



PROTOCOL **Efficacy of probiotics in the treatment of acute infectious diarrhoeal disease in African children: A protocol for systematic review and meta-analysis**
Alao Michael A, Adebayo Bosedede E, Oladokun Regina E, Ademola Adebowale D, Ogunbosi Babatunde O, Akindolire Abimbola A, et al

ORIGINAL RESEARCH **Dysglycaemia and Clinical Outcomes in Under-Five Children with Severe Acute Malnutrition at the Federal Teaching Hospital, Birnin Kebbi**
Falaye Monsurat A, Tahir Ali A, Abubakar Mansur, Lawal Teslim

Prevalence and Clinical Effects of Inappropriate Antidiuresis Syndrome in Children Hospitalised for Pneumonia at a Tertiary Health Facility in Nigeria
Hamzah Abdullateef, Ibraheem Rasheedat M, Katibi Oludolapo S, Ibrahim Tajudeen L, Sanusi Ibraheem, Aliu Rasaki

Spectrum of Paediatric Cardiac Diseases in a private echocardiography facility in Makurdi, North Central, Nigeria
Abah Rose O, Ochoga Martha O, Abdallah Ramatu J

Pediatric Vision Screening: School-Based Approach to Identify Childhood Eye Disease and Visual Impairment.
Adejumo Olubusayo O, Adeoti Caroline O, Olomola Bolanle V, Ubah Josephine N, Hassan Mustapha B, Olaopa Adedolapo O, et al

Microbiological profile, Antibiotic Susceptibility Pattern of Isolates and Outcome of Paediatric Parapneumonic Effusion in a Tertiary Facility, North-Western Nigeria
Abubakar Fatima I, Mohammed Yahaya, Ukwuani Solomon, Ahmed Hadiza K, Mikailu Abubakar J, Idrees Rufai A

Trends in Childhood Deaths in Lagos, Nigeria: An Autopsy Study
Soyemi Sunday S, Onayemi Oluwaseye O, Oluwatunbi Joy O, Mgbehoma Alban I, Sanni Daniel A, Oyewole Olugbenga O, Faduyile Francis A, Obafunwa John O

Orofacial Burkitt's Lymphoma: A 15-Year (2007-2021) Retrospective Review in a Nigerian Tertiary Hospital
Adefehinti Olufemi, Agboola Oluwatimilehin J, Fatusi Olawunmi A

CASE REPORT **Post Lightning-Strike Psychogenic Non-Epileptic Seizure: A Case Report**
Okafor Amarachukwu F, Ekekwe Nkechi, Enwereji Ngozi U, Chukwudi Ndubisi K, Ukpabi Ihuoma K

Retained Plastibell Device Following Neonatal Circumcision: A Case Report and Literature Review
Chisor-Wabali, Egbuchilem, Ijah Rex FOA

Unusual Presentation of Ewing sarcoma in a Black Adolescent: A Case Report and Literature Review
Urom Kelechi O, Chukwu Bartholomew F, Olusina Daniel B, Iloanusi Nneka I, Onuh Augustine C, Okezie Juliet G, et al.



Nigerian Journal of Paediatrics 20XX; Volume 52(4):338-345.

<https://dx.doi.org/10.63270/njp.v52i4.2000034>.

Paediatric Vision Screening: A School-Based Approach to Identification of Childhood Eye Diseases and Visual Impairment

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Abstract

Background: Despite evidence of the developmental and educational importance of good vision, childhood eye health continues to receive inadequate attention within Nigeria's preventive health framework.

Objective: To identify childhood eye disease and visual impairment through paediatric vision screening among school children in Southwest Nigeria.

Methods: A multi-stage random sampling technique was used to select and screen 364 pupils for visual impairment from a total of 300, 690 pupils aged 4–17years attending government-owned preschool, primary, and junior secondary schools in a city in Southwest Nigeria. They all had ophthalmic evaluation using distance Snellen visual acuity chart, pen torches, loupe magnifier and direct ophthalmoscope.

