Original Article

Causes of Visual Impairment in a Sample of Adult Iraqi Patients

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PJO – Official Journal of Ophthalmological Society of Pakistan

ABSTRACT

Purpose: To identify causes of visual impairment in adult patients seeking treatment at teaching hospital in Iraq.

Study Design: Descriptive observational.

Place and Duration of Study: Ibn Al-Haytham Teaching Eye Hospital (IAHTEH) in Baghdad, Iraq during the year 2023.

Methods: This study comprised of 125,804 adults. All the participants had comprehensive history and ocular examination. Mild, moderate and sever visual impairment were defined as from 6/9 to 6/18, 6/24 to 6/36 and 6/60 or below respectively.

Results: Among 125,804 patients, the breakdown of conditions was as follows: 60,650 (48%) had cataracts, 37,741 (30%) had refractive errors, 12,071 (10%) had diabetic retinopathy, 8,328 (7%) had glaucoma, and 7,014 (5%) had experienced trauma. Most patients (54%) had severe visual impairment, followed by moderate (29%) and mild (17%) impairment. The majority of cases (45%) were in individuals aged 60 years and older, with 26% in the 40-59 years age group and 29% in the 20-39 years age group. Diabetic retinopathy was most common in the 40-59 years age group, while glaucoma and cataracts were predominantly in those aged 60 and above. Refractive errors and trauma were mainly found in the 20-39 years age group. Females accounted for 63% of patients with reduced vision, whereas males predominated among trauma cases, with 29% of trauma cases involving blunt trauma.

Conclusion: Cataract is the most prevalent condition in older patients. Younger adults frequently experience refractive errors and trauma. Females are more likely to have reduced vision, whereas males are more prone to trauma-related vision issues.

Key Words: Visual acuity, diabetic retinopathy, cataract, trauma, refractive errors, glaucoma.

How to Cite this Article: Al-Khafaji Z, Al-Salam MSN. Causes of Visual Impairment in a Sample of Adult Iraqi Patients. 2024;40(3):302-309. **Doi:10.36351/pjo.v40i3.1799**

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Received: January 19, 2024
Accepted: June 28, 2024

INTRODUCTION

Iraq is a Middle Eastern country where over the last thirty years, the ongoing conflicts and turmoil have greatly hindered medical services, health promotion initiatives, medical surveys, and medical research, resulting in substantial adverse effects. Currently, there is a lack of up-to-date comprehensive study that could examine frequency and underlying factors contributing to vision impairment. Given the current volatile geopolitical environment in Iraq, it is unlikely that comprehensive population-based research on visual impairment would be possible in the foreseeable future. The lack of accurate data about visual impairment in Iraq hinders the establishment of national eye health programs and the attainment of the objectives set forth by the Vision 2020 initiative.[1] Nevertheless, hospitals' statistics on visual impairment provide some insight to national health bodies. This research assessed the primary factors contributing to visual impairment in adult patients visiting Ibn Al-Haytham Teaching Eye Hospital (IAHTEH) in Baghdad, Iraq. The aim was to identify obstacles to early treatment and gather first hand data for visual impairment prevention initiatives in Iraq.

Visual impairment is an important public health issue worldwide. Globally, over 45 million individuals suffer from blindness, while an additional 135 million have severe visual impairment.[2] Although majority of visually impaired individuals live in impoverished countries in Africa, Asia and Latin America, about 75% of global visual impairment can either be cured or prevented.[3-5]

The study of distribution of visual impairment is intricate and covers a diverse range of reasons. Effectively addressing this issue requires tailored approaches that are relevant to each locality based on community data. There is scarcity of published research about the prevalence of this issue within the Iraqi community.[6] The national health survey in Iraq did not provide data on visual impairment. Thus, there is a need to conduct a study to identify and evaluate the leading causes of visual impairment. Collecting precise ophthalmic epidemiological data from this area is crucial in order to efficiently allocate limited resources. Retrospective research suggests that the primary causes of visual impairment in Iraq are uncorrected refractive errors and cataract, with age-related macular degeneration and glaucoma being the next most common.[7]

This report provides population-level data on the etiology of vision impairment in Iraq. This data will help in making policies for provision of eye health care and the execution of initiatives aimed at further decreasing the impact of blinding diseases.

