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Challenges and supports for children with low vision in accessing education in Nigeria: A six-state mixed-methods study

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Abstract

Background: Low vision reduces functional vision and cannot be fully corrected with standard spectacles, medication, or surgery, thereby limiting children's ability to participate effectively in key school tasks such as reading the board, reading print, copying notes, and completing assessments. In Nigeria, inclusive education policies and disability-rights frameworks emphasize equal educational access and reasonable accommodation for learners with disabilities; however, implementation gaps persist in teacher preparedness, accessible learning materials, assistive devices, and school–eye health referral pathways. This study assessed the challenges and supports affecting educational access for children with low vision across Nigeria's six geopolitical zones.

Materials and Methods: A convergent mixed-methods cross-sectional study was conducted across six states representing the six geopolitical zones of Nigeria: Lagos (South-West), Enugu (South-East), Rivers (South-South), FCT–Abuja (North-Central), Kano (North-West), and Bauchi (North-East). Eight schools were selected per state (48 schools), and 2,760 learners were screened for eligibility. A total of 384 learners met the study definition for low vision; 360 provided assent and caregiver consent and were included in the quantitative analysis. Data were collected using learner and teacher questionnaires, a school administrator questionnaire, and an observation checklist assessing classroom accessibility and supports. Qualitative data were obtained through semi-structured interviews with learners, caregivers, teachers, administrators, and eye-care providers. Quantitative data were analyzed using descriptive statistics and multivariable logistic regression, while qualitative data were analyzed thematically, and findings were integrated during interpretation.

Results: Most learners reported difficulty seeing the board (78.1%) and reading standard print (72.5%). Difficulties copying notes (66.4%) and eye strain/headache during reading (59.2%) were common. Assessment barriers were substantial: 62.0% reported difficulty reading examination scripts, 55.3% reported running out of time during tests, 78.9% did not receive extra time, and 91.4% reported that large-print examination scripts were not provided. Supports were inconsistent: 58.6% owned spectacles but only 34.2% had updated correction within 12 months; 10.8% had ever used a handheld magnifier and 1.4% had accessed electronic magnification. In regression analysis, better educational access and participation were associated with regular spectacle use (AOR 2.10), consistent front-row seating (AOR 1.86), availability of large-print materials (AOR 3.41), and teacher training exposure (AOR 2.69), while rural/peri-urban location (AOR 0.62) and bullying/stigma (AOR 0.58) were associated with poorer access.

Conclusion: Children with low vision across Nigeria experience substantial instructional, assessment, and psychosocial barriers to education, driven largely by limited accommodations and low availability of accessible materials and assistive devices. Strengthening routine classroom and examination accommodations, improving teacher capacity, expanding access to updated correction and basic low-vision devices, and reinforcing school eye health linkages are critical to improving equitable educational participation for learners with low vision.

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1. Introduction

Low vision is a form of visual impairment that reduces functional vision for daily activities and is not fully correctable with standard options such as conventional spectacles, contact lenses, medication, or surgery.[1] Among school-age children, low vision affects the ability to perform core learning tasks, including reading from the board, decoding printed text, copying notes, writing accurately, recognizing visual cues in class, and moving safely within the school environment.[1] Where teaching relies heavily on chalkboard work, small-print textbooks, and time-bound written assessments, these functional limitations can translate into reduced classroom participation, poor academic performance, fatigue, and avoidance of learning activities that require sustained visual effort.[1] Globally, vision impairment remains a major public health and development concern. It is estimated that at least 2.2 billion people live with near or distance vision impairment, and a substantial proportion of this burden is preventable or remains unaddressed, reflecting persistent gaps in eye-care access and rehabilitation services.[2] The World Health Organization emphasizes that strengthening eye care within health systems and ensuring access to appropriate interventions, rehabilitation, and assistive support are central to improving functioning, participation, and inclusion, including within education.[3] For children, timely detection and appropriate support are particularly critical because visual impairment during schooling can have lifelong implications for learning, employment, and social participation.

