ORIGINAL ARTICLE

PATTERN OF OCULAR MORBIDITY IN SCHOOL CHILDREN IN CENTRAL INDIA

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ABSTRACT

School eye health services is one of the important aspect of school health services in which children can be screened for various systemic and eye diseases such as refractive error, squint, amblyopia, cataract ,vitamin deficiency etc .

The basic aim of this study was to assess the prevalence and pattern of visual impairment amongst school children of central India and to recognize avoidable causes of ocular morbidity. School surveys were conducted in various government schools of rural, urban and semi urban areas of Bhopal between Nov-2004 to Dec-07. A total of 20,800 school children between age group 5 to 16 years had under gone the complete ocular examination. Prevalence of Ocular morbidity was found in 14.5%. Refractive error was found to be the most common cause of ocular morbidity (47.91%) followed by vitamin A deficiency (13.66%) and strabismus (2.08%).

Key words: Refractive error, Night blindness, Cataract and Trachoma.

INTRODUCTION

India has an estimated of 320,000 blind children, more than any other country in the world. [1] Even though this represents a small fraction of the total blindness, the control of blindness in children is one of the priority areas of the World Health Organization's (WHO) "Vision 2020: the right to sight" program. This is a global initiative, which was launched by WHO in 1999 to eliminate avoidable blindness from worldwide by the Year 2020. [2]

Although blindness in children is relatively uncommon, this age group is also considered a priority as severe visual loss in children can affect their development, mobility, education, and employment opportunities. This has far-reaching implications on their quality of life and their affected families. In terms of the 'blind person years' they form the maximum burden of blindness on the community, next only to

cataract, which is the commonest cause of avoidable blindness. [3] The prevalence of blindness in children ranges from approximately 0.3/1000 children in affluent regions to 1.5/1000 in the poorest communities. Globally there are estimated to be 1.4 million blind children, almost three-quarters of them live in developing countries. [3] Major causes of childhood blindness are easy to detect and approximately 40% are preventable. School children are a captive audience and can be reached more easily in comparison to general population.

Considering the fact that 30% of India's blind population loses their sight before the age of 20 years, the importance of early detection and treatment of ocular diseases and visual impairment in young is obvious.

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which children can be screened for diseases such as refractive error, squint amblyopia, trachoma etc.

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MATERIAL AND METHODS

School surveys were conducted in various government schools of rural, urban and semi urban areas of Bhopal between Nov-2004 to Dec-07. A total of 20,800 school children between age group 5 to 16 years had under gone the complete ocular examination. The School was informed well in time for appropriate arrangements at a given date and time. Informed consent was obtained from the parents or guardian.

Our survey Team consisted of an Ophthalmologist, Optometrist, ophthalmic technician and two other staff.

All the Children underwent comprehensive ocular examination which included detailed history of present and past ocular problems, along with relevant family history.

Visual Acuity was taken unaided, with pinhole, with glasses on Snellen's or 'E 'chart at a distance of 6 meters. anterior segment was examined with torch light. Color vision was tested on Ischihara chart. Convergence test and test for Squint were carried out. Fundus evaluation with dilated pupil was done where vision was not improving with pinhole.

Criteria's for inclusion of children for ocular morbidity:
- Visual acuity of <6/9 and improving with pinhole was considered to be refractive error.
- Vitamin A Deficiency was considered by recording Bitot's spot, Conjunctival and Corneal xerosis and night blindness. The history of night blindness was obtained from the child.
- Strabismus was diagnosed by recording corneal light reflex combined with extra ocular movements and cover -uncover tests.
- A probable diagnosis of amblyopia was made if the vision was <6/9, not improving

with pin hole and no organic lesion was detected after complete ocular examination.

OBSERVATION AND RESULTS:

A total of 20,800 children were screened, Out of them 12130 were boys (58.31%) and rest 8670 (41.68%) were girls. Ocular morbidity was found in 3016(14.5%) children out of which 1617(7.77%) were boys and 1399(6.72%) were girls.

