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Impact And Management Of Vision Impairment In Children Of School Age In South East Nigeria: The Situation In Parts Of Abia And Ebonyi States

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Abstract:
Background*: Childhood vision impairment is a significant global health concern, with nearly 19 million children affected worldwide, most of whom live in low- and middle-income countries. In Nigeria, particularly in the South East region, limited data and weak eye health systems exacerbate the burden. Vision impairment in school-age children hinders learning, psychosocial development, and long-term productivity.*
Methods*: This narrative review synthesized evidence from PubMed, Google Scholar, African Journals Online, and institutional reports (WHO, UNICEF, Nigerian Ministry of Health). Studies published between 2000 and 2024 addressing prevalence, causes, impacts, and management of childhood vision impairment were included. Thematic synthesis focused on the burden, impact, current management, regional situation in Abia and Ebonyi States, and key gaps.*
Results*: Uncorrected refractive errors remain the leading cause of vision impairment in school-age children globally and in Nigeria. Regional studies from South East Nigeria highlight challenges such as poor spectacle uptake, shortage of pediatric eye specialists, limited school-based screening, and socio-cultural barriers. The consequences extend beyond academics to include reduced self-esteem, economic hardship, and public health inequities.*
Conclusion*: Childhood vision impairment in South East Nigeria is an under-recognized but pressing public health issue. Strengthening school eye health programs, integrating eye care into primary health systems, and expanding community-based interventions are essential to reduce the burden and improve child well-being in Abia and Ebonyi States.*
Key Words: *Childhood blindness, Refractive error, School health, Nigeria, South East, Abia, Ebonyi, Pediatric optometry*

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I. Introduction

Vision is a critical sense for a child's development, influencing educational attainment, social participation, and long-term productivity. According to the World Health Organization (WHO), at least 2.2 billion people worldwide live with near or distance vision impairment, and in nearly 1 billion cases the impairment could have been prevented or has not yet been addressed[1]. Childhood vision impairment is of particular concern because undetected or untreated conditions may lead to irreversible visual disability, reduced quality of life, and limited academic opportunities. The International Agency for the Prevention of Blindness (IAPB) also emphasizes that uncorrected refractive errors and childhood blindness continue to pose major challenges globally, especially in low- and middle-income countries[2]. In sub-Saharan Africa, the burden of childhood vision impairment is disproportionately high due to systemic challenges such as inadequate access to pediatric eye care, scarcity of trained personnel, and poor affordability of corrective services.[1] In Nigeria, evidence indicates that vision impairment remains a significant public health issue among children. A systematic review of 17 studies involving nearly 17,000 children reported prevalence rates of 3.9% mild, 2.7% moderate, and 0.3% severe visual impairment, with childhood blindness estimated at 0.2%. The leading causes were refractive errors, cataracts, glaucoma, and corneal scars.[3] Beyond prevalence, barriers such as low parental awareness, inadequate school vision screening programs, and poor compliance with spectacle use continue to hinder progress.[6] The school-age period (approximately 6–18 years) is particularly important because learning is highly vision-dependent. Impaired vision negatively affects reading ability, classroom engagement, academic achievement, and participation in extracurricular activities. It may also lead to psychosocial consequences such as low self-esteem, social exclusion, and long-term limitations in vocational opportunities[2]. Early detection and intervention, especially through school-based screening programs, are essential for preventing avoidable blindness and ensuring optimal child development. Despite progress in eye health research in Nigeria, there are notable gaps in the South East, particularly in Abia and Ebonyi States. For example, a study in Abia State found that 16.8% of secondary school children suffered from accommodative anomalies conditions that can significantly affect near work and reading

performance but are often overlooked in school screening programs[5]. However, comprehensive data on the prevalence, causes, and management of vision impairment among school children in Abia and Ebonyi remain limited. This lack of evidence impedes targeted interventions and effective policy formulation in the region.

This review therefore aims to synthesize existing literature on the impact and management of vision impairment in school-aged children, with a particular focus on Abia and Ebonyi States in South East Nigeria. It will highlight the global, African, and Nigerian contexts; evaluate the consequences of vision impairment on educational and psychosocial outcomes; examine existing interventions; and identify gaps in research and practice, with a view to informing future policies and school eye health programs.

II. Methods

This research is presented as narrative review synthesizing evidence on childhood vision impairment in school-aged populations, with an emphasis on South East Nigeria (Abia and Ebonyi States). The approach was chosen because of the limited availability of region-specific studies and the need to contextualize global and national findings for local policy and practice relevance[6].

