



RESEARCH ARTICLE

INCIDENCE OF ACUTE EYE DISEASES AMONGST PILGRIMS DURING HAJJ 2016 IN MAKKAH,  
SAUDI ARABIA

Mohammed Saed Almalki, Irshad A Subhan, \*Bafaraj Ahmad, G., Almalki Riyadh, A.,  
Alzaidy Nazih, S., Alamri Osama and Almalki Ashwaq, M.

Faculty of Medicine, Hail University, Makkah Saudi Arabia

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ABSTRACT

**Objective:** To estimate the incidence and distribution of common acute eye diseases amongst pilgrims during Hajj 2016 in Makkah City, Saudi Arabia by age, nationality and gender.

**Method:** An exploratory descriptive cross-sectional incidence survey was done. We surveyed about 156 patients who presented to the ophthalmology clinic at the 3 main hospitals: Al-Noor Hospital, King Faisal Hospital, and King Abdullah Medical City in Makkah city, during the time period of 2/09/2015 to 15/09/2016 (1/12/1437H to 14/12/1437 H). Patients received thorough eye examination and management. The diagnostic data was used to gather information which was analyzed by statistical tools, to estimate the incidence of acute eye conditions among a wide range of age, nationality and gender amongst pilgrims.

**Results:** 156 patients attended the eye clinics in two of the above listed hospital, out of which 102 (65.4%) were males and 54(34.6) were females. Among these patients 124 of them were above the age group of 36 years. 75 of them belong to the Middle East. The commonest diagnosis was Simple Conjunctivitis (26 patients-16.7%). Retinal detachment and Blepharitis was diagnosed in 8 patients (5.1%), followed by ulcerative keratitis and glaucoma in 6 cases (3.8%). Remaining of the patients fell into other non specific category, like dry eyes, pterygium, corneal foreign body and refractive error.

**Conclusions:** Majority of the patients had non-specific infections of the eye. There was no incidence of spurt of contagious eye infections. An extensive study is required including all the primary clinics catering the hajj pilgrims, and the duration of the study must be more than 2 weeks which was in this study.

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INTRODUCTION

Hajj is a unique Islamic ritual where around 3 million Muslims from the whole world come annually to Makkah, Kingdom of Saudi Arabia. Eye diseases among pilgrims are considered to be one of the possible health concerns during this period, where the risk of infectious eye diseases is a potential threat. The mass accumulation of these people and crowding makes these patients at high risk for contagious eye diseases. We thought to study of the pattern of acute ocular diseases as they may lead ocular morbidity, and to adverse health hazards, although conditions like refractive errors and cataract are treatable, and dry eyes and infections are largely preventable. (Onwasigwe et al., 1996) About 161 million people are visually disabled in the world today, and the number is steadily increasing because of population growth and aging.

(Resnikoff et al., 2004) Blindness, with its social and economic consequences, represents a significant public health problem in many parts of the world. (Thylefors, 1999) Cataract is still the major cause of visual impairment and blindness globally, but other age-related eye diseases, that is, age-related macular degeneration (AMD), glaucoma, diabetic retinopathy (DR), and degenerative myopia, are becoming the most important causes in developed countries (Pascolini and Mariotti, 2012; Klaver et al., 1998) It is important to note some of these infections may lead to blindness and inflammatory eye diseases that cause corneal scarring, which eventually lead to functional blindness. Trachoma, ocular trauma, and corneal ulceration are significant causes of corneal blindness, which are often under reported, but may be responsible for millions of new cases of monocular blindness every year. (Whitcher et al., 2001) Acute eye conditions are those which need to be attended by a medical professional within 24 hours, like corneal ulcers, acute mucopurulent conjunctivitis, ocular trauma, ocular foreign body, acute anterior uveitis, acute congestive glaucoma,

\*Corresponding author: Bafaraj Ahmad, G.  
Faculty of Medicine, Hail University, Makkah Saudi Arabia

etc. The complicated epidemiology of ocular conditions and the wide variety of factors involved and since there is paucity of literature describing the pattern of eye diseases in this kind of huge gathering, we contemplated to conduct this study and to provide appropriate data to compare the pattern of eye conditions amongst pilgrims. This study aimed to determine the incidence of Acute Eye Diseases among pilgrims during Hajj 2016 attending the Eye Clinics in Al-Noor Hospital, King Faisal Hospital, and King Abdullah Medical City, in Mecca city, Saudi Arabia, which provides medical care facilities for this population.

### Primary Objective of the study

To identify common acute eye conditions among pilgrims.

### Secondary Objectives were

- Assessing the incidence of preventable eye diseases.
- Information which obtained from the study used to assist ministry of health in planning for better eye care for pilgrims and provided data for future analytical researches.

## MATERIALS AND METHODS

A cross-sectional study used to assess the incidence of the acute eye diseases amongst pilgrims. Pilgrims with Acute eye diseases are referred to 3 main hospitals; Al-Noor Hospital, King Faisal Hospital, and King Abdullah Medical City, in Mecca. Data pertaining to the diagnosis and demography was collected by filling in excel data sheet with the information from the treating Ophthalmologist.

