

Prevalence of Ocular Morbidity among School Children of Less Than or Equal to 15 Years- Study from North India

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ABSTRACT

Objective: Diseases of eye in childhood affects learning ability, adjustment in school and personality. The primary cause for visual impairment and blindness in India are uncorrected refractive errors. In order to prevent future blindness early detection and treatment of these problems are necessary. The present study was done to see the prevalence of ocular morbidity among school children, to take necessary preventive measures & early management of preventable blinding disorders.

Methodology: The present cross-sectional study was conducted on all the children of randomly-selected six government schools of Katra. After meeting inclusion & exclusion criteria all the children underwent complete eye examination including color vision, refraction, Schiottz tonometry, direct funduscopy.

Results: Out of 258 students, prevalence of ocular morbidity was 22.87%, the most common causes of ocular morbidity was refractive error in 12.79% followed by blepharitis in 3.10% children.

Conclusion: Refractive error is the main cause of visual impairment in school children which is preventable by use of spectacles. Thus, there is need to launch a periodic school eye screening to prevent permanent visual disability of the school children.

Key Words: Ocular morbidity, Prevalence, Refractive errors, School children.

INTRODUCTION

Blindness has an enormous personal, social and economic impact limiting the education and life choices of otherwise healthy people & placing a significant weight on family, community, social & health service. Group of diseases and conditions occurring in childhood or early adolescence, which, if left untreated leads to severe visual impairment that are likely to be untreatable later in life (blindness).^[1] As we all know one of the most important organ in the human body are eyes and the most wonderful gift is vision, the

importance of eye is neglected by many people by not paying proper attention towards eye care.^[2] According to the World Health Organisation (WHO), about 75% of causes of blindness can be avoided through preventive or therapeutic measures. Control of childhood blindness is main priority of the WHO through its programme "VISION 2020: the Right to Sight".^[3] In the developing countries 25% of the populations are constituted by children in the school-going age group (6-15 years). They fall best in the preventable blindness age group & schools are the best for

imparting health education to the children. Children do not complain of defective vision, may not even be aware of their problem. Children make various adjustments to the poor eyesight by sitting near the blackboard, holding the books closer to their eyes, squeezing the eyes, avoiding work requiring visual concentration. Schools are also one of the best centers for effectively implementing the comprehensive eye healthcare programme. [4] Hence, present study was conducted with the objective of estimating the prevalence of ocular morbidity among school children at Katra.

MATERIALS AND METHODS

The present cross-sectional study was conducted over a period of 6 months from October 2017 to March 2018 in 6 government schools of Katra. A total of 258 students participated in this study. A short talk on eye health was given to the school staff & children before the eye examination. Informed consent from school heads were taken prior to conduct of study.

Inclusion Criteria: All available and eligible students age ≤ 15 years.

Exclusion criteria: Uncooperative students, students absent from school during the day of examination, those who were not willing to participate in study.

All participated children were worked out as:

1. Diffuse Torch light Examination: Examination of the eyelid margins, conjunctiva, the cornea and anterior segment of the eye was performed. Strabismus was diagnosed by recording the corneal light reflex combined with cover-uncover test.
2. Visual acuity with Snellen chart: children with VA $< 6/6$ underwent a pinhole vision to differentiate refractive errors from pathological conditions. Refractive error was diagnosed when VA less than 6/6, improved on pin-hole test.
3. Colour vision with Ishihara chart.

4. Fundus examination using WelchAllyn direct ophthalmoscope in undilated pupil to see posterior segment of the eyes in dark room.
5. Schiottz tonometry: to measure IOP.

No drug was administered to any child. Vitamin A deficiency was determined by recording conjunctival dryness and bitot's spot with or without a history of night blindness. All information was recorded in the proforma especially designed for the purpose of this study.

Statistical analysis: Analysis of data was done using statistical software MS Excel / SPSS version 17.0 for windows. Data presented as percentage (%) as discussed appropriate for quantitative and qualitative variables.

OBSERVATION & RESULTS

Total of 258 students participated in the present study, following observations were made;

Maximum students were in age group of $>10-15$ years i.e. 61.63% followed by 35.66% in $>5-10$ years. (Table no.1)

Table No. 1 Age wise distribution of students:

Age (in years)	No.	%age
≤ 5	7	2.71
$>5-10$	92	35.66
$>10-15$	159	61.63

Male students comprised 51.55% while female students were 48.45%. (Table no. 2.)

