

**PREVALENCE, INCIDENCES AND MANAGEMENT PRACTICES OF OPHTHALMIC EMERGENCIES;  
A CROSS-SECTIONAL STUDY IN JINJA REGIONAL REFERRAL HOSPITAL.**

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**ABSTRACT****Page | 1 Introduction**

This study was aimed at establishing the prevalence of ophthalmic emergencies, determining the common incidences of ophthalmic emergencies, and establishing the common management practices of ophthalmic emergencies at Jinja Regional Referral Hospital. This study was carried out at the eye department of Jinja Regional Referral Hospital, Jinja City Busoga region

**Methodology**

It employed a descriptive cross-sectional study design that employed both qualitative and quantitative methods of data collection from a sample size of 100 using a self-administered questionnaire. Data was analyzed manually and presented in tables and figures.

**Results**

The study showed that 43(43%) of the respondents were 10-20 years old and 60(60%) of them were males. Most of the respondents affected 42(42%) were those who were working in industries, factories, and welding. The most common ophthalmic emergency incidences were open globe injuries 72(72%) and mostly corneal foreign bodies 42(42%). The common management options for ophthalmic emergencies present at JRRH were both topical and systemic antibiotics, anti-fungal anti-viral drugs depending on the cause of the illness; surgery; topical or systemic steroids to reduce inflammation in the eye; anti-glaucoma drugs to reduce IOPs and referral

**Conclusion**

The study concluded that the common age group affected by ophthalmic emergencies is 10-20 years and mostly males are affected and with those working, it was mostly welders, those working in industries, factories, and peasants.

**Recommendations**

The government, Ophthalmologists, ophthalmic clinical officers, and ophthalmic nurses should play their roles to address the challenges in service delivery to reduce ophthalmic emergencies or even avoid complications of ophthalmic emergencies

**Keywords:** Prevalence, Incidences, Management Practices, Ophthalmic Emergencies, Jinja Regional Referral Hospital

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**Background of the study**

An emergency is defined as an accident or an acute illness that needs qualified first aid or emergency medical assistance at one or more levels of competence (Ovidiu Samoilă, 2016)

Emergencies in medical practice are afflictions in which a delay will lead to irreversible organ damage or death of the patient. Disorders in different organs and systems in the body including the eye can present as emergencies requiring urgent attention to save life. Early attention to ophthalmic emergencies is critical for instance a thirty-minute delay in attending to true ophthalmic emergencies such as chemical burns or central retinal artery occlusion (CRAO) will lead to permanent visual loss or deformity. Ocular emergencies have different causes including infections, and traumatic and non-traumatic afflictions (Sebastian N N Nwosu, 2019)

Other Ophthalmic emergencies include Angle-closure glaucoma, retinal detachment, eye injuries, especially from blunt trauma, penetrating trauma, and foreign body in the eye, and corneal injuries

**Prevalence of ophthalmic emergencies**

According to Wong et al., 2001, Previous prevalence rates of ocular trauma ranged from 14.4% up to 21.1% in Western countries, and people living in these areas with young age, sex, and lower socio-economic status, poor education levels, or engaged in labor-intensive occupations mostly have a high risk of ocular trauma. In Asia, some population-based studies reported that the prevalence of ocular trauma was 4.4 % in the Singapore Chinese population, 3.6 % Chinese population in Beijing, and 2.1% in Handan respectively. (Xiaoyan Bian et al, 2020) In Singapore, there is no association between occupation and ocular trauma. Here the

**Management practices of ophthalmic emergencies**

Prompt recognition and referral of patients with patients with ophthalmic emergencies is crucial to preserve vision. Acute angle closure glaucoma is the result of blockage of the outflow of aqueous humor, which increases intraocular pressure (IOP) and damages the retina. Patients report abrupt onset of the unilateral painful red eye with blurry vision and constitutional symptoms. The diagnosis is confirmed by measurement of IOP. Urgent evaluation by an ophthalmologist is required to reduce IOP before medical and surgical treatment. According to Langan, 2022, Mechanical trauma to the eye may cause globe rupture or full-thickness laceration. Antiemetic, pain management, systemic antibiotics, and use of eye shield.