In Nigeria, childhood visual impairment is frequently linked to treatable or correctable causes such as uncorrected refractive error. These conditions may remain unnoticed until children begin formal schooling, where sustained near work and board viewing become routine and learning demands increase.[12,13] Evidence from a large school-based regional survey in south-eastern Nigeria, using standardized protocols for school-age vision assessment, demonstrates that refractive error and measurable visual impairment occur among pupils, suggesting that many learners may be attempting schooling with suboptimal vision unless identified and supported.[13] The consequences are both individual and systemic. At the individual level, learners may struggle with reading speed, comprehension, copying, and assessment performance, while at the system level weak detection and limited school–eye health linkages can delay referral, spectacle uptake, and access to low-vision support.[12,15] Nigeria-focused scholarship on school eye health similarly highlights that school eye-health programmes are often irregular or constrained by workforce limitations, logistics, funding, and weak monitoring and referral pathways.[12] Inclusive education and disability rights frameworks position access to education for learners with disabilities, including those with low vision, as a legal and moral obligation. The UN Convention on the Rights of Persons with Disabilities (CRPD) recognizes the right to education and requires inclusive education systems at all levels, including the provision of reasonable accommodation to meet individual learning needs.[4] The CRPD Committee's General Comment No. 4 clarifies the meaning of inclusive education and reinforces that inclusion is essential to achieving the right to education without discrimination.[5] These obligations align with Sustainable Development Goal 4 (SDG 4), which calls for inclusive and equitable quality education and explicitly recognizes disability inclusion within education targets and monitoring.[6] Within Nigeria, the National Policy on Special Needs Education (2015) articulates principles such as "zero reject," inclusion, and the provision of supports for learners with special needs.[7] In addition, federal inclusive education resources and implementation guidance emphasize expanding access and participation for marginalized learners, including children with disabilities.[9] Complementing education policy, national disability governance documents and the Discrimination Against Persons with Disabilities (Prohibition) Act (2018) aim to strengthen enforceable standards and supports for persons with disabilities, including within education.[8,10] However, policy goals often outpace implementation capacity. Teacher preparedness and confidence to support learners with blindness or partial sight may be limited, and awareness of policy and legal obligations may be low, reducing the likelihood that learners with low vision receive consistent accommodations and individualized instructional support.[14]

For children with low vision, meaningful access to education depends on practical supports and adaptations. These include early identification and referral, affordable correction through appropriate spectacles, access to low-vision devices such as magnifiers, accessible learning materials (including large print and high-contrast resources), suitable seating and lighting, and teachers trained to adapt instruction and assessment.[1,3] Nigeria has taken steps toward strengthening assistive technology access through the national Priority Assistive Products List, which supports scale-up of essential assistive devices.[11] Nevertheless, gaps in resourcing, service delivery, and school-level inclusive practices can leave learners underserved, affecting enrolment, attendance, classroom participation, academic progression, and overall educational outcomes. Against this background, the present study examines the challenges faced by children with low vision in accessing education in Nigeria, maps the supports currently available across school, health-sector, and household/community levels, and identifies feasible interventions aligned with Nigeria's inclusive education goals and disability-rights commitments.[4–9] By focusing on functional barriers and implementation realities, the study aims to generate evidence that can guide classroom accommodations, teacher support, assistive

technology provision, and strengthened school eye-health pathways to improve educational participation and outcomes for learners with low vision.[3,11,12]

Figure 1 Interaction between a teacher and a learner with low vision during a classroom task

2. Material And Methods

2.1. Study Design

This study adopted a convergent mixed-methods cross-sectional design. Quantitative data documented the prevalence and predictors of educational access barriers among learners with low vision, while qualitative data explored lived experiences, school practices, and contextual constraints. The two datasets were analyzed separately and integrated during interpretation to strengthen conclusions through triangulation.

2.2. Study Setting and Location

The study was conducted across six Nigerian states selected to represent the six geopolitical zones, with one state included from each zone: Lagos State (South-West), Enugu State (South-East), Rivers State (South-South), Federal Capital Territory–Abuja (North-Central), Kano State (North-West), and Bauchi State (North-East). Within each state, two Local Government Areas (LGAs) were selected to represent different contexts, one predominantly urban and one predominantly rural/peri-urban. Data collection took place in public and private primary schools and junior secondary schools (JSS) located within the selected LGAs.

2.3. Study Duration and population

Data collection was carried out over six months, from 1 March 2025 to 31 August 2025. School entry and participant identification were completed first, followed by questionnaire administration, interviews, and school environment observations. The study population comprised school-aged children with low vision enrolled in participating schools, their teachers, school administrators, and parents/caregivers. Teachers included class and subject teachers who taught the participating learners. School administrators included head teachers or principals and special needs focal persons where available. Parents/caregivers provided information on home-based support, costs, and pathways to eye-care and educational support.

