Prevalence of Ocular, Adnexal and Orbital Trauma at Three Areas in Different Tertiary Care Centers in Karachi.

Nazia Qidwai (✉ nazia_qidwai@hotmail.com)

Al Ibrahim Eye Hospital, Isra Postgraduate Institute of Ophthalmology

Nausheen Hayat

Jinnah Postgraduate Medical Center

Saba Alkhairy

Dow International Medical College

Tauseef Mahmood

Al Ibrahim Eye Hospital, Isra Postgraduate Institute of Ophthalmology

Muhammad Ashraf

Al Ibrahim Eye Hospital, Isra Postgraduate Institute of Ophthalmology

Alyscia Cheema.

Jinnah Postgraduate Medical Center

Mazhar ul-Hassan

Dow International Medical College

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Abstract

Purpose:

To assess the prevalence of ocular, adnexal and orbital trauma resulting from various inciting agents presenting at three large centers located in different areas of Karachi, Pakistan.

Method:

Patients with ocular trauma were recruited at three centers over three months. Proforma was filled for every patient, and the inciting agents and prevalence of the different types of ocular damage were identified. Trauma scoring was performed according to the Ocular Trauma Score.

Results:

A total of 343 patients with trauma presenting at different tertiary centers, including Dow International Medical College (DIMC) 38 (11%), Jinnah Postgraduate Medical Center (JPMC) 150 (44%) and Al Ibrahim Eye Hospital/Isra Postgraduate Institute of Ophthalmology (IPIO) 155 (45%), were included. Commonest causes at IPIO were vegetative trauma, road traffic accidents at JPMC and metallic foreign bodies at DIMC (Table 5). Most of the patients fell at grade 5 of the Ocular Trauma Score. Patients with lid, conjunctival, paracentral corneal or lenticular damage retained V/A $\geq 6/18$ after medical and/or surgical treatment. However, it remained $\leq 6/60$ in those with central corneal, vitreal or retinal damage.

Conclusion:

This study showed that different inciting agents topped at the three centers with respect to their location, surrounding workplaces and dealing with medicolegal cases.

Introduction

Trauma to the eye is a vital and potentially avoidable cause of ocular morbidity. It can severely damage the eye and may lead to blindness. The number of people affected by eye injuries is over half a million globally each year. [1]

The most common types of injuries are foreign bodies (35%), open wounds (25%) and contusions (25%), followed by burns, which account for 15% of the injuries. Ninety percent of these injuries could have been protected by proper eye wear. [2]

Ocular injuries pose a great threat to visual acuity and can not only lead to significant visual disability but also financial and mental stress due to absence from the workplace, expensive medication or healthcare expenses and fear or anxiety directly due to trauma, particularly in developing countries where health resources are limited and not funded by the state. To make it worse, education and public awareness regarding the prevention of eye injuries and their immediate management have been an area of neglect.

A study conducted in the twin cities of Punjab ranged the prevalence of occupational injuries to almost 30% in welders working primarily in the automobile sectors. [6] Safety measures are neither implemented nor undertaken by workers while working. The use of proper glasses/goggles/shields can reduce occupational hazards to a considerable degree.

We conducted a multicenter study that included patients presenting to three major tertiary care centers located in Karachi with complaints of ocular trauma, namely, Al Ibrahim Eye Hospital/Isra Postgraduate Institute of Ophthalmology (IPIO) (Figure 3), Jinnah Postgraduate Medical Centre (JPMC) (Figure 4) and Dow International Medical College (DIMC) (Figure 5). The details regarding the mode of injuries, time elapsed since injury ocular findings such as visual acuity, lacerations, presence of foreign bodies, globe rupture, etc. were meticulously recorded in all centers to determine the ocular trauma score and hence to analyze the common presentation of ocular trauma and its associated morbidity. Maps of these three hospitals are being provided to facilitate a better understanding of geography for the readers.

