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Original Research Article

Study of Eye Health Status among Rural School Going Children of Santhal Pargana Jharkhand

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Abstract

Background: The eye is the most important special sense organ in a human being. Normal vision is necessary to lead a normal and dignified life. The children with ocular morbidity affect learning ability and also have an impact on adjustment in the school and personality development as a whole.

Method: Out of 250 (two hundred fifty) school-going children, 157 (62.8%) were male, and 93 (37.2%) were female and had ocular morbidities. Visual acuity was measured by Snell's chart. The Hirschberg test, a cover-uncover test for the detection of squint, was done. A torchlight was used to examine the anterior chamber, iris, and pupil. Retinoscopy was used to study refraction. Ophthalmoscopy is the study of the fundus slit lamp for the anterior segment. Any pathology of the eye is treated with suitable antibiotics.

Results: 182 (72.8%) refractive errors, 98 (39.2%) simple myopia, 44 (17.6%) hypermetropia, 37 (14.8%) strabismus, 32 (12.8%) alternate convergent squint, 13 (5.2%) Vit. A deficiency is noted. Highest incidence 77 (78.5%) myopia, 25 (83.3%) astagmitism, 21 (47.5%) Hyper metropia was observed in 14-16 age groups could be due to late approach to medical aid.

Conclusion: Among visual morbidities refractive error is a common eye health problem. Present findings will help the ophthalmologist to treat and prevent blindness in children.

Keywords: Ophthalmoscope, Hirschberg Test, Retinoscopy, Refractive Error, Snell's Chart.

Introduction

Schools are one of the best centers for effectively implementing a comprehensive health program with successful results [1]. The eye is the most important special sense organ in human beings. Normal vision is necessary for optimum physical, mental, and psychological development [2]. Thus childhood blindness accounts for one-third of the economic cost of blindness, although it represents less than 4% of the overall magnitude.

Among the 1.4 million blind children worldwide, 73% live in low-income countries, 7 million children suffer from low vision, and approximately 10 million children have correctable refractive error causing visual impairment (visual acuity <6/18 in the better eye). Factors other than refractive errors, such as amblyopia, strabismus, pediatric cataracts, corneal opacities, lid abnormalities, and retinal diseases, are largely unaccounted for causes of ocular morbidity in children [3]. The presence of any of these morbidities affects the learning ability of a child and also has an impact on adjustment in the school and also personality development [4]. Hence, an attempt was made to study the school-going children of both sexes and different age groups to find out about eye health diseases.

Material and Method

Out of 250 school-going children, 157 (62.8%) were male children, and 93 (37.2%) were female children who 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 Sadar Hospital Dumka, cum phulo Jhano Medical College hospital, Dumka, Jharkhand-814101 from nearby

primary and high schools located around the Dumka area by the medico-social worker of the community medicine department and referred by PHC working under phulo Jhano Medical College hospital, Dumka, (Jharkhand).

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). Extraocular movements, the Hirschberg test, and the cover-uncover test for detecting squint were done. A gross examination of the cornea, conjunctiva, anterior chamber, iris, and pupil with torchlight was done.

The children who were suspected of having any pathology were treated with suitable antibiotics. Examination of the anterior segment with a 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 October 2024 to December 2024.

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

Observation and Results

Table 1: Study of various disorders prevalence among the rural school going children:-

