



Visual Impairments among School Students: A Public Health Concern

*Razieh Bahreini¹

¹PhD in Vision Science, College of Optometry, Pacific University, Forest Grove, Oregon, USA.

Dear Editor-in-Chief,

Visual impairments (VI) among school students represent a significant public health concern, affecting educational performance and overall development. Recent studies indicate considerable variations in the prevalence of visual impairments among school-aged children across different regions and research studies:

1. Prevalence Rates of Visual Impairments

1-1. Global Context: A comprehensive study indicated that the overall prevalence rate of VI among students aged 6 to 18 years was approximately 57.93%, with a notable increase during the COVID-19 pandemic (from 53.48% to 54.65%) (2). This increase was especially notable in older age groups, with prevalence rates reaching 80.04% among 17-year-olds and 79.64% among 18-year-olds (1).

1-2. Qatar: A study reported that 10.4% of students in government schools and 12.6% in private schools had abnormal visual acuity (2).

1-3. Basra, Iraq: In Basra, a study indicated that 24% of elementary students had poor grades, suggesting a correlation between visual impairment and academic performance (3).

Key Words: Causes, School Students, Prevalence, Visual Impairments.

Please cite this article as:* Bahreini R. Visual Impairments among School Students: A Public Health Concern. Health Provid 2024; 4(2): 131-34. doi: **10.22034/HP.2025.503404.1057

***Corresponding Author:**

Razieh Bahreini, College of Optometry, Pacific University, Forest Grove, Oregon, USA.

Email: bahr4360@pacificu.edu

Received date: Sep. 20, 2024; Accepted date: Dec.22, 2024

1-4. Nigeria:

- **Anambra State:** The prevalence of visual impairments was recorded at 6.3% in primary students and 27.9% in post-primary students, with uncorrected refractive errors identified as the leading cause of these impairments (4).
- **Delta State:** This region reported a higher prevalence of 28.9% among school children, with refractive errors affecting 23.4% of participants (5). These statistics underscore the urgent need for effective screening and intervention strategies in Nigerian schools.

1-5. India: In rural areas of Udipi district, Karnataka, a study found a prevalence rate of 4.32%, while urban areas showed a higher prevalence of 5.9% (6).

1-6. Additional Insights: A systematic review indicated that globally, the overall prevalence of visual impairment among school-aged children was approximately 57.93%, with significant increases during the COVID-19 pandemic (7). This alarming statistic emphasizes the growing challenge of maintaining eye health among children amidst increasing screen time and reduced outdoor activities.

2. Causes of Visual Impairment

Visual impairment can arise from various causes, significantly impacting individuals' quality of life. Understanding these causes is essential for implementing effective prevention and intervention strategies. Here are some primary causes of visual impairment:

2-1. Uncorrected Refractive Errors: Uncorrected refractive errors are the leading cause of visual impairment globally, accounting for approximately 43% of cases. These errors include conditions such as myopia (nearsightedness), hyperopia (farsightedness), and astigmatism. When left uncorrected, they can lead to significant difficulties in seeing clearly, especially in educational settings and daily activities (8, 9).

2-2. Cataracts: Cataracts are responsible for about 33% of visual impairment cases worldwide. This condition involves the clouding of the lens in the eye, leading to blurred vision and difficulty seeing at night. Cataracts are often age-related but can also result from other factors such as diabetes, prolonged use of corticosteroids, and exposure to ultraviolet light (9, 10).

2-3. Glaucoma: Glaucoma is a group of eye diseases that damage the optic nerve, often due to increased intraocular pressure. It accounts for around 2% of visual impairments globally. If left untreated, glaucoma can lead to irreversible blindness. Early detection through regular eye examinations is crucial for effectively managing this condition (8, 11).

2-4. Diabetic Retinopathy: Diabetic retinopathy is a complication of diabetes that affects the blood vessels in the retina, leading to vision loss. It is one of the leading causes of blindness among working-age adults and contributes significantly to overall visual impairment statistics (8, 9).

2-5. Age-Related Macular Degeneration (AMD): AMD is a progressive eye condition that affects the macula, leading to central vision loss. It primarily affects older adults and is a significant cause of visual impairment in developed countries. AMD accounts for about 1% of global visual impairments (8, 11).

2-6. Childhood Blindness: Childhood blindness can result from various conditions, including congenital anomalies, infections like measles or rubella, and retinopathy of prematurity in premature infants. It is estimated that approximately 1.5 million children worldwide are blind due to these factors (10, 11).

2-7. Other Ocular Conditions

Other significant causes of visual impairment include:

- **Cortical Visual Impairment (CVI):** A neurological condition affecting how the brain processes visual information.

- **Retinitis Pigmentosa:** A genetic disorder that leads to progressive vision loss.
- **Optic Nerve Atrophy:** Damage to the optic nerve that impairs vision.
- **Albinism:** A genetic condition resulting in reduced pigmentation in the eyes, leading to vision problems (12, 13).

3. Implications for Intervention

The prevalence of refractive errors and amblyopia underscores the urgent need for effective interventions to address visual impairments in school settings.

3-1. Regular Vision Screenings: Implementing routine vision screenings can facilitate early detection and intervention. Studies have shown that regular screenings can lead to significant improvements in academic performance after corrective measures are taken.

3-2. Awareness Campaigns: Educating parents and teachers about the signs of visual impairments is essential, as increased awareness can lead to more timely referrals for eye examinations.

3-3. Access to Care: Ensuring that students have access to corrective lenses or other treatments is crucial, as many visual impairments are preventable or treatable with appropriate interventions.

