



## A STUDY OF UNDIAGNOSED REFRACTIVE ERROR CASES IN SCHOOL GOING CHILDREN AT A TERTIARY CARE HOSPITAL

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**ABSTRACT** **Introduction** -Refractive error is the most common cause of visual impairment in all age groups. Especially in children, the painless and progressive nature of the disease and lack of awareness makes the problem remain undetected and hence, uncorrected. The uncorrected refractive error can not only result in a drastic impact on learning process and educational development of the child. **Aim** -The study aims at providing demographic data of the patients, presenting signs and symptoms and refractive error detected. **Methods** -This is a Retrospective Observational Study carried out at tertiary care hospital within the age group of 5-15years (school going children). **Results** - With 250 patients under study, Myopia (56%) was the major refractive error among total refractive error followed by astigmatism(28%) and hypermetropia(16%). The higher number of children with uncorrected refractive error were noted in the age group of 11-15 years(50.4%) as compared to age group of 8-11years(29.2%) and 5-8 years(20.4%). There was female predominance. The patients usually presented with complaints in the order Difficulty in seeing distant objects who were suspected to have a refractive error(42%), Headache(36%) and Eyestrain(10%) while others like Rubbing of eyes, half shutting of eyes accounted for ~6% each. **Conclusion** -School going children which usually present with non-visual complaints must be screened for refractive errors to reduce morbidity due to refractive error

**KEYWORDS** : Refractive error, Myopia , School children

### INTRODUCTION:

Uncorrected refractive error has become a major challenge to the health care policymakers<sup>(1)</sup>. An estimated 19 million children are visually impaired worldwide of which 12 million are due to refractive errors which could be easily corrected<sup>(2)</sup>. Global data shows uncorrected refractive errors(43%) are the leading cause of visual impairment followed by un-operated cataract(33%) and glaucoma (2%)<sup>(3)</sup>. However, refractive errors often remain uncorrected due to various reasons such as lack of awareness, failure to recognize symptoms in children by parents and teachers, non-availability or inability to afford refractive services and negative attitude to the use of spectacle in children<sup>(4)</sup>. It is a hard fact that 30% of India's blind population loses their sight before the age of 20 years, thus the Importance of early detection and treatment of refractive errors in young becomes Obvious<sup>(5)</sup>.

Children usually refrain from complaining of defective vision and this becomes More pronounced if only one eye is involved. They may not even realise their Problem. They adjust to themselves by sitting near the blackboard, bringing the Book closer to their eyes, squeezing their eyes and even avoiding work requiring Visual concentration and this evades early detection<sup>(6)</sup>. Myopia is one of the important cause of visual impairment which is usually acquired and progressive<sup>(7)</sup>.

### MATERIALS AND METHODS:

This is a Retrospective Observational Study of 250 OPD patients within the age group of 5-15years (school going children). The data of the patients were assessed through the records available. It consisted of detailed history, visual assessment with Snellen's chart, complete ophthalmic examination with Slit-lamp microscopy and Refractive error quantification with Cycloplegic Refraction followed by post-mydriatic subjective refraction. Refractive errors were classified according to the standard definitions as myopia, hypermetropia and astigmatism.

Patient was divided into 5-8 years , 8-11 years and 11-15 years age group. Institutional ethical clearance was obtained before starting the study. Children with ocular pathologies other than refractive errors affecting visual functions were excluded from the study. Those children who had difficulty in reading 6/6 and N/6 or less were listed and these children were further examined with the parent's consent.

### RESULTS:

**Table No.1 Age and Pattern of Refractive Error**

Pattern of Refractive errors	Age in Years			
	5-8 years	8-11 years	11-15 Years	Total
	No. of cases	No. of cases	No. of Cases	No. of Cases (%)
Myopia	23	36	81	140 (56%)
Hypermetropia	15	14	11	40 (16%)
Astigmatism	13	23	34	70 (28%)
Total	51 (20.4%)	73 (29.2%)	126 (50.4%)	250 (100%)

Out of 250 children with uncorrective refractive error , myopia was seen in 140 cases (56%), hypermetropia in 40 cases (16%) and astigmatism in 70 cases (28%).

Among these cases , 51 cases (20.4%) were in age group of 5-8 years, 73 cases (29.2%) were in age group of 8-11 years and 126 (50.4%) cases were in age group of 11-15 years.

**Table No.2 Gender and Refractive Error**

Pattern of Refractive errors	Gender		
	Male	Female	Total
Myopia	69	71	140 (56%)
Hypermetropia	16	24	40 (16%)
Astigmatism	30	40	70 (28%)
Total	115 (46%)	135 (54%)	250 (100%)

Among these cases of refractive error , 115 cases (46%) were male and 135 cases (54%) were females which showed female preponderance

**Table No.3 Symptoms and Refractive Error**

Symptom	No. of cases	Percentage(%)
Difficulty in seeing distant objects	105	42

Headache	90	36
Eyestrain	25	10
Rubbing of eyes	15	6
Half Shutting of eyes	15	6
Total	250	100

Out of these 250 cases, 105 cases (42%) complaint of difficulty in seeing distant objects followed by headache in 90 cases (36%), eyestrain in 25 cases (10%), rubbing of eyes in 15 cases(6%) and half shutting of eyes in 15 cases (6%).

#### DISCUSSION:

Our study showed that myopia was the most Common refractive error seen in 56% cases, followed by astigmatism in 28% cases and hypermetropia in 16% cases. Similar observations were found in the study done by Rahman M, Devi B, Kuli JJ, Gogoi G<sup>(6)</sup>. In a study Conducted by Dulani et al, myopia was seen in 63.4% cases, astigmatism in 25.8% cases followed by hypermetropia in 11.35% cases<sup>(9)</sup>. In a study by Sarma et al, myopia was found to be the most common refractive error in 81.92%cases, astigmatism was seen in 14.89% Cases and hypermetropia in 3.91% cases<sup>(10)</sup>.

In our study hypermetropia was observed more in children of younger age group and Myopia in older age group. In a study by Mittal et al, an Age related shift of refractive error was observed from hypermetropia in younger age group towards myopia in the older age Group<sup>(11)</sup>.

There was female preponderance (54%) Seen in our study. The Probable reason for this may be due to Negligence towards females in the target group. Female preponderance has been observed in hospital-based studies in Nigeria<sup>(12)</sup> and also Seema et al. reported little higher pre-valence of refractive error as 23.7% in female and only 12.2% in males<sup>(13)</sup>. Similar results were observed by Khurana et al, showed higher prevalence of refractive error in girls(73.53%) as compared to boys(49.3%)<sup>(14)</sup>.

It was evident from our study that among refractive error detected cases majority complaint of difficulty in seeing distant objects (42%%) followed by headache(36%) and eyestrain(10%). EL-Bayoumy BM, Saad A, Choudhury AH. reported a similar finding where the Prevalence of refractive error was higher among those who had Problem in seeing distant objects<sup>(15)</sup>. Similar finding were found In the study done by Kumar KS, Akoijam BS<sup>(16)</sup>.

#### CONCLUSION

The present study shows refractive error to be the Commonest cause for visual impairment in children <15 Years. Thus recommending a school screening program in developing countries at regular periodic intervals and also students, parents and teachers must be educated about signs and symptoms of refractive errors as most of the refractive error can be detected earlier and easily corrected with Spectacles and therefore can improve the educational Performance and development of the child. Once the Performance in school improves, the children get better Opportunities in further studies and the child has a Bright future. Hence, it is very important to detect Preventable cause of visual impairment at the earliest stage and hence prevent visual impairment due to Uncorrected refractive error.

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