



## Shifting Patterns of Ocular Emergencies: A Comparative Study in Basrah, Iraq

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### ABSTRACT

**Introduction:** Ocular emergencies present a significant public health concern, potentially leading to vision loss if not addressed promptly. Understanding the dynamics of these emergencies is essential for effective healthcare planning and resource allocation. This study aimed to analyze the trends and characteristics of ocular emergencies in Basrah, Iraq, and compare them with historical data. **Methods:** A retrospective study was conducted at Al-Sayab Teaching Hospital in Basrah, involving 250 patients presenting to the ophthalmology emergency department between January 1<sup>st</sup>, 2023, and December 31<sup>st</sup>, 2023. Data regarding demographics, presentation time, causes of emergencies, and visual acuity were analyzed. **Results:** The leading causes of ocular emergencies were inflammatory diseases (32%), trauma (28%), and foreign bodies (33.2%). A significant proportion of patients (20%) presented with severe visual impairment (less than 20/200). Most emergencies occurred in males (72.4%), primarily in the 20-40 year age group. **Conclusion:** The study highlights a high prevalence of inflammatory diseases and trauma among ocular emergencies in Basrah. Public health interventions should focus on preventing ocular trauma and improving access to eye care services. Continuous monitoring of these patterns is crucial for effective public health planning.

### 1. Introduction

Ocular emergencies, encompassing a diverse spectrum of conditions affecting the eye and its surrounding structures, demand immediate medical intervention to avert potential vision loss or irreversible damage. These emergencies, ranging from acute infections and inflammatory processes to traumatic injuries and foreign body intrusions, constitute a significant public health concern, particularly in regions with limited access to specialized ophthalmic care. The prompt and effective management of ocular emergencies is paramount, not only to preserve vision but also to enhance the overall quality of life for those affected. The burden of ocular emergencies weighs heavily on healthcare systems worldwide, accounting for a substantial proportion of visits to emergency departments. Studies have

reported that eye-related complaints constitute approximately 1% to 6% of all emergency room presentations, underscoring the significant impact of these conditions on healthcare resources and patient well-being. The diversity of etiologies contributing to ocular emergencies further complicates their management, necessitating a comprehensive understanding of their patterns and trends to optimize preventive strategies and healthcare delivery. Trauma, encompassing a wide array of injuries resulting from accidents, violence, or occupational hazards, stands out as one of the most prevalent causes of ocular emergencies globally. These injuries, ranging from minor corneal abrasions to severe globe ruptures, can lead to significant visual impairment and even blindness if not addressed promptly. The prevention of ocular trauma, through the implementation of safety

measures and public awareness campaigns, is therefore crucial in reducing the burden of these emergencies.<sup>1-4</sup>

Infections, another major contributor to ocular emergencies, can affect various structures of the eye, including the conjunctiva, cornea, and uvea. These infections, often caused by bacteria, viruses, or fungi, can lead to severe complications such as corneal ulcers, endophthalmitis, and even vision loss if left untreated. The timely diagnosis and appropriate management of ocular infections are essential to prevent irreversible damage and preserve vision. Foreign bodies, frequently encountered in both occupational and recreational settings, pose a significant threat to ocular health. These foreign bodies, which can range from dust particles and metallic fragments to organic matter, can cause corneal abrasions, and infections, and even penetrate the eye, leading to severe complications. The prompt removal of foreign bodies and the prevention of their entry into the eye are crucial steps in minimizing the risk of ocular emergencies.<sup>5-7</sup>

The patterns of ocular emergencies can vary significantly depending on geographical location, socioeconomic conditions, and cultural practices. In developing countries, where access to healthcare may be limited, ocular infections and trauma tend to be more prevalent, while in industrialized nations, occupational hazards and recreational activities may contribute to a higher incidence of foreign body injuries. Understanding these regional variations is essential for tailoring public health interventions and resource allocation to meet the specific needs of different populations. In Iraq, a country grappling with the aftermath of conflict and political instability, the healthcare system faces numerous challenges, including limited resources, infrastructure deficiencies, and a shortage of trained healthcare professionals. These challenges have likely had a profound impact on the provision of eye care services and the patterns of ocular emergencies. However, there is a dearth of up-to-date data on the epidemiology of ocular emergencies in Iraq, hindering

the development of effective preventive and management strategies.<sup>8-10</sup> This study aims to shed light on the trends and characteristics of ocular emergencies presented to a tertiary care center in Basrah, Iraq.

