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To Study the Prevalence of Refractory Errors in School Children.

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ABSTRACT

Refractive errors are the most common causes of childhood blindness in India. Refractive errors in childhood affects performance in school and has a negative influence on the development and maturity, thus affecting their performance. Early detection and correction of refractive errors with spectacles is best remedy to control prevalence of refractive errors. total of 1604 children were examined to study the prevalence of eye disorders. Visual acuity was tested by using Snellen's visual acuity chart. Fundus examination by direct ophthalmoscope. The prevalence of hypermetropia(44.6%) was high followed by astigmatism(33.1%) and myopia(22.3%). Study of clinical profile of visual impairment helps in early detection and treatment of refractive errors. Proper education of school teachers in detecting eye related disorders could be helpful in early detection and treatment of the child.

Key words: Refractive errors, Myopia, Hypermetropia, Astigmatism

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INTRODUCTION

India is the home of largest number of blind children in the world. Ironically in 50% of these of these cases blindness can be either prevented or treated. Among the rural population of economically backward states of central India childhood blindness is alarming high. Refractive errors and vitamin A deficiency are the most common causes of childhood blindness in the region [1]. The prevalence of blindness in India, is estimated to be 0.8/1000 children in the age group of 0-15 years. Currently, there are an estimated 270,000 blind children in India [2, 3].

Refractive errors are the second major cause of blindness in India after cataract and the most common reason for patients to consult ophthalmologist or ophthalmic assistant. Over a quarter of the outpatient attendance at all eye clinics and hospitals is due to refractive errors [4]. Children form one of the main age groups requiring attention to refractive errors because of the high prevalence of myopia, hypermetropia and astigmatism. Refractive errors and more particularly myopia is a common cause of visual impairment which is usually acquired and progressive. It rarely occurs before the age of 5 years and new cases appear between the ages of 6 to 15 years. Poor vision in childhood affects performance in school and has a negative influence on the development and maturity, thus affecting their performance [5,6].

In developed countries, screening for eye diseases in preschool and school-aged children is done routinely [7]. High prevalence of blindness due to refractive errors reflects on availability, access & utility of refraction services and spectacles. Early detection and correction of refractive errors with spectacles is best remedy to control prevalence of refractive amblyopia resulting in blindness or visual impairment. Government of India under National Program for Control of Blindness (NPCB) had given directions. Under this program for amelioration of childhood blindness by educating the school teachers in detecting eye related disorders could be helpful in early detection and treatment of the child [8].

MATERIALS AND METHODS

The study was conducted in children of randomly selected schools in Bangalore city. They were examined for prevalence of visual impairment due to various ocular disorders from November 2010 to April 2013. Consent from school principal and ethical clearance was taken. A total of 1604 children were examined from 8 government aided schools of Bangalore city. Children of age group 6-15 years were included. Children with learning disabilities like unable to read Snellen's charts were excluded from the study.

A detailed history about present and past ocular problems and treatment of medical, surgical and family were taken. Visual acuity of each eye was assessed unaided, with pinhole and with glasses (if any) using Snellen's visual acuity chart in a good day light at a distance of 6 meters. External ocular examination was done with torch. Fundus examination was carried out with dilated pupil with direct ophthalmoscope. Colour vision test using Ishihara's colour plates in a good day light. Cycloplegic refraction was done with streak retinoscope.

Prevalance of myopia,hypermetropia,astigmatism in worse eye was noted. Children who require spectacle correction were referred to tertiary centre for cycloplegic refraction and needful. Follow up was done at 6 months,1 year and 1&1/2 years. Diagnosis of myopia, hypermetropia, astigmatism is made if the value is more than absolute value of 0.5D. Diagnosis of amblyopia was made if best corrected visual acuity was <6/9.

Statistical analysis

The 1604 children will be selected by stratified random sampling. Excel and SPSS software packages were used for data entry and analysis. The results were presented in numbers and percentage for categorical data in table and figure.Estimation of prevalence of various eye diseases with their 95% confidence intervals. Disease prevalence was compared between groups with the test for large samples and Fisher's exact test for small samples. Proportion were compared using chi-square test for significance

RESULTS

A total of 1604 children were examined to study the prevalence of eye disorders. The results were drawn. Children were divided into <10 years and ≥10 years for comparison of prevalence.

In Fig. 1 Prevalance of refractory errors were shown. The prevalence of hypermetropia was 44.6 % followed by astigmatism was found to be 33.1 % and myopia 22.3 %.

