

# Pattern of Ocular Trauma in Gusau, North West Nigeria

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## Abstract

**Background:** Ocular trauma is an important public health hazard especially in the developing countries. The objective of the study was to determine the pattern of ocular injuries in patients who presented at the eye clinic of Federal Medical Center, Gusau, Zamfara State, Nigeria. **Materials and Methods:** A prospective study was conducted between 1<sup>st</sup> January and 31<sup>st</sup> December, 2008. All consecutive, consenting patients with ocular trauma were interviewed with the aid of an interviewer-administered questionnaire and underwent a detailed eye examination. **Results:** There were 121 patients in the study with 101 (83.4%) males and 20 (16.6%) females. The most common location of ocular trauma was more on the road (32.2%); road traffic accident (RTA), followed by home/domestic injury (23.1%) and at work in 15.8%. The most common anatomical site of injury was the cornea (40.6%) followed by the lids (17.5%) and the iris (14%). **Conclusion:** In this study, RTA was the most common cause of ocular trauma followed by domestic injuries. There is need for community education on preventive measures such as use of safety seat belts while driving and importance of supervising playing children at home.

**Keywords:** Blunt injury, ocular trauma, penetrating injury

## INTRODUCTION

Globally, ocular trauma accounts for about 1.6 million people blind with a further 19 million people affected with monocular blindness.<sup>[1,2]</sup> Several forms of ocular trauma are avoidable causes of blindness and visual impairment.<sup>[3]</sup> Ocular trauma was initially described as a neglected issue<sup>[4,5]</sup> but has now been highlighted as a major cause of visual morbidity.<sup>[4,6]</sup> Ocular injuries have significant socioeconomic impact and are now considered as an important, preventable public health problem globally.<sup>[2]</sup> The male-to-female ratio is 4:1 worldwide<sup>[7-9]</sup> with open globe injuries said to be the most common form.<sup>[10-13]</sup> There is a geographical variation in the pattern of ocular trauma presentation<sup>[14]</sup> with the developing countries carrying the largest burden of ocular trauma.<sup>[15]</sup>

There has been no study on the pattern of ocular trauma in the study area. This study was designed to determine the pattern of ocular trauma in patients presenting to the department of Ophthalmology, Federal Medical Centre, Gusau, Zamfara State. The result would be used in advocacy and in designing preventive measures by appropriate authorities.

## MATERIALS AND METHODS

This is a prospective study conducted at the eye clinic of Federal Medical Centre, Gusau, Zamfara State, North-West Nigeria between January 1<sup>st</sup> and December 31<sup>st</sup> 2008. This hospital is a tertiary referral centre for ophthalmology and other specialties for patients living in the state and neighbouring villages and towns of adjoining states of Sokoto and Katsina States as at the time of the study. The patients with ocular trauma usually present directly to the eye clinic, and then consults were either sent to the eye clinic from the casualty department also or referred from other public and private hospitals. All consecutive, consenting patients with any form of ocular trauma were enrolled in the study. A semi-structured questionnaire was used to interview the respondents by the author. All patients underwent a comprehensive eye examination which included visual acuity (using the Snellen's chart), pen light, slit lamp examination and direct ophthalmoscopy, where it is possible. Ethical approval was obtained from the Ethics and Research Committee of the hospital. Informed consent was also obtained from each subject. Data were analysed using the Statistical Package for

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the Social Sciences version 16.0 software package (SPSS Inc., 2006, Chicago, Illinois, USA). Chi-square test was employed to test the significance of the differences where applicable. Statistical significance was set at  $P = 0.05$ .

## RESULTS

There were one hundred and twenty-one (121) subjects in the study with 101 males (83.4%) with male-to-female ratio of 5.1:1. The age ranged from 1 to 73 years with mean age of 29.8 (standard deviation  $\pm 18.2$ ) years. Table 1 shows the age distribution of the subjects.