## **2. Methods**

This research employed a retrospective, cross-sectional design to delve into the intricacies of ocular emergencies presented at a specialized eye care facility in Basrah, Iraq. The study was conducted at the Ophthalmology Clinic within Al-Sayab Teaching Hospital, a distinguished tertiary care center in Basrah, Iraq. This hospital, renowned for its specialized ophthalmic services, serves as a primary referral center for patients seeking advanced eye care in the region. The hospital's strategic location and comprehensive eye care services make it an ideal setting to capture a diverse range of ocular emergencies, providing a representative snapshot of the challenges faced by the local population. Prior to commencing the study, ethical approval was sought and obtained from the Institutional Review Board of Al-Sayab Teaching Hospital. The review board, an independent body responsible for overseeing the ethical conduct of research, meticulously reviewed the study protocol, ensuring its alignment with international ethical guidelines and the protection of human subjects.

The study population encompassed all patients who presented to the Emergency Room (ER) of the Ophthalmology Clinic at Al-Sayab Teaching Hospital with ocular emergencies during the calendar year 2023. This inclusive criterion ensured the capture of a wide spectrum of ocular emergencies, irrespective of their underlying causes or severity, providing a comprehensive overview of the challenges encountered in the ER setting. A retrospective review of medical records was employed as the sampling strategy, allowing for the systematic collection of data on all eligible patients who presented to the ER during the study period. This approach ensured the inclusion of all ocular emergency cases, minimizing the risk of

selection bias and enhancing the generalizability of the study findings. Inclusion Criteria; Patients of all ages and both genders who presented to the ER with ocular emergencies were deemed eligible for inclusion; Ocular emergencies were broadly defined as any condition affecting the eye or its surrounding structures that required immediate medical attention to prevent vision loss or further complications; Patients with complete medical records, including demographic information, date and time of presentation, cause of the ocular emergency, and visual acuity at presentation and discharge, were included in the study. Exclusion Criteria; Patients with incomplete or missing medical records were excluded from the study to maintain data integrity and prevent bias due to missing information; Patients who presented with non-urgent ocular conditions, such as routine eye exams or follow-up appointments, were excluded to maintain the study's focus on acute ocular emergencies.

A standardized data collection form was meticulously developed to ensure the systematic and consistent collection of relevant information from the medical records of eligible patients. The form was pilot-tested on a small sample of medical records to assess its clarity, comprehensiveness, and ease of use, and refined based on the pilot test results. Trained research assistants, well-versed in medical terminology and data collection procedures, were responsible for extracting data from the medical records. These assistants underwent rigorous training to ensure familiarity with the study protocol, data collection form, and ethical guidelines, ensuring data accuracy and consistency. The data collection form captured a comprehensive range of variables, including; Demographic Characteristics: Age, gender, residency (urban or rural), educational level, smoking status, and occupation; Clinical Presentation: Date and time of presentation to the ER, presenting visual acuity, and a detailed description of the ocular emergency; Diagnosis: The primary diagnosis responsible for the ocular emergency, categorized into broad categories such as trauma, infection, inflammation, and foreign body; Treatment: A detailed

description of the treatment provided in the ER, including medications, surgical interventions, and follow-up care; Visual Acuity at Discharge: The visual acuity of the affected eye(s) at the time of discharge from the ER, providing an indication of the immediate treatment outcome.

The data collected from the medical records were meticulously entered into a secure electronic database, ensuring data integrity and confidentiality. The database was password-protected and accessible only to authorized research personnel, safeguarding patient privacy and complying with data protection regulations. Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS) version 26 (IBM, Chicago, US), a comprehensive statistical software package widely used in healthcare research. The analysis included descriptive statistics to summarize patient demographics, clinical characteristics, and treatment outcomes. Categorical variables were presented as frequencies and percentages, providing a clear overview of the distribution of various characteristics within the study population. Continuous variables, such as age and visual acuity, were presented as means and standard deviations, offering insights into the central tendency and variability of these measures.

The Chi-square test, a non-parametric statistical test, was employed to assess the association between categorical variables. This test allowed for the comparison of proportions between different groups, such as the distribution of causes of ocular emergencies across different age groups or genders. A p-value of less than 0.05 was considered statistically significant, indicating that the observed association between variables was unlikely to have occurred by chance alone. This threshold, widely accepted in healthcare research, provided a robust criterion for determining the significance of the study findings.

To ensure the accuracy and reliability of the data, stringent quality control measures were implemented throughout the data collection and analysis process. These measures included; Data Validation: A random sample of medical records was independently reviewed

by a second research assistant to verify the accuracy of data extraction, minimizing the risk of errors; Data Cleaning: The electronic database was regularly checked for inconsistencies, missing values, and outliers, ensuring data integrity and preventing bias in the analysis; Statistical Review: A qualified statistician reviewed the statistical analysis plan and results, ensuring the appropriateness of the statistical methods and the accuracy of the interpretations.