The ocular trauma score is a standard method to predict the visual outcomes in patients affected with trauma to the eye. It was developed by Kuhn in 2002. The OTS takes into account certain variables (visual acuity, rupture, endophthalmitis, perforating injury, retinal detachment, and afferent pupillary defect) at presentation. The possible final visual acuities (NLP, LP/HM, 1/200-19/200, 20/200-20/50, and $\geq 20/40$) in the OTS categories (1 to 5) were calculated. [3,4,5]

To the best of our knowledge, we do not know of any similar local prospective multicenter study that has been conducted in Pakistan.

There is a dire need to highlight the common forms of ocular trauma that present to the emergency and the methods that can be taken to prevent them and to administer timely treatment to reduce the associated ocular morbidity. The purpose of this study is to introduce the world to the types and causes of trauma to the eye in this region of the world. The world is readily becoming a global village, and people move across the world more than ever before. Different regions show an increased incidence of different causes of ocular trauma. Global awareness of the management of health issues should hence be of interest to all of us.

Materials And Methods

This prospective cross-sectional study was conducted in the largest metropolis of Pakistan, looking after a population of over 20 million. The three largest ophthalmic centers of Karachi collaborated to contribute data for three months, named Al Ibrahim Eye Hospital/Isra Postgraduate Institute of Ophthalmology (IPIO), Jinnah Postgraduate Medical Centre (JPMC), and Dow International Medical College (DIMC).

In this multicenter study, conducted from August 1, 2020 to October 31, 2020, a total of 343 patients were evaluated, of which 150 patients were from Jinnah Postgraduate Medical Center, 155 patients were from Isra Postgraduate Institute of Ophthalmology and 38 patients were from Dow International Medical College. Approval from the ethical committee was obtained and informed consent was taken from all the patients and from the legal guardians of children, beforehand. The ethical committee of Isra Postgraduate Institute of Ophthalmology approved the study. A sample of 343 was calculated by the Raosoft sample calculator by taking the pooled prevalence of ocular injuries as 38.27%(34), keeping the 95% confidence interval and 5% margin of error. All methods were carried out in accordance with relevant guidelines and regulations.

We drafted a customized proforma to record data for this study, which contains information on demographics, history and relevant examination details. All patients were informed and explained about the process. These profiles were completed by a single doctor in their respective institute (3 doctors from 3 hospitals). The majority of the patients included in this study were reported in the accidents and emergency department of the hospital, from which they were referred to eye care units of the respective institute. Every individual was requested

for a brief history and assessed for visual acuity, ocular examination of the anterior and posterior segments, and orbital and adnexal examination. Gross general physical examination was also performed, and referrals to the relevant department were sent in cases where necessary. Consequently, ocular trauma scores (OTSs) were calculated for every individual included in the data, which had 5 factors for visual assessment. **(Figure 1.)**

Patient inclusion in the study was based on history and signs of recent trauma to the eyelid, adnexa or orbit. Patients of any age were included. The exclusion criteria consisted of any other cause for ocular damage apart from trauma.

Data were analyzed by using SPSS version 22.0. Mean $\pm$ S. D was calculated for continuous variables such as age.

Frequencies and percentages were calculated for categorical variables such as sex, visual acuity, and mode of injury.

and sign and symptoms. A doughnut chart was made to present the number of patients at each center, while a multiple bar chart was created.

was made to see the trauma scoring at each center.

Statistical Analysis:

Data were analyzed by using SPSS version 22.0. Mean $\pm$ S. D was calculated for continuous variables such as age. Frequencies and percentages were calculated for categorical variables such as sex, visual acuity, mode of injuries and sign and symptoms. A doughnut chart was made to present the number of patients at each center, while a multiple bar chart was made to see the trauma scoring at each center.