- Refractive Error: 115 (73.2%) in male, 67 (72.8%) in female, 182 (72.8%) total refractive error
- Simple myopia: 57 (36.3%) in males, 41 (44.6%) in female, 98 (39.2%) were total cases.
- Myopic Astigmatism: 16 (10%) in males, 14 (15.3%) in female, total cases were 30 (12%).
- Hyper metropia: 31 (21.6%) in males, 13 (13.9%) in female, total cases were 44 (17.6%).
- Strabismus: 21 (13.3%) in males, 16 (17.2%) in female, total cases were 37 (14.8%).
- Alternate convergent squint: 18 (11.4%) in males, 14 (15.0%) in female, total cases were 32 (12.8%).
- Right convergent squint: 3 (1.36) in males, 1 (1.5%) in female, total cases were 4 (1.6%).
- Traumatic Eye injury: 10 (6.36%) in males, 1 (1.07%) in female, total cases were 11 (4.4%).
- Injury with stick: 5 (3.18%) in males, total cases 5 (2%).
- Fall in the ground: 5 (3.18) in males, 1 (1.5%) in female, total cases were 6 (2.5%).
- Color blindness: 3 (1.01%) in males, 1 (1.07%) in female, total cases were 4 (1.6%).
- Vitamin A deficiency: 10 (6.3%) in males, 3 (3.07%) in female, total cases were 13 (5.2%).
- Congenital abnormalities: 3 (1.9%) in males, 1 (1.07%) in female, total cases were 4 (1.6%).
- Coloboma of Iris and disc: (Not found)
- Cataract: 3 (1.4%) in males, 1 (1.5%) in female, total cases were 4 (1.4%).
- Micro cornea with Nystagmus was zero:

Table 2: Distribution of various Refractive errors in rural school going children –

- Myopia: 8 (8.1%) in age between 8-l0 years, 13 (13.2%) in age 11-13 years, 77 (78.5%) in age 14-16 years, total cases were 98 (99.8%)
- Myopic Astigmatism: 2 (6.5%) in age between 8-10 years, 3 (2.10%) in age 11-13 years, 25 (83.3%) in 14-16 years, total cases were 30 (99.9%).
- Hyper Metropia: 3 (6.81%) in 5.7 years of age, 9 (20%) in 8-10 years of age, 21 (47.7%) in 11-13 years, 23 (6.5%) in 14-16 years of age, total cases were 44 (99.9%).

Table 1: Study of Various Eye disorders prevalent among school going children (Number of patients: 250)

Types of Eye disease (ocular Morbidity)	Male (157)		Female (93)		Total (250)	
	No	%	No	%	No	%
Refractive Error	115	73.2	67	72.8	182	72.8
Simple Myopia	57	36.3	41	44.0	98	39.2
Myopic Astigmatism	16	10.1	14	15.3	30	12
Hypermetropia	31	21.6	13	13.9	44	17.6
Strabismus	21	13.3	16	17.2	37	14.8
Alternate convergent squint	18	11.4	14	15.0	32	12.8
Right convergent squint	3	1.91	1	1.7	4	1.6
Traumatic Eye injury	10	6.36	1	1.7	11	4.4
Injury with a stick	5	3.18	0	0	5	2
Fall on the ground	5	3.18	1	1.07	6	2.4
Colour blindness	3	1.91	1	1.07	4	1.6
Vitamin A deficiency	10	6.36	3	3.02	13	5.2

Congenital abnormalities	3	1.91	1	1.07	4	1.6
Coloboma of Iris and disc	0	0	0	0	0	0
Cataract	3	1.91	1	1.07	4	1.6
Micro cornea with Nystagmus	0	0	0	0	0	0
Total	300	192.65	185.2	187.8	474	189.6

