

School Eye Screening and the National Program for Control of Blindness

R JOSE AND SANDEEP SACHDEVA

From the Directorate General of Health Services, Ministry of Health and Family Welfare, Nirman Bhawan, New Delhi.

Correspondence to:

*Dr Sandeep Sachdeva,
National Consultant,
Ministry of Health and Family Welfare,
Nirman Bhawan,
New Delhi 110 011, India.*

E-mail:

drsandeepsachdeva@gmail.com

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. Refractive errors and more particularly myopia, place a substantial burden on the individual and society. School-age children constitute a particularly vulnerable group where uncorrected refractive errors may have a dramatic impact on learning capability and educational potential. This article provides an overview of school eye screening from the perspective of National Program for Control of Blindness (NPCB), Government of India; and challenges, future directions and thrust area envisaged under the program for amelioration of childhood blindness.

Keywords: *Blindness, Prevention, Refractive errors, School health.*

Refractive errors are the second major cause of blindness in India after cataract and the most common reason for patients to consult ophthalmologist or ophthalmic assistant. Over a quarter of the outpatient attendance at all eye clinics and hospitals is due to refractive errors(1). The availability and access of infrastructure, services, trained manpower, cost of spectacles, and community awareness is an area of concern. Pediatric ophthalmology, as a separate subspecialty, is not yet well established, and services targeting children are not often offered separately by ophthalmologists. Training to address ocular problems relating to children is not always a part of every residency program and very few institutions offer post-residency training programs in pediatric ophthalmology(2-5).

Children form one of the main age groups requiring attention to refractive errors because of the high prevalence of myopia, hypermetropia and astigmatism. The ultimate molding of a person's personality and potentiality rests with his nature, surroundings and quality of eye sight. The school going years are formative for children in determining their physical, intellectual and behavioral develop-

ment. Poor vision in childhood affects performance in school and has a negative influence on the development and maturity. Further, most school children do not realize that they are suffering from the ocular disability as they adjust to poor eye sight in different ways. They compensate for their poor vision by sitting closer to the blackboard, or by holding their books close to their eyes. They may also squeeze their eyes. They may also tend not to undertake any work that needs visual concentration, thus affecting their performance(6).

MAGNITUDE OF THE PROBLEM

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 (refractive bilateral visual acuity of <6/18). Though no population based nation wide survey has been undertaken on the prevalence of blindness in India, is estimated to be 0.8/1000 children in the age group of 0-15 years. Currently, there are an estimated 270,000 blind children in India(7,8). 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. Myopia is a common cause of visual impairment which is usually acquired and nearly always progressive. It rarely occurs before the age of 5 years and new cases appear throughout childhood and adolescence, particularly between the ages of 6 to 15 years.

EYE CARE SERVICES IN INDIA

Refraction services are primarily provided by ophthalmologists and paramedical workers and management of common eye care ailments is done by general health care staff. It is estimated that there are 12,000 ophthalmologists and 9,000 paramedical ophthalmic assistants working in the private or public sector (medical colleges, Regional Institutes of Ophthalmology, district/sub district hospital etc.) in the country. Out of 23,000 Primary Health Centers (PHCs) in the country, only forty percent are equipped to provide refractive services. Ideally, ophthalmic assistant should be available at each PHC. However, currently, they are serving a larger population as they are based at Community Health Centers (CHCs) or Block PHCs. Ultimately, it is envisaged that refraction facilities with basic equipments will be created at all PHCs.

SCHOOL EYE SCREENING PROGRAM

National Program for Control of Blindness (NPCB) was initiated by Ministry of Health and Family Welfare, Government of India in the year 1976 and primarily administered by respective State Governments in collaboration with district health authorities through public and NGO institutions. School Eye Screening (SES) program became the integral part of the NPCB since 1994 after successful implementation at the five pilot districts. Based on administrative, logistic, social and medical reasons, it is envisaged under the program to focus initially on screening of students in "middle and secondary schools" or schools having 5th to 10th standard students. This is because of the reason that age of the pupils in these classes is around 10-14 years and they are in the position to understand the purpose and need for vision screening. Administratively it is easy to implement and the students can carry the message

home thereby creating awareness in their respective villages. The activities under SES program include identification of schools, collection of information on number of students and teachers, screening and referral centres, training of school teachers, training of general health care personnel, confirmation of "suspect" students by ophthalmic assistant/ ophthalmologist, prescription of glasses, and provision of free glasses to students from poor socio-economic strata.

ORGANIZATION OF SES PROGRAM

The actual planning of SES is carried out by respective District Health Societies (DHS) keeping various parameters under consideration like holidays, examinations, involvement of teachers in academic activities, availability of human resource, other events in the district etc. In general, it is usually carried out during April-September of each year as the number of cataract surgery increases from the month of October onwards. From each school, one teacher is selected for a one-day training course. Preference is given to women, so as to counteract prejudice against girls wearing spectacles, and to teachers who themselves wear spectacles as they are likely to be more motivated. During the training, teachers are provided with a kit for screening the children in their schools. The teacher's kit contains a six-meter (20 feet) measuring tape, standard vision screening "E" card, referral card for children with suspected poor vision, and educational material.

PROCEDURE FOR SCREENING OF REFRACTIVE ERRORS AMONGST SCHOOL CHILDREN

For the initial screening, a single optotype of the Snellen's chart or the 'E' chart can be easily administered by minimally trained personnel. This is a low cost, non-invasive, rapid, reliable and acceptable method. The conventional Snellen's charts with all the 7-lines of the optotypes may be confusing for use by personnel like the school teachers and staff. In addition, the conventional charts are easily memorized by the children thus making them less useful for screening. A single optotype like the 'E' can be rotated each time the child sees it, and thus each eye can be tested differently. With the limbs of the 'E' facing in

different directions, children are asked to identify at least three optotypes with each eye (rotating the card for the second eye, so that the letters are in different configuration) before labeling them as having abnormal or normal vision.

