

Research Article**Prevalence of Ocular Morbidity among School Going Children (6-15years)**Dr. Roopa Naik^{1*}, Dr. Jaineel Gandhi², Dr. Nikita Shah²¹Professor and Head of Department Dept. of Ophthalmology, Padmashree Dr. Vithalrao Vikhe Patil Medical College & Hospital, Near Govt. Milk Dairy, Vilad Ghat, Ahmednagar, Maharashtra, India²Resident, Padmashree Dr. Vithalrao Vikhe Patil Medical College & Hospital, Near Govt. Milk Dairy, Vilad Ghat, Ahmednagar, Maharashtra, India***Corresponding author**

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Abstract: School children are affected by various eye disorders like refractive errors, squint (strabismus), Vitamin A deficiency and eye infections. Eye diseases in childhood are important causes of medical consultation and it affects learning ability, adjustment in school and personality. Most children do not complain of defective vision, as they may not recognize such conditions as a problem. Uncorrected refractive errors form the primary cause for visual impairment and blindness in India. This warrants early detection and treatment of these problems to prevent future blindness. The study was conducted with the objective of estimating the prevalence of ocular problems among school going children in rural area and to create 'eye-health awareness' among them. This was a cross-sectional study of school children attending the ophthalmology OPD of Vikhe Patil Memorial Hospital. All the patients were examined by ophthalmologists. The patient underwent detailed ocular examinations. Visual acuity measurement with the help of Snellen's chart for distant vision and any child having visual acuity of 6/9 or worse was examined for refractive error. Extraocular movements, Hirschberg test, cover- uncover test for detection of squint was done. Gross examination of cornea, conjunctiva, anterior chamber, iris, and pupil was done with a torch light. Examination of the anterior segment with slit lamp was done when needed. Retinoscopy and subjective refraction was done for all the patients suspected of having refractive error. Cycloplegic refraction was done when needed. Examination of fundus with direct ophthalmoscope was also done. Indirect ophthalmoscopy when needed.

Keywords: Ocular morbidity, Snellen's chart, Refractive errors, Visual acuity

INTRODUCTION

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 [1]. Children in the school-going age group (6-15 years) represent 25% of the population in the developing countries. They fall best in the preventable blindness age group, and are a controlled population i.e., they belong to a certain age group and are easily accessible and schools are the best forum for imparting health education to the children. Schools are also one of the best centers for effectively implementing the comprehensive eye healthcare programme [1].

Aims and Objectives

- To diagnose the prevalence of ocular morbidity among school going children of the age group 6-15 years.
- To take necessary steps for prevention and early management of preventable blinding disorders.

METHODS

This was a cross-sectional study of school children of the Age group 6-15yrs in 2 rural schools in Ahmednagar District. A total of 1095 students were examined. All the patients were examined in the school.

The patients underwent the following examinations: Visual acuity measurement with the help of Snellen's chart. Any child having visual acuity of 6/9 or worse was examined for refractive error. Extra ocular movements, Hirschberg test, cover-uncover test for detection of squint was done. Gross examination of cornea, conjunctiva, anterior chamber, iris, and pupil with a torch light was done. The children who were suspected of having any pathology were called to the ophthalmology OPD of Vikhe Patil Memorial Hospital. Examination of the anterior segment with slit lamp was done. Retinoscopy and subjective refraction was done for all the patients suspected of having refractive error. Cycloplegic refraction was done when needed. Examination of fundus with direct ophthalmoscope was done and indirect ophthalmoscopy done when needed.

Inclusion criteria: a) Children of the age group 6-15yrs, b) Children attending school.

Exclusion criteria: a) Children below 6 and above 15yrs, b) Previously diagnosed and treated children

RESULTS

A high prevalence of ocular morbidity among school children was observed. Refractive errors were the most common ocular disorders. Out of 1095 children examined a total of 150 children between 5 and 16 years of age were called to the ophthalmology OPD and examined. A total of 113 children, 61 males and 52 females were found to have some pathology detected. The remaining 37 children had no pathology detected. The mean age of the study population was 9.5 years. 9.66% school age children had some abnormality detected.

