

# FREQUENCY AND PATTERN OF OCULAR EMERGENCY IN DISTRICT SWABI

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## ABSTRACT

**OBJECTIVES:** To determine the frequency and pattern of ocular conditions presented to the ophthalmic casualty room at a secondary care hospital in District Swabi.

**STUDY DESIGN:** Descriptive Cross-sectional study.

**PLACE AND DURATION OF STUDY:** Eye Department of District Head Quarter Hospital, Swabi over a period of two years from 1<sup>st</sup> March 2010 to 28<sup>th</sup> February 2012.

**METHODOLOGY:** Nine hundred and Sixty patients who presented either with acute ocular condition or ocular injury through the outpatient or emergency routes were included in the study. The patients demographic data, detailed history, examination and final diagnosis were recorded in a questionnaire. Statistical analysis was based on age, gender, presentation, ocular features and diagnosis.

**RESULTS:** In our study male were 57.8% (n=555) and female were 42.2% (n=405). Five hundred and thirty Six (55.8%) patients were in traumatic group while four hundred and twenty four (44.2%) patients were in non-traumatic group. Infective conjunctivitis (62.2%), Stye (12.6%), corneal ulcer (10.10%), retinal vascular disease (1.2%), acute post operative endophthalmitis (1.1%), acute uveitis (2.6%) and acute glaucoma (1.0%) were the leading causes in the non-traumatic group. In traumatic group 94.2% patients were non-infected while 5.8% were infected. In non-infected patients, both globe and extra globe injuries (44.6%), extraglobe injuries (23.8%) and globe injuries (23%) were present. In globe injuries, open globe injuries (OGI) were 39.7%. Post traumatic endophthalmitis was reported in 54.8% of traumatic ocular infection. Mechanical injuries (70.7%) were leading the list of traumatic ocular emergency. Work place (31.5%) was the most common place for ocular trauma.

**CONCLUSION:** Common non-traumatic ocular emergency were Infective conjunctivitis, infective keratitis, acute glaucoma and acute uveitis. Females mostly middle age housewives had non-traumatic ocular emergencies. Traumatic ocular emergency commonly reported were both globe and extra globe injuries and open globe injuries. Males mostly young workers had traumatic ocular emergency. Mechanical injuries mostly the result of occupational accidents in workers.

**KEYWORDS:** Ocular Emergency, Trauma, Globe Injuries, Non Traumatic Emergency, Occupation.

## INTRODUCTION

Ocular emergency cause considerable morbidity. A variety of ocular disorders present to the emergency department on routine basis. Globally 1-6 % of complaints of patients referred to emergency department are eye related<sup>(1)</sup>. Annually more than two million visits to emergency department are eye related<sup>(2)</sup>. In the United States more than 65000 work related eye injuries and illnesses are reported annually<sup>(3)</sup>. Nearly half are for injuries, two thirds of which occur in males. Majority of visits are for minor problems like corneal abrasion or conjunctivitis, approximately 3% of patients require hospitalization<sup>(3)</sup>.

Ocular casualties are an important cause of preventable monocular blindness (both traumatic and non traumatic).

Globally 1.6 million cases of blindness and 2.3 million cases of impaired vision are caused by ocular trauma annually<sup>(4)</sup>. In the United States about 2 million eye injuries occur each year with eye trauma being the third most common indication for hospitalization<sup>(5)</sup>. In Pakistan hospital based data showed that 9.54% of total ophthalmic admissions are due to ocular trauma<sup>(6)</sup>. Ocular trauma victims are predominantly males, young and have a potential risk of blindness. In the developing countries about 5 % of the blindness is trauma related<sup>(7)</sup>. People are at different risk for ocular trauma depending on factors such as their activities, jobs and protection methods they use. Ocular trauma can have potential long term effects on the quality of life of the subject and can introduce a burden on public health resources especially when occurring in children<sup>(8)</sup>.

Non traumatic emergencies like infective keratitis, glaucoma, optic neuritis are also of high importance and outcome of the disease severely differs if treated in a timely manner<sup>(9)</sup>. Although information about non traumatic ocular emergencies is very limited, still it is an important cause of visit to emergency department in Pakistan.

The purpose of this study was to determine the frequency and pattern of ocular emergencies attending the ophthalmic casualty room of secondary care hospital.