2.4. Operational Definition of Low Vision

A learner was classified as having low vision if the presenting or best-corrected visual acuity in the better-seeing eye was worse than 6/18 but equal to or better than 3/60, or where an eye-care record indicated low vision and the learner reported functional difficulty affecting school tasks such as reading standard print or seeing the board. Learner's meeting criteria for blindness (visual acuity worse than 3/60 in the better-seeing eye) were not included because the study focused specifically on low vision and supports for partial sight.
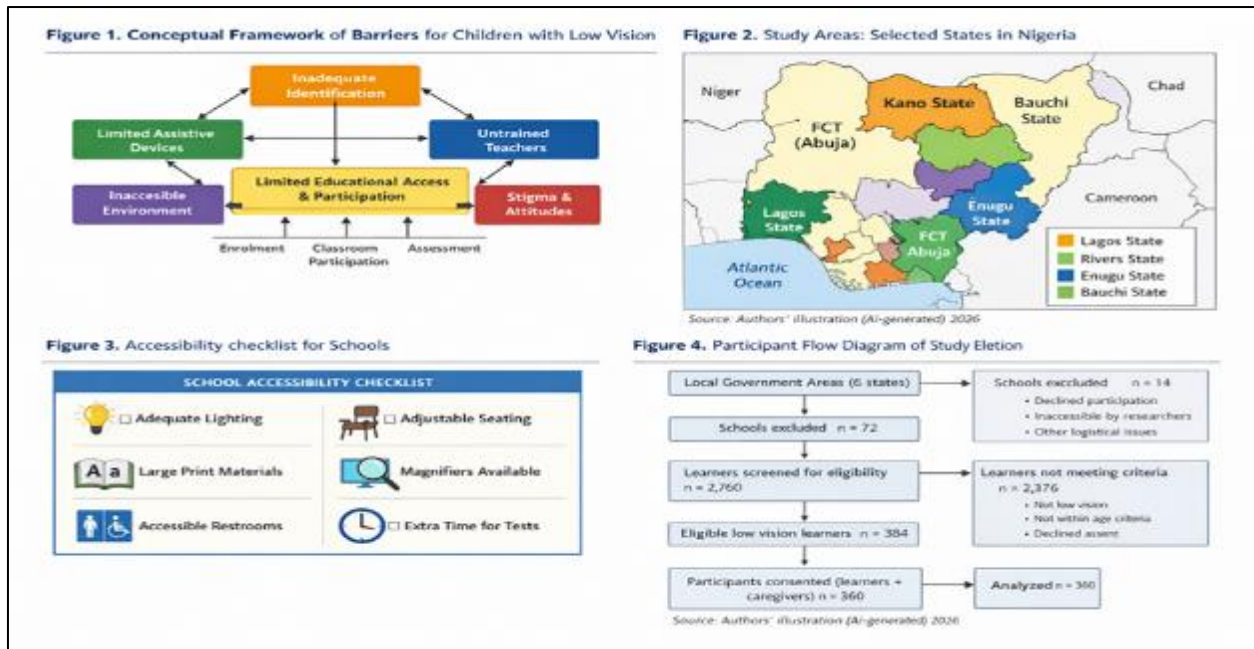
Figure 2 Conceptual Frame of Barriers for Children with low vision

2.5. Eligibility Criteria

Eligible learners were children aged 6–17 years enrolled in Primary 3 to JSS3 in participating schools who met the operational definition of low vision. Participation required written informed consent from a parent/guardian and assent from the child. Learners were excluded if they had an acute eye condition requiring urgent care at the time of data collection, if they had severe cognitive or communication limitations that prevented participation without a feasible supported method, or if consent/assent was not provided.

2.6. Sample Size Determination

The quantitative sample size was estimated using the single-proportion formula to measure the prevalence of key educational barriers among learners with low vision. A conservative prevalence of 50% was used because robust multi-zone estimates of school barriers specific to low vision were limited. With a 95% confidence level (Z = 1.96) and a precision of 6%, the minimum sample size was approximately 267. A design effect of 1.3 was applied to account for clustering within schools, yielding approximately 347 learners. An additional 10% allowance was added for non-response and incomplete data, resulting in a target sample size of 382 learners. The final target was rounded to 384 learners for equal allocation across states, producing 64 learners per state. One caregiver per learner and at least one teacher linked to each participating learner were recruited where feasible. At the school level, one administrator respondent was recruited per school. For the qualitative component, purposive sampling was used to capture depth and diversity of experiences across geopolitical zones and school contexts. Ninety-six interviews were targeted, comprising 36 learners with low vision (6 per state), 24 caregivers (4 per state), 24 teachers (4 per state), 6 school administrators (1 per state), and 6 eye-care providers (1 per state). Sampling continued until thematic saturation was achieved within participant groups.

2.7. Sampling Procedure

A multistage sampling approach was applied. First, the six states were selected to represent the six geopolitical zones. Second, two LGAs were selected per state, one urban and one rural/peri-urban, giving a total of 12 LGAs. Third, schools were selected using stratification by school type and level to ensure representation of public and private institutions and both primary and JSS levels. Eight schools were selected in each state, resulting in 48 schools across the six states. Fourth, eligible learners were identified through school records and teacher referrals and then verified through eye-care documentation where available. Where documentation was unavailable, basic distance visual acuity screening was conducted using an E chart at 6 meters in a well-lit space to support eligibility classification. Learners identified with unmet eye-care needs received referral guidance.