Patients with central retinal artery occlusion should be admitted urgently for stroke evaluation and should receive therapy for low intraocular pressure and vasodilating agents to minimize retinal ischemia. According to Christopher D Gelston et al.2020, Chemical injuries require immediate irrigation of the eye to neutralize the pH of the ocular surface. Globe laceration rupture is common in patients with a recent history of trauma from a blunt trauma or penetrating object, Physicians should administer prophylactic oral antibiotics after a globe injury to prevent endophthalmitis. The eye should be covered with a face shield until evaluation by an ophthalmologist. Patients with symptomatic floaters and flashing lights should be referred to an ophthalmologist for a dilated fundoscopic examination to evaluate for a retinal tear or detachment.

The effectiveness of trauma centers in treating ocular emergencies was compared with treatment in traditional clinical hospital emergency departments. Demographic causes and nature of ocular emergencies as well as visual outcomes in community hospitals' emergency departments and trauma centers were also examined. (Cindy A Cheung et al, 2022). To determine the prevalence, incidences, and management practices of ophthalmic emergencies in Jinja Regional Referral Hospital

**Specific objectives**

1. To establish the prevalence of ophthalmic emergencies in JRRH
2. To determine the common incidences of ophthalmic emergencies in JRRH
3. To assess the management practices of ophthalmic emergencies at JRRH

**METHODOLOGY****Study design**

The study used a descriptive cross-sectional study design because it takes a short period for data analysis and interpretation. It will involve both qualitative and quantitative approaches to collect data. The quantitative approach will be used to quantify the number of patients who are aware of eye care services at JRRH while the

prevalence of risk factors of ocular trauma varies from region to region and global evidence of these estimates on ocular trauma is rare.

According to The World Health Organization's (WHO) Blindness data bank approximately 55 million eye injuries occur worldwide annually resulting in about 23 million individuals with at least unilaterally poor vision and 750,000 hospitalizations(Bian et al., 2020). Over 70 percent of all injuries occur in males. The average age of eye injury in the United States is 29 years thus these injuries may affect the vision of individuals for many of their remaining years. (Matthew F Gardiner et al, 2022)

According to the research carried out in Onitsha Nigeria, Ocular injuries and infections are the most common ophthalmic emergencies. Ophthalmic emergencies are associated with great ocular morbidity even after treatment, (Sebastiann n Nwosua et al, 2019)

Retinal detachment has an incidence of 5 cases in 100,000 persons per year (for otherwise normal eyes), but 20 in 100000 when including middle-aged or elderly populations. The lifetime risk of retinal detachment is approximately 1 in 300, and notably shows a strong correlation with affluence, indicating that retinal detachment may become more prevalent as populations age in more affluent countries. Estimates have determined that 50%-70% of patients present after their macula is detached due to their not being able to recognize the symptoms of retinal detachment. (Neil Jairath1 et al, 2020)

**Incidences of ophthalmic emergencies**

Ophthalmic emergencies include; Central retinal artery occlusions, chemical injuries, mechanical globe injuries, and retinal detachments are eye emergencies that can result in permanent vision loss if not treated urgently.(Gelston & Deitz, 2020) Globe laceration rupture is common in patients with a recent history of trauma from a blunt trauma or penetrating object (Christopher D Gelston et al.2020)

Blunt trauma to the eye or face often causes bleeding under the skin that leaves a bruise called the "black eye". The tissue around the eye turns black and blue, gradually becoming purple, green, and yellow over several days as the blood is absorbed. The abnormal color disappears within 2 weeks. Common causes include things like fists, tennis balls, and airbags.