Results

A total of 343 patients with trauma presented at different tertiary centers, including DIMC 38 (11%), JPMC 150 (44%) and IPIO 155 (45%). **(Figure 1).** The demographic details of these patients are briefly described in **Table 1.**

At DIMC, 20 (52.63%) cases came due to different kinds of accidents by bicycle stand, wood, door, etc. The second most common were occupational injuries noted among 16 laborers (42.11%) who were injured during welding and grinding stones. At JPMC, assault was the most frequent method of injury, as 48 (31.75%) patients suffered due to various kinds of attacks, such as acid splashing, hitting by steel rods, punches, scissors and stones. Road traffic accidents were the second most common cause of injury, as 29 (19.21%) patients reported accidents on roads. Twenty-five (16.56%) cases were reported due to hit by blunt objects like Cracker, tire burst and ball, etc. At IPIO, 100 (64.52%) cases were reported due to different accidental exposures, as patients were hit by a Tennis ball, glass, knife, pipe and scissor. The second most common cause of injury was working in the construction sector, as 11 (7.10%) patients were hit by stone. Details are shown in **Table 2.**

Patient visual acuity was also checked at the time of presentation. At DIMC, 73.6% of the patients had good vision (6/6-6/18). Similarly, at JPMC, 93 (62%) patients had good vision at the time of presentation. At IPIO, 82 (52.90%) patients had good vision, while 44 (28.38%) patients had poor vision ($< 6/60$). **(Table –3)**

Patients who suffered lid, conjunctival, paracentral corneal or lenticular damage retained V/A $\geq 6/18$ after medical and/or surgical treatment, as required. However, those with central corneal, vitreal or retinal damage did not show improvement in vision, and the V/A stayed $\leq 6/60$.

Trauma scoring was also measured on the basis of the following OTS chart (Koh et al) at each center.

At DIMC, 18 (47.37%) patients had an OTS score of 5, and 13 (34.21%) had an OTS score of 4. Similarly, at JPMC, most of the patients, 86 (57.33%) patients had an OTS score of 5, while 37 (24.67%) had a score of 4. A similar pattern was noticed at IPIO, as 57 (36.77%) patients had an OTS score of 5, whereas 36 (23.23%) patients had a score of 4. There are also 5 (3.23%) nonverbal kids as well. **(Figure 2)**

Patients presented with numerous signs and symptoms at presentation. At DIMC, the most common sign was lid swelling (10, 26.32%), corneal ulcer (10, 26.32%) and subconjunctival hemorrhage (4, 10.53%). At JPMC, 29 (16.20%) patients came with a sign of lid tear, 17 (9.50%) presented with corneal ulcer and 13 (7.26%) came with periorbital swelling. Similarly, at IPIO, most of the signs were related to subconjunctival hemorrhage, with 35 (13.21%), and the other 25 (9.43%) were related to corneal foreign bodies. **(Table –4)**

Table 1: Baseline Characteristics of Patients

Descriptive	DIMC	JPMC	IPIO
Male	31 (81.5%)	115 (76.6%)	111 (71.61%)
Female	7 (18.4%)	35 (23.3%)	44 (28.3%)
Male/Female ratio	4.2:1	3.2:1	2.5:1
Total	38 (100%)	150 (100%)	155 (100%)
Adults	36 (84.2%)	115 (75.3%)	78 (42.5%)
Kids	6 (15.7%)	35 (24.6%)	77 (57.4%)
Adults/Kids Ratio	6:1	3.2:1	1.01:1
Mean Age Adults (≥ 14 yrs)	31.05 $\pm$ 11.02	30.67 $\pm$ 13.55	32.85 $\pm$ 12.76
Mean Age Kids (< 14 yrs)	10 $\pm$ 4.24	7.1 $\pm$ 3.58	7.56 $\pm$ 3.21