### 3. Results

Table 1 provides a breakdown of the demographic and clinical characteristics of the 250 participants who presented with ocular emergencies at the Ophthalmology Clinic in Al-Sayab Teaching Hospital, Basrah, throughout 2023. The average age was about 35.7 years, with a standard deviation of 18.28. This indicates a wide age range of individuals presenting with eye emergencies. Almost three-quarters (72.4%) of the patients were male. This suggests a potential disparity in the prevalence of ocular emergencies between genders, with males being more likely to experience such conditions. This could be due to a variety of factors, including occupational hazards, risk-taking behaviors, or differences in access to care.

The majority of patients (79.6%) resided in urban areas. This might reflect differences in access to healthcare facilities, types of occupations, or environmental factors between urban and rural settings. A substantial proportion (70.8%) of the participants were educated. While the table doesn't specify the level of education, this suggests that educational attainment might play a role in the awareness and seeking of healthcare for ocular emergencies. 44.4% of the participants reported being smokers. This is a notable finding, as smoking is a known risk factor for various ocular diseases, including cataracts, macular degeneration, and vascular occlusions. Only 35.2% of the participants were employed. This relatively low employment rate could be influenced by various factors, including the local economic conditions, the impact of ocular emergencies on work ability, or the demographics of the study population. The right eye was affected slightly more often (43.6%) than the left eye (40%), while both eyes were involved in 16.4% of cases. This distribution provides insights into the laterality of ocular emergencies and can inform clinical management and resource allocation.

Table 1. Participants characteristics.

Characteristic	Frequency or Mean±SD	Percentage
<b>Age (years)</b>	35.66±18.28	
<b>Gender</b>		
Male	181	72.4%
Female	69	27.6%
<b>Residency</b>		
Urban	199	79.6%
Rural	51	20.4%
<b>Education</b>		
Yes	177	70.8%
No	73	29.2%
<b>Smoking</b>		
Yes	111	44.4%
No	139	55.6%
<b>Occupation</b>		
Yes	88	35.2%
No	172	68.8%
<b>Eye affected</b>		
Right	109	43.6%
Left	100	40%
Both	41	16.4%

Table 2 presents the distribution of ocular emergencies by their underlying causes among the 250 cases presented to the Ophthalmology Clinic in Al-Sayab Teaching Hospital, Basrah, in 2023. Foreign bodies were the most common cause of ocular emergencies, accounting for 33.2% of cases. This highlights the significant risk posed by foreign bodies, such as dust, debris, and other particles, in this environment. This could be related to occupational hazards, environmental factors like dust storms, or even recreational activities. Inflammatory conditions represented the second most frequent cause (32%), indicating a high prevalence of inflammatory eye diseases in this population. This could be attributed to various factors, including allergies, autoimmune

diseases, or infections, and warrants further investigation to identify specific inflammatory conditions. Trauma was the third leading cause (28%), emphasizing the importance of preventive measures to reduce the occurrence of eye injuries. This could be related to workplace accidents, road traffic incidents, or even violence. Infections, vascular disorders, and glaucoma each accounted for a small proportion (2%) of cases. While less frequent than the top three causes, these conditions still represent significant ocular emergencies requiring prompt attention to prevent vision loss. Tumors were the least common cause (0.8%), reflecting the rarity of ocular tumors presenting as emergencies.

Table 2. Distribution of ocular emergencies by cause.

Cause	Number of cases	Percentage
Inflammatory conditions	80	32%
Trauma	70	28%
Foreign bodies	83	33.2%
Infections	5	2%
Vascular disorders	5	2%
Tumors	2	0.8%
Glaucoma	5	2%
Total	250	100%

Figure 1 illustrates the monthly trends of ocular emergencies presented to the Ophthalmology Clinic in Al-Sayab Teaching Hospital, Basrah, throughout 2023. The graph differentiates between inflammatory cases (blue line), trauma cases (red line), other cases (green line), and the total number of cases (black line). The total number of ocular emergencies (black line) shows noticeable fluctuation throughout the year, with peaks in May and August and troughs in February and October. This suggests a potential seasonality to ocular emergencies, possibly influenced by environmental factors, occupational hazards, or social activities. Inflammatory cases (blue line) demonstrate a fluctuating trend, with peaks in April and November and a general increase towards the end of the year. This pattern could be linked to seasonal allergies, infections, or other inflammatory triggers that are more prevalent during specific times of the

year. Trauma cases (red line) show a gradual upward trend throughout the year, with a peak in August. This suggests a potential increase in the incidence of eye injuries during the summer months, possibly due to increased outdoor activities, construction work, or other risk factors. The "other" category (green line), which includes infections, vascular disorders, tumors, and glaucoma, exhibits a less pronounced pattern with a slight peak in August. This category is likely influenced by a variety of factors that are not directly related to seasonality. The peaks in total cases (black line) often coincide with peaks in either inflammatory cases (blue line) or trauma cases (red line), indicating that these two categories are major drivers of the overall fluctuation in ocular emergencies. There appears to be a slight inverse relationship between inflammatory cases (blue line) and trauma cases (red line) during certain months. For example, in April,

inflammatory cases peak while trauma cases are relatively low, and the opposite occurs in August. This

could suggest that different factors contribute to these two categories of ocular emergencies.

