



## RECOMMENDATION FOR OPHTHALMOLOGICAL EXAMINATION OF CHILDREN IN INDIA AND DEVELOPED COUNTRIES –ITS RELEVANCE AND SIGNIFICANCE.

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**ABSTRACT** Ocular examination and vision assessment in children plays important role for the detection of conditions resulting in blindness, may alarm for serious systemic disease. Early detection and treatment is important to avoid life –long permanent visual impairment. Guidelines for screening and pediatric eye examination are being followed in developed and developing countries. In India, school screening programs contribute majorly for ophthalmic examination in children. So it is a challenge to reach the community residing in unserved areas and out-of-school children. To overcome this situation basic treatment should be done at PHC and District level hospitals, community health camp should be organized more frequently, along with provision of affordable spectacles for children with significant refractive errors.

**KEYWORDS :** School Eye Screening , low cost quality spectacles, rehabilitation program.

### INTRODUCTION

Ocular examination and vision assessment plays important role for the detection of conditions that result in blindness, may hinder with school performance as school-age children constitute a vulnerable group where uncorrected refractive errors may act as a setback on the learning capability and social life, may alarm for serious systemic disease(1).

Ocular examination should be performed beginning in the newborn period. Visual acuity measurement should be performed at the earliest possible age. Early detection and prompt treatment of ocular disorders in children is important to avoid lifelong permanent visual impairment.

### Screening programs of children in developed countries

According to the **American Academy of Pediatrics** children should have an assessment for eye problems in the newborn period beginning at 1 month of age and then at all subsequent routine visits. The evaluation should be age-appropriate and those who are at risk for developing eye problem should be referred to a pediatric ophthalmologist. Because children do not complain of visual difficulties, visual acuity measurement (vision screening) is an important part of complete pediatric eye care and should begin at 3 years of age. Children who wear spectacles should undergo eye examination as recommended or annually (2).

The Children's Sub-Group of the **National Screening Committee (NSC)** of the UK has recently reviewed screening for ophthalmic disorders and visual deficits in children (3). Based on this review, national recommendations have been made for different age groups.

### NSC recommendation

**(A) Neonatal period and early infancy**–Newborn screening for media opacities, comprising examination of the pupillary red reflex can be done by pediatrician and suspected children should be referred to the ophthalmologist for further evaluation. A repeat examination not later than six weeks, for cataract and other eye anomalies is recommended.

**(B) Infancy to primary school age**- identification of vision defects should rely on parental concern and professional awareness for children under the age of 4 years rather than a formal screening programme.

**(C) Primary school age** - According to the NSC recommendations screening of children in the age group 4–5 years, should be done with the aim of testing all children by the age of 5, children with a squint and defective vision should be referred to the pediatric ophthalmologist.

**(D) Secondary school age**-According to the NSC recommendations as an alternative to routine visual acuity tests, children should be provided with information and/or education about eye care by the school teachers, including the availability of free eye tests, and the

importance of checking colour vision for specific career ambitions.

**(E) All ages**-Children suspected of having serious vision disorders, or having history of an inherited eye disorder need a combined examination by a pediatric, ophthalmologist, and genetics services(4).

**The Canadian Association of Optometrists (CAO)** recommends that children should undergo their first eye examination between the ages of 6 and 9 months. And at least one eye examination between the ages of 2 and 5 years. Children aging 6 to 19 years should undergo an eye examination annually. However the Guidelines are not appropriate for all clinical situations, so the decision to follow or not follow the guideline should be made by the health professional on an individual basis, taking into account the condition of the patient (5).

### Need for frequent testing and re-evaluation

**According to the American Academy of Pediatrics** Children considered to be at risk for the development of eye and vision problems may need additional testing or more frequent re-evaluation, the risk factors include:

- Prematurity, low birth weight, grade III or IV intraventricular hemorrhage
- Family history of retinoblastoma, congenital cataracts, or metabolic or genetic disease
- Infection of mother during pregnancy (TORCH infection , or AIDS)
- Difficult or assisted labor, which may be associated with fetal distress or low Apgar scores
- Ocular conditions such as High refractive error, Strabismus, Anisometropia
- Known or suspected central nervous system dysfunction evidenced by developmental delay, cerebral palsy, dysmorphic features, seizures, or hydrocephalus(2).

