

Article • Investigating the Factors that Hinder School-Based Vision Screening Programs at Egor Local Government Area, Benin City, Nigeria

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Work emphasis, school-based vision screening, rural eye care, preventable blindness, health education, and community eye health programs.

Supported school- and community-based health interventions across Edo, Lagos, and Delta States, with experience in vision screening, outreach coordination, stakeholder engagement, and health communication.

lack of need (19.9%). Despite these challenges, respondents highlighted significant benefits, such as early detection of vision problems (49.5%) and improved academic performance (22.0%). Recommended strategies for improvement included increasing awareness campaigns (35.1%) and providing additional resources (25.1%).

Conclusion: The findings reveal critical gaps in the prevalence and consistency of school-based vision screening programs. Addressing barriers through targeted awareness, resource allocation, and stakeholder engagement can significantly enhance their implementation, leading to improved vision health and student educational outcomes.

Keywords: school-based programmes, students, vision-screening

ABSTRACT

Background: Many children worldwide experience vision impairment, much of which is preventable with early intervention. School-based vision screening programs are vital for early detection and improved academic performance. However, in countries like Nigeria, these programs often face challenges, such as poor awareness, limited resources, and low stakeholder involvement. This study aimed to evaluate the prevalence, barriers, and benefits of school-based vision screening programs in Egor LGA, focusing on identifying actionable strategies for improvement.

Methods: A 14-question survey was conducted among 291 respondents, including students, teachers, administrators, and parents. The questionnaire assessed the frequency of vision screenings, barriers to implementation, perceived benefits, and recommendations for enhancing program participation.

Results: Most respondents (79.7%) reported that no vision screenings had been conducted in their schools over the past year. The frequency varied among the schools conducting screenings, with only 1.7% performing screenings more than twice annually. Key barriers included a lack of awareness (33.7%), a lack of resources (23.7%), and a perceived

Introduction

Vision is a crucial sense for learning and development, particularly for children who depend on their eyesight to acquire knowledge and skills. According to the World Health Organization (WHO), approximately 19 million children worldwide are visually impaired, with 12 million experiencing conditions that could be prevented or treated.¹ Unaddressed vision problems can adversely affect academic performance, social interactions, and overall well-being. Early detection and treatment of vision issues lead to better educational outcomes and improved quality of life for students.^{2,3}

One strategy to address this problem is school-based vision screening (SBVS), a process designed to identify children with potential vision problems and refer them to appropriate eye care services.⁴ SBVS is widely recognized as an effective, cost-efficient, and feasible intervention, especially in low- and middle-income countries, where access to eye care is often limited.⁵ Schools provide an ideal setting for vision screening due to their accessibility and ability to reach large populations of children who may not otherwise receive regular eye examinations.^{4,6}

Globally, several countries have implemented successful vision screening models, offering valuable lessons for program design and scalability. For instance, the Vision for Baltimore program in the United States provides free eye exams and eyeglasses to disadvantaged children, significantly improving academic performance and stakeholder engagement.⁷ Similarly, India's School Eye Health Program demonstrated the cost-effectiveness of training teachers to conduct initial screenings, reducing the burden on healthcare professionals.^{8,9} In Africa, the Peek Vision Program in Kenya and Botswana leverages mobile technology to conduct screenings via smartphone-based applications, improving referral rates and access to specialist care.⁵ Meanwhile, large-scale budget impact analyses in Cambodia and Ghana indicate that scaling up SBVS is financially viable when integrated into existing school health programs.⁶

Despite these successes, barriers to implementation persist. Socioeconomic limitations, lack of trained personnel, parental resistance, and misconceptions about spectacle use frequently hinder program effectiveness.^{5,10,11} Addressing these challenges through policy interventions, awareness campaigns, and sustainable funding mechanisms is critical for maximizing the impact of school vision programs.^{5,11}

In Nigeria, SBVS is a component of the National School Health Policy and Program, which aims to promote the health and well-being of school-age children.⁹ However, program coverage and quality vary across states and local government areas (LGAs). Egor LGA, located in Nigeria's South-South geopolitical zone, is one such area where these disparities are evident. With a population of approximately 339,899, including a significant number of school-age children, the region comprises diverse ethnic, cultural, and religious communities that can influence health-seeking behaviors and attitudes toward vision care. Vision problems among Nigerian children include refractive errors such as myopia, hyperopia, and astigmatism, as well as strabismus, amblyopia, cataracts, glaucoma, corneal diseases, and vitamin A deficiency.¹ According to WHO, at least 2.2 billion people worldwide suffer from vision impairment, with regional and national variations in prevalence due to differences in eye care accessibility, environmental factors, and socioeconomic conditions.¹ In Nigeria, uncorrected refractive errors, congenital ocular defects, corneal scarring, and cerebral visual

impairment are leading causes of moderate-to-severe vision impairment and blindness.¹

