

Epidemiological study of ocular trauma in SNMC and HSK hospital Bagalkot

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Abstract

Aim: To study the epidemiology of ocular trauma in a medical college hospital in North Karnataka region.

Materials and Methods: Demographic data, detail history and ocular examination were done for all the patients who presented to our hospital between the periods of August 2016 to April 2017 with any ocular trauma. Data were collected and analyzed using Open- Epi software.

Result: 104 patients presented to our hospital during the time period of 9 months. The mean age of trauma was 32.78 with SD 16.97. Male (65.38%) were more affected than female (34.61%). 57.69% were from rural and 42.3% were from urban. Ocular trauma mostly occurs between 30-50 years (41.3%). Home, road and field were the most common location of ocular injury. Foreign body, stick and lime were the most common offending agent. The association between age of ocular trauma and location of injury and occupation was clinically significant with p value 0.05 and 0.041 respectively. The association between gender and location of injury was clinically significant with p value 0.0013 but occupation and gender of ocular trauma was clinically not significant with p value 0.08.

Conclusion: Considering the prevalence, middle aged men are more vulnerable to ocular trauma mostly while working at field or driving. Prognosis might be challenging. Appropriate education for eye protection and use of safety measures, would help in reducing ocular morbidity. Educating for timely treatment and intervention after injury is helpful for saving vision.

Keyword: Epidemiology, Ocular trauma, Rural.

Introduction

Ocular trauma is one of the major causes of blindness and disabilities in developing countries, though it is preventable in majority of cases. The current study aimed to identify the prevalence and epidemiology of ocular trauma, which has a vital role in planning for reduction of their prevalence. Ocular trauma causes a serious health burden. A number of studies on eye injuries have been reported in literature. But these studies focus on specific types of trauma, have a small sample or were conducted in industrialized countries but our study was done in general population attending tertiary eye care unit.¹⁻⁴

Materials and Methods

This was a prospective study of sample size of 104 patients, who attended our hospital during the period of August 2016 to April 2017 with any ocular trauma. The Ethical committee of our Institute approved this study and it met the criteria of Helsinki Declaration on human experimentation. The written informed consent was taken from individual patients in their own language.

Personal information and detailed history was taken including age, gender, type of injury, ocular structures involved, time interval between the injury and presentation. All patients underwent ocular examination which included visual acuity, anterior segment examination by slit lamp (Haag Streit), fundus examination was done using 90 diopter lens and IOP measurement was done.

Visual acuity of each eye was tested with Snellen's visual acuity chart. The projection and perception of light was tested with a well-focused torch light.

Minor injury of lid and adnexal tissue was repaired under local anaesthesia for adult patients and for children under sedation or general anaesthesia. Patients were followed up after 24 hours, 1 week and 6 weeks.

We classified intraocular injuries according to Birmingham Eye Trauma Terminology (BETT)

A person with open globe was admitted and operated under local anaesthesia at the earliest. The cornea and sclera were sutured using 10/0 nylon sutures. We did not remove any damaged part of the lid or anterior segment of the eye. In the case of traumatic cataract, we removed cataract, implanted an intraocular lens. During their postoperative visits, vision was noted as presented as well as with the best correction.

The data was collected on a pre-tested form. The information was entered on a spread sheet using Microsoft Excel. We conducted a univariate analysis of the parametric method and used Statistical Package for Social Studies version 18 (SPSS).

Result

Out of 1074 patients who presented to Ophthalmology OPD, SNMC & HSK Hospital, Bagalkot, 104 patients had ocular/orbital trauma during the time period of 9 months. Males (65.38%) were more affected than females (34.61%). 57.69% were from rural and 42.3% were from urban.

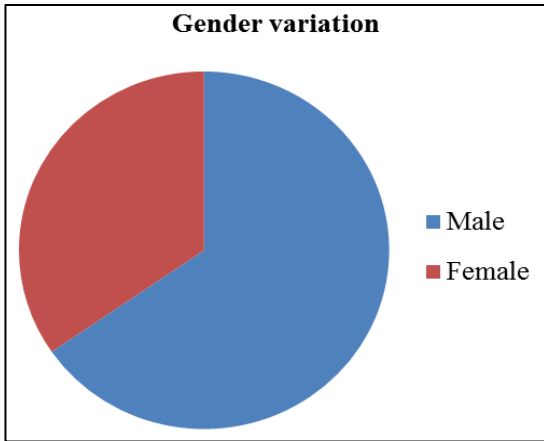


Fig. 1: Pie graph showing gender variation

Among all the patients 57.69% patients belonged to rural area and 42.3% belonged to urban area.

