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Clinical Profile of Paediatric Ocular Trauma in A Tertiary Hospital In Mangalore

SupriyaSamakSriganesh*[1], Sripathi Kamath[1], Sunayana Bhat[1]
1(Department of Ophthalmology, Father Muller Medical College Hospital, Mangalore, India)
**Corresponding author – Dr SupriyaSamakSriganesh.*

Abstract
Background*– One of the most common causes for acquired ocular blindness in children is ocular trauma. There are about 6 million incidences of childhood ocular trauma worldwide. Children are at a higher risk of ocular trauma due to their poorly developed motor skills and curious nature. This study focuses on the demographic data, mode of injury, time to presentation, structures involved, visual outcomes and complications in cases of pediatric ocular trauma in a tertiary care center in southern Karnataka.*
Methods*-A retrospective study was conducted at a tertiary hospital between June 2016 and June 2019 with a total of 68 patients below the age of 16 with ocular trauma. Anterior and posterior segment examination was done. Imaging was done when required. Time to presentation, lens involvement and infection were assessed*
Results-A total of 68 patients were included with 42 males (61.76%) and 16 females (23.52%). The most affected age group was 0-5 years followed by 6-10 years. Most common cause was mechanical trauma. Adnexal injuries seen in majority of cases followed by open globe injuries and closed globe injuries. Most patients attained best corrected visual acuity of 6/18 or better.
Conclusion*-Children are prone to ocular trauma and preventive measures can reduce the incidence. Prompt investigation and treatment improves visual outcomes*
Keywords*: Paediatric ocular trauma, eye injuries in children, complications of ocular trauma, open globe injury, closed globe injury, visual outcome, south India.*

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I. Introduction

Visual morbidity cause by eye trauma in children is a great cause for concern considering the impact it has on the remainder of their lives. Although it is not life threatening in most cases, the long-term implications include impaired academic performance, challenges with regard to social development and the economic burden imposed on the patient as well as their caretakers.[1]There are about 6 million estimated episodes of ocular trauma affecting children <15 years of age worldwide each year.[2] It is one of the leading causes of preventable blindness in children as well as adults, 90% of the cases being preventable.[1,4] As children are more uncooperative, the primary assessment and diagnosis of ocular injuries is more challenging.[7] Moreover, due to an increased ocular inflammatory response and poor compliance to treatment, the post-operative course can be more complicated in children.[7]

Although many studies have been conducted in developed countries on paediatric ocular trauma profiles, not many studies have been conducted in developing countries.[1]

This study focuses on the demographics such as age, sex, geographical area, the mode of injury, the visual outcomes and complications in children below the age of 16, presenting with ocular trauma to a tertiary hospital in Mangalore.

II. Materials and Methods

A retrospective study was conducted in the Department of Ophthalmology at a tertiary hospital between June 2016 and June 2019 with a total of 68 patients below the age of 16 presenting with ocular trauma. Data collection included the patients' demographic profile, place of injury, mode of injury, time to presentation, visual acuity using Snellen's chart, anterior and posterior segment examination to evaluate the structures involved and imaging modalities such as X-ray, B-scan, CT scan when required. The follow up of all patients was done in the outpatient department of the same hospital.

III. Results

We retrospectively viewed the records of 68 patients from June 2016 to June 2019. 42 patients were male (61.76%) and 16 were female (23.52%). Most affected age group was0-5 years - 26 patients (38.23%) followed by 6-10 years - 21 patients (30.88%) and 11-16 years -18 patients (26.47%). The most common cause of injury was mechanical trauma – (91.17%), followed by burns (5.88%).Majority were open globe injuries (72.05%) while rest of the patients had closed globe injuries (27.94%).Most modes of injury were by wooden stick, stone, metal rod, kitchen knife and pen. There were 2 cases of injury with broom stick, there was one case of hen beak injury, 1 case of dog bite and 1 injury by a bat (animal attack), 4 cases of ocular burns, 1 case of chemical injury with alkali, 1 case of blunt trauma with a fan blade and 1 firecracker injury.

Majority of patients presented on the same day of the injury (54.41%), followed by patients that presented one week later (33.82%) and later than 1 week (11.76%).Home was found to be the commonest place of injury (47.05%) followed by streets (44.11%). Other sites such as school, work and construction sites were the place of injury in 8.4% of patients. Patients were most commonly from Kasargod (25%) followed by Mangalore city (17.6%). Rest of the patient hailed from other places such as Bantwal, Puttur, Madikeri, Kanhangad, Chikmagalur, Karwar and Belur.