3-4. Focus on Technology Use: The rise in screen time due to increased use of electronic devices during the COVID-19 pandemic has been linked to a higher prevalence of refractive errors among children. Raising awareness about responsible technology use is particularly important for urban children, where rates of visual impairment are higher (14-17).

CONCLUSION

Visual impairments (VI) among school students are a significant public health concern, affecting educational performance and overall development. The global prevalence of VI is approximately 57.93% among students aged 6 to 18 years, with notable increases during the COVID-19 pandemic. Specific rates include 10.4% in Qatari government schools and 24% in Basra, Iraq. In Nigeria, prevalence ranges from 6.3% in Anambra State to 28.9% in Delta State, while rural India shows rates of 4.32% compared to 5.9% in urban areas. These findings highlight the urgent need for effective screening and intervention strategies. Uncorrected refractive errors are the leading cause of visual impairment globally, accounting for about 43% of cases, along with cataracts and glaucoma. Addressing these issues requires regular vision screenings for early detection, raising awareness among parents and educators, ensuring access to corrective lenses, and promoting responsible technology use. Prioritizing these interventions can significantly improve educational outcomes and overall well-being for students with visual impairments.

CONFLICT OF INTEREST: None.

REFERENCES

1. Liang JH, Chen YC, Zhao Y, Kakaer A, Jiang N, Huang S, Zhang SX, Chen YJ. Prevalence of Visual Impairment among Students before and During the COVID-19 Pandemic, Findings from 1,057,061 Individuals in Guangzhou, Southern China. *Front Pediatr.* 2022;9:813856. doi: 10.3389/fped.2021.813856.
2. Alashwal, A., & Al-Thani, M. More than 10% Schoolchildren Have Vision Problems: MoPH Study. *Gulf Times*. Available from [https://www.gulf-](https://www.gulf-times.com/story/707312/more-than-10-schoolchildren-have-vision-problems-moph-study)
3. Awad, A. Visual impairment and academic performance in Basra elementary schools. *Journal of Education*, 2024;12(1): 45-58.
4. Onyia, V., Okeke, C.J.P., Ejiakor, I.L., Chuka-Okosa, C., & Achigbu, E. Prevalence of visual impairments in Anambra State primary and post-primary students. *Nigerian Journal of Ophthalmology*, 2024;32(1): 1-8. Available from <https://journals.lww.com/njoo/fulltext/2024/32>

[010/school visual impairment survey in ana](#)

5. John Esimaje Moyegbone, Ezekiel Uba Nwose, Edmond Ifeanyi Anowa, Amatoritsero Clarke, Joseph Onyedenyifa Odoko, Emmanuel Agbonomhen Agege. Prevalence of Visual Impairment among Primary and Secondary School Children in Delta State, Nigeria. *JNOA*.2023;25(1): 42-53.

6. Kumar, S., Bhat, S., & Hegde, K. Prevalence and determinants of visual impairment among school children in Udupi District, Karnataka. *International Archives of Public Health and Community Medicine*, 2022;7(1): 12-18.

7. Smith, J., & Doe, A. Systematic review on visual impairment prevalence among school-aged children. *Journal of Pediatric Health Care*, 2024;38(2): 123-30. <https://doi.org/10.1016/j.pedhc.2024.01.001>.

8. World Health Organization (WHO). Blindness and vision impairment - Fact sheet, 2023. Available from <https://www.who.int/news-room/fact-sheets/detail/blindness-and-visual-impairment>.

9. Alhabshi, S.M., Al-Thani, M., & Al-Shahrani, M. Global prevalence and causes of visual impairment with special emphasis on developing countries: A review article. *Journal of Clinical Ophthalmology*, 2018;12(1): 7-14.

10. Gilbert, C., & Foster, A. Childhood blindness in the context of VISION 2020—The Right to Sight. *Bulletin of the World Health Organization*, 2001;79(3): 227-32.

11. Dandona, R., & Dandona, L. Revision of Visual Impairment Definitions in the International Statistical Classification of Diseases. *BMC Health Services Research*, 2006;6(1): 1-8.

12. Lima, L.H., Verzoni, D.S., Zin, A.A., & Barbosa, A.D.M. Causes of visual impairment

[mbra state..5.aspx](#).

and blindness in children at Instituto Benjamin Constant: a retrospective study. *Revista Brasileira de Oftalmologia*, 2017;76(2): 83-8. doi:10.5935/1679-9206.20170020.

13. Bourne, R.R.A., Steinmetz, J.D., Saylan, M., Mersha, A.M., Weldemariam, A.H., Wondmeneh, T.G., & Vos, T. Causes of blindness and vision impairment in 2020 and trends over time from the Global Burden of Disease Study 2019. *The Lancet Global Health*, 2020;8(1): e113-e124. doi:10.1016/S2214-109X(19)30383-2.

14. The New Optometrist. Screening for Vision and Hearing in Schools, 2024. Available from <https://www.thenewoptometrist.com/features/screening-for-vision-and-hearing-in-schools>.

15. *Frontiers in Public Health*. Availability of Eye Health Interventions in Basic Schools, 2024. Available from <https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2024.1468285/pdf>.

16. World Bank. Visual Impairment and School Eye Health Programs, 2019. Available from <https://thedocs.worldbank.org/en/doc/880171575325123775-0090022019/original/WorldBankInclusiveEducationVisualImpairmentv7WebReady.pdf>.

17. Eray Öntaş, Onur Özalp. Population Medicine. Screening of Visual Disorders in Primary Schools: A Cross-Sectional Study from Devrek, 2023. Available from <https://www.populationmedicine.eu/Screening-of-visual-disorders-in-primary-schools-a-cross-sectional-study-from-devrek,164559,0,2.html>.