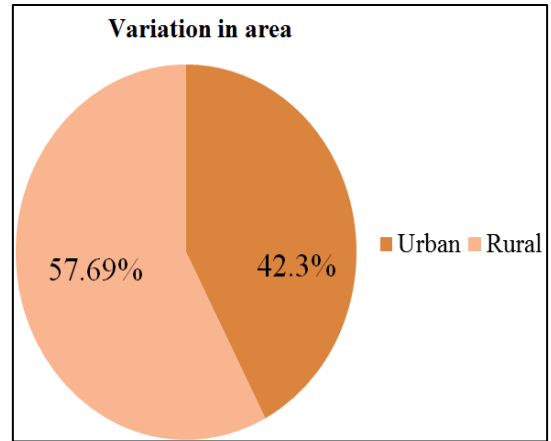


Fig. 2: Pie graph showing distribution of ocular trauma

The mean age of trauma was 32.78 years with SD 16.97. Ocular trauma mostly occurred between 30-50 years (41.3%).

18.26% were between 1-15 years, 28.24% were between 15-30years, 11.53% were >50 years.

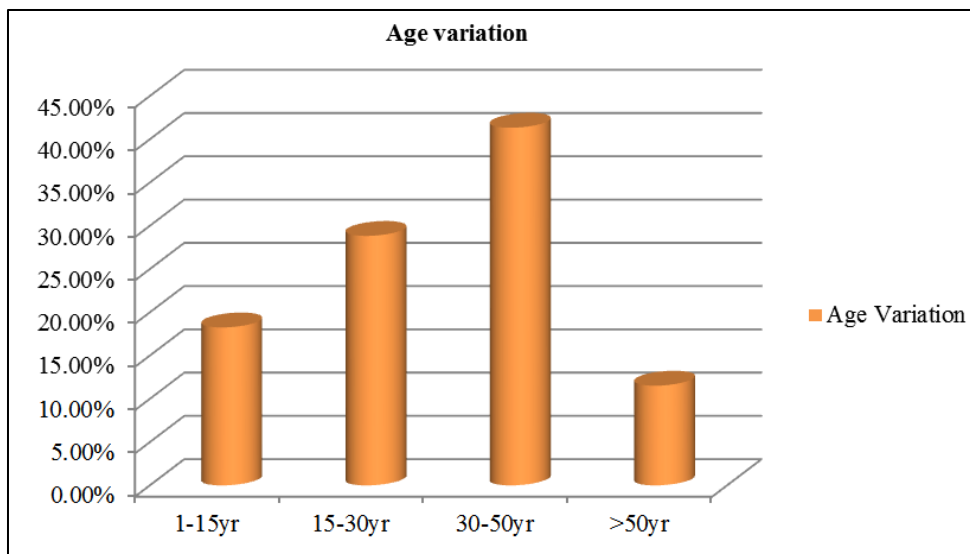


Fig. 3: Bar graph showing age variation in ocular trauma

Table 2: Distribution of visual acuity at the time of presentation

Visual acuity at presentation	Number	Percentage
6/6-6/18	61	58.65%
6/18-6/60	20	19.23%
6/60- CF @ 1mtr	14	13.46%
CF@1mtr-PL +ve	6	5.7%
Unable to measure	3	2.8%

Majority of the cases(58.5%) had visual acuity between 6/6-6/18,19.23% had visual acuity between 6/18-6/60,13.4% had 6/60-CF at 1meter,5.7% had CF at 1 meter to PL+ve and only in 3 patients visual acuity was not recorded due to severe lid edema.