Results: Out of the 364 pupils, 45.3% were males while 54.7% were females. The mean age was 9.2±0.65 years. Respondents aged 6-10 years formed 57.1% of the cohort. The prevalence of eye disorders was 27.8% while the commonest cause of eye disorder was refractive error (46.6%), followed by allergic conjunctivitis (39.6%).

Conclusion: The commonest cause of eye disorders in this study is treatable. There is a need for regular school screening to ensure early identification of this treatable cause to avoid needless visual impairment that could impair learning.

Keywords: *Allergic conjunctivitis, Childhood blindness, Eye disorders, Paediatric Vision Screening, Refractive errors, Visual Impairment.*

Introduction

Vision plays a fundamental role in a child's cognitive, emotional, and social development, with nearly 80–85% of classroom learning dependent on sight.¹ Early detection of eye

disorders is therefore central to improving educational outcomes and overall quality of life. Paediatric vision screening is a systematic process of identifying children aged 0–17 years who have ocular or visual abnormalities that may interfere

Paediatric Vision Screening: A School-Based Approach to Identification of Childhood Eye Diseases and Visual Impairment

with normal visual development or learning.² Screening may be conducted in schools or community settings, providing an efficient and accessible means to detect and correct visual impairment early. Evidence suggests that regular screening can reduce the risk of permanent vision loss by more than 50% when performed before the age of seven.³

Globally, childhood visual impairment remains a significant public health challenge.^{3,4} According to the World Health Organisation, approximately 1.44 million children are blind and over 22 million experience moderate to severe visual impairment, the majority of which are preventable or treatable.⁴ Among these, uncorrected refractive errors account for more than 60% of cases, followed by amblyopia and allergic eye diseases. The World Health Organisation defines visual impairment as presenting visual acuity of less than 6/18 in the better eye. Amblyopia, also known as "lazy eye," refers to reduced best-corrected visual acuity not caused by structural abnormalities of the eye and becomes increasingly resistant to treatment after about nine years of age. Early identification through screening is therefore critical to prevent irreversible deficits during the sensitive period of visual development.⁵

Visual health in childhood is closely linked to educational performance, psychological well-being, and long-term productivity. Children with uncorrected visual problems often struggle with reading, writing, and classroom engagement, leading to lower academic achievement and impaired confidence.⁶ These difficulties can have broader socioeconomic implications, including reduced learning potential, dependency in adulthood, and financial strain on families and communities. In many low- and middle-income countries where access to eye care services is limited, integrating vision screening into school health programs offers a cost-effective approach

to ensuring that children with correctable visual problems receive timely intervention.⁷ In sub-Saharan Africa, the prevalence of visual impairment among school-aged children is estimated to range between 5% and 30%, yet access to diagnostic and corrective care remains poor.⁸ Rural–urban disparities, lack of awareness, and a shortage of trained eye care personnel contribute to the underdiagnosis and undertreatment of visual disorders in children.^{1,8} Studies from Kenya and Ghana indicate that most affected children had never undergone an eye examination before school-based screening interventions.^{9,10} In Nigeria, although the National Eye Health Policy and School Health Programme recommend integrating vision screening into primary eye care, implementation remains inconsistent due to weak health systems, limited funding, and insufficient collaboration between the education and health sectors.¹¹

Despite evidence of the developmental and educational importance of good vision, childhood eye health continues to receive inadequate attention within Nigeria's preventive health framework.¹² Large segments of the school-aged population, especially those in public schools, remain unscreened, leading to undetected and untreated visual disorders.^{11,12} The scarcity of recent epidemiological data from southwest Nigeria further limits the development of targeted interventions and the evaluation of existing eye health programs.¹³

Therefore, this study was designed to address key questions regarding the prevalence and causes of visual impairment and eye disorders among school-aged children in a city in southwest Nigeria, and to determine whether these conditions vary by demographic characteristics such as age and gender. The objective of this study was to determine the prevalence and causes of childhood eye diseases and visual impairment through school-based paediatric vision screening,

and to provide timely treatment for those with correctable disorders.

