ORIGINAL RESEARCH PAPER

Volume-8 | Issue-3 | March-2019 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

PREVALENCE OF VISUAL DISORDERS AMONG CHILDREN IN A TERTIARY HOSPITAL

Physiology

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ABSTRACT

Background: Ocular diseases in children require immediate ophthal consultation to preserve vision, due to its impact on childs development, performance and learning.

Aim and objective: Assessment of prevalence of visual disorders in selected 508 children attending Ophthalmology department in Kanyakumari Medical College Hospital.

Materials and methods: The study is a hospital- based , non- interventional, cross-sectional prospective study. The study group comprise of children (less than 15 years) attending Ophthalmology department. Estimation of visual acuity, colour vision, anterior segment examination, slit lamp examination, dilatation and fundoscopy are done to detail the defective vision.

Results: The common ocular disorders are refractive errors (37%) followed by infection/ inflammation of eye (35%), ocular trauma (9%), strabismus (5%), ptosis (2%), congenital eye diseases (1%) and cataract (0.7%).

Conclusion: Majority of visual disorders are preventable or treatable and require early diagnosis and intervention procedures for best visual outcome.

KEYWORDS

Refractive Error, Ocular Infection, Prevention

I. Introduction

School age years are formative for children and determine their physical, intellectual and behavioral characteristics. Over 80 percent of childs growth and development is processed through their eyes. Visual skills are needed for learning and school success. About 5 to10 % of preschool children and 25% of school-aged children have visual problems. Early ocular examination and quantifying visual function in children is important that includes visual acuity, extraocular movements, field of vision, sensory function, binocular single vision, simultaneous perception, fusion, stereopsis.[1]

India has been the first country in the world to initiate a public- funded program for the control of blindness as a national priority health problem. With the launch of 'Vision 2020' global initiative, the focus has shifted to all causes of avoidable blindness rather than to cataract and rapid assessment have been expanded to include all causes of avoidable blindness especially in childhood.[2]

Visual function can be profoundly impaired by a variety of ocular disorders – conditions as refractive error, cataract are treatable and others like measles and vitamin A deficiency are largely preventable.[3] It has been estimated that 50% of pediatric blindness is preventable. Hence strategies to manage ophthalmic diseases must be initiated as early as possible, with interventions at primary, secondary and tertiary level. With this view, this study has been undertaken.

II. Materials and methods

The present study is a hospital- based, non- interventional, cross-sectional study. For this study, 508 children less than 15 years of age attending Ophthamology out patient department in Kanyakumari Medical College Hospital are chosen. Informed consent was obtained from their parents/guardian of all the selected children, who fit into the criteria. By way of providing proforma, the required data was collected.

Ophthalmic examination:

Visual acuity testing – The presenting distant visual acuity for both eyes was measured seperately using a standard Snellen's chart properly illuminated at a distance of 6m. Colour vision was tested using Ishiharas chart. Each participant had an anterior segment examination, using a torch, to detect the signs of conjunctival disease and corneal disease. Slit lamp examination of cornea was done to determine the position, depth and site of corneal abnormality and lens opacities . Retinoscopy was performed after pupillary dilatation to elicit the refractive status of the eye. Fundus examination was done using direct ophthalmoscope. The following definitions are used for the study

1.Corneal opacity: Loss of normal transparency of cornea.

2.Cataract: was defined as the presence of lens opacity of such magnitude as to cause a corrected visual acuity of <6/18.

3.Myopia: defined as a spherical equivalent less than – 0.50 Diopter sphere; Hypermetropia: defined as a spherical equivalent greater than + 0.50 Diopter sphere ; Astigmatism: defined as refractive error worse than +0.5 Diopter cylinder.

III. Results analysis

Table 1: Distribution of subjects by age and sex

Age in years	Girls	Boys	Total
0-1	46	30	76
1-5	73	62	135
6-10	90	80	170
10-15	75	52	127

Out of 508 children examined, 224 are boys and 284 are girls.

Table 2: Association of various ocular diseases in children

Ocular diseases	Total no: of children	Percentage (%)
Ptosis	15	2.9
Strabismus	27	5.3
Refractive error	192	37.7
Infections	178	35.0
Trauma	48	9.4
Congenital anomalies	6	1.1
Cataract	4	0.7

The most common ocular disease is refractive error (37.7%), followed by ocular infections (35.0%).

Table 3: Distribution of refractory error among various age groups

Age in years	Myopia	HM	Astigmatism	Total
0-1	-	-	-	-
1-5	-	-	-	-
5-10	47	-	35	82
10-15	60	-	50	110

Among children aged 5-15 years, myopia (21.0%) and astigmatism (16.7%) are prevalent.