### The current scenario of eye care services in India

In India management of common eye care ailments is done by general health care staff, refraction services are primarily provided by ophthalmologists and Paramedical workers. Out of 23,000 Primary Health Centers (PHCs) in the country, forty percent are equipped to provide refractive services. Ideally, ophthalmic assistant should be available at each PHC. The basic tool for eye screening of children in our country is school screening programs (6).

### School Eye Screening Program

School Eye Screening (SES) program is an integral part of the NPCB (National Program for Control of Blindness), which focus on screening of students in “middle and secondary schools” or schools having 5<sup>th</sup> to 10<sup>th</sup> standard students. The activities under this 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 of poor socioeconomic status (7).

### 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 the school teachers and staff, also the conventional charts are easily memorized by the children thus making them less useful for screening.

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.

### Provision of spectacles

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. 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.

When there is non-availability of optician in the concerned district, arrangements are made with an outside optician for supply of spectacles. In case of non-arrangement of spectacles, SES is not started at all.

### The challenges in India

The availability and access of infrastructure, services, trained manpower, cost of spectacles, and community awareness is an area of concern. It is a challenge to reach the community residing in under-served areas and out-of-school children within available resources, infrastructure and trained manpower.

Pediatric ophthalmology, as a separate subspecialty, is not yet well established, and services targeting children are not often offered separately by the ophthalmologists.

### Scope for improvement

1. Services should be targeted at Neonates / infants (birth to 12 months), Preschool (12 months to 3 years), School children (3 to 15 years).
2. The services should be delivered as part of P.H.C. at the community level, integrated into a district eye care programme at the secondary level of care, at a specialized referral and training centre at the tertiary level.
3. The personnel involved in this programmes at the community level (like Child Development Project Officer, Supervisors, ANMs and Anganwadi workers in ICDS) should be given some basic training in detection of eye conditions which need to be referred and the basic fundamentals of eye health, stressing the importance of nutrition.
4. Educating the paramedical staff involved in maternal & child care at primary & secondary health centers.
5. The importance of cross referral between Pediatrician, obstetrician, general Practitioners & ophthalmologists.
6. Training of adequate number of paediatric ophthalmologist in the country along with training of paramedical staff especially orthoptists and optometrists.

### CONCLUSION

Effective methods of early detection of ophthalmic disorders and visual deficits in children are critical to the optimal management of affected children and their families. The need to achieve this must be balanced against the financial, time, and personal costs to individuals.

Basic treatment should be done at PHC and District level hospitals. There should be provision of affordable spectacles for children with significant refractive errors. There should be development of tertiary centers to provide curative service. There should be provision of low vision services for children with a best corrected visual acuity of 6/24 – 1/60. Community based rehabilitation programmes and education should be encouraged.

### Our recommendations for the screening schedule of the children in India

**1. At 1 month** as there are some ocular conditions such as congenital cataract, congenital glaucoma, unilateral myopia, high refractive errors which require early treatment, an early examination at 1 month of life is important for timely diagnosis and effective management. This can be done by the pediatrician by examining the red reflex, or timely referral to an ophthalmologist.

**2. At 9 month** eye examination can be done at 9 months of age in conjunction with measles vaccination with an ease to both the parents and the pediatrician especially for retinal conditions and amblyopia in addition to congenital cataract, congenital glaucoma, unilateral myopia and high refractive errors.

**3. At 3 year** child begins his / her school life, routine examination can be done by using LEA symbol chart and other methods for preschool children. In most of the children visual acuity can be assessed accurately in an easy manner. Children with small refractive errors, which did not require spectacles before this age, now requires spectacles due to fine vision required in school.

**4. At 5 years** children are familiar with alphabets and numbers so vision assessment at this age is more reliable than the previous examination.

**5. After an age of 5 year** eye examination of the children can be done by the School screening programs, by trained school teachers and health professionals and all the suspected cases should be referred to a pediatric ophthalmologist for further assessment and timely management.

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