Penetrating trauma may be caused by things such as knives, icepacks, nails, sticks gunshots, foreign bodies thrown at a high speed by machining, grinding, or hammering

Chemical injuries to the eye may be caused by a work-related accident, they can also be caused by common household products such as cleaning solutions, garden chemicals, solvents, or other types of chemicals, fumes, and aerosols can also cause chemical burns

Foreign bodies in the eye are caused by dust, sand, and other debris which can easily be embedded in the cornea without entering the eyeball. (Pan Medicine, Philadelphia. 2022)

qualitative approach will be used to establish the attitude of patients attending health care services at JRRH

D=30 days, S=200mins, T=60minutes  
(30\*200)/60 =100 respondents

**Qualitative methods**

This method was used because it is easy to use a questionnaire and collect information from the respondents about their knowledge and attitudes toward eye care services

**Quantitative methods**

This method was used in the later phase of the study to compile data collected in the form of tables, pie charts, and bar charts

**Study setting**

The study was carried out at the eye clinic of the OPD department of JRRH in Jinja which is in the Eastern part of Uganda. The OPD department operates daily from Monday to Friday from 8:00-4:00 pm. The participants will be the patients attending health care services at JRRH in the outpatient department. The research was carried out in April 2023.

**Study population**

The study was carried out among patients attending eye care services at the eye clinic of the OPD department at JRRH during the time of data collection for the study and some key informants for example the principal and hospital director

**Sample size determination**

The sample size was calculated using the method below according to Mbuto Samuel (2004);

Sample size,  $S = (D*H)/T$

Where S= Sample size

D= Number of days available for data collection

T= total time that was spent on each event in minutes

**Sampling technique**

A simple random sampling process was used since I'll need to get information from at least all patients attending eye care services at the eye clinic of the OPD department at JRRH, from eye specialists, and other key informants like the hospital director at Jinja Regional referral hospital except those included in the exclusion criteria

**Sampling procedure**

For the reasons for ensure random sampling, the researcher and his assistant assigned all the patients a unique number. The numbers from one were written on small pieces of paper folded, then they were opened and those with odd numbers picked participated in the study

**Inclusion Criteria**

For participants to take part in this study, they have to be clients of the eye department at JRRH or eye specialists working at the hospital during the time of data collection. They must also be 10 years of age and above. Eye specialists working at the eye department of Jinja Regional Referral Hospital during the time of data collection.

**Exclusion Criteria**

A respondent may not be able to participate in the study if he or she is below the age of 10 years, very ill patient or he/she is a visitor in the catchment area

**Research instruments**

A questionnaire was developed based on the researcher's knowledge of local perceptions of vision and eye care. It will include both open-ended and close-ended questions about the knowledge of law vision and eye care-seeking behaviors one single question about attitudes towards eye care and questions about demographic characteristics

**Variable measurement**

Specific objectives	Variable (s)	Information to be collected	Source of information	Tools to be used
To establish the prevalence of ophthalmic emergencies	Prevalence of ophthalmic emergencies	Number of patients who present with ocular emergencies	HMIS Eye health workers in JRRH	1. Study guide 2. Interview guide 3. Recorders
To determine the common incidences of ophthalmic emergencies	Incidences of ophthalmic emergencies	Incidences of ophthalmic emergencies	Patients presenting to the eye clinic	Surveys Photographs
To access the management practices of ophthalmic emergencies	Management practices of ophthalmic emergencies	Management practices of the different ophthalmic emergencies	HMIS Eye health workers at JRRH	Questionnaires Documents and records

ophthalmic emergencies			Patients who have ever been managed at JRRH	
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**Data collection procedure**

A letter obtained from the research committee was taken to the management of Jinja Regional Referral Hospital and then to the outpatient department to allow me to carry out data collection among the patients attending health care services. One clinician was identified from the OPD department who helped as the research assistant in filling the questionnaire. Verbal and written consent was obtained from respondents before data collection among patients

**Quality control**

**Pre-visiting**

Before the study, I visited the JRRH Outpatient department to obtain permission from the relevant authorities to carry out the study and ascertain that the study is relevant and needed

**Research assistants**

The researcher was assisted by one research assistant who was selected according to his level of education (secondary level) communication skills, ability to speak the local language and English, and his knowledge about the research topic. He was first trained and oriented about the data collection process and was involved in the pre-testing of the questionnaire

**Pre-testing of the questionnaire**

The pre-testing was done at Iganga district hospital, Iganga District among the patients. 12 questionnaires were used. This aimed at evaluating the validity and reliability of the questionnaire. The data tool was therefore revised to suit realities by reconstructing questions and eliminating useless questions