2.8. Data Collection Instruments

Quantitative data were collected using structured questionnaires for learners and teachers, a school administrator questionnaire, and a school accessibility and support checklist completed through observation. The learner questionnaire captured demographic characteristics, enrolment and attendance patterns, barriers to classroom participation such as board visibility, reading standard print, copying notes, and following demonstrations, as well as assessment barriers including difficulty reading examination scripts, lack of accommodations, and time pressure. It also captured availability and use of accommodations such as front-row seating, lighting adjustments, enlarged or large-print materials, extra time, teacher support, peer support, and use of assistive devices such as spectacles and magnifiers. The teacher questionnaire assessed training exposure, knowledge and practice of classroom accommodations for low vision, perceived constraints such as lack of materials, workload, limited training, and policy awareness, as well as referral practices for learners with visual difficulties. The administrator questionnaire documented school-level inclusion practices, availability of learning aids, staffing for special needs support, and examination arrangements. The observation checklist documented lighting quality, glare control, seating flexibility, board contrast and visibility, availability of accessible materials, and presence or use of assistive devices. Qualitative data were collected using semi-structured interview guides for learners, caregivers, teachers, administrators, and eye-care providers. Learner interviews explored daily learning experiences, tasks perceived as most difficult, coping strategies, support received, and peer/teacher interactions. Caregiver interviews explored costs, health-seeking pathways, school engagement, and home support. Teacher and administrator interviews explored feasibility of accommodations, institutional constraints, and training/resource needs. Eye-care provider interviews explored referral pathways and barriers to service access for school-aged children.

2.9. Data Collection Procedure

Following ethical approval and permissions, entry meetings were conducted with relevant education authorities and school leadership. Eligible learners were identified using records and teacher referrals and verified through documentation or screening as described. Caregiver consent and child assent were obtained before participation. Learner questionnaires were administered in a quiet space using an interviewer-supported approach to avoid disadvantaging learners who could not read standard print. Teachers, administrators, and caregivers completed their questionnaires on-site or at agreed locations. School environment observations were conducted to complete the checklist. Qualitative interviews were conducted after completion of quantitative data collection to allow deeper probing of patterns emerging from survey data. Interviews were audio-recorded with permission and transcribed verbatim. Where local languages were used, translations into English were completed and checked for consistency of meaning.

2.10. Study Variables and Outcome Measures

Primary outcomes included indicators of educational access and participation such as difficulty seeing the board, difficulty reading standard print, difficulty copying notes, reduced classroom participation, lack of assessment accommodations, and attendance problems linked to vision-related challenges. A composite Educational Access and Participation Index was created from standardized items across board access, print access, note-taking, assessment access, and availability of accommodations, with higher scores indicating better access. Secondary outcomes included availability and use of supports, teacher preparedness indicators, and stigma-related experiences. Predictor variables included school type, urban/rural location, class level, availability of accommodations/devices, teacher training exposure, and household socioeconomic proxies derived from caregiver education and occupation.

2.11. Data Management and Statistical Analysis

Quantitative data were coded, entered, cleaned, and analyzed using SPSS version 26. Descriptive statistics summarized participant characteristics and the prevalence of barriers and supports. Associations were assessed using Chi-square tests for categorical variables and t-tests or ANOVA for continuous variables as appropriate. Multivariable regression models identified independent predictors of poor educational access outcomes. Logistic regression was used for binary outcomes and linear regression for continuous outcomes such as the Educational Access and Participation Index score. Because learners were clustered within schools, robust standard errors were applied, and sensitivity analyses were conducted using mixed-effects models with school as a random effect. Statistical significance was set at $p < 0.05$.

2.12. Qualitative Data Analysis

Qualitative data were analyzed using thematic analysis. Transcripts were coded inductively to capture emerging concepts and then organized into themes aligned with instructional barriers, environmental barriers, assistive technology barriers, psychosocial barriers, and system-level barriers such as referral pathways and policy

implementation constraints. Themes were compared across states and participant groups to identify convergence and divergence. Credibility was strengthened through triangulation across participant groups and maintenance of an audit trail of coding decisions.

2.13. Integration of Quantitative and Qualitative Findings

Integration occurred at the interpretation stage. Quantitative results identified the most prevalent barriers and predictors, while qualitative findings explained how and why these barriers occurred in school contexts and which solutions were perceived as feasible. Integrated conclusions informed practical recommendations for classrooms, schools, and education systems.

3. Results

Across the six-state sample, learners with low vision reported substantial difficulties accessing routine classroom instruction and assessments despite being enrolled in school. The dominant pattern of barriers reflected limited visual access to teaching and learning materials, particularly where classroom instruction relied heavily on-board work and standard-print resources. Time-related constraints were also prominent during tests and examinations, as many learners required more time to read, copy, and write, yet rarely received standardized assessment accommodations. Psychosocial barriers further compounded learning difficulties, with a notable proportion of learners reporting teasing and bullying associated with their vision or use of spectacles. Overall, the findings indicate that learning environments remained largely "standard-format," with limited systematic adjustments for low vision, leading to persistent participation gaps (Table 2).