## METHODOLOGY

This was a descriptive cross sectional study and sampling was done by non – probability convenience sampling technique. The study was conducted at ophthalmic emergency and out-patient

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department of DHQ Hospital Swabi. Duration of the study was two years from 1<sup>st</sup> March 2010 to 28<sup>th</sup> Feb 2012. Patients of all ages and both sexes having acute ocular problem were included. Infants and neonates, patients with non emergent ocular conditions like allergic eye disease, cataract, pterygium, refractive error, primary open angle glaucoma etc, patients who are un co-operative, not giving informed consent, severely ill or injured, unconscious, multiple organ injuries who are in life threatening situations were excluded.

Informed consent was taken from patients or parents/guardians in cases of children for using their data.

Demographic informations including age, sex, profession etc was taken. Detailed history about the patient's condition, eye involved, previous ocular trauma or surgery, cause of referral, activity at the time of injury was recorded. Then patients were examined by standard procedures. The patients were divided into traumatic and non-traumatic group, which were further divided into subgroups. In non-traumatic cases a single diagnostic term was assigned that could explain the condition best.

In cases of trauma, in children mostly evaluation was done under general anaesthesia whenever feasible. If child not prepared for general anaesthesia, then patient was wrapped in cloth and examined with torch and direct ophthalmoscope after putting topical anaesthetic drops. In case of chemical burns acid or alkali thorough ocular wash was done as urgently as possible then patient was assessed for extent of damage. In cases of mechanical trauma patients were assessed by torch and by slit lamp examination whatever feasible after emergency treatment and hemodynamic stability. In cases of suspected intraocular foreign body or orbital fracture, digital X-Ray orbit PA, lateral and Water's view was done. Then individual case was assessed for proper management and dealt with accordingly.

The informations gathered were noted in a designed proforma, entered and analyzed using Spss version 16. Analyzed data presented as frequency distributions in the form of tables or graphs.

## RESULTS

Nine hundred and sixty patients were included in this study. Traumatic group comprised of five hundred and thirty six patients (55.8%) was further divided into traumatic non infectious and traumatic infectious sub groups, which were further subdivided into small groups. Similarly non-traumatic group was also further divided into sub-groups.

Overall, males were 57.8% (n=555) and females were 42.2% (n=405). In non-traumatic group, males were 33.4% (n=142)

and females were 66.6% (n= 282). 31.8% patients were in the age range of 40- 60 years. In traumatic group males were 77% (n= 413) and females were 23% (n=123). 39.8% patients were in the age range of 11- 40 years. It shows that patients in traumatic group were young. Age and gender distribution of non-traumatic and traumatic groups is shown in (Table-I).

In non-traumatic group 63% (n= 267) patients were housewives and 17.2% (n=73) were farmers. In traumatic group 27.4% (n=147) were workers followed by 17.0% (n= 91) were housewives. Occupation and gender distribution of non-traumatic and traumatic groups is shown in (Table- II).

Most of the common acute infective ocular condition was conjunctivitis in 62.2%, stye in 12.6%, corneal ulcer in 10.10% patients. Post operative infection was present in 1.1% (n=11) of total referral. Endophthalmitis was present in 90.9% (n=10) patients while one patient reported with acute post operative infection after chalazion surgery. Acute ocular inflammation was reported in 2.7% of total patients, out of which uveitis was present in 2.6% and optic neuritis in 0.1 % patients. Acute glaucoma composed of 1.0% (n=10) of total patients. Retinal vascular disease composed of 1.2% (n=12) of total patients, out of which 58% had branch retinal vein occlusion while central retinal vein occlusion and central retinal artery occlusion was reported in 25% and 17% of vascular occlusion cases each (Table- III).

Traumatic ocular emergency comprised 55.8% (n=536) Of total patients, of which 5.8% (n=31) was traumatic infection and 94.2% (n=505) was traumatic non-infection sub group. In traumatic infection subgroup, 54.8% (n=17) was endophthalmitis, 25.8% (n=8) was corneal ulcer and 19.4% (n=6) patients were having pre-septal cellulitis. In traumatic non-infection group, 44.6% were having both globe and adnexal injuries, 75.6% of which had mechanical injury and 10.2% (n=23) had acid burns. Extra globe injuries were reported in 23.8% patients, eyelid was most commonly injured in extra globe injury. Mechanical trauma was the most frequent type of trauma to extra ocular tissue. Globe injuries were reported in 23.0% patients, 39.7% patients had mechanical open globe injury while 30.2% patients had mechanical close globe injury. Complex injuries involving eyes and head and neck area was reported in 8.7% of total trauma cases. 47.7% patients having complex trauma was due to mechanical injury (Table- IV).

