

STUDY OF OCULAR HEALTH PROBLEMS AMONG CHILDREN IN SCHOOLS OF NORTH KARNATAKA

Ophthalmology

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Abstract:

Aim: To determine the prevalence of ocular health problems among school children of 5-15 years of age.

Materials and methods: A cross sectional study which was carried out in August 2017 at two government schools in Hubli, Karnataka. A total of 150 students of age group 5-15 years were examined in detail after informed consent from the school authorities and guardian of the students.

Results: Prevalence of ocular morbidity among school children was found to be 37.33% among which prevalence of refractive error was 18.66%, Blepharitis 5.33%, allergic conjunctivitis 4%, Vitamin A deficiency 2.66%, meibomitis 2.66%, squint 1.33%, infective conjunctivitis 1.33 %, corneal opacity 0.66% and retinitis pigmentosa 0.66 %.

Conclusion: Percentage of ocular morbidity in school children is significant which strongly recommends screening of school children at regular intervals.

Key words: Ocular morbidity, Prevalence, refractive error.

Introduction:

Childhood blindness and visual impairment are as important and perhaps more devastating and disabling than adult onset blindness, because of the long span of life still remaining to be lived.¹ Control of childhood blindness is one of the priorities of World Health Organization's 'VISION 2020 — The Right to Sight program'.² IAPB's School Eye Health Work Group notes that school eye health services are far too often a neglected part of child health interventions – at the expense of students' potential.³ Access to eye care for an increasing number of school age children is critically important for at least four reasons:

First, it is a golden opportunity to deliver eye health education messages ranging from hygiene to healthy diet. Second, early detection and referral of children with eye problems is key to timely provision of highly cost effective interventions such as provision of glasses. Third, irritated, sore, light sensitive eyes significantly impede children's ability to learn and may lead to the use of harmful practices, which can further damage the eyes. Fourth, considering that 80% (estimate) of what a child learns is processed through the visual system, good vision is critical to the child's ability to participate in and benefit from educational experiences.⁴ It is estimated that there are 1.4 million blind children

in the world, two thirds of whom live in the developing countries, and that the causes of blindness in children vary according to region and socioeconomic development.^{5,6} There are few data available on the prevalence and types of refractive errors in children in developing countries, but in the USA the prevalence of vision problems is estimated to be 5–10%, while the prevalence of amblyopia is 1–5% in children. In a study in India, 5.1% of children in schools had a visual acuity of < 6/12 in the better eye.⁷ At least 2000 children / million population have refractive errors greater than –1.00 D in both eyes. These are the children who should be the focus of attention in any school vision testing program.⁸ Approximately 50 % of all childhood blindness in India is preventable or treatable. Most of the available studies demonstrate that corneal and lenticular conditions are the predominant causes of blindness whereas amongst children outside blind schools, refractive errors are important causes of visual impairment and blindness.⁹ School-age children constitute a particularly vulnerable group where uncorrected refractive errors may have a dramatic impact on learning capability and educational potential. The ultimate moulding of a person’s personality and potentiality rests with his nature, surroundings and quality of eye sight.

Aims and objectives:

1. To determine the prevalence of ocular health problems among school children.
2. To manage ophthalmic problems among school children.

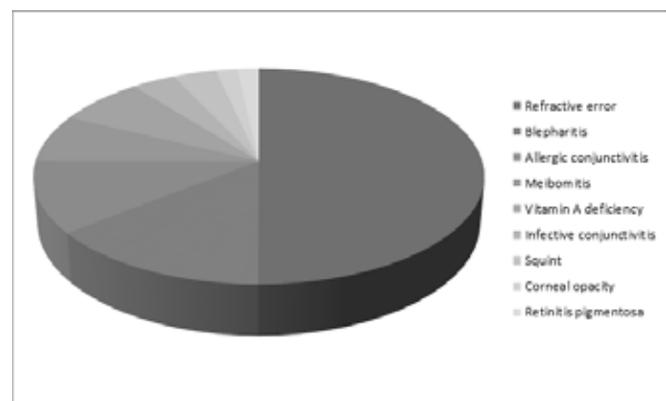
Materials and methods:

This is a cross sectional which was study was conducted among 150 children in two government schools around Hubli, Karnataka, during the month of August 2017. Age of the children ranges from 5-15 years. One school was having capacity of 80 students among which 50 were males and 30 were females. Other school was having capacity of 70 students which was made only for males. Required permission for examination of children was taken from authorities of the school and parents of the children. Parents were advised to be present during the screening of the child so that additional information or complaints can be obtained. Brief demographic details of each child was recorded. Examination of each child consists of detailed eye

examination right from head posture, facial symmetry, eye position, examination of the eyelid, conjunctiva, cornea, iris, pupillary reaction and lens examination. Visual acuity with pinhole improvement of each child was recorded with Snellens chart. Color vision of each child was examined with Ishihara color charts. Initial examination was carried out in a torch light. Children with suspected complaints and signs were examined in OPD under slit lamp. Refraction after dilatation was done for selected children.