Most common structures involved were cornea (61.76%) and lens (17.64%) followed by adnexal injuries (10.29%), scleral injures (8.82%) and retinal injury (5.88%). The complications included traumatic cataract (17.64%), pthisisbulbi (14.70%), endophthalmitis (13.23%), aphakia(10.29%) and retinal detachment(10.29%). Among the patients who developed traumatic endophthalmitis, only one patient presented on the same day of trauma, 7 patients presented within 2 days of trauma and one patient presented 10 days after trauma had occurred.

With respect to follow up, 55.88% of patients were lost to follow up while 44.11% of patients were followed up for 6 months. Among the patients who able to be followed up, the visual outcome was better than 6/36 in 46.66% of patients and worse than 6/36 in 53.33% of patients.

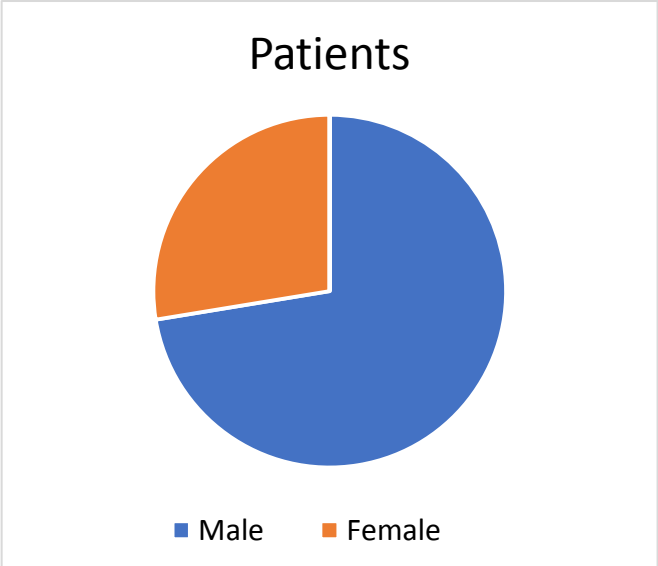

Chart 1: Sex distribution of patients

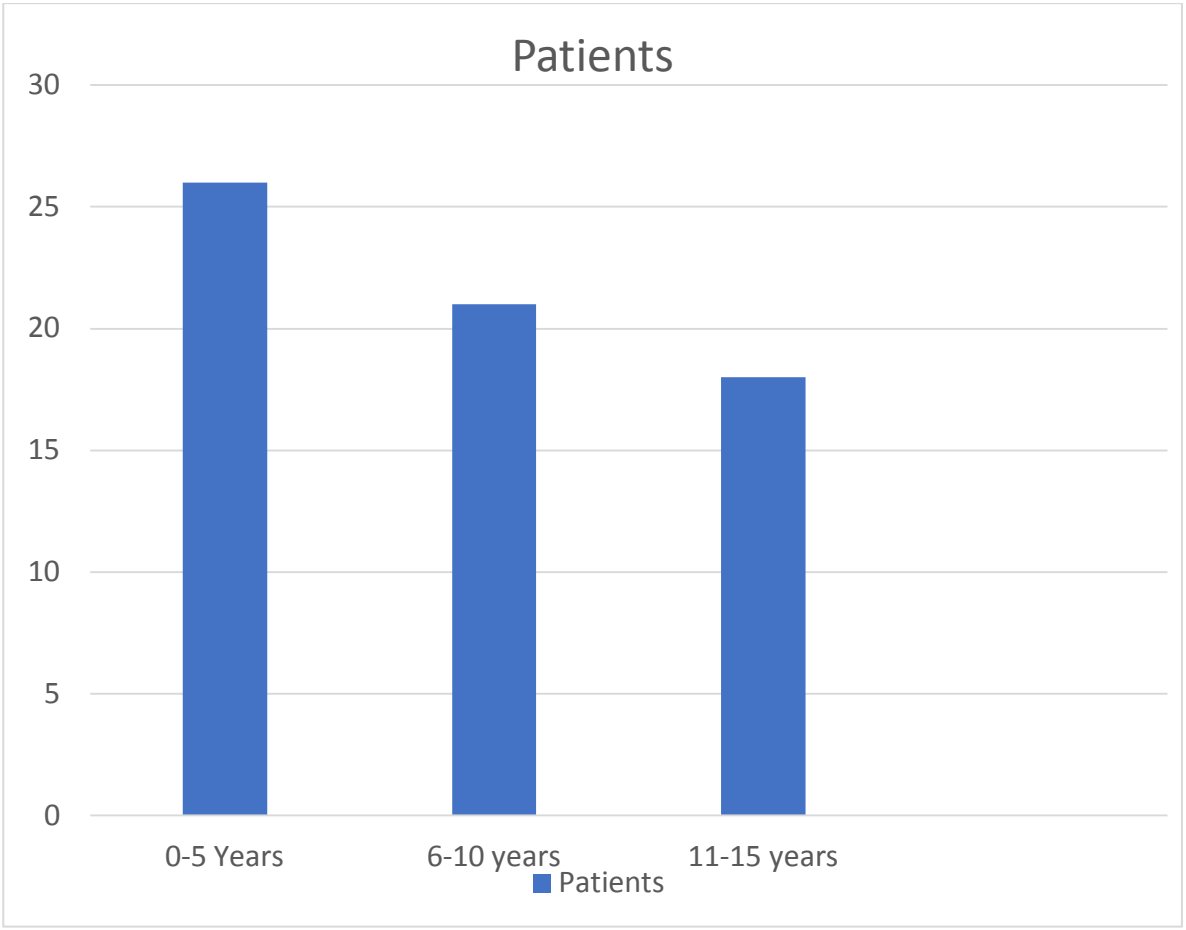

Chart 2: Age distribution of patients

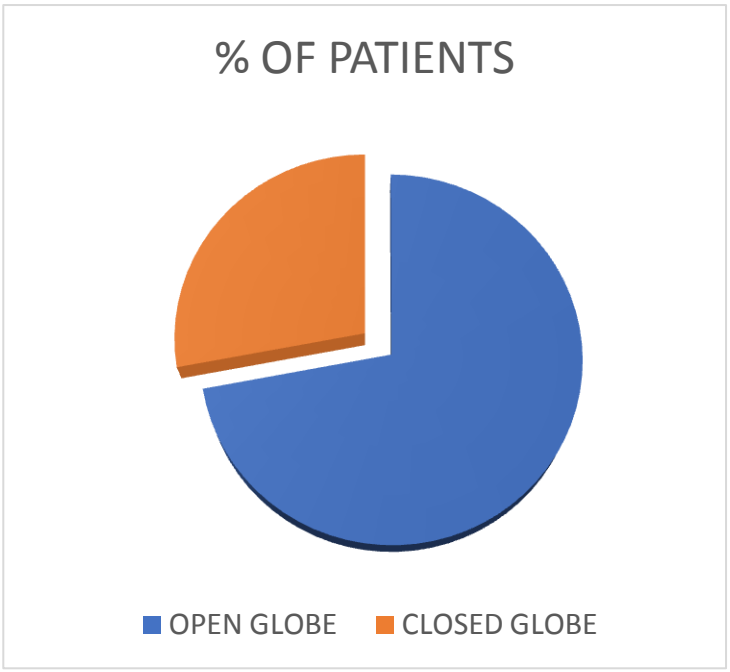

