



REFRACTIVE ERRORS IN SCHOOL GOING CHILDREN: A PREVALANCE STUDY

Ophthalmology

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ABSTRACT

INTRODUCTION: Preventing childhood blindness is one of the important priorities in Vision 2020 program. Its very difficult to detect children with refractive errors as Parents and teachers caring for them are not sensitive enough of the magnitude of the disease. They themselves may not report the problem until late when vision is greatly affected.

MATERIAL AND METHODS: Cross sectional study was conducted among school going children of age group of 7-14 years for assessment of visual problems.

RESULTS: Total 500 students were enrolled in study of which 278(55.6%) were males and 222(44.4%) were females .Of these 28 were found to have refractive error with prevalence of 5.61/100 students. Of these 17(60.71%) presented with myopia, 11(39.28%) presented with hypermetropia.

CONCLUSION: Routine eye check ups by trained ophthalmologist is important aspect of diagnosing the refractive error in this age group and for their optimal management.

KEYWORDS

refractive error, school children

INTRODUCTION:

Prevention of Childhood blindness is one of the priorities in Vision 2020: the right to sight.[1,2] It is estimated that there are nearly 1.4 million blind children in the world, of whom nearly 67% live in the developing countries.[3] Child's vision is essential for successful learning in school. When the vision suffers, pupil's routine school work and day to day activities also get affected. The students are not mature enough to point out the deficiency at the early stage or the parents have no idea on the gradually developing vision problem. This results in tiredness, distraction, headache and decreased concentration on academic and recreational activities.

Blindness is one of the significant social problem in India. About 80% of it is avoidable blindness, but a large number of those affected remain blind due to lack of access to eye care. Uncorrected refractive errors are responsible for about 19.7% of blindness.[4] About 13% of Indian population is in the age group of 7-15yrs and about 20% of children develop refractive error by the age of 16 years.[4]

Most of the children with uncorrected refractive error are asymptomatic and hence screening helps in early detection of refractive errors and timely interventions. Uncorrected refractive error may have impact to a larger extent on the learning capability and potential of the student. Timely detection and intervention can improve child's potential tremendously during the formative years. Hence the present study was conducted to determine the prevalence of refractive error among primary school children aged between 7 to 14 years. The socio demographic factors with the type of refractive error were also analysed.

MATERIAL AND METHODS:

A cross-sectional study, carried out in the government schools in the rural area of Gwalior division during the period between February 2016 and January 2017 to know the prevalence of refractive error in school children and their correlation with sociodemographic profile. Ethical clearance was obtained from institution before conducting the study. Government Schools were randomly selected in rural areas of Gwalior. Permission was seeked from the principal of the selected schools for the visit. They informed and seek permission from the parents of the student regarding the study. All schools going children of age between 7-14 years were included.

METHOD OF EYE EXAMINATION IN SCHOOLS:

Examinations were performed in the school compound with proper light availability. The first part of the questionnaire dealt with information regarding child's age, Sex, residential address, socio economic and nutritional status as per BMI . The second part of the

questionnaire included ocular complaints (if any), vision testing(visual acuity, visual acuity with pin hole), ocular examination (torch light exam, cover-uncover test and fundus exam). Referral card to the tertiary care Centre was given to the school teachers for the children with visual acuity less than 6/9 in either eye. Then a full detailed routine examination including retinoscopy ,refraction and management was done at tertiary care Centre. Analysis of the data was done using excel spreadsheet. Descriptive interpretation of data was done in the form of percentages.

RESULTS

Total 500 students were enrolled in study of which 278(55.6%) were males and 222(44.4%) were females .The mean age of students is 10.39± 2.32 years. Of these 28 were found to have refractive error with prevalence of 5.61/100 students.

Among childrens with refractive error 15(53.57%) were males and 13(46.42%) were females . Of these 17(60.71%) presented with myopia, 11(39.28%) presented with hypermetropia .Age wise distribution of refractive error and socio demographic profile of children with type of refractive error is presented in the table 1

Table 1: Profile of study population with myopia and hypermetropia status

	Myopia(17)		Hypermetropia(11)		Refractive Error total(28)	
	Number	%	Number	%	NO.	%
AGE GROUP						
7-8	0		5	17.85	5	17.85
9-10	2	7.1	5	17.85	7	25
11-12	10	35.71	1	3.57	11	39.28
13-14	5	17.85	0		5	17.85
SEX						
MALES	10	35.71	5	17.85	15	53.57
FEMALES	7	25	6	21.4	13	46.42
SOCIOECONOMIC STATUS						
I(UC)	1	3.57	0		1	3.57
II (UM)	7	25	8	28.57	15	53.57
III (MC)	7	25	2	7.1	9	32.1
IV (LM)	2	7.1	1	3.57	3	10.71
V (LC)	0		0		0	
DIET						
VEG	4	14.28	3	10.71	7	25
NON VEG	13	60.71	8	28.57	21	75

W/H RATIO						
UNDERWEIGHT	3	10.71	1	3.57	4	14.28
NORMAL	13	46.42	9	32.1	22	78.57
OVERWEIGHT	0		1	3.57	1	3.57
OBESE	1	3.57	0		1	3.57

DISCUSSION:

India, as in other developing countries, the school health services provided are hardly more than a token service because of shortage of resources and insufficient facilities.[5] The prevalence of refractive error in this study population was 5.61% similar to the prevalence observed by GVS Murthy et al in New Delhi (6.4%).[6] and Kumar et al in Lucknow (7.4%)[7] . But less compared to the prevalence observed by Seema S et al in Haryana (13.65%).[8] Similar studies from different parts of the world showed a variable prevalence ranging from 2.9% to 15.8% [9-12] These variations in the prevalence data from studies in different parts of the world are due to different operational definitions considered by investigators and also due to differences in demographic factors.

This study shown that refractive error was found maximum in the age grp of 11-12 year 11(39.2%). S Matta et al also found that refractive error increased with increasing age especially in the age group of 10-14 years.[13] Unlike other studies from india and outside[8,14] ,in the present study refractive error was more common in the male children 15(53.57%) compared to female children 13(46.42%). Significant.

Myopia was the most common type of refractive error which constitutes 60.71%(17) and hypermetropia was seen in 11(39.28%) of cases. In the present study myopia was more common in older study population whereas the hypermetropia was found to be higher in the younger age group of 7-10 yrs. GVS Murthy et al also found that there was an age related shift in refractive error from hypermetropia in young children (15.6% in 5-year-olds) toward myopia in older children (10.8% in 15-year-olds).[6] Kalkivayi V et al in Andhra Pradesh found that myopia was significantly higher among children of >10 years ($p<0.001$) [15] Refractive error was more common in obese, overweight and normal children than in underweight students in the present study.

Limitations of our study were, only school going children were included in the study. Significant proportion of children in rural India and other developing countries do not go to schools specially females ; hence a more complete assessment of visual impairment in children would be possible with population based studies . Population based studies covering the non-school going children are recommended.

CONCLUSION

These data support the assumption that vision screening of school children in developing countries would be very useful in early detection of correctable causes of poor vision, especially refractive errors and in preventing long term visual complications. Most of the children were unaware of their problem. The existing school health services should be strengthened and implemented effectively. Provision of affordable corrective services should follow screening, especially to this age group.

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