Methods

Study design

A community-based, cross-sectional, observational study design was used.

Sampling technique

A multi-stage random sampling technique was used to select 364 pupils from a total of 300,690 pupils aged 4–17 years attending government-owned preschool, primary, and junior secondary schools in a city in Osogbo, southwest Nigeria.

Study populations

The respondents were pupils and students from preschools, primary and junior secondary schools in Osogbo, the state capital of Osun State, southwest Nigeria.

Sample size determination

The total population of students attending government-owned preschools, primary, and junior schools in Osun State at the time of study was 300,690. The minimum sample size was determined using Leslie–Fisher's formula for estimating a single proportion, which is valid for sample sizes greater than 10,000.

$$N = z^2pq/d^2$$

Where n = minimum sample size, z = standard normal deviate, set at 1.96 and corresponds to 95% confidence interval, p = prevalence of visual impairment among school children in Ibadan, Oyo State, southwest Nigeria (29.4%).²³

$q = 1 - p$, d = precision determined as 0.05.

Therefore, the calculated minimum sample size was 351 following an addition of 10% for non-response.

However, a total of 364 pupils were available for screening and were thus screened.

Ethical considerations

Ethical principles for medical research involving human subjects were duly followed. Ethical approval for the study was obtained from the Health Research Ethics Committee (OSHREC) of the Osun State Ministry of Health (OSHREC/PRS/569T/1029), and written approval to carry out the study was obtained from the Osun State Universal Basic Education Board (SUBEB). Written informed consent was obtained from parents or guardians before the screening day.

Data collection

A total of 364 children attending the preschool, primary, and junior secondary schools in Osogbo were screened during the 2024 World Sight Day. A structured vision screening proforma was used as the data collection instrument. The proforma was adapted from the World Health Organisation/International Agency for the Prevention of Blindness (WHO/IAPB) School Eye Health Screening template, which is a recognised standard tool for paediatric eye screening. It captured sociodemographic details, ocular symptoms, and clinical findings, ensuring structured and comparable data collection. The instrument was pretested among 20 pupils in a neighbouring school not included in the study to evaluate clarity, consistency, and feasibility. Its content validity was reviewed and confirmed by two consultant paediatric ophthalmologists before implementation.

Children whose parents or guardians consented were brought to the screening venue by the designated schoolteacher from each school. A comprehensive ocular examination was carried out by a team of Consultant Ophthalmologists, resident ophthalmic trainees, Optometrists and Ophthalmic nurses. Their socio-demographics and symptoms of eye problems were noted. Monocular distant visual acuity with the Snellen distant chart was assessed at 6 meters for the

Paediatric Vision Screening: A School-Based Approach to Identification of Childhood Eye Diseases and Visual Impairment

primary and junior school children. At the same time, the E-chart and Lea symbols were employed for preschool-aged children. Children with visual acuity worse than 6/9 in any eye or whose visual acuity improves with Pin Hole (PH) in any eye had refraction done. The anterior segments of the children were examined with pen torches and a loupe magnifier. The posterior segments were examined thereafter with a direct ophthalmoscope. Each child's sociodemographic characteristics and ocular symptoms were recorded, and the findings were documented on the standardised pro forma. Children diagnosed with eye disorders requiring further evaluation or treatment were referred to the nearest tertiary eye hospital for appropriate care.

Data analysis and management

The data were double-checked and analyzed in SPSS version 25 using descriptive statistics. Inferential statistics was done using the Chi-square test to determine the statistical significance of any observed relationships between categorical variables. P-value below 0.05 was considered statistically significant.

