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PREVALENCE AND PATTERN OF REFRACTIVE ERRORS: A CROSS SECTIONAL STUDY AT TERTIARY HEALTH CENTER

Ophthalmology

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ABSTRACT

Refractive error is the most common ocular morbidity worldwide. Throughout the world the main causes of visual impairment are uncorrected refractive errors 43% followed by cataract 33% and glaucoma in 3 % cases. Children being unaware of their problem do not complain about it. Untreated refractive error can lead to amblyopia and poor school performance which in long run can lead to considerable impact on child's future. A Hospital based cross sectional observational study was conducted in the ophthalmology department of NMCH, Patna, Bihar. Total 612 children of age group 5 to 16 years coming to the OPD were enrolled in the study. Myopia is the most common refractive error in childhood. It is corrected by using concave lens. Other types of refractive errors are hypermetropia and astigmatism. Uncorrected refractive errors among children have considerable impact on their learning & academic achievements. So, screening is the only way for early detection of refractive errors. Early diagnosis and treatment will prevent onset of amblyopia & visual disability.

KEYWORDS

Refractive error, Myopia, Amblyopia.

INTRODUCTION

Refractive error is the most common ocular morbidity worldwide. Emmetropia is the refractive state of the eye where parallel rays of light coming from infinity are focused on the sensory layer of retina with accommodation being at rest.

Ammetropia or refractive error is the inability of the eye to focus the rays of light from distant object on the retina. Throughout the world the main causes of visual impairment are uncorrected refractive errors 43% followed by cataract 33% and glaucoma in 3 % cases[1].

Refractive errors are the second leading cause of treatable blindness[2]. Normal vision in child is essential for good performance in school. Children with refractive errors can't concentrate in studies or any other curricular or extracurricular activities. Children being unaware of their problem do not complain about it. The childhood ocular disorders including refractive errors are very difficult to diagnose and manage as they cannot speak about their problems and are not cooperative for ocular examination. Untreated refractive error can lead to amblyopia and poor school performance which in long run can lead to considerable impact on child's future. So, early detection and treatment is necessary to prevent permanent visual disability[3].

Myopia is the most common refractive error in childhood. It is corrected by using concave lens. Other types of refractive errors are hypermetropia and astigmatism.

AIMS OF THE STUDY

The purposes of the study are:

1. To find out the prevalence of refractive error in children of age group 5-16 years attending tertiary health care centre.
2. To assess the pattern of refractive error among boys & girls.
3. To explore the percentage of patients using spectacles.

MATERIAL & METHODS

A Hospital based cross sectional observational study was conducted in the ophthalmology department of Nalanda Medical College & hospital, Patna, Bihar. Total 612 children of age group 5 to 16 years coming to the OPD were enrolled in the study. General details like name, age, sex and residential address were noted. Gross ocular examination was done. Prior written informed consent was taken from their guardian or parents accompanying them for the study.

Visual acuity was measured by Snellen's chart. Refractive errors were estimated by cycloplegic retinoscopy. Cycloplegic agent, 1% Atropine ointment was used in children up to 7 years of age and Cyclopentolate eye drop was used in children older than 7 years. After cycloplegic retinoscopy all children underwent Post Mydriatic Test (PMT) for subjective refraction.

INCLUSION CRITERIA

All children of 5-16 years of age coming to OPD of ophthalmology department of NMCH, Patna.

EXCLUSION CRITERIA

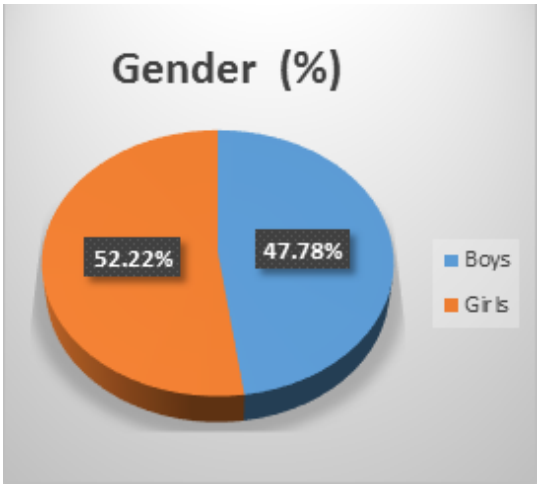
1. Children of age less than 5 years and more than 16 years.
2. Children with history of ocular surgery or trauma.

RESULTS

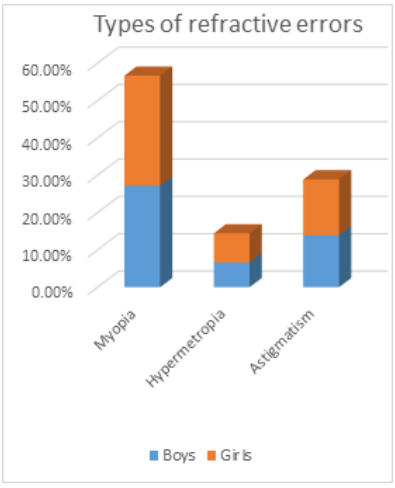
Out of 612 children enrolled in the study, 180(29.41%) were found to have refractive errors.

Out of 180 children with refractive errors, 86 (47.78%) were boys while 94 (52.22%) were girls (Figure 1).

FIGURE 1



In relation to residence 75 cases were from urban areas, 55 from semi-urban and 50 from rural areas. Among the types of refractive errors the most common error encountered was myopia in 102 cases (56.67%) in which 49 were boys & 53 girls. It was followed by astigmatism in 52 cases (28.89%), 25 were boys & 27 girls. The least common refractive error in this study was hypermetropia in 26 cases only (14.44%) with 12 boys & 14 girls (Figure 2).



Out of 180 children with refractive errors 33 (18.33%) were already using spectacles. The common age of presentation in the study were 11-16 years i.e. 114 children (63.33%) while 66 children (36.67%) were between 5-10 years age (Table 1).

TABLE 1

Age group(years)	No.	%
5-10	66	36.67
11-16	114	63.33
Total	180	100

DISCUSSION

This study tells about types of refractive errors among boys & girls of 5-16 years of age coming to the hospital. We found 29.41% children with refractive error. In a study conducted by N. Prema[4] refractive error was found in 30.57% of children.

In our study refractive errors were more common in girls (52.22%) than boys (47.78%). Similar result of female dominance of prevalence were found in study conducted by K S S Vidusha et al[5], N Prema[4] & Seema et al[6]. While Pavithra et al[7] found male dominance in their study. In this study the most common type of refractive error found was myopia (56.67%) followed by astigmatism (28.89%) and hypermetropia (14.44%). Similar pattern of refractive errors were found in study conducted by Dhanya et al[8].

Majority of children with refractive error belonged to urban & semi-urban areas. More use of television, computer, mobiles etc may be the reason behind it. Although 18.33% children were already using spectacles.

Most common age group with refractive errors were between 11-16 years than 5-10 years.

The main limitation is that it's a hospital based study not a population based study, so it may not represent the real distribution in general population. Selection bias also comes in, whenever hospital based studies are done[9,10].

CONCLUSION

This study shows that the most common refractive error among children of age group 5-16 years is myopia and there is also slightly higher prevalence among girls than the boys.

Most of the children with uncorrected refractive error remain either asymptomatic or do not complain of their problem to parents as they are not mature enough to understand their problem. Uncorrected refractive errors among children have considerable impact on their learning & academic achievements. So, screening is the only way for early detection of refractive errors. Early diagnosis and treatment will prevent onset of amblyopia & visual disability.

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