9.66% of children examined had some form of ocular morbidity, 5.57% were males and 4.74% were females. Refractive errors (7.57%) constitute the major cause of ocular morbidity followed by squint (1.55%), color blindness (0.18%), vitamin A deficiency (0.36%), traumatic eye disorders (0.5%), congenital disorders (0.2%). Myopia was a more common disability than hypermetropia. Likewise, alternate divergent squint was more common than alternate convergent squint. Right exotropia with amblyopia was found in 0.18% of children examined. Traumatic eye injury (0.5%) was caused by injury with a stick (0.3%) or a fall on the ground (0.2%). Congenital ocular defects (0.36%) consisted of congenital cataract and unilateral microcornea with nystagmus in one student each. The ocular morbidity is almost equally distributed between sexes in all categories.

Myopia and myopic astigmatism were not found in children below 7 years of age. However, it started increasing steadily in older children. Among children with refractive error the prevalence of myopia was 4.8% in those 8–10 years of age, which increased almost fourfold in those aged 11–13 years (18%), and which almost doubled again at 14–16 years of age (33%). Myopic astigmatism increased almost fourfold (6% to 15.6%) between those age groups. However, hypermetropia did not show such an increase.



Fig. 1: Showing a school going girl having developmental cataract bilaterally

Table 1: Showing the various disorders prevalent amongst the school going children

Type of ocular morbidity	Male	Female	Total
Refractive error	45	38	83
Simple myopia	22	23	45
Myopic astigmatism	10	8	18
Hypermetropia	13	7	20
Strabismus	8	9	17
Alternate divergent squint	7	8	15
Alternate convergent squint	0	0	0
Right divergent squint	1	1	2
Traumatic eye injury	4	1	5
Injury with a stick	2	0	2
Fall on the ground	2	1	3
Colour blindness	1	1	2
Vitamin A deficiency	2	2	4
Congenital abnormalities	1	1	2
Coloboma of iris and disc	0	0	0
Cataract	1	0	1
Microcornea with nystagmus	0	1	1
Total	61	52	113

Table 2: Showing the distribution of various refractive errors amongst the study population

Age (Years)	Myopia		Myopic Astigmatism		Hypermetropia		Total	
	No	%	No	%	No	%	No	%
5-7	0	0.0	0	0.0	1	1.2	1	1.2
8-10	4	4.8	5	6.0	5	6.0	14	16.8
11-13	15	18.0	4	4.8	4	4.8	23	27.6
14-16	28	33.8	13	15.6	4	4.8	45	54.3
Total	47	56.8	22	26.4	14	16.8	83	100

DISCUSSION

9.66% of children examined had some form of ocular morbidity, 5.57% were males and 4.74% were females. Refractive errors (7.57%) constitute the major cause of ocular morbidity followed by squint (1.55%), color blindness (0.18%), vitamin A deficiency (0.36%), traumatic eye disorders (0.5%), congenital disorders (0.2%).

The prevalence of ocular morbidity of 10.5% among school children of age 6-15 years in this study is much lower than a study conducted in Delhi, where prevalence was reported to be 34.04% in the 5-14 years age group.^[2] However, higher prevalence of ocular morbidity has been reported from neighboring states like Haryana (58.8% in 4-18 years) and Rajasthan (71.7% in 4-16 years) and also from Hyderabad in South India (43.5% in 3-16 years).^[3-5] It was because of the higher prevalence of trachoma and conjunctivitis found in these two northern states and of refractive errors found in South India. Moreover, the range of age groups covered in the above mentioned studies was also more as compared to the present study. Lower prevalence (15%) of ocular morbidity has been reported from Kolkata, West India among school children of 5-13 years, because of lower prevalence of refractive errors (2%) and smaller age group covered in that study.^[6] Review of international studies revealed lower prevalence of 15.6% of ocular morbidity in children aged 7-19 years in rural area of Tanzania, Africa [7]. International differences in prevalence may also be explained by racial and ethnic variations, partly due to different lifestyles and living conditions in addition to different methodologies used.