Workplace was the most common cause of ocular trauma followed by accidental ocular trauma (Table-V). The nonexistence or inadequacy of safety measures at home, workplace, in sports, lack of adequate eye care facilities, delay in presentation and the use of traditional medicine were some of the important factors.

TABLE- I: GROUPWISE AGE AND GENDER DISTRIBUTION (n= 960)

Group	Age in Years	Sex of Patient		Total
		Male	Female	
Non- traumatic	1- 10	6	5	11(1.1%)
	11-20	0	10	10(1.0%)
	21-30	0	65	65(6.8%)
	31-40	0	11	11(1.1%)
	41-50	0	143	143(14.9%)
	51-60	114	48	162(16.9%)
	61-70	14	0	14(1.5%)
	>71	8	0	8(.8%)
	<b>Total</b>		<b>142</b>	<b>282</b>
Traumatic	1- 10	23	7	30(3.1%)
	11-20	79	23	102(10.6%)
	21-30	102	45	147(15.3%)
	31-40	94	39	133(13.9%)
	41-50	53	4	57(5.9%)
	51-60	39	5	44(4.6%)
	61-70	16	0	16(1.7%)
	>71	7	0	7(.7%)
	<b>Total</b>		<b>413</b>	<b>123</b>

TABLE-II: GROUPWISE OCCUPATION AND GENDER DISTRIBUTION (n= 960)

Group	Occupation	Sex of Patient		Total
		Male (%)	Female (%)	
Non- traumatic	Pre school	6	5	11(2.6%)
	Student	0	10	10(2.4%)
	Housewife	0	267	267(63.0%)
	Farmer	73	0	73(17.2%)
	Driver	27	0	27(6.4%)
	Businessman	13	0	13(3.1%)
	Jobless	23	0	23(5.4%)
	<b>Total</b>		<b>142</b>	<b>282</b>
Traumatic	Pre school	16	7	23(4.3%)
	Student	55	13	68(12.7%)
	Housewife	0	91	91(17.0%)
	Worker	135	12	147(27.4%)
	Farmer	77	0	77(14.4%)
	Welder	42	0	42(7.8%)
	Driver	22	0	22(4.1%)
	Businessman	20	0	20(3.7%)
	Jobless	46	0	46(8.6%)
	<b>Total</b>		<b>413</b>	<b>123</b>

TABLE- III: CAUSE OF REFERRAL TO EYE DEPARTMENT AND GENDER DISTRIBUTION (n=960)

Group	Cause of Referral	Sex of Patient		Total	
		Male	Female		
Non- traumatic	<b>1-Trauma</b>				
	a. Globe Injury	82	34	116 (12.1%)	
	b. Extra globe Injury	87	33	120 (12.5%)	
	c. Both globe and extra globe Injury	185	40	225 (23.4%)	
	d. Complex Injury	38	6	44 (4.5%)	
	<b>2-Traumatic eye infection</b>				
	a. Endophthalmitis	12	5	17 (1.7%)	
	b. Corneal ulcer	5	3	8 (0.8%)	
	c. Pre- septal cellulitis	4	2	6 (0.6%)	
Traumatic	<b>1- Eye Infection</b>				
	a. Acute Dacryocystitis	0	21	21 (2.2%)	
	b. Stye	06	40	46 (4.8%)	
	c. Acute hardeolum	0	30	30 (3.1%)	
	d. Pre-Septal cellulitis	0	4	4 (0.4%)	
	e. Infective Conjunctivitis	111	116	227 (23.6%)	
	f. Corneal ulcer	14	23	37 (3.8%)	
	<b>2- Post Surgical Infection</b>				
	a. Endophthalmitis	3	7	10 (1.0%)	
	b. Acute hardeolum	0	1	1 (0.1%)	
	<b>3- Inflammation</b>				
	a. Uveitis	0	25	25 (2.6%)	
	b. Optic neuritis	0	1	1 (0.1%)	
	<b>4- Acute Glaucoma</b>				
	a. Lens induced	3	2	5(0.5%)	
	b. Acuteangle closure	0	2	2(0.2%)	
	c. Neovascular	1	2	3(0.3%)	
	<b>5- Retinal Vascular disease</b>				
	BRVO	2	5	7(0.7%)	
	CRVO	1	2	3(0.3%)	
	CRAO	1	1	2(0.2%)	
	<b>Total</b>		<b>555</b>	<b>405</b>	<b>960(100.0%)</b>