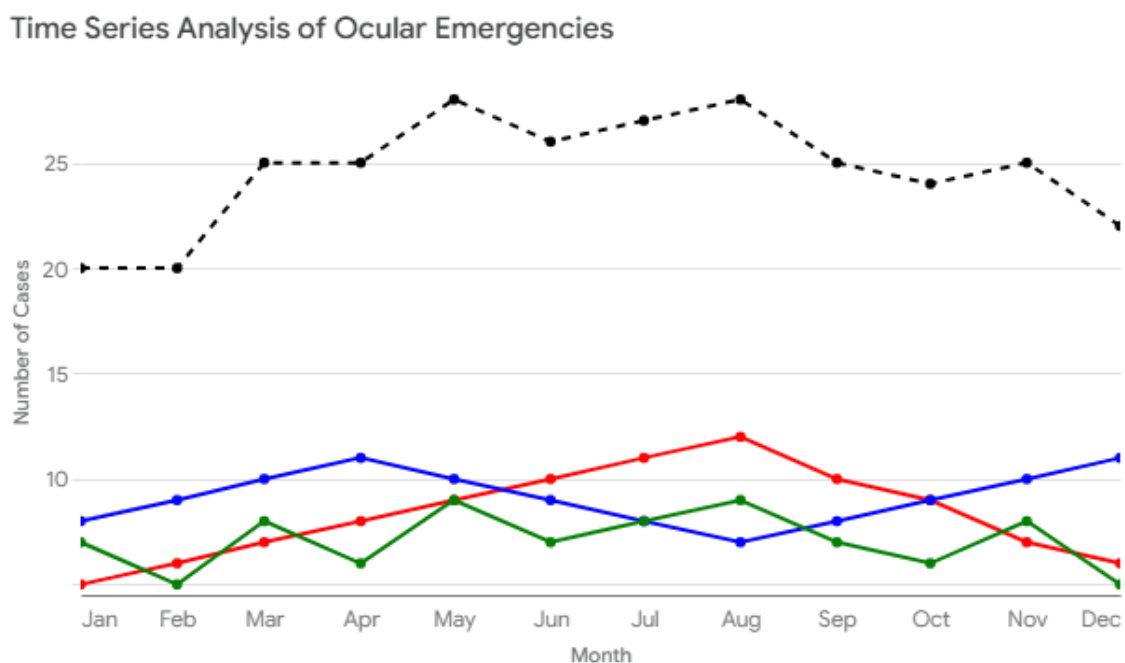


Figure 1. Time series analysis of Ocular Emergencies. Blue line: Inflammatory cases; Red line: Trauma cases; Green line: Other cases; Black line: Total cases.

Table 3 provides a comparative analysis of the frequency of different causes of ocular emergencies between 2023 (based on this study) and historical data, presumably from similar studies conducted in Basrah. This comparison allows us to identify any shifts in the patterns of ocular emergencies over time. There has been a notable increase (+12%) in the proportion of trauma cases compared to historical data. This suggests a growing concern regarding eye injuries in Basrah, possibly due to changes in occupational hazards, road safety, or other factors. A moderate increase (+10.7%) in foreign body cases is observed, indicating a persistent challenge with foreign body injuries in this region. This could be related to environmental factors like dust and sand, occupational exposures, or inadequate use of protective eyewear. A slight decrease (-8.6%) in

inflammatory conditions is noted compared to historical data. This might reflect improvements in the management of inflammatory eye diseases, changes in environmental allergens, or other factors influencing the prevalence of these conditions. A substantial decrease (-60%) in infections is observed, which could indicate improved hygiene, access to antibiotics, or better public health measures to control eye infections. A moderate decrease (-33.3%) in vascular disorders is also seen, potentially suggesting improved management of vascular risk factors or changes in the prevalence of these conditions. The proportion of glaucoma cases remains unchanged (0%), suggesting a consistent prevalence of this condition over time. A small increase (+0.8%) in the "other" category is observed, which encompasses a variety of less common ocular emergencies.

Table 3. Analyzed for trends in the frequency and causes of ocular emergencies over the study period and compared with historical data.