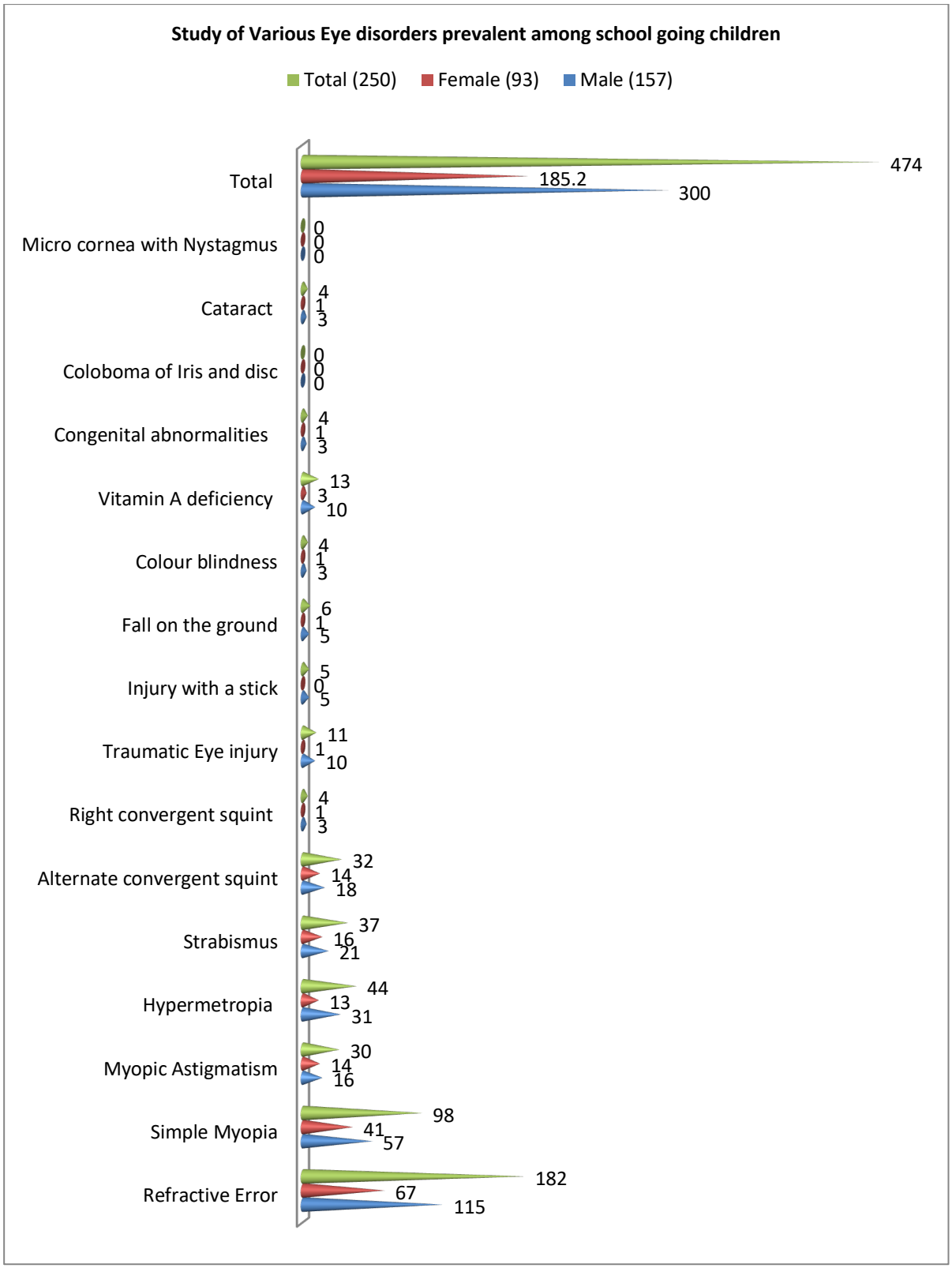

Figure 1: Study of Various Eye disorders prevalent among school going children

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	3	6.81	3	1.2
8-10	8	8.1	2	6.6	9	20.4	19	7.6
11-13	13	13.2	3	10	11	25	27	10.8
14-16	77	78.5	25	83.3	21	47.7	123	49.2
Total	98	99.8	30	99.9	44	99.9	172	68.8