Results:

Figure 1. Pie chart showing ocular morbidity pattern among school children



Total 150 children were examined in this study among which 120 were males and 30 were females. 60 children were in 5-8 year age, 60 were in 9-12 year age and remaining 30 were 13-15 year age group. Minor and major Ocular health problems were found to be in 56 out of 150 children (37.33 %).

Total 28 children were having distance visual acuity of less than 6/6 among which 26 children were having improvement with pinhole, which shows that refractive error is the most common (18.66%) ocular health problem in school children which needs to be corrected.

Table 1. Visual acuity pattern among school children

| Visual acuity | Number of children |
|------------------------------------|--------------------|
| 6/6 | 122 (81.33%) |
| 6/9 improving to 6/6 with pinhole | 11 (7.33%) |
| 6/12 improving to 6/6 with pinhole | 05 (3.33%) |
| 6/18 improving to 6/6 with pinhole | 07 (4.66%) |
| 6/24 improving to 6/6 with pinhole | 03 (2%) |
| 6/36 Not improving with pinhole | 01 (0.66%) |
| 6/60 Not improving with pinhole | 01 (0.66%) |

Lid and eye lash infection which is second most common

ocular health problem in this study found in 8 children (5.33%) among which all were males and more than half of them were having refractive error.

Infective condition of meibomian glands was found in 4 children (2.66%)

Signs and symptoms of allergic conjunctivitis was found in 6 children (4%) among them all were having conjunctival papillae and one child was having gelatinous limbal ring around cornea.

Signs of vitamin A deficiency such as bitot's spot was found in 4 children.(2.66%).

Infective conjunctivitis was found in 2 children (1.33%) who were giving history of similar complaints in the family.

2 children were having concomitant esotropia which was taking fixation on cover test. Both were having visual acuity of 6/12.

One male child was having visual acuity 6/36 which was not improving with pinhole. On examination we found nebular grade corneal opacity in pupillary area.

Another male child was having visual acuity 6/60 which was not improving with pinhole. On fundus examination we found bony spicules in mid periphery of retina.

Discussion:

It is estimated that there are 1.4 million blind children in the world. An additional 7 million suffer from low vision and a further 10 million children have a correctable refractive error causing visual impairment (bilateral visual acuity of less than 6/18).^{5,6}

Definitions:

UNICEF defines a child as an individual aged less than 16 years.

WHO defines blindness as a corrected visual acuity in the better eye of less than 3/60, and severe visual impairment as a corrected acuity in better eye of less than 6/60.(8)

Ocular health problems in school children is found to be 37.66 % in our study which is lesser than a study conducted by Surinder singh et al in which it was 64.25 %.¹⁰ It is almost comparable to study conducted by Madhu Gupta et al in 2009 in which percentage of ocular morbidity was 31.6 %.¹¹ One more study which was conducted in Rohtak in which ocular morbidity prevalence was found to be 34.04 %.¹²

Refractive error was found to be the most common ocular morbidity in our study which is found to be 18.66 %. It is lesser than a study conducted by Sethi et al in which prevalence of refractive error was 25.3 %.¹³ This variation in percentage might be because of different sample size and different study population.

Prevalence of blepharitis among children is 5.33% in our study which is significant. Similar results found in study conducted by Singh et al in which prevalence of blepharitis was 4.42 %.¹⁰ The children with blepharitis were having poor personal hygiene unlike children without blepharitis. Posterior blepharitis or meibomian gland infection was found to be 2.66 % of children in our study.

Allergic conjunctivitis was found to be in 4 % of children in our study. This number is less as compared to study conducted by Wade et al in 2012 in which allergic conjunctivitis was found in 7.9 %.¹⁴ This variation might be because of different environmental conditions.