METHODS

This is descriptive cross-sectional study was done at Ibn Al-Haytham Teaching Eye Hospital, the primary teaching eye hospital in Iraq. Ibn Al-Haytham Teaching Eye Hospital is a government hospital that offers medical treatment at minimal or no cost. It serves as a secondary and tertiary referral center, accepting patients from all regions of the country. This research comprised a total of 125,804 adult patients during the year 2023. Ethical board approval was sought (IRB/357).

An interview was conducted from each participant regarding demographic characteristics, past history of eye diseases, ocular trauma, diabetes mellitus, hypertension, any ophthalmological care received by the patient and obstacles to receiving therapy. Informed consent was taken. This was followed by comprehensive eye examination which included uncorrected and best corrected visual acuity (BCVA), subjective and cycloplegic refraction, color vision test, Goldmann applanation tonometry, lensometry, examination of the external eye, anterior segment, media, and fundus. The examiners were not blinded to the co-variates; age, education or sex of the individuals. The optometrists assessed un-corrected and BCVA using Snellen charts. Those with severe visual impairment were evaluated for finger counting, hand movement and light perception. The patients also underwent subjective refraction, cycloplegic retinoscopy ocular motility, and cover testing.

Mild visual impairment was defined as visual acuity ranging from 6/9 to 6/18.Moderate visual impairment as 6/24 to 6/36.Severe visual impairment was described as visual acuity of 6/60 or below.

Detailed examination included Slit lamp examination (Topcon Corp., Tokyo, Japan) and fundoscopy using indirect ophthalmoscopy (Keeler Instruments, Philadelphia, PA, USA) with a +20 D lens after pupil dilation. Intraocular pressure was assessed using Applanation tonometer (Haag-Streit AG in Koeniz, Switzerland). Participants had initial evaluation by general ophthalmologists and then specialist ophthalmologists were consulted if needed.

Statistical analysis was done using Stata Corporation Texas, USA version 6.0. Numerical data were analyzed and presented as frequency and percentage.

RESULTS

Out of 125,804 patients attending IAHTEH, 60,650 (48%) had cataracts 37,741 (30%) had refractive errors, 12,071 (10%) had diabetic retinopathy, 8,328 (7%) had glaucoma and 7,014 (5%) had experienced trauma. Majority of the patients (54%) exhibited severe visual impairment, followed by moderate (29%) and mild visual impairment (17%).

Moderate visual impairment was most prevalent in patients of diabetic retinopathy, glaucoma, and refractive errors. In contrast, severe visual impairment was predominant feature in cases of trauma and cataracts (Figure 1).

Majority of cases (45%) were 60 years old and above. The age group of 40-59 years comprised of 26% of the cases, while the age group of 20-39 years represented 29%. Delving deeper into the age groups and their etiologies, we found the following patterns:

- In patients with diabetic retinopathy, most cases were in the 40-59 years age group.
- For glaucoma and cataracts, the majority of cases were 60 years old and above.
- Regarding refractive errors and trauma, most cases were seen in the 20-39 years age group.

In the 20-39 years age group, the most common causes of reduced vision were refractive errors, trauma, and cataracts, respectively. In the 40-59 years age group, the most common cause was cataracts, followed by refractive errors and diabetic retinopathy. For those aged 60 years and older, the most common cause was cataract, followed by glaucoma and diabetic retinopathy (Figure 2 and 3).Females constituted majority of the patients accounting for 63%. In terms of gender distribution by etiology, males constituted majority of patients presenting with trauma (Figure 4). In contrast, females predominated in all other causes of reduced vision. In terms of type of trauma, we found 29% had blunt trauma while rest of the patients had penetrating trauma (71%).