Table 4: Prevalence of ocular infections in children

Ocular infections	Total no: of children	Prevalence (%)
Preseptal cellulitis	5	0.9
Hordeolum externum	24	4.7
Chalazion	6	1.1
Phylectenular conjunctivitis	9	1.7
Vernal conjunctivitis	120	23.6
Dacryocystitis	12	2.3
Rhinospordiosis	2	0.3

The most commom ocular infection is vernal conjunctivitis (23.6%).

IV. Discussion

Out of 508 children examined, 38 of them did not have any significant alterations in the visual apparatus. Others were diagnosed with various ocular disorders. **Refractive error** is the most common causes of visual impairment and the prevalence 37.7% in our study, is similar to South Indian study.[4] Myopia in 26.9 % of children is usually acquired and always progressive. It rarely occurs before the age of 5 years and children develop the error between 6 to 15 years. Astigmatism (10.8%) is the second common refractive cause of diminished vision in childhood, that can be optically corrected by cylindrical lenses. In both these conditions, refraction and corrective lenses should be prescribed earliest to prevent amblyopia. More over younger school children between age groups 7 to 10 years have high incidence of myopia and astigmatism. The reasons encountered for this might be due to increase in screen time, decrease in time spent outdoors and nutritional deficiency.[5] 'Screen time' - refers to the amount of time a person spends staring at the visual display units (VDU) in hours /day. The blue light of VDUs are harmful to the light-sensitive retina, over time. Therefore limiting the screen time, encouraging children to spend more time outdoors, lowers the risk and improves vision and general health.[6]

Ocular infection (35%) is found to be the second common cause of ocular morbidity in children, this is similar to studies reported by Bhattacharjee H et al.[7] Prevalence rate of various infections in our study are Preseptal cellulitis (0.9%), Hordeolum externum(4.7%), Chalazion (1.1%), Phylectenular conjunctivitis(1.7%), Vernal conjunctivitis (23.6%), Dacryocystitis (2.3%) and Rhinospordiosis (0.3%). Allergic conjunctivitis is an important cause of visual morbidity due to its irritation, chronic nature and recurrence. Phylectenular conjunctivitis needs further evaluation for tuberculous infection. Proper medical treatment with suitable antibiotics/steroids will subside the infective foci and restore vision. Our findings insist on the importance of primary prevention- measles immunisation , promotion of breast feeding, nutrition education and vitamin A therapy thereby preventing corneal involvement and scaring.[8]

Ocular trauma in 9.4% of children is prevalent more in boys than girls similar findings reported by Mehari ZA et al.[9] Various injuries diagnosed are contusion of eye, lid tear, conjunctival tear, sub conjunctival hemorrhage, foreign body cornea and traumatic cataract. Ocular injuries are the most common cause of acquired uniocular blindness in children.[10] Ocular trauma in children is mainly accidental and has an age-specific patten. Preventive education regarding supervised play, the concept of child-proofing of houses, schools and play areas, the hazards firecrackers, and road safety measures is essential.

Ptosis diagnosed in 15 children (2.9%), is an abnormally low position of the upper eyelid. Simple congenital ptosis is caused by a developmental dystrophy of the levator muscle. Surgical correction should be carried out during the preschool years by levator resection.[11] In 27 children (5.3%), who presented with **strabismus**, detail examination of extraocular movements, tests for stereopsis, motor fusion, sensory anomalies, measurement of deviation are done. They are advised surgery with ocular alignment ideally before 1 year of age. **Cataract** in 4 children (0.7%), is due to trauma and congenital cause. Traumatic cataract is the most common cause of unilateral cataract in children due to direct penetrating injury to the lens. Causes for congenital cataract are metabolic diseases, intrauterine infections, systemic syndromes, etc., Visually significant cataract should be surgically extracted with intra ocular lens implantation.

In our study, **congenital ocular anomalies**- microphthalmos, coloboma diagnosed in 6 children (1.1%), is similar to findings reported in Southern India study. Congenital anomalies may be due to genetic diseases or intrauterine factors, but in majority the aetiology is unknown. By decreasing the rate of consanguineous marriage and performing a regular genetic consultation before marriage, we can prevent the hereditary eye diseases. For children with low vision, visual rehabilitation is provided.

V. Conclusion

Prevalence of pediatric ocular diseases serve as useful template for planning ophthalmic care strategies for children in a given locality. Dietary modifications and ensuring adequate vitamin A rich foods need to be emphasized. School teachers and parents should be educated to identify squint,refractive errors and about ocular hygeine to minimize ocular trauma and infections. Low vision rehabilitation services are to be provided to visually impaired children. Early detection, careful follow up and prompt treatment are key stages in the successful management of eye disease in children, so that visual function can be preserved.

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