<b>Cause</b>	<b>2023 (This Study)</b>	<b>Historical data</b>	<b>% Change</b>
Trauma	28%	25%	0,12
Inflammatory	32%	35%	-8.6%
Foreign body	33.2%	30%	10.7%
Infections	2%	5%	-60%
Vascular	2%	3%	-33.3%
Glaucoma	2%	2%	0%
Others	0.8%	0%	0.8%

#### 4. Discussion

The high prevalence of foreign bodies and inflammatory conditions as the leading causes of ocular emergencies in Basrah, Iraq, highlights the particular vulnerability of this population to these preventable conditions. This susceptibility is likely multifactorial, with environmental factors playing a significant role. Basrah's arid climate and frequent dust storms create an environment conducive to both foreign body injuries and inflammatory eye diseases. Dust particles, sand, and other airborne debris can easily enter the eye, causing irritation, abrasions, and even more serious injuries if the foreign body penetrates the ocular surface. The arid climate can also promote the growth of allergens and irritants, such as pollen, mold spores, and dust mites. These allergens can trigger allergic conjunctivitis, a common inflammatory eye condition characterized by redness, itching, and watering of the eyes. The warm and often humid conditions in Basrah can also facilitate the growth and spread of infectious agents, such as bacteria and viruses. These agents can cause various inflammatory eye conditions, including conjunctivitis, keratitis (inflammation of the cornea), and uveitis (inflammation of the uvea, the middle layer of the eye). Many occupations in Basrah, such as agriculture, construction, and manufacturing, involve exposure to dust, debris, and other potential eye irritants. Workers in these occupations may be at increased risk of foreign body injuries and inflammatory eye conditions if proper eye protection is not used. Certain recreational activities, such as swimming, biking, and gardening, can also increase the risk of foreign body

injuries and exposure to allergens and irritants. Improper use of eye makeup and contact lenses can also increase the risk of inflammatory eye conditions and infections. The high prevalence of foreign bodies and inflammatory conditions as causes of ocular emergencies in Basrah underscores the need for comprehensive public health interventions. Public education campaigns should emphasize the importance of proper eye protection in various settings, including workplaces and during recreational activities. These campaigns should also raise awareness about the risk factors for inflammatory eye conditions and the importance of early intervention. Measures to reduce dust and other airborne irritants in the environment can help reduce the risk of foreign body injuries and inflammatory eye conditions. Workplace safety regulations should mandate the use of appropriate eye protection for workers in high-risk occupations. Ensuring access to timely and affordable eye care services is crucial for the effective management of foreign body injuries and inflammatory eye conditions. Early intervention can help prevent complications and vision loss. The term "inflammatory conditions" encompasses a variety of specific eye diseases, each with its own set of causes, symptoms, and treatment strategies. Allergic conjunctivitis is caused by an allergic reaction to allergens such as pollen, dust mites, and pet dander. Symptoms include redness, itching, watering, and swelling of the conjunctiva (the membrane lining the eyelid and covering the white part of the eye). Keratitis is an inflammation of the cornea, the clear front part of the eye. Keratitis can be caused by infections

(bacterial, viral, or fungal), dry eye, or other irritants. Symptoms include pain, redness, blurred vision, and sensitivity to light. Uveitis is an inflammation of the uvea, the middle layer of the eye that includes the iris (the colored part of the eye), ciliary body (which produces the fluid in the eye), and choroid (which supplies blood to the retina). Uveitis can be caused by infections, autoimmune diseases, or other factors. Symptoms include pain, redness, blurred vision, and floaters (dark spots or lines in the field of vision). Dry eye occurs when the eyes do not produce enough tears or when the tears evaporate too quickly. Dry eye can cause irritation, redness, a feeling of grittiness in the eyes, and blurred vision. Use appropriate eye protection, such as safety glasses or goggles, when engaging in activities that could expose the eyes to dust, debris, or other potential hazards. Wash hands frequently and avoid touching the eyes to reduce the spread of infectious agents. Follow the manufacturer's instructions for the use and care of eye makeup and contact lenses. Avoid sharing eye makeup and replace contact lenses as recommended by your eye care professional. If you have allergies, take steps to reduce your exposure to allergens and use over-the-counter or prescription allergy medications as directed by your doctor. Regular eye exams can help detect early signs of inflammatory eye conditions and other eye problems, allowing for prompt treatment and better outcomes. By understanding the factors contributing to the high prevalence of foreign bodies and inflammatory conditions as causes of ocular emergencies in Basrah, individuals and public health officials can work together to implement effective prevention and management strategies. The considerable proportion of trauma cases (28%) in this study highlights the vulnerability of the eye to external forces and underscores the need for targeted preventive measures. Occupational injuries are a common cause of eye trauma, particularly in industries such as construction, manufacturing, and agriculture. Workers in these industries may be exposed to flying debris, sharp objects, and chemicals that can cause serious eye injuries. Road traffic