DISCUSSION

Preventable vision loss poses a substantial healthcare challenge in underdeveloped countries.[1] The WHO campaign 'Vision 2020' poses a challenge to ophthalmologists; to completely eradicate all preventable cases of visual impairment. Approximately 90% of global visual impairment is concentrated in underdeveloped nations.[8] A primary focus of programs aimed at preventing visual impairment is management of the primary disorders that lead to visual impairment, which can differ among various groups and countries.[9,10] Health education initiatives targeting individuals at a higher risk of visual impairment should be tailored based on their demographic features.[11,12] Prior research has shown the impact of different demographic variables (such as age, race, geographic location, educational attainment and socioeconomic standing) on the occurrence of visual impairment.[13,14] Successful health promotion relies on a comprehensive knowledge about the subjects and their level of knowledge and activities regarding a particular health issue.[15,16] There are obstacles that prevent visually impaired patients from accessing medical care and these barriers may differ depending on the region.[6] However, with time, these challenges can be addressed. The primary obstacles towards medical facility access in many developing nations include high costs, limited awareness, inadequate service delivery and lack of faith in available medical care.

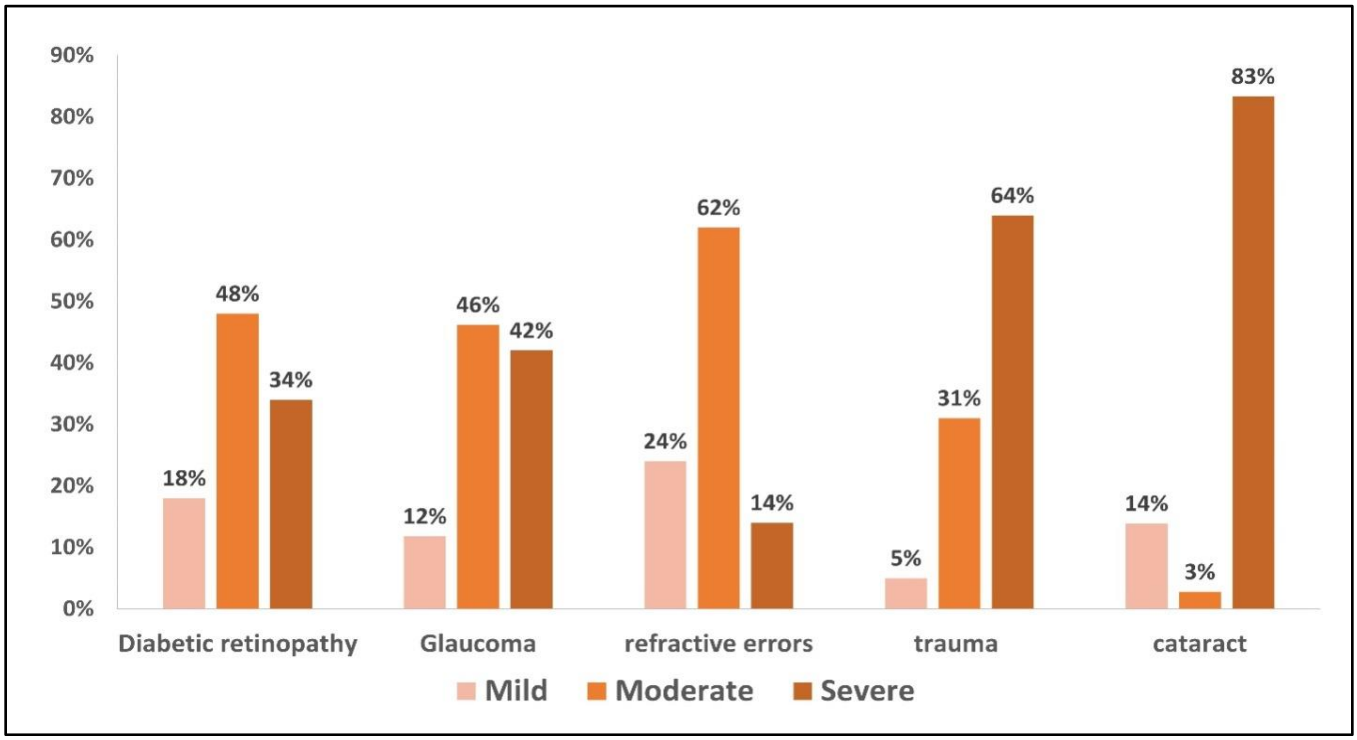

Figure 1: Causes of visual impairment, represented as percentage of severity.