Supports and accommodations were present but inconsistent and often insufficient to offset these challenges. While more than half of learners reported owning spectacles, a smaller proportion reported recent updates to their correction, and access to low-vision devices such as magnifiers was limited. Classroom accommodations such as front-row seating were relatively common but not consistently maintained across terms, and supports such as large-print learning materials and enlarged handouts were rarely available. Examination accommodations were especially weak, with only a minority of learners reporting extra time or large-print scripts. Multivariable analysis showed that regular use of spectacles, consistent front-row seating, availability of large-print materials, and teacher exposure to training on low-vision adaptations were the strongest predictors of better educational access and participation, whereas rural/peri-urban location and reported bullying/stigma were associated with poorer access (Tables 3 and 4).

3.1. Participant flow and response rate

Across the six selected states representing Nigeria's six geopolitical zones, 48 schools were approached for participation. Fourteen schools were excluded due to declined participation, inaccessibility to the research team, or other logistical constraints, resulting in 34 participating schools. A total of 2,760 learners were screened for eligibility. Of these, 2,376 did not meet the inclusion criteria because they did not have low vision, were outside the study age/class range, or declined assent. Three hundred and eighty-four learners met the eligibility criteria for low vision. Three hundred and sixty learners provided assent and had caregiver consent, giving a participation rate of 93.8% among eligible learners. All 360 consenting learner questionnaires were complete and were retained for analysis.

3.2. Socio-demographic and schooling characteristics

The analyzed sample comprised 360 learners with low vision aged 6–17 years, with a mean age of 12.1 ± 2.9 years. Males constituted 52.8% of participants and females 47.2%. Most learners attended public schools (68.1%), while 31.9% attended private schools. Learners were distributed across the six states with approximately 60 participants per state. Approximately 45.6% of learners attended schools located in rural/peri-urban LGAs, while 54.4% attended schools in urban LGAs. Primary school learners (Primary 3–Primary 6) constituted 57.5% of the sample, and junior secondary school learners (JSS1–JSS3) constituted 42.5%. Participant characteristics are summarized in Table 1.

Table 1 Socio-demographic and school characteristics of learners with low vision (n = 360)

Variable	Category/Statistic	n	%
Age (years)	Mean ± SD	12.1 ± 2.9	—
Age group (years)	6–9	90	25.0
	10–13	150	41.7
	14–17	120	33.3
Sex	Male	190	52.8
	Female	170	47.2
School level	Primary (P3–P6)	207	57.5
	Secondary (JSS1–JSS3)	153	42.5
School ownership	Public	245	68.1
	Private	115	31.9
School location (LGA)	Urban	196	54.4
	Rural/Peri-urban	164	45.6
State/Geopolitical representation	Lagos (South-West)	60	16.7
	Enugu (South-East)	60	16.7
	Rivers (South-South)	60	16.7
	FCT–Abuja (North-Central)	60	16.7
	Kano (North-West)	60	16.7
	Bauchi (North-East)	60	16.7

Note: Percentages may not total 100% due to rounding. Age groups were categorized for descriptive reporting, while age was analyzed as a continuous variable in regression models.

3.3. Prevalence of educational barriers to participation

Substantial barriers to learning participation were reported. Difficulty seeing the board from the usual seating position was reported by 78.1% of learners, while 72.5% reported difficulty reading standard print in textbooks or handouts. Difficulty copying notes at the same pace as classmates was reported by 66.4%, and 59.2% reported frequent eye strain or headaches during reading tasks. Nearly one-third of learners (29.4%) reported missing school days in the previous term due to vision-related challenges. Assessment barriers were pronounced: 62.0% reported difficulty reading examination questions or scripts clearly, and 55.3% reported running out of time during tests because reading and writing tasks took longer. Most learners (78.9%) did not receive extra time during tests, and 91.4% reported that large-

print examination scripts were not provided. Psychosocial barriers were also evident, with 38.1% reporting teasing related to their vision or use of spectacles, 22.5% reporting bullying, and 15.0% reporting exclusion from some classroom or playground activities. The prevalence of key barriers is presented in Table 2.

Table 2 Prevalence of educational access and participation barriers reported by learners with low vision

Barrier/Indicator	n	%
Difficulty seeing the board from usual seating position	281	78.1
Difficulty reading standard print (textbooks/handouts)	261	72.5
Difficulty copying notes at the same pace as classmates	239	66.4
Frequent eye strain/headache during reading tasks	213	59.2
Missed school days in the previous term due to vision-related challenges	106	29.4
Difficulty reading examination questions/scripts clearly	223	62.0
Ran out of time during tests because reading/writing took longer	199	55.3
Did not receive extra time during tests/exams	284	78.9
Large-print examination scripts not provided	329	91.4
Teased about vision problem or wearing spectacles	137	38.1
Reported bullying (repeated ridicule/intimidation/exclusion)	81	22.5
Excluded from some classroom/playground activities	54	15.0

