ORIFINAL ARTICLE

Refractive errors in Primary school children in Surat City

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ABSTRACT

Introduction: Refractory error in student lead to poor performance in study. The present study was conducted to assess the magnitude of refractive errors in the school going children in the Surat city of Gujarat and to study its age and sex distribution, types and its distribution.

Materials and Methods: The study was a review of school based vision screenings conducted from 2017-18. Survey of Refractive Error in school going children in the age group of 5-14 years and studying in class I to class VIII was done in one municipal corporation and one private school in Surat.

Results: 190 school students were screened. Number of students detected with refractive errors was found to be 37 (19.5%). Out of the refractive error detected Myopia accounted for 75.6%, Hypermetropia for 13.5% and Astigmatism for the remaining 10.8%.

Conclusion: Uncorrected refractive errors constitute a major public health problem in urban school aged children with myopia being the most common and early detection and timely intervention can easily eliminate these treatable causes of visual impairment.

Key words: Refractive error; School children; Spectacles; Myopia; Hypermetropia

INTRODUCTION:

Refractive error is one of the most common cause of visual impairment around the world and second leading cause of treatable blindness and school aged children are no exception to it [1].

Reduced vision because of uncorrected refractive error is well known to be a major public health problem in school aged children. Most of the children with uncorrected refractive errors are asymptomatic. They often adjust to the poor eyesight by sitting near the blackboard, holding the books closer to their eyes, squeezing the eyes and even avoiding work requiring visual concentration [2-4]. Hence screening helps in early detection and timely intervention in these children and simple the provision of correctly prescribed spectacles can prove out to be a cost-effective health intervention [5,6].

Children with gross loss of vision of gradual painless nature, concomitant squint and certain other conditions were subjected for retinoscopy. A gross loss of vision ie 6/60 or less that improves with pinhole, is most probably myopia. Children with hypermetropia of same amount have better vision as they can use accommodation to improve their vision. While myopes report for treatment earlier than hypermetropes, Hypermetropia causes more muscle imbalance and asthenopia.

MATERIALS AND METHODS

The survey was done in two schools, one municipal corporation school and one private school in Surat city among children in the age group of 5-14 years and studying in class I to class VIII. Fixation reflex and Pupillary responses were seen in all the school children and visual acuity measurement was done by Snellen's chart while E chart was used for the students in lower standards.

Visual acuity with Pin hole was then noted which gave the extent to which vision can be improved with spectacles. School children detected with refractive errors were advised retinoscopy after full cycloplegia with atropine ointment applied twice daily for two days. 2-3 mm length of the Atropine ointment was told to be put in the eye. Fundus examination was also done on dilated pupils to exclude other causes of visual impairment.

Prescription of spectacles was done based on retinoscopy value up to class IV as it was found that objective test was more reliable than subjective test in these children. Students in standards above class IV, PMT test was also done; after a fortnight. In a non-verbal, non-cooperative child reliance was given on retinoscopic findings. Data were analysed in Microsoft excel sheet.

RESULTS

A total of 190 school students were screened in this study and 37 (19.5%) students were found to have refractive errors. Myopia was most common of the refractive errors detected in this study, accounting for 75.6% of the refractive errors while Hypermetropia accounted for 13.5% and astigmatism 10.8%. (table 1,2) Myopia risk was associated with male gender and having a father with higher level of schooling. There was an age-related shift in refractive error, cases of myopia increases with age while hypermetropia cases remain similar in all age groups (Table 3)

DISCUSSION

Visual impairment is a worldwide problem that has a significant socioeconomic impact. Childhood blindness is a priority area because of the number of years of blindness that ensues. Data on the prevalence and causes of blindness and severe visual impairment in children are needed for planning and evaluating preventive and curative services for children, including planning special education and low vision services. The available data suggest that there may be a ten-fold difference in prevalence between the wealthiest countries of the world and the poorest, ranging from as low as 0.1/1000 children aged 0-15 years in the wealthiest countries to 1.1/1000 children in the poorest [7]. It is estimated that the cumulative number of blind-person-years worldwide due to childhood blindness ranks second only after the cumulative number of blind-person-years due to cataract blindness [8].

Considering the fact that 30% of India's blind lose their eyesight before the age of 20 years and many of them are under five when they become blind, the importance of early detection and treatment of ocular disease and visual impairment among young children is obvious [9].

Children do not complain of defective vision, and may not even be aware of their problem. They adjust to the poor eyesight by sitting near the blackboard, holding the books closer to their eyes, squeezing the eyes and even avoiding work requiring visual concentration. This warrants early detection and treatment to prevent permanent disability. Effective methods of vision screening in school children are useful in detecting correctable causes of decreased vision, especially refractive errors and in minimizing long-term visual disability [9].

Reduced vision because of uncorrected refractive error is a major public health problem in urban school aged children and the same was reflected in our study in the 37 (19.5%) students found to have refractive errors out of the total of 190 students screened.

Table 1: Soci-demography of the students

Socio-demographics	Student	Percentage
Gender		
Male	102	53.7%
Femlae	88	46.3%
Total	190	100.0%
Age		
5-7 yrs	45	23.7%
8-10 yrs	50	26.3%
11-12 yrs	47	24.7%
13-14 yrs	48	25.3%
Total	190	100.0%
Education of Father		
Illiterate	13	6.8%
Primary	15	7.9%
Secondary	67	35.3%
Higher secondary	59	31.1%
Graduate & Above	36	18.9%
Total	190	100.0%

Table 2: Prevalence of refractory errors in students

Socio-demographics	Student	Refractory error present	Prevalence
Gender			
Male	102	21	20.6%
Femlae	88	16	18.2%
Total	190	37	19.5%
Age			
5-7 yrs	45	5	11.1%
8-10 yrs	50	8	16.0%
11-12 yrs	47	11	23.4%
13-14 yrs	48	13	27.1%
Total	190	37	19.5%
Education of Father			
Illiterate	13	3	23.1%
Primary	15	4	26.7%
Secondary	67	5	7.5%
Higher secondary	59	16	27.1%
Graduate & Above	36	9	25.0%
Total	190	37	19.5%

Table 3: Type of refractory errors in the student

Socio-demographics	Myopia	Hypermetropia	Astigmatism
Gender			
Male	16	2	3
Femlae	12	3	1
Total	28	5	4
Age			
5-7 yrs	3	1	1
8-10 yrs	6	2	0
11-12 yrs	9	1	1
13-14 yrs	10	1	2
Total	28	5	4

Myopia was most common of the refractive error detected in this study. Out of total refractive error Myopia detected was 75.6%, Hypermetropia 13.5% and Astigmatism 10.8%.

Myopia risk was associated with male gender 56.57%

and having a father with higher level of schooling. Previous studies have also shown prevalence of Myopia more in Asian children and higher in urban children. There was an age-related shift in refractive error, cases of myopia increases with age while hypermetropia cases remain similar in all age groups. Cost-effective strategies are needed to eliminate this easily treated cause of vision impairment which definitely will increase the productivity of the nations in the long run.

CONCLUSION

Uncorrected refractive errors constitute a major public health problem in urban school aged children with myopia being the most common and early detection and timely intervention can easily eliminate these treatable causes of visual impairment.

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