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Profile of Emergency Ophthalmic Consultation in A Tertiary Care Hospital

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Abstract

Introduction: Eye emergencies may range from trivial trauma to sight threatening complications. The number of patients seen in an emergency department, after working hours, has been increasing in the recent times. Ophthalmic inpatient, outpatient, surgical and emergency services in a tertiary care hospital are available round the clock which may be sought for screening, diagnosis and management of ophthalmic & systemic conditions of varied manifestation. Information regarding the profile of ocular emergency reference in each setting is important for strategic planning of efficient service allocation. The aim of this study was to investigate the profile of cases that were referred for emergency ophthalmic consultation: in a tertiary care centre in Kolar, with an effort to identify the true ophthalmic emergencies. *Materials and Methods:* A retrospective study was conducted over a period of one year, from December 2017 to November 2018 and the data of 1842 was collected from the emergency register of the department of Ophthalmology. *Results:* This study was conducted among 1842 subjects. Majority of them were men. The most common presenting age group was in between 21–30 years. Most of the referrals were due to hypertension followed by diabetes. Just 2.9% of the subjects presented with pure ocular complaints, with non-infectious conditions forming a majority. Of those patients presenting with trauma, RTA was the most common cause. *Conclusion:* In conclusion, the ophthalmologist plays a pivotal role in diagnosing the severity of non-emergency conditions like diabetes, hypertension and papilledema, PIH when referred in a tertiary health care centre. A dedicated ophthalmic emergency care team should be competent to manage primary ophthalmic emergencies, be a part of the emergency trauma team and interdisciplinary health care delivery system

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Introduction

Any ocular condition that requires immediate care to prevent permanent impairment of vision is considered as an ocular emergency and can range from symptomatic emergencies like trauma, uveitis, retinal detachment, acute angle closure glaucoma to asymptomatic emergencies like papilledema.[1]

Eye emergencies may range from trivial trauma to sight threatening complications which not only affects the physical and psychological status of an individual but also deprives the society of the optimum beneficial services that an individual can offer.[2]

The number of patients seen in an emergency department, after working hours, has been increasing in the recent times, probably due to the convenience of the patients to visit after their work, references given by other departments in a tertiary hospital or because of examining even the non-emergency conditions in the emergency department (ED).[3]

Due to lack of knowledge, patients don't realize the need for a regular check, hence miss out on the progression of retinopathic changes due to diabetes

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mellitus or hypertension and are referred to an ophthalmologist by a general physician or surgeon, which might often be too late.[4] It has been found, according to studies that 5–82% of patients who present to emergency department are in fact for non-emergency complaints.[4]

This diversity in the presenting number of cases is probably due to the contrast in study population or due to the benchmark taken for urgency.[5]

Majority of the population seek efficient, multispeciality affordable health care which is provided by medical colleges.[6]

Ophthalmic inpatient, outpatient, surgical and emergency services in a tertiary care hospital are available round the clock which may be sought for screening, diagnosis and management of ophthalmic & systemic conditions of varied manifestation.[7]

In most such institutions, the cases seen by an ophthalmologist after working hours are due to inter department references which help in diagnosing a large variety of ocular manifestations of systemic diseases.[6]

It has also been observed that the severity of systemic illness is more in inpatients when compared to those coming to the OPD making the referral examination more important.[7]

Systemic disorders like diabetic and hypertensive emergencies that can easily be detected by direct ophthalmoscopy require the expertise of an ophthalmologist by a thorough examination of fundus.[8]

Information regarding the profile of ocular emergency reference in a given setting is important for strategic planning of efficient service allocation. The aim of this study was to investigate the profile of cases that were referred for emergency ophthalmic consultation: in a tertiary care centre in Kolar, with an effort to identify the true ophthalmic emergencies.

Materials and Methods

A retrospective study was conducted over a period of one year, from December 2017 to November 2018 and the data was collected from the emergency register of the department of Ophthalmology. The patient details,primary diagnosis, the referring department and the ophthalmic findings were considered for the study. The Institutional Ethical Clearance as per declaration of Helsinki, was obtained prior to the data collection.

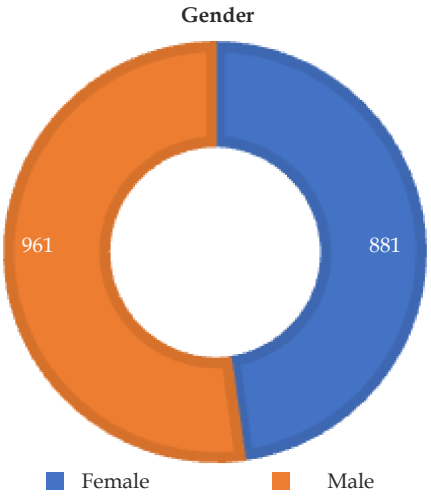
Observation

A retrospective study was conducted for one year to study the emergency profile of ophthalmology cases that presented after OPD hours, in a tertiary health care institute, in Karnataka. The total number of subjects were 1842.

