Profile of ocular injuries among Road traffic accident victims at a tertiary care hospital in Goa: A cross sectional study

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Abstract—*A large percentage of ocular trauma is secondary to road traffic accidents. Most accidents and the associated eye injuries can be prevented with adherence to safety regulations. The present study was conducted to study the clinical profile of ocular injuries among road traffic accident victims presenting to a tertiary hospital in Goa. A hospital-based descriptive study was conducted among 312 consecutive patients of ocular trauma secondary to road traffic accidents who presented to the tertiary hospital. Detailed history and examination was done and findings were entered in a structured proforma. Observations were expressed as simple percentages and proportions. Among study population, 89.74% patients were males, 63.78% were below the age of 40. Among participants, 58.33% were driving two-wheelers at the time of accidents. And 83.97% presented to the hospital within 6 hours of the accident. Out of 312 participants, 75% were under the influence of alcohol and 41.98% were not following safety regulations at the time of accident. Among ocular injuries, 95.83% patients presented with closed-globe injuries while 4.16% with open-globe injuries. Most commonly involved ocular structure were the lids followed by conjunctiva, lens, iris, anterior chamber and cornea. After successful treatment 82.69% achieved vision better than 6/12 at the end of 6 weeks. It is concluded that road traffic accident related ocular injuries are common in males in the productive age group. By adhering to the safety regulations these injuries could be reduced to a considerable amount*.

Keywords: Ocular Trauma, Road Traffic Accidents.

I. INTRODUCTION

Ocular trauma as a cause of ocular morbidity is an important public health problem in developing countries like India. As per global estimates there are around 55 million cases of ocular trauma in the world every year[1]. Ocular trauma is also the most common cause of unilateral blindness globally.[2] A very large proportion of ocular injuries are as a result of road traffic accidents. Road traffic accidents have been on a rise in our country since past few decades as a result of population explosion, increase in the number of vehicles on the road as well as rash negligent rash driving. Most cases of road traffic accidents and their associated ocular injuries can be arrested if safety regulations are followed.

The present study was conducted to study the pattern of eye injuries associated with road traffic accidents presenting at a tertiary care hospital considering the importance of the topic and lack of scientific data in Goa.

II. METHODOLOGY

A hospital based descriptive study was conducted among 312 consecutive ocular trauma, Road traffic accidents patients followed by road traffic accidents who presented to the Department of Ophthalmology Goa Medical College and Hospital during the time period between September-August 2014. Institutional Ethics Committee approval was obtained before conducting the study. Informed

consent was obtained from the study participants. All patients who presented with eye injuries following road traffic accidents were enrolled in the study. Patients who had life threatening injuries and unable to respond owing to the severity of their condition were however excluded from the study. The data so collected was entered into pre-tested study proforma which included history, clinical examination such as visual acuity, slit-lamp biomicroscopy, fundus examination, intraocular pressure measurement. Radiological investigations such as B-scan ultrasonography and CT scan were requested as and when found necessary. The patients were given appropriate medical or surgical treatment. Patients were followed up at regular intervals till a period of 6 weeks.

The data so collected was entered into Microsoft Excel version 2010 and statistically analyzed using SPSS version 22 (trial version) and expressed as simple percentages and proportions.

III. RESULTS

Most of the patients i.e. 112 (35.89%) patients belonged to the young and productive age group between 21-40 years, followed by 87 (27.88%) aged 20 years or less, 59 (18.91%) between 41-60 years and 54 (17.30%) more than 60 years. Thus most of the affected patients were young and below 40 years of age (63.78%). (Table 1)

Table 1
Age wise distribution of study participants (N=312)

S. No.	Age (in years)	Number	Percentage (%)
1	Up to 20	87	27.88
2	21-40	112	**35.89**
3	41-60	59	18.91
4	>60	54	17.30
	Total	312	100

Majority i.e. 280 (89.74%) patients were males and only 32 (10.26%) patients were females.

Majority i.e. 182 (58.33%) were riding two wheelers while 130 (41.66%) were driving four wheelers at the time of the accident. A large number 234 (75%) were reportedly driving under influence of alcohol at the time of accident. 131 (41.98%) were not following other road safety measures at the time of accident. (Table 2)

Table 2
Distribution of study population as per variables related to RTA (N=312)

S. No.	Variables related to RTA		Number	Percentage (%)
1	Type of Vehicle	Two Wheeler	182	58.33
		Four Wheeler	130	41.66
2	Influence of Alcohol	Yes	234	75
		No	78	25
3	Following road safety measures	Yes	181	58.02
		No	131	41.98