Despite the recognized benefits of SBVS programs, various challenges impede their effective implementation in Egor LGA. These include limited financial resources, lack of trained personnel, poor referral systems, low parental engagement, and cultural beliefs about spectacle use.^{5,10,11} Additionally, logistical challenges such as inadequate screening equipment, lack of school infrastructure, and weak follow-up systems further hinder success.^{5,11} One notable concern is the low parental involvement in SBVS programs. Studies indicate that parental resistance to vision screening interventions, coupled with low awareness of eye health issues, significantly affects program acceptance and follow-up compliance.^{5,10,11} These programs are usually conducted by trained personnel, such as school nurses, teachers, or volunteers, using various methods and instruments to assess visual acuity, refractive errors, ocular alignment, and other ocular health indicators.¹² The objectives of SBVS programs include detecting and preventing amblyopia, reducing the prevalence and impact of uncorrected refractive errors, identifying and referring children with other eye diseases or conditions, and promoting eye health awareness and education among children, parents, teachers, and communities.⁸

SBVS programs offer several benefits for children's eye health and well-being. Schools provide access to many children who may not have regular access to eye care services due to geographic, economic, or cultural barriers. These programs also use simple, low-cost, and portable tools that yield accurate results, reducing the workload for eye care professionals by filtering out children who do not need further evaluation.¹³ Furthermore, they improve the detection and treatment of vision problems that affect children's learning, development, and quality of life, preventing complications associated with untreated eye conditions.¹⁴

Children with untreated vision problems often struggle to engage with educational materials, which adversely affects their academic performance. Research has shown a correlation between poor performance on standardized assessments and visual impairment. For example, research found that among third-grade students with normal visual acuity (VA), 89.5% had satisfactory academic performance, whereas only 75% of those with impaired VA did ($p = 0.015$).¹⁵ This suggests a significant association

between low VA and poor academic performance, indicating that visual impairments can negatively impact students' learning and academic outcomes, including information processing and reading comprehension.

The effectiveness of SBVS programs is influenced by multiple factors. Socioeconomic barriers, such as limited financial resources, lack of health insurance, and transportation challenges, often prevent families from accessing follow-up care. Cultural beliefs and misconceptions about refractive errors and vision correction can also reduce acceptance and compliance with these programs. Additionally, lack of awareness among parents and teachers about the importance of vision screening can result in missed opportunities for early detection and treatment. Logistical challenges, including shortages of trained personnel, inadequate resources, and a lack of infrastructure, further hinder the implementation of these programs. Difficulties in follow-up, such as the cost of treatment, parental awareness, and school policies, also affect program outcomes.¹⁶

Materials and Methods

A convenience sampling technique was used, selecting participants who were readily available and who consented. This study was conducted at five schools: Benin Technical College (BTC), Calvary Crown Academy (CCA), Gabus International College (GIC), Russell Group of Schools, and GSTC, all located in Egor LGA, Benin City, Edo State. These individuals were selected based on their eligibility for the study.

A survey questionnaire was used to collect data from administrators, teachers, students, and parents. Quantitative data were collected through a survey questionnaire administered to a sample of school teachers, students, and parents in Egor LGA, Edo State. The survey questionnaire was designed to collect information on current practices and policies for SBVS programs, as well as the factors that hinder their implementation. The survey also gathered data on these stakeholders' perceptions and experiences with SBVS programs, as well as their suggestions for improving the programs to better address the vision needs of school-aged children.

Ethical Considerations

Before this study, informed consent was sought, and ethical approval was obtained from the University, where the research team is affiliated with the REC approval number: EC/UBEN/LSC.OPT/23/78. All

procedures performed in this study were conducted in accordance with the Tenets of the Declaration of Helsinki for the protection of human subjects.

Data Analysis

The data obtained from this study were analyzed using the Statistical Package for Social Sciences (SPSS) version 22.0. Descriptive statistics, frequency tables, and percentages were used in the data analysis and interpretation.

Results

The study surveyed 291 participants, predominantly students (80.1%), teachers (14.8%), administrators (3.4%), and parents (1.7%). Respondents were drawn from six schools in Egor LGA, with Benin Technical College contributing the largest share (57.7%), followed by Calvary Crown Academy (15.5%), GSTC (14.4%), and Gabus International College (10.3%), with minimal representation from Russell Group of Schools (1.0% each). The distribution of respondents from these schools provides a comprehensive view of the status of vision screening programs in the region.