Search Strategy

A literature search was carried out across the following;

1. Electronic databases: such as PubMed, Google Scholar, and African Journals Online.
2. Institutional websites and reports: such as World Health Organization, International Agency for the Prevention of Blindness (IAPB), and the Nigerian Federal Ministry of Health.
3. Grey literature: NGO reports, national surveys, and conference proceedings related to eye health in children.

Search terms included combinations of: “childhood vision impairment,” “school eye health,” “refractive error,” “Abia State,” “Ebonyi State,” “Nigeria,” and “low and middle-income countries.

Eligibility Criteria:

Publications were considered relevant if they met the following criteria;

1. Publications from 2000-2024 which addressed vision impairment, blindness, or eye health in children aged 6–18 years.
2. Focused on prevalence, causes, impact, or management strategies.
3. Originated from Nigeria or other LMICs with comparable health system contexts.
4. Included both peer-reviewed and grey literature (government reports, NGO publications).

Exclusion criteria included:

1. Studies focusing exclusively on adult populations.
2. Articles lacking relevance to childhood vision or school-based interventions.
3. Commentaries and editorials without empirical or programmatic evidence.
4. Data Extraction and Synthesis

Key information extracted from each source included: study location, sample characteristics, prevalence of vision impairment, causes, interventions, and major findings. The review did not attempt a quantitative meta-analysis but instead employed thematic synthesis, organizing evidence into six domains:

1. Burden and causes
2. Impact on school-aged children
3. Current management strategies
4. Situation in Abia and Ebonyi States
5. Gaps and challenges
6. Recommendations

This approach allowed for integration of diverse types of evidence, enabling identification of contextual challenges and opportunities for school-based eye health initiatives in Abia and Ebonyi States[7].

III. Burden And Causes Of Childhood Vision Impairment

Global Perspective

Childhood vision impairment is a major global public health concern. Among children globally, the leading causes of vision impairment include uncorrected refractive errors, amblyopia, congenital cataract, corneal opacities, and ocular trauma[2,8]. Refractive error alone is responsible for nearly half of childhood vision problems globally, yet remains one of the most easily correctable conditions with spectacles[9]. The consequences of childhood blindness and vision impairment are profound. Unlike adults, children who lose vision at an early age face a lifetime of disability, which significantly reduces educational attainment, limits social interaction, and impacts long-term economic productivity[10]. Global disparities are stark: while high-income countries often have

access to routine screening and corrective services, low and middle-income countries account for the vast majority of preventable childhood blindness[8].

Nigerian Context

Nigeria, Africa's most populous country, carries a considerable share of the continent's burden of childhood vision impairment. A systematic review involving 16,925 children found prevalence rates of 3.9% mild, 2.7% moderate, and 0.3% severe vision impairment, with blindness affecting 0.2% of children[3]. The major causes reported were refractive errors, cataract, glaucoma, and corneal scarring, with uncorrected refractive error being the most common and preventable[3,4]. Regional disparities exist across the country. Studies indicate that urban children are more likely to be diagnosed with refractive errors due to better access to screening and eye care services, while rural populations often present with advanced, untreated cases of cataract, corneal opacities from measles or vitamin A deficiency, and trauma-related complications[11]. Cultural beliefs, financial barriers, and poor health-seeking behavior further exacerbate these disparities[4].

South East Nigeria: Abia and Ebonyi States

Evidence specific to South East Nigeria, particularly Abia and Ebonyi States, is limited. Available hospital-based studies and small-scale surveys suggest that uncorrected refractive errors and accommodative anomalies are significant contributors to poor vision among school-aged children in the region. For example, a study conducted in Abia State reported that 16.8% of secondary school children had accommodative anomalies, including insufficiency, excess, and infacility, conditions that can significantly hinder reading and near tasks required for academic success[5].

Hospital records from tertiary eye care facilities in South East Nigeria indicate that congenital and developmental cataracts, corneal scarring from infections such as measles, and trauma are also important causes of childhood blindness[12]. However, there is a lack of large-scale population-based data from Abia and Ebonyi, making it difficult to determine the true prevalence of vision impairment among school children. This gap underscores the urgent need for school-based eye health programs and epidemiological surveys to inform targeted interventions in these states.