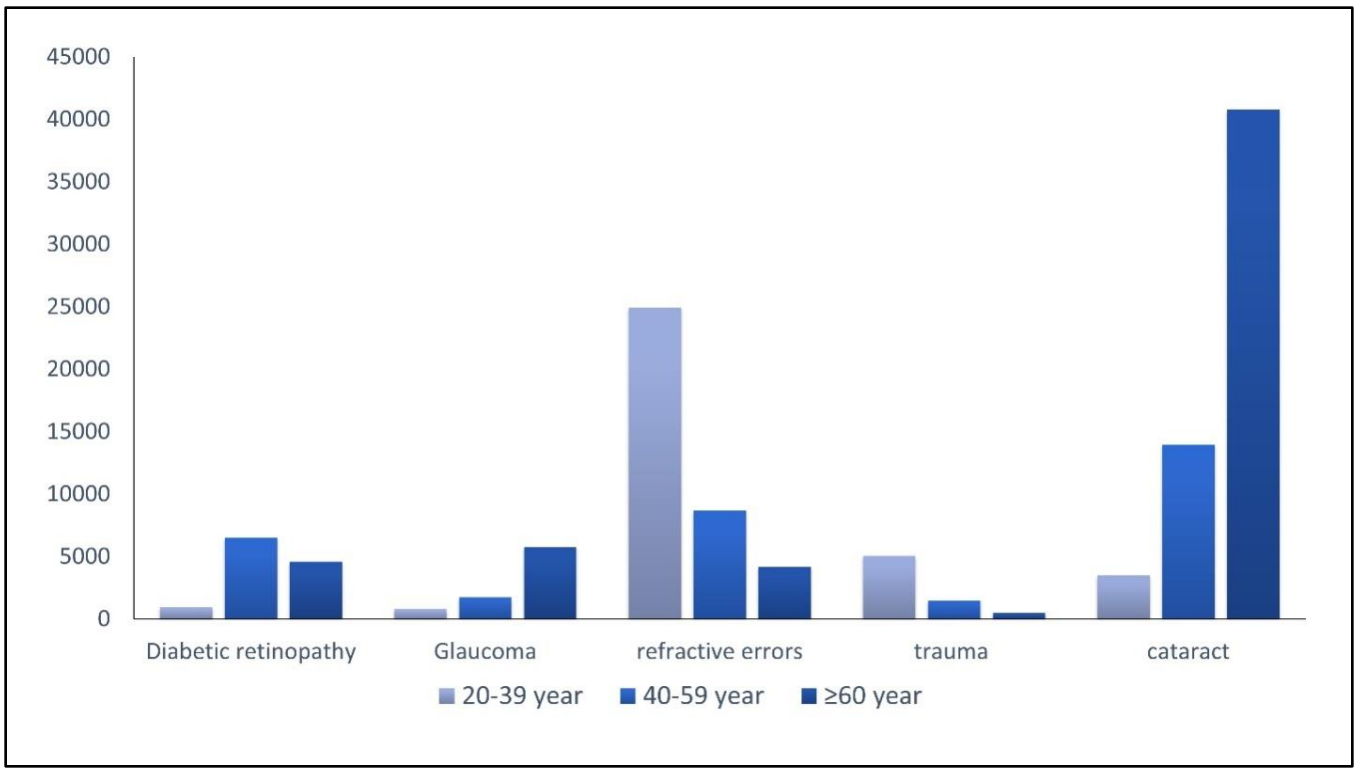

Figure 2: Age distribution of the patient sample with respect to cause of visual impairment.