Results

A total of 364 pupils were screened from preschool, primary and junior secondary schools. The demographic distribution of the study population is shown in Table I. There were 165 males (45.3%) and 199 females (54.7%) with an overall male-to-female ratio of 1:1.2. The age range was 4 years to 17 years with the mean of 9.2 ± 0.65 years. Respondents aged 6-10 years constituted the bulk of the population (57.1%). The majority of respondents were in primary school (46.4%). Only 16.2% of the respondents' mothers had a tertiary level of education.

Table I: Sociodemographic characteristics of participants (n = 364)

Variables	Frequency	Percentage	
Gender	Male	165	45.3
	Female	199	54.7
Age (years)	0-5	15	4.1
	6-10	208	57.1
	11-15	117	32.1
	16-17	24	6.7
Class	KG 1- Nursery	33	9.1
	Primary 1- Primary 6	169	46.4
	JSS1- JSS3	114	31.3
	SS1-SS3	48	13.2
Religion	Christian	113	31.0
	Muslim	239	65.7
	Traditional	12	3.3
Ethnicity	Yoruba	324	89.0
	Hausa	11	3.0
	Igbo	13	3.6
	Others	16	4.4
Father's Educational Status	No formal education	32	8.8
	Primary education	62	17.0
	Secondary education	194	53.3
	Tertiary education	76	20.9
Mother's Educational Status	No formal education	41	11.3
	Primary education	66	18.1
	Secondary education	198	54.4
	Tertiary education	59	16.2

Many of the children had difficulty seeing the board (54.1%), and some had headaches while reading (44.2%). Many respondents (61.3%) also complained of itchy eyes. Only 5.2% of the children had ever used spectacles (Table II).

Table II: Symptoms of Eye diseases among children

Symptoms	Frequency (n = 364)	Percentage (%)
Difficulty in seeing the board?	197	54.1
Difficulty in reading books or seeing near?	171	47.0
Headache while reading	161	44.2
Eye discharge	148	40.7
Eye itching	223	61.3
Red eyes	198	54.4
Have you used glasses before?	19	5.2

Presenting visual acuity of worse than 6/18 was recorded in the better eye of 46 (12.6%) children, while 85 (23.2%) of the children had presenting visual acuity less than 6/9 in the better eye. Among these children, 19 (5.2%) had a presenting visual acuity of worse than 6/60 in the better eye (Table III).

A total of 101 pupils (27.8%) had eye disorders, with the majority of having refractive errors (46.6%), followed by allergic conjunctivitis (39.6%) (Table IV). One of the cases of corneal opacity was a male with ocular trauma sustained from a pencil prick while in school. There was no statistically significant association between presence of eye disorders and age ($p = 0.301$) as well as presence of eye disorders and sex ($p = 0.157$) (Table V).

Table III: Presenting Visual Acuity in the better eye of 364 children

Visual acuity	Frequency	Percentage
$\geq 6/9$	279	76.7
$< 6/9-6/18$	39	10.7
$< 6/18-6/60$	27	7.4
$< 6/60-3/60$	13	3.6
$< 3/60$	6	1.6
Total	364	100.0

Table IV: Identified eye disorders (n = 101)

Ocular	Frequency	Percentage
Refractive error	47	46.6
Allergic/Vernal conjunctivitis	40	39.6
Cornea opacity	2	2.0
Cataract	2	2.0
Oculocutaneous albinism	2	2.0
Lid sinus	1	0.95
Optic atrophy	1	0.95
Pseudophakia	2	2.0
Posterior Segment Disorders	2	2.0
Chalazion	1	0.95
Stye	1	0.95

Table V: Occurrence of eye disorders by age and sex

Variable	Eye disorders		Chi-Square	p-value
	Yes n = 101	No n = 263		
Age (years)				
0-5	3 (3.0)	12 (4.5)	8.426	0.301
6-10	52 (51.5)	156 (59.3)		
11-15	39 (38.6)	78 (29.7)		
16-17	7 (6.9)	17 (6.5)		
Sex				
Male	52 (51.5)	113 (43.0)	10.592	0.157
Female	49 (48.5)	150 (57.0)		

