

## Profile of paediatric ocular trauma at a tier 2 city in Southern Karnataka

Pradeep Addagadde Venkataramana<sup>1,\*</sup>, Srinivas Siddegowda<sup>2</sup>, Prathibha Shiveshi<sup>3</sup>

<sup>1</sup>Assistant Professor, <sup>2</sup>Associate Professor, <sup>3</sup>PG Student, Dept. of Ophthalmology, Mandya Institute of Medical Sciences, Karnataka

**\*Corresponding Author:**

Email: dr.avpradeep@gmail.com

### Abstract

**Aim:** To identify cause, demographic and clinical profile, parents education status and final visual outcome of ocular trauma in pediatric age-group (= < 14 years) patients attending casualty and Ophthalmology OPD.

**Materials and Methods:** Prospective interventional study was carried out in teaching hospital of Mandya district in South Karnataka during December 2015–May 2016 where children up to 14 years with history of ocular trauma attending the casualty/OPD were included. Demographic details like age and sex, activity at time of injury, mode of injury, parent education status and delayed presentation were noted with follow-up to period of 30 days.

**Results:** In our study, total 32 patients with 32 eyes were enrolled. Five years and below age-group was more affected (40.6%, 13 eyes). Boys (50%, 16 eyes) and Girls (50%, 16 eyes) were equally affected. Adnexal injuries were found in 37.5% eyes, whereas closed and open globe injuries in 59.3% and 3.1% respectively. 28.1% reported early to casualty within 24 hours (9 eyes), remaining 23 eyes after 24 hours (71.8%). The objects causing injury were projectile objects & sticks (37.5%), road traffic accidents (9.3%), chemical injury (9.3%), playing at school and home (40.6%), animal bite (6.2%) and self fall (9.3%). Best corrected visual acuity (BCVA) of more than 6/9 achieved in 29 (90.6%) eyes, 6/18–6/24 in 3 (9.37%) eyes. Most of the ocular injuries occurred while playing at home and at playground (40.6%).

**Conclusion:** The most common age-group affected was below 5 years. Boys and girls were equally affected. Delayed presentation was common compared to early presentation especially among illiterates. Projectile objects, blunt trauma while playing, were common causes of injury. Most of the children achieved best corrected visual acuity (BCVA) more than 6/9.

**Key words:** Blunt trauma<sup>1</sup>, Hyphema<sup>3</sup>, Penetrating injury<sup>5</sup>, Closed globe injuries<sup>2</sup>, Paediatric age-group<sup>4</sup>

Access this article online	
Quick Response Code:	Website: www.innovativepublication.com
	DOI: 10.5958/2395-1451.2016.00024.X

### Introduction

Paediatric ocular trauma is an important cause of ocular morbidity and acquired preventable unilateral blindness.<sup>[1]</sup> Even in Pediatric age group, different sub pattern of ocular injuries occurs with different sub age group. Handler-related injuries like from fingernails of siblings, parents and caretakers are common in children below 3 years age.<sup>[2]</sup> While sharp objects, sticks, toys, tree branches, pencils, sports, stones etc. is the usual cause in older children.<sup>[2]</sup> Even trivial trauma to an eye if neglected may lead to permanent visual impairment causing significant emotional, psychological, and socio-economical impact on the individual person and family, as a whole on future quality of life. Thus, social and health education regarding eye injuries and its early treatment can give good visual outcome.<sup>[3]</sup> Most of our understanding is based on the studies from developed countries with very limited studies from India.<sup>[4]</sup> This epidemiological study was planned to understand the

patterns of ocular trauma in pediatric population, parents' educational level and its visual outcome.

### Materials and Methods

This was prospective interventional study carried out during December 2015–May 2016.

**Inclusion criteria:** All pediatric patients within 14 years of either sex having complaint of ocular trauma attending casualty and Ophthalmology OPD were included in study.

