

Pattern of Eye Diseases in Children at Secondary Level Eye Department in Karachi

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Purpose: To assess the pattern of common eye diseases in children of 0-15 years of age attending an out patient eye department, Sindh government hospital, new Karachi.

Material and Methods: A modified WHO/PBL eye examination proforma in respect of each child was filled in for recording of personal history, examination results and treatment required. The pattern of eye diseases affecting the children of new Karachi causing blindness and visual impairment according to age and sex were assessed.

Results: A total of 520 children of which 57.1% were male and 42.9 % female were examined and recorded squint 17.7% was the most common ocular morbidity followed by bacterial conjunctivitis 14.8%, Vernal Catarrh 12.1%, trauma 9.6%, blephritis 7.9%, vitamin A deficiency 7.5%, lid problems 7.5% (chalazion, sty), Corneal ulcers and Corneal opacity accounted for 9.4% ,nasolacrimal duct block 3.7%, trachoma 2.3%, and Cataract 1.4%. Out of 520, 334 children in age group 7-15 i.e. 64.2% were examined for refractive errors and 56.8 %found to be visually impaired. Others causes were less than 1%.

Conclusion: The distribution of male and female children was similar in different age groups. The number of eye disease was highest in children age group 7-15 i.e. 64% followed by age group 1-6, i.e. 27.5%, and children less than 1 year were 8.3%.

According to a recently concluded population census in 1998, Pakistan has an estimated population of 142 million in 2003. It is estimated that 40% of the population is below 16 years of age. The prevalence of blindness in children in Pakistan is estimated to be about 10 per 10,000 children, which means there are about 60,000 blind children. A further 100,000 to 180,000 children are estimated to have low vision¹.

The high incidences of consanguineous marriages together with maternal infections and environmental factors are responsible for the significant proportion of

congenital/developmental abnormalities in these children. Other causes of childhood blindness include nutritional factors and trauma².

In poor countries of the world corneal scarring due to vitamin A deficiency, ophthalmia neonatrum trachoma and use of harmful traditional practices (TP) predominates³.

Increasingly, refractive errors is being recognized as an important cause of visual impairment in both children and adults, the type and magnitude of refractive errors clearly changes with advancing age and also appears to be changing overtime , with recent

cohort having higher prevalence than earlier one . Visual acuity is the most appropriate screening test to identify individual with visual impairment due to uncorrected refractive errors⁵.

MATERIAL AND METHODS

This was a hospital-based study; and cross sectional in term of time and orientation and descriptive in methodological design. All children 0-15 years attending outpatient at eye OPD in Sindh Government Hospital New Karachi, were included in study.

The survey thus commenced on 1st July and extended to 10th August 2002 i.e. 36 days. Logistics and ethical considerations were discussed before the start of the study with the medical superintendent and Head of the ophthalmology department of Sindh Government Hospital New Karachi and they extended full cooperation and the required equipment during the entire survey period.

Against the estimated 540 children, a total of 520 children were examined. The subjects were children in the age group 0-15 attending outpatient in Eye Department of Sindh Government Hospital, New Karachi. On an average 12 children attended the said OPD daily from 9a.m to 1p.m daily. All children examined were found to have single ocular problems while a few children had more than one ocular problem.

During the study, a detailed history of each child, father's occupation, immunization, was asked. Children of 0-3 years were examined with a magnifying loop. The visual acuity of all children from age group 0-6 years was excluded, due to time limitation and technique. All children of age group 7-15 were examined on slit lamp and visual acuity checked with illiterate snellen E chart directly and with pinhole. Children who showed improvement with pinhole were referred, with findings on an outpatient slip, for refraction to the head of ophthalmology department and children who showed no improvement were also referred to the ophthalmologist for direct and indirect ophthalmoscopy, to exclude any pathology. On anatomical basis the disorders were divided into the diseases affecting the lid, whole globe, cornea, lens, uvea, retina, optic nerve.

Data was entered daily in the evening on the computer using Epi Info 2000 version. The data was cleaned, analyzed using the same software, results were drawn and recommendations were suggested.

RESULT

A total of children 520 of which 57.1% were male and 42.9% female were examined and recorded (Table 1).

Few of all children examined had one or more ocular problems. 30 % consanguinity was found, in all examined subjects. One child was mentally retarded and two were found to be physically handicapped.