Discussion

Children constitute about 45% of the Nigerian population, with approximately 15–20% falling within the 5–15-year age group.¹⁸ School children represent an accessible target group for preventive health interventions because they can be reached easily through educational institutions.¹⁹ In this study, 54.7% of the participants were female, a gender distribution

Paediatric Vision Screening: A School-Based Approach to Identification of Childhood Eye Diseases and Visual Impairment

similar to a survey conducted in another part of southwest Nigeria, where females constituted 53%,²⁰ but slightly different from findings in northern Nigeria, where females accounted for 48.4%.²¹ The higher female participation in the present study likely reflects improved school enrolment for girls in southern Nigeria, where gender parity in education is more established.²²

The overall prevalence of eye disorders in this study was 27.8%, which falls within the range reported in comparable studies across Africa and Asia. A similar study in another part of southwest Nigeria found a 29.4% prevalence among schoolchildren.²³ Studies in Kenya reported prevalence rates between 24% and 30%, with refractive error and allergic conjunctivitis being the leading causes,⁹ as seen in this study. Similar trends were observed in Ghana, where a prevalence of 25.1% was reported.¹⁰ In India, population-based school screening programs found prevalence rates ranging from 20% to 28%, dominated by uncorrected refractive errors and allergic conjunctivitis,^{24,25} similar to this study. These parallels suggest that paediatric ocular morbidity exhibits epidemiological patterns comparable to those in tropical regions, where environmental and genetic factors intersect with limited access to vision correction.

In the present study, refractive error (46.6%) was the most common ocular disorder, followed by allergic conjunctivitis (39.6%). This distribution mirrors the findings of those who also identified refractive error as the leading cause of visual impairment among preschool and schoolchildren.^{9,20,23-26,29} The persistence of uncorrected refractive error as a dominant condition indicates that, despite its easy correctability, access to refractive services and optical correction remains poor. Only 5.2% of children in the current study had ever used spectacles, a figure consistent with similar studies in Anambra State of Nigeria, reporting negligible spectacle use among affected

children.²⁷ This underscores the need for low-cost vision correction initiatives and the integration of optometry services within school health programs.

Trauma-related corneal opacity was observed in isolated cases, consistent with other Nigerian studies identifying ocular trauma as a notable cause of unilateral visual impairment, particularly among boys.^{20,28,29} The gender pattern reflects behavioural tendencies linked to play and risk exposure. Although the occurrence of eye disorders was slightly higher in females, the difference was not statistically significant, aligning with the findings of Adejumo *et al.*²⁹ and Fasina and Ajaiyeoba,³⁰ who reported no significant gender disparity in the prevalence of childhood ocular diseases. Socioeconomic factors, particularly parental education, remain important determinants of childhood visual health. In this study, only 16.2% of mothers had a tertiary education, a finding similar to that of Ibukun *et al.*³¹ and Adejumo *et al.*²⁰ Children of parents with higher education levels are more likely to receive early detection and treatment due to increased awareness and affordability of eye care services.²⁰ Strengthening health education and promoting female literacy could indirectly improve child eye health outcomes.²⁰

Conclusion

The findings from this study reaffirm that the majority of childhood eye disorders in Nigeria are preventable and treatable, with refractive error and allergic conjunctivitis remaining the predominant conditions. The prevalence observed aligns closely with results from other African and Asian countries, suggesting that the burden of paediatric ocular morbidity follows a consistent regional pattern. Regular school-based vision screening, early intervention, and parental sensitisation are vital strategies for reducing avoidable visual impairment and enhancing children's academic and developmental potential.

Authors' Contributions: AOO and ACO conceived and designed the study. AOO, ACO and UN analysed and interpreted the data. UJN, HMB, OBV, OAO, AAG, AO, ATO, OMN, and AM drafted the manuscript. ACO, AOO, UJN and AM revised the draft for sound intellectual content. All the authors approved the final version of the manuscript.