IV. Impact Of Vision Impairment On School-Age Children

Educational Outcomes

Vision plays a crucial role in a child's educational development, as up to 80% of learning in school is visual[1]. Children with uncorrected vision impairment often struggle with literacy, reading fluency, and classroom participation, which can result in poor academic performance and reduced learning opportunities[4]. Uncorrected refractive errors, for instance, have been directly linked to lower reading speed, difficulties in copying from the board, and challenges with sustained near tasks[9]. These educational disadvantages often compound over time, creating a persistent gap between affected children and their peers.

Psychosocial Impact

Beyond academics, vision impairment significantly influences children's psychosocial well-being. School-age children with visual difficulties may experience low self-esteem, social withdrawal, and bullying, which can negatively affect peer interactions and social inclusion[13]. Limited participation in group learning and extracurricular activities often results in feelings of isolation, thereby reducing overall quality of life[14]. In cultures where disability carries stigma, children with visible eye conditions (such as corneal scars or strabismus) may also face discrimination from both peers and the broader community[4].

Economic Consequences

The economic consequences of childhood vision impairment are substantial. Families often face out-of-pocket costs for consultations, spectacles, surgery, or travel to specialized centers, which can be prohibitive in resource-limited settings[3]. In the long term, children who remain visually impaired are more likely to have reduced employability and earning potential, leading to lifetime productivity losses[15]. On a societal scale, untreated childhood blindness imposes a high economic burden due to lost human capital and increased dependency[10].

Public Health Implications

From a public health perspective, childhood vision impairment extends beyond the individual to affect families and communities. Caregivers often bear the emotional and financial strain of providing ongoing support, which may reduce household income and well-being[11]. At the community level, untreated visual impairment among children contributes to intergenerational cycles of poverty, especially in low- and middle-income countries where access to eye health services remains limited[8]. Addressing childhood vision impairment is therefore not only a matter of child welfare but also an essential public health priority.

V. Current Approaches To Management

Clinical Interventions

Management of childhood vision impairment typically begins with clinical interventions targeting the underlying causes. Uncorrected refractive errors remain the most common cause of visual impairment among school-aged children and can be effectively corrected with spectacles[9]. Despite their cost-effectiveness, uptake of spectacles in Nigeria remains low due to financial constraints, cultural perceptions, and lack of awareness[4]. Surgical interventions are also critical in addressing congenital cataract, corneal opacities, and trauma-related ocular injuries. Pediatric cataract surgery, followed by visual rehabilitation, has been shown to significantly reduce childhood blindness when implemented early[16]. In addition, amblyopia therapy, including occlusion (patching) and vision exercises, remains an important strategy for younger children, although accessibility is limited in many low- and middle-income countries[17].

School Eye Health Programs

School-based eye health programs represent a practical entry point for early detection and management. Routine vision screening by trained teachers or health workers helps identify children with vision problems at an early stage[18]. In Nigeria, several NGO-led initiatives, such as those by Sight savers and the Brien Holden Vision Institute, have implemented school screening and provided free spectacles to children in underserved communities[19]. These programs highlight the importance of teacher involvement as frontline identifiers of children struggling with visual tasks in the classroom. However, sustainability is often threatened by lack of integration into existing school health services and inconsistent government support[20].

Community-Based Strategies

Community-based interventions, such as outreach services and mobile eye clinics, play an important role in reaching children in rural and hard-to-reach areas of South East Nigeria. Mobile clinics provide on-site refraction, spectacle dispensing, and referral for surgical care where necessary[21]. More recently, tele-optometry has been explored as a means of expanding access to specialized care by linking community screenings with remote optometrists and ophthalmologists[22]. Such innovations are particularly relevant for Abia and Ebonyi States, where health infrastructure is limited and specialist eye care facilities are concentrated in urban centers.

Government and Policy Efforts

At the policy level, Nigeria has adopted the National Eye Health Policy which emphasizes prevention, early detection, and integration of eye health into primary healthcare and school health services. Nigeria is also a signatory to the VISION 2020: The Right to Sight initiative, a global strategy aimed at eliminating avoidable blindness by 2020 [8]. While progress has been made, challenges persist in implementation, particularly at the state level, where funding, political commitment, and coordination of services vary widely[20]. Strengthening state-driven eye health programs in Abia and Ebonyi could play a transformative role in reducing the burden of childhood vision impairment.