Table 1: Gender distribution of patients studied.

Gender	No. of Patients	%
Female	881	47.8
Male	961	52.2
Total	1842	100.0

Graph 1: Gender distribution of patients studied.



A majority, 52.2%, of them were men and the rest women.

Table 2: Age distribution of patients studied.

Age in years	Gender		Total
	Female	Male	
0–10	46(5.2%)	46(5.4%)	86(5.3%)
11–20	85(9.7%)	57(6.7%)	132(8.1%)
21–30	304(34.5%)	139(16.4%)	407(25.1%)
31–40	78(8.9%)	137(16.2%)	208(12.8%)
41–50	92(10.4%)	116(13.7%)	197(12.1%)
51–60	117(13.3%)	156(18.4%)	259(15.9%)
61–70	109(12.4%)	141(16.6%)	237(14.6%)
71–80	25(3.2%)	42(5%)	67(4.1%)
81–90	19(2.4%)	12(1.4%)	31(1.9%)
>90	0(0%)	2(0.2%)	2(0.1%)
Total	776(100%)	848(100%)	1624(100%)

This study shows a wide age distribution among the subjects, between 1 to 90 years old. The most common presenting age group was in between 21–30 years, followed by 51–60 years. Majority of women 34.5% belonged to the age group 21–30 whereas majority of male subjects belonged to the age group of 51–60.

Graph 2: Age distribution of patients studied.

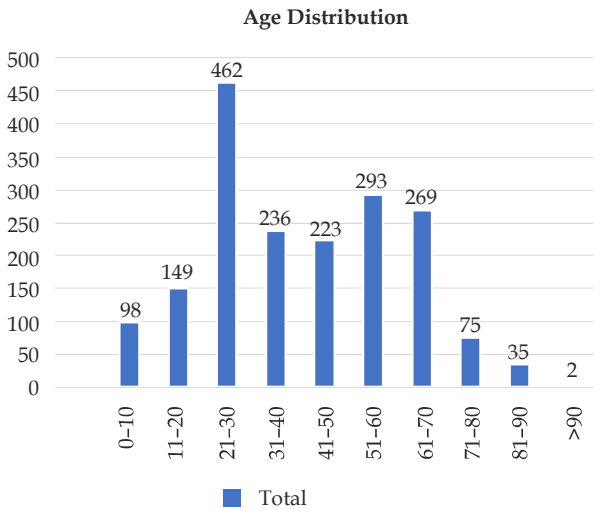


Table 3: Profile of cases presenting as emergencies.

Diabetes Mellitus + Hypertension	953
Medical Condition	567
Injuries	257
Eye Condn	54
Surgical Condn	11

Graph 3: Profile of cases presenting as emergencies.

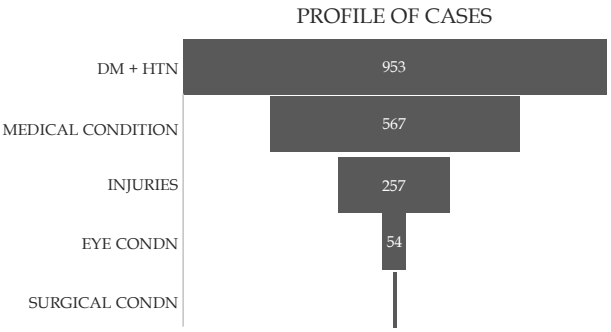
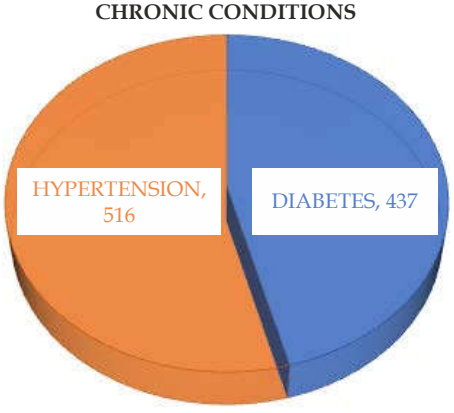


Table 4: Chronic Cases.

