties with daily activities like driving, reading, navigating unfamiliar spaces, and potentially causing feelings of anxiety and isolation due to the gradual nature of the condition and the need for consistent eye drops and monitoring; people with glaucoma may also notice blurry vision, halos around lights, and increased sensitivity to glare, significantly impacting their quality of life. Therefore, the participants shared the lived experiences as thus:

My vision is reducing, especially my right eye. As I am sitted before you, I cannot see clearly at all. Everything looks dark but I can see clearly with my left eye. I can see far things with my right eye but not clearly. - Respondent M

I just observed that reading some things from my phones became somehow tiring as in I don't, I feel why, why am I not seeing very well? And I went to complain to that effect. So the doctor served me and recommended I go for a checkup at FMC Abeokuta here, which I did, and they recommended the glasses for me, which is how, how, what is it called, for both reading and for me to work normally. - Respondent C

So I collected the glasses, got it back to the office and I told them that I expected to see improvements in my, in my sight after I started using this glasses and the eye drops that they have recommended. But instead, it's like it's getting more, even more blurrier than I expected. They now said yes, yeah, that's my glasses is bifocal. They don't expect me to read, I mean to even work without the glasses. So that also gave me some kind of, ah, so I'll always be working with glasses. Thank God for God I can still work without glasses but they just want me to, to reduce the stress of the eye. - Respondent A

I was used to sunshades as a fashion accessory but I started noticing before 2020, I started feeling pain in the lower part of my eyes, as if my eyes have been exposed to water for a significant while. So when I wanted to buy another sunshade, I told the person and he told me to go to hospital and said that delay is dangerous. I don't play with my health so I immediately came to the ophthalmologist. - Respondent K

There's a lot of expenses involved in glaucoma management. It is very money intensive. And sometimes that discourages you from getting new medications. There was a time there was high pressure in my eyes. I was using Xalatan then, other medications were added and I was spending a lot. Sometimes I would get an appointment to come in next 3 months but will come after 5 months because I want to buy the drugs first. But as time went on, the pressure reduced. It's still a lot but I am managing. - Respondent D

Some of the challenges I'm having again is that the procedure, the procedure of getting the code from the HMOs are always tiring. It takes many hours before you get the code and after getting the code, go for authorization again. Still like about—today I got to FMC

around eight, before I could leave the HMO department, I left there around 10:30, which is about 2 and half hours and I even have to write a mail to my HMO to fast track that and I still spent like two, two and a half, two and a half hours. - **Respondent Q**

I once believed that the cost of treatment is high (because generally — I would like to generalize it because I shouldn't say because I'm getting some more) I'm privileged to have HMO because HMO still carries some of my own costs. Now I put myself in the position of those that don't even have the opportunity. So I know that it's a cost as it is cost effective. The high drugs that we using are of high price. So I wonder how the common man will need to so, those are the challenges that I know. - **Respondent F**

On this aspect, as I've said, I can't say that it's not eating to my cost because some of these eye drops now—even, I just had a discussion with the doctor I'm coming from now that somewhere the eye drops are sold for 13,000, thereabouts, 14,000. And I can still try and afford this, and this price now will now give you some kind of a constraint from buying or from keeping to the timeframe of the eye drops because the eye drops are to last you for a 30 days period of a month. - **Respondent J**

I used to be able to read things very well but all of a sudden, I realized changes in my sight, I wasn't able to see wide fonts, I was straining my eyes a lot and even with that, I found it difficult to see well still. Another thing is I started scratching my eyes a lot and I just felt very uncomfortable. It got to a point in time where I noticed that anytime I was outside in the sun, I could not see anything on my phone no matter how much I increased the brightness. I would have to ask someone near to look at whatever it was on my phone to tell me. **Respondent X**