Table 2: Mode of injuries at three tertiary center

Presenting VA at DIMC		Presenting VA at JPMC	
VA	Count	VA	Count
6/6 - 6/18	28	6/6 - 6/18	93
< 6/18 - 6/60	1	< 6/18 - 6/60	26
< 6/60	9	< 6/60	31
Total	38	Total	150
Presenting VA at IPIO			
VA		Count	
6/6 - 6/18		82	
< 6/18 - 6/60		17	
< 6/60		44	
8 CPCM		6	
6/48 CARDIFF		2	
4 CPCM		2	
6/15 CARDIFF		1	
Following Light		1	
Total		155	

Table 3: Presenting VA at different Tertiary center

Presenting VA at DIMC		Presenting VA at JPMC	
VA	Count	VA	Count
6/6 - 6/18	28	6/6 - 6/18	93
< 6/18 - 6/60	1	< 6/18 - 6/60	26
< 6/60	9	< 6/60	31
Total	38	Total	150
Presenting VA at IPIO			
VA		Count	
6/6 - 6/18		82	
< 6/18 - 6/60		17	
< 6/60		44	
8 CPCM		6	
6/48 CARDIFF		2	
4 CPCM		2	
6/15 CARDIFF		1	
Following Light		1	
Total		155	

Table 4: Presenting signs of patients at three tertiary centers:

DIMC			JPMC			IPIO		
Sign	Count	%	Signs	Count	%	Signs	Count	%
Lid Swelling	10	26.32	Lid tear	29	16.20	Subconj hemorrhage	35	13.21
Corneal	10	26.32	Corneal ulcer	17	9.50	Foreign body in cornea	25	9.43
Subconj Hemorrhages	4	10.53	Periorbital swelling	13	7.26	Corneal tear	22	8.30
Corneal Tear	2	5.26	Corneal tear	13	7.26	Keratitis	22	8.30
Lid Tear	2	5.26	Macular edema	11	6.15	Cataract	20	7.55
Corneal Abrasion	1	2.63	Subconj hemorrhage	7	3.91	Corneal opacity	15	5.66
Enophthalmos	1	2.63	Corneal abrasion	7	3.91	Endophthalmitis	15	5.66
Mid Dilated Pupil	1	2.63	Lid swelling	6	3.35	Iris prolapse	13	4.91
RD	1	2.63	Lid abrasion	5	2.79	Pupil irregularity	11	4.15
Optic Disc	1	2.63	Lid bruise	5	2.79	Hyphema	8	3.02
Vitreous Hemorrhage	1	2.63	Cataract	5	2.79	Shallow AC	7	2.64
Commotio Retinae	1	2.63	Scleral tear	4	2.23	Corneal ulcer	6	2.26
Hyphema	1	2.63	Brow tear	3	1.68	Pyhysis	6	2.26
Glaucoma	1	2.63	Lid ecchymosis	3	1.68	FB fornix	6	2.26
Red cell glaucoma	1	2.63	Fungal keratitis	3	1.68	Lid tear	5	1.89
Total	38	100	Corneal opacity	3	1.68	RD	5	1.89
			Conjunctivitis	3	1.68	Soft eye	5	1.89
			Iris prolapse	3	1.68	Posterior synechiae	4	1.51
			Corneal edema	3	1.68	Occlusion papillae	4	1.51
			Perforated globe	2	1.12	Lid burn	4	1.51
			Corneoscleral tear	2	1.12	Oneuritis traumatic	3	1.13
			RAPD	2	1.12	Iridodialysis	3	1.13
			Pale disc	2	1.12	Corneal perforation	3	1.13

