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Original Article

Management of ocular trauma among patients attending eye care services at Jinja Regional Referral Hospital. A cross-sectional study.

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Abstract

Background:
Urgent, early, and proper ophthalmologic evaluation is the key to prompt and appropriate management of ocular trauma. The study aims to assess the Management of ocular trauma among patients attending eye care services at Jinja Regional Referral Hospital.

Methodology:
A cross-sectional descriptive study design. 100 respondents were selected using a non-probability consecutive sampling process. Data collected was processed quantitatively by tallying and using non-programmable scientific calculators and was presented using tables and figures. The study was conducted from September 2022 to March 2023.

Results:
55% of the respondents had attained secondary education, 20% had attained primary education, 18% had attained tertiary education, and 7% had not attained any level of education. The majority received medical management (65%), 20% received surgical management, 10% used self-medication, and 5% used traditional medication. 41% of the respondents had received closed globe injuries, while 59% had received open globe injuries. The majority of the patients. (58%) showed great improvement, 15% showed less improvement, and 12% showed mild improvement. The majority of the patients (40%) were presented after 24 hours, 24% were presented to the clinic immediately, 20% were presented after 2 days, and 16% were presented after one week. Among patients who were presented to the clinic after one week, 63% showed poor prognosis, 25% showed mild prognosis, and 13% showed good prognosis.

Conclusion:
Health-seeking behavior after sustaining eye injuries was good. The distance of patients from the Hospital affected their health-seeking ability. Patients who presented early to the clinic had a better prognosis than those who presented late. Open globe injuries required surgical management and were associated with a poor prognosis.

Recommendations:
The government should establish more equipped, specialized eye centers (Hospitals) with adequate staff to increase accessibility to eye care services.

Keywords: *Health-seeking behavior, Eye centers, Ophthalmologic evaluation.*
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Background
Urgent, early, and proper ophthalmologic evaluation is the key to prompt and appropriate management of ocular trauma. Radiological imaging is necessary and crucial since surrounding periorbital soft tissue swelling and other associated injuries may make physical examination of the globe difficult, and patient cooperation may be limited by unresponsiveness, altered mentation, or sedation. For traumatic eye injury, patients who need immediate surgery, an intravenous injection is given, and any needed ancillary lab studies, including imaging and blood testing, are done. Prolapsed tissue to close the eyes is managed, and then the internal eye damage is addressed.

Globally, responses received from representatives of 36 of 42 institutions (85.7%), of which 33 (78.6%) had sufficient trauma volume to be included, showed that preoperative systemic antibiotics for open globe injuries were administered by 75.8%(n=25/33) of institutions, while 30.3% (n=10/33) administered preoperative topical antibiotics. Intraoperative ophthalmic antibiotics for open globe injuries were used by 54.4 % (n=18/33) of experts (Sarah et al 2022).

A correlation between the presenting and final Visual Acuity (VA). Despite the severity of the injuries, one out of four eyes reached a final visual Acuity (VA) greater than 20/200 (Joao et al,2022). Ocular trauma causes significant morbidity and loss of production (American Academy of

Ophthalmology). In the USA, more than 2.5 million eye injuries occur each year, and out of these, 50,000 people permanently lose part or all of their vision (S Qayum et al, 2016).

Serious ocular injury gives rise to irrevocable structural damage or functional loss. If the issue of ocular injuries is not addressed, given the age bracket, the population will be affected. (Adong, 2016). The study aims to assess the Management of ocular trauma among patients attending eye care services at Jinja Regional Referral Hospital.

Methodology

Study design.

The researcher used a cross-sectional descriptive study design, which utilized quantitative data. To find out the factors associated with ocular trauma in patients receiving eye care services in Jinja Regional Referral Hospital. Quantitative methods were used in the later stages of the study to compile data in the form of tables, figures, and text (narration)

Study Population

The study population comprised all patients attending Jinja Regional Referral Hospital outpatient eye clinic with ocular injuries during the period of study.

Study setting

The study was carried out from the OPD eye clinic at JRRH, Jinja district. The hospital is located in the southeastern region of the country in Jinja city near the source of the Nile. It serves several clients/patients across the region, some of whom are just referred from other hospitals and health centers iv while others are self-referred. Among the services provided are medical, surgical, orthopedic, eye care, private, gynecology, pediatrics, dental, ENT, lab, X-ray/Scan, Immunization, HIV testing and counseling, and Reproductive health services, among others. The study was carried out for a period of 7 months; that is, from September 2022 to March 2023

Sample Size Determination

The sample size was calculated using Cochran's formula, n=(z2pq)/d2

Where:

n=sample size

z=is the standard normal deviate estimated at 1.96 (adopted from the z distribution table) at a 95% confidence interval

p=is the proportion of respondents with Ocular trauma (target population groups). Since P is not known with certainty, we therefore estimate it at 7%=0.07, which is the maximum value

q=1-p (1-0.07) =0.93 (The probability of selecting respondents without ocular trauma

d=0.05, the maximum error

n= (1.96x1.96x0.07x0.93)/ 0.05x0.05)

n=100.03

100 respondents were considered for the study

Sampling technique

The study was a non-probability consecutive sampling process, and all the clinicians at Jinja Regional Referral Hospital eye clinic were sensitized about the ocular trauma study.