Chronic Conditions	No.
Diabetes mellitus	437
Hypertension	516

Graph 4: Chronic Cases.



Most of the patients who came to the emergency department were mostly with medical conditions like hypertension & diabetes mellitus which constituted about 51.73%. Among this, 54.14% of them were hypertensives and the rest were diabetic patients.

Table 5: List of Medical Conditions.

SL No	Medical Conditions	Count
1.	Eclampsia	204
2.	Pre-eclampsia	104
3.	Seizures	58
4.	Encephalitis	42
5.	Headache	35
6.	Chronic kidney disease	33
7.	Meningitis	23
8.	Anemia	11
9.	Neurocysticercosis	10
10.	Shock	06
11.	Cavernous sinus thrombosis	05
12.	Encephalopathy	05
13.	Retro positive	05
14.	Diabetic keto acidosis	04
15.	Hypertensive emergency	04
16.	Lung cancer	04
17.	COPD	03
18.	HELLP syndrome	02
19.	Hemiparesis	02
20.	7th Nerve palsy	01
21.	DIC	01
22.	Fat embolism	01
23.	Fungicide poisoning	01
24.	Neurotoxoplasmosis	01
25.	SLE	01
26.	Thrombocytopenia	01

Medical conditions other than hypertension & diabetes mellitus came in next, comprising of 30.78% of the total. Of these patients, most of them were references from the OBG department for eclampsia (35.97%) and pre eclampsia (18.34%). Other conditions like seizures (10.23%), encephalitis, headache, chronic kidney disease, meningitis, anemia, neurocysticercosis, shock, cavernous sinus thrombosis, encephalopathy, retropositive, diabetic keto acidosis, hypertensive emergency, lung cancer, COPD, HELLP syndrome, hemiperesis, 7th nerve palsy, DIC, fat embolism, fungicide poisoning, neurotoxoplasmosis, SLE and thrombocytopenia (0.1%) comprised of the remaining cases.

Out of 1842 subjects, just 54(2.9%) presented to the emergency department with pure ocular complaints.

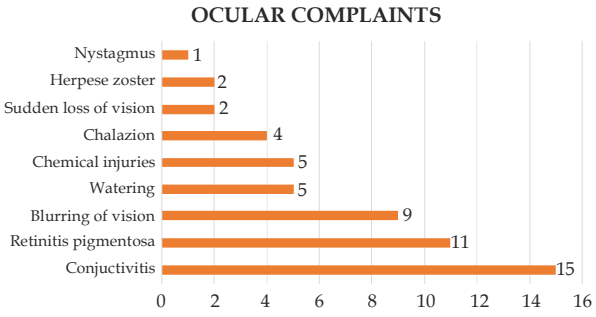
Majority of them presented with non-infectious conditions in which a most of them who presented

with diminished vision were found to have retinitis pigmentosa (20.37%) whereas 16.67% of them presented with blurring of vision. The others presented with watering of the eye, chalazion, sudden loss of vision and nystagmus. Among the infectious etiology, it was found that a majority of them presented with (27.79%) acute conjunctivitis and the rest with herpes zoster.

Table 6: List of pure ocular complaints.

Sl No	Non Infectious	Count	Sl No	Infectious	Count
1	Watering	05	1	Herpese zoster	02
2	Sudden loss of vision	02	2	conjuctivitis	15
3	Blurring of vision	09			
4	Chalazion	04			
5	Chemical injuries	05			
6	Retinitis pigmentosa	11			
7	Nystagmus	01			

Graph 4: Ocular Complaints.



Injuries

Table 7: Mode of Injuries.

Sl No	Mode of Injuries	Count
1	Road traffic accident	221
2	Foreign body	17
3	Burns	04
4	Dog bite	02
5	Chemical injuries	07
6	Stick injury	04
7	Fire cracker injury	02

Next set of subjects presented to the emergency due to trauma 13.95%. A majority of which was due to RTA – 85.99% which included lacerations, periorbital oedema, subconjunctival haemorrhage, ecchymosis and traumatic cataract. 6.61% of them presented with a foreign body to the eye. The remaining were due to chemical injuries, burns, stick injury, dog bite and fire cracker injury.

Graph 5: Mode of Injuries.

