



**A CLINICAL STUDY OF VARIOUS OPHTHALMIC DISEASES IN CHILDREN
ATTENDING OPD OF GOVERNMENT GENERAL HOSPITAL, KAKINADA, ANDHRA
PRADESH**

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ABSTRACT

Introduction: Vision disorders in children are different from adults, because of children's inability to express and due to the risk of developing amblyopia. Therefore, children must be treated as early as possible, with treatment modalities such as optical, orthoptic, medical and surgical measures. India alone is accounting for more than 200,000 of blind children, which is 5 times that of developed nations. Present study aims to determine the pattern of ocular morbidity in children attending out-patient department of ophthalmology of government general hospital, Kakinada, from December 2016 to June 2018. **Materials and Methods:** A cross sectional observational study of 391 children between 0-14 years age. Patients were examined by optometrists, senior residents and Assistant professors at various levels, using equipment for testing visual acuity, refraction, slit lamp examination, direct and indirect ophthalmoscopy, squint examination. Seeking consent and cooperation from parent/ guardian were mandatory. **Results:** Out of 391 patients, most common morbidity detected was refractive error 157(40.15%), followed by infections of eye and adnexa 85(21.70%), allergic conjunctivitis 56(14.32%), ocular trauma 36(9.20%), congenital eye diseases 25(6.39%). Other less common causes detected were bitot's spots, chalazion, corneal opacities, episcleritis, oculomotor nerve palsy, optic nerve glioma, papilloedema, trichiasis. These affected 32(8.18%) children. **Conclusions:** Refractive errors were the most common morbidity detected in the present study. Most morbidities detected were either treatable or preventable. Regular conduction of school eye health programs, health education activities on ocular hygiene practices are essential for early detection and treatment of refractive errors, ocular infections and other morbidities.

KEYWORDS: Ocular morbidity, refractive errors, Amblyopia.

INTRODUCTION

Disorders of vision in children are fourth most common class of disability in children and one of the leading causes of handicapping conditions in childhood.^[1] Ocular morbidity in children affects learning ability, adjustment in school, and personality.^[2] Early years of life are very crucial in determining physical, intellectual, behavioral development and quality of life for a child.^[3] Any ocular morbidity which begins in childhood and if not detected, may result in severe visual disturbances or even blindness. Most morbidities are due to carelessness and ignorance.

Childhood blindness is referred to as best corrected visual acuity of less than 3/60 in an individual aged less than 16 years. Childhood blindness is the second largest cause of blind person years, next to cataract.^[4] Most of the children suffering from visual impairment are from

developing countries. Many conditions associated with blindness lead to childhood mortality. Hence control of blindness in children is closely related to child survival.^[5] Studies show that almost 50% of childhood blindness is preventable. Therefore, conducting vision screening programs in children is important, as early detection and early treatment has beneficial outcomes.

Early development of visual system is critical in infants to develop normal vision. Abnormalities in visual system in this early phase of development and maturation can modify normal development of occipital cortex and can cause permanent visual loss. However there is little information on epidemiological aspects of vision disorders in children. So, we conducted this study aiming to determine the pattern of ocular morbidity among paediatric population.

MATERIALS AND METHODS

A hospital based cross-sectional type of observational study conducted among 391 children with eye diseases attending the out patient department of ophthalmology of government general hospital, Kakinada were included in the study. A total of 501 children were examined. Of those 110 children were excluded from the study as no ocular pathology was detected.

Inclusion Criteria

All children with eye diseases attending out-patient department of ophthalmology between 0-14 years of age were included in the study.

Exclusion Criteria

1. Children without eye diseases coming for routine medical check up were excluded from the study
2. Children attending ophthalmology OPD, for whom no ocular pathology was detected on examination were also excluded from the study group.

Statistical analysis

Ocular Morbidities	Refractive Errors	Infections	Ocular Allergy	Trauma	Congenital Disorders	P.Value	
Gender	Male	75 (47.7 %)	40 (47 %)	40 (71.4 %)	23 (63.8 %)	14 (56 %)	0.01
	Female	82 (53.3 %)	45 (53 %)	16 (28.6 %)	13 (36.2 %)	11 (44 %)	
Total	157	85	56	36	25		

Chi square test was used to find out the association between variables.