Conflicts of Interest: None declared.

Funding Supports: The authors did not receive funding for the research or the preparation of the manuscript.

Accepted for publication: 21st November 2025.

References

- Narayanasamy S, Vincent SJ, Sampson GP, Wood JM. Visual demands in modern Australian primary school classrooms. *Clin Exp Optom*. 2016;99(3):233–40.
- McDowell N, St Clair Tracy H, Blaikie A, Ravenscroft J, Dutton GN. Hiding in plain sight: children with visual perceptual difficulties in schools. *Front Hum Neurosci*. 2024;18:1496730. <https://doi.org/10.3389/fnhum.2024.1496730>
- Ho WC, Tang MMM, Fu CW, Leung KY, Pang PCK, Cheong AMY. Relationship between Vision and Visual Perception in Hong Kong Preschoolers. *Optom Vision Sci*. 2015;92(5):623–31.
- World Health Organisation. WHO publishes new global data on the use of clean and polluting fuels for cooking by fuel type [Internet]. 2022 20th January [cited 2023 5th October]. Available from: <https://www.who.int/news/item/20-01-2022-who-publishes-new-global-data-on-the-use-of-clean-and-polluting-fuels-for-cooking-by-fuel-type>.
- Magakwe TSS, Hansraj R, Xulu-Kasaba ZN. Impact of vision problems on children's daily activities: Insights from a focus group discussion. *F1000Res* 2025;13:1538.
- Alvarez-Peregrina C, Sánchez-Tena MÁ, Andreu-Vázquez C, Villa-Collar C. Visual Health and Academic Performance in School-Aged Children. *Int J Environ Res Public Health*. 2020;17(7):2346.
- Loh L, Prem-Senthil M, Constable PA. A systematic review of the impact of childhood vision impairment on reading and literacy in education. *J Optom*. 2024;17(2):100495.
- Alrasheed SH, Mohamed ZD, Alluwimi MS. Childhood visual impairment causes and barriers to accessing eye care: A suggested approach for Africa. *Afr J Prim Health Care Fam Med*. 2024;16(1).
- Signes-Soler I, Nangena S, Wekesa A, Llamusi RM. Prevalence of visual impairment and estimation of refractive errors among school children in Kakamega, Kenya. *Int J Ophthalmol*. 2024;17(5):932–9.
- Abdul-Kabir M, Nii Kwashie Bortey D, Ehianata Onoikhua E, Asare-Bediako B, Ben Kumah D. Ametropia among school children- A cross-sectional study in a sub-urban municipality in Ghana. *Pediatr Dimens*. 2016;1(3):65–8.
- Ada Aghaji, Clare Gilbert. Policies for primary eye health care in Nigeria: a case study. *Community Eye Health*. 2021;34(113):82–3.
- Nsikak BN. Primary Eye Care in Nigeria: A Review of Human Resource for Health Development. 2021.
- Christian BN, Shomuyiwa DO, Christian NG, Umoette NR. Integrating eye care into primary healthcare in Nigeria: Challenges of the primary healthcare workforce. *Public Health Challenges*. 2024;3(2).
- Alex Anne-Harvey A, May Ho S, Morjaria P, Gilbert C, Khan I, Minto Reviewers H. IAPB School Eye Health Guidelines for Programmes in Low-and Middle-Income Settings 2024. 2024.
- Health Service - Child A, Community Health A, of Western Australia G. Community Health Clinical Nursing Manual PROCEDURE Distance Vision Testing (LEA Symbols Chart). 2024.
- Chen XJ, Sun B, Jiang DD, Zuo SS, Wang YH, Zhang CH, et al. Two different autorefractors for vision screening in children and adolescents. *Int J Ophthalmol*. 2024;17(2):331–8.
- Kaiser KP, Lwowski C, Nazir F, Kohnen T, Wenner Y. A comparison of the cycloplegic effect of cyclopentolate 0.5% versus 1.0% eye drops with five different refraction

