



THE EPIDEMIOLOGY OF OCULAR TRAUMA IN GAYA DISTRICT AND ADJACENT AREAS

Ophthalmology

Dr. Ashutosh Kumar Anand*	M.B.B.S., M.S. (Ophthal.), Senior Resident, Department of Ophthalmology, Anugrah Narayan Magadh Medical College and Hospital, Gaya, Bihar. *Corresponding Author
Dr. [Prof.] Arjun Choudhary	M.B.B.S., M.S. (Ophthal.), Professor & Head of Department, Department of Ophthalmology, Anugrah Narayan Magadh Medical College and Hospital, Gaya, Bihar.
Dr. Debarshi Jana	Young Scientist (DST), Institute of Post-Graduate Medical Education and Research, A.J.C. Bose Road, Kolkata-700020, West Bengal, India.

ABSTRACT

Aim: The aim was to determine the epidemiology of ocular trauma in Gaya District and adjacent areas from February 2019 to January 2020.

Materials and Methods: This prospective, hospital-based, observational study was conducted at the Ophthalmology and Emergency Outpatient Departments of ANMMCH, Gaya, Bihar. Detailed history was taken, incidence of injury in different months, incidence of non-occupational injury and incidence of occupational injury etc.

Results: Out of 455 patients, 283 (60.2%) were male and 172 (39.8%) were female. Overall male-to-female sex ratio was 3:1. Patients were aged between 0 and 75 years (mean: 35.38 ± 11.69 (male) and 56.88 ± 17.44 (female)). The most vulnerable age group was 16–25 years. In this study cases were particularly seen in summer than winter and rainy season due to more outdoor activities in summer than in winter and rainy season. It was also seen that non occupational injury was more than occupational injury and in nonoccupational injury most cases was domestic [30%] followed by crackers, playground etc. among occupational injuries highest incidences were seen among construction worker [40%] followed by chemical factory workers [34%], blunt injuries predominate [56%] and only 17% by sharp objects. In majority of cases traumatic agent was solid in nature and most common mode of injury was projectile in nature. Most common ocular part involved was ocular adnexa 83% of cases followed by globe injury. Kaur and Agarwal study revealed that 78.94% of injuries were open globe injury whereas AL-Mahrouki reported that 94% of ocular injuries were closed globe.

Conclusion: The study highlights epidemiology of ocular trauma in Gaya district and its adjacent areas. Based on this study services recommended are public should be educated about importance of eyes.

KEYWORDS

Ocular trauma, pupillary reflexes, non-occupational injury etc.

INTRODUCTION

Ocular trauma is one of the most common and worldwide ophthalmological defect and problem encountered by mankind. Ocular trauma is a major cause of preventable monocular blindness and visual impairment in the world.^[1,2] Although it can be treated well with proper diagnosis, thorough check up and proper medication, yet the developing nations have not been able to tackle it in an appropriate manner. The reason lies in the paucity of knowledge and awareness among masses to get it treated or methods by which it can be prevented.

It mostly affects young productive population and therefore it has an immense socioeconomic importance.³ This is of-course a severe problem where the GDP and socioeconomic growth, development rests on the shoulder of youth.

Globally, there are approximately 1.6 million people who are blind from eye injuries, 2.3 million are bilaterally visually impaired, and 1.9 million have unilateral visual loss.^[4,5] It has been estimated that 90% of all ocular injuries are preventable.^[6] Hence the masses need to be aware of the devastating effects of ocular injuries that can prove fatal and deadly in the long run too, surmounting effects to getting visually impaired. Thus, prevention should form the basis of management of ocular trauma, and in order to formulate the preventive strategies, we need detailed epidemiological data. The climatic and geographical condition, population, and lifestyle of the societies with their cultural and socioeconomic condition influence the nature and cause of trauma.^[7,8]

The only national estimate regarding the Indian subcontinent is from a survey conducted from 1971–1974, where ocular trauma accounted for 1.2% of national blindness.⁹ An ideal data collection system for ocular injury should incorporate population-based comparisons using a known denominator; demographic data, details of injury, visual acuity (VA) at presentation and final outcome after appropriate management.¹⁰

This study is an attempt to study the various parameters like age, sex, occupation, seasonal changes that account for contracting the injury. It also tries to study how significantly and distinctly it presents itself in

various age groups.

MATERIALS AND METHODS

METHODS

A prospective, hospital based observational study was conducted in ANMMCH at Department of Ophthalmology, Gaya, India during February 2019 to January 2020 after taking ethical clearance from Institutional Ethics Committee, ANMMCH, Gaya.

Criteria of Inclusion

Patients who claimed ocular injuries in their diagnosis were taken for the study. Detailed demographic information such as age, gender, residential area, occupation, per capita family income, and education level of patients were noted.

Criteria of Exclusion

Any kind of birth injury or congenital ocular defect leading to visual defect were excluded from the study.

