

# Assessment of Ocular Conditions among Pediatric Patients

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## ABSTRACT

**Introduction:** Vision disorders are the fourth most common class of disability of children the leading cause of handicapping conditions in childhood. In infants and young children these vision disorders include significant refractive error, strabismus, and amblyopia, as well as other ocular diseases. We planned this study to assess the different ocular conditions among pediatric patients.

**Material and methods:** The study was conducted in the ophthalmology department of the shadan institute of medical science. For the study, 510 pediatric patients reporting to the department between the age group 0-16 years were selected. Patients were grouped according to their age group preschool (0–5 years), school-age (6–10 years) or older children (11–15 years). In their first visit, all of them had a full ophthalmic evaluation, including refraction/cyclorefraction, carried by and optometrist and an assessment of intraocular pressure (IOP), ocular motility, dilated ophthalmoscopy, slit lamp examination and carried out by a consultant ophthalmologist. **Results:** We evaluated 510 records of patients who were seen in the hospital during the study period constituting 100 % of all new patients seen less than 16 years old. Patients who had no eye disorders, 120 patients of all patients were excluded from the study. The review was done for 390 patients with a mean age of 8.19 years. There were 182 females and 208 males. The highest number of consultation was recorded among the preschool age group patients and constituted around 153 patients. Refractive errors were the most common encountered disorders seen in 124 patients, which was followed by conjunctival diseases (93 patients).

**Conclusion:** From the results of the study, this can be concluded that refractive errors are the most common cause of the ocular morbidity. Proper eye health education to the community is must to prevent these morbidities. Children with diseases at initial stages must be presented early at eye care centers for proper management of these conditions.

**Keywords:** Ocular Morbidity, Ocular Trauma, Children, Refractive Errors

## INTRODUCTION

Vision disorders are the fourth most common class of disability of children the leading cause of handicapping conditions in childhood.<sup>1</sup> In infants and young children these vision disorders include significant refractive error, strabismus, and amblyopia, as well as other ocular diseases. Thus the development of vision-screening programs in children has become an important priority since early detection and early treatment of these ocular disorders has beneficial outcomes.<sup>2</sup> Extensive research has been conducted over the past three decades on vision disorders in infants and children and has demonstrated that early development of the visual system is critical if infants are to develop normal vision. Any abnormality in the visual system during this early developmental and maturation phase can modify the normal development of the occipital cortex and cause permanent severe

visual loss.<sup>3</sup> However, despite this improved understanding of the underlying mechanisms of vision loss in childhood and improvement in early detection and treatment options, we have little information regarding epidemiological aspects of vision problems in infants and young children. So, we planned this study to assess the different ocular conditions among pediatric patients.

## MATERIAL AND METHODS

The study was conducted in the ophthalmology department of the shadan institute of medical science. For the study, 510 pediatric patients reporting to the department between the age group 0-16 years were selected. Subjects were grouped by their age group into preschool (0–5 years), school-age (6–10 years) or older children (11–15 years). Patients who came for a medical check-up and had no eye disorders were excluded from this study. Ethical approval was obtained from the ethical committee of the institution before starting the study. An informed written consent was also obtained from the parents or guardians of the patients after educating them about the procedure. At the first visit, all the subjects had a full ophthalmic evaluation, including refraction, carried by and optometrist and an assessment of intraocular pressure (IOP), ocular motility, slit lamp examination and dilated ophthalmoscopy carried out by a ophthalmologist. All the tests were conducted to get a diagnosis, and management initiated required. At the end of the consultation, diagnosis were recorded in each patient's file. Age, sex, and clinical diagnosis were extracted from the medical records. The clinical diagnosis were grouped into anatomical categories; lacrimal diseases, lid diseases, orbital diseases, cornea/sclera, lens, glaucoma, strabismus and amblyopia, congenital disorders, conjunctiva, iris/ciliary body/choroid, retina/vitreous, diabetes mellitus, neuro-ophthalmic diseases, refractive error, ocular trauma, normal exams and miscellaneous.

## STATISTICAL ANALYSIS

All the data were stored and analyzed using SPSS software for, the Chi square test was performed to compare variables and “p” value less than 0.05 was considered statistically significant.

