

Prevalence of Refractive Errors in Urban Area among School Boys

Zulfiqar Ali¹, Nadia Nazir¹, Soufia Farrukh¹, Abdul Rehman², Muhammad Javaid Iqbal³
and Imran Nazir⁴

ABSTRACT

Objective: To study the prevalence of refractive errors among school boys in urban area.

Study Design: A cross sectional study

Place and Duration of Study: This study was conducted at Ophthalmology, Bahawal Victoria Hospital, Quaid e Azam Medical College, Bahawalpur during November 2017.

Materials and Methods: The study population comprised of 462 students from class 6th to Class 10th. Ocular examination process was thoroughly explained to the study participants while all the study instruments/equipments were transported to school one day prior to the actual ocular examination. Standard "Snellen Chart" was used for screening of visual acuity. Children having visual acuity < 6/6 in any of the eye were further confirmed for refractive error with the use of pinhole. Objective refraction was made using auto-refractor and retinoscopy while confirmation was done applying subjective refraction.

Results: Among a total of 460 students, age range was between 9 to 18 years while the mean age \pm SD was recorded to be 14.3 \pm 1.8 years. History of glasses was noted among 58 (12.6%) students. There were 253 (55.0%) who had history of glasses in their parents. Findings of our study revealed frequency of refractive errors in 98 (21.3%) students. Among 98 children with refractive errors, myopia in 58 students (59.2%) was the commonest type of refractive error followed by astigmatism in 28 students (28.6%) and hypermetropia in 12 students (12.1%).

Conclusion: Myopia was the commonest type of refractive error in school going boys followed by Astigmatism and hypermetropia.

Key Words: Refractive errors, myopia, astigmatism, boys

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INTRODUCTION

Prevalence of blindness in pediatric population ranges between 0.3% to 1.5% per 1000 children in developing countries. Uncorrected refractive errors are known to be the commonest reason of visual impairment worldwide. WHO estimated around 285 million people to have visual impairments, out of which, around 40 million are having blindness while 250 million have low vision.² Commonest causes for visual impairment are considered to be refractive errors followed by cataract seen in 43% and 33% cases respectively.³ Researchers have proposed that more than 90% causes of blindness are either preventable or treatable.⁴

¹. Department of Ophthalmology / Pediatric Medicine² / Consultant Physician³ / Pharmacist⁴, Bahawal Victoria Hospital, Quaid e Azam Medical College, Bahawalpur.

Correspondence: Dr. Zulfiqar Ali, Assistant Professor of Ophthalmology, Bahawal Victoria Hospital, Quaid e Azam Medical College, Bahawalpur.

Contact No: 0300-9689475

Email: dr.zulfiqarali64@hotmail.com

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Among children, refractive errors are considered to be one of the commonest problems faced. In children and adults age groups, refractive errors present multiple issues like educational loss, economic hurdles, less productivity as well as impairment in quality of life.^{5,6} Lack of services along with less affordability and poor access to healthcare services are some of the major issues linked to non-correction of refractive errors among pediatric age groups.⁷ But, this does not mean that developed communities cannot have unidentified or uncorrected refractive errors in pediatric age groups.⁸ Untreated visual problems are of special interest among children as they affect educational achievements as well as put emotional burden on the parents and families. Vision problems can be addressed with help of various available options like eye glasses, medications or vision therapies. Children themselves have increased chances of developing social or emotional problems due to unidentified or untreated vision issues. Studies have shown variation in the prevalence of refractive errors among school going children.^{9,10} This study was planned to determine the prevalence of refractive errors among boys in an Urban school of District Bahawalpur.

MATERIALS AND METHODS

This cross sectional study was conducted in a boys school of Bahawalpur City. Boys from Class 6th to

Class 10th were included during November 2017. Request was made to school administration and after getting the formal permission, ocular examination of the students was done in the school. Approval from “institutional ethical committee” was taken for this research. Informed consent was sought from all study participants.

Ocular examination process was thoroughly explained to the study participants while all the study instruments/equipments were transported to school one day prior to the actual ocular examination. Two ophthalmologists along with 2 optometrists did ocular examination and refraction. Standard “Snellen Chart” was used for screening of visual acuity. Children having visual acuity < 6/6 in any of the eye were further confirmed for refractive error with the use of pinhole. Objective refraction was made using auto-refractor and retinoscopy while confirmation was done applying subjective refraction.

A special proforma was made to record study data. SPSS version 26.0 was used for data handling and analysis. Study data was represented as frequency and percentages.

RESULTS

Among a total of 460 students, age ranged between 9 to 18 years while the mean age+SD was recorded to be 14.3±1.8 years. Table (1) is showing characteristics of study participants. Class 10th followed by 9th and 8th had the most number of students in the present study having 106 (23.0%), 102 (22.2%) and 94 (20.4%) students respectively. History of glasses was noted among 58 (12.6%) students. There were 253 (55.0%) who had history of glasses in their parents.