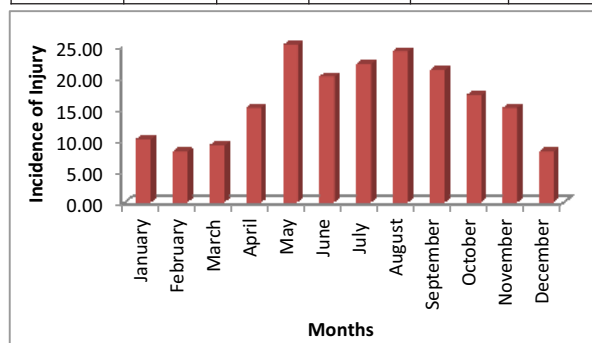
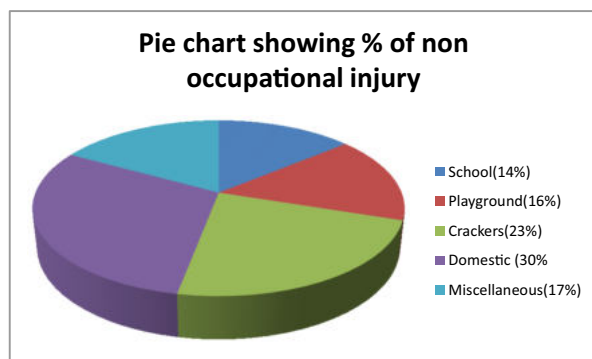
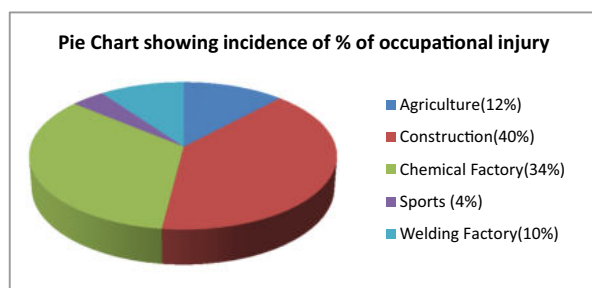
Examination of patients and maintenance of record

A thorough ocular examination was conducted in all patients which included visual acuity, pupillary reflexes, detailed slit lamp examination and fundus examination. The data was collected and entered in patients proforma. Visual acuity was graded according to WHO categories of visual impairment and ocular injury was classified as per BETT's classification. Then collected data was analyzed and entered in Microsoft excel spread sheet.

Then statistical analysis of data was done with SPSS (Statistical Package for Social Sciences) ver. 21.0. Specific history of trauma including date, time, place and seasonal predilection, nature of injury (mechanical or non-mechanical), circumstances of injury (occupational or non-occupational), and mode of injury (projectile object, fall, impact), persons condition at time of injury, and information about use of protective measures at the time of injury were carefully studied. All patients were examined by standard ophthalmological procedures to note the type, extent, and severity of injury. Structural and functional loss was noted. All the information was collected in a predesigned and pretested pro forma. $P < 0.05$ was taken as statistically significant.

OBSERVATION**Table 1 :Data of different age groups of male and female suffering with ocular injury**

Age group	Male	Mean	STDEV	%Male	Female	Mean	STDEV	%Female	Total (Male & Female)	Mean	STDEV
0-5	12.00	35.38	11.69	4.24	10.00	22.00	6	5.68	22.00	56.88	17.44
6-15	64.00	35.38	14.31	22.61	45.00	22.00	11.5	25.56	105.00	56.88	24.06
16-25	80.00	35.38	22.31	28.26	50.00	22.00	14	28.40	130.00	56.88	36.56
26-35	54.00	35.38	9.31	19.08	32.00	22.00	5	18.18	86.00	56.88	14.56
36-45	43.00	35.38	3.81	15.19	24.00	22.00	1	13.63	67.00	56.88	5.06
46-55	18.00	35.38	8.69	6.36	10.00	22.00	6	5.68	28.00	56.88	14.44
56-65	8.00	35.38	13.69	2.82	4.00	22.00	9	2.27	12.00	56.88	22.44
66-75	4.00	35.38	15.69	1.41	1.00	22.00	10.5	0.56	5.00	56.88	25.94

**Fig 1: Bar diagram showing the incidence of injury in different months****Fig 2: Pie chart showing incidence of non-occupational injury****Fig 3: Pie Chart showing incidence of % of occupational injury****DISCUSSION**

Ocular trauma is one of the major cause of avoidable blindness. Male preponderance is true for all age groups except for infants and elderly people.

High preponderance of ocular trauma can be explained by the increased outdoor activities, taking more part in adventurous games. They also indulge more in violence and rash driving and are more employed in factories and manual jobs. Our study also showed most vulnerable age group was between 16-25 years. Macewan et al reported that one out of five patients admitted to hospital were more than 15 years of age.

People belonging to rural background with lower educational level and low socioeconomic status are more affected by ocular trauma due to delay in seeking medical advice.

In this study cases were particularly seen in summer than winter and

rainy season due to more outdoor activities in summer than in winter and rainy season. Mackiewicz et al, Keklikci et al and Gyasi et al reported peak ocular injuries in summer months.

In this study it was also seen that that non occupational injury was more than occupational injury and in nonoccupational injury most cases was domestic [30%] followed by crackers, playground etc.

In this it was also seen that among occupational injuries highest incidences were seen among construction worker [40%] followed by chemical factory workers [34%].

In this study blunt injuries predominate [56%] and only 17% by sharp objects. This was consistent with Macewen et al. In majority of cases traumatic agent was solid in nature and most common mode of injury was projectile in nature.

In this study most common ocular part involved was ocular adnexa 83% of cases followed by globe injury. Kaur and Agarwal study revealed that 78.94% of injuries were open globe injury whereas AL-Mahrouki reported that 94% of ocular injuries were closed globe.

CONCLUSION

The study highlights epidemiology of ocular trauma in Gaya district and its adjacent areas. Based on this study services recommended are public should be educated about importance of eyes. They should be motivated for utilization of services in the event of trauma irrespective of gender. Mass health education and awareness about risk of ocular trauma, morbidity caused by delayed presentation, and need to adopt safety equipments such as goggles, visors, or preventive strategies should be focused, especially during travel, playground and at workplace.

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