

## A Prospective Study of Pattern of Ocular Morbidity in School Going Children in a Tertiary Care Hospital

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### Abstract

**Introduction:** Ocular diseases affect every individual in this world, with the only difference being in the pattern of occurrence of disease depending on age, sex, region, and climatic conditions. Children are susceptible to many ocular diseases, especially those who are malnourished and living in unhygienic conditions. The pattern of ocular diseases varies, depending on whether they are living in developed countries or developing countries. Certain ocular diseases in children can lead to blindness or visual impairment, which can directly affect their growth and development. **Materials and Methods:** The present cross-sectional study was conducted in the Inpatient Department of Ophthalmology in Santhiram Medical College, Nandyala for duration of one year from January 2019 to December 2019. All the patients less than 15 years of age admitted in the IPD during the study period constituted our study population. Thus complete enumeration method was applied. Informed verbal consent was taken from guardians of all children admitted for inclusion in the study. A total of 136 children were included in the study. Data was collected by using a semi structured questionnaire and also from the clinical records. **Results:** A total of 136 children were admitted during the study period in the Ophthalmology Department of Santhiram Medical College. The age range was from 1 to 13 years. Mean age of the study participants was  $7.308 \pm 3.7008$  years. High frequency group was 6 -10 years which constituted 42.6%. There were 84 males (61.8%) and 52 females (38.2%). Male preponderance was noted. 28(41.2%) of respondents' mother were illiterate and maximum 34 (50%) of participants' mother were Home maker. **Conclusion:** The present study suggests that ocular injuries are one of the important causes of childhood ocular morbidity, which cause avoidable blindness and these can be avoided by adopting various protective measures. In majority of ocular injuries children are not responsible for their actions. Information, education and communication (IEC) activities should be carried out to educate parents and guardians regarding the home safety measures & preparation of safe environment for their children.

**Keywords:** Ocular diseases, IEC, Children.

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### Introduction

Ocular diseases affect every individual in this world, with the only difference being in the pattern of occurrence of disease depending on age, sex, region, and climatic conditions. Children are susceptible to many ocular diseases, especially those who are malnourished and living in unhygienic conditions.[1]

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The pattern of ocular diseases varies, depending on whether they are living in developed countries or developing countries. Certain ocular diseases in children can lead to blindness or visual impairment, which can directly affect their growth and development.[2]

Poor socio-economic condition and lack of proper medical facilities in rural areas are other important causes contributing to childhood blindness. Our study will help in understanding ocular diseases affecting children in a better way. There are an estimated 19 million children worldwide with visual impairment, of which 1.26 million are bilaterally blind.[3]

Approximately 500,000 children become blind every year and 60% of these die within 1-2 years of becoming blind.[2] It is estimated that 1.5 million children suffer from severe visual impairment and of these, one million children live in Asia.[4] Childhood blindness is second only to cataract in terms of blind years. Eye diseases are an important cause of medical consultation. The pattern of ocular diseases in children varies depending on the anatomical structure involved, such as whole globe or specific tissues of the eye such as sclera, cornea, uvea, conjunctiva, lens, and retina. Childhood ophthalmic disorders can seriously impact development, education, future employment, and quality of life. A major proportion of childhood blindness has been found to be preventable.[5] Vitamin A deficiency is an important cause of visual impairment and night blindness, predominantly seen in children who are malnourished, especially in the rural areas of developing countries. It is estimated that worldwide, every year 5-10 million children develop xerophthalmia, of which a significant proportion go blind.[6]

School-going children also show a very high prevalence of allergic conjunctivitis. Vernal keratoconjunctivitis is common in male children, who usually have a complaint of severe itching and foreign body sensation in eyes. Corneal ulcers, trachoma, and dacryocystitis are also seen in children who are malnourished and living in unhygienic conditions. Congenital cataracts are often seen in children whose mothers were exposed to infections and malnourishment during pregnancy. Children should receive prompt and proper eye care to avoid vision problems and eye morbidities.