Regarding the status of SBVS programs, only 59 respondents (20.3%) reported that their schools conducted such vision screenings in the past year. In contrast, a significant majority (79.7%) indicated that no vision screenings occurred. The frequency varied across schools that conducted screenings: 3.4% of respondents reported that vision screenings were held once a year, 4.1% twice a year, and 1.7% more than twice a year. Notably, 11.0% of respondents were unsure of the frequency of these vision screenings.

Respondents provided several explanations for the absence of vision screening programs. Specifically, 33.7% attributed the lack of screenings to insufficient awareness, 23.7% to inadequate resources, and 19.9% to the perception that there was no need for vision screening. A smaller proportion of respondents reported combined reasons: 3.1% cited all three factors, 2.1% indicated a lack of resources and awareness, and 0.3% noted a combination of a lack of understanding and a perceived lack of need. Additionally, 17.2% of respondents had no opinion on the matter.

Regarding attitudes toward these programs, 55.3% of respondents expressed an optimistic view, 15.5% were neutral, 4.1% were negative, and 25.1% remained uncertain. The study also assessed knowledge of SBVS, revealing that only

39.2% of respondents had previously heard of such programs, while 60.8% were unaware of them. Among those familiar with the programs, awareness was primarily gained through other sources (25.1%), followed by teachers (10.0%), students (9.3%), school administration (5.2%), and parents (4.5%). When evaluating the perceived importance and benefits of vision screening programs, most respondents (238 out of 291) believed that such programs are essential for students. This belief is supported by the potential benefits, with 49.5% of respondents identifying early detection of vision problems as the key advantage, 22.0% noting improved academic performance, and 14.4% mentioning an enhanced quality of life. A further 10.3% indicated that all listed benefits applied, while only minimal percentages chose various combinations of benefits or reported no benefit. These promising findings underscore the potential positive impact of SBVS programs.

Finally, the study examined the challenges of implementing vision screening programs. The most commonly reported challenge was a lack of resources, cited by 41.9% of respondents, followed by a shortage of trained personnel (28.9%). Additionally, 11.0% cited insufficient parental support, and 3.1% cited cultural barriers. These challenges are real and significant, and the study aims to address them. Regarding strategies to improve participation, 35.1% of respondents recommended increasing awareness through targeted campaigns, while 25.1% emphasized the need for additional resources. Other suggestions included parental involvement and innovative screening tools, each noted by 11.0% of respondents. These findings highlight the multifaceted challenges and potential strategies for enhancing the delivery of SBVS programs in Egor LGA.

Discussion

Table 1 indicates that 79.7% of respondents reported no vision screening programs in the past year, while only 20.3% reported screenings. Among those, the frequency was low: only 1.7% conducted

Table 1. Frequency of Vision Screening Programmes

Response	Frequency	Percent
Once a year	10	3.4
Twice a year	12	4.1
More than twice a year	5	1.7
Don't know	32	11.0
N/A	232	79.7

Table 2. Reasons for Absence of Vision Screening

Response	Frequency	Percent
Lack of resources	69	23.7
Lack of awareness	98	33.7
No need for vision screening	58	19.9
A combination of the three above reasons	9	3.1
Lack of resources and awareness	6	2.1
Lack of awareness and no need for vision screening	1	0.3
No opinion	50	17.2

Table 3. Benefits of Vision Screening Programmes

Response	Frequency	Percent
Early detection of vision problems	144	49.5
Improved academic performance	64	22.0
Improved quality of life	42	14.4
All options	30	10.3
Options 2 & 3	1	0.3
Options 1 & 2	6	2.1
Options 1 & 3	2	0.7
No benefit	2	0.7

screenings more than twice annually. These findings reveal a significant gap in the implementation of the SBVS program in Egor LGA. This gap is wider than studies reported, which found that over 60% of basic schools in a Ghanaian municipality had some form of eye health intervention in place.¹⁶ Similarly, a study in Armenia found higher screening coverage due to a standardized national framework.¹⁰ The stark contrast suggests that Egor LGA lags in policy enforcement and operational readiness for SBVS.

As shown in Table 2, the primary barriers cited for the absence of SBVS were lack of awareness, insufficient resources, and a perceived lack of need. These findings align with the rapid review study, which identified awareness, resource limitations, and stakeholder engagement as consistent global challenges in school-based eye care delivery.¹² Likewise, a qualitative study in Ontario found that awareness among educators and parents significantly affected program implementation and follow-up care.¹³ Our results reinforce that awareness campaigns and educational outreach are critical starting points for intervention.

