ORIGINAL RESEARCH PAPER

Ophthalmology

A STUDY OF REFRACTIVE ERRORS IN SCHOOL GOING CHILDREN VISITING OPHTHALMOLOGY OPD AT MVJMC & RH IN RURAL BENGALURU

KEY WORDS: Refractive errors, School children, Myopia, Hypermetropia, Astigmatism

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ABSTRACT

Purpose: The aim of this study is early detection and correction of refractive errors in school. **Methods:** A Cross-sectional study was conducted among 1200 school going children of 5-18yrs visiting Ophthalmology OPD at a tertiary health centre. All children underwent complete ophthalmic examination including cycloplegic refraction to identify the different types, measure and record the refractive errors for analysis. **Results:** The results of this study showed that the total number of children with refractive errors were 144(12%) among which myopia was the most common refractive error present in 78(54.16%) children, followed by astigmatism in 60(41.66%) children and hypermetropia in the remaining 6(4.16%) children. The age group 14-18yrs had highest prevalence of refractive error with 54(38%) children. **Conclusion:** Refractive errors were most prevalent in 14-18yrs age group. The most common refractive error was Myopia followed by astigmatism and hypermetropia.

INTRODUCTION

Ametropia or refractive error occurs when the optical system of the non-accommodating eye fails to bring parallel rays of light to focus on the eye. Refractrive error includes myopia, hypermetropia and astigmatism. A refractive error is determined by mismatch between the two factors; refractive power of the cornea and the lens and axial length of the eye which occurs during childhood when the eyes are growing.[1]

Vision plays an important role in a child's development and communication.[2] Visual impairment due to uncorrected refractive errors can lead to short-term and long-term consequences in adult and children, like loss of educational and career opportunities for individuals, families, and societies, and thus result in a poor quality of life.[1]

Uncorrected refractive error is the leading cause of vision impairment and the second leading cause of blindness globally, affecting 1 in 90 people of all age.[3] An estimated 12 million are due to refractive errors which could be easily corrected.

The impact of uncorrected refractive error depends on a range of factors including the type, severity and working distance for different tasks.[3] Uncorrected hyperopia may result in accommodation-related and strabismus-related impact on quality of life, attention and learning. Uncorrected myopia may have a negative impact on distance tasks such as viewing a blackboard, impacting not only educational outcomes but also self-esteem and well-being. In uncorrected anisometropia in early childhood may result in amblyopia, with associated loss of depth perception, impacting activities of daily living.[3] Children are not aware of the problem and usually do not complain of defective vision. This necessitates early detection and treatment of visual impairment to prevent permanent visual defects.[1]

AIMS AND OBJECTIVES

To study the occurrence of various refractive errors and their comparison among school going children of 5-18years.

MATERIALS AND METHODS

Study Design: Cross-sectional study

Study Site: M.V.J. Medical College and Research Hospital in Rural Bengaluru.

Source Of Data: Children attending Ophthalmology OPD

Study Duration: 5 months

Sample Size: 1200 school going children aged 5-18yrs

All the school going children of age 5-18yrs visiting the department of ophthalmology at MVJ medical college and research hospital in rural Bengaluru were examined. The first step was examination of Visual Acuity using Snellen chart. All the children with vision less than 6/6 were subjected to autorefractometry and were given a full correction.

Next, complete ophthalmic examination was done with a slit lamp to rule out any anterior segment abnormalities. After slit lamp examination, children were subjected to cycloplegic refraction using 0.5% cyclopentolate eyedrops, and streak retinoscopy was done. Fundus examination was done with slit lamp biomicroscopy. Children were asked to come after two days for a post mydriatic test, and spectacles were prescribed. Types of refractive errors were identified and recorded for analysis.

Inclusion Criteria:

1. All children between 5-18 years of age were included.

Exclusion Criteria:

1. Children below 5 years and above 18 years of age.
2. Children with congenital eye diseases or systemic diseases.
3. Children with corneal opacities or scars.
4. Children with previous history of ocular trauma.

RESULTS

The results of this study showed that the total number of children with refractive errors were 144(12%), among which myopia was the most common refractive error. Among the

children with refractive error, Myopia was present in 78(54.16%) children, followed by astigmatism in 60(41.66%) children and hypermetropia in the remaining 6(4.16%) child. The age group 14-18yrs had highest prevalence of refractive error(37.5%).