In fig 2 prevalence of visual acuity was represented and difference between males and females was shown. The prevalence of visual acuity ≤6/60 was significantly higher in ≥10 years as compared <10 years [p<0.001].The prevalence of hypermetropia was 44.6 %. It was more among females [p<0.001] than males. Hypermetropia was more among <10 years than ≥10 years. Range of hypermetropia was +0.5 to +8D.[Average +0.75D].

Figure 1: Prevalance of Hypermetropia , astigmatism and Myopia

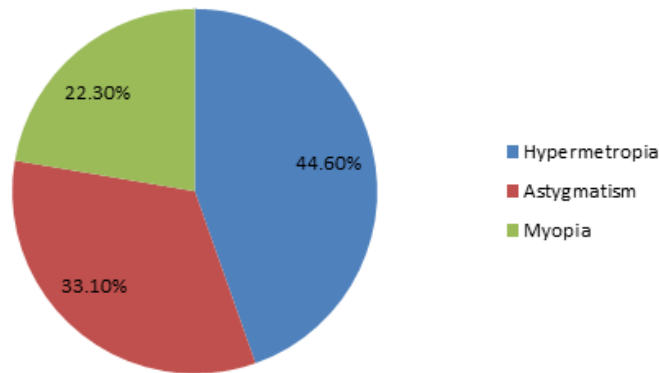
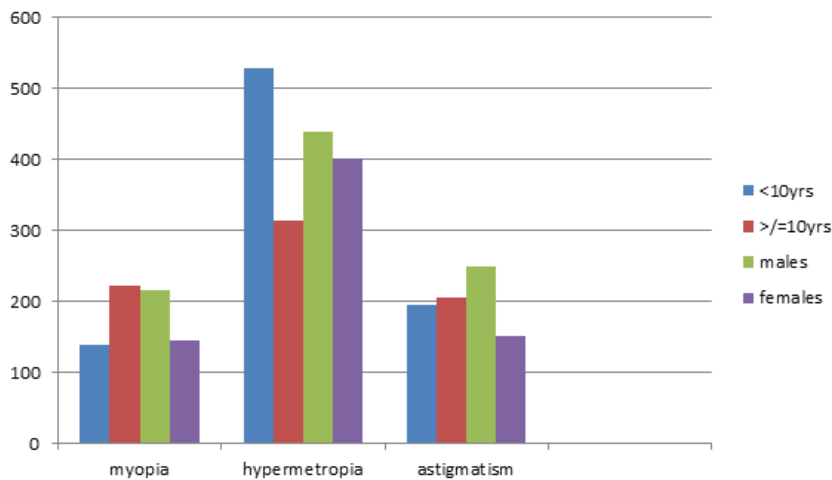


Figure 2: Prevalance of Hypermetropia , astigmatism and Myopia according to age and sex



The prevalence of myopia was found to be 22.3 %. It was more among ≥10 years than <10 years. There was no significant difference between males and females. Range of myopia was -0.75 D to -11D [Average -1.5D].

The prevalence of astigmatism was found to be 33.1 %. It was more common among <10 years than ≥10 years. The occurrence was common in females[p<0.001]. Myopic astigmatism was present in 8.6 %,hypermetropic astigmatism was found to be 2 %.

DISCUSSION

In our study 1604 children were examined to study the prevalence of eye disorders. In this study we have observed that prevalence of hypermetropia was high followed by astigmatism and myopia.⁵ The

commonest cause of visual loss were size of the eye ball microphthalmos i.e hypermetropia, retinal problems and corneal scarring etc. Most of the problems were preventable and treatable [9].

The prevalence of myopia in our study was 22.3%, more among above 10 years age group. Range of myopia was -0.75 D to -11D [Average -1.5D]. Myopia prevalence rate was between the ages above 12 years which is similar our study. Myopia prevalence associated with family income and educational level which was due to their association with near work, a factor that has been implicated in the pathogenesis of myopia [10].

The increase in myopia as the age increases correlates with the axial length of the eye. The mean spherical equivalent refraction gradually changes from plano at age six to seven to -2.00 D of myopia [11].

A study Louis Tong et al in a follow up study show minimal progression of astigmatism in school age children. The occurrence was common in females. The results were similar our study. The progression rate of astigmatism was affected by the ethnicity, presence of myopia, axis, and subtype of astigmatism [12].

SUMMARY AND CONCLUSION

Understanding the clinical profile of visual impairment helps in early detection and treatment of refractive errors. This has proven to reduce the prevalence of amblyopia. Proper education of school teachers in detecting eye related disorders could be helpful in early detection and treatment of the child. Periodic evaluation of ocular and general health of school children can help in control of prevalence rate of curable and preventable blindness and other ocular morbidities.

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