### Materials and Methods

The present cross-sectional study was conducted in the Inpatient Department of Ophthalmology in Santhiram Medical College, Nandyala for duration of one year from January 2019 to December 2019. All the patients less than 15 years of age admitted in the IPD during the study period constituted our study population. Thus complete enumeration method was applied. Informed verbal consent was taken from guardians of all children admitted for inclusion in the study. A total of 136 children were included in the study. Data was collected by using a semi structured questionnaire and also from the clinical records which included following things:

- 1) Detailed history from guardians regarding the time of onset of symptoms, duration and progress, mode of injury if any.
- 2) Comprehensive ophthalmic evaluation was done. Visual acuity using different methods according to the

age and intellect was checked. Snellen's chart was used for children more than 5 years.

- 3) Slit lamp bio-microscopy was used to examine anterior segment of eye.
- 4) Visual Evoke potential was used to detect macular optic nerve function.
- 5) USG B-Scan, CT-Scan and MRI were used to evaluate the posterior segment.

**Statistical Analysis:** Data Analysis Collected data was checked for consistency and entered in Microsoft-Excel 2007 data sheet and it was analyzed by IBM Statistical Package for Social Sciences (SPSS) version 20. It was organized and presented using the principles of descriptive statistics. Analysis was done with the test of significance (P value, chi-square test).

### Results

A total of 136 children were admitted during the study period in the Ophthalmology Department of Santhiram Medical College. The age range was from 1 to 13 years. Mean age of the study participants was  $7.308 \pm 3.7008$  years. High frequency group was 6 -10 years which constituted 42.6%. There were 84 males (61.8%) and 52 females (38.2%). Male preponderance was noted. 28(41.2%) of respondents' mother were illiterate and maximum 34 (50%) of participants' mother were Home maker [Table 1].

Ocular injuries (57.4%) were the most common childhood ocular morbidity during the study period, followed by ocular infection (10.4%), retinoblastoma (7.4%), chronic dacryocystitis (7.4%), congenital cataract, traumatic cataract and others constituted 5.8% [Table 2] & [Figure 1].

Ocular injuries were more common in the age group 6 -10 years (26.5%), followed by 0 -5 years age group (19.1%) and in 10 years and above (11.8%). However, it was found to be not significantly different ( $\chi^2=1.248$ ,  $df=2$ ,  $p\text{-value}=0.536$ ). Similarly, ocular injuries were more among male children (39.7%) compared to female children (17.6%) and it was found to be statistically significant ( $\chi^2=4.317$ ,  $df=1$ ,  $p\text{-value}=0.038$ ), [Table 3].

Out of all ocular injuries, 36(46.2%) were open globe injuries, 34 (43.6%) were closed globe injuries and 8(10.2%) was due to chemical injury [Table 4]. Out of total patients with open globe injuries, 26 were caused by sharps like pen, pencil, iron particles, knife, 6 were due to stone pelting, 2 was due to trauma with wood stick, 2 was because of injury with fall from height. Among the patients with closed globe injuries, 20 were due to fire crackers and 14 were due to fist blow.

**Table 1: Socio-demographic profile of study participants (n=136)**

Age (In years)	Frequency	Percentage
0-5	46	33.8
6-10	58	42.6
Above 10	32	23.6
Sex		
Male	84	61.8
Female	52	32.2
Education level of mother		
Illiterate	56	41.2
Literate	22	16.2
Primary	26	19.1
Middle-Secondary	26	19.1
Higher secondary & Above	6	4.4
Occupation of mother		
Home maker	68	50
Labourer	50	36.8
Domestic help	14	10.3
Teacher	4	2.9
Total	136	100