The proportion of diseases as shown in (Table 2) were squint both convergent and divergent i.e. 17.7%

Table 1: Distribution of children 0-15 years by age & sex

Age (Yrs)	Male n (%)	Female n (%)	Total n (%)
< 1	23 (7.7)	20 (8.9)	43 (8.3)
1 - 6	86 (29)	57 (25.6)	143 (27.5)
7 - 15	188 (63.3)	146 (65.5)	334 (64.2)
Total	297 (100)	223 (100)	520 (100)

Table 2: Proportion of children (0-15) with diseases

Diseases	Male n (%)	Female n (%)	Total n (%)
Squint	58 (19.5)	34 (15.2)	92 (17.7)
Bacterial conjunctivitis	42 (14.1)	35 (15.7)	77 (14.8)
Vernal catarrh	51 (17.2)	12 (5.4)	63 (12.1)
Trauma	34 (11.4)	16 (7.2)	50 (9.6)
Blepharitis	7 (2.4)	34 (15.2)	41 (7.9)
Vitamin. A deficiency	31 (10.4)	8 (3.6)	39 (7.5)
Lid problem (chalazion, sty)	10 (3.4)	29 (13)	39 (7.5)
Corneal ulcer	23 (7.7)	5 (2.2)	28 (5.3)
Corneal	13 (4.4)	8 (3.6)	21 (4.1)

opacity			
Nasolacrimal duct block	4 (1.3)	15 (6.7)	19 (3.7)
Trachoma	5 (1.7)	7 (3.2)	12 (2.3)
Cataract	4 (1.4)	3 (1.4)	7 (1.4)
Other <1%	15 (5.1)	17 (7.6)	32 (6.1)
Total	297 (100)	223 (100)	520 (100)

was the most common ocular morbidity followed by bacterial conjunctivitis 14.8%, vernal catarrh 12.1 %, trauma 9.6 %, the etiology (Table 3) of the trauma in this study was 50% due to foreign bodies, (like Iron particle, plastic, glass piece, paint, glue, tyre burst) 10% due to lime burn, 10% stick injury, and 30 % occurred at home (by rubber bands, needles, fire crackers, while playing with others). Blepharitis 7.9 %, vitamin A deficiency 7.5 % and it was mainly due to malnourishment, poverty and large family sizes. Lid problems (chalazion, sty) 7.5%, Corneal ulcers and corneal opacity accounted for 5.3% and 4.1% respectively, additionally corneal ulceration and scar were due to bacterial conjunctivitis, viral (herpes) conjunctivitis, presence of foreign bodies and trauma, exact details for these few cases in terms of frequencies and percentages is not presented in this document. Naso lacrimal duct block cases 3.6%, trachoma 2.3%, cataract 1.4% and other miscellaneous disease less than 2%, among them few important one include, a case of panophthalmitis, drooping of eyelid, oclusio pupillae, nystagmus, macular degeneration and conjunctival cyst and retinoblastoma. The frequency of eye diseases was highest in children age group 7-15 years in 334 i.e. 64.2%, followed by age group 1-6 years 143 i.e. 27.5% and < 1 year 43 i.e. 8.3 % (Table 4).

Out of 520, children 334 in the age group 7-15 only were examined for refractive error, and the frequency was 56.8%. Of the total refractive errors 50% were found to be myopic and 50% were hypermetropic (Fig. 1). Refractive error was found predominately in male children i.e. 70% and 30% in female children (Fig 2).

Medication (eye drops) were provided to all who needed it. Children suffering from vitamin A deficiency were provided vitamin A capsules but no one turned up for follow up. All children of cataract and refractive error were referred to ophthalmologist for further evaluation¹.

DISCUSSION

Total children 520 were examined, of which 57.1% males and 42.9% were females children. All of them had eye diseases; number of children had more than one ocular problem. Consanguinity was found in 30 % of cases.

Squint was registered among highest number of children 17.7% and followed by bacterial conjunctivitis i.e. 14.8%. The leading cause of monocular blindness was trauma.

