

STUDY OF EYE HEALTH STATUS AMONG SCHOOL GOING CHILDREN OF RURAL MAHARASHTRA

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Received : 24/07/2024
Received in revised form : 13/08/2024
Accepted : 29/08/2024

Keywords:

Refractive Error, Strabismus, Snellen chart, retinoscopy, Hirschberg test, ophthalmoscopy.

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DOI: 10.47009/jamp.2024.6.4.189

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2024; 6 (4); 967-969



Abstract

Background: Eyes are the most sensitive and treasured organ of the body. Any ocular disease in childhood, if not treated at the earliest may lead to permanent blindness. **Materials and Methods:** Out of 495 (four hundred ninety-five) school-going children, 310 (62.6%) were male, and 185 (37.4%) were female and had ocular morbidities. Visual acuity was measured by Snellen chart. Hirschberg test, cover-uncover test for detection of squint was done. Torch light was used to examine the anterior chamber, Iris, and pupil, Retinoscopy was used to study refraction. Ophthalmoscopy to study fundus slit lamp for anterior segment. **Result:** 362 (73.1%) of refractive errors, 201 (39.5%) simple myopia, 65 (12.3%) myopic astigmatism, 96 (18.3%) hypermetropia were observed, 73 (14.7%) strabismus, 64 (12.9%) alternate divergent squint was studied, 26 (5.2%) Vit. A deficiency was noted. **Conclusion:** The present visual impairment study found refractive errors are common ocular morbidities. It will help the ophthalmic surgeon in effectively treating such patients to prevent blindness in children.

INTRODUCTION

Schools are one of the best centers for effectively implementing comprehensive health programs with successful results and to create awareness among the new generation.^[1]

Eyes are the most treasured organ of human beings. 1.4 million blind children are reported globally.^[2] Blindness is one of the most significant social problems in society and in families as well. It is reported that 30% of Indian children lose their sight before the age of 20 years.^[3] Hence early detection and proper treatment of ocular morbidity and visual impairment in school-going children can prevent blindness, and such children can lead a normal social life. Globally refractive error is one of the most common causes of visual impairment in young children. The etiologies of refractive errors could be malnutrition or under nutrition, such as vitamin A deficiency or environmental factors, genetic factors, or an unhygienic atmosphere.^[4] Hence, an attempt is made to evaluate the various health status of eye in school-going children and treat them efficiently so that they can lead a normal social life.

MATERIALS AND METHODS

Out of 495 school-going children, 310 (62.6%) were male children, and 185 (37.4%) were female children were studied.

Inclusion Criteria

Children below 16 years of age having ocular morbidity and given consent in writing by their parents or guardians were selected for study.

Exclusion Criteria

The children above 16 years and already under medications for ocular diseases were excluded from the study.

Method: Children were brought to the ophthalmology department of Government Medical College Hospital Nandurbar Maharashtra-425412 from nearby primary and high schools located around the Nandurbar area by the medico-social worker of the community medicine department and referred by PHC working under Government Medical College Hospital Nandurbar (Maharashtra).

Every patient underwent the following examinations: visual acuity measurement with the help of Snellen's chart. Any children having visual acuity 6/9 or worse were examined for refractive error (RI). Extra ocular movements, Hirschberg test, cover-uncover test, for detection of squint was done. A gross examination of

the cornea, conjunctiva, anterior chamber, iris, and pupil with torch light was done. The children who were suspected of having any pathology were treated with suitable antibiotics. Examination of anterior segment with slit lamp was done. Retinoscopy and subjective refraction were done for all patients suspected of having refractive error. Cycloplegic refraction was done if necessary. Examination of the fundus with a direct ophthalmoscope was carried out, and indirect ophthalmoscopy was also done if needed. The duration of the study was May 2022 to June 2024.

Statistical analysis: Various ocular morbidities and refractive errors were classified with percentage in both genders. The statistical analysis was carried out in SPSS software. The ratio of male and female was 2:1.

