

Ocular diseases other than refractive errors among school children of Aurangabad city of Maharashtra: A cross-sectional study

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Abstract

Background: Ocular diseases during childhood involve a wide variety of eye disorders that adversely affect all round development of the child. This cross-sectional study was done to assess the Ocular diseases other than refractive errors among school going children of Aurangabad city of Maharashtra. **Methods:** The present cross-sectional study was done at Aurangabad city during the period 2017 -2018. We included school going city children of age group 6 - 15 years from government schools. Sample was of 2000 children. Eye examination was done in the classroom. Extra-ocular movements assessment, Hirschberg test, cover-uncover test was done for detection of squint. Examination of cornea, conjunctiva, anterior chamber, iris, pupil and lens with torchlight was done. Slit lamp examination was done in children suspected of anterior segment abnormalities for which they were brought to the hospital. Vitamin A deficiency was diagnosed if there was history of night blindness, or on examination there were signs of conjunctiva xerosis, Bitot's spots, corneal xerosis, or keratomalacia, xerophthalmic fundus. Ocular disease distribution in study population was described. **Results:** Among the 2000 students studied there were 1060 male children and 940 female children. There were 50 children (2.5%) found to have squint on examination. Bitot's spots were noted in 32 children (1.6%), Conjunctivitis was noted in 30 children (1.5%), Blepharitis was noted in 22 children (1.1%). There were 8 cases of External hordeolum, 2 cases each of Chalazion and Ptois and one case each of Keratitis and Cataract. **Conclusions:** School children studied had a fair number of squint cases, vitamin A deficiency and conjunctivitis apart from other less frequent ocular morbidities. As these disorders require early detection and management to prevent adverse prognosis, it is recommended to screen school children by periodic ophthalmological examination for timely intervention.

Key Word: Squint, Conjunctivitis, Vitamin A deficiency.

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INTRODUCTION

Ocular diseases during childhood involve a wide variety of eye disorders that adversely affect all round development of the child. Ocular morbidity due to cataract, trachoma, squint, vitamin A deficiency and other eye disorders has been considered to be a health burden which needs attention and timely intervention for its prevention and early management. This will help in the reduction of economic burden due to these ophthalmological disorders and facilitation of societal developments.¹⁻² Ocular morbidity in childhood leads to learning impairment, adjustment disorders, and personality issues during school going years. An estimate suggests that among the blind population of India as much as 30% people lose the

eyesight before attaining the age of 20 years and many among them are less than five years of age when they become blind. There is a lack of hospital and community-based data on childhood ocular morbidity in our country. Epidemiological data regarding the causes and magnitude of the problem of ocular morbidity in children in a given region is necessary for the proper planning and implementation of preventive and therapeutic services for the children in that region.³⁻⁵ School eye screening has been suggested as a cost-effective method that can provide crucial help in the early diagnosis, prevention and management of childhood visual disorders.⁶ The data on refractive errors among school children in Aurangabad city has been published earlier.⁷ The present cross-sectional study was done to assess the ocular diseases other than refractive errors among school going children of Aurangabad city of Maharashtra.

METHODS

The present cross-sectional study was done at Aurangabad city during the period Jan 2017 –Jan 2018. We included school going city children of age group 6 - 15 years from government schools. The sample was of 2000 children. Eye examination was conducted in the classroom. Extra-ocular movements assessment, Hirschberg test, cover-uncover test was done for detection of squint. Examination of cornea, conjunctiva, anterior chamber, iris, pupil and lens with torchlight was done. Slit lamp examination was done in children suspected of anterior segment abnormalities for which they were brought to the hospital. Vitamin A deficiency diagnosis was made if there was a history of night blindness, or on examination, there were signs of conjunctiva xerosis, Bitot's spots, corneal xerosis, or keratomalacia, xerophthalmic fundus. Ocular disease distribution in study population was described.

OBSERVATIONS

Among the 2000 students studied there were 1060 male children and 940 female children. There were 27% children aged 6-9 years, 54% children aged 10-12 years and 19% children aged 13-15 years. Bitot's spots (Vitamin A deficiency) were noted in 32 cases, which was more prevalent in boys (18 cases) than in girls (14 cases). No case of night blindness was found. Table 1 to 4 describe the pattern of ocular morbidity other than refractive errors in study population, distribution of squint cases, distribution of conjunctivitis cases, and eyelid disorders in study population. Keratitis was observed in only one male child aged 9 years and it was a case of viral Keratitis. Cataract was observed in one male child aged 6 years.

Table 1: Pattern of Ocular Morbidity other than Refractive Errors in Study Population

Ocular Morbidity	Frequency	Percentage
Squint	50	2.5
Bitot's Spots	32	1.6
Conjunctivitis	30	1.5
Blepharitis	22	1.1
Chalazion	2	0.1
External Hordeolum	8	0.4
Ptosis	2	0.1
Keratitis	1	0.05
Cataract	1	0.05
Total Ocular Morbidity other than Refractive Errors	148	7.4
Total Study Population	2000	100

Table 2: Distribution of Squint Cases in Study Population

Squint Classification	Frequency	Total
Esotropia	28	40
Esophoria	12	
Exotropia	3	
Exophoria	7	10
Total	50	

Table 3: Distribution of Conjunctivitis Cases in Study Population

Conjunctivitis	Frequency	Total
Allergic Male	17	28
Female	11	
Viral Male	2	2
Female	0	
Total	30	