TABLE- IV: TRAUMATIC INJURY TO STRUCTURES OTHER THAN GLOBE (n= 505)

Extent of Injury	Structures Injured	Mechanical	Thermal	Acid	Alkali	Superglue	Total
Globe	Globe	81	8	4	8	15	116(22.9%)
Both Globe and Extra globe	Globe + Adnexa	170	15	23	17	—	225(44.5%)
Extra Globe	Orbit	5	—	—	—	—	5(0.9%)
	Eyelid	47	6	11	7	3	74(14.6%)
	Lacrimal System	6	1	—	—	—	7(1.3%)
	Extra Ocular Muscle	3	—	—	—	—	3(0.6%)
	Extraocular Tissue	16	3	7	3	2	31(6.1%)
Complex	Globe+Maxillofacial	21	8	9	6	—	44(8.7%)
<b>Total</b>		<b>349(69.1%)</b>	<b>41(8.1%)</b>	<b>54(10.6%)</b>	<b>41(8.1%)</b>	<b>20(3.9%)</b>	<b>505(100%)</b>

**TABLE- V: PLACE OF TRAUMA AND GENDER DISTRIBUTION (n= 536)**

Cause of Trauma	Sex of Patient		Total
	Male	Female	
Workplace	159	10	169(31.5%)
Home	7	64	71(13.2%)
Assault	61	9	70(13.1%)
Accidental	75	23	98(18.3%)
Firearm	26	4	30(5.6%)
Road traffic accident	40	7	47(8.8%)
Self injury	15	5	20(3.7%)
Sports related	14	1	15(2.8%)
Bomb blast	16	0	16(3.0%)
<b>Total</b>	<b>413</b>	<b>123</b>	<b>536(100.0%)</b>

### DISCUSSION

The ophthalmologists are facing enormous load of various ocular diseases among them ocular emergencies has a great share.

In non traumatic ocular emergency group, 71.9% of the patients are aged above 40 years. This is due to the fact that certain diseases are more prevalent in old age group. This is same to result reported by Iqbal et al<sup>(10)</sup> and Qayyum et al<sup>(11)</sup>. Most of the patients are female (66.5 %) in this group. This is in contradiction with Iqbal et al<sup>(10)</sup>, Qayyum et al<sup>(11)</sup> and Jafari et al<sup>(14)</sup> who reported females as 33.4%, 34.8% and 44% respectively. Most of the females are housewives (63%). In this study, the most common infectious ocular emergency is infective conjunctivitis in 227 (62.2%) patients followed by stye in 46 (12.6%) patients and corneal ulcer in 37 (10.1%) patients. This finding is contrary to Iqbal et al<sup>(10)</sup> who reported corneal ulcer in 39.8% and Qayyum et al<sup>(11)</sup> who reported corneal ulcer in 35% of cases. In USA there are 11 corneal ulcers per 100,000 populations annually<sup>(12)</sup> while in India the number is 10 times higher with 113 corneal ulcers per 100,000 populations per year<sup>(13)</sup>.

In current study, the most common cause of ocular inflammation is Uveitis in 25 cases (2.6%), retinal vascular disease is present in 12 cases (1.2%) and acute glaucoma in 10 cases (1.0%). This is contrary to Jafari et al<sup>(14)</sup> who reported Uveitis in 2 cases (0.4%), retinal vascular disease in 42 (3.5%) and acute glaucoma in 53 (4.4%) cases. Iqbal et al<sup>(10)</sup> reported acute glaucoma in 344 cases (23.3%) and Uveitis in 43 (2.9%) whereas Qayyum et al<sup>(11)</sup> reported acute glaucoma in 234 (27%) and Uveitis in 43 (5%) cases.

Current study shows that 11 (1.1%) patients are having post operative endophthalmitis. This is contrary to Jafari et al<sup>(14)</sup> who reported post operative endophthalmitis in 15 patients (3.1%). Iqbal et al<sup>(10)</sup> and Qayyum et al<sup>(11)</sup> reported post operative endophthalmitis as 10.7% and 12% respectively.

In traumatic ocular emergency group, 382 (71.2%) patients are in age group 11-40 years. This means that most of the patients in this group are young. This is in agreement with Jahangir et al<sup>(15)</sup> who reported that 55 % of the cases were of age group 18-45 years, while Iqbal et al<sup>(10)</sup> reported 58.2 % of the patients were less than 20 years of age.