**Exclusion criteria:** Patients with history of previous eye diseases like glaucoma, congenital anomalies, injury repaired elsewhere and age above 14 years were excluded from study. Study was conducted after approval from Institutional Ethics Committee MIMS Mandya and data was collected after written informed consent from parents. Patient's demographic details such as age, sex, time & objects causing injury, delay in presentation in hours, parents' education status were noted. Evaluation of visual acuity by Snellen's chart (4 years and above), slit lamp examination to evaluate anterior segment, Gonioscopy in cooperative patients and fundus examination by Indirect ophthalmoscopy were done. All patients were managed in outpatient department (OPD) and if needed is admitted with required investigations and interventions. Intraocular pressures were measured in all eyes except open-globe

injuries. All patients were followed up on day 1, 7, and 30. The final best corrected visual acuity was taken on day 30.

Modes of injuries were classified into trauma sustained during outdoor activities like playing with ball, bow and arrow, stone pellets, wooden top, sticks, Road traffic accidents, Chemical injuries, agriculture field and work place related injuries.

## Results

Total 32 subjects with 32 eyes were studied. Majority of injuries occurred in children below 5 years (40.6%), above 6-10 years (34.3%) and 11-14 years (25%). Both male and female were equally affected. But subgroup analysis shows at 0-5 years both males and females are affected equally but in > 11-14 years females are more commonly involved [Table 1].

Most of the ocular injuries were adnexal in nature 20 eyes (62.5%). Among adnexal injuries presented with lid and periorbital injury in 18 eyes and orbital fractures in 2 eyes. Closed-globe injuries were reported in 11 eyes (41%). Contusion in 6 and lamellar laceration in 5 eyes. Open globe injuries were reported in 1 eye with uveal tissue prolapse and conjunctival tear (3.1%) [Table 2].

Most of injuries occurred during playing in home and school in 15 subjects (46.8%), while remaining 25% injury with sharp objects, chemical injury in 12.4%, self fall in 6.2%, animal bite in 6.2% and 3.2% with road traffic accident. Out of 32 eyes, 13 (40.2%) eyes visual acuity could not taken as they were less than 5 year age-group and uncooperative. On day 30, 16 eyes had visual acuity better than 6/9 (50 %) and 3 eyes had visual acuity of less than 6/18 because of retinal scarring (3.1%) and corneal scarring (6.2%).

Most of ocular injuries presented late 23(71.8%) whereas only 9(28.1%) presented early. Sub group analysis of parent's education status with presentation showed delayed presentation was more common in illiterate compared to person having some education. Comparing the Time Interval between the time of Injury to presentation to the hospital with level of literacy of the parents showed illiterate had delayed presentation than literates (P =0.01044) which is statistically significant. [Table 3]

Common ocular findings found in pediatric ocular trauma are sub-conjunctival hemorrhage 16(50%), Ecchymosis 18(56.25), Corneal epithelial defect (12.5%), Uveitis (12.5%), lid tear 3(9.3%), conjunctival tear 2(6.25%), Corneal foreign body 2(6.25%) Hypema and sclera tear (3.1%) [Table 4].

**Table 1: Profile of the study subjects with age and sex wise distribution**

Age in years	Male	%	Female	%	Total	%
0-5	6	18.7%	7	21.8%	13	40.6%
> 6-10	8	25%	3	9.37%	11	34.3%
>11-14	2	6.2%	6	18.7%	8	25%
Total	16	50%	16	50%	32	100%

**Table 2: Pattern of ocular Injury**

Serial No	Type of Injury	No of subjects	Percentage
1	<b>Open globe injury</b>	1	3.1%
	Full thickness laceration	1	3.1%
2	<b>Closed globe</b>	11	59.3%
	Contusion	6	18.75%
	Lamellar laceration	5	15.6%
3	<b>Adnexal injury</b>	20	37.5%
	Lid & periorbital injury	18	56.25%
	Orbital fractures	2	6.2%

**Table 3: Level of education of Parents with presentation**

Level of parents education	Illiterate	Percentage	Literate	Percentage	Total N=32
		11	34.3%	21	
Early Presentation	0	0%	9	28.12%	9
Delayed presentation	11	34.3%	12	37.5%	23

**Table 4: Ocular findings in Pediatric trauma**

Ocular findings	Number	Percentage
Lid tear	3	9.3%
Sub conj hg	16	50%
Ecchymosis	18	40.6%
Conjunctival tear	2	6.25%
Sclera tear	1	3.1%
Corneal opacity	4	12.5%
Corneal foreign body	2	6.25%
Uveitis	4	12.5%
Hyphema	1	3.1%
Cataract	1	3.1%
Subluxated lens	1	3.1%
Macular / retinal edema	2	6.25%
Multiple ocular structure	2	6.25%