The screening is carried out in the following way: From a distance of six meters (measured with the tape provided), child is shown the vision card, which is white with four black "Es" of standard size (6/9 of Snellen's chart). For each eye, child has to indicate the direction of the open end of the "E". By simply rotating the card, the sequence can be changed. The child indicates the direction correctly (eyesight "good") or incorrectly (eyesight "not good"). If there is any doubt, the teacher should record the eyesight as "not good".

PROVISION OF SPECTACLES

Spectacles are the most attractive component of all the services under this program. Each child with a refractive error will require a specific frame according to his/her head size and power of corrective lenses depending on the degree of error. Good coordination with the ophthalmic assistant and further with ophthalmologist is crucial at this stage. An agreement is usually made by District Health Society with one or more of the local opticians for supply of low cost quality spectacles (acetate frame with white English lenses) for all children referred to them or orders placed with them under the program. Experience has shown that contractual agreement can be arrived at half the usual retail price prevalent in the local area. Since this activity generates publicity about the need for spectacles amongst the children and adults outside the school as well, the additional clientage for the optician increases his volume of business. This serves as an additional incentive for the opticians on contract and they agree for reduced rates in the contract. If there is non-availability of optician in the concerned district, arrangements are made with an outside optician for supply of spectacles. In the event of non-arrangement of spectacles, SES is not started at all!

SUSTAINABILITY AND QUALITY ISSUES:

FUTURE DIRECTIONS

Developing eye care programs targeting children is

different from programs targeting adults, as the primary decision maker in the case of children with eye problems is often not the subject with the problem. Additionally, the decision maker is often not aware of the problem, as the child is unable to express his discomfort. Knowledge regarding perceptions and awareness of eye diseases among parents is important in this context. The success of any program or approach depends on its continuity, simplicity and adaptability ensuring quality at each stage.

The effective and efficient delivery of SES program is ensured by making the district education department and schools to run the program themselves after the initial thrust and support. The cost of SES component is borne by Government of India including provision of Rs 125/- for glasses for poor children through District Health Society funds. This amount is being enhanced during 11th five year (2007-2012) plan period with additional provision of in-service training of ophthalmologist in pediatric ophthalmology. Other initiatives proposed by Government of India for ameliorating childhood blindness for the 11th five year period include development of Pediatric Ophthalmology units, Low Vision Services Centres, provision of latest equipment and Low-Visual aids at identified public institutions (Medical colleges and Regional Institutes of Ophthalmology) and non-governmental organizations (NGO), strengthening of eye banks and services for corneal transplantation, provision of financial assistance of corneal transplantation in NGO sector and development and dissemination of resource material on various childhood eye disease like Vitamin A deficiency, eye injuries, refractive errors, corneal opacities and retinopathy of prematurity (ROP).

EPILOGUE

It is a challenge to reach the community residing in under/unserved areas and out-of-school children within available resources, infrastructure and trained manpower. However, Government of India is committed to the goal of amelioration of avoidable blindness in the country with involvement of stakeholders at all levels in public and NGO sector. Eye screening of school children is one such

effective strategy. Similar to seeking of details in context of childhood immunization, a concept of “missed opportunity” is also applicable in area of eye screening. Physicians should be sensitive to the issue of visual impairment especially for premature babies and children/adolescent including their siblings attending outpatient clinics for some ‘other’ cause, to seek appropriate eye referral and management.

Funding: None.

Competing Interests: None stated.

REFERENCES

1. Vision screening in school children. In: Training Module, Ophthalmology/Blindness Control Section, Directorate General of Health Sciences, Ministry of Health and Family Welfare. New Delhi: Government of India; 2004.
2. Rahi JS, Sripathi S, Gilbert CE, Foster A. Childhood blindness in India: Causes in 1318 blind school students in nine states. *Eye* 1995; 9: 545-550.
3. Nirmalan PK, Vijayalakshmi P, Sheeladevi S, Kothari MB, Sundaresan K, Rahmathullah L. The Kariapatti Pediatric Eye Evaluation Project (KPEEP): Baseline ophthalmic data of children aged 15 years or younger in south India. *Am J Ophthalmol* 2003; 136: 703-709.
4. Gilbert CE, Canovas R, Hagan M, Rao S, Foster A. Causes of childhood blindness: results from West Africa, South India and Chile. *Eye* 1993; 7: 184-188.
5. Nirmalan PK, Sheeladevi S, Tamilselvi V, Victor AC, Vijayalakshmi P, Rahmathullah L. Perceptions of eye diseases and eye care needs of children among parents in rural South India: The Kariapatti Pediatric Eye Evaluation Project (KEEP). *Indian J Ophthalmol* 2004; 52: 163-167.
6. Murthy GVS, Gupta SK, Bachani D, editors. The Principles and Practices of Community Ophthalmology. New Delhi: Community Ophthalmology Section, RP Centre, AIIMS; 2002.
7. A Study on Childhood Blindness, Visual Impairment and Refractive Errors in East Delhi. New Delhi: Community Ophthalmology Section, RP Centre, AIIMS; 2001.
8. Community Based Screening of Children for Detection of Visual Impairment in Rajasthan and Uttar Pradesh. Blindness Control Division, Directorate General of Health Services, Ministry of Health and Family Welfare, Government of India, Nirman Bhawan, New Delhi; 2006.