Table 3: Major causes of trauma

Causes	Male n (%)	Female n (%)	Total n (%)
Foreign bodies	20 (40)	5 (10)	25 (50)
Home injuries	8 (16)	7 (14)	15 (30)
Lime burn	2 (4)	3 (6)	5 (10)
Stick injury	4 (8)	1 (2)	5 (10)
Total	34 (68)	16 (32)	50 (100)

Table 4: Distribution of disease in different age group

Disease	< 1 (y) n (%)	1-6 (y) n (%)	7-15 (y) n (%)	Total n (%)
Squint	2 (4.7)	10(7)	80 (24)	92 (17.7)
Bacterial conjunctivitis	16 (37)	31(21.6)	30 (9)	77 (14.8)
Vernal catarrh	0 (0)	14(9.8)	49 (14.7)	63 (12.1)
Trauma	4 (9.3)	12(8.4)	34 (10.2)	50 (9.6)
Blephritis	0 (0)	1(.7)	40 (11.9)	41 (7.9)
Vitamin a deficiency	0 (0)	29(20.2)	10 (3)	39 (7.5)
Lid problem(chalazion, sty)	2 (4.7)	11(7.7)	26 (7.8)	39 (7.5)
Corneal Ulcer	3 (7)	9(6.3)	16 (4.8)	28 (5.3)
Corneal opacity	0 (0)	4(2.8)	17 (5)	21 (4.1)
Naso lacrimal duct block	8 (18.6)	9(6.3)	2 (6)	19 (3.7)
Trachoma	0 (0)	2(1.4)	10 (3)	12 (2.3)
Cataract	2 (4.7)	1(.7)	4 (7)	7 (1.4)
Others < 1%	6 (14)	10(7.1)	16 (4.8)	32(6.1)
Total	43 (100)	143(100)	334 (100)	520 (100)

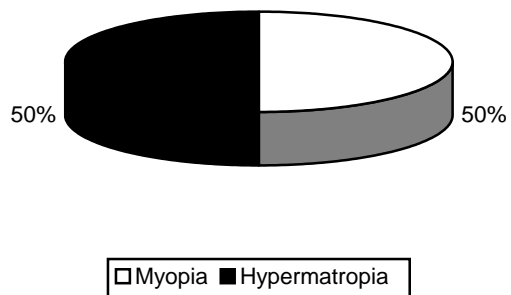


Fig. 1: Types of refractive errors age 7-15 years
Total = 190

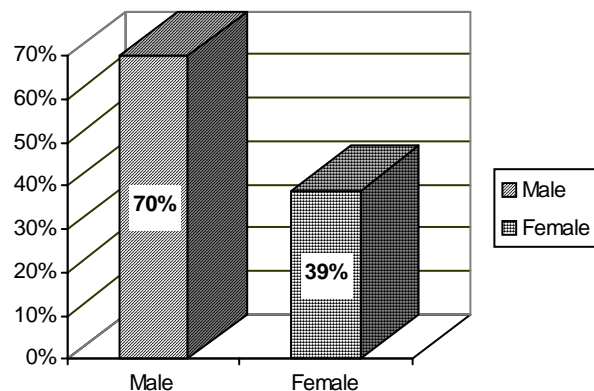


Fig. 2: Refractive errors in age group (7-15) years by sex. Total children =334

Both convergent and divergent squints were discovered in 92 i.e 17.7 % children. Squints are common all over the world but do not have any special association with developing countries or tropical environments⁶.

There are many possible causes of squint. Squints develop in children where there is no obvious defect or refractive error in the eye. Convergent squints were more common than divergent squints.

Most of them had convergent squint associated with refractive errors. Out of total, there were 24% squints in age group (7-15years), associated with refractive errors, 75 % children had convergent squints whereas 25 % were having divergent squint. Children with Squint were referred to the hospital Ophthalmologist for further evaluation. Hyper-

matropic squints were found to be 80 % in age group 0-15 years i.e. 520 and 50% hypermatropic were of total refractive errors i.e. 190, the reason is that hypermetropes were ignored due to illiteracy and squint occurred whereas myopic were noticed by others, so parents seek early treatment.

In our study, 80% were hypermetropes; this is also emphasized by Abrahamsson et al where the patient with convergent squint had a pronounced hypermetropia⁷. This relation of esotropia to hypermetropia has also been reported by Duke-Elder⁸.

The proportion of squint in our study is similar to study by Chaturved S found, the apparent/latent squint was 7.4%⁹. In our study squints were almost same proportion in both sexes i.e. 19.5% in male and 15.2% in female children.

Further studies will be needed to find out reason and mechanism identified so these children can be detected early.

It was observed that squints were due to illiteracy and uncorrected refractive errors in children, whose parents cannot afford glasses. The Government/NGOs should provide literacy and spectacles to young children, who have refractive errors, so they do not develop squint. Squints managed by glasses may need corrective surgery as well.

In this study the bacterial conjunctivitis was found in patients 77 (14.8%), the second highest paediatric ophthalmic disorder. Bacterial conjunctivitis was diagnosed on the presence of purulent discharge in eye. The same results were obtained by Awan and Usman i.e. 34.18%¹⁰. In our study 37 % were <1 year, 4.3 % were between age group 1-6, and 0.9 % were in age group 7-15.