RD	2	1.12	Anterior synechiae	2	0.75
Photo keratitis	1	0.56	Vitreous hemorrhage	2	0.75
Endophthalmitis	1	0.56	Band keratopathy	1	0.38
Globe rupture	1	0.56	Phacodonesis	1	0.38
Chemosis	1	0.56	ON Atrophy	1	0.38
CNVI palsy	1	0.56	Paralytic ectropion	1	0.38
Iridodialysis	1	0.56	Lagophthalmos	1	0.38
Subluxated lens	1	0.56	Exposure keratopathy	1	0.38
APD	1	0.56	Corneal abrasion	1	0.38
Macular scar	1	0.56	Choroidal detachment	1	0.38
FB Corneal	1	0.56	Chemosis	1	0.38
Hypotony	1	0.56	Secondary glaucoma	1	0.38
CD	1	0.56	PAS	1	0.38
Limbal Ischemia			Scleritis with FB	1	0.38
grade 1	7	3.91	Symblepheron	1	0.38
grade 2	3	1.68	Aphakia	1	0.38
grade 3	2	1.12	Total	265	100.00
grade 4	2	1.12			
Total	179	100.00			

Table 5

Consolidated data of Inciting agents	Total number of cases in all 3 hospitals
Road traffic accident	37
Accidental exposure to various objects	10
Workplace injury	46

Discussion

Ocular trauma is a major problem faced in Karachi that results from disobedience to laws, weak security status, domestic violence, lack of education and awareness and a care-free attitude toward handling hazardous objects.

These could occur at the workplace, at home, including falls, door injuries and accidental injuries.; be related to road traffic accidents, assault and to leisure activities and festivals, fireworks, blast injuries, etc. Domestic accidents and assaults make nearly one-third of injuries. [2, 7, 8] Apart from the various eye disorders causing blindness, as seen in a US eye disease statistics survey, ocular trauma is also a major cause. [9]

Various studies have shown varied orders of incidence of trauma according to the socioeconomic and cultural circumstances at the site of the event. Zakrzewski et al showed that workplace incidents were the most common, followed by domestic causes. [10] In the study of Ying Qi, work-related injuries accounted for 31.5%, followed by household injuries (27.4%), firework injuries (24.5%), electric bicycles (15.1%), animal-related injuries (8.4%) and sports injuries (7.3%). [11]

Many times the patient, the attendant or a quack manages the injury initially, but when the trauma is severe or becomes complicated, it is then brought to an eye clinic. The state of hospitality and medical supplies of eye clinics in rural and urban areas is another detrimental factor. Patients suffering ocular trauma in rural areas do not either find a qualified optometrist or ophthalmologist or do not receive appropriate management from the available medical personnel. Factors that formulate the final visual and structural outcome include mode, velocity severity and site of injury, duration spent since trauma, age of patients, co-occurrence of any systemic illnesses, primary or secondary infections, duration of exposure to the traumatizing object and the duration spent until commencement of appropriate treatment. [12]

Our study was based on data collection of ocular trauma patients who presented at three large tertiary care hospitals in Karachi: the Al Ibrahim Eye Hospital/Isra Postgraduate Institute of Ophthalmology (IPIO), the Jinnah Postgraduate Medical Centre (JPMC) and the Dow International Medical College and Hospital (DIMC).

The numbers of patients at JPMC and IPIO were nearly the same. Fewer patients presented at DIMC versus the other two tertiary care institutions. Possible reasons could be that it is located considerably away from the city center and is not easily approachable to the vast majority of the population. Services offered are paid; hence, nonaffording patients do not visit this center. The eye department is fairly new with limited faculty members compared to the other two institutes and is still in its development stages.

Males outnumbered females in all three centers because they still worked in larger numbers outside than females. Many national and international studies have shown this male preponderance to be 83.87%, 84.2%, 81.6%. [12, 13, 14] In a large study conducted by Ying Qi et al, the male to female ratio was 2.8:1. [11]

In our study, the most common age of patients was between 20-50 years, which is the prime working age in Pakistan. Adolescents are taken out of school and put to work at a younger age. Being at a vulnerable age with a lack of education, financial instability and socially ill-developed individuals are at an increased risk of injuries. The lower limit of age of working females is decreasing rapidly as more girl kids now mainly working in the service sector start working at a younger age.