Note: Responses were self-reported by learners and reflect barriers experienced during routine classroom learning and assessments. Percentages are calculated using n = 360.
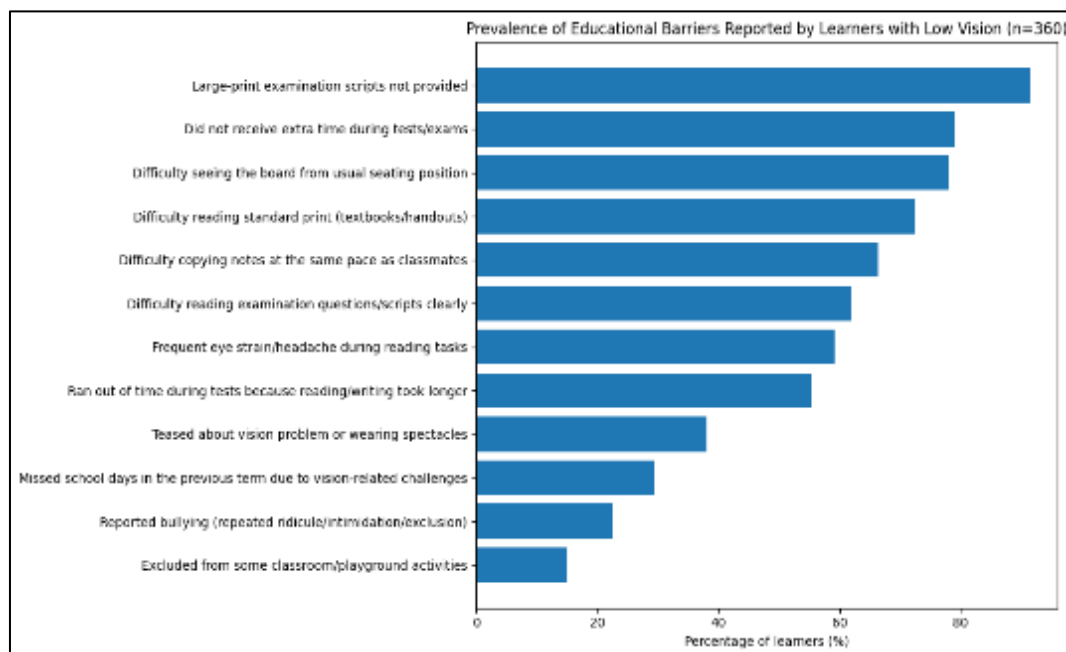

Figure 3 Prevalence of Educational Barriers Reported by Learners with Low Vision

3.4. Availability and use of school-based supports and accommodations

Supports and accommodations were available but inconsistent across schools. More than half of learners (58.6%) reported owning spectacles; however, only 34.2% reported that their spectacles had been updated within the last 12 months. Access to low-vision devices was limited: 10.8% reported ever using a handheld magnifier for schoolwork, 4.7% reported routine magnifier use in class, and 1.4% reported access to an electronic/video magnifier. In terms of classroom accommodations, 54.7% reported being placed near the board or in front-row seating, but only 33.9%

indicated this was implemented consistently throughout the term. Lighting adjustments were reported by 18.3%, while access to large-print learning materials and enlarged handouts was reported by 12.2% and 10.6%, respectively. Only 21.1% reported receiving extra time during tests or examinations, and 8.6% reported receiving large-print examination scripts. Peer support for note-taking or board copying was reported by 38.3%, and teacher-provided individualized support during lessons was reported by 40.6%. These supports are summarized in Table 3.

Table 3 Availability and use of school-based supports and accommodations for learners with low vision

Support/Accommodation	n	%
Owns spectacles (has glasses)	211	58.6
Spectacles updated within the last 12 months	123	34.2
Ever used a handheld magnifier for schoolwork	39	10.8
Routine use of handheld magnifier in class	17	4.7
Ever accessed an electronic/video magnifier	5	1.4
Front-row seating/proximity to board provided	197	54.7
Front-row seating implemented consistently throughout the term	122	33.9
Lighting adjustment used (e.g., reduce glare/move near window)	66	18.3
Large-print learning materials available to learner	44	12.2
Enlarged/print-accessible handouts provided	38	10.6
Extra time provided during tests/exams	76	21.1
Large-print examination scripts provided	31	8.6
Peer support used for note-taking/board copying	138	38.3
Teacher provides individualized support during lessons	146	40.6