## Discussion

In our study, as per age-specific pattern of ocular injuries, more prevalence is found in age-group below 5 years (40.6%) than above 5 years which is opposite to studies like MacEwen where it was 84% of ocular injuries in 5-14 years age-group.<sup>[5]</sup>

Even though younger age-group children are under parental supervision still younger age-groups are more susceptible to handler-related injuries<sup>[3]</sup>. Even though boys tend to be more adventurous and aggressive than the girls, surprisingly in our study both were equally affected<sup>[6]</sup>. In our study most of injuries occurred during playing in home and school in (46.8%) subjects which was similar to MacEwen CJ *et al.*, (51%) and Desai T *et al.*, (45.62%)<sup>[3,5]</sup>. Home is the common place for injuries of preschool and school-going children which reflect the time spend at home.

Early treatment is the key factor for good visual outcome. In our study only 9(28.1%) presented early whereas most of ocular injuries presented late 23(71.8%) which is similar to Desai T *et al.*, where around 70% presented after 24 hours.<sup>[3]</sup> Those visited within 24 hours had relatively good visual prognosis than presented late. Those visited late after 24 hours were due to Illiteracy, carelessness, poverty and rural area. Most of injuries occurred during playing in home and school in 15 subjects (46.8%), while remaining 25% injury with sharp objects. Other causes of injuries are blunt objects, road traffic accidents, chemical injuries, animal bite and assault. In India, wooden-stick related injuries are considered as more common as in our study 25% injury is with sharp objects which corresponds to studies like Kaur A *et al.*, where wooden stick injuries found in 28.07% eyes.<sup>[7]</sup> Mostly lack of eye protection is responsible with low socioeconomic status and lack of supervision of parents<sup>[8,9]</sup>.

In our study, closed-globe and ocular adnexal injuries had different incidences of 41% and 62.5% respectively which are different from other studies like Desai T *et al.*, where incidence of closed globe injuries was 27% and adnexal injuries 32%<sup>[3]</sup>. In our study,

incidences of open-globe injuries (3.1%) were lower similar to study by Pardhi *et al* from Western Maharashtra.

## Conclusion

According to our study, most of eye injuries occurred in age group 5 years and below, mostly in unsupervised conditions which can be easily preventable. In our study, Boys and girls were equally affected. Delayed presentation was common compared to early presentation especially among illiterates. Better health care facilities should be provided so that the delay in seeking treatment is avoided.

## References

1. MacEwen CJ, Baines PS, Desai P. Eye injuries in children: The current picture. *Br J Ophthalmol* 1999;83:933-6.
2. Burgueño Montañés C, Colunga Cueva M, González Fernández E, Cienfuegos García S, Díez-Lage Sánchez A, Diab Safa M. Eye injuries in childhood. *An Esp Pediatr* 1998;48:625-30.
3. Desai T, Vyas C, Desai S, Malli S. Pattern of ocular injuries in paediatric population in western India. *NHL J Med Sci* 2013;2:37-40.
4. Natarajan S. Ocular trauma, an evolving sub specialty. *Indian J Ophthalmol* 2013;61:539-40.
5. MacEwen CJ. Ocular injuries. *J R Coll Surg Edinb* 1999;44:317-23.
6. Dulal S, Ale JB, Sapkota YD. Profile of pediatric ocular trauma in mid western hilly region of Nepal. *Nepal J Ophthalmol* 2012;4:134-7.
7. Kaur A, Agrawal A. Paediatric ocular trauma. *Curr Sci* 2005;89.
8. Pardhi CH, Nandedkar VS, Shelke EB, Bhojane VR, Awatade VP. Pattern of pediatric ocular trauma in rural area of Marathwada. *J Clin Ophthalmol Res* 2015;3:127-31.
9. Rajendra P, Maurya, Virendra P. Singh, Ishan Yadav, Mahendra K. Singh, C.P. Mishra, Prithvi R. Sen, Abhijeet Kunwar. Profile of pediatric ocular trauma at a tertiary eye care center in Northern India. *Ind J Clin Exp Ophthalmol* 1(2):76-83.