Sampling procedure

Patients were registered at the reception, their age and sex documented regardless of presenting ocular complaints. Whenever an ocular injury was identified by any clinician during the course of a patient, he/she would direct the patient to the principal investigator for assessment.

Data collection method

The principal investigator used interviews as the method of data collection, using an interview guide with well-structured questions.

Data Collection tools

Data was collected using an interviewer-administered questionnaire. This searched for socio-demographic and clinical data of each patient who presented with ocular injuries. It also searched for information on the causative factors of the injury, the place where the injury was sustained, and the circumstances under which the injury was sustained.

Data collection procedure

The principal investigator started by creating rapport with the respondents and reassuring them about confidentiality. The questions were read and interpreted to the respondents to understand. Responses were given in the local language and written in English by the researcher, and at the end, the respondents were thanked for their cooperation.

Study Variables

Independent variables

Management of ocular trauma, extent of trauma, health-seeking behavior, and practices.

Dependent variables

Prognosis of ocular trauma

Inclusion criteria

Only patients who presented to the outpatient eye clinic with ocular injuries for their first visit at Jinja Regional Referral Hospital outpatient eye clinic were included.

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Exclusion Criteria
Patients who had life-threatening ocular trauma with active bleeding that required urgent and intensive management were excluded from the study.

Quality control
The principal investigator pre-tested the study tools, and piloted testing was done to identify and correct errors.

Pre-testing the questionnaire
This was aimed at evaluating the validity and reliability of the questionnaire. The data tool was therefore revised to suit realities through reconstructing questions and eliminating grammatical errors and useless questions.

Data processing, analysis, and presentation
Data collected was processed quantitatively by tallying and using non-programmable scientific calculators and was presented using tables and figures.

Ethical consideration
Introductory letter
On approval of the research proposal by the institution's research committee, a letter of introduction was provided by the principal of Ophthalmic Clinical Officer's Training School, and it was delivered to the director of Jinja Regional Referral Hospital, who then introduced the researcher to the in-charges of the eye clinic. He introduced the researcher to the respondents.

Informed consent
Verbal consent was sought from the patients after the explanations of the topic of study. The patients were assured of their right to consent.

Confidentiality
The principal investigator assured the patients that the information to be collected was to be kept confidential and was only for academic purposes and planning to promote a better life.

Results
Social demographic factors associated with ocular trauma

Table 1: shows socio-demographic factors associated with ocular trauma

Variables	Category	Number of respondents	Percentage (%)
Age (years)	0-20	32	32
	21-40	55	55
	41-60	10	10
	>60	3	3
	Total	**100**	**100**
Sex	Male	70	70
	Female	30	30
	Total	**100**	**100**
Education level	None	7	7
	Primary	20	20
	Secondary	55	55
	Tertiary	18	18
	Total	**100**	**100**
Tribe	Baganda	20	20
	Basoga	50	50
	Bagwere	10	10
	Banyankole	4	4
	Others	16	16
	Total	**100**	**100**

Table 1, the most affected age group was 21-40 (55%) followed by 0-20 age group with 32%, 41-60 age group with 10% and the least affected age group was >60 years 3%, according to sex, males were more affected by ocular trauma (70%) than females (30%). 55% of the respondents had attained secondary education,20% had attained primary education, 18% had attained tertiary education, and 7% had not attained any level of education. The most affected tribe was Basoga (60%), followed by Baganda with 20%, Bagwere with 10%, Banyankole with 4% and the least among others with 16%.