Note: Items reflect learner-reported access and use of supports during routine classroom learning and assessment. Some accommodations may have been provided intermittently rather than routinely.
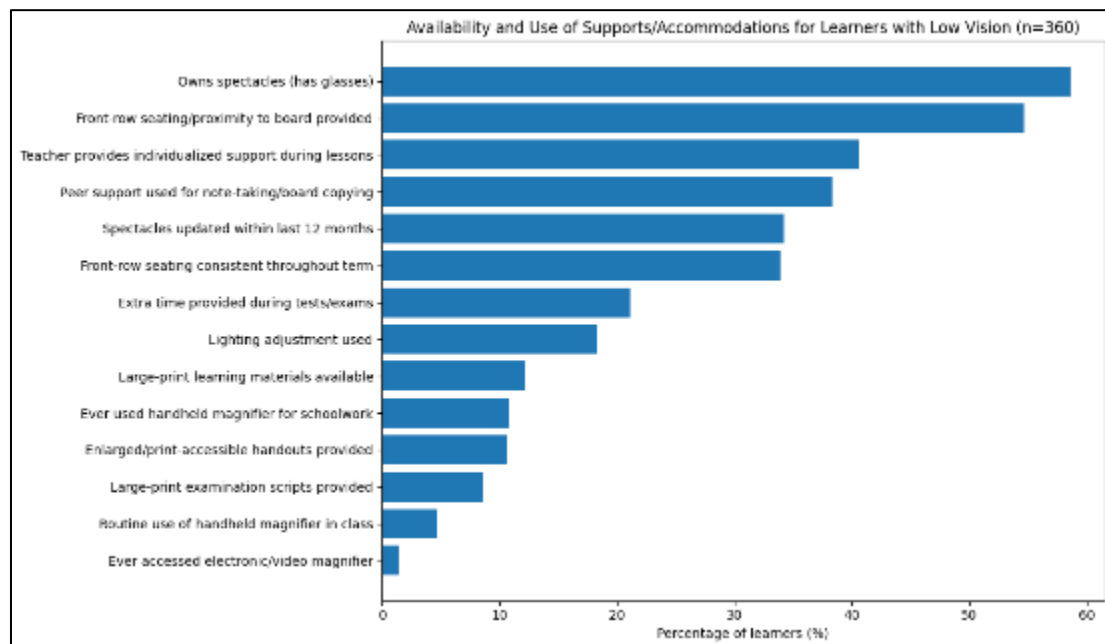

Figure 4 Availability and Use of Supports/Accommodations for Learners with Low Vision

3.5. Predictors of better educational access and participation

A composite Educational Access and Participation Index (EAPI) was constructed from standardized items covering board access, print access, note-taking, assessment access, and availability of accommodations. Better educational access and participation was defined as scoring in the highest tertile of the EAPI. In multivariable logistic regression, better access was independently associated with regular use of spectacles (AOR 2.10; 95% CI: 1.35–3.27; p = 0.001), consistent front-row seating (AOR 1.86; 95% CI: 1.18–2.93; p = 0.007), availability of large-print learning materials (AOR 3.41; 95% CI: 1.65–7.04; p = 0.001), and teacher exposure to training on low-vision adaptations (AOR 2.69; 95% CI: 1.32–5.47; p = 0.006). Rural/peri-urban school location was negatively associated with better access (AOR 0.62; 95% CI: 0.40–0.96; p = 0.032), and reported bullying/stigma was also negatively associated with better access and participation (AOR 0.58; 95% CI: 0.35–0.95; p = 0.031). Other variables such as school ownership, sex, age, and severity of low vision were not statistically significant predictors in the adjusted model. Regression results are presented in Table 4.

Table 4 Multivariable logistic regression showing predictors of better educational access and participation among learners with low vision

Predictor variable	Adjusted Odds Ratio (AOR)	95% CI	P value
Regular use of spectacles (Yes vs No)	2.10	1.35–3.27	0.001
Front-row seating implemented consistently (Yes vs No)	1.86	1.18–2.93	0.007
Large-print learning materials available (Yes vs No)	3.41	1.65–7.04	0.001
Teacher exposed to training on low-vision adaptations (Yes vs No)	2.69	1.32–5.47	0.006
Rural/peri-urban school location (Yes vs Urban)	0.62	0.40–0.96	0.032
Reported bullying/stigma (Yes vs No)	0.58	0.35–0.95	0.031
Private school (Yes vs Public)	1.21	0.78–1.88	0.394
Female sex (Female vs Male)	1.05	0.69–1.60	0.820
Age (per 1-year increase)	0.97	0.91–1.03	0.301
Severe low vision (vs Moderate)	0.74	0.49–1.11	0.148