## RESULTS

We evaluated 510 records of patients who were seen in the hospital during the study period constituting 100% of all the new patients who were less than 16 years of age. 120 patients

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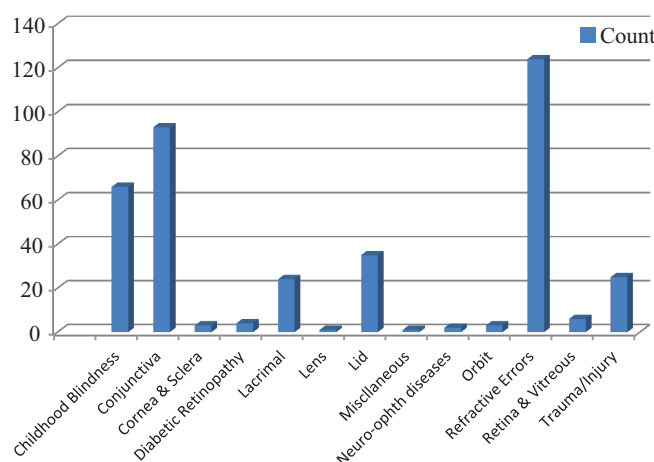
Morbidity	Count	Gender		Age Group		
		Female	Male	0-5 y	6-10 y	11-15 y
Childhood Blindness	66	36	30	34	12	10
Conjunctiva	93	39	54	33	30	30
Cornea and Sclera	3	1	2	0	1	2
Diabetic Retinopathy	4	1	3	1	0	3
Lacrimal	24	12	12	18	2	4
Lens	1	0	1	0	0	1
Lid	35	18	17	14	8	13
Miscellaneous	1	1	0	1	0	0
Neuro-ophth diseases	2	1	1	1	0	1
Orbit	3	1	2	2	1	0
Refractive Errors	124	58	66	33	30	58
Retina and Vitreous	6	4	2	3	2	1
Trauma/Injury	25	10	15	13	7	5
Total	390	182	208	153	93	128

**Table-1:** Comparison of different morbidities on basis of sex and age groups

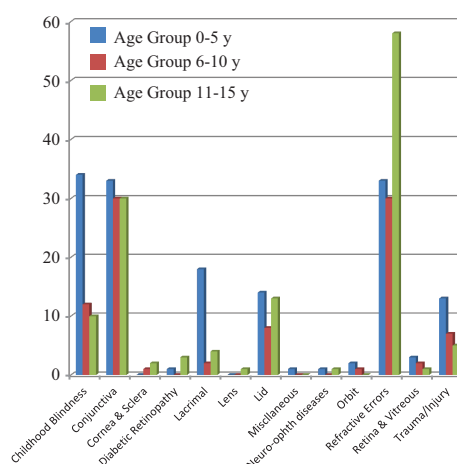
of all the subjects were excluded from the study because of the absence of the eye disorder. The review was done for 390 patients with a mean age of 8.19 years. There were 182 females and 208 males. Most of the consultation was recorded among the (0–5) age group and constituted 153 patients (table-1). The most common disorder that is refractive errors seen in 124 patients and it was followed by conjunctival diseases which was encountered in 93 patients. Figure 1 and 2 shows percentage and spectrum of morbidities seen. The frequency and pattern of eye diseases varied across the various age groups. The difference in the presentation of the features by age group was more common among 0–5 year-old children compared to other age groups (using Chi square test,  $p < 0.001$ ). Blepharitis and refractive errors were more common among the age group of 11–15 years compared to other age groups (using Chi square test,  $p < 0.001$ ). Refractive errors were the most common disorders seen which was encountered in 124 cases. Refractive errors were recorded more frequently among the age group of 11–15 years age group compared to other age groups (using Chi square test,  $p < 0.001$ ). Conjunctival diseases were the second most common disorder encountered in 93 cases. Diseases of lid were the fourth most common presentation in our study which is represented in 35 cases. Ocular trauma was the fifth most commonly seen disease in this study and found in 25 cases. Lacrimal diseases were the sixth most common presentation in this study which is found in 24 cases. The problem of naso - lacrimal duct obstruction was more prominent among the age group of 0–5 years (Chi square,  $p < 0.001$ ). Cornea and scleral diseases represented 3 cases. Retina and vitreous disorders represented 6cases. Diabetic patients represented 4 cases and the majority showed no retinopathy. Orbital diseases were having 3 cases, Neuro-ophthalmic diseases were having 2 cases. Lens disorders and miscellaneous disorders each represented 1 case. This study showed that there were no statistically significant differences in prominent conditions in either males or females (using Chi square test,  $p = 0.064$ ).