Conjunctivitis of the newborn is a very serious problem in many parts of the developing world. The great damage to sight is infection, which involves the cornea. As the condition usually affects both eyes, the tragedy of an otherwise healthy child becoming blind is avoidable¹¹.

Bacterial conjunctivitis could be due several factors i.e. due to over crowding, poor hygiene, poor nutrition and lack of health education of mothers, as the children's were coming from very poor community having large family size, and in most of families absence of mothers from home as they were also working. In addition to bacterial conjunctivitis cases allergic conjunctivitis, viral conjunctivitis, and hemorrhagic conjunctivitis were also observed but they were all less than 1%.

Vernal keratoconjunctivitis is a recurrent, bilateral, external, ocular inflammation primarily affecting boys and young adults living in warm, dry climates¹². The disease was found in 63 patients i.e. 12.1%. Similar finding 11% of vernal catarrh was also reported by medi¹³.

In this study 17% male were affected more than females who were 5%. High prevalence of disease in male also found in Khan study¹⁴. In our study, 14.7% children in age group 7-15 years were affected predominantly, this is supported by A. Sharma, and the peak incidence of vernal catarrh was in age 11-13 years¹⁵.

Trauma was observed in 9.6 % cases. In our study male were found to be dominant i.e. 68% like other studies by Chan et al¹⁶, Thylefors¹⁷ and Khan et al¹⁸.

A countrywide population based surveys in Nepal reported that 7.7 % of all monocular blindness is due to trauma, and this was one of the causes of childhood blindness in Eastern Mediterranean countries¹⁹. Jan et al also found also found, 9.5% of trauma in hospital base study²⁰.

In our study 50%, injuries were due to foreign bodies, 10% was due to lime burn, 10 % stick injury and 30% occurred at home. Among the cases of trauma, a major portion of accidents occurred at home, a factor also documented by Desai et al²¹.

The proportion of corneal ulcer / opacity in children was 5.3% and 4.1% respectively i.e. 9.3%. Tayab Afghani in a survey of blind school shows 12% corneal diseases as cause of blindness²². Rahi at blind school in India shows 26.4% of corneal diseases responsible for visual impairment and blindness²³.

Corneal ulcers in this study were mostly due to foreign body, bacterial keratitis, and herpes infections and also due to lime burn, Vitamin A deficiency may be a contributing factor to corneal opacity, which was found in 7.5% children and which could not be confirmed due to lack of laboratory support. According to who report about 3 million children have clinically xerophthalmia through out the world²⁴. Majority of corneal ulcers follow the occurrence of often trivial corneal abrasions. In study by Jatoti S causes of corneal ulcers were found to be trauma in 63.5% of cases²⁵.

In Pakistan, various studies have been carried out which have so far suggested Vitamin A deficiency as a problem. No in-depth survey has been carried out. A survey in four district of Punjab covering 21 villages

showed prevalence of Vitamin A deficiency in children as 6.4 % however that in children 5-6 years of age was 50 %, while 17% of cases were from 2-3 years and 4-5 years and 12% from 3 to 4 years²⁷.

Cataract in this study was 1.4% of cases, including all types, congenital, traumatic, and developmental and it found to be the cause of monocular blindness. Trachoma cases accounted for only 2.3%, frequency being 12 out of 520 children. Of these 1.7% were male and 3.2 % in female children.

Eyelid problems (Chalazion, sty) in our study was 39 i.e. 7.5%. Blephritis was discovered in 41 (7.9%) of case, the proportion was high in females i.e. 15.2 %, and mostly involves age group 7-15 years. In countries with warm climate, the prevalence of staphylococci is as high as 95% in culture, and sub clinical and mild lid infections are quite common²⁸.

Refractive errors were seen in high proportion i.e. 334 (56.8 %) in children age group 7-15 years.

A population based study conducted by Memon in 1987- 90 showed that 11.4% of blindness was due to refractive errors and amblyopia²⁹.

In our study, visual impairment was found predominantly in males i.e. 70% and female were 30%. The prevalence of refractive errors in school study in Nepal is 2.9%, in china 12.8%, in Chile 15.8%. Comparing to these studies proportion is higher in our study³⁰.

It is recommended that visual acuity should be performed in all primary and secondary school students. Daily refraction at hospital by training more refractionist and low vision workers.

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