accidents are another major cause of eye trauma, particularly among pedestrians, cyclists, and motorcyclists. The high speeds involved in these accidents can result in severe eye injuries, including corneal abrasions, lacerations, and even globe rupture. Sports and recreational activities can also lead to eye injuries, particularly those involving high-speed projectiles, such as baseball, basketball, and racquet sports. Other activities, such as swimming and gardening, can also expose the eyes to potential hazards. Violence, including domestic violence, assault, and child abuse, can also result in eye trauma. These injuries can range from minor contusions to severe, vision-threatening injuries. Falls are a common cause of eye injuries, particularly among young children and older adults. Falls can result in a variety of eye injuries, including corneal abrasions, eyelid lacerations, and orbital fractures. The severity of eye trauma can vary widely, from minor injuries that heal without complications to severe injuries that can result in permanent vision loss. Corneal abrasions are scratches on the cornea, the clear front surface of the eye. Corneal abrasions can be caused by a variety of factors, including foreign bodies, contact lens wear, and trauma. Eyelid lacerations are cuts on the eyelid. Eyelid lacerations can be caused by sharp objects, blunt trauma, and animal bites. Orbital fractures are breaks in the bones surrounding the eye. Orbital fractures can be caused by blunt trauma to the eye socket. Globe rupture is a tear in the outer layer of the eye, called the sclera. Globe rupture is a serious medical emergency that can result in permanent vision loss. The high proportion of trauma cases in this study underscores the need for targeted preventive measures to reduce the risk of eye injuries in Basrah. Public education campaigns can raise awareness about the risk factors for eye injuries and the importance of eye protection. Workplace safety regulations can help to reduce the risk of occupational eye injuries. Road safety initiatives, such as speed limits and traffic calming measures, can help to reduce the number of road traffic accidents and, consequently, eye injuries. Sports safety programs can



help to reduce the risk of eye injuries during sports and recreational activities. Violence prevention programs can help to reduce the number of eye injuries caused by violence. In addition to these preventive measures, it is important to ensure that people have access to timely and effective eye care in the event of an eye injury. This includes providing first aid training to the public and ensuring that there are adequate eye care facilities and personnel in the region. By taking a comprehensive approach to the prevention and management of eye trauma, it is possible to reduce the number of people who suffer from these debilitating injuries.<sup>11-14</sup>

The exploration of sociodemographic factors, such as age, gender, and residency, in the context of ocular emergencies has unveiled intriguing patterns that warrant further investigation. The study found that males accounted for 72.4% of ocular emergency cases. Men are more likely to be employed in occupations with a higher risk of eye injury, such as construction, manufacturing, and agriculture. Men are generally more likely to engage in risk-taking behaviors that can lead to eye injuries, such as contact sports and recreational activities involving projectiles or high speeds. In some cultures, men may be less likely to seek medical attention for minor eye injuries, potentially leading to more severe complications and a higher representation in emergency departments. The study found that the average age of patients presenting with ocular emergencies was 35.66 years. This suggests that ocular emergencies are more common in younger and middle-aged adults, who are often more active in the workforce and engage in more outdoor activities. Young children are more prone to falls and accidental eye injuries due to their developing motor skills and curiosity. As mentioned earlier, working-age adults are more likely to be exposed to occupational hazards and risk-taking behaviors that can lead to eye injuries. Older adults may be more susceptible to falls and age-related eye conditions, such as cataracts and glaucoma, which can increase their risk of ocular emergencies. The study found that 79.6% of patients presenting with ocular emergencies

resided in urban areas. Urban areas tend to have a higher concentration of industries and occupations with a higher risk of eye injury. Urban environments may expose individuals to more pollutants, allergens, and irritants that can contribute to inflammatory eye conditions. While urban areas generally have better access to healthcare facilities, this may also lead to a higher number of patients seeking emergency care for minor eye conditions that could be managed in a primary care setting. Understanding the impact of sociodemographic factors on ocular emergencies can help tailor public health interventions and preventive strategies to specific populations. Workplace safety programs and regulations should be strengthened to reduce the risk of eye injuries in high-risk occupations. Public education campaigns should target specific age groups and genders to discourage risk-taking behaviors that can lead to eye injuries. Efforts should be made to improve access to eye care services in both urban and rural areas, ensuring that everyone has the opportunity to receive timely and appropriate care for ocular emergencies. The study's meticulous assessment of visual acuity outcomes has shed light on the immediate impact of ocular emergencies on patients' vision. The significant proportion of patients presenting with reduced visual acuity underscores the urgency of prompt and effective eye care. While the majority of patients experienced improvement in their vision following treatment, the persistence of visual impairment in a subset of patients emphasizes the need for comprehensive eye care services, including rehabilitation and follow-up care. The study found that a significant proportion of patients (20%) presented with reduced visual acuity, defined as visual acuity less than 20/200. This indicates that many patients are already experiencing significant visual impairment at the time of their emergency presentation, highlighting the urgent need for prompt and effective eye care. The causes of reduced visual acuity in these patients were varied and included corneal opacities, retinal damage, and optic nerve damage. The severity of visual impairment also varied depending on the underlying cause and the