Its value = 12.35

Degree of freedom = 4

In our study, ocular allergy, trauma, and congenital disorders were predominantly in male children, whereas, Refractive errors and infections were more common in female children and the difference was found to be statistically significant ($P < 0.05$)

RESULTS AND DISCUSSION

A total of 391 children were included in the study. Of those children 205 (52.42%) were boys and 186 (47.58%) were girls. All the children were divided into 3

Verbal informed consent regarding participation in the study is obtained from children, parents or guardians

Patients underwent the following examinations

- Visual acuity measurement with snellen's chart in older and Co-Operative patients
- Any child with visual acuity 6/9 or worse was examined for refractive error
- Retinoscopy and subjective refraction was performed for all patients suspected of having a refractive error
- Anterior segment examination was done with slit lamp
- Extra ocular movements, hirschberg's test, cover-uncover tests and using prism bars, were done in cases of squint
- Examination of fundus with direct and indirect ophthalmoscopy.

broad groups, that is 0-5 years, 5-10 years and 11-14 years. Majority of children were in the 11-14 years age group constituting about 213(54.47%). Children of 0-5 years age group constituted about 68(17.40%) and 6-10 years age group children constituted about 110(28.13%)

Among all, refractive errors were the most common ocular morbidity detected 157(40.15%), which is followed by infections of eye and adnexa 85 (21.7%), allergic conjunctivitis (14.32%), ocular trauma (9.20%). Congenital eye diseases constituted about 25 (6.39%). Other less common causes constituted chalazion, bitot's spots, episcleritis, corneal opacities, oculomotor nerve palsy, optic nerve glioma, papilloedema, trichiasis.

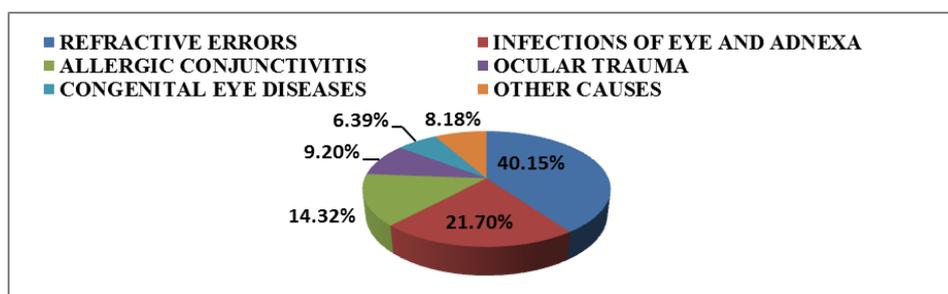


Fig. 1 A pie diagram showing pattern of ocular morbidity.

Refractive Errors

Among 157 children with refractive errors, 75 (47.77%) were males and 82 (52.23%) were females. Refractive error was found to be maximum among 11 to 14 age group children constituting about 123 cases (78.34%). As age increases, proportion of children with refractive errors increased.

There was one girl child below 5 years, 15 male and 18 female children in the 6-10 years age group. There were 60 male and 63 female children in the 11-14 years age group.

• Infections of Eye and Adnexa

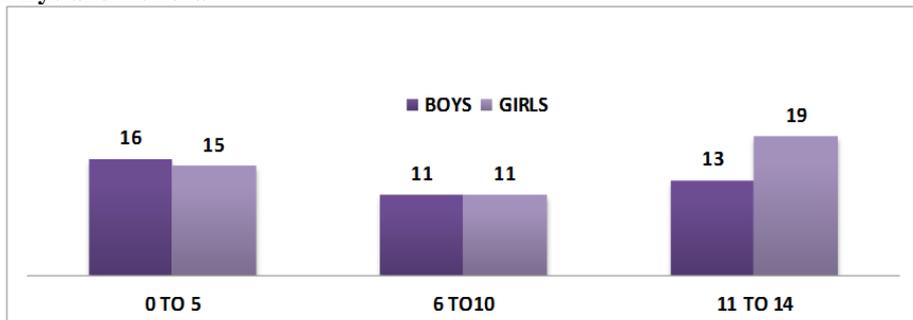


Fig. 2: Age and gender distribution of infections of eye and adnexa.