Paediatric Vision Screening: A School-Based Approach to Identification of Childhood Eye Diseases and Visual Impairment

- measurement modalities in young adults. *Graefe Arch Clin Exp Ophthalmol.* 2025;263(4):1135–46.
18. Nwaokenye J, Lakoh S, Morgan J. Perceptions of Nigerian healthcare workers towards hand hygiene: a qualitative study. *Pan Afr Med J* 2020;36.
 19. Zelalem M, Abebe Y, Adamu Y, Getinet T. Prevalence of visual impairment among school children in three primary schools of Sekela Woreda, Amhara regional state, north-west Ethiopia. *SAGE Open Med.* 2019; 10;7:2050312119849769. <https://doi.org/10.1177/2050312119849769>.
 20. Adejumo OO, Isawumi MA, Parakoyi BD, Faramade IO, Olarewaju SO. Prevalence and Determinants of Ocular Disorders among In-School Children with Physical and Mental Disabilities in Osun State, South West Nigeria. *West Afr J Med* 2024;41(3):286–92.
 21. Schäfer C, Hoffmann I, Steinbach J. The role of traditional livestock husbandry in the supply of milk, meat and draught power in the Northwest of Nigeria. *Animal Res Dev.* 1997;46:14–29.
 22. Akinbi J, Akinbi Y. Gender Disparity in Enrolment into Basic Formal Education in Nigeria: Implications for National Development. *Afr Res Rev* 2015;9(3):11.
 23. Ajaiyeoba AI, Isawumi MA, Adeoye AO, Oluleye TS. Prevalence and causes of blindness and visual impairment among schoolchildren in South-Western Nigeria. *Int Ophthalmol.* 2007;26(4–5):121–5.
 24. Sheeladevi S, Seelam B, Nukella PB, Modi A, Ali R, Keay L. Prevalence of refractive errors in children in India: a systematic review. *Clin Exp Optom.* 2018;101(4):495–503.
 25. Kumar V, Soni M, Rajagopal V, Behera A, Gandhi A, Shamim MA, *et al.* The Prevalence of Refractive Errors in Indian School Children: A Systematic Review and Meta-Analysis. *Ophthalmic Epidemiol.* 2025;25:1–10. <https://doi.org/10.1080/09286586.2025.2450346>.
 26. Bogunjoko T, Bogunjoko J, Hassan A, Anene C, Ogbonna I. Refractive error patterns at a community eye hospital in southwest of Nigeria. [Internet]. 2018. Available from: <https://www.researchgate.net/publication/324910856>
 27. Ezinne NE, Mashige KP, Akano OF, Ilechie AA, Ekemiri KK. Spectacle utilisation rate and reasons for non-compliance with wearing of spectacles amongst primary school children in Onitsha, Anambra state, Nigeria. *Afr Vision Eye Health.* 2020;79(1).
 28. Jac-Okereke CC, Jac-Okereke CA, Ezegwui IR, Umeh RE. Current pattern of ocular trauma as seen in tertiary institutions in south-eastern Nigeria. *BMC Ophthalmol.* 2021;21(1):420.
 29. Adejumo OO, Olusanya BA, Ajayi BG. Ocular Disorders among Preschool Children in Southwest Nigeria. *Middle East Afr J Ophthalmol.* 2021;28(1):23–8.
 30. Fasina F, Ajaiyeoba A. The prevalence and causes of blindness and low vision in Ogun state, Nigeria. *Afr J Biomed Res.* 2010;6(2):63–7.
 31. Ibukun FA, Ugalahi MO, Bekibele CO. Unilateral visual impairment and blindness in school children – prevalence and aetiology in Saki-East LGA of Oyo State, Nigeria. *Eye.* 2024;38(11):2117–23.