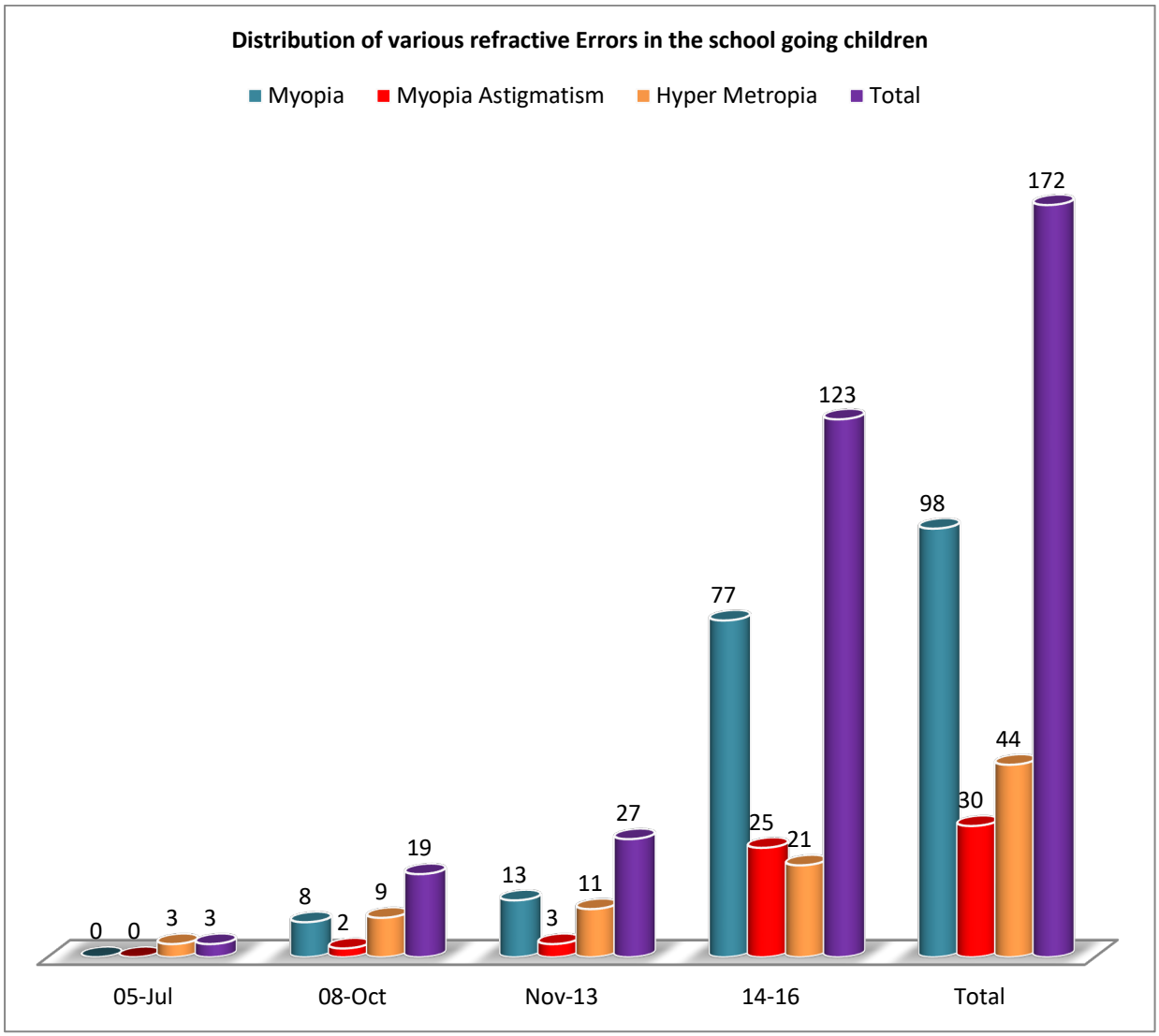

Figure 2: Distribution of various refractive Errors in the school going children

Discussion

In the present study of eye health status among rural school-going children Refractive 115 (73.2%) in males and 67 (72.8%) in females. Simple myopia: 57 (36.3%) in males, 41 (44.0%) in females; hypermetropia: 31 (21.6%) in males, 13 (13.9%) in females; strabismus: 21 (31.1%) in males, 16 (17.2%) in females; Vit. A deficiency of 10 (6.36%) in males and 3 (3.07%) in females (Table 1). Highest incidences of myopia, myopic astigmatism, hyper metropia was observed in 14-16 year (Table 2). These findings are more or less in agreement with previous studies [5,6,7]. Refractive error causes poor vision in childhood, which affects 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 that refractive error was the leading cause of visual impairment among rural children, i.e., 68%, with amblyopic included [10]. Vitamin A deficiency causes night blindness in 5.2% in the present study, but WHO claims 3.53%. Hence, we are still 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.

Summary and Conclusion

In the present study of eye health in the Jharkhand 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. Moreover majority of ocular morbidities observed in 14-16 year children due to delayed approach to medical aid.

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

This research work was approved by Ethical committee of phulo Jhano Medical College hospital, Dumka, Jharkhand.

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