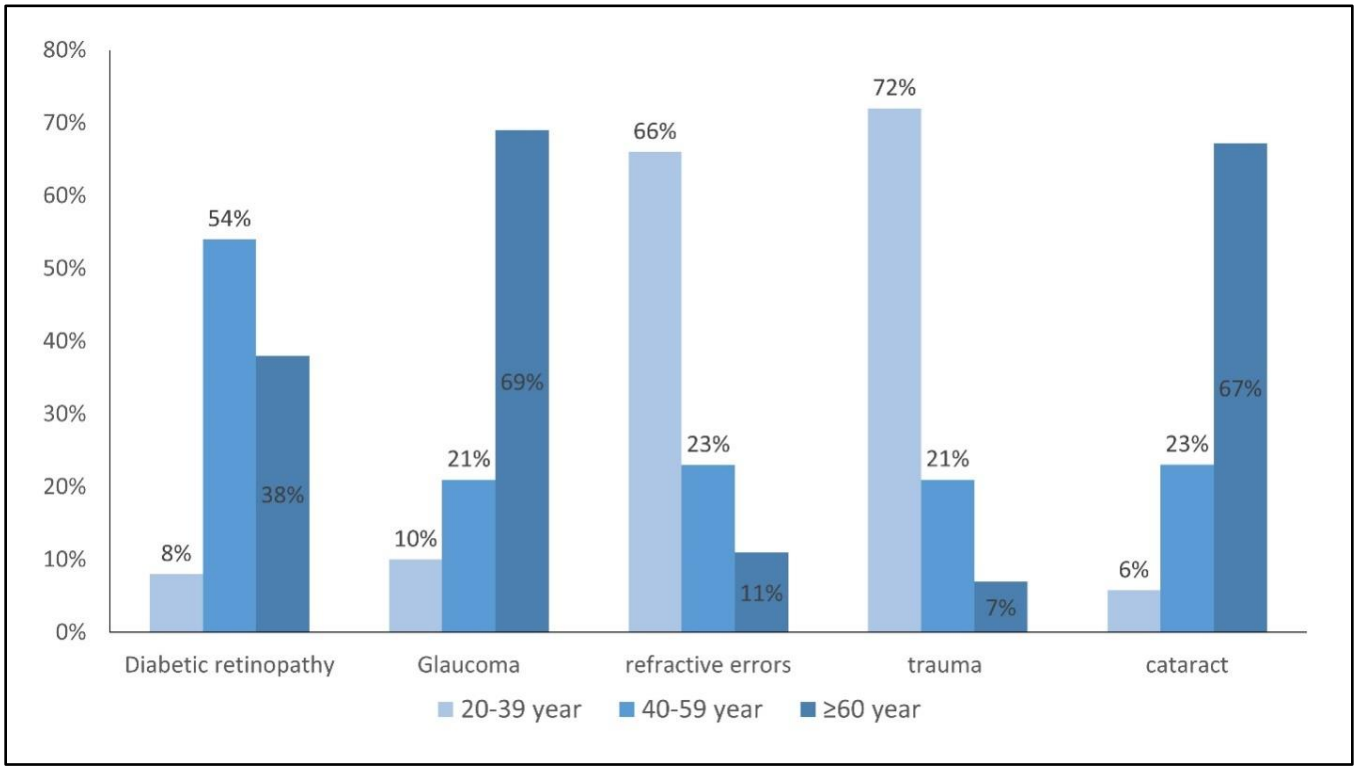

Figure 3: Distribution of patients in different age groups according to etiology in percentages.