Among 85 children with infections of eye and adnexa, 40 (47.05%) are male children and 45 (52.95%) are female children. Bar diagram showing age and gender distribution of infections of eye and adnexa. Among all the infections viral conjunctivitis is found to be the commonest accounting for 51.6% of the cases.

Second common cause was found to be stye accounting for 16 cases (18.82%).

Other causes of infections detected in the present study constituted blepharitis, hordeolum internum, preseptal cellulitis, orbital cellulitis, dacryocystitis and bacterial conjunctivitis.

Table. Various infections noted in present study and number of children affected.

Type of infection	Number of children affected
Viral conjunctivitis	44
Stye	16
Blepharitis	13
Hordeolum internum	4
Preseptal cellulitis	3
Bacterial conjunctivitis	2
Folliculitis	1
Dacryocystitis	1
Fungal orbital cellulitis	1
TOTAL	85

Allergic Conjunctivitis

Allergic conjunctivitis was found to be higher among male children constituting 40 (71.42%) out of 56 cases. Female children with allergic conjunctivitis constituted about 16 (28.58%) cases. There were 5 males and 3 females on the 0-5 years age group, 18 males and 6 females on the 6-10 years age group, 17 males and 7 females in the 11-14 age group.

among male children constituting 23 (63.88%) out of 36 cases compared to female children who accounted for 13 (36.12%) cases. 13 of them belonged to age group of 0-5 years, 15 were between 6-10 years and 8 were aged between 11 and 14 years. Among trauma group, sub conjunctival haemorrhage (33.33%) is most commonly encountered, followed by ocular surface foreign body (22.22%). Other traumatic lesions detected in the present study constituted black eye, hyphema, penetrating globe trauma, corneal abrasions, staphyloma, lid lacerations.

Ocular Trauma

Ocular trauma constituted about 9.20% of total ocular morbidity in our study. It was also found to be higher

Table. Various traumatic lesions detected in the study and number of children affected.

Lesion	No. of affected children
Sub conjunctival haemorrhage	12
Ocular surface foreign body	8
Black eye	5
Corneal abrasions	3
Penetrating globe injury	3
Hyphema	2
Lid laceration	1
Chemical injury	1
Staphyloma	1
TOTAL	36

Congenital Eye Diseases

Among 25 children with congenital eye diseases 14 (56%) were males and 11 (44%) were females.

13 among them were of 0-5 years age group, 8 were between 6-10 years and 4 were between 11 and 14 years. Among congenital eye diseases, congenital nasolacrimal

duct obstruction was commonest, accounting for about 28%, followed by coloboma of uveal tract (16%).

Other congenital eye diseases detected in the present study constituted congenital ptosis, dermoid, strabismus, ectropion, nystagmus, buphthalmos, anophthalmos, crouzan’s syndrome.

Table. Number of children affected with various congenital diseases detected in the present study.

Congenital eye disease	Number of affected children
Congenital nasolacrimal duct obstruction	7
Coloboma of uveal tract	4
Congenital ptosis	3
Dermoid	3
Strabismus	3
Lamellar ichthyosis with cicatricialectropion	1
Buphthalmos	1
RE microphthalmos LE anophthalmos	1
Crouzon’s syndrome	1
Nystagmus	1
TOTAL	25

Other causes of ocular morbidity

Among other disorders, chalazion was found to be most frequent constituting 16 (50%) Of 32 cases.

Other less common causes are vitamin A deficiency (bitot’s spots), episcleritis, conjunctival cyst, corneal opacity, oculomotor nerve palsy, optic nerve glioma, papilloedema, uveitis, trichiasis.

Table. Age and gender distribution of ocular morbidity.