Table 3: Showing clinical finding at the time of presentation

Closed globe injury	Open globe injury
Total –81(77.8%)	Total Penetrating injury-23 (22.1%)
1. Superficial lid injury-11(10.5%)	1. Zone I-13(12.5%)
2. Lid tear-7(6.7%)	2. Zone II-7(6.7%)
3. Subconjunctival hemorrhage-19 (18.2%)	3. Zone III-3(2.8%)
4. Conjunctival FB- 8(7.6%)	
5. Corneal FB-13(12.5%)	
6. Chemical injury-5(4.8%)	
7. Epithelial defect-14(13.4%)	
8. Corneal ulcer-3(2.8%)	
9. Traumatic optic neuropathy-1(0.9%)	

The categories of injury showed that 81(77.8%) had closed globe injury and 23(22.1%) had open globe injury. Among the closed globe injury subconjunctival haemorrhage (18.2%) was the most common finding followed by epithelial defect (13.4%). The open globe injury was classified by BETT, among it zone I (12.5%) injury was the most common.

Home, road and field were the most common location of ocular injury. Foreign body, stick, lime and stone were the most common offending agent. Orbital trauma occurs most commonly among farmer followed by student, house wife, and driver in decreasing order.

Between 1-15 years age group most common location of injury were school (54%) and play ground (46%). In 15 -30 year age group home was the most common location of injury followed by road (25.8%). In 30-50 years age field (37.2%) was the most common location of injury followed by home (32.5%) and road (25.8%) in decreasing order. In patients more than 50 years, field (71.4%) was the most common location of injury.

The association between age of ocular trauma and location of injury was clinically significant with p value 0.05.

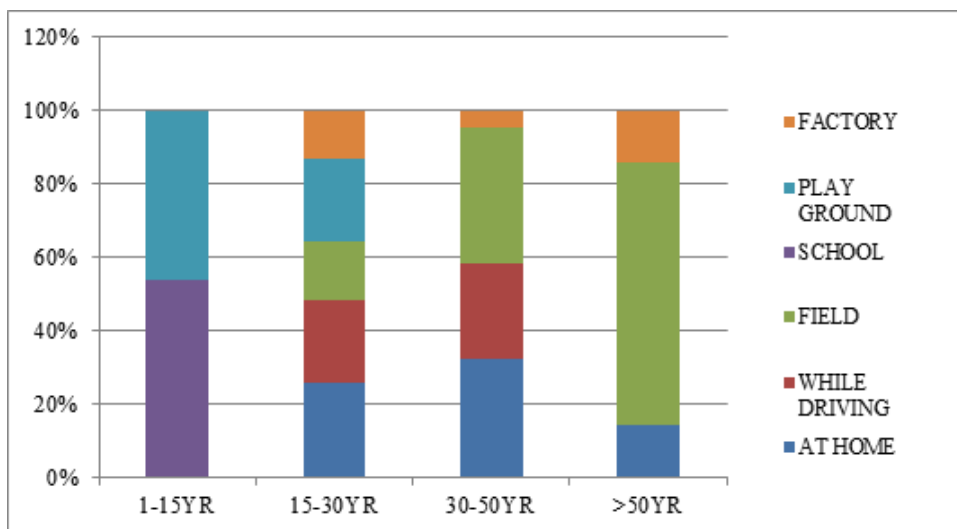


Fig 4: Bar graph showing correlation of location of injury with age

Among 1-15years (100%) and 15-30 year (35.4%) age group most of them were students. In between 30-50 years (34.8%) and >50 years (64.2%) most of them were farmers. The association between age of ocular trauma and occupation was clinically significant with p value 0.041.