Actually for now, I can't say it really impacted me, but I have some fear for my old age, and that's the aspect where I feel disturbed every time I have the mindset that I'm not in a glaucoma because I, and that is why I try as much as possible to make sure that I give it all it takes because I pray it doesn't deteriorate when old age sets in. - **Respondent E**

Yeah, it had impact. After the diagnosis, I, I rarely went out because the pain, you know, was, we were still in the phase of trying to control the pressure. So I, because I couldn't sleep, I rarely went out and I was irritable. You know, I just wanted to be on my own, and then I took a leave from work. **Respondent G**

Theme 3: Health-seeking Behaviour (Medication Adherence and Consistency with appointments)

This section assess the view and opinion of the respondents on what they do when they have a health issue especially eyes problems in relation to glaucoma and want to find a solution. It includes going to a healthcare provider and/or using/adhering to medication. The excerpts are shown hereunder,

Due to the nature work I do, I can't say I'm consistent with my appointments, but the medication — besides the appointment that I've been given is not for, is not that is a, is just come for checkup to see the pressure of the eye. - **Respondent D**

But due to the nature of my work, I sometimes miss the opportunity of having appointments and meeting up with the appointment time. But thank God whenever I have the time and I can reschedule my appointment, they do the checking of the pressure, so the pressure is still at the expected range. - Respondent Q

Theme 4: Preventive measures (Resources and strategies available)

Preventive measure is an action taken to prevent the glaucoma patients from losing their vision or going blind. In this case, it involved the resources and strategies made available by the healthcare facilities to promote their knowledge of prevention of glaucoma.

Yes, I have been given pamphlets. I gained, it helped me. It has really assisted me, I didn't read everything on the pamphlet, but the little I read has educated me more. It also encouraged me.

No, I haven't used any self-instructional materials for managing your glaucoma

Let me say I didn't really concentrate on reading them (pamphlets).

No, I don't use any self-instructional materials for managing your glaucoma

No, I do not have the opportunity to see or have any self-instructional materials for managing your glaucoma

Not at all, I don't think it is available

DISCUSSION OF FINDING

The outcome of this study on the general knowledge of participants reveal poor knowledge. This equally reflected in their live experiences due to the symptoms of glaucoma, medication adherence and consistency with appointments why.

The poor knowledge of glaucoma observed among the participants of this study is in line with the previous study of Bankole et al. (2020) who stated that a barrier to self-management was the difficulty with the proper administration of drops by patients due to lack of requisite knowledge about the diseases.

Also, Aina et al (2019) who examined knowledge of glaucoma management among glaucoma patients on medical therapy in a tertiary hospital found out that only 18(10%) of the patients had a good knowledge of the purpose of glaucoma treatment, and less than half (48.3%) of the participants could recall the names of their anti-glaucoma medications.

Comparatively, this study is in line with the report of Bankole et al (2020) and Sotirios et al. (2016) in glaucoma patients in Greece on medication adherence and effective eye drop instillation, the results showed that individuals with lower levels of knowledge were less likely to adhere to medication instructions and skilful on eye drop instillation compared to those that were highly informed and trained by medical practitioners themselves.

Living with glaucoma can involve experiencing gradual vision loss, particularly in the peripheral vision, often leading to difficulties with daily activities like driving, reading, navigating unfamiliar spaces, and potentially causing feelings of anxiety and isolation due to the gradual nature of the condition and the need for consistent eye drops and monitoring; people with glaucoma may also notice blurry vision, halos around lights, and increased sensitivity to glare, significantly impacting their quality of life.

Additionally, the outcome of this study revealed the mixed report of health-seeking behaviour among the glaucoma patients most especially in terms of medication adherence and consistency with appointments.

This is line with the poor adherence barriers observed in the previous studies of Newman-Casey et al (2015) and Singh et al (2024), which were categorized as patient factors (forgetfulness, motivation, comorbidity), provider factors (poor communication or dissatisfaction with drops), situational/environmental factors (lack of support, travel, major life events), and medication regimen factors (regarding refill, cost, and/or side effects). This results also revealed the preventive and management measures the glaucoma patients self-utilized.