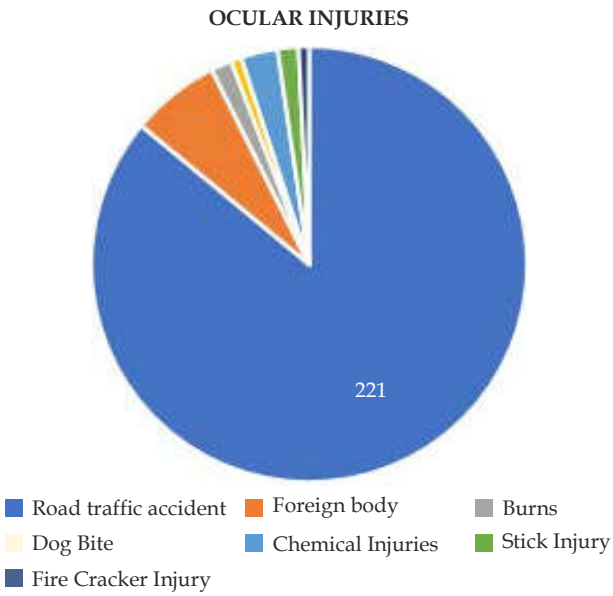


Table 8: Surgical causes.

SL NO	Surgical Conditions	Count
1.	Snake Bite	04
2.	Epistaxis	03
3.	Intra Cranial Bleed	02
4.	Pancreatitis	02
5.	Frontal Fungal Sinusitis	01
6.	Intra Cranial Embolism	01
7.	Sub Dural Heamorrhage	01
8.	Axonal Injuries	01
9.	Hydrocephalus	01
10.	Schwannoma Tumour	01
11.	Ruptured Aneurysm	01
	Total	18

Just 0.59% of them presented to us secondary to surgical complications. 22.22% was to rule out vascular complications due to snake bite. The rest were mainly to rule out papilledema secondary to raised ICT due to intra cranial bleed, hydrocephalus, schwannoma tumour, ruptured aneurysm, intra cranial embolism.

Results

This study was conducted among 1842 subjects. Majority of them were men. The most common presenting age group was in between 21–30 years. Most of the referrals were due to hypertension followed by diabetes. Just 2.9% of the subjects presented with pure ocular complaints, with non-infectious conditions forming a majority. Of those patients presenting with trauma, RTA was the most common cause.

Discussion

Successful outcomes in emergencies depend on timely presentation and intervention which will help in minimizing the vision loss and provide a chance at better visual prognosis[9] especially in a teaching hospital.[6]

This study shows a diverse age distribution ranging from 1 to 90 years. The most common presenting age group was in between 21–30 years, followed by 51–60 years representing the productive age group of the society. A study by May et al., showed similar results with 58 of the patients visiting the emergency being less than 30 years of age. [10] Studies conducted in Nigeria showed similar results with most of the patients being less than 50 years of age.[11] 33.2% of the patients were less than 30 years of age, similar to the studies done by Joseph et al., this might be due a higher incidence of outdoor activities by this age group.[1]

Males constituted 52.2%, of our study subjects, a finding similar to other studies that show that men are more susceptible to ocular emergencies or trauma due to occupational hazards, greater participation in adventure sports, propensity to accidents probably due to the influence of drug and alcohol.[12,4] Resnikoff et al. suggested that the numbers might be more in men than in women because men seek health care more often than women.[13]

Majority of the emergency ophthalmic consultations (51.73%) were referrals associated with medical conditions like hypertension (54.14%) & diabetes mellitus (45.86%).

In patients with hypertensive urgency, it can be a significant marker of target organ damage.[14] This will help in better care of the patient with due importance to multi system management.

The importance of hypertensive retinopathy is mostly due to its association with stroke. The presence of retinopathy maybe an indicator to initiate antihypertensive therapy.[15]

45.86% of patients were diabetics in the present study. A study conducted in Malaysia by Tajunisah, et al7, and Australia studyby Chandra Bala Et. Al.,[16] showed that majority of the diabetic inpatient references were to rule out diabetic retinopathy.

A study conducted in Australia differed in that majority of ophthalmology references were from in patient with a recent history of stroke, nerve palsy or were on long term steroids mostly from department of surgery and medicine.[17]

30.78% of emergency ophthalmic consultations were from the Obstetrics & Gynaecology department (eclampsia (35.97%) and pre eclampsia (18.34%)) and other medical conditions like seizures, encephalitis, headache, chronic kidney disease, meningitis, anaemia, neurocysticercosis, shock, cavernous sinus thrombosis, encephalopathy, retropositive patients, diabetic keto acidosis, hypertensive emergency, lung cancer, COPD, HELLP syndrome, hemiparesis, 7th Nerve palsy, DIC, fat embolism, fungicide poisoning, neurotoxoplasmosis, SLE and thrombocytopenia.