**Data management**

After data collection every questionnaire was checked for completeness and any gaps were filled immediately before

the client left the department. The questionnaire was kept under key and lock only accessible to the researcher and his assistant on request. It was checked for completeness and tally coding

The data collected was edited in the field and presented information of charts, tables, and figures for easy interpretation

**Data analysis**

The data collected was analyzed by counting and coding the questionnaires. The results were presented in frequency tables and figures and later analyzed using percentages

**Ethical considerations**

A permission letter and introductory letter from the Principal of the Ophthalmic Clinical Officers Training School were taken to the hospital director of JRRH who recommended the researcher to the in charge of the Jinja Regional Referral Hospital Patient Department who then permitted to carry out research

**Informed consent**

Verbal consent was sought from the respondents after the explanation of the study to them. The respondents were assured of their right to consent.

**Confidentiality**

Before data was collected, the researcher and the research assistant first assured the respondents that the information to be collected was kept confidential and was only used for academic purposes and planning to promote a better social life for patients. To further ensure that code numbers are to be used instead of patients 'names as an assurance that no one knows from whom the information is to be got

**RESULTS**

**Prevalence of ophthalmic emergencies**

**Table 1; shows the demographic characteristics of the respondents n = 100**

Variable	Frequency (n)	Percentage (%)
<b>Age</b>		
10-20 years	43	43
21-30 years	41	41
31 and above	16	16
<b>Sex</b>		
Male	60	60
Female	40	40
<b>Occupation</b>		
Peasant	30	30
Civil servant	28	28
Others (Specify)	42	42

From Table 1, ophthalmic emergencies were noticed to be more prevalent among the ages of 10-20(43%) and 21-30(41%) years Compared to females, males were found to also have a higher prevalence rate of ophthalmic emergencies

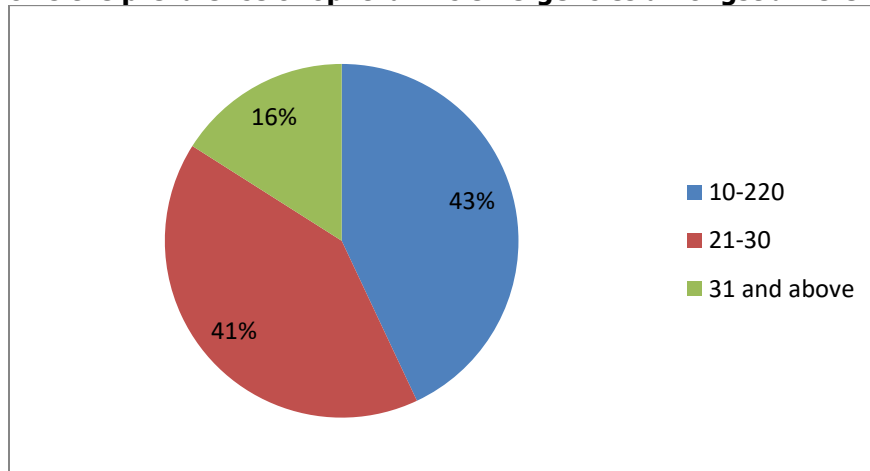
Most of the respondents who reported ophthalmic emergencies were mostly peasants (30%) and people working in high-risk areas or jobs like working in factories and industries since Jinja is an industrialized city

**Table 2; shows the prevalence of ophthalmic emergencies in different age groups n =100**

Age(years)	Frequency (n=100)	Percentage (100%)
10-20	43	43
21-30	41	41
31 and above	16	16

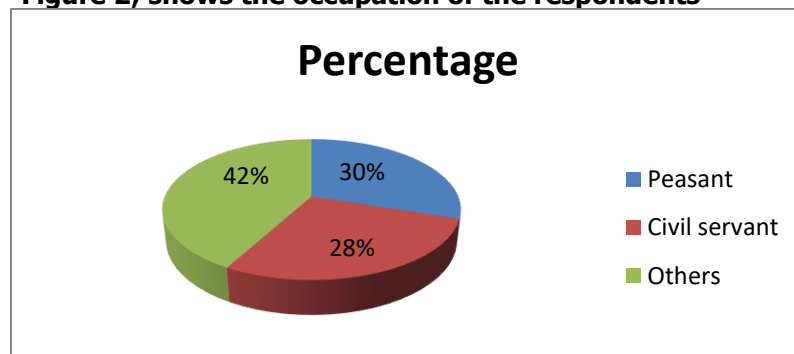
From Table 2, majority 43(43%) of the respondents who had ophthalmic emergencies were within the age group of 10-20 years