Table 3 outlines the perceived benefits of SBVS. The most frequently cited were early detection of vision problems, improved academic performance, and enhanced quality of life. These findings are supported by multiple studies. For example, Toledo

Table 4. Challenges to Vision Screening Programmes

Response	Frequency	Percent
Lack of resources	122	41.9
Lack of trained personnel	84	28.9
Lack of parental support	32	11.0
Cultural barriers	9	3.1
All options	9	3.1
Options 1 & 2	14	4.8
Options 1 & 3	3	1.0
Options 1 & 4	1	0.3
Option 1, 3, & 4	1	0.3
Option 2, 3, 4	1	0.3
Option 1, 2, & 3	10	3.4
Option 3 & 4	1	0.3
Others (Lack of awareness)	1	0.3
No benefit	3	1.0

et al. found a strong association between corrected visual acuity and academic success among school-aged children, where students with normal vision achieved significantly higher academic scores.¹⁷ The Vision for Baltimore initiative also linked vision correction through SBVS to improved classroom engagement and school attendance.⁷ Our study validates these claims and underlines the potential of SBVS to improve not only health but also education outcomes.

A small proportion of respondents expressed skepticism or were unaware of these benefits. This suggests the presence of attitudinal barriers and underlines the importance of targeted stakeholder education. These attitudes could be influenced by cultural norms or misinformation, consistent with findings from a study that noted resistance to spectacle use among schoolchildren in parts of India due to social stigma and misconceptions.⁸

Table 4 identifies the most pressing challenges during SBVS implementation: insufficient resources and insufficient trained personnel. These findings mirror a study on mobile vision screening in Botswana, which emphasized the importance of equipping schools with both physical tools and adequately trained staff to deliver consistent and reliable screenings.⁵ Similarly, a study on the cost and budget impact analysis emphasized that sustainable funding and workforce development are essential for scalability in low-resource settings.⁶

Parental support was another challenge. The frequency is notably lower than anticipated, yet crucial, as parental involvement significantly affects program uptake and compliance with referrals. A

Table 5. Suggestions to Improve Participation

Response	Frequency	Percent
Increase awareness	102	35.1
Provide more resources	73	25.1
Involve parents	32	11.0
Use innovative screening tools	32	11.0
All options	20	6.9
Options 1 & 2	5	1.7
Options 1 & 3	3	1.0
Options 1 & 4	5	1.7
Option 1, 3, & 4	3	1.0
Option 2, 3, 4	3	1.0
Option 1, 2, & 3	11	3.7
Option 3 & 4	1	0.3
Options 2 & 3	2	0.7

study identified a lack of parental follow-through as a major bottleneck in Canada’s school-wide screening programs.¹⁵ Our findings align with this concern and suggest the need for structured communication between schools and parents, possibly through community health workers or parent-teacher associations.

As seen in Table 5, recommended strategies for improving SBVS included increasing awareness, providing more resources, and engaging parents. These proposals reflect global best practices, such as those implemented in Cambodia and Ghana, where it was demonstrated that combining financial investments with education and parental engagement significantly improved SBVS participation.⁶ Similarly, a study concluded in their systematic review that integrating SBVS into broader school health policies and using cost-effective tools enhances both reach and impact.¹⁸

In summary, this study’s findings highlight systemic gaps in SBVS delivery in Egor LGA and offer a path forward through increased awareness, resource mobilization, and stakeholder education. When viewed alongside global data, our study adds valuable regional insight to the growing evidence base on the challenges and opportunities in school vision screening implementation.

Study Limitation

One limitation of this study is the low representation of parents among survey respondents, which limits insights into parental attitudes and barriers to SBVS. Possible reasons for this low participation include lack of awareness, socioeconomic constraints, cultural beliefs about

spectacle use, and limited communication between schools and parents regarding vision care. Since parental involvement is crucial for successful screening programs, future efforts should focus on raising awareness, improving school-parent communication, and addressing cultural misconceptions to enhance participation and referral compliance.

Conclusion

This study identified various challenges affecting the effectiveness of the SBVS in Egor Local Government Area, Benin City, Nigeria, mirroring similar issues found in other contexts. It highlights critical gaps in the provision of vision screening programs, including low prevalence, resource constraints, and lack of awareness. At the same time, it emphasizes the significant potential benefits of such programs and provides actionable recommendations to address the barriers identified. The findings emphasize the importance of targeted strategies to increase awareness, allocate resources effectively, and engage key stakeholders in ensuring that vision screening becomes an integral part of school health initiatives.

To address these challenges, recommendations include allocating adequate government resources to fund equipment, trained professionals, and materials; implementing staff training programs; fostering parental engagement; and establishing continuous monitoring and evaluation to improve the program's impact and sustainability in enhancing students' eye health outcomes.

Ethics approval: Ethical approval for this study was obtained from the Research and Ethics Committee of the Department of Optometry, University of Benin, with the REC approval number EC/UBEN/LSC. OPT/23/78. All procedures performed in this study were conducted in accordance with the Tenets of the Declaration of Helsinki for human subjects.

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