The distribution of ethnicity of the subjects was Hausa (87%), Yoruba (9%) and Ibo (4%). The majority of the patients were Muslims (89.6%) while the remaining were Christians (10.4%). Considering knowledge of the few patients, 18 (14.8%) had tertiary education, 26 (21.5%) had secondary education, 42 (34%) had primary education and 35 (28.9%) had no formal education. Most of the patients were either artisans or were in school (26.5%). The occupation of the patients is shown in Figure 1.

The right eye was involved in 59 (48.7%) subjects, the left eye in 62 (51.2%) and the injury was bilateral in 10 (8.3%). Injury occurred on the road in 39 (32.2%), at home in 28 individuals (23.1%), at work in 19 (15.8%), at school in 18 (14.8%) and on the farm in 17 (14.1%). Age and sex did not affect the location at which the injury was sustained ( $\chi^2 = 0.16$ ,  $P = 0.758$  and  $\chi^2 = 0.39$ ,  $P = 0.092$ , respectively), but occupation was significantly associated with the location of injury ( $\chi^2 = 8.34$ ,  $P = 0.001$ ). Most injuries (77.8%) were due to blunt trauma; 16.1% eyes had penetrating trauma and 3.5% were affected by chemical burns while 2.6% eyes sustained perforating injury. Age, sex and occupation did not significantly affect the type of injury ( $\chi^2 = 0.07$ ,  $P = 0.586$ ,  $\chi^2 = 0.003$ ,  $P = 0.601$  and  $\chi^2 = 0.19$ ,  $P = 0.872$ , respectively).

Most of the patients (42.3%) presented within 24 h, 11.4% within 48 h, 8.6% within 72 h; and, 37.7% between 3 days and 1 week. During the first quarter of the year (January–April), there were 40 patients seen, the second quarter (May–August), there were 28 patients while the last quarter (September–December) had 53 patients.

Figure 2 shows the distribution of the anatomical sites of trauma among subjects. The cornea in 49 (40.6%) subjects and the lids in 21 (17.5%) were the two most common sites. Age and sex did not significantly affect the anatomical site of injury ( $\chi^2 = 0.05$ ,  $P = 0.683$  and  $\chi^2 = 0.13$ ,  $P = 0.512$ , respectively) while occupation did ( $\chi^2 = 11.45$ ,  $P = 0.011$ ).

The majority of patients (48.7%) had good vision at presentation and also after treatment (71.9%). Table 2 describes visual acuities of the patients at presentation and after treatment.

## DISCUSSION

The male-to-female ratio of 5.1:1 in this study is similar to what was found in other studies.<sup>[4,16,17]</sup> This is, however,

slightly lower to what was reported by other studies.<sup>[18,19]</sup> This may be explained by the fact that males tend to be more aggressive, perform more artisan jobs, and