Table-1: prevalence of various ocular morbidities

Causes	Total children ((3016) (%)	% (n=20800)*
Refractive Error	1445 (47.91)	6.94
Vitamin A Deficiency	412 (13.66)	1.98
Strabismus	63 (2.08)	0.30
Infective Condition	439 (14.55)	2.11
Corneal Opacity	177 (5.86)	0.85
Developmental Cataract	108 (3.58)	0.51
Traumatic Eye Injury	161 (5.33)	0.77
Miscellaneous	211 (6.99)	1.01

*Out of total children population

Refractive error was found to be the most common cause of ocular morbidity (47.91%) followed by vitamin A deficiency (13.66%) and strabismus (2.08%).

Table 2: Age Wise Distribution of Ocular Morbidity

	Total no of children examine	Children with ocular morbidity
5 – 8yr	4234	476
9-12yr	8562	1423
13-16yr	8004	1117

The most common age group affected was 8 to 12 years followed by 13 to 16 years.

Table 3: Visual acuity in children with refractive error

Visual Acuity	No of Children (n=1445) (%)
6/9 – 6/18	947 (65.53)
6/24 -6/60	416 (28.78)
<6/60	82 (5.67)

It was observed that 65.53% of children with refractive error had uncorrected visual acuity between 6/9 – 6/18 while 5.67% had uncorrected vision < 6/60 causing severe visual impairment. Out of 412 children with vitamin A deficiency, 125 (30.33%) were boys and 287(69.66%) were girls. Most affected age group was 5-8 years (44.90%) followed by 9-12 years (34.70%) and 13-16 years (20.38%)

Table 4: Types of strabismus

Type	Cases (63) (%)
Exotropia	13 (20.63)
Esotropia	09 (14.28)
Exophoria	28 (44.44)
Esophoria	11 (17.46)
Vertical squint	2 (3.17)

Latent squint was found to be more common than manifest squint, exodeviation being more prevalent.

DISCUSSION

The ocular morbidity if detected and treated early in life can prevent the social and intellectual under development of the child. Despite the recognized importance of correcting ocular morbidity in children, population based data on this issue is limited. More over there is a large global variation in the prevalence and causes of ocular morbidity. In our study the prevalence of ocular morbidity was found to be 14.5 %. Results were comparable to the study of Kalikivayi et al (1997). [4]

The high prevalence of preventable causes of blindness like refractive error as highlighted by the present study needs to be addressed first. WHO introduced the global initiative called 'VISION 2020' is based on the identification of prevalence of such avoidable causes. Refractive error has been chosen in part because they are very common and corrective spectacles provide a remedy that is inexpensive, effective and associated with huge functional improvement.

As outlined by the study issues to reduce visual impairment due to uncorrected refractive errors are:

1. Increase parental awareness of symptoms in a child suggestive of poor vision.

2. Attempt to link visual screening with other population based activities.
3. Involvement of school teachers in visual screening of children.
4. Children with history of refractive error in family should be screened at an early age.

The Vitamin A deficiency was found in 13.66 % of children screened. The highest prevalence was found in the age group of 5-8 yrs. A study conducted by committee on preventable childhood blindness found the proportion of childhood blindness attributable to Vitamin A deficiency ranged from 7.5 % in Kerala to 26.7 % in M. P. Though there is marked variation in the geographical distribution, but high prone areas needed to be identified and focused.

CONCLUSION

Though we have to be cautious in extrapolating the results of this study to the entire population of school children in India, but these data validate the need for vision screening of school children.

Realizing that with a significant proportion of children are not going to school in India, a more complete assessment of visual impairment in children could be assessed by general population based studies and not restricted to school children

Screening of school children for ocular diseases should be made a key component of an effective blindness prevention program. In the context of Vision 2020, the priorities of action to reduce the childhood ocular morbidity in India should be directed towards refractive error and vitamin A deficiency.

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