**Figure 1; shows the prevalence of ophthalmic emergencies amongst different age groups**



From Figure 1, most of the respondents who suffered from ophthalmic emergencies were in the age bracket of 10-20 years 43(43%), followed by 21-30 years 41(41) lastly 31 years and above 16(16%)

**Figure 2; shows the occupation of the respondents**



From Figure 2, most respondents carrying out activities like welding working in factories, mines, and other occupations that mostly suffered from ophthalmic emergencies 42(42%) followed by peasants 30(30%) then the least were the civil servants 28(28%)

**Incidences of ophthalmic emergencies**

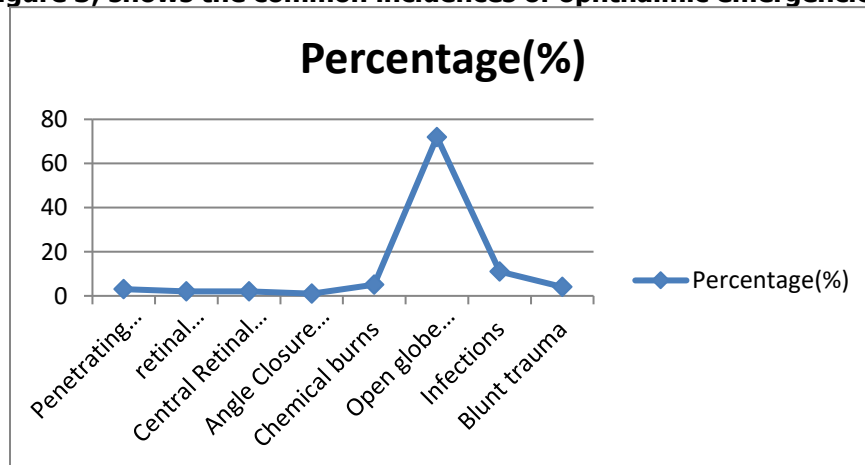
**Table 3; shows the incidences of ophthalmic emergencies in the Jinja Regional referral hospital n =100**

Incidence	Number of respondents	Percentage (%)
Penetrating globe injuries		
-Retained intra-ocular foreign body	3	3
Retinal detachment	2	2
Central retinal Artery Occlusion	2	2
Angle-closure glaucoma	1	
Chemical burns		
-Acid burns	4	
-Alkali burns	1	5
Open globe injuries		
-Corneal ulcers	22	
-Tarsal foreign body	5	
-Corneal foreign body	42	72
-Corneal tear	3	
Infections		
-Pre-septal cellulitis	1	
-Orbital cellulitis	4	
-Gonococcal conjunctivitis	6	11
Blunt trauma		
-Hyphaema	4	4

From Table 3, open globe injuries take the biggest percentage (72%) of ophthalmic emergencies at Jinja Regional Referral Hospital. This is associated with the nature of work commonly done by people living in Jinja

which is mainly working in factories; peasant farming exposes them mostly to foreign bodies thus resulting in corneal ulcers while retinal detachment and central retinal artery occlusion have the lowest percentage