A study conducted by Joseph et.al.[1] showed that most of their referral cases were of non-emergency type and constituted about 57.5%.[1]

A study conducted by Sridhar Et. Al showed that 35.8% of the patients who visited the EMD were due to non – emergency causes.[3] Similar results were found in studies conducted in the United States that also showed that majority of cases were not an emergency, Uscher – Pines et al., study showed that 37% of the cases in their literature review of 26 articles conducted, were of non-emergency types.[18] Similar study series conducted in ophthalmology departments all over the world show that the rate of non-emergency cases are about 50–70%.[19] Similar to this, a study done in Nigeria showed that non traumatic emergencies summed up to 47.7%.[19]

However, this is in contrary to some studies conducted in the developing parts of the world with higher incidence emergency referrals for trauma. This might be due to poor road traffic awareness or lack of precautions taken by them during driving or at work or due to inadvertent use of over the counter medications resulting in worsening of the otherwise simple eye conditions.[1]

2.9% of the entire study population, primarily presented to the emergency department with pure ocular complaints. Majority of them, (68.5%) were non-infectious conditions like retinitis pigmentosa (20.37%). 16.67% presented with nonspecific blurring of vision and the others presented with watering of the eye, lid swelling, sudden loss of vision and nystagmus.

31.5% of the primary ocular emergency consultations were attributed to infectious causes , majority being acute conjunctivitis (88.23%) and the rest to rule out ocular involvement in herpes zoster involving the eyelids.

This is somewhat comparable to a study conducted in Miami, USA, which showed that the most common presenting ocular finding was conjunctivitis, corneal abrasion, dry eye, foreign body and corneal ulcer.[3]

A study conducted in Australia showed that conjunctivitis was the most common finding followed by keratitis, cataract, corneal abrasion and iridocyclitis in a metropolitan hospital.[20]

Three separate studies, under altogether different conditions, conducted in Ophthalmology clinics in Great Britain by Price et al[21]., Vernon et al[22]., and Jones et al[23]. reported that their most common diagnosis was corneal foreign body followed by meibomian gland dysfunction, corneal abrasion and conjunctivitis.

A study conducted in Brazil showed that acute infections of the eye like conjunctivitis, chalazion, keratitis, endophthalmitis and herpes zoster was the second most common cause of presentation to the ED after trauma.[4]

13.95% of the subjects presented to the emergency department with trauma, mostly due to RTA (85.99%). These patients had lacerations, periorbital oedema, subconjunctival haemorrhage, ecchymosis and traumatic cataract at presentation. 6.61% of them had corneal foreign body which conforms to the study conducted by Voonet.a l.[24] Chemical injuries, burns, stick injury, dog bite and fire cracker injury constituted the rest of the trauma a cases.

Thus studies have shown that an ophthalmologist's help has a critical role in diagnosing systemic conditions and has a key role in referring a patient to a clinician, like the detection of Kayser Fleischer rings could point to Wilsons disease, CMV retinitis is indicative of HIV infection and papilledema maybe due to raised ICT.[n]

Conclusion

In conclusion, the ophthalmologist plays a pivotal role in diagnosing the severity of non-emergency conditions like diabetes, hypertension and papilledema, PIH when referred in a tertiary health care centre.

Inputs of ophthalmoscopy forms an integral part of management pregnancy induced hypertension and related complications. Triage when done in cases of polytrauma or pure ophthalmic trauma will benefit not only in prioritising the critical cases needing ophthalmic services but will also help in optimal utilising of manpower. A dedicated ophthalmic emergency care team should be competent to manage primary ophthalmic emergencies, be a part of emergency trauma care and interdisciplinary health care delivery system.

In pure ocular injuries like chemical injuries, globe rupture, etc, early diagnosis and prompt intervention will help in preserving the visual function in the patients.

A dedicated ophthalmic emergency care team should be competent to manage primary ophthalmic emergencies, be a part of the emergency trauma team and interdisciplinary health care delivery system.

Limitations

A complete ocular diagnosis and visual morbidity assessment was not captured in the data collected. Also, there was no follow up data available.

Abbrevations

CMV– Cyto Megalo Virus

COPD– Chronic Obstructive Pulmonary Disease

DIC– Disseminated Intravascular Coagulation

ED– Emergency Department

HELLP– Haemolysis Elevated Liver Enzymes Low Platelet count

HIV– Human Immunodeficiency Virus

ICT– Intracranial Tension

OBG– Obstetrics and Gynaecology

OPD– Out Patient Department

PIH– Pregnancy Induced Hypertension

RTA– Road Traffic Accident

SLE– Systemic Lupus Erythematosus

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