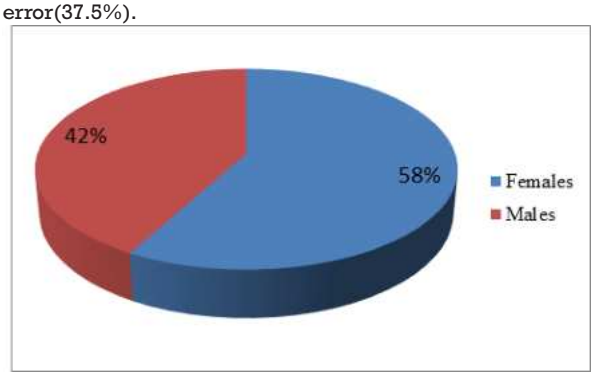

Figure 1: Refractive errors according to gender

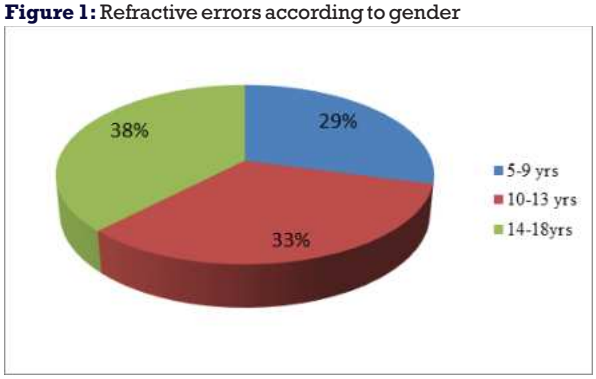

Figure 2 : Refractive Errors according to Age

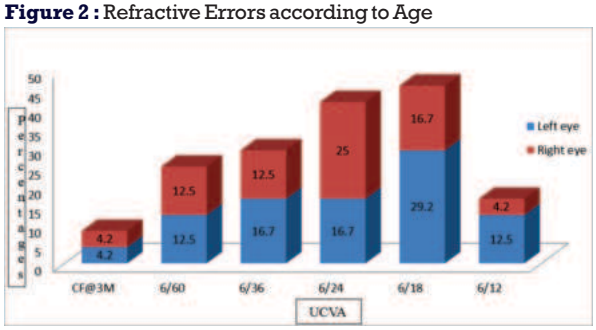

Figure 3: Uncorrected Refractive errors in right and left eyes

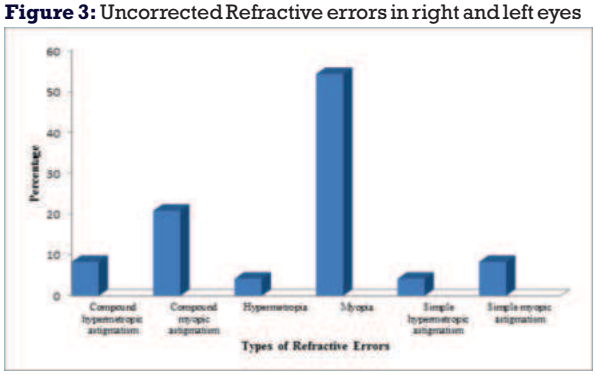

Figure 4: Types of Refractive Errors

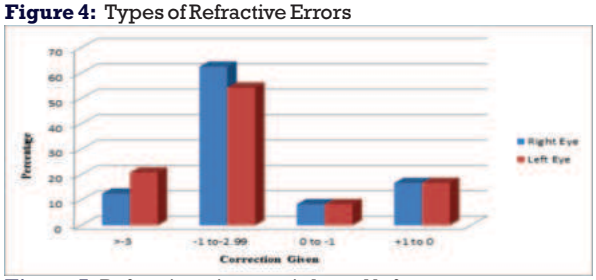

Figure 5: Refraction given to right and left eyes

DISCUSSION

In our study children aged 5-18years were selected.

In this study we observed that, predominant number of cases were seen in the age group of 14-18 years; 54(38%) children, followed by 10-13 years; 48(33%) children and the least number of cases were found in the age of 5-9 years; 42(29%) children.

According to the study conducted by Vidusha KSS et al on the prevalence of refractive errors among school children in the rural field practice area of a tertiary care hospital in Benagaluru, the age of the study subjects ranged from 7-15 years and predominant number of cases were found to be in the age group of 13-15 years which is similar to our study.

In our study more girls as many as 78(6.5%) were affected with refractive errors as compared to 66(5.5%) boys comparable with study by Bhutia et al. on Prevalence of refractive errors among the schol-going children in East Sikkim., where 590 (6.9%) girls had refractive errors and were more in number than 443(5.9%) boys.

In a study conducted by Pradhan N et al on the prevalence of refractive errors among school children of 6-12years of age group and reason for not using spectacles even after correction showed a higher prevalence of refractive errors among females which is similar to our study.

In our study a total of 144 children had uncorrected refractive error.

The prevalence in our refractive study was 12% and comparable to the study done by Bakare et al. on the prevalence of uncorrected refractive error and other morbid ocular conditions in school children of industrial area in a non-metro city in India, who found a 12.04% prevalence.

In a study done by Triveni C. et on Prevalence of Refractive errors in school going children in rural and urban areas - A Cross-sectional study, the prevalence of refractive errors was 6.41%.

In a study done by Bhutia et al. on Prevalence of refractive errors among the school-going children in East Sikkim, the prevalence of refractive errors was 6.7%.

In our study the most common refractive error was Myopia followed by astigmatism and hypermetropia. Myopia was seen in 78(6.5%) children, Astimatism was seen in 60(5%) children and Hypermetropia was seen in 6(0.5%) children.

Our results were again comparable to those of Bakare et al. who reported the prevalence of myopia and hyperopia at 6.68% and 0.52%, respectively. Astigmatic refractive error was seen in 60(5%) children as comparable to 4.85% as found by Bakare et al.

In our study, out of 60 astigmatic children, 12(1%) children had simple myopic astigmatism, 36(3%) children had compound myopic astigmatism, 6(0.5%) had simple hypermetropic astigmatism, 6(0.5%) children had compound hypermetropic astigmatism and none of them had mixed astigmatism.

In the study done by Bakare et al., Simple Myopic Astigmatism was found in 73(2.39%) children, Compound Myopic Astigmatism was found in 38(1.24%) children, Simple Hypermetropic Astigmatism was found in 13(0.34%) children, and Compound Hypermetropic Astigmatism in 16(0.52%) children and was similar to our study.

CONCLUSION

Refractive errors were most prevalent in 14-18yrs age group. The most common refractive error was Myopia followed by

astigmatism and hypermetropia. Refractive errors were slightly more prevalent in girls as compared to boys.

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