Note: Outcome variable was "better educational access and participation," defined as scoring in the highest tertile of the Educational Access and Participation Index (EAPI). AOR > 1 indicates higher odds of better access; AOR < 1 indicates lower odds.
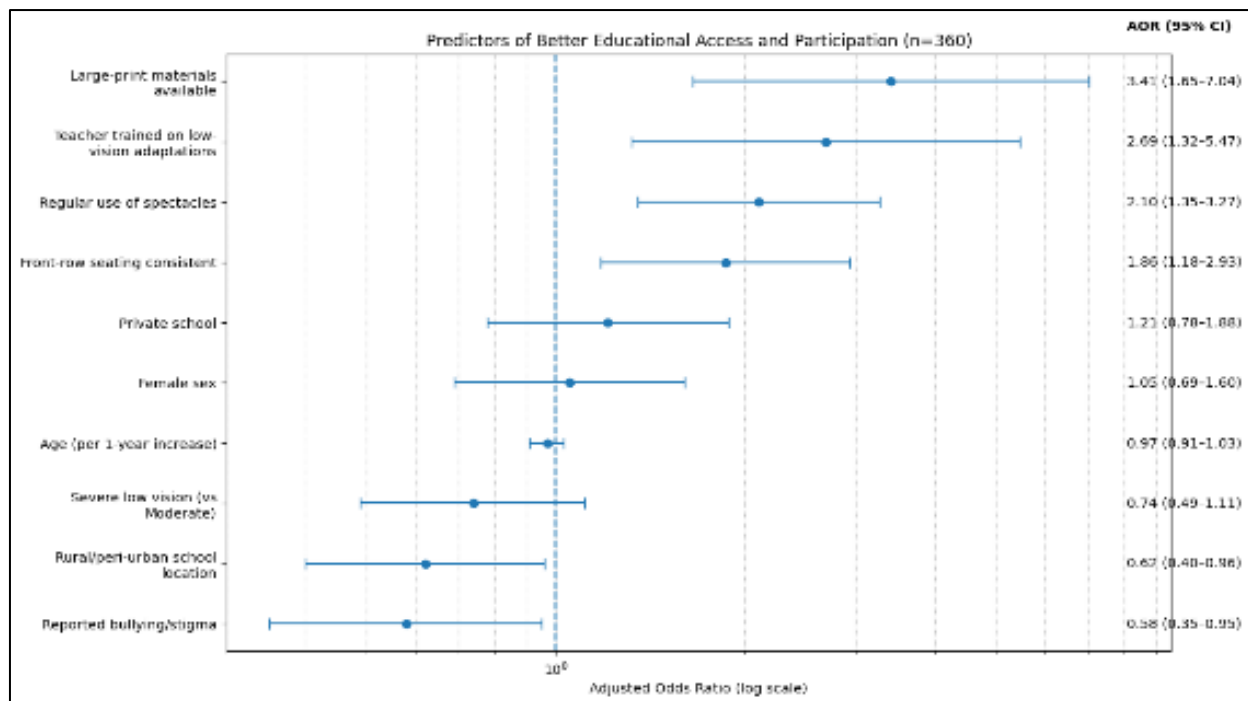
Figure 5 Predictors of Better Educational Access and Participation

4. Discussion

This six-state mixed-methods study shows that children with low vision in Nigeria face major barriers to meaningful participation in school, even when they are enrolled. The most common challenges were difficulty seeing the board, reading standard print, copying notes, and completing tests within the allocated time. These findings suggest that classroom teaching and assessment practices remain largely designed for learners with typical vision, with limited routine adaptations for low vision. Supports were present but inconsistent and often inadequate. Although many learners reported owning spectacles, a smaller proportion had updated correction, and access to low-vision devices such as magnifiers was very limited. Classroom accommodations such as front-row seating were relatively common but were not consistently maintained, while large-print learning materials and examination scripts were rarely provided. This indicates weak institutionalization of accommodations, where supports depend on individual teacher discretion rather than standardized school procedures. The regression analysis reinforces that practical supports are linked to improved access. Regular use of spectacles, consistent front-row seating, availability of large-print materials, and teacher exposure to training on low-vision adaptations predicted better educational access and participation, while rural/peri-urban school location and bullying/stigma predicted poorer access. This highlights the importance of both material/teaching supports and the social environment for learning. The findings point to feasible priorities for improvement: routine classroom and examination accommodations, stronger teacher training on low-vision strategies, better access to updated spectacles and basic assistive devices, and school-wide anti-bullying and disability awareness measures. Strengthening school eye health linkages for identification, referral, and follow-up is also essential for sustaining supports for learners with low vision.

5. Conclusion

This study found that children with low vision across six Nigerian states experienced substantial barriers to accessing education, particularly difficulty seeing the board, reading standard print, copying notes, and completing assessments within standard time limits. Supports such as spectacles and front-row seating were available for some learners but were often inconsistent, while access to large-print materials, extra time, and low-vision devices was limited. Better educational access and participation were associated with regular use of spectacles, consistent seating near the board, availability of large-print materials, and teacher training on low-vision adaptations, whereas rural/peri-urban location and bullying/stigma were linked to poorer access. Strengthening routine classroom and examination accommodations, improving teacher capacity, expanding access to affordable assistive devices and updated correction, and reinforcing school eye health referral pathways are critical steps toward achieving inclusive education for learners with low vision in Nigeria.

Compliance with ethical standards

Disclosure of conflict of interest

The author declares that there is no conflict of interest.

Statement of informed consent

Written informed consent was obtained from the parents/guardians of all participating learners, and assent was obtained from the learners. Participation was voluntary, and confidentiality of participants' information was maintained throughout the study.

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