

## Frequency of ocular emergencies in a tertiary care setting in Karachi, Pakistan — It is time to reduce unnecessary visits

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### Abstract

**Objective:** To examine the frequency of ocular emergencies received in a tertiary care setting.

**Methods:** This retrospective clinical audit was undertaken at the Emergency Department of the Aga Khan University Hospital, Karachi, and comprised data of all individuals who presented between January and October 2016. The department's triage database was used to retrieve the data on patient's age, gender, presenting complaints, time and date of presentation. Data was analyzed using SPSS 19.

**Results:** Of the 74729 individuals who presented, 928 (1.2%) presented with ocular complaints. The age range with the highest total number of visits was 0-9 years followed by 20-29 years. A significantly higher proportion of patients with eye complaints presented between 8am and 8pm on weekends (Sundays) compared with weekdays ( $p < 0.001$ ). There was no significant association between gender and time of visit ( $p = 0.592$ ). The most commonly reported symptom was "eye injury" 368(39.7%). A significantly higher proportion of males presented with eye injury than females ( $p = 0.043$ ).

**Conclusion:** Ocular complaints accounted for a reasonable proportion of emergency visits, but many of the visits were unnecessary.

**Keywords:** ED, Ocular emergencies, Red eye. (JPMA 68: 1493; 2018)

### Introduction

Ophthalmic emergencies often present as immediate threats to the visual system, which, if left untreated, can lead to significant loss of vision and blindness.<sup>1</sup> Timely diagnosis and referral by primary care providers is essential for successful outcomes.

The frequency and type of ocular conditions presenting to emergency departments (EDs) depend on the social context and healthcare systems. Several studies have investigated the most common ophthalmic conditions presenting to the ED.<sup>2-6</sup> Many emergency room (ER) visits are due to common eye conditions of relatively minor severity, especially simple red eye like viral conjunctivitis.<sup>3-6</sup> Open globe injuries, a vision-threatening condition that requires immediate ophthalmology consultation, account for a substantial proportion of the presentations in ER in our settings,<sup>5</sup> but only a minor fraction of the presentations in other settings.<sup>2-4,6</sup>

The study of ocular emergencies is an under-studied research topic in Pakistan. Many of these eye emergencies could be minor problems, might not require ER visits and could be treated in outpatient settings. Examining the frequency and types of ocular emergencies provide

avenue for intervention to reduce unnecessary emergency visits. The current study was planned to report the frequency and types of ocular emergencies received in an urban tertiary care setting.

### Patients and Methods

This cross-sectional, retrospective clinical audit was held at the Aga Khan University Hospital, Karachi, and comprised consecutive patients who presented to the ED between January and October 2016. Approval was obtained from the institutional ethics review committee. ED triage database was used to retrieve data on patient's age, gender, presenting complaints, time and date of presentation. Data was analysed using SPSS 19. Means with standard deviation (SD) were computed to describe continuous data. Frequencies and percentages were calculated to describe categorical data. Chi-square test was used to compare proportions.  $P < 0.05$  was considered statistically significant.

### Results

Of the 74729 individuals who presented to the ED, 928(1.2%) presented with ocular complaints. Of them, 512(55.2 %) were males and 416 (44.8 %) were females. April was the month with the highest proportion of patients with emergency eye visits (105/6743[1.6%]) whereas January was the month with the lowest percentage of patients with emergency eye visits (74/7843[0.9%]).

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**Table-1:** Characteristics of patients presenting with ocular complaints at the Emergency Department (ED) of a tertiary care hospital in Karachi (n = 928).

Characteristic	Frequency	%	
Age group years	0-9	304	32.8
	10-19	97	10.5
	20-29	163	17.6
	30-39	123	13.3
	40-49	78	8.4
	50-59	63	6.8
	60-69	60	6.5
	70-79	29	3.1
	≥ 80	11	1.2
	Total	928	100.0
Sex	Male	512	55.2
	Female	416	44.8
Time	8 am to 7.59 pm	553	59.6
	8.00 pm - 11.59 pm	211	22.7
	Midnight -7.59 am	164	17.7
Day	Monday	118	12.7
	Tuesday	110	11.9
	Wednesday	120	12.9
	Thursday	116	12.5
	Friday	93	10.0
	Saturday	133	14.3
	Sunday	238	25.6
	Month	Jan	74
Feb	91	9.8	
March	87	9.4	
April	105	11.3	
May	86	9.3	
June	88	9.5	
July	109	11.7	
Aug	93	10.0	
Sept	94	10.1	
Oct	101	10.9	

The age range with the highest total number of emergency eye visits was 0-9 years followed by 20-29 years. Overall, 553(59.6 %) eye emergency visits took place between 8am and 7.59pm, 211(22.7%) between 8pm and midnight, and 164(17.7%) between midnight and 7.59am. A significantly higher proportion of patients with eye complaints presented between 8am and 8pm on Sundays compared with weekdays ( $p < 0.001$ ). There was no significant association between gender and time of visit ( $p = 0.592$ ) (Table-1).