These include medication, often in the form of eye drops, being the first-line treatment. Regular eye exams, adherence to prescribed treatments, and lifestyle adjustments in the secondary prevention of the condition and prevention of vision loss. This in tandem with the findings of Kio et al (2020) that higher intake of fruit, vegetables, may be associated with decreased odds of glaucoma in healthy subjects.

CONCLUSION AND RECOMMENDATION

This study came to the conclusion that there are insights into the significant life burden that glaucoma patients endure and the factors that impact their ability to manage their health. Misconceptions about the disease and inadequate medication administration methods highlighted inadequate counseling.

Detailed demonstrations of eyes drop instillation and connecting medication administration to everyday tasks like eating, bathing, sleeping, and exercise should be an essential counselling components during their visitation to the hospitals. Additionally, glaucoma patients require better education, which could be enhanced through the use of cue cards.

Therefore, it is determined that in order to maximize adherence behavior toward glaucoma secondary prevention, more customized and group tactics are needed. It is therefore, recommended that community-level education on the secondary prevention of glaucoma should be given equal weight to support dietary changes, environmental factors that contribute to emergence of glaucoma.

References

- 1) Adeoti, C. O., E. A. Abioye Kuteyi, B. V. Olomola, & O. Adejumo. (2021). Awareness of Glaucoma in Olorunda Local Government Area, Osogbo, Osun State, Nigeria". *Ophthalmology Research: An International Journal* 14 (2):34-40. <https://doi.org/10.9734/or/2021/v14i230190>.
- 2) Adewoye, R.K., Ibrahim, T., Aremu, S.K., Alao, T.A., Adeniyi, M.A. and Bakare, A. (2019) Prevalence, Awareness and Factors Associated with Glaucoma in a Rural Community of Ekiti State, South West Nigeria. *Open Journal of Ophthalmology*, **9**, 18-27. <https://doi.org/10.4236/ojoph.2019.91003>
- 3) Adewumi, B., Adewoye, K., Aremu, S., Ipinnimo, T., Salawu, I., & Orewole, T., (2019) *Awareness and Practice of Proper Health Seeking Behaviour and Determinant of Self-Medication among Physicians and Nurses in a Tertiary Hospital in Southwest Nigeria*. *Open Journal of Epidemiology*, 36-49. ISSN 2165-7467
- 4) Afolabi, O., Mabuza-Hocquet, F., Nelwamondo, F., & Babu S. (2021). The use of U-Net Lite and Extreme Gradient Boost (XGB) for glaucoma detection. *IEEE Access*, 9, 47411- 47424
- 5) Aina, A., Olawoye, O., Oluleye, T., Uyanne, I & Aina, I (2019). Knowledge of glaucoma management among glaucoma patients on medical therapy in a tertiary hospital. *Afr. J. Med. Med. Sci.* (2019) 48, 77-83
- 6) Allison K, Patel D, Alabi O. Epidemiology of Glaucoma: The Past, Present, and Predictions for the Future. *Cureus*. 2020 Nov 24;12(11): e11686. doi: 10.7759/cureus.11686. PMID: 33391921; PMCID: PMC7769798.
- 7) Bankole, M. A., Kio, J., & Ayodele, K. O. (2020). Nurse led intervention on the self-management of glaucoma among patients at federal medical center Idi Aba, Abeokuta, Ogun State, Nigeria. *International Journal of Research in Medical Sciences*, 8(7), 2568–2574. <https://doi.org/10.18203/2320-6012.ijrms20202897>
- 8) Bello SU, Eze UA, Umar MM, Abdull M, Babalola OE. (2023). Economic burden of glaucoma in Nigeria: Estimating the direct health care cost in a tertiary eye clinic. *Niger J Ophthalmol* 2023; 31:25-31.
- 9) Christian B-N, Shomuyiwa DO, Christian NG, Umoette NR. (2024) Integrating eye care into primary healthcare in Nigeria: Challenges of the primary healthcare workforce. *Public Health Chall.* 2024;3: e191. <https://doi.org/10.1002/puh2.191>
- 10) Durowade, K.A., Salaudeen, A.G., Akande, T.M., Musa, I.O., Olokoba, L.B., Ibrahim, T., *et al.* (2016) Prevalence and Risk Factors of Glaucoma among Adults in Rural and Urban Communities of Ilorin West Local Government Area, North-Central Nigeria. *International Journal of Clinical Medicine Research*, **3**, 6-12
- 11) Godson-Amamoo, (2017). Knowledge and perception of patients of children living with congenital glaucoma at Komfo Anokye Teaching Hospital, Ghana. The University of Ghana, Master of Public Health Degree
- 12) Kyari, F., Chandler, C., Martin, M. & Gilbert, C. (2016) So let me find my way, whatever it will cost me, rather than leaving myself in darkness: experiences of glaucoma in Nigeria. *Global Health Action*, 9:1, 31886, DOI: 10.3402/gha.v9.31886
- 13) Mathiba MC, Landela LK, Metsing TI. Glaucoma knowledge and attitudes among diagnosed participants at a Vhembe clinic, South Africa. *Afr Vision Eye Health*. 2024;83(1), a935. <https://doi.org/10.4102/aveh.v83i1.935>
- 14) Newman-Casey PA, RobinAL, Blachley T, Farris K, Heisler M, Resnicow K, *et al.* (2015). The Most common barriers to glaucoma medication adherence: A cross-sectional survey. *Ophthalmology*; 122:1308-16.