Refractive Error

Poor vision in childhood affects performance in school or at work and has a negative influence on the future life of a child. Moreover, planning of the youth's career is very much dependent on visual acuity, especially in jobs for the navy, military, railways and aviation. Refractive errors are the most common reasons of the outpatient visit to an ophthalmic surgeon or an ophthalmic assistant. The overall incidence has been reported to vary between 21% and 25% of patients attending eye outpatient departments in India [8]. Similar prevalence of refractive errors has been observed among children of 12-17 years in Ahmedabad city [9]. From South India, higher (32%) prevalence rate of refractive errors among school children of age 3-

18 years as compared to the present study was observed, because of higher case detection rate in that study by an optometrist [5]. However, low prevalence of refractive errors of 2% has been reported from Eastern India by Datta *et al.*, among primary school children of 5-13 years, which could not be explained [6]. Internationally, lower prevalence of refractive errors (2.7-5.8%) has been reported among children of age 5-15 years from Africa, Finland, Chile and Nepal as compared to the present study [7,10-12]. These differences may be explained by the different diagnostic criteria used by different authors, racial or ethnic variations in the prevalence of refractive errors, different lifestyles or living conditions (e.g. reading, watching TV, or using computer/ visual display units, nutrition) or medical care (e.g. unnecessary or overcorrection of refractive errors which may worsen the refractive error by inhibiting natural "emmetropisation").

Squint

Prevalence of squint as reported by Pratap *et al.*, of 2.8% of primary squint and that of paralytic squint as 0.42%, is comparable with the results of the present study [13]. However, higher (7.4% in 5-15 years) and lower (0.2-0.6% in 4-18 years) prevalence of squint has been reported from Haryana, Rajasthan, West Bengal and Delhi [3, 4, 6, 14]. Studies done abroad also revealed lower prevalence of squint (0.5%) by Wedner *et al.*, among children of 7-19 years in Tanzania, Africa [7].

Colour Blindness

Prevalence of color blindness has been observed in an earlier study conducted in this part of the country [15]. Comparable results (2.9% in 4-16 years) have also been reported from Rajasthan [4]. However, lower prevalence of color vision defects (0.11%) has been reported by Pratap *et al.*, from North India [13]. A different study population (children who attended eye care centre in the last 18 months) in their study may explain this. Children are less likely to attend eye care centers for colour blindness.

Vitamin A Deficiency

Vitamin A deficiency up to an extent of 5.4-9% in 4 to 16 years has been reported from Rajasthan and Kolkata respectively as compared to 1.8% in the present study [4, 6]. This can be explained by lower socioeconomic status associated with unhealthy dietary

pattern of children in those studies. Prevalence of vitamin A deficiency decreased with age in the present study, which is comparable to the Desai *et al.*, study [4]. The prevalence of night blindness (0.41%) in the present study is comparable to results of earlier studies showing prevalence to vary from 0.29-0.3% in Haryana and North India [3,13]. Internationally, Wedner *et al.*, reported the prevalence of night blindness as 5.3% and bitot's spots as 0.6% among school children of age 7-19 years in Tanzania [7]. Since their study was done in the rural area, where children belonged to low socioeconomic status and had poor nutritional status, prevalence of vitamin A deficiency was high.

Conjunctivitis

Higher (3-17.5%) prevalence of conjunctivitis has been reported in other parts of Variation in the prevalence of conjunctivitis can be explained by difference in socioeconomic status, personal hygiene of children and seasonal variations of occurrence of conjunctivitis. Low prevalence of congenital disorders was found to be the same as it has been observed in other studies from India.

In almost all studies conducted in India, the prevalence of ocular morbidity decreased with age, the results of our study also confirmed this finding in an urban North Indian hilly area [3-6]. The decrease in prevalence of ocular defects with increasing age of children may be due to age dependence of eyeball and improved ophthalmic hygiene as a result of health education. Higher prevalence of refractive errors in the younger (6-10 years) age group could be because of high prevalence of age-related hypermetropia in young children as is also observed from other studies in North India [4, 8, 9].

CONCLUSION

School health programmes should focus on the ocular health of children. Health education activities should be intensified in schools and also in the community regarding signs and symptoms of ocular disorders. The aim of all blindness control programmes should be to propagate awareness in the masses of eye care and to teach the essentials of ocular hygiene and eye healthcare. Poor vision in childhood affects performance in school or at work and has a negative influence on the future life of a child.

The results of the study strongly suggest that screening of school children for ocular problems should be done at regular intervals and it should be one of the prime components of the School Health Programme. For this, school teachers should be oriented and trained in identifying common eye problems among school children so that these children can be referred for prompt treatment.

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