**Figure 3; shows the common incidences of ophthalmic emergencies at JRRH**





**Management practices towards ophthalmic emergencies**

**Table 4; shows the common management practices of ophthalmic emergencies in JRRH**

INCIDENCE	MANAGEMENT
<p><b>Penetrating globe injuries</b>                      -Retained intra-ocular foreign body</p>	<p>Most retained IOFBs are managed by examination under anesthesia (EUA) the surgery to remove the foreign body then followed by antibiotic treatment and steroids</p>
<p><b>Retinal detachment</b></p>	<p>Referral to a retinal surgeon</p>
<p><b>Central retinal artery occlusion</b></p>	<p>Referral</p>
<p><b>Acute angle closure glaucoma</b></p>	<p>-Taking visual acuity to know the remaining vision                      -Measuring IOPs                      -Fundoscopy to observe the back of the eye i.e. the optic disc for any capping and nasal shifting                      -Taking visual fields to establish the visual field and confirm glaucoma                      -Trabeculectomy to allow drainage of aqueous humor</p>
<p>Chemical burns                      -Acid burns                      -Alkali burns</p>	<p>In Chemical injuries, the eye is immediately irrigated to neutralize the pH of the ocular surface using local anesthesia too concurrently to relieve pain. Topical antibiotics and steroids are then administered to prevent infections and also reduce inflammation. IOPs are also measured to ensure they are normal and if not normal, they are managed using acetazolamide to reduce them. The eye is then shielded to reduce the effects of photophobia                      Physicians</p>
<p><b>-Corneal ulcers</b></p> <p><b>-Tarsal foreign bodies</b></p> <p><b>-Corneal foreign bodies</b></p> <p><b>-Corneal tear</b></p>	<p>A common general management drug for corneal ulcers is Atropine which paralyzes the ciliary body to reduce pain and also prevents synechia. The other management depends on the cause; bacterial corneal ulcers are treated with topical antibiotics for example ofloxacin eyedrops, viral corneal ulcers with a dendritic pattern are managed using topical anti-virals like acyclovir, then fungal corneal ulcers with topical antifungals like natamycin                      -Tarsal f.bs are managed using a local anesthetic which is to anesthetize the eye and then the lid everted to expose the tarsal a needle is used to remove the f.b and then antibiotics are used after f.b removal                      -Corneal f.bs are also removed using a needle after anesthetizing the eye and topical antibiotics are used for example chloramphenicol eye drops                      The only management practice for corneal tear is surgery where a corneal repair, in the case of corneal transplant, patients are referred</p>
<p><b>-Pre-septal cellulitis</b>  <b>-Orbital cellulitis</b>  <b>-Gonococcal conjunctivitis</b></p>	<p>Most of the infections are managed by antibiotics both topical and systemic to manage the infection                      Commonly used topical antibiotics are ciprofloxacin and ofloxacin eye drops and chloramphenicol or tetracycline eye ointment</p>

	The systemic antibiotic commonly used is I.V Ceftriaxone because it's a broad-spectrum antibiotic readily available in hospitals and cheap
<b>-Hyphaema</b>	Most patients with Hyphaema are admitted and then advised to get bed rest with the head elevated at an angle of 15 degrees to settle the Hyphaema. Topical steroids are administered to reduce inflammation In case the IOPs are high Acetazolamide can be given to reduce IOPs Once the Hyphaema doesn't resolve as soon as possible, an A/C washout is done to clear the A/C

**Table 5; shows common management options for ophthalmic emergencies in JRRH**

Management option	Incidence
<b>Surgery</b>	Corneal tear Retained IOFB Angle-closure glaucoma Hyphaema
<b>Antibiotics</b>	Foreign bodies Pre-orbital cellulitis Pre-septal cellulitis Bacterial corneal ulcer Gonococcal conjunctivitis Chemical injuries Hyphaema
<b>Steroids</b>	Hyphaema Chemical burns
<b>Antifungals</b>	Fungal corneal ulcer
<b>Anti-virals</b>	Viral corneal ulcer
<b>Referral</b>	Retinal detachment Central Retinal Artery Occlusion

**DISCUSSIONS**

**Prevalence of ophthalmic emergencies**

The study specifically sought to establish the prevalence of ophthalmic emergencies at JRRH, it established that 43(43%) of the respondents were in the age bracket of 10-20 years. This was the most available category during data collection. According to Makwana et al., 2019, Children are more often victims of ocular trauma, so health education in schools is very important. This age group is assumed to be carrying out high-risk activities they do for example playing with sharps, digging, working in factories, high sex activities that expose them to infections. This is in line with the study carried out in Onitsha, Nigeria by Sebastian n Nwosu et al, 2019 which noted that infections and injuries are the commonest causes of ophthalmic emergencies