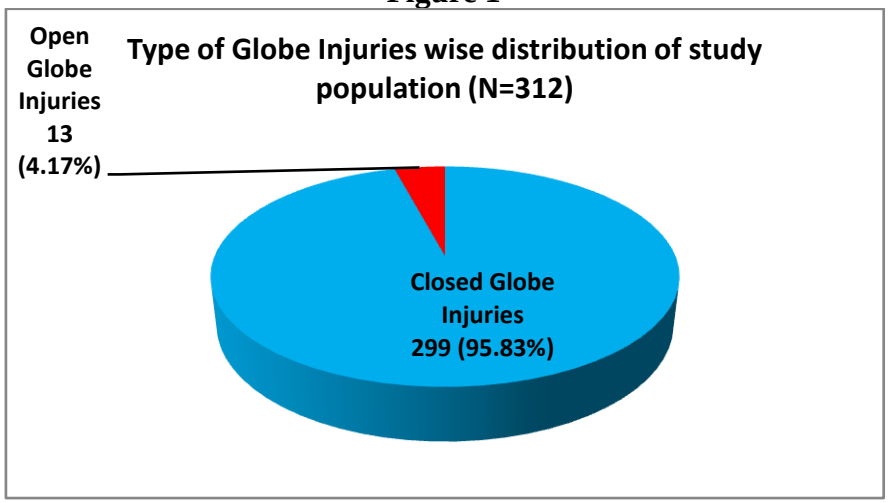
Majority i.e. 262 (83.97%) patients presented to the emergency department within 6 hours of the accident. (Table 3)

Table 3
Distribution of patients according to the time lag between accident and presenting to emergency

S. No.	Time between injury and presentation	Number	Percentage (%)
1	<6 hours	262	**83.97**
2	6-12 hours	37	11.85
3	12-24 hours	10	3.20
4	>24 hours	3	0.96
	Total	312	100

Majority of the patients i.e. 299 (95.83%) developed closed globe injuries as a result of the accident, while 13 (4.16%) developed open globe injuries. (Figure 1)

Figure 1



A distribution of injuries affecting the anterior and posterior segment is depicted in Table 4. The most common ocular structure to be injured was lids (41.98%) patients had injuries such as lid lacerations, ecchymosis, lid avulsions and abrasions. The second most common structure to be injuried was the conjunctiva (34.93%) followed by lens i.e. 63 (20.19%), iris i.e. 47 (15.06%) and cornea i.e 32 (10.25%). Orbital fractures were seen in 22 (7.05%) of the patients. (Table 4)

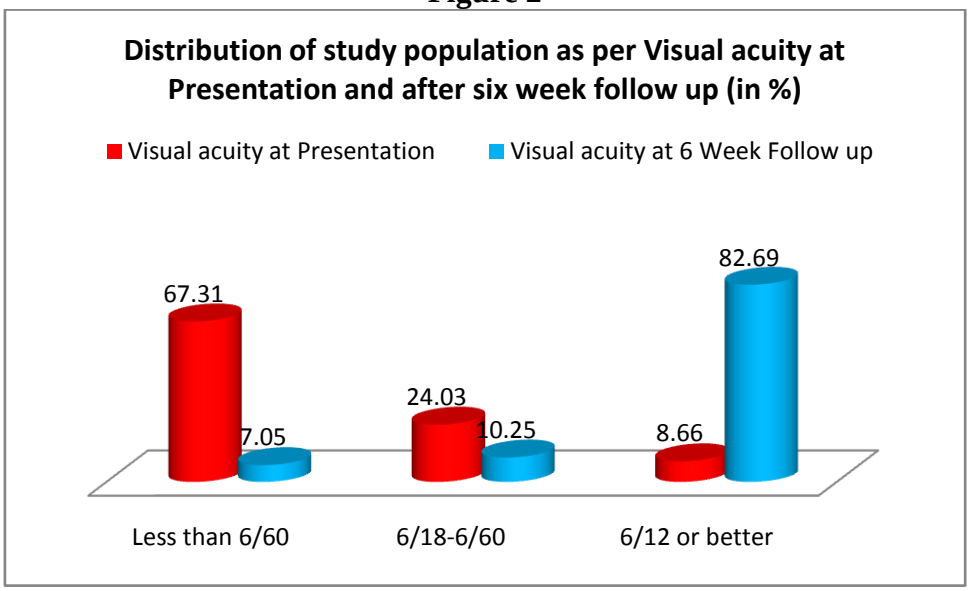
Table 4
Distribution of study population as per type of ocular injuries (N=312)