Signs of vitamin deficiency was found in 2.66 % in our study which is almost comparable to study conducted by Singh et al in 2017.¹⁵ Other signs of malnourishment were present in all 4 children with bitots spot and all of them belongs to lower socioeconomic group.

Prevalence of squint is found to be 2.66 % in our study which is similar to study conducted by Gupta et al in 2009.¹¹

One male child who was having nebular grade corneal opacity in pupillary area of right eye was giving history of red and painful eye in the past. This could be because of healed superficial corneal ulcer.

Parents of the child with fundus picture of retinitis pigmentosa were giving history of similar complaints in the close family member. Though retinitis pigmentosa is not leading cause of ocular morbidity in this study but it is of significance while examination of the child in blind

schools.¹⁶

Main limitation of this study is unable to make out the difference between ocular morbidity pattern in males and females because one school was made only for males. Other studies showed higher prevalence of conjunctivitis and blepharitis among females.¹²

Conclusion:

Prevalence of ocular morbidity in our study is significant specially refractive error. Early detection and management reduces the disease progression and can prevent visual disability. Hence, Regular screening of school children is must to manage avoidable causes of blindness. School teachers should be encouraged for seeing for common eye problems among children.

References:

1. Indian Pediatr. 2009 Mar;46(3):205-8. School eye screening and the National Program for Control of Blindness. Jose R1, Sachdeva S.
2. Gilbert C, Foster A. Childhood blindness in the context of VISION 2020 The Right to Sight. Bulletin of the World Health Organisation. 2001;79(3):227–32.
3. IPAB - School eye health work group, <https://www.iapb.org/about-iapb/iapb-work-groups/school-eye-health/>
4. Comprehensive School Eye Health Programs: A Unique Opportunity <https://www.iapb.org/wp-content/uploads/Guidelines-School-Eye-Health-Programmes-Final.pdf>
5. World Health Organization. Preventing blindness in children: report of WHO/IAPB scientific meeting. Programme for the Prevention of Blindness and Deafness, and International Agency for Prevention of Blindness. Geneva: WHO, 2000 (WHO/PBL/00.77).
6. Gilbert CE, Anderton L, Dandona L, et al. Prevalence of visual impairment in children: a review of the available data. Ophthalmic Epidemiol 1999;6:73–82.
7. Visual impairment in school children in southern India. Kalikivayi V, Naduvilath TJ, Bansal AK, Dandona L Indian J Ophthalmol. 1997 Jun; 45(2):129-34.
8. G V S Murthy; Vision Testing for Refractive Errors in Schools ‘Screening’ Programmes in Schools Community Eye Health. 2000; 13(33): 3–5.
9. Eye Screening in Children : Its Relevance and Implications. A. K. Grover, Surbhi Arora Vision Eye Centre & Department of Ophthalmology, Sir Ganga Ram Hospital, New Delhi, India; JIMSA October-December 2012 Vol. 25 No. 4 221
10. Surinder Singh, Harcharan Singh, Vasdev Singh Joshi; Eye diseases among primary school children; IJO; 1974, volume 22, issue 3, page 1-3
11. Madhu Gupta, Bhupinder P Gupta, Anil Chauhan, Ashok Bhardwaj; Ocular morbidity prevalence among school children in Shimla, Himachal, North India; year 2009, volume 57, issue 2, page 133-138.
12. Khurana AK, Sikka KL, Parmar IP, Aggarwal SK.; Ocular morbidity among school children in Rohtak City; Indian J Public Health. 1984 Oct-Dec;28(4):217-20.
13. .Sonam sethi, G P Gupta; prevalence of refractive error in school children; IJCM; volume XXV number 4; oct-Dec 2000
14. Patricia D Wade, Anthonia N Iwuora, Laritza Lopez, Mustapha A Muhammad,; Allergic Conjunctivitis at Sheikh Zayed Regional Eye Care Center, Gambia; J Ophthalmic Vis Res. 2012 Jan; 7(1): 24–28.
15. veer singh, k p s Malik; Prevalence of ocular morbidity in school children; IJO year 2017, volume 65, issue 6, page 500-508
16. Pradeep Agarwal, Veenu Maan, Mosaib Omaer, Kunal Gupta, Lokesh Chauhan, Ashi Khurana; Clinical profile of childhood blindness and inappropriate enrolment of children in schools for

visually impaired in Uttar Pradesh, India; IJO; year
2018, volume 66, issue 10, page 1456-1461