### Study Population / timing and sitting

Hajj 2016 pilgrims presented to ophthalmology clinic OPD at 3 main hospital: Al-Noor Hospital, King Faisal Hospital, and King Abdullah Medical City in Makkah city, during the time period of 2/09/2015 to 15/09/2016 (1/12/1437H to 14/12/1437 H).

### Inclusion Criteria

- Adult patients in the age group (15 – 90 years old).
- Both genders. (Females and Males)
- Hajj Pilgrims who attended the Eye clinics with Acute Eye conditions in the previously mentioned Hospitals.

### Exclusion criteria

Patients with no eye complaint were excluded from our study.

### Study procedure

Data was collected by means of information from the examining Eye Doctor in the respective eye clinics by the research co investigators on a structured data sheet. The data sheet contained the following:

- Patient's personal data (age, gender, nationality, etc..)
- Associated medical history e.g. of chronic diseases (DM, HTN, CKD, Asthma, thyroid disorders, rheumatic disorders, URI, others..), Use of lenses at time of recruitment.

## Outcome Assessment

Primary outcome was to assess the frequency of each eye disease diagnosed by Ophthalmologist.

## Data collection and management

The data sheet printed on paper was in the form of excel sheet approved by IRB. The investigating co-authors filled in the data sheet. The data sheet was handed over to the primary investigator at the end of the each day of the study period.

## Sample size determination

This study is an exploratory descriptive study that aimed to determine most common eye conditions diagnosed during hajj time.

## Statistical Analysis Plan

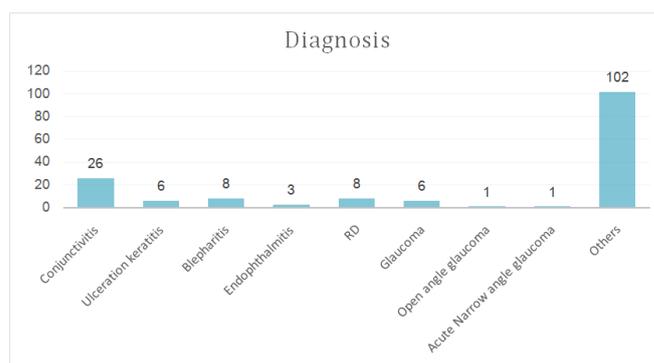
SPSS software, version 22.0 was used for all statistical analysis. For categorical variables, percentages were used included comparisons between groups:

## RESULTS

A total number of 156 patients attended the eye clinics in two of the above listed hospital, out of which 102 (65.4%) were males and 54(34.6) were females. Among these patients 124 of them were above the age group of 36 years. 75 of them belong to the Middle East. The commonest diagnosis was Simple Conjunctivitis (26 patients-16.7%). Retinal detachment and blepharitis was diagnosed in 8 patients (5.1%), followed by ulcerative keratitis and glaucoma in 6 cases (3.8%). Remaining of the patients fell into other non specific category, like dry eyes, pterygium, corneal foreign body and refractive error.

**Table 1. The characteristics of the cases**

| Parameter         | Category             | Number      | Valid percent |
|-------------------|----------------------|-------------|---------------|
| Gender<br>(n=156) | Males                | 102         | 65.4          |
|                   | Females              | 54          | 34.6          |
| Age<br>(n=156)    | 15-25                | 16          | 10.3          |
|                   | 26-35                | 16          | 10.3          |
|                   | 36-45                | 49          | 31.4          |
|                   | >55                  | 75          | 48.1          |
|                   | Ethnicity<br>(n=156) | Middle East | 75            |
|                   | East Asia            | 9           | 5.8           |
|                   | North Africa         | 23          | 14.7          |
|                   | South Africa         | 17          | 10.9          |
|                   | Indian               | 15          | 9.6           |
|                   | Caucasian            | 1           | 0.6           |
|                   | Rest of the World    | 16          | 10.3          |



**Figure 1. The number of each diagnosis**

## DISCUSSION

This was the first kind of study documented in a mass population, gathering in this city for a short period of time. Majority of the patients had non-specific infections of the eye. There was no incidence of spurt of contagious eye infections, which reflects the health and hygiene standards maintained during the pilgrimage by the local authorities. The total number of eye cases reporting to the hospital for medical care was surprisingly low, as there were about 2 million people who gathered for the Hajj, this year, though it was lesser than the number of pilgrims in the previous years. The data collected was from three major hospitals which cater to these patients. We believe that it would be more informative if the data can be collected from the primary clinics located in the residential places of these people. Though most of these diseases were managed medically, 8 patients needed surgery.

### Conclusion

A study is required including all the primary clinics catering to the hajj pilgrims, and also the duration of the study must be more than 2 weeks which was in this study.

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