RESULTS

[Table 1] Study of various Eye disorders prevalence among school going children:

- **Refractive Error:** 227 (73.2%) in male, 135 (72.9%) in female, 362 (73.1%) total refractive error
- **Simple myopia:** 119 (36.7%) in males, 82 (44.2%) in female, 201 (39.5%) were total cases.
- **Myopic Astigmatism:** 37 (10.3%) in males, 28 (15.6%) in female, total cases were 65 (12.3%).
- **Hypermetropia:** 71 (21.2%) in males, 25 (13.6%) in female, total cases were 96 (18.3%).
- **Strabismus:** 41 (13.2%) in males, 32 (17.6%) in female, total cases were 73 (14.7%).
- **Alternate divergent squint:** 36 (14.6%) in males, 28 (15.1%) in female, total cases were 64 (12.9%).
- **Right convergent squint:** 4 (1.29%) in males, 2 (1.28%) in female, total cases were 6 (1.21%).
- **Traumatic Eye injury:** 20 (6.4%) in males, 2 (1.08%) in female, total cases were 22 (4.4%).
- **Injury with stick:** 10 (3.2%) in males.
- **Fall in the ground:** 10 (3.2%) in males, 2 (1.08%) in female, total cases were 12 (2.4%).
- **Color blindness:** 4 (1.29%) in males, 2 (1.08%) in female, total cases were 6 (1.2%).
- **Vitamin A deficiency:** 20 (6.4%) in males, 6 (3.24%) in female, total cases were 26 (5.2%).
- **Congenital abnormalities:** 4 (1.6%) in males, 2 (1.08%) in female, total cases were 6 (1.2%).
- **Cataract:** 4 (1.6%) in males, 2 (1.08%) in female, total cases were 6 (1.2%).
- **Micro cornea with Nystagmus:** observed only in female 2 (1.08%) 310 (62.6%) in males, 185 (37%) in female, total cases were 495 (100%).

[Table 2] Myopia: 40 (8.08%) in 8-10 years, 65 (13.1%) in 11-13 years, 90 (19.3%) in 14-16 years, total cases were 201 (40.6%)

- **Myopic Astigmatism:** 16 (3.23%) in 8-10 years, 13 (2.62%) in 11-13 years, 36 (7.27%) in 14-16 years, total cases were 65 (13.3%).
- **Hyper Metropia:** 6 (1.2%) in 5.7 years of age, 22 (4.4%) in 8-10 years, 34 (6.8%) in 11-13 years, 34 (6.8%) in 14-16 years, total cases were 96 (19.3%).

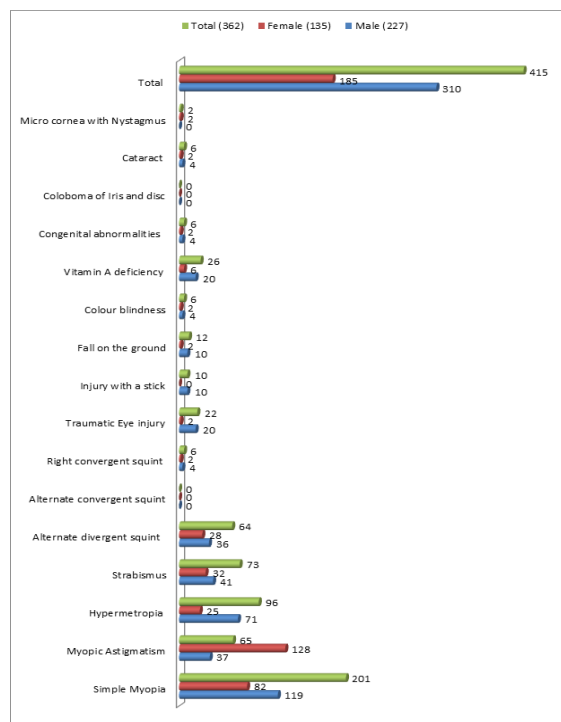


Figure 1: Study of Various Eye disorders prevalent among school going children

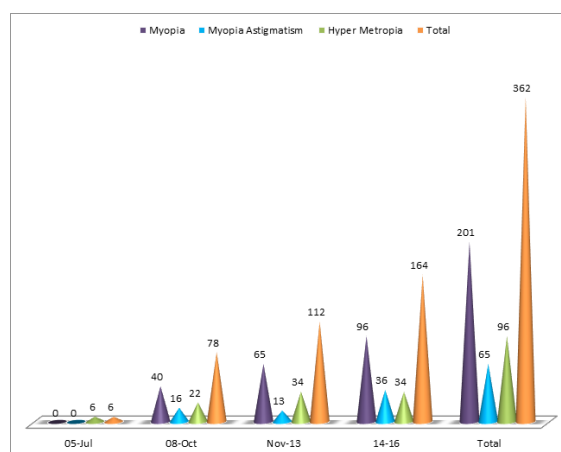


Figure 2: Distribution of various refractive Errors in the school going children

Table 1: Study of Various Eye disorders prevalent among school going children. Number of patients: 495