Morbidity	Total		0-5		6-10		11-14	
	M	F	M	F	M	F	M	F
Refractive errors	75	82	0	2	28	35	79	123
Infections	40	45	16	15	11	11	13	19
Allergic conjunctivitis	40	16	5	3	18	6	17	7
Ocular trauma	23	13	7	6	10	5	6	2
Congenital eye diseases	14	11	7	6	5	3	2	2
Chalazion	4	12	0	1	2	1	2	10
Bitot’s spots	3	3	0	0	2	0	1	3
Episcleritis	0	2	0	1	0	0	1	0
Corneal opacity	1	1	0	1	0	0	1	0
Oculomotor nerve palsy	1	0	0	0	0	0	1	0
Optic nerve glioma	1	0	0	0	1	0	0	0
Papilloedema	1	0	0	0	0	0	1	0
Uveitis	1	0	0	0	0	0	1	0
Trichiasis	0	1	0	0	0	1	0	0

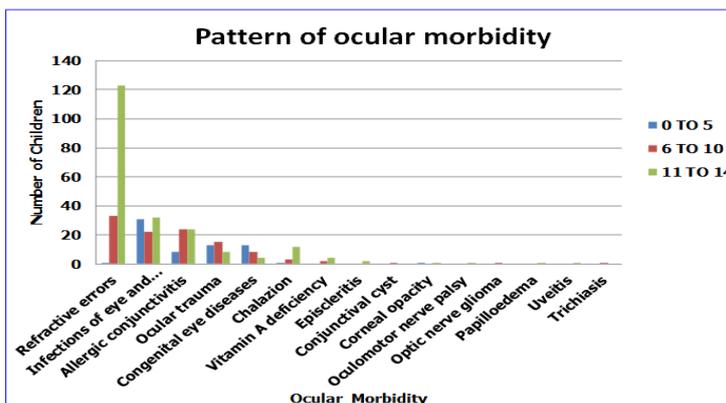


Fig. 3 Bar diagram showing pattern of ocular morbidity among study group.

DISCUSSION

Our study was conducted among children of 0-14 year's age group attending OPD. In our study boys(52.42%) were found to be slightly higher compared to girls(47.58%).

We categorized our study children in three broad groups of 0-5, 6-10 and 11-14 years age group. Majority of study children were under 11-14 years age group (54.47%). This was similar to few other previous studies like study done by *Prabha gupta et al.* (41.25%), *KC Rai Salma et al.*^[6] (35.5%) and *Jaya Biswas et al.* (70.73%). Whereas in study done by *Mohd Qamruddin et al.* majority of children were of 0-5 age group (153 children out of 390). Next common age group constituted 6-10 age group(28.13%), followed by 0-5 age group (17.40%). This age group distribution was found to be similar to few other previous studies.

In the present study refractive errors were found to be the most common cause of ocular morbidity detected with the prevalence of 40.15%(157 children). This is similar to several other hospital based studies like, study done by *Shubhra Mehta et al.*^[7] (41.90%), Study done by *Mohd Qamruddin et al.* (31.79%) and *Jaya Biswas et al.* (23.67%). Few other hospital based studies have shown lower prevalence (19.8%-9.15%).

In some school based studies like those conducted by *Veer Singh et al.*^[8] in West Uttar Pradesh, *Kalivayi et al.*^[9] at Hyderabad, *Gupta et al.*^[10] in urban Shimla and *Shrestha et al.*^[11] In Kathmandu refractive errors were the most common ocular morbidity detected. Few other school based studies have found lower prevalence of refractive errors. These differences may be attributed in part to the differences in sample sizes and different patterns of eye diseases among different socioeconomic and demographic regions.

There is higher prevalence of refractive errors among older age group children. This may be due to better detection and expression of visual problem by them. Globally, uncorrected refractive errors remain the major cause of visual impairment in children of age group 5-14. Many children with refractive errors go unnoticed without proper school eye programs. School health programs to regularly screen for refractive errors and refer those affected for refractive services are to be considered. This prevents poor school performance and amblyopia.

Infections of eye and adnexa were the second most common cause of ocular morbidity in our study with the prevalence of about 21.70%. Prevalence was found to be similar among male and female children of all age groups. Other similar studies conducted by *Jaya Biswas et al.* and that conducted by *Onakpoya OH et al.*^[12] showed a prevalence of 15.13% and 15.40% respectively.

In school based study conducted in West Uttar Pradesh by *Veer Singh et al.* among total ocular morbidity of 29.35%, prevalence of blepharitis was found to be 2.11%, bacterial conjunctivitis 0.95%, stye 0.31%. This lower prevalence of infections among school based studies compared to hospital based studies may be due to the fact that, children with acute infections tend to seek medical care at hospitals.