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Figure 1: Shows age distribution among respondents with ocular injuries

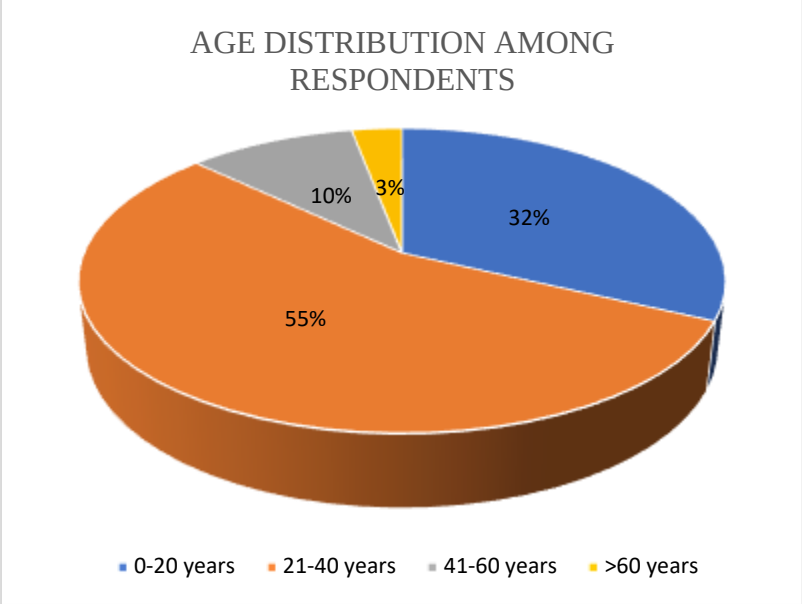

Figure 1 indicates that the 21-40 years age group was the most affected (55%), followed by the 0-20 age group 32%, the 41-60 age group 10% and the>6o years was the least affected age group (3%).

Management and prognosis of ocular trauma

Table 2: Shows the Distribution of patients according to interventions made

Variable	Category	Frequency	Percentage (%)
Management intervention	Medical	65	65
	Surgical	20	20
	Tem	10	10
	Self-medication	05	5
Type of injury	Closed globe injury	41	41
	Open globe injury	59	49
Injury subtype	Corneal abrasion	37	37
	Corneal penetration	15	15
	Lid abrasion	12	12
	Contusion	28	28
	Others	08	8
Which eye sustained the injury	Right eye	50	50
	Left eye	50	50

Table 2, the majority of the respondents received medical management (65%), 20% received surgical management, 10% used self-medication, and 5% used traditional medication 41% of the respondents had received closed globe injuries, while 59% had received open globe injuries. Most of the respondents had suffered from corneal abrasions (37%), 28% had suffered from contusions, 15% of the respondents had suffered from corneal penetration injuries,12% had suffered from lid abrasions and were among others with 8%, the table also shows that 50% of the respondents sustained the injury on the right eye and 50% suffered on the left eye.

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Table 3 shows the outcome of the interventions made on ocular trauma patients.

Category	Frequency	Percentage (%)
Medical intervention		
Great improvement	38	58
Mild improvement	12	19
Less improvement	15	23
Total	65	100
Surgical intervention		
Great improvement	05	25
Mild improvement	02	10
Less improvement	13	65
Total	20	100
TEM		
Great improvement	00	00
Mild improvement	02	20
Less improvement	07	70
Total	10	100
Self-medication		
Great improvement	00	00
Mild improvement	01	20
Less improvement	04	80
Total	05	100

Table 3 concerning the interventions made on ocular trauma patients, among those that received medical intervention majority of the patients (58%) showed great improvement, 15% showed less improvement, and 12% showed mild improvement. Among those that received surgical intervention, the majority showed less improvement (65%), 25% of the respondents showed great improvement, and 10% showed mild improvement 70% of the patients that had used traditional eye medication showed less improvement, 30% showed mild improvement, and none showed great improvement. Among those respondents who had used self-medication 80% showed less improvement, 20% showed mild improvement, and none showed great improvement.

Table 4: Shows patients who sustained ocular trauma and needed surgical management

Surgical management	Number of patients (n=25)	Percentage (%)
Foreign body removal	10	40
Surgical repair	6	24
AC wash out	5	20
MSICS for a dislocated lens	4	16
Total	25	100

Table 4 shows that among the patients who received surgical management, 40% underwent foreign body removal, 24% received surgical repair, 20% received anterior chamber washout, and 16% underwent manual small incision cataract surgery (MSICS) for a dislocated lens.

Time of presentation to the clinic

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Table 5 shows the time of presentation to the clinic of the respondents who had sustained ocular trauma.

Time of presentation	Number of patients (%)
Immediately	24
After 24 hours	40
after 2 days	20
After one week	16

Table 4: Regarding the time of presentation to the clinic, Table 6 shows that the majority of the patients (40%) were presented after 24 hours, 24% were presented to the clinic immediately, 20% were presented after 2 days, and 16% were presented after one week.

Table 6 shows the relationship between the type of presentation to the eye clinic and the prognosis of the injury.