Table No.1: Characteristics of Students Participated

Characteristics		No. (%)
Class-wise Distribution	6 th	82 (17.8%)
	7 th	76 (16.5%)
	8 th	94 (20.4%)
	9 th	102 (22.2%)
	10 th	106 (23.0%)
History of Glasses	Yes	58 (12.6%)
	No	402 (87.4%)
History of Glasses among any of the Parents	Yes	253 (55.0%)
	No	207 (45.0%)

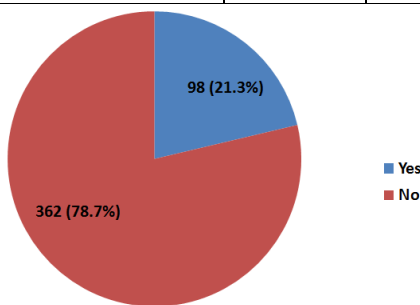


Figure No.1: Prevalence of Refractive Errors among students (n=460)

Findings of our study revealed frequency of refractive errors in 98 (21.3%) students while remaining 362 (78.7%) had normal vision (Figure No.1). Figure (2) is showing distribution of students with refractive errors in terms of types of refractive errors. Among 98 children with refractive errors, myopia 58 (59.2%) was the commonest type of refractive error followed by astigmatism 28 (28.6%) and hypermetropia 12 (12.1%).

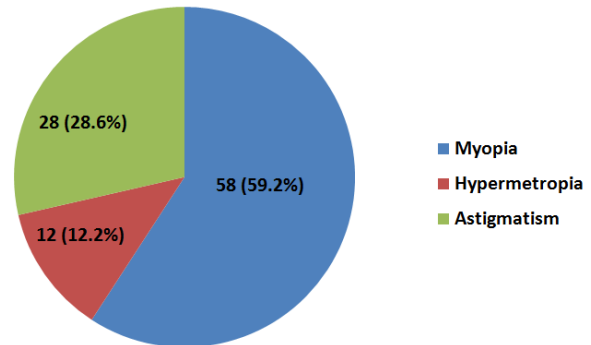


Figure No.2: Types of Refractive Errors (n=98)

DISCUSSION

Among children, refractive errors are associated with short-term as well as long term problems like loss in education, poor educational grades, loss of professional opportunities, economic difficulties as well as poor quality of life.^{5,6} Visual impairments caused by unaddressed refractive errors are considered to be a public health issue while correction of refractive errors adopting spectacles are known to be the best cost effective interventions. Researchers have shown that screening at mass levels among children of school going age can be a successful way of identifying and treating uncorrected refractive errors.¹¹

In the present study, frequency of refractive errors was noted to be 21.3% among students. Our findings are showing a higher prevalence of refractive errors when compared to other local studies (8.9% and 10%).^{10,12} Studies from Malaysia¹³ noted prevalence of refractive errors among children to be 7.7% while researchers from Nepal¹⁴ and Iran¹⁵ noted that to be 8.6% and 3.5% respectively. A recent local study found prevalence of refractive errors to be 9.4% among children.¹⁶

In this study, among 98 children with refractive errors, myopia 58 (59.2%) was the commonest type of refractive error followed by astigmatism 28 (28.6%) and hypermetropia 12 (12.1%). Our findings are close to a recent local study from Faisalabad which showed that Myopia was the commonest type of refractive error observed among 51.5% children.¹⁷ Another local study revealed Myopia to form 42.1% of refractive errors among children.¹⁶ Data from Ethiopia also showed that myopia was the most frequent type of refractive error among children.¹⁸ Our findings were somewhat different to a local study from LandiKotal where researchers noted hypermetropia to be the most

frequent type of refractive error.¹²Data from Vietnam has also shown that myopia was the commonest cause of impaired vision among school going children.¹⁹Some other researchers have also concluded that Myopia is the most frequent type of refractive error among children.²⁰

The present study has some limitations as well. As this study was conducted among school going children, our findings cannot be generalized. As this study was conducted among male students. We were unable to find out any gender based differences regarding prevalence and types of refractive errors. High prevalence of refractive errors among school going children is alarming so the government and stakeholders should form alliance to plan regular screening programs for the timely identification and treatment of refractive errors among school going children. These screening programs can provide low cost assistance to children and their families who are suffering with refractive errors. Awareness programs and relevant educational activities can also be planned to increase awareness and knowledge about refractive errors among general population.

CONCLUSION

Prevalence of refractive errors was high among school going children. Myopia followed by Astigmatism was the commonest types of refractive errors. Regular screening programs for the early identification and treatment of refractive errors should be conducted.

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Author's Contribution:

Concept & Design of Study:	Zulfiqar Ali
Drafting:	Nadia Nazir, Soufia Farrukh
Data Analysis:	Abdul Rehman, Muhammad Javaid Iqbal and Imran Nazir
Revisiting Critically:	Zulfiqar Ali, Nadia Nazir
Final Approval of version:	Zulfiqar Ali

Conflict of Interest: The study has no conflict of interest to declare by any author.

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