extent of the damage. The study found that the majority of patients experienced an improvement in their visual acuity following treatment. This highlights the effectiveness of timely and appropriate eye care in improving visual outcomes for patients with ocular emergencies. Despite the overall improvement in visual acuity, a subset of patients continued to experience visual impairment even after treatment. This persistent visual impairment may be due to irreversible damage to the eye or the underlying cause of the ocular emergency. The time elapsed between the onset of the ocular emergency and the presentation to the emergency department can significantly affect visual outcomes. Delays in seeking care can lead to more severe damage and a higher risk of permanent vision loss. The severity of the ocular emergency and the extent of damage to the eye can also affect visual outcomes. More severe conditions, such as globe rupture or retinal detachment, are more likely to result in permanent vision loss. Access to timely and appropriate eye care is crucial for improving visual outcomes in patients with ocular emergencies. This includes access to emergency care, specialized ophthalmic care, and rehabilitation services. The study's findings emphasize the need for comprehensive eye care services to address the visual needs of patients with ocular emergencies. Prompt and effective emergency care is essential to stabilize the patient's condition and prevent further damage to the eye. Specialized ophthalmic care, provided by ophthalmologists (eye doctors), is necessary to diagnose and treat the underlying cause of the ocular emergency. Rehabilitation services, such as vision therapy and low vision aids, can help patients with persistent visual impairment to maximize their remaining vision and improve their quality of life. Regular follow-up care is essential to monitor the patient's progress and ensure that any complications are detected and addressed promptly. Public awareness campaigns should emphasize the importance of early presentation to the emergency department for ocular emergencies. These campaigns should also educate the public about the risk factors

for eye injuries and the importance of eye protection. Efforts should be made to improve access to comprehensive eye care services, particularly in underserved areas. This may involve increasing the number of eye care providers, expanding the availability of rehabilitation services, and reducing financial barriers to care. The quality of eye care services should be monitored and improved to ensure that patients with ocular emergencies receive the best possible care. This may involve developing clinical guidelines, providing continuing education for eye care providers, and supporting research to advance the understanding and treatment of ocular emergencies. By investing in comprehensive eye care services and public health initiatives, it is possible to improve visual outcomes for patients with ocular emergencies and reduce the burden of vision loss in the community.<sup>15-</sup>

17

The study's comparison with historical data has unveiled intriguing shifts in the patterns of ocular emergencies in Basrah over time, providing valuable insights for public health planning and resource allocation. The study found a notable increase (+12%) in the proportion of trauma cases compared to historical data. Rapid socioeconomic development and urbanization can lead to increased industrial activity, construction, and traffic, all of which can contribute to a higher risk of eye injuries. The types of occupations and industries prevalent in a region can change over time, potentially introducing new occupational hazards that increase the risk of eye injuries. For example, the growth of the construction or manufacturing sectors may expose more workers to eye hazards. The popularity of certain sports and recreational activities can also change over time, potentially influencing the types and frequency of eye injuries. For example, an increase in contact sports or the use of recreational vehicles may lead to more eye injuries. Conversely, the study found an encouraging decrease (-60%) in the proportion of infections compared to historical data. Public health measures, such as vaccination campaigns, hygiene education, and access to clean water and sanitation, can

significantly reduce the prevalence of eye infections. Better personal hygiene practices, such as frequent handwashing and avoiding touching the eyes, can also help prevent the spread of eye infections. Improved access to healthcare, including antibiotics and other treatments for eye infections, can help prevent complications and vision loss. A moderate increase (+10.7%) in foreign body cases suggests persistent challenges with environmental or occupational exposures to dust, debris, and other foreign bodies. A slight decrease (-8.6%) in inflammatory conditions may reflect improvements in the management of these conditions or changes in environmental allergens. A moderate decrease (-33.3%) in vascular disorders may suggest improved management of vascular risk factors or changes in the prevalence of these conditions. Understanding the changing patterns of ocular emergencies allows for the development of targeted interventions to address specific needs. For example, the increase in trauma cases may necessitate greater emphasis on injury prevention programs, while the decrease in infections highlights the importance of continued public health efforts to control infectious diseases. Monitoring the trends of different causes of ocular emergencies can help healthcare systems allocate resources effectively. For example, if trauma cases are on the rise, hospitals may need to increase their capacity to handle eye injuries. Comparing current data with historical data allows for the evaluation of existing public health programs and policies. For example, the decrease in infections may suggest that current public health measures to control eye infections are effective. The study's findings have profound implications for public health policy and practice in Basrah, underscoring the need for comprehensive strategies to address the multifaceted challenges of ocular emergencies. The high prevalence of preventable conditions, such as foreign body injuries and inflammatory diseases, highlights the need for robust preventive measures. Public education campaigns should raise awareness about the risk factors for these conditions, emphasizing the importance of protective eyewear, proper hygiene