Various studies have shown the most common age of presentation to be between 45-59 years, 17 and 39 years and 18 - 35 years [11,12, 13, 15].

It was noted that the incidence of the different modes of injury were different at the three centers. At JPMC, adult cases of road traffic accident and assault topped the list. JPMC is the largest tertiary care center built on Sharea Faisal, which is a main street connected to multiple areas of Karachi. Multidisciplinary management is effectively possible here for patients who present with multiple injuries, as the hospital has all medical and surgical

departments. Medicolegal cases are accepted here. Forty-four patients presented with injury from assault and 29 with RTA. This mainly reflects the high frustration level of society, disobedience of traffic rules and the prevalent fearless attitude to readily indulge in assault and encounter.

In various studies, the incidence of RTA-related injuries was 24.2%, 25.2% cases and 20.5% patients. [11,13,14] In the West, the incidence of RTA and assault are also considered to be associated with alcoholism and substance use. [16]

Fourteen cases at JPMC presented with chemical injury, of which 4 occurred at the workplace, 4 as a result of assault and 6 related to accidental exposure to agents such as sanitizer, thinner, perfume, caustic soda and commonly available adhesives such as Elfy. The over-counteravailability of acids, alkalis and kerosene oil has consistently kept a number of cases of assault from chemical injury, high, mostly in young and middle-aged ladies. Cases of sanitizer splash into eyes rose during this study's duration because of its increased use during this coronavirus pandemic.

Koh et al showed that the workplace presents the greatest risk of chemical injuries. [17] Alkali is a more common cause than acid in workplace settings. These include ammonia, lye (sodium hydroxide), potassium hydroxide, magnesium hydroxide, and lime, which are found in fertilizers, refrigerants, and cleaning solutions drain cleaners. Lime is the most common cause of workplace chemical injuries overall and is found in plaster, mortar, cement, and whitewash. [18] In the study of Quesada et al, ocular chemical burns were the second most common workplace eye injury, with 68.54% of men and 31.45% of females being affected. [19] The largest proportion of chemical eye injuries are seen in women in cleaning and kitchen jobs, which results from splashing and spraying of liquids [20]. The cause has been attributed to, limited training. [21]

IPIO cases of corneal injury and keratitis resulting from foreign body exposure presented the most. This is mainly because this center is located in the outskirts of Karachi surrounded by villages and farms. While traveling through dusty lands and working on farms, they are exposed to dust, stones and vegetative matter. Industrial workers, vehicle mechanics and welders fell next and reported exposure to metallic particles, wires or rods. Blunt objects were found to be the most common causative agent. They often work without abiding by to any appropriate handling measures. In the study of Ying Qi et al, 21.4% of cases resulted from metals, knives and scissors. Construction sector workers reported exposure to stones, sand and pebbles. Chemical injuries reported from exposure to bleach, used for cleaning in homes and from acid use, resulting from car or UPS (uninterruptable power supply) battery explosion. Ying Qi showed that 51.9% of the cases were farmers and workers. [11] Tan HH's study revealed that 53% of the workers included cleaners, workers and technicians. [22]. Bhupally et al showed chemical injuries to be the second most common (13%) in their study. [12]

At DIMC, cases of accidental injury resulting from various foreign bodies followed by welding and grinding ranked high. There are many workplaces of welders and iron mongers in the vicinity. Quesada et al.'s study showed foreign bodies to be the top most common cause of ocular injury (43.42%). A total of 29.4% of cases were affected by metallic foreign bodies in the study of Khaqan et al.[19]

In the study of Bhupally et al, the most common mode of ocular trauma was blunt trauma (77.6%) [12]

