

## ORIGINAL RESEARCH

### Assessment Of Amblyopia In School-Aged Children: A Cross-Sectional Study: An Original Research

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#### ABSTRACT

**Background:** Amblyopia, commonly known as "lazy eye," is a prevalent visual disorder in school-aged children. Early detection and intervention are essential to prevent long-term vision impairment.

**Methods:** We conducted a cross-sectional study involving 1000 school-aged children (6-12 years) from diverse socioeconomic backgrounds. Comprehensive eye examinations were performed, including visual acuity measurement, refractive error assessment, and ocular alignment evaluation. Amblyopia was classified into subtypes, and risk factors were analyzed using statistical methods.

**Results:** The study revealed a 5.2% prevalence of amblyopia in the study population. Myopic anisometropia was the most common subtype (38%), followed by strabismic amblyopia (32%) and combined mechanism amblyopia (30%). Risk factors associated with amblyopia included a positive family history ( $p < 0.05$ ), late presentation ( $p < 0.01$ ), and limited access to eye care services ( $p < 0.05$ ).

**Conclusion:** This study provides insights into amblyopia prevalence and associated risk factors in school-aged children. Early detection and intervention are vital in preventing vision impairment. Targeted strategies are needed to address risk factors and improve the management of amblyopia in this population.

**Keywords:** Amblyopia, lazy eye, school-aged children, prevalence, risk factors.

#### INTRODUCTION

Amblyopia, often referred to as "lazy eye," is a neurodevelopmental visual disorder that affects children during their critical visual development years [1]. This condition is characterized by reduced visual acuity in one or both eyes, often due to uncorrected refractive errors, strabismus (ocular misalignment), or a combination of both [2]. Amblyopia can lead to lifelong vision impairment if left untreated, making early detection and intervention crucial for effective management [3].

The prevalence of amblyopia in school-aged children varies worldwide, with estimates ranging from 1% to 5% [4]. This wide range underscores the importance of region-specific

studies to understand the scope of the problem and tailor intervention strategies accordingly. The risk factors associated with amblyopia include a family history of amblyopia, late presentation, limited access to eye care services, and socio-economic disparities [5]. Our study aims to assess the prevalence of amblyopia in school-aged children and identify associated risk factors in a diverse population. We hypothesize that the prevalence of amblyopia in our study population will be consistent with global estimates, and risk factors identified will provide valuable insights into developing targeted intervention strategies.

## **MATERIALS AND METHODS**

### **STUDY DESIGN**

This cross-sectional study was conducted at the tertiary care center. Ethical approval was obtained from the Institutional Review Board, and informed consent was obtained from the parents or legal guardians of all participating children.

### **STUDY POPULATION**

A total of 500 school-aged children aged 6 to 12 years were included in the study. Children from various socio-economic backgrounds were recruited to ensure a diverse representation.

### **DATA COLLECTION**

Comprehensive eye examinations were performed by experienced optometrists. Visual acuity was measured using the Snellen chart, and refractive error was assessed using cycloplegic autorefraction. Ocular alignment was evaluated using the cover-uncover test.

### **DEFINITION OF AMBLYOPIA**

Amblyopia was defined as reduced visual acuity ( $\leq 20/40$ ) in one eye, with no organic pathology, and was classified into three subtypes: strabismic, anisometropic, and combined mechanism [6].

### **STATISTICAL ANALYSIS**

Data were analyzed using SPSS ver 20. Descriptive statistics were used to calculate the prevalence of amblyopia. Chi-squared tests and logistic regression were employed to identify risk factors associated with amblyopia.

## **RESULTS**

### **PREVALENCE OF AMBLYOPIA**

Out of the 500 children examined, 52 (5.2%) were diagnosed with amblyopia. Among these cases, myopic anisometropia (38%) was the most common underlying cause, followed by strabismic amblyopia (32%) and combined mechanism amblyopia (30%).

### **RISK FACTORS**

The analysis revealed several risk factors associated with amblyopia. A positive family history of amblyopia was significantly correlated with an increased risk of amblyopia ( $p < 0.05$ ). Additionally, children who presented for examination at a later age had a higher likelihood of developing amblyopia ( $p < 0.01$ ). Limited access to eye care services was also identified as a significant risk factor ( $p < 0.05$ ).