Chart 3: Proportion of Open and Closed globe injuries

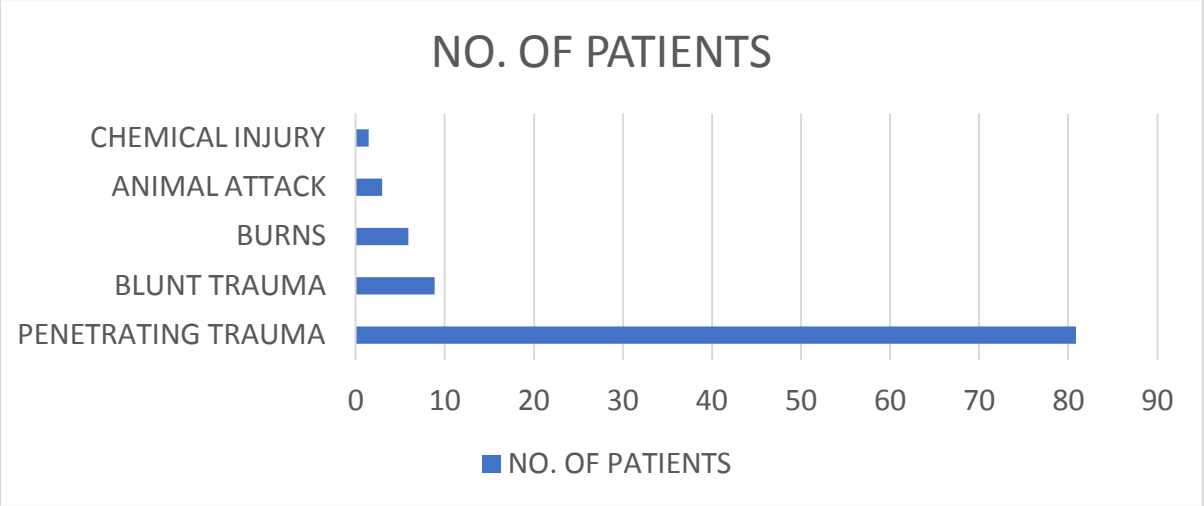

Chart 4: Mode of injury

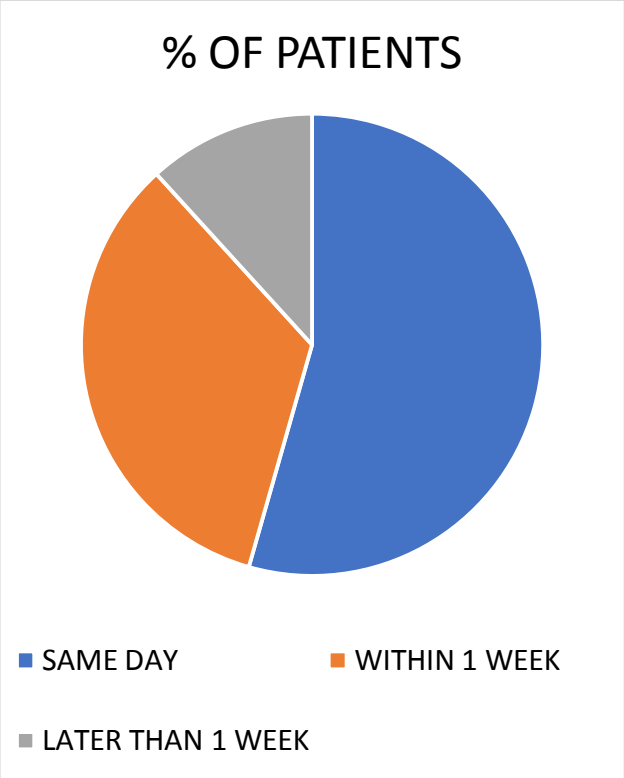

Chart 5: Time of presentation

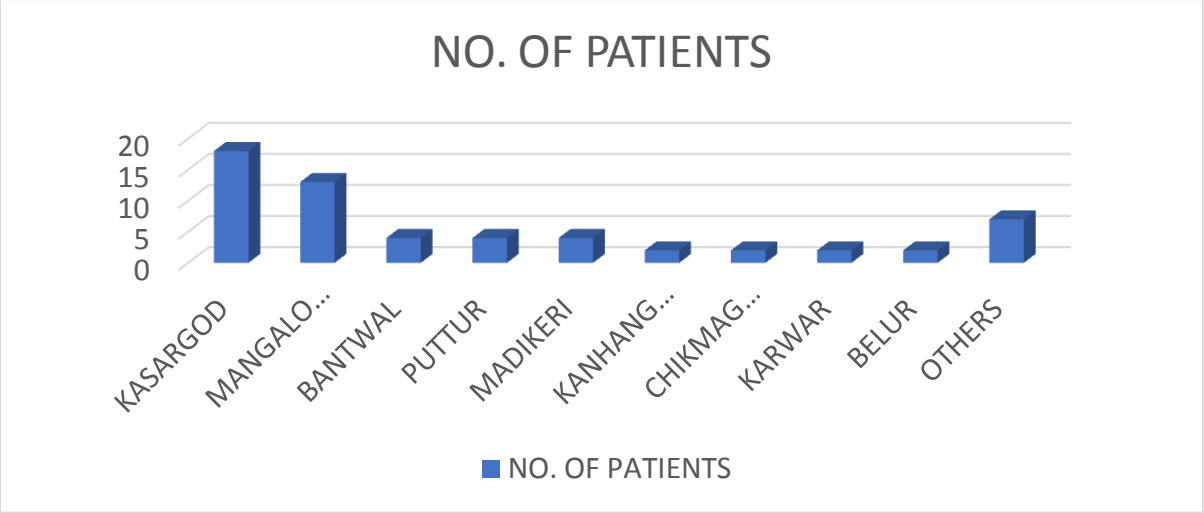

Chart 6: Geographical distribution of patients

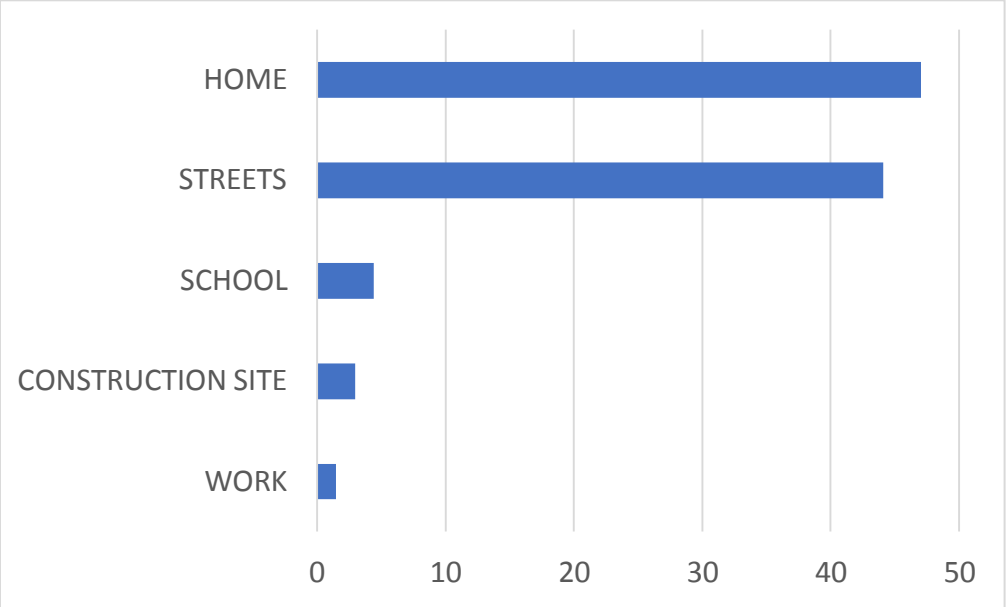

Chart 7: Place of injury

CORNEA	**42**	**61.76%**
SCLERA	**6**	**8.82%**
LENS	**12**	**17.64%**
RETINA	**4**	**5.88%**
ADNEXA	**7**	**10.29%**

Table 1: Structures involved in the injury

COMPLICATIONS	NO. OF PATIENTS
TRAUMATIC CATARACT	12
ENDOPHTHALMITIS	9
RETINAL DETACHMENT	7
PTHISIS BULBI	10
APHAKIA	7

Table 2: Complications following trauma

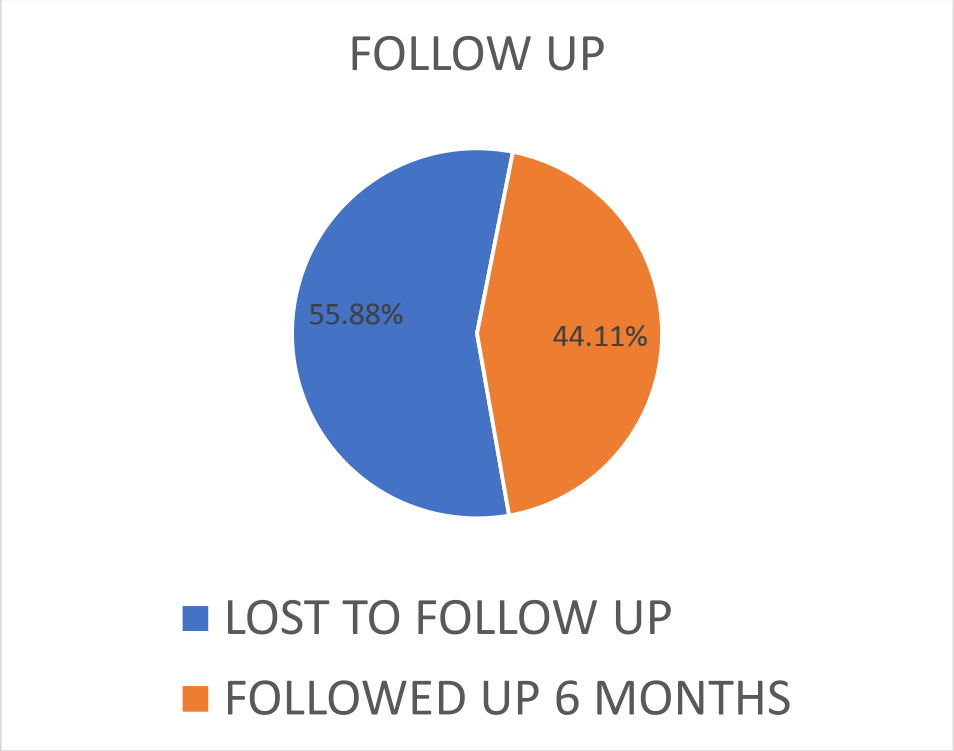

Chart 8: Proportion of patients followed up

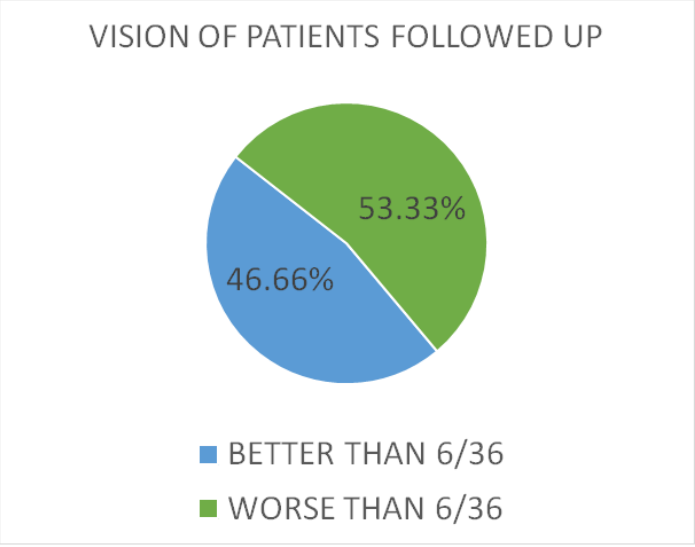

Chart 9: Visual outcomes in the followed up patients

IV. Discussion

Childhood ocular trauma is more common in developing countries due various reasons such as lack of protective equipment, lack of supervision of children and children being employed at a much younger age in construction activities, factories, agriculture etc.[4]