VI. Situation In Abia And Ebonyi States

Local evidence: studies, hospital records and reports

Evidence specifically describing childhood vision impairment in Abia and Ebonyi States is scarce and largely limited to small-scale studies and hospital-based case series. A school-based study from Abia State reported a high prevalence of accommodative anomalies (16.8%) among secondary school pupils a finding that highlights near-vision problems that can compromise reading and classroom performance but are often missed by routine distance-vision screenings[5]. Hospital-based reports from tertiary centres in the South East describe pediatric presentations including congenital/developmental cataract, corneal scarring from infections, and trauma-related ocular injuries, all of which contribute to the regional burden of childhood visual loss[12]. Beyond these sources, there are few population-based surveys from Abia or Ebonyi that reliably estimate prevalence or map service coverage, making it difficult to quantify burden with confidence[3].

Challenges unique to the region

Shortage of pediatric eye-care specialists: Like many parts of Nigeria, the South East region has relatively few paediatric ophthalmologists and child-specialized optometrists. Specialist services are concentrated in urban tertiary centres, leaving rural and semi-urban communities with limited access to pediatric eye assessment, refraction, and surgical services. The specialist shortfall delays diagnosis (especially of amblyopia and congenital cataract) and restricts timely interventions that are critical for visual rehabilitation.

Limited school screening programs: Formal, routine school-based vision screening remains patchy in Abia and Ebonyi. Where screening occurs, it is often driven by short-term NGO projects or ad hoc outreach rather than

integrated state or local education-health systems. This results in many children with correctable problems especially near vision and binocular anomalies remaining unidentified or being identified late[5,19].

Cultural beliefs and health-seeking behaviour: Cultural perceptions and limited awareness about eye disease influence care-seeking. Caregivers may attribute poor school performance to laziness or behavioural issues rather than uncorrected vision, delaying presentation to health services. Stigma associated with visible eye conditions (e.g., corneal scarring, strabismus) can also discourage families from seeking help or using spectacles for children[4].

Economic and infrastructural barriers: Out-of-pocket costs for consultations, spectacles, transport to tertiary centres, and surgical care place a heavy burden on families. Inadequate road networks and sparse public transport in rural parts of Abia and Ebonyi further hinder timely access to care. These economic and infrastructural constraints reduce uptake of even low-cost interventions and limit follow-up for amblyopia therapy and post-operative rehabilitation[3,21].

Case examples of interventions

- NGO-led school screening and spectacle provision: National and international NGOs (for example, Sightsavers and the Brien Holden Vision Institute) have conducted school screening campaigns and spectacle distribution programs in various Nigerian states. While documented evidence of sustained, state-wide programs specifically in Abia and Ebonyi is limited, such NGO activities demonstrate feasible models (screen-and-provide) that could be scaled with state partnership[19].
- Mobile/outreach clinics: Mobile eye clinics and outreach camps have been used in Nigeria to bring refraction, basic eye care and referrals to underserved districts; these models have reportedly reached children who otherwise lack access to care in semi-urban and rural communities and are applicable to Abia and Ebonyi[21].
- Tele-optometry as an emerging option: Telemedicine approaches that link community screenings to remote specialists (tele-optometry/teleophthalmology) have shown promise in LMIC settings for triage and specialist input where local expertise is limited. Such strategies could be piloted in South East Nigeria to extend specialist reach without requiring immediate expansion of on-site specialist numbers[22].

Overall, the situation in Abia and Ebonyi is characterized by fragmentary evidence, clear service gaps (specialist shortages, weak school screening), and structural barriers (economic, geographic, cultural) that limit early detection and effective management of childhood vision problems. Existing intervention models NGO-led screening, mobile clinics, and telehealth pilots offer practical templates but require formal evaluation and integration into state health and education systems to achieve sustainable impact. There is an urgent need for population-based surveys, routine school-level screening protocols (including near-vision and binocular function checks), and investments in workforce and referral pathways targeted to South East Nigeria.

VII. Gaps And Challenges

Lack of Comprehensive Prevalence Data in South East Nigeria

Despite the recognized burden of childhood vision impairment in Nigeria, there is a paucity of region-specific prevalence studies for South East Nigeria, particularly Abia and Ebonyi States. Most available evidence derives from small hospital-based studies and school surveys with limited representativeness[5,12]. The absence of robust, population-based data makes it difficult to design context-appropriate interventions, allocate resources effectively, or monitor progress toward eye health targets[3].

Weak Integration of School Eye Health into Primary Healthcare

Although Nigeria's National Eye Health Policy recommends integrating school screening into primary healthcare, actual implementation remains fragmented and donor-driven. In most schools in Abia and Ebonyi, vision screening is not systematically included in school health services, leaving many children undiagnosed until vision loss affects their academic performance[20]. Without strong linkages between the education and health sectors, school eye health remains under-resourced and unsustainable.