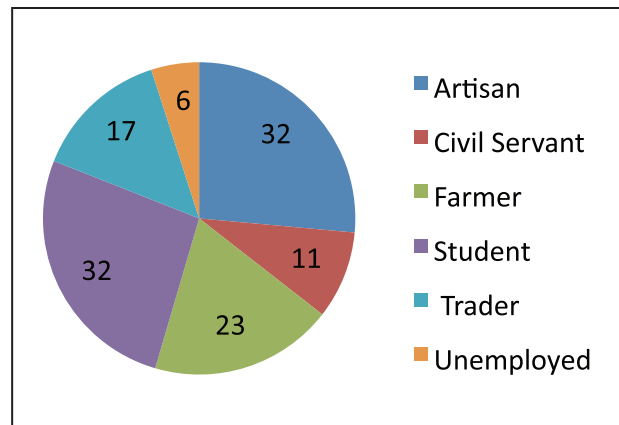


Figure 1: Patients' occupation

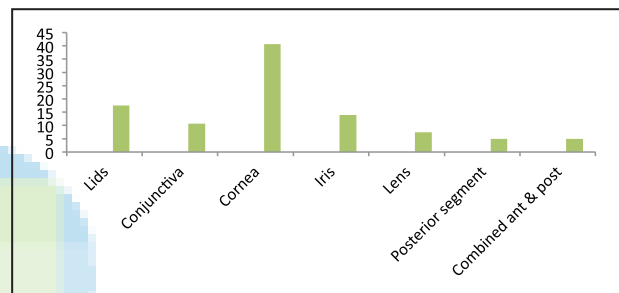


Figure 2: Site of trauma

Table 1: Age distribution of subjects

Age (years)	Number	Percent
0–10	4	3.3
11–20	7	5.8
21–30	43	35.5
31–40	31	25.6
41–50	25	20.7
51–60	5	4.1
61–70	4	3.3
70+	2	1.7
Total	121	100

Table 2: Visual acuity at presentation and after treatment

Visual acuity	Frequency			
	At presentation		After treatment	
	N	%	n	%
Normal	59	48.7	87	71.9
Moderate VI	14	11.6	11	9.1
Severe VI	5	4.1	2	1.7
Blind	35	28.9	21	17.4
Total	121	100	121	100

Keys: VI = visual impairment. Normal: 6/6–6/18; Moderate VI: 6/18–6/60; Severe VI: 6/60–3/60; Blind: 3/60–no light perception.

are adventurous in their behaviour compared with females, and these make them more prone to ocular trauma.

The predominance of the Hausa and Muslims in our study is due to the geographic location of the hospital—the indigenous population of Zamfara State being Hausas and Muslims. The majority of the subjects affected by ocular injuries in our study were in the young and active age group with the age ranging 21–50 years and thus constituting 81.8% of the subjects. This is similar to what was reported by some other studies.<sup>[16,20]</sup> This finding is not surprising as this group people are likely to exhibit more aggression and likely to engage in risky activities which may predispose to ocular injuries.

The cornea was the most common site of injury (40.6%) followed by the lids (17.5%). This is similar to what was found in other studies.<sup>[16,21,22]</sup> This may be due to their being the most exposed part of the eye. In our study, the left eyes were slightly more affected (51.2%). This is different from what was found in other studies.<sup>[16,22]</sup> This may be due to the right-hand drive in Nigeria which places the left eye of drivers more at ocular injury risk; also, right handed persons (who are in the majority) are likely to hit the left eyes of individuals in a fight. However, Titiyal *et al.*<sup>[4]</sup> found a similar slight preponderance of the left eye in India. Of the 10 bilateral cases, eight were from road traffic accidents (RTAs) while the other two were involved in fights.

RTAs (on the road) accounted for majority of the location of ocular trauma occurred in our study (32.2%) followed by domestic/home injuries (23.1%). There are varying reports on the most common locations of ocular trauma from several studies; some reporting home,<sup>[16]</sup> while others RTA.<sup>[4]</sup> Our hospital is located on a very busy highway with heavy vehicular movement—this may explain the high number of RTA as a cause of ocular trauma in this study. Most of our subjects had blunt trauma similar to what was reported in other studies,<sup>[4,16]</sup> Okoye<sup>[20]</sup>, however, reported more of penetrating trauma. The location of the hospital on the highway may also explain the high number of patients seen in the first quarter of the year as this period coincides with festivities and a lot travelling by people.

Majority of the patients presented to the clinic within 24 h of eye trauma which may have contributed to the favourable visual outcome seen in this study. This may have been because of the location of the hospital—been the first and easily accessible health facility for RTA victims in the zone. This is similar to what was reported in India<sup>[4]</sup> and in Nigeria<sup>[16]</sup> where majority of the patients presented within the first 48 h of injury because of the proximity of the health facilities.

## CONCLUSION

Most of the ocular trauma occurred among the male subjects who are in the young and active working age group with majority having blunt injuries. A significant proportion of patients presented within 24 h after injury. A sizeable number sustained ocular trauma from RTA at homes and in

school. It is recommended that simple safety procedures such as wearing seat belts in driving and supervising children while playing should be advocated using the mass media. Another recommendation is the development of a database for all ocular trauma to aid research using a standard protocol in future.

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## Conflicts of interest

There are no conflicts of interest.

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