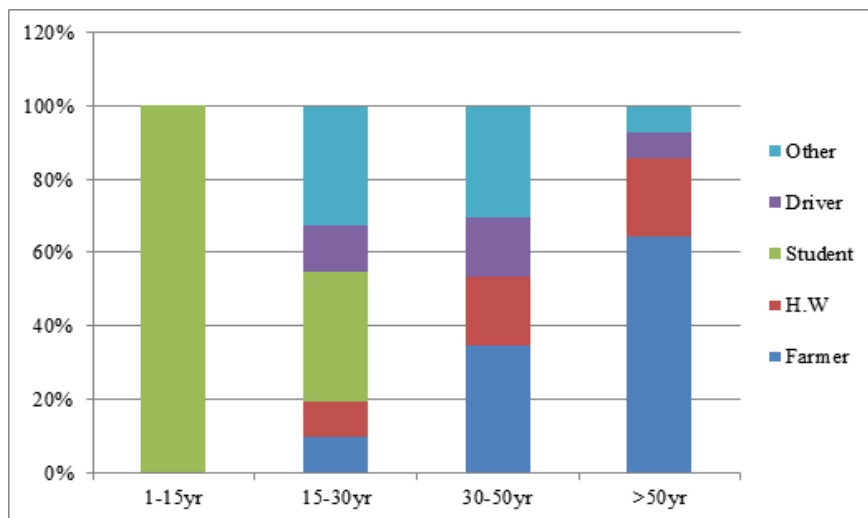


Fig. 5: Bar graph showing correlation of age with occupation

Table 4: Showing correlation between gender and location of injury

Location of injury	Male	Female
At home	14(20.58%)	15(41.6%)
While driving	15(22%)	4(11.1%)
Field	24(35.29%)	7(19.4%)
School	3(4.4%)	4(11.1%)
Play ground	8(11.7%)	5(13.8%)
Factory	4(5.8%)	1(2.7%)

Most common location of injury among male was field (35.29%) followed by road (22%) and among female most common location was home (41.6%).The association between gender and location of injury was clinically significant with p value 0.0013.

Table 5: Showing correlation between occupation and gender

Occupation	Male	Female
Farmer	23(33.8%)	4(11.1%)
H.W		14(38.8%)
Student	15(22%)	9(25%)
Driver	15(22%)	0(0%)
Teacher	1(1.4%)	2(5.5%)
Clerk	2(2.9%)	1(2.7%)
Factory worker	3(4.4%)	1(2.7%)
Cooley	4(5.8%)	1(2.7%)
Others	5(7.3%)	4(11.1%)

Most common occupation among male with ocular trauma were farmer > student > driver. Most common occupation among female were home maker > student. Correlation between occupation and gender of ocular trauma was clinically not significant with p value 0.08.

Discussion

In this retrospective study of 104 patients presenting after ocular trauma the prevalence of ocular trauma in this study was 0.09%, majority of the patients were males (65.38%), M: F is 1.8:1. This could be due to involvement of male in outdoor activities, similar observation was noted by Rafindadi A et al. (2013), Vats S et al. (2008) and Soyelu M. et al. (2010).⁵⁻⁷

Average age of presentation was 32.78 years with SD 16.97 years, with range from 1 year to 70 years and most of them were between 30-50 years (41.3%), but study done by Rafindadi A et al. (2013) among 142 patients over periods of 2 years reported that, most common age of presentation was between 16-30 years (33.1%), followed by age group 0-15 years (32.4%). Even study done by Soyelu M. et al. (2010) most common age group was between 0-15 years. This variation is because, majority of the study population were student who were educated enough to consult a doctor after an ocular injury. Education and preventive method at working environment and school may reduce the prevalence of the ocular injury.^{5,6}

Most common location of injury was field followed by road as majority of patient were farmer by occupation followed by student and driver. Soyelu M. et al. (2010) on ocular trauma in Turkey reported that ocular trauma among 250 patients, most (72%) patient had open globe injury and most of them had occurred on the street. The reason for this differences was most of our patients were from rural area who were farmer by occupation as agriculture was the main form of earning and the second reason was high prevalence of road traffic accident in Turkey which led to ocular injury. Study done by Ostadi-Moghadan et al. in Mashhad reported 28.8% ocular injuries among factory worker, due to lack of sufficient precautionary measures.^{5,8}

In our study most common offending agent were foreign body followed by stick, lime and stone in decreasing order. Study done by Mccarty CA et al.

showed that stick and stone were the most common offending agent, but in contrary Soyelu M. et al. (2010) found that most common offending agent was metallic objects (72% injury was open globe injury). Study done by Poon et al in rural area of Tanzania showed that wood chips was the most common offending agent, observed in worker and farmers.^{5,9,10}

In our study we found a significant correlation between age of ocular trauma and location of injury, in paediatric age group most common location of injury was school and play ground, while Thompson et al. reported that most of injuries in paediatric population took place at home. This difference was because playing behaviour of Indian children was different from Australian children.¹¹

Conclusion

Considering the prevalence, middle aged men are more vulnerable to ocular trauma mostly while working at field or driving. Prognosis might be challenging. Appropriate education for eye protection and use of safety measures, would help in reducing ocular morbidity. Educating for timely treatment and intervention after injury is helpful for saving vision.

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