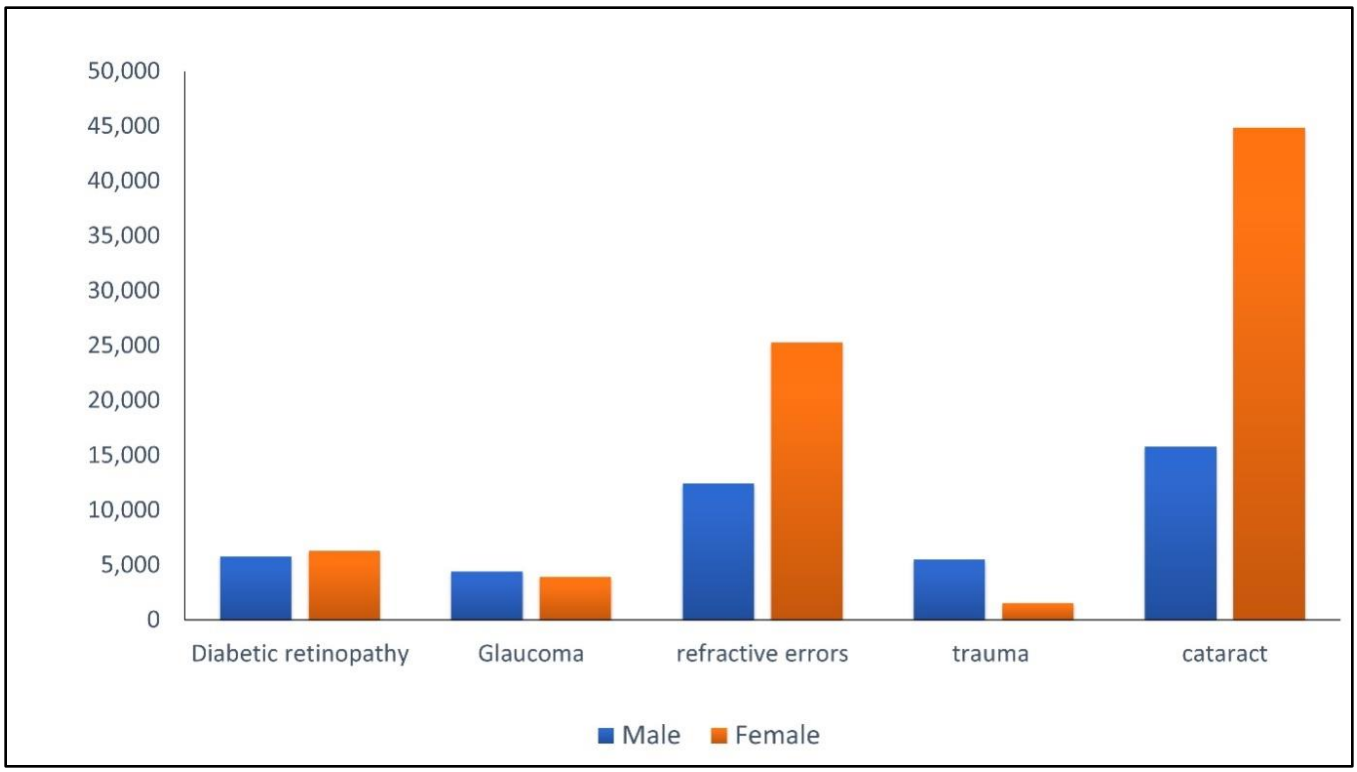

Figure 4: Gender distribution according to cause of reduced vision.

It is widely acknowledged that hospital-based surveys have certain drawbacks.[18] These studies are not indicative of true prevalence of visual impairment in public due to self-selection bias. This bias arises because individuals who are unable to visit hospitals or are ignorant of their visual impairment are not included in the studies.

The primary factors contributing to visual impairment in those seeking treatment at IAHTEH were cataract, diabetic retinopathy, glaucoma, refractive errors, and trauma. The majority of specialized ophthalmologists possessed training in cataract surgeries, however, the volume of cataract surgeries conducted in government hospitals is limited. In 2007, a total of 74,000 individuals with cataract underwent evaluation in government hospitals across the country. However, only 8,300 cataract surgeries were actually carried out at these places.[17]

As far as we know, there is a lack of surveys that provide data on the quantity of cataract procedures conducted in private hospitals in Iraq. It is possible that the number of cataract surgeries conducted at private hospitals surpasses the number carried out at government hospitals due to the fact that all specialized ophthalmologists employed at government hospitals, as well as retired ophthalmologists, are permitted to practice privately. The price range for medical advice at private clinics is often between US $10 and $25, whereas the cost of private cataract surgery ranges from US $500 to $1000, making it unaffordable for a significant number of patients. According to a recent survey, 23% of the Iraqi population resides below the poverty threshold, earning less than US $70 a month.[18]

The study identified diabetic retinopathy as a significant contributor to visual impairment. The prevalence of diabetes mellitus in Iraq reaches up to 10.4%.[19] A significant number of people with diabetic retinopathy delay seeking therapy until their eyesight is compromised by severe illness and becomes unresponsive to treatment. The lack of accessibility to specialists is a significant issue, as there is only one hospital in the entire country that conducts vitreous surgery, and even this center is inadequately prepared. While lasers can be found in certain facilities, there is scarcity of vitreoretinal surgeons and medical retina experts.