practices, and prompt medical attention for eye-related concerns. Measures to reduce dust and other airborne irritants in the environment can help minimize the risk of foreign body injuries and inflammatory eye conditions. This may involve implementing dust control measures in industrial areas, promoting the use of protective eyewear in outdoor settings, and improving air quality through environmental regulations. Workplace safety regulations should mandate the use of appropriate eye protection for workers in high-risk occupations, such as construction, manufacturing, and agriculture. Regular safety training and education programs can reinforce the importance of eye protection and safe work practices. The significant proportion of trauma cases further emphasizes the need for comprehensive injury prevention programs. Implementing and enforcing traffic regulations, promoting safe driving practices, and improving road infrastructure can help reduce the number of road traffic accidents and, consequently, eye injuries. Educating athletes, coaches, and parents about the importance of eye protection in sports and recreational activities can help prevent eye injuries. Promoting the use of appropriate protective eyewear and enforcing safety rules during sports activities are crucial. Addressing the root causes of violence, promoting conflict resolution skills, and providing support services for victims of violence can help reduce the incidence of eye injuries caused by violence. In addition to preventive measures, the study's findings highlight the need for comprehensive eye care services to address the visual needs of the Basrah population. Ensuring access to prompt and effective emergency eye care is crucial for managing ocular emergencies and preventing vision loss. This may involve strengthening emergency medical services, providing specialized training for emergency room personnel, and establishing dedicated eye emergency departments in hospitals. Access to specialized ophthalmic care, provided by ophthalmologists, is essential for the diagnosis and treatment of various eye conditions. This may involve increasing the number of ophthalmologists in the

region, providing training opportunities for eye care professionals, and establishing referral networks to ensure timely access to specialized care. Rehabilitation services, such as vision therapy and low vision aids, can help patients with persistent visual impairment to maximize their remaining vision and improve their quality of life. These services should be integrated into the eye care system to provide comprehensive support for patients with visual impairments. Regular follow-up care is essential to monitor patients' progress, detect any complications, and ensure the long-term maintenance of eye health. This may involve establishing follow-up protocols, providing patient education on self-care practices, and utilizing technology to facilitate remote monitoring and follow-up. The study's findings also underscore the importance of public health advocacy to promote eye health and prevent vision loss. Increasing public awareness about the importance of eye health, the risk factors for eye diseases and injuries, and the available preventive measures and treatment options. Advocating for policies that support eye health, such as workplace safety regulations, road safety initiatives, and funding for eye care services. Engaging with community leaders, schools, and other organizations to promote eye health and implement preventive programs. By implementing comprehensive public health strategies, strengthening eye care services, and advocating for eye health, the burden of ocular emergencies can be reduced, and the visual health of the Basrah population can be improved.<sup>18-20</sup>

## 5. Conclusion

This study has provided a comprehensive overview of ocular emergencies in Basrah, Iraq, highlighting the significant burden of preventable conditions such as foreign bodies, inflammatory diseases, and trauma. The findings underscore the need for multifaceted public health interventions, including health education, environmental protection, occupational safety measures, and injury prevention programs. Strengthening eye care services, including emergency care, specialized ophthalmic care, and rehabilitation

services, is crucial to ensure timely and effective management of ocular emergencies. Continuous monitoring of the patterns of ocular emergencies is essential to adapt public health strategies and address the evolving needs of the population. The study's findings have implications for other regions with similar environmental or socioeconomic challenges. Public health officials and healthcare providers can utilize these findings to inform the development and implementation of targeted interventions to prevent ocular emergencies and improve eye health outcomes. Further research, incorporating prospective designs and multi-center collaborations, can enhance our understanding of ocular emergencies and guide evidence-based interventions. The collective efforts of healthcare providers, policymakers, and community leaders are crucial to address the multifaceted challenges of ocular emergencies. By investing in preventive measures, strengthening eye care services, and promoting eye health education, we can strive towards a future where everyone has access to timely and effective eye care, safeguarding their precious gift of sight.

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