In our study, children between the age of 0-5 years were most prone to ocular injuries. Qayum et al reported the most common age group to be 2-6 years in their study.[1] Other studies showed that the age group of 5-10 years was more commonly affected.[3,4,6]Males were also reported to be more commonly injured than females and this was echoed in most other similar studies.[2.3.4,5,6,7,8] This is attributed to the fact that more freedom is given to boys to spend time and play outside while girls tend to be more strictly supervised. In many cases, ocular trauma in girls may also remain unattended.[5]

Our study showed that a little over half the patients presented on the day of injury while almost one third of patients presented within one week of injury. Chakraborti et al found that 52% of their patients presented within 24h while 16% presented within 72h.[3] Narang et al reported 45.8% patients presented within 24h and 18.06% within 72h.[9] We also found that most patients who went on to develop endophthalmitis had presented within 48h of the injury. This tells us that the later the patient presents to the hospital, the greater likelihood of developing infections.

Most serious ocular injuries that require admission and surgical intervention were found to be penetrating injuries, followed by blunt trauma, burns and chemical injuries. Hence the majority of cases in our study were penetrating injuries. A similar result was found in the study conducted by Singh et al.[5] This can be attributed to the fact that seemingly minor injuries and blunt injuries are not commonly brought to immediate medical attention. However, MacEwen et al found the most common injuries to be blunt trauma.[8]Puodziuviene et al found that most patients in their study had closed globe injuries.[6]

Home was found to be the most common place of injury in our study and this was consistent with many other studies.[2,3,6,7,8] The prevalence of ocular injuries occurring at home could indicate the lack of supervision of children at home and a greater need for child proofing of the domestic environment.

In our study, most patients were lost to follow up. Among the patients who followed up, almost half the patients had visual acuity better than 6/36. This was consisted with other studies.[1,9]

Personnel in primary health care centers must be trained in the initial management of ocular trauma, especially chemical injuries.In spite of prompt treatment, most patients are lost to follow up. Awareness about the seriousness of ocular trauma must be improved.

V. Conclusion

Children, owing to their curious nature and poor regard for personal safety, are more prone to ocular trauma. Preventive measures such as better supervision of children at home and in school, child proofing of the domestic environment and better education can reduce the incidence. Laws to ban the use of firecrackers can greatly help in the reduction of ocular morbidity.Prompt investigation and treatment improves visual outcomes

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