Overall, 604 (65.1%) patients reported one, 315 (33.9%) patients two, and 9(1%) reported three symptoms. The most commonly reported symptom was eye injury 368(39.7%), followed by red eye, painful eye, swollen eyes, reduced vision, itching, watery eyes, eye discharge and burning eyes (Table-2). One (0.10%) patient each presented with "absent globe at birth" and eye tumour. A

**Table-2:** Symptoms of patients presenting with ocular complaints at the Emergency Department of a tertiary care hospital in Karachi (n = 928).

Presenting ocular symptom	Frequency	%
Eye injury	368	39.7
Red eye	341	36.7
Painful eye	203	21.9
Swollen eye	189	20.4
Reduced vision	38	4.1
Itching	32	3.4
Watery eyes	22	2.4
Irritation	20	2.2
Discharge	19	2.0
Burning eyes	16	1.7
Drooping eyelids	6	0.6
Floater/flushes	2	0.2
Squint	2	0.2
Absent globe at birth	1	0.1
Eye tumour	1	0.1
Stye	1	0.1

significantly higher proportion of males presented with eye injury than females ( $p=0.043$ ).

### Discussion

In our study, ocular complaints accounted for 1.2% of all ED visits to a private tertiary care hospital. The age range with the highest absolute number of emergency eye visits was 0-9 years. Eye injuries accounted for 39.7% of all eye-related ED visits.

Previous studies<sup>2,4</sup> have shown that an overwhelming proportion of ED visits were for red, painful and watery eyes. This was also the case in our study. Most cases of red eye are due to viral conjunctivitis, which may be isolated or part of an outbreak and do not require antibiotics. Treatment is supportive. It is usually caused by adenovirus and is highly contagious and patients should be instructed about how to prevent its transmission.

Eye injuries accounted for 39.7% of all eye-related ED visits. This proportion was 47.2% in a study done in Peshawar, and 53.3% in Singapore.<sup>2,5</sup> Eye injuries were significantly more common among males than females, which has been a consistent finding across different studies.<sup>4,6</sup> A higher frequency of occupational or outdoor exposure in males likely explains this finding.

With respect to age groups, children under 10 years made a significant proportion of the cases. Children are more likely to suffer accidental eye injuries, especially while playing with other children. Decreased knowledge of child-safe toys or simply the lack of resources to protect or supervise younger children from harm may further increase their risk of eye injuries. A decreased frequency

of hand-washing and overcrowding predispose this age group to infections. It is estimated that approximately 3 million school days are lost annually in the United States alone as a result of acute conjunctivitis, mostly viral in nature.<sup>7</sup> School administrators and teachers should know how to prevent the spread of conjunctivitis in the classroom.

In our study, non-urgent eye problems accounted for a sizable share of all eye-related ED visits. Many of these visits were unnecessary and could have been handled by primary healthcare physicians/workers. The inappropriate use of scarce ER resources for non-urgent conditions needs to be studied in greater depth so that appropriate measures can be taken to ensure correct utilisation of ED resources. Research is also needed to determine why these cases present directly to ER and not to primary healthcare physicians or an ophthalmologist.

One of the limitations of this study is that it is based on patient-reported presenting complaints. We did not follow up to see what the ophthalmologist's diagnosis was and hence could not assess the validity of the patient-reported data. There is also a possibility that some of the visits we classified as "unnecessary" may not have been so. We also have no information on how the individuals injured their eye, the type of eye injury (corneal, open globe, severity, etc.) or resulting visual acuity. We also don't know why the person went to the ED instead of their primary healthcare provider.

There is a need to explain to the general population when to go to the ED. There are certain benign but sudden and ominous-looking ocular conditions that do not warrant an ED visit. These include painless red eyes, itching of eyes alone and swollen or watery eyes. There were certain common cases that had arrived and warranted a visit. Painful eyes and reduced vision were two of those conditions. The high frequency of such cases questions the lack of eye safety methods available to the general

population in the city. Exposure of children to sight-threatening toys and to other harmful sources needs to be reduced. Certain occupations require eye protection gears, if not already provided. There could also be a poor attitude towards ocular safety in our population. This should be explored in future studies. The burden of ocular infections could be substantially reduced by promoting hand hygiene.

## Conclusion

Non-urgent visits accounted for a significant proportion of eye-related ED visits. The finding provides the foundation for the hypothesis that a significant proportion of people who come to the ED can be treated elsewhere, thus decreasing unnecessary burden on the emergency system. However, this needs to be evaluated in prospective studies.

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