Ocular infections are an important cause of avoidable blindness and also a cause of school absenteeism. Early detection and management prevents adverse sequel like corneal blindness, adnexal infections progressing to preseptal and post septal orbital cellulitis. Importance of ocular hygiene, impact of over crowding and role of fomite transmission in the spread of eye infections need to be emphasized to students and parents through health education programs.

Allergic conjunctivitis was found to be the third most common cause of ocular morbidity detected in our study with the prevalence of about 14.32%. Prevalence was found to be significantly higher among boys (71.42%), compared to that of girls (28.58%). Higher prevalence was noted among 6-10(42.80%) and 11-14(42.80%) year age group children. These two age groups accounted for 85.7% of total cases. These results were comparable to similar other studies like study conducted by *Jaya Biswas et al.*(17.23%) and *Onakpoya OH et al.* (17.5%) and *Gupta P et al.* (18.95%). Above studies also reported higher prevalence among 11-15 age group boys which was similar to our study. Higher prevalence among older children and boys may be due to more outdoor activities leading to exposure to dust and other allergens. Allergic conjunctivitis is an important cause of school absenteeism due to its discomfort and because of its chronic and recurrent course. Dusty, polluted environment and poor ocular hygiene are important predisposing factors for the development of chronic allergic conjunctivitis. Simple measures like early detection and medical management can prevent potentially blinding complications.

Ocular trauma constituted about 9.20% of total ocular morbidity detected in our study. Commonest traumatic manifestation in our study was found to be sub conjunctival hemorrhage accounting for 33.33% followed by ocular surface foreign body constituting 22.22%. Prevalence was found to be higher among boys (63.88%) compared to girls (36.12%). Slightly higher prevalence was seen among children of 6-10 years age group. Other similar studies showed prevalence of ocular trauma as follows- *Jaya Biswas et al.* (12.74%), *Gupta P et al.* (11.25%), *Mehari et al.*^[13] (11.8%). As in most other studies, trauma was found to be higher among boys compared to girls. Closed globe injury was found to be the most common type of injury noted in our study. Most of the ocular trauma in children is due to unsupervised play with dangerous objects. Proper parental supervision

can reduce the incidence of trauma and thus can prevent avoidable blindness.

Congenital eye diseases constituted about 6.39 percentage of total ocular morbidity detected in our study. Congenital nasolacrimal duct obstruction (28%) was found to be the commonest cause in our study. Uveal coloboma (16%), congenital ptosis (12%) and dermoid (12%) were the next common causes in our study. Congenital nasolacrimal duct obstructions are mainly due to improper canalization of nasolacrimal duct and in most cases resolve with age and with proper massage. However, proper diagnosis and treatment prevents complications like secondary bacterial infections. Children with uveal colobomas must undergo systemic screening to rule out more complicated pathologies like CHARGE association.

Other less common causes of ocular morbidity detected in our study constituted mainly of chalazion, accounting for 16 cases and vitamin A deficiency (bitot's spots) in 6 children. Chalazion was found to be higher among 11-14 age group children, accounting for 75% of all cases. This may be due to eye strain and eye rubbing associated with higher prevalence of refractive errors in this age group children.

CONCLUSIONS

Majority of ocular morbidity detected in our study was among 11-14 years age group and the most common among them in the present study were refractive errors. Refractive errors were found to be higher among 11-14 years age group children.

Infections of eye and adnexa were found to be the second most common cause in our study.

Third most common cause was found to be allergic conjunctivitis and higher prevalence was noted among boys.

Ocular injuries were noted to be higher among boys compared to girls.

Genetic counseling and emphasis on role of consanguinity in transmission of inherited diseases can reduce the incidence of some congenital eye diseases.

Most morbidities found were either treatable or preventable. Regular conduction of school eye health programs will help in early detection and treatment of refractive errors and other ocular morbidities.

Health education activities on ocular hygiene practices involving teachers, students and parents can reduce the prevalence of ocular infections. Measures to reduce ocular trauma include- keeping sharp objects and dangerous chemicals out of reach from them, avoiding unsupervised play.

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