Table 4: Distribution of Eyelid Disorders in Study Population

Eyelid Disorders	Frequency	Total
Blepharitis Male	16	22
Female	6	
Stye (External Hordeolum) Male	5	8
Female	3	
Chalazion Male	2	2
Female	0	
Ptosis Male	1	2
Female	1	
Total	34	

DISCUSSION

In the present study, there were 50 children (2.5%) found to have squint on examination. Bitot's spots were noted in 32 children (1.6%), Conjunctivitis in 30 children (1.5%), Blepharitis in 22 children (1.1%). There were 8 cases of External hordeolum, 2 cases each of Chalazion and Ptosis and one case each of Keratitis and Cataract. A recent similar study in school children of age group 5 to 15 years with a sample of 4838 children by Veer Singh *et al.* in western Uttar Pradesh during 2012-14 reported that vitamin A deficiency prevalence assessed by Bitot's spots or conjunctiva xerosis was 2.09%. Blepharitis was found

in 2.11% children, allergic conjunctivitis in 1.92% and bacterial conjunctivitis in 0.95% children. The prevalence of strabismus in their study was 0.27% whereas stye was prevalent in 0.31% children. ⁶ G Nageshwar Rao *et al.* reported ocular morbidity in a hospital-based study from eastern India at Bhubaneswar, Odisha in children below 17 years of age. Allergic conjunctivitis (8.53%), blepharitis (5.05%), vitamin A deficiency (4.58%), strabismus (4.1%) was reported. ⁸ Biswas J *et al.* reported ocular morbidity among children below 15 years of age in a hospital-based sample. They reported a high prevalence of allergic conjunctivitis (17.23%) in studied children. They stressed that although it is a rare cause of blindness; it causes absenteeism from school due to the discomfort and has chances of recurrence. They suggested that there should be a mandatory regular screening of school students for ocular morbidity and teachers, parents and students should be encouraged for maintaining the proper eye hygiene and explained the importance of periodic eye examination by ophthalmologists. ³ Ravinder K *et al.* studied ocular disorders among primary school children from Warangal, Telangana in South India and found that Vitamin-A deficiency was 2.6%, squint was 0.42%, corneal opacity was 0.24%, cataract was 0.16%, Ptosis was 0.18%, and Keratitis was 0.3%. They also stressed the need for epidemiological data from different regions regarding ocular morbidity in school children and implementation of eye care programs at school and health facility level for early detection and treatment. ⁹ Harpal Singh reported a data from 20,800 school children aged 5-16 years during 2004-2007 from Bhopal, Madhya Pradesh in central India. Vitamin A deficiency (13.66%) was high, and strabismus was 2.08%. Corneal opacity was also reported in a comparatively high number of children (5.86%). Again, they also recommended tackling the problem of ocular morbidity in school children with efforts like screening programs and collection of epidemiological data. ¹⁰ Turkey and Adlakha observed a prevalence of allergic conjunctivitis at 131/1300 (10.1%), corneal opacity at 102/1300 (7.8%), Ptosis at 35/1300 (2.7%), squint at 60/1300 (4.6%) and stye at 21/1300 (1.6%) among the private school children aged 5-10 years in Vindhya region of central India. ¹¹ V Kalikivayi *et al.* studied ocular diseases among lower-middle-class school children aged 3-18 years from Hyderabad in southern India with a sample size of 4029 children. Strabismus was noted in 30 (0.7%) children, nine were esodeviations, and 21 were exodeviations. Corneal diseases were noted in 5 (0.1%) cases, and cataract in 2 (0.05%) cases. ¹² Deshpande JD and Malathi K studied ocular diseases in 622 adolescent school children of 5th to 10th standard aged 10-16 years from rural area of north Maharashtra and reported vitamin A deficiency in 44/622 (7.1%), conjunctivitis in 16/622

(2.6%), squint in 11/622 (1.8%), Blepharitis in 6/622 (1%), chalazion in 5/622 (0.8%), trachoma in 5/622 (0.8%), stye in 3/622 (0.5%), corneal opacity in 1/622 (0.2%) and Ptosis in 1/622 (0.2%). ¹³ Although the ocular morbidity data is being reported from different parts of India, still there is a need for collection and reporting of more epidemiological data from various geographical regions as there is a wide variation in the magnitude of the problem of various ocular diseases. It is much needed for proper planning and implementation of prevention strategies as well as resource allocation. Screening of school children is a cost-effective and fruitful method for early diagnosis and treatment of ocular diseases. All the stakeholders should work in unison and coordinate in reducing the burden of ocular disorders in children which may lead to a positive change in the lives of our children who are the future of the nation. The study limitations are cross-sectional data reflecting the point magnitude of ocular morbidity other than refractive errors among government school students with no data regarding the seasonal or other variations, and there is a need to study associated risk factors to design prevention strategies. Also, studies including private school students screening for ocular morbidity should be done in the region for an overall assessment of the magnitude of the problem and associated factors.

CONCLUSIONS

School children studied had a fair number of squint cases, vitamin A deficiency and conjunctivitis apart from other less frequent ocular morbidities. As these disorders require early detection and management to prevent adverse prognosis, it is recommended to screen school children by periodic ophthalmological examination for timely intervention.

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