Category	Frequency	Percentage (%)
Immediate presentation		
Great prognosis	18	75
Mild prognosis	04	17
Poor prognosis	02	8
Total	24	100
After 24 hours		
Great prognosis	29	73
Mild prognosis	06	15
Poor prognosis	05	13
Total	40	100
After 2 days		
Great prognosis	03	15
Mild prognosis	10	50
Poor prognosis	07	35
Total	20	100
After one week		
Great prognosis	02	13
Mild prognosis	04	25
Poor prognosis	10	63
Total	16	100

Table 6 Concerning the relationship between time of presentation to the clinic after sustaining the injury and the prognosis of the injury, Table 7 shows that among the patients who were presented immediately after sustaining an ocular injury, 75% of the patients showed a great prognosis, 17% showed a mild prognosis, and 8% showed a poor prognosis. Among the patients who were presented to the clinic after 24 hours,73% of the patients received a great prognosis, 15% received a mild prognosis, and 13% received a poor prognosis 50% of the patients who were presented to the clinic after 2 days showed a mild prognosis,35% showed a poor prognosis, and 15% showed a great prognosis. Among patients who were presented to the clinic after one week, 63% showed poor prognosis, 25% showed mild prognosis, and 13% showed good prognosis.

Discussion

Socio-demographic factors associated with ocular trauma

Concerning age, the study established that the most affected age group was 21-40 years (55%) and the least affected was >60years (3%) this is probably because 21-40 years is a working age group, this concurs with Fabriziomario et al (2017) who observed that among all cases of

ophthalmological departments adults are more affected by trauma.

The study established that ocular trauma was more common in males (70%) than in females (30%). This is probably because more males indulge in risky behaviors, such as alcoholism, than females.

Concerning tribe, the study showed that most of the respondents were Basoga (50%), and the least (14%) were among others. This is because the study was conducted in the Busoga region, where most of the people attending JJRH are Basoga.

According to educational level, the study revealed that the majority (88%) of the respondents were literate, while 12% were illiterate. This is because the majority of the respondents were factory and business workers, and most businesses and factories employ people who have attained a particular level of education.

Management and prognosis of ocular trauma

The study findings revealed that the majority of the patients needed medical management (65%) while the minority had used self-medication (5%). This is because many patients had minor injuries that never required surgery, and others refused surgery. The study also showed that more than half of the injuries (59%) were open globe injuries, while closed globe injuries were 41%. Findings revealed that the most common injury subtype was corneal abrasion (37%), and the least was among others (8%). This is probably because most of the injuries were caused by blunt objects.

The majority of the patients who received medical intervention (58%) showed great improvement, indicating a good prognosis, while those who used traditional eye medication and those who applied self-medication didn't show any improvement, indicating a poor prognosis. This is probably because those who went for medical management received the required treatment from qualified personnel, yet those who treated themselves and those who used TEM missed proper treatment, giving a poor prognosis.

The majority of the patients who received surgical intervention (65%) showed less improvement (poor prognosis). This is probably because many of them had suffered from open globe injuries, which are more severe and associated with more complications and longer treatment time compared to closed globe injuries. This finding is in line with Li X et al, 2015, who revealed that Open globe injury (OGI) is a severe form of eye trauma estimated at 2-3.8/100,000 in the United States.

The study findings also revealed that the majority of the patients presented to the clinic after 24 hours (40%). This was related to the long distance that was needed to reach the hospital and health-seeking behaviors.

The study revealed that those presented immediately (73%)and those who presented after 24 hours(75%) had a great prognosis while those who presented after 2 days and after one week showed mild (50%) and poor prognosis (63%) respectively indicating that the patients who presented early to the clinic had better prognosis than those who presented late. This is because the injury was managed early and urgently before any complications set in.

Conclusion

Health-seeking behavior after sustaining eye injuries was good. The distance of patients from the Hospital affected their health-seeking ability. Patients who presented early to the clinic had a better prognosis than those who presented late. Open globe injuries required surgical management and were associated with a poor prognosis.

Recommendations

Health education on ocular injuries should be adopted by the relevant authorities, such as the district health team, to increase awareness of the dangers, causes, predisposing factors, and burden of ocular trauma among the community. The government should establish more specialized hospitals (eye clinics) to increase accessibility to eye care services.

Acknowledgement

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Conflict of interest

The author did not declare any conflict of interest

Author Biography

David Ssekajigo is a student of a diploma in clinical ophthalmology at the Ophthalmic Clinical Officers' Training School, Jinja.

Adonia Kyakulaga is a tutor at the Ophthalmic Clinical Officers' Training School, Jinja.

List of abbreviations

AC	**A**nterior chamber
HIV	Human Immune Virus
JRRH	Jinja Regional Referral Hospital
MSICS	Manual: Small Incision Cataract Surgery
OGI	Open Globe Injury
OPD	Outpatient Department
TEM	Traditional Eye Medication
VA	Visual Acuity

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