Children overall suffered trauma with varied objects easily accessible at home and on streets. During the COVID-19 pandemic, children were mostly out of school and staying at home. This increased their chance of being exposed to various inciting agents, such as rooster and bird beaks, matchsticks, adhesives (elfy), pencils, knife, screw driver,

scissors, etc. Increased use of gadgets also impacted the cartoons shown on the various kids' channels, which show trauma as fun. In our study we got most kids of age 7 years. This reflects lack of parental supervision. Kids are freely allowed to play on streets, which further predisposes them to various forms of trauma. Child labor in Pakistan also exposes children to hazardous agents. [23] In the study of Malik I.Q. Seventy percent of cases occurred in the age group less than 10 years. The male:female ratio was 1.6:1, which incremented to 10:1 after the age of 10 years. [15] In the study by Khaqan H. A. A total of 28.8% of patients were less than 10 years old, and the mean age of the children was 8.09 years. [14] In the study of Ying Qi, patients aged younger than 2 y comprised 5.3%. [11] Commonest causes of ocular trauma have been found to be household items, RTA and physical abuse in various studies. [24,25]

Commonest signs at presentation at DIMC were impacted foreign bodies; at JPMC, lid and corneal tears were observed, followed by cases of chemical trauma. At the IPIO corneal foreign body, keratitis, corneal tear, corneal opacity, iris prolapse, pupillary irregularity, hema and cataract were found in decreasing order. Since children made a large part of the sample size, traumatic endophthalmitis was found in 15 cases. These signs were clearly related to the type of inciting trauma.

Other studies showed nearly similar results. In one study Open Globe Injuries occurred in 53.4%. [13] In yet another study, intraocular foreign bodies (IOFBs) were found in 15%, corneal tears in 75%, corneoscleral tears in 24%, cataract formation in 61.6% and retinal detachment in 9.81%. [15] In the study of Ying Qi, the most common signs were traumatic cataracts (25.0%), endophthalmitis (16.8%), intraocular foreign bodies (16.6%), and retinal detachment (15.0%) [11]

Worldwide, however, due to the ongoing pandemic, an overall decrease in the incidence of trauma has been reported. Christey et al. reported a 43% reduction in injury-related hospitalization. [26] Pellegrini et al reported a 68.4% reduction in the number of eye trauma cases during the first month of the pandemic compared to the same period of the previous year. They found that a massive decrease occurred in sport-related ocular injuries (from 6.5% to 0.9%) [27, 32]. However, an increase in household-related ocular injuries was observed. [28, 29, 33]

Most of the patients from all 3 centers fell at grade 5 of the OTS, and their visual acuity ranged mostly between 6/6 and 6/18. It was between PL+ and 6/60 in the study by Khaqan et al. This correlated with the high number of RTA cases. [14]

According to an international survey, 200,000 open-globe injuries occur annually, resulting in 1.6 million blind, 2.3 million bilaterally and 19 million unilaterally. [31] Ocular trauma results in an inability to continue jobs and chores at home and the workplace. It increases the financial and physical burden on the patient and attendants. [10, 30]. As seen by Quesada et al, 6 patients suffered permanent partial disability. [19] Quesada et al found that the total cost of the initial emergency consultation, follow-up consultations, nursing appointments, consultations with the ophthalmologist, medical transport and medication and treatment costs were very high. [19]

We recommend, in coherence with other studies, that at the workplace, personal protective equipment (PPE) must be provided by authorities and religiously used by workers. Laws be made and their abidance made mandatory. In our part of the world taking care of traffic rules and by enacting punishment for illegal acts, the cases of RTA and assault, especially domestic violence and child abuse, would be immensely reduced. Child labor and over-the-counter availability of chemicals will be checked sternly. The care-free attitude toward handling sharps at home is addressed via awareness sessions including pictorials and videos showing the possible consequences of ocular injuries via various common household objects. [19, 33]

We also recommend adhering to the standardized classification of ocular trauma. [35]

Declarations

Competing interests statement: There are no conflicts of interest. All data have been provided as available in the patient files.

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Figures

Figure 1

Patients presenting at each center

Figure 2

Trauma Scoring at three tertiary centers

Figure 3

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Figure 4

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Figure 5

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