Poor Spectacle Compliance Among Children

Even when refractive errors are detected and spectacles provided, compliance among children is poor. Reasons include stigma from peers, misconceptions by parents that spectacles weaken the eyes, and economic barriers to replacing lost or broken spectacles[4]. Poor compliance undermines the cost-effectiveness of school-based interventions and perpetuates the educational and psychosocial disadvantages associated with uncorrected refractive errors.

Limited Public Awareness and Low Prioritization in Health Policy

Public awareness about childhood eye conditions remains low in South East Nigeria. Caregivers may attribute poor school performance or inattentiveness to behavioral or spiritual causes rather than vision problems[4]. At the policy level, child eye health has historically received low prioritization compared with infectious disease programs such as malaria and immunization[20]. Limited budgetary allocations for eye health at the state level in Abia and Ebonyi further exacerbate service gaps. As a result, most interventions depend heavily on NGOs and short-term projects, raising concerns about long-term sustainability.

VIII. Recommendations

Strengthen Data Collection and Research

To address the evidence gap, there is an urgent need for population-based surveys on childhood vision impairment in Abia and Ebonyi States. These should assess prevalence, causes, and access to services, providing the evidence base for planning, monitoring, and resource allocation. Partnerships between universities, Ministries of Health, and NGOs could facilitate the conduct of such studies[3].

Integrate School Eye Health into Primary Healthcare

State governments should mainstream vision screening into school health programs by training teachers and primary healthcare workers to conduct initial screenings and refer children for further evaluation. Integration into existing school health services would improve sustainability compared with donor-driven, one-off programs[20]. Developing standardized screening protocols that include near vision and binocular assessments is essential to detect a broader range of problems.

Improve Access to Affordable Spectacles and Compliance

Interventions should not stop at detection; they must ensure that affordable, durable, and child-friendly spectacles are provided. Establishing school-based spectacle delivery systems and creating repair/replacement schemes would reduce dropout from spectacle wear. Social behavior change communication campaigns should target parents, teachers, and children to dispel myths about spectacle use and reduce stigma[4].

Expand Human Resources for Child Eye Health

Investments are needed to train and deploy more pediatric optometrists and ophthalmologists to serve semi-urban and rural areas. Task-shifting approaches, such as enabling optometry interns or mid-level eye health workers to participate in school eye health, could help bridge immediate workforce gaps[1]. Incentivizing specialists to work in underserved areas of Abia and Ebonyi is also recommended.

Leverage Community-Based and Technological Approaches

Scaling up mobile eye clinics and community outreach can bring services closer to children in rural areas. In addition, tele-optometry and teleophthalmology can be leveraged to connect local screenings to remote specialists, reducing delays in care[22]. Pilot projects should be supported with local funding to evaluate feasibility in South East Nigeria.

Enhance Policy Commitment and Financing

At the policy level, Abia and Ebonyi State Ministries of Health should prioritize child eye health within state health budgets. Eye health targets should be integrated into state education sector plans to ensure a coordinated response. Partnerships with NGOs, private sector actors, and donor agencies can provide additional resources, but long-term sustainability requires state ownership.

IX. Conclusion

Childhood vision impairment remains a global public health concern, with significant implications for education, psychosocial well-being, and long-term productivity. Globally, refractive errors, amblyopia, and congenital or acquired ocular conditions remain the leading causes, and the burden is disproportionately higher in low- and middle-income countries. In Nigeria, childhood eye health continues to face persistent challenges, including limited data, weak school health systems, poor access to affordable spectacles, and inadequate human resources. In South East Nigeria, particularly Abia and Ebonyi States, the true magnitude of the problem remains under-documented. Available hospital-based studies suggest a considerable burden of uncorrected refractive error, ocular trauma, and preventable causes of vision loss, yet community-level and school-based data are sparse[3,20]. This gap highlights the urgent need for population-based surveys and better integration of eye care into primary and school health services. The review emphasizes that addressing childhood vision impairment requires multifaceted approaches such as strengthening epidemiological research and surveillance, expanding school eye health programs, improving access to affordable spectacles and pediatric eye care services, leveraging

community-based and telehealth interventions, and ensuring stronger government commitment and financing. By adopting these strategies, Abia and Ebonyi States can serve as models for integrated child eye health programs in Nigeria, ensuring that no child is left behind due to avoidable vision loss. Such investments will not only improve health outcomes but also enhance educational attainment, reduce social inequalities, and contribute to the long-term human capital development of the region.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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