- 15) Obasuyi OC, Yeye-Agba OO, Ofuadarho OJ (2024) Factors limiting glaucoma care among glaucoma patients in Nigeria: A scoping review. *PLOS Glob Public Health* 4(1): e0002488. <https://doi.org/10.1371/journal.pgph.0002488>
- 16) Ogunleye, O., Olawoye, O., Sirimaye, T. & Ashaye A. (2021). The effect of direct health education on the uptake of screening by first degree relatives of glaucoma patients in Nigeria. *Journal of Glaucoma*, <http://dx.doi.org/10.1097/IJG.0000000000001769>
- 17) Onakoya AO & Mbadugha CA. (2019). Self-reported adherence rates in glaucoma patients in Southwest Nigeria. *J Clin Sci*; 13:51-7.
- 18) Onyia, O., Achigbu, E., Ejiafor, I., Uche, N., Chinemerem, U., Ogbonnaya, C., ... Bascaran, C. (2022). Risk factors for late presentation among glaucoma patients attending three referral hospitals in South-East Nigeria: case-control study. *Cogent Public Health*, 9(1). <https://doi.org/10.1080/27707571.2022.2125533>
- 19) Osayamwen, O. & Amosu, A. (2020). Prevalence of refractive errors and intention to use prescription glasses regularly among secondary school students in Ogijo Community, Ogun State, Nigeria. *Journal of the Nigerian Optometric Association*, 22(1): 4 - 13. <https://dx.doi.org/10.4314/jnoa.v22i1.3>
- 20) Singh K, Singh A, Jain D, & Verma V. (2024). Factors affecting adherence to glaucoma medication: Patient perspective from North India. *Indian J Ophthalmol*, 72:391-6.
- 21) World Health Organisation (WHO). (2019). World Report on Vision. CC BY-NC-SA 3.0. Retrieved November 18, 2018, from <https://www.iapb.org/wp-content/uploads/world-vision-report-accessible1.pdf>
- 22) World Health Organisation. (2018) Priority Eye Diseases. In WHO. Blindness and Visual Impairment Prevention. <https://www.who.int/blindness/causes/priority/en/index6.html>