**Table 2: Distribution of Ocular morbidities (n=136)**

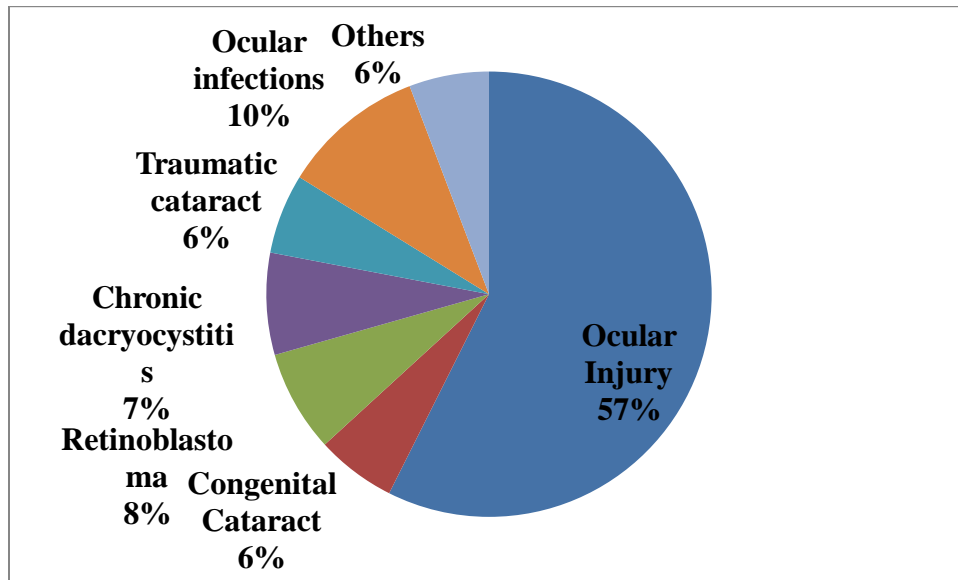
Ocular Morbidities	Frequency	Percentage
Ocular Injury	78	57.4
Congenital Cataract	8	5.8
Retinoblastoma	10	7.4
Chronic dacryocystitis	10	7.4
Traumatic cataract	8	5.8
Ocular infections	14	10.4
Others	8	5.8
Total	136	100

**Table 3: Association between ocular injury with demographic characteristics (n=136)**

Demographic characteristics	Ocular Injury			
	Present	Absent	Total	
Age (in years)	N (%)	N (%)	N (%)	P=0.536
0-5	26 (19.1)	20 (14.7%)	46 (33.8%)	
6-10	36 (26.5)	22 (16.2%)	58 (42.7%)	
Above 10	16 (11.8)	16 (11.7%)	32 (23.5%)	
Total	78 (57.4)	58 (42.6%)	136 (100)	
Sex				
Male	54 (39.7)	30 (22.1%)	84 (61.8)	P=0.038
Female	24 (17.7)	28 (20.5%)	52 (38.2)	
Total	78 (57.4)	58 (42.6%)	136 (100)	

**Table 4: Distribution of types of Ocular injury (n=78)**

Types of ocular injuries	Frequency	Percentage
Closed globe	34	43.6
Open Close	36	46.2
Chemical	8	10.2
Total	78	100



**Fig. 1: Distribution of Ocular morbidities (n=136)**

### Discussion

In the present study, proportion of males were more than females which is quite similar to study done by Wagle N et al at Tertiary care Hospital, Goa, where 70.7% were male and 29.3% were female.[7] This may be due to gender bias in health care seeking behaviour in the society. In our study ocular morbidities were seen more in males compared to females. The predominance of males in ocular morbidities is also seen in previous studies. Out of all children who were admitted in the IPD of Santhiram Medical College for consultation, majority (42.6%) were in the age group 6 to 10 years.

However, the study by Wagle N et al found higher frequency of consultation in the age group 10-15 years (43.9%). The higher proportion in ocular morbidity among older children may be due to better detection of visual problem by them, suggesting lack of awareness among parents to detect them earlier.[8]

In the present study, ocular injuries (57.4%) were the most common cause of ocular morbidity, which is higher than the study done by Wagle N et al in Goa, where ocular injuries accounted for 36.58% of all. Open globe injury was responsible for 46.2% of childhood ocular morbidity, which is lower than the study conducted by Wagle N et al in Goa, where it accounted for 66.6% of al.[9] These were seen commonly in males. Open globe injury was most common injury noted in present study, while in several other studies closed globe injury was most common. Globally, the frequency of ocular trauma is also high.

Major cause of ocular trauma in children includes unsupervised play and use of dangerous objects. Occurrence in ocular trauma is significantly higher in boys in all countries. Ocular injuries were leading cause of unilateral blindness, it was found in a community based study conducted in Botswana on childhood blindness.[10]

### Conclusion

The present study suggests that ocular injuries are one of the important causes of childhood ocular morbidity, which cause avoidable blindness and these can be avoided by adopting various protective measures. In majority of ocular injuries children are not responsible for their actions. Information, education and communication (IEC) activities should be carried out to educate parents and guardians regarding the home safety measures & preparation of safe environment for their children.

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**Conflict of Interest:** Nil

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