In this study, male patients are 413 (77%), 147 (27.4%) patients are factory workers and in 169 patients (31.5%) trauma occurs at their work place. This is in agreement with Jafari et al<sup>(14)</sup> who reported 75.6 % male predominance and in a study in Singapore 99.3 % of the patients were male. Contrary to this, Jahangir et al<sup>(15)</sup> reported home as common place of injury in 31 % of cases.

In this study mechanical injury is observed in 379 (70.7%) patients, of which 319 (84.2 %) are males and 60 patients (15.8%) are females. This is in agreement with Jafari et al<sup>(14)</sup> who reported 1630 patients (84.4%) of mechanical trauma, out of which 1437 patients (88.1%) were males and 193 patients (11.9%) were females. These findings suggest that males are at high risk of Ocular trauma.

Current study shows that open globe injury occurs in 59 patients (43.1%) of total globe injury. This is in contrast with Iqbal et al<sup>(10)</sup> who reported open globe injury in 76.1 % of patients and Jahangir et al<sup>(15)</sup> who reported open globe injury in 57 % of patients. Jafari et al<sup>(14)</sup> reported OGI as 5.9% of total globe injuries and Singapore study reported OGI in 5%<sup>(16)</sup>.

Chemical injuries, relatively less frequent are still devastating. In our study, 96 patients (17.9%) are having chemical burns, out of which 55 patients (57.3%) have acid burns and 41 patients (42.7%) have alkali burns. This is in agreement with Jahangir et al<sup>(15)</sup> who reported 6 patients (6%) of chemical burns and Iqbal et al<sup>(10)</sup> who reported 3.5 % and Jafari et al<sup>(14)</sup> who reported 8% cases of chemical burns.

Thermal burns are more frequently observed in our study which is reported in 41 patients (7.64%). Thermal injuries are more common in males (56.1%) compared to females (43.9%). Jafari et al<sup>(14)</sup> reported 42 patients (2.2%) whereas Jahangir et al<sup>(15)</sup> reported 9% and 3.5 % by Iqbal et al<sup>(10)</sup>. The management of ocular burns has been a challenging condition. Even under favourable circumstances, visual performance is distributed by ocular surface scarring, persistent epithelial defects, vascularization and associated dry eye in most cases of ocular burns<sup>(16)</sup>.

Superglue injury is also a cause for emergency referral. In this study, superglue injury is observed in 20 patients (3.7%), out of which 11 patients (5.5%) are males and 9 patients (4.5%) are females. Mostly superglue injury is accidental. No serious ocular morbidity has been reported due to superglue injury. In the past



30 years, 53 cases of superglue injuries have been published in literature<sup>(18)</sup>.

Current study shows that 27 patients (2.8%) are endophthalmitis, out of which 17 patients (63%) are post traumatic endophthalmitis and 10 patients (37 %) are post op endophthalmitis. Iqbal et al<sup>(10)</sup> reported 10.7 % cases of endophthalmitis and Jafari et al<sup>(14)</sup> reported 3.1 % cases of endophthalmitis. It has been reported that endophthalmitis associated with trauma has a poorer prognosis than that associated with cataract extraction<sup>(19)</sup>. High compressive and concussive forces, as well as heavy body injuries with multiple organ involvement can make an eye vulnerable to infection<sup>(20)</sup>. Post traumatic endophthalmitis is a catastrophic complication of penetrating ocular trauma. It has been shown that the microbiology of traumatic endophthalmitis is distinct from other subgroups of exogenous endophthalmitis<sup>(21,22)</sup>. The risk factors for the development of endophthalmitis in the setting of trauma are the presence of an intra ocular foreign body (IOFB), delay in primary repair, disruption of the crystalline lens and a rural setting<sup>(23)</sup>. Brinton et al<sup>(24)</sup> reported increased incidence of endophthalmitis in eyes with IOFB (10.7%) compared to in eyes without IOFB (5.2%). Complications of postoperative endophthalmitis may also be devastating. It has been reported that despite appropriate therapy, post-operative endophthalmitis results in severe visual loss in at least 30% patients and retinal detachment in 8-10% of patients<sup>(25)</sup>.

### CONCLUSION

Spectrum of ocular conditions presented to ophthalmic casualty room. Females mostly middle age housewives had non-traumatic ocular emergency. Males mostly young workers had traumatic ocular emergency. Work related injuries were most common and predominantly mechanical. It could be prevented with simple safety measures such as protective eye wear at home, workplace and in sports.

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