The study also indicated that compared to females, males were found to also have a higher prevalence rate of ophthalmic emergencies due to the nature of occupation males are involved in which is also in line with WHO and Matthew F Gardiner et al which stated that ocular trauma results into ocular injuries majorly males due to occupation The study showed that most of the respondents who reported ophthalmic emergencies were mostly peasants (30%) due to exposure to foreign bodies like stones, dust, etc., and people

working in high-risk areas or jobs like working in factories and industries since Jinja is an industrialized city .this agrees with the research carried out in Katwe, Uganda by Immaculate Atukunda et al, 2019 which stated that most people that presented with ophthalmic emergencies were welders

The study also showed that the most common tribe that reported ophthalmic emergencies was the Basoga (58%) followed by Baganda (23%). This was so because the area of study is located in the Busoga region which is neighboring the Buganda region just across the River Nile

**Common incidences of ophthalmic emergencies**

The study also sought to establish the prevalence of ophthalmic emergencies at JRRH, it established that the common ophthalmic emergencies at JRRH were retained IOFB, retinal detachment, Central retinal artery occlusion (CRAO), Angle-closure glaucoma, chemical burns, corneal ulcers, foreign bodies, corneal tear, preseptal cellulitis, orbital cellulitis, Gonococcal conjunctivitis, and Hyphaema due to blunt trauma.



The most common incidences were foreign bodies (47%), this is because of the nature of work that most people in Jinja District and the neighboring areas do which is mostly peasant farming and working in industries since Jinja is an industrialized city. This agrees with Intanon Imsuwan et al. 2020 which states that the most common diagnoses of the traumatic eye are the foreign bodies at the cornea and conjunctiva and minor trauma to the conjunctiva

### Management practices of ophthalmic emergencies

The study also established that immediate, careful examination and appropriate treatment were always done because ocular emergencies may have a poor visual prognosis, resulting in blindness. This is in line with the research carried out by Rev Bras Oftalmol.; 2012

The common management options that were done in JRRH during the time of the study were surgery for conditions like a corneal tear, retained IOFB, angle closure glaucoma, and Hyphaema; Medical management with Antibiotics for conditions like foreign bodies, pre-orbital cellulitis, pre-orbital cellulitis, bacterial corneal ulcers, Gonococcal conjunctivitis and chemical injuries; Steroids for Hyphaema, chemical burns; Anti-fungals for management of fungal corneal ulcers; Anti-virals for viral corneal ulcers; then Referral for retinal detachment, Central Retinal Artery Occlusion.

### Generalizability

The study was carried out in the outpatient department of JRRH therefore the results from this study cannot be generalized to those living in the more remote areas of the country. This is because, based on the findings of the study we would expect varied levels of knowledge, attitudes, and eye care services in these hard-to-reach areas.

### Conclusions

The study concluded that the common age group affected by ophthalmic emergencies is 10-20 years and mostly males are affected and with those working, it was mostly welders, those working in industries, factories, and peasants. The most common incidences were corneal foreign bodies and common management options were medical management with antibiotics, antifungals, anti-virals, and antiglaucoma depending on the cause; surgical management and referral

### Recommendations

Based on the study findings and conclusions, the following recommendations and suggestions were thought to be of help to improve service delivery at JRRH

The government should deploy more medical personnel for example at least two ophthalmologist doctors and four ophthalmic clinical officers' to ensure quick and effective management of ophthalmic emergencies and also reduce the number of referrals since JRRH is already a referral hospital

There should also be procurement of surgical equipment at the hospital to still reduce the number of referral cases Adequate delivery of medical support to the health facility should be always ensured by the government Ophthalmic Clinical officers and ophthalmic nurses should strengthen health education on eye health care to reduce the number of ophthalmic emergency incidences

### Study limitations

The study required a lot of financing and time to carry out which is limited. Other most likely challenges are the unresponsiveness of respondents, weather variations, lack of data, and information biases.

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### ABBREVIATIONS AND ACRONYMS

JRRH – Jinja Regional Referral Hospital  
CRAO- Central, Retinal Artery Occlusion  
POAG- Primary angle closure glaucoma  
MOH – Ministry of Health  
IOP- Intra-ocular pressure  
IOFB- Intra-ocular foreign body  
F.b- Foreign body  
A/C- Anterior Chamber

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### Conflict of interest

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