Our research suggests that a lack of knowledge about glaucoma and a failure to follow medical instructions are the primary obstacles to treatment for

glaucoma patients. A significant number of participants reported discontinuing the usage of topical medication due to absence of any discernible improvement in their visual acuity. In addition, some recently developed topical drugs are not available in public hospitals and are expensive when purchased from private pharmacies. To enhance adherence to therapy and raise awareness about glaucoma, it is necessary to educate primary health care providers at dispensaries. Importance should be given to the gradual progression of glaucomatous damage and the hereditary basis of this disease. It is necessary to provide focused education to those diagnosed with glaucoma about the significance of ongoing medical treatment and regular appointments to the ophthalmologist. It is strongly advised to create vision rehabilitation programs for patients with visual impairment.

The presence of refractive errors was identified as a significant factor contributing to visual impairment. Keratitis resulting from the use of cosmetic contact lenses is a notable and escalating issue in Iraq.[20] We have scarcity of donor corneas, resulting in a lengthy queue of patients in the need of corneal grafts. Despite Iraq being classified as one of the regions experiencing a significant lack of vitamin A, we did not come across any instances of xerophthalmia during this study.[21] Another important cause of visual impairment is trauma, which arises as a consequence of the prevailing security situation in the country.

The lack of a comprehensive national program to prevent visual impairment in Iraq may lead to inefficient allocation of resources and suboptimal utilization of existing medical eye treatments. Prior to the nation-wide census on visual impairment, healthcare providers might utilize the existing data to develop targeted measures aimed at reducing the prevalence of visual impairment within the community. The primary objectives of these strategies are to reduce barriers to treatment for the most preventable diseases, implement targeted and effective health education initiatives for specific patient groups, and provide medical services that are both affordable and sustainable over the long term. Screening programs are necessary to identify retinopathy in diabetic patients receiving care at general hospitals and dispensaries, as well as to identify glaucoma in individuals over the age of 40years, particularly those with a positive family history. Public health education campaigns are crucial for increasing awareness regarding the hazards and repercussions of diabetic retinopathy and glaucoma, as well as the advantages of early detection and treatment. Public health education should prioritize the promotion of the maintenance and usage of cosmetic contact lenses, as well as the potential consequences that can arise from their misuse. To address the growing problem of visual impairment, it is crucial to enhance the capacity of public hospitals to perform cataract and other ocular surgeries. This can be achieved by equipping specialized operating rooms with state-of-the-art facilities. Mandatory recruiting of recent ophthalmology graduates to work at government hospitals is necessary. Furthermore, it is necessary to undergo thorough training in order to effectively utilize the latest ophthalmic technology and practices. Continuing medical education (CME) is essential for ophthalmologists, nurses, and allied healthcare workers in ophthalmology to enhance their contribution in preventing avoidable visual impairment.

Despite being conducted in a hospital setting this study possesses several notable advantages. The study took place at a centralized specialized eye facility and specifically involved individuals with visual impairment. The data from the current study likely accurately represents the causes of visual impairment in the community as a whole. This is because most people in the community seek treatment when their eyesight is seriously compromised, especially when medical treatments are easily accessible at a reputable center in the country. Furthermore, this study elucidates the demographic attributes of the visually impaired individuals and the obstacles to receiving medical care.

CONCLUSION

The primary factors contributing to visual impairment, as shown by this research conducted in a hospital setting, were cataract, diabetic retinopathy, and refractive errors. The main focus of visual impairment prevention programs in Iraq is to address the issue of long waiting lists for cataract surgery in government institutions. Additionally, there is a need to implement health promotion programs that aim to diagnose and treat diabetic retinopathy and glaucoma at an early stage.

Funding: None to declare.

Patient's Consent: Researchers followed the guidelines set forth in the Declaration of Helsinki.

Conflict of Interest: Authors declared no conflict of interest.

Ethical Approval: The study was approved by the Institutional review board/Ethical review board **(IRB/357).**

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Authors Designation and Contribution

Zainab Al-Khafaji; Specialist Ophthalmologist: *Concepts, Design, Literature search, Data acquisition, Data analysis, Statistical analysis, Manuscript preparation, Manuscript editing Manuscript review.*

Mohammed Suhail Najm Al-Salam; Specialist Ophthalmologist: *Concepts, Data analysis, Manuscript preparation, Manuscript editing Manuscript review.*