Types of Eye disease (ocular Morbidity)	Male		Female		Total	
	No (227)	% (73.2)	No (135)	% 72.9	No 362	% 73.1
Simple Myopia	119	36.7	82	44.2	201	39.5
Myopic Astigmatism	37	10.3	28	15.6	65	12.3
Hypermetropia	71	21.2	25	53.6	96	18.3

Strabismus	41	13.2	32	17.6	73	14.7
Alternate divergent squint	36	11.6	28	15.1	64	12.9
Alternate convergent squint	0	0	0	0	0	--
Right convergent squint	4	1.29	2	1.08	6	1.21
Traumatic Eye injury	20	6.4	2	1.08	22	4.4
Injury with a stick	10	3.2	0	0	10	2.02
Fall on the ground	10	3.2	2	1.08	12	2.4
Colour blindness	4	1.29	2	1.08	6	1.2
Vitamin A deficiency	20	6.4	6	3.24	26	5.2
Congenital abnormalities	4	1.6	2	1.08	6	1.2
Coloboma of Iris and disc	0	0	0	0	--	--
Cataract	4	1.6	2	1.08	6	1.2
Micro cornea with Nystagmus	0	0	2	1.08	2	0.4
Total	310	67.6	185	37.3	415	100%

Table 2: Distribution of various refractive Errors in the school going children.

Age (years)	Myopia		Myopia Astigmatism		Hyper Metropia		Total	
	No	%	No	%	No	%	No	%
5-7	0	00	0	00	6	1.2	6	1.21
8-10	40	8.08	16	3.23	22	4.4	78	14.7
11-13	65	13.1	13	2.62	34	6.8	112	22.6
14-16	96	19.3	36	7.27	34	6.8	164	33.1
Total	201	40.6	65	13.3	96	19.3	362	73.1

DISCUSSION

In the present study of eye health status in school-going children of Maharashtra, Out of 495 children, 310 (62.6%) were male and 185 (37.4%) were female. 362 (73.1%) Refractive error was noted. It included 201 (39.5%) simple myopia, 65 (12.3%) myopic astigmatism, 96 (18.3%) hypermetropia, 73 (14.7%) strabismus, 64 (12.9%) alternate divergent squint, 26 (5.2%) vitamin A deficiency, 6 (1.2%) congenital abnormalities, 6 (1.2%) cataracts, and 6 (1.2%) color blindness were studied. In the distribution of various refractive errors in school-going children, Myopia: 40 (8.08%) in 8-10 years of age, 65 (13.1%) in 11-13 years of age, 96 (19.3%) in 14-16 years of age, total 201 (40.6%). In myopic astigmatism: 16 (3.23%) in 8-10 years, 13 (2.62%) in 11-13 years, 36 (7.2%) in 14-16 years, total 65 (13.3%). Hypermetropia: 6 (1.2%) in 5-7 years of age, 22 (4.4%) in 8-10 years of age, 34 (6.8%) in 11-13 years of age, 34 (6.8%) in 14-16 years of age, total 96 (19.3%) [Table 2]. These findings are more or less in agreement with previous studies.^[5-7]

Refractive error causes poor vision in childhood, which effects the performance in school or at work and has a negative influence on the future of the child. Moreover, the planning of a youth's career is very much dependent on visual acuity,^[8] especially in jobs in defense service like navy, military, railway, and aviation. Clustering of refractive error associated with environmental or genetic influences with families.^[9] Baseline (presenting) visual acuity of 20/40 or worse in at least one eye was found in 4-9% of the study population, which decreased to 2.5% with best corrected vision. It is reported refractive error was the leading cause of visual impairment among rural children, i.e., 68%, with amblyopia included.^[10] Vitamin A deficiency causes night blindness 5.2% in the present study, but WHO claims 3.53%. Hence still we are inferior to eradicating

malnutrition, which includes vitamin A deficiency, squint, color blindness, and other common visual problems. It needs to be treated in childhood only.^[11]

CONCLUSION

In the present study of eye health in the Maharashtra population, refractive error was the major ocular morbidity, followed by strabismus, alternate divergent suit, vitamin A deficiency, and cataract. Most refractive errors can be easily corrected with spectacles. As visual impairment has a detrimental impact on education and the future of a child's life. Hence cost-effective strategies to eliminate visual impairment are warranted because ocular morbidities are mainly observed in lower and middle socio-economic status children.

Limitation of study: Owing to tertiary location of research centre, small number of children and lack of latest techniques, we have limited finding and results.

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