Table No. 2 Sex wise distribution of students:

Sex Distribution	No.	%age
Male	133	51.55
Female	125	48.45

Table No.3 Ocular morbidity seen among students:

Ocular Morbidity	No.	%age
Refractive Errors	33	12.79
Vitamin A Deficiency	2	0.77
Conjunctivitis	5	1.94
Squint	1	0.39
Colour blindness	5	1.94
Amblyopia	0	0
Ptosis	0	0
Stye	3	1.16
Corneal scar	0	0
Chalazion	2	0.78
pterygium	0	0
blephritis	8	3.10
No ocular morbidity	199	77.13
Total	258	100

Table No.4 Visual acuity seen among students:

Visual acuity(V/A)	No.	%age
<6/60	1	0.39
6/60-6/36	2	0.77
6/24-6/18	4	1.55
6/12-6/9	26	10.08
6/6	225	87.21

The prevalence of ocular morbidity among school children in present study was 22.87% , the most common causes of ocular morbidity was refractive error in 12.79% followed by blepharitis in 3.10% children. Conjunctivitis & colour blindness each constitute 1.94%. (Table no. 3)

In the present study, V/A of 6/12-6/9 was found in 10.08% children followed by 6/24-6/18 in 1.55%, 6/60-6/36 in 0.77% & <6/60 in 0.39%. (Table no.4)

DISCUSSION

Poor vision in childhood has a negative influence on the future life of a child & also affects performance in school or at work. Moreover, planning of the youth's career is very much dependent on visual acuity, especially in jobs for the navy, military, railways and aviation. [4] In recent years there is increasing awareness for preventive measures with programmes specially focussed on newborn and school children. As many children reach school age without having undergone any ocular examination, therefore school screening is important. [5]

Male students comprised 51.55% while female students were 48.45% in the present study. This difference is not very large but probably due to the special importance given to male children, ignorance of parents and geographical inaccessibility to the schools among those residing in remote, hilly areas. Pandey et al in their study reported 58.51% males and 41.48% were female. [6]

In the present study, the prevalence of ocular morbidities was found to be 22.87%. Rao SM et al reported 26.5 % prevalence among school children in north India [7] whereas Chaturvedi S et al reported that more than 40 % of the children had one or more eye diseases in their school based study. [8] The commonest cause of ocular

morbidity in present study was refractive errors 12.79%. Kallklvayl V et al reported 32% prevalence rate of refractive errors among school children in their study from South India. [9] While Matt S et al reported 12.5% prevalence rate. [10] The most common causes of visual impairment around the world and the second leading cause of treatable blindness is refractive error. [11] An optical defect which is intrinsic to the eye, prevents light from being focussed to a single point on the retina thereby reducing normal vision is refractive error & easiest way to reduce such impaired vision is to diagnose and treat refractive errors. [2] Out of 33 children with refractive errors, 0.39% students had vision \leq 6/60, 0.77% students had vision 6/60-6/36, 1.55% students had vision 6/24-6/18, 10.08% students had vision 6/12-6/9 and 87.21% had vision 6/6. Children with refractive error were not using spectacles. This is due to reason that they were not aware of the presence of the problem which could be due lack of awareness, attitudes regarding the need for spectacles, spectacle cost, cosmetic appearance. Shrepa D et al in their study found 0.85 % children with visual acuity of 6/9 - 6/18 and 0.43 % children with visual acuity of 6/18 - 6/60. There were 1.29 % children with visual morbidity. [1] These differences may be explained by the different racial or ethnic variations in the prevalence of refractive errors, different lifestyles or living conditions or medical care diagnostic criteria used by different authors.

In the present study blepharitis was seen in 3.10% children. Desai S et al in their study reported 3.48% prevalence of blepharitis. [12] Slightly lower prevalence in present study could be because of better living condition.

Prevalence of color blindness in the present study was 1.94%. This may be due to reason that children are less likely to attend eye care centers for colour blindness. Comparable results 2.9% in 4-16 years have also been reported by Desai S et al in their study. [12] Pratap *et al* reported 0.11%

prevalence of color vision defects in their study. [13]

The school health services provided in developing countries are quite insufficient due to shortage of infrastructure and resources as compared to services provided in developed countries. Childhood blindness has to be targeted in order to implement Vision 2020 in India and for that school eye screening program need to be implemented on a large scale to detect children suffering from blindness due to refractive error. Refractive error can lead to complication like amblyopic and strabismus if not diagnosed earlier and managed timely. Thus in order to plan & evaluate the preventive & curative services for children, data on prevalence and causes of blindness in children is needed.

The limitation of this study was that our study was school based, which may not reflect the clinical conditions in this community where a significant number of children may not attend school due to poverty, geographical inaccessibility to the schools among those residing in remote, hilly areas.

CONCLUSION

From present study, it has been concluded that the commonest preventable cause of visual impairment in school students was refractive errors & treatable cause was blepharitis. Therefore, early detection, proper screening and evaluation of school students if done timely can help in reducing the burden of eye disease. Authors suggest every child ideally should be examined by an ophthalmologist before starting school and preventive eye examination in the first year of life should be done.

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