S. No.	Structure involved		Number	Percentage (%)
1	Anterior segment	Lids	131	41.98
		Conjunctiva	109	34.93
		Cornea	32	10.25
		Iris	47	15.06
		Anterior chamber	37	11.85
		Lens	63	20.19
		Orbital fracture	22	7.05
2	Posterior segment	Retinal detachment	15	4.80
		Traumatic optic neuropathy	25	8.01
		Vitreous hemorrhage	7	2.24
		Choroidal injuries	2	0.64
		Optic nerve avulsions	1	0.32

At the time of presentation, most patients i.e. 210 (67.31%) had visual acuity less than 6/60, whereas 75 (24.03%) had visual acuity between 6/18-6/60 and only 27 (8.66%) had visual acuity of 6/12 or better. (Figure 2)

At 6 weeks follow up 258 (82.69%) had vision better than 6/12, 32 (10.25%) had visual acuity between 6/18-6/60 and only 22 (7.05%) had visual acuity of less than 6/60. (Figure 2)

Figure 2



IV. DISCUSSION

Out of the total 312 patients who presented to the Department of Ophthalmology Goa Medical College with ocular injuries secondary to road traffic accidents, most i.e. 35.89% patients were in the age group between 21-40 years , while the least were in patients aged more than 60 years i.e. 17.30%; the reason being that most individuals in the age group between 21-40 years constitute the productive age group, and are actively involved in outdoor activities and driving, while it is not very common for persons aged more than 60 years to be involved in activities such as driving. Observation of present study are comparable with those reported by Das S et al[3] in a similar study where most individuals who presented with road traffic injury related eye injuries belonged to the age group between 21-30 years and likewise Dhasamana et al[4] who reported that most such patients belonged to the age group between 21-40 years.

Majority of the patients (89.74%) who presented with road traffic accident related eye injuries were males while a very few (10.25%) were females. Other studies done in different states of India have also shown similar results. A study done in Rajasthan by Arora AS et al[5] showed a male: female ratio of 2.5: 1, while Das S et al[3] in Assam showed that 75% patients were males. A study done by Muralidhar P et al[6] in South India showed a male: female ratio of 19: 1. A similar study was conducted by Cao et al[7] in China also showed that majority of the patients who presented with road traffic accident related eye injuries were males. The reason for this being that most of the times it is the males that are involved in outdoor activities. Also a higher prevalence of alcohol dependence and driving under the influence of alcohol which is more common among males could be a contributing factor. In present study, two-thirds (75%) patients were under the influence of alcohol at the time of accident. More than half (58.33%) cases were driving two wheelers while the rest were driving four wheelers at the time of accident. In

many other studies[3,8] it has been noted that majority of road traffic accidents are among two wheeler riders as compared to four wheeler drivers.

It was also observed in present study that 41.98% patients were not wearing seatbelts, not using helmets or driving rashly at the time of accidents. This shows that large percentage of drivers in the State of Goa do not adhere to traffic rules and regulations. Strict implementation of traffic rules is thus very important and may help reduce accidents and related injuries considerably.

Majority of the cases i.e. 83.97% patients presented to the Department within 6 hours of the accident, while only 0.96% presented after 24 hours since the accident. This is a very positive finding as it shows that there is an efficient medical transportation facility in cases of emergencies such as accidents in Goa e.g. EMRI 108 service.

Closed globe injury was seen in majority of the patients i.e. 95.83%, while only 4.16% had open globe injuries. The most common ocular structure to be injured was lids (41.98%) patients had injuries such as lid lacerations, ecchymosis, lid avulsions and abrasions. The second most common structure to be injuried was the conjunctiva (34.93%) with injuries such as subconjunctival hemorrhage, conjunctival tears and conjunctival foreign bodies, followed by lens, iris and cornea. Orbital fractures were seen in 7.05% of the patients. These findings are comparable to those found by Oum BS et al[9] who reported that 70% of the patients had subconjunctival hemorrhages and 50% had lid ecchymosis. A study conducted by Kulkarni PR et al[10] also found almost similar results.

Most of the patients at the time of presentation had a visual acuity of less than 6/60. However after 6 weeks majority patients i.e. 82.69% had a visual acuity between 6/12-6/6. This shows successful outcomes of treatment by the treating Ophthalmologists at Goa Medical College and Hospital.

V. CONCLUSION

Majority of patients who presented with road traffic accident related eye injuries were males in the active and productive age group between 21-40 years. Rash driving, driving under the influence of alcohol, not wearing seat belts and helmets were some of the common factors with ocular injuries among road traffic accident victims. Strict and consistent implementation of road safety regulations can help prevent accidents and associated injuries considerably and go a long way in reducing the disability adjusted life years (DALY) of individuals in the young and productive age group..

CONFLICT OF INTEREST

None declared till now.

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