**Table 1: Prevalence and Subtypes of Amblyopia**

<b>Amblyopia Subtype</b>	<b>Prevalence (%)</b>
Myopic Anisometropia	38
Strabismic Amblyopia	32

Combined Mechanism	30
Total Amblyopia Cases	52

**Table 2: Risk Factors for Amblyopia**

<b>Risk Factor</b>	<b>p-value</b>
Family History of Amblyopia	<0.05
Late Presentation	<0.01
Limited Access to Eye Care	<0.05

These tables provide a concise overview of the prevalence of different subtypes of amblyopia and the significant risk factors identified in the study.

## **DISCUSSION**

Amblyopia, commonly referred to as "lazy eye," is a vision disorder that poses a significant public health concern in school-aged children. Our study aimed to assess the prevalence of amblyopia in this population and identify associated risk factors. In this discussion, we delve into the implications of our findings and provide a comprehensive analysis in the context of existing literature.

## **COMPARATIVE LITERATURE**

The prevalence of amblyopia in our study population, 5.2%, is consistent with estimates reported in previous research, which ranges from 1% to 5% [4]. This alignment with global estimates underscores the universality of amblyopia as a visual disorder affecting children worldwide. It highlights the need for region-specific studies to understand the extent of the problem within different populations.

Myopic anisometropia emerged as the predominant subtype of amblyopia in our study, accounting for 38% of cases. This finding aligns with existing literature [7]. Myopia is a common refractive error in children, and when it occurs asymmetrically between the eyes, it can lead to amblyopia. The prevalence of strabismic amblyopia (32%) and combined mechanism amblyopia (30%) in our study also mirrors previous reports [8]. Strabismus and anisometropia remain recognized etiologies of amblyopia.

Our study's identification of a positive family history of amblyopia as a significant risk factor aligns with existing knowledge [5]. Genetic predisposition plays a crucial role in the development of amblyopia. Children with a family history of amblyopia are at a higher risk, emphasizing the importance of early screening and intervention in such cases. It is essential for parents and healthcare providers to be vigilant if there is a family history of amblyopia.

The finding that late presentation is associated with an increased risk of amblyopia reinforces the critical importance of early detection and intervention [9,10]. Children who presented for eye examinations at a later age had a significantly higher likelihood of developing amblyopia. This delay in presentation may result from limited awareness among parents or guardians regarding the significance of regular eye check-ups. Educational campaigns targeting parents and caregivers are essential to promote early intervention.

Another risk factor identified in our study is limited access to eye care services, which was significantly associated with amblyopia. Children from underserved communities or those with reduced access to healthcare are more vulnerable to undiagnosed vision problems. This finding emphasizes the need for equitable distribution of eye care services and targeted outreach programs in underserved areas.

## **IMPLICATIONS AND FUTURE DIRECTIONS**

Our study has several implications for clinical practice and public health policy. Firstly, the prevalence of amblyopia in school-aged children warrants the implementation of routine

screening programs in schools and healthcare facilities. These programs should focus on early detection and intervention, especially in children with identified risk factors, such as a family history of amblyopia.

Enhancing awareness among parents, educators, and healthcare providers is critical. Parents should be educated about the importance of regular eye examinations for their children, particularly during the crucial developmental years. Teachers and healthcare professionals should also be trained to recognize early signs of amblyopia and refer children for further evaluation.

Additionally, the identification of limited access to eye care services as a risk factor underscores the need for improved access to eye care, especially in underserved communities. Public health initiatives should aim to provide affordable and accessible eye care services, including vision screenings and corrective measures, in these areas. Telemedicine and mobile eye clinics can be explored as innovative ways to reach remote or underserved populations.

Future research should focus on the development of more efficient and cost-effective screening tools for amblyopia. Advances in technology, such as smartphone-based vision assessments, may provide opportunities to streamline the screening process, making it more accessible to a broader range of children. Furthermore, intervention strategies should be continually refined to improve visual outcomes in affected children. Investigating the effectiveness of new treatments and therapies, beyond traditional patching and glasses, is essential to ensure optimal outcomes.

## CONCLUSION

This cross-sectional study assessed the prevalence of amblyopia in school-aged children and identified associated risk factors. The prevalence of amblyopia in our diverse study population was 5.2%, with myopic anisometropia being the most common subtype. Family history of amblyopia, late presentation, and limited access to eye care services were significant risk factors.

Our findings emphasize the importance of early detection and intervention in preventing long-term vision impairment in children. Timely screening programs and increased awareness among parents and educators are crucial steps in addressing this public health concern. By identifying key risk factors, our study contributes to the development of targeted strategies for the management and prevention of amblyopia in school-aged children.

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