Characterising ophthalmology related presentations to the emergency department: a retrospective study

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Introduction

- There is limited evidence characterising the profile of patients presenting to the emergency department (ED) with ophthalmology-related complaints.
- We sought to examine the main reasons for ophthalmology-related presentations to the ED using a large electronic health record.

Methods

We used the Medical Information Mart for Intensive Care IV Emergency Department (MIMIC-ED v2.0) database to examine ophthalmology-related ED visits. MIMIC-ED is a large, freely available database of ED admissions at the Beth Israel Deaconess Medical Centre between 2011 and 2019.[1] A list of ophthalmology-related International Classification of Diseases (ICD-9 and ICD-10) diagnostic codes were compiled and used to identify eligible patients.

Patient demographics, presenting complaint recorded at ED triage, and 1st & 2nd diagnoses recorded on ED discharge were examined to characterise the type of ophthalmology-related presentations to the ED.

Top 15 most common diagnoses on ED discharge	Count
Conjunctivitis	529
Laceration without foreign body of eyelid and periocular area	443
Ocular pain	273
Superficial injury to cornea	259
Injury to conjunctiva and corneal abrasion without foreign body	231
Essential (primary) hypertension	220
Pain in or around eye	218
Exposure to other specified factors, initial encounter	212
Fracture orbital floor-closed	179
Fracture of orbital floor	157
Struck by object or person with or without fall	140
Headache	134
Striking against or struck by other objects, initial encounter	126
Conjunctival hemorrhage	108
Fall on same level, unspecified, initial encounter	99

Table 1

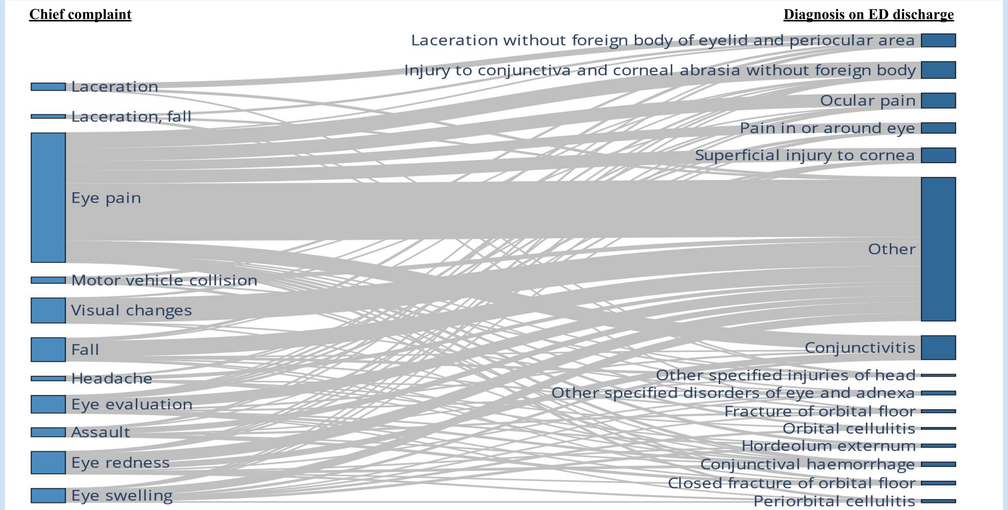


Figure 1. Sankey diagram demonstrating how the chief complaint in ED (L) maps to diagnosis on discharge (R)

Results

- The initial dataset of all ED admissions consisted of 447,712 visits for 216,373 unique patients.
- There were 5,592 ophthalmology-related visits from 5,202 unique patients.
- The median age of ophthalmology-related ED visits was 47.0, compared to 54.0 across all ED visits (Figure 2).
- The most commonly coded diagnoses of ophthalmology-related visits included 'Conjunctivitis' (n = 529), 'Laceration without foreign body of eyelid and periocular area' (n = 443), 'Ocular pain' (n = 273), 'Superficial injury to cornea' (n = 259), and 'Injury to conjunctiva and corneal abrasion without foreign body' (n = 231), (Table 1).
- 17.1% of ophthalmology-related visits resulted in hospital admission, compared with 47.8% of all ED visits.
- The most commonly coded diagnoses that resulted in hospital admission included 'Closed fracture to the orbital floor' (n = 88), 'Laceration without foreign body of the eyelid and periocular body' (n = 66), and 'Fall on the same level' (n = 35).

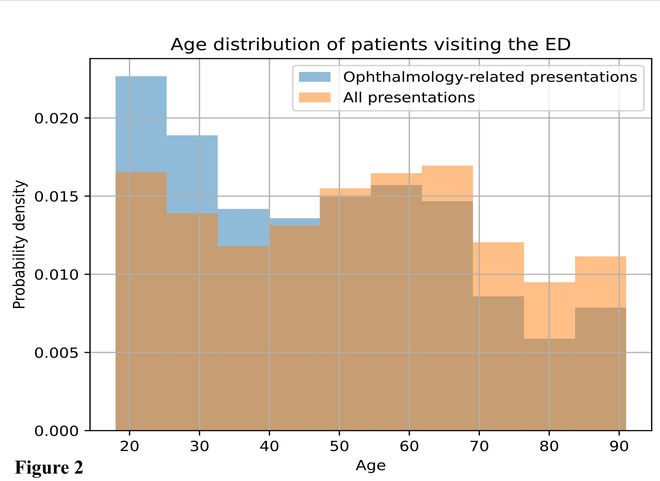


Figure 2

Discussion

- Many ophthalmology-related presentations do not have a formal diagnosis on discharge
- ED presentations that ended with admission were most frequently related to trauma (fractures, lacerations etc)
- Improving understanding of the profiles of patients who present to the emergency department, and how the presentations relate to demographics and hospital admissions, will help inform triaging, training and resource allocation.

Limitations

1. Retrospective, single-centre analysis of a single hospital, Beth Israel Deaconess Medical Centre (BIDMC)
2. Population age ranges were not adjusted to the greater population
3. Accurate capture of diagnoses within electronic health records (EHRs) is reliant on correct coding.