**DISCUSSION**

One of the important reasons for medical consultations in childhood is eye diseases . It affects learning ability, personality and adjustment in school of a child.<sup>4</sup> About 30% of blind population of India lose their eyesight before the age of 20 years



**Figure-1:** Count of different morbidities of concerned with eye among children



**Figure-2:** Comparison of different age groups on the basis of different morbidities

and many of them are under the age of 5 when they become blind.<sup>5</sup> Data available on causes and prevalence for ocular morbidity in children is essential for planning and evaluation of preventive and curative services for children. Hospital-based studies are available on childhood ocular morbidity is very few. Information obtained from this study might be useful in improving the existing eye care facilities that will consequently

reduce the prevalence of childhood blindness and severe visual impairment.<sup>6</sup> In the present study, the refractive errors were the most common disorders seen which was encountered in 124 cases and were the most common morbidity seen among the 11–15 age group patients as compared to other age groups (using Chi square,  $p < 0.001$ ). These results are consistent with reports from China, Bengal, Nigeria, and Kathmandu.<sup>26</sup> Refractive errors affects the development of the child, and many of them go unnoticed without preschool or school eye screening for refractive errors. The second most common morbidity seen for all age groups in this study was conjunctival diseases which has been seen in 93 cases. According to previous reports allergic conjunctivitis is the most common disorder in children and the second most common in children are supported by this study<sup>7-11</sup> Onakpoya OH et al. conducted a retrospective review of all patients who were less than 15 years of age, presented to the eye clinic of Wesley Guild Hospital Ilesa, Nigeria between January 2001 and December 2006. Data on age at onset of disease, age presentation, sex and diagnosis were collected and analyzed using SPSS software. They evaluated the reports of 286 children, with a male-female ratio of 1:1. Children who were between 11–15 years made up the largest group and having a  $p$  value of 0.013. Ocular trauma having 21.7%, allergic conjunctivitis having 17.8%, infections of the eye and its adnexa having 15.4% and refractive errors having 14.3% were the most common conditions. Ocular injury was more common in males and having  $p$  value 0.002 and children who were between 6–10 years of age, and 87.1% of these cases were a closed globe injury. Infections were seen more commonly among females and children who were in between the age of 0–5 years, with keratitis representing 40.9% of these cases. Congenital eye disease represented 13.3% of childhood eye diseases. The authors concluded that the prevalent childhood eye diseases recorded here can lead to absenteeism from school and are potentially blinding.<sup>12</sup> Rocha M et al. conducted a study to identify the levels of visual impairment and the prevalence of refractive errors and eye diseases in children seen at a referral center for ophthalmology in the Central-West region. Cross-sectional, the descriptive and retrospective analysis of medical records of children enrolled in the Ophthalmology department of Universidade Federal de Goiás, in the period between April 2009 and March 2010 was done. The disease most commonly found in children were infectious conjunctivitis which was having 248 cases and 26.4% and allergic were having 204 cases and 21.7%, blepharitis was having 69 cases and 7.3%, chalazion had 34 cases and 3.6%, strabismus had 133 cases, 12.06%, diseases of retina and vitreous were encountered in 24 cases and had 2.6%, cataract and lens changes were found in 20 cases which had 2.1%. Ametropia frequently told by eye, were hyperopia, 46.9% and stigmatism in 42.2% and systemic diseases were more informed prematurity in 30 cases and diabetes mellitus in 26 cases. Authors concluded that the group of diseases more prevalent was the disease of the conjunctiva cornea which is a condition of allergic conjunctivitis, dry eye and keratitis. Diseases were the second eyelid (chalazion, and lacrimal obstructions blepharitis). The refractive errors were the most common hyperopia and astigmatism. The findings in the study population are shown similar to those observed in the national literature.<sup>13</sup> Biswas J et al conducted a study to

determine the pattern of ocular morbidity among 714 children, who were attending Ophthalmology department at a tertiary eye care center in Kolkata, West Bengal. All the children less than the age of 15 years, attending in Unit II outpatient department were selected by complete enumeration method for duration of one year that was January–December 2010. Distribution was analyzed by “Chi-square” test and difference between two proportions was calculated by “z” test for proportions. The common ocular morbidity were refractive errors which was having 23.67% followed by allergic conjunctivitis having 17.23%, infection of the eye and adnexa had 15.13%, ocular trauma was found in 12.74%, and congenital eye diseases were encountered in 13.59%. Authors concluded that the majority of the ocular morbidity is treatable hence need early attention through eye screening cum intervention program right from the childhood.<sup>14-18</sup>

## CONCLUSION

From the results of the study, this can be concluded that refractive errors are the most common cause of the ocular morbidity. Proper eye health education to the community is must to prevent these morbidities. Children with diseases at initial stages must be presented early at eye care centers for proper management of these conditions.

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