

OCCUPATIONAL AND ENVIRONMENTAL FACTORS ASSOCIATED WITH OCULAR TRAUMA AMONG PATIENTS ATTENDING EYE CARE SERVICES AT JINJA REGIONAL REFERRAL HOSPITAL. A CROSS-SECTIONAL STUDY.

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Page | 1

Abstract

Background

Ocular trauma refers to any injury to the eyeball, its adnexa, orbit, and periorbital structures due to direct contact with fixed or mobile, blunt or sharp objects. The study aims to assess the factors associated with ocular trauma among patients attending eye care services at Jinja Regional Referral Hospital.

Methodology

A cross-sectional descriptive study design that collected quantitative data from 100 respondents using a non-probability consecutive sampling process from September 2022 to March 2023.

Results

70% of the respondents were male while 30% were females. 55% of the respondents were 21-40 years, 32% were 0-20 years, 10% were 41-60 years and 3% were >60 years. Ocular injuries were caused by a foreign body (40%) followed by work-related activities with 20%, accidents with 18%, assault-related actions with 20%, and the least were chemical injuries with 5%. (65%) didn't have eye protective equipment while 35% had. 40% of the respondents knew about awareness programs on ocular trauma while 60% had not received these programs. (43%) obtained trauma from the workplace, 25% from bars, 17% from homes, and 15% from schools. 55% had used nontherapeutic drugs like alcohol. 50% were using water from protected streams, 30% were using water from taps, 15% were using water from wells and the least were those using water from rivers (05%).

Conclusion

The most affected age group was 21-40. Males were more affected than females. Literates were most affected, and most cases of ocular trauma were obtained from the workplace.

Ocular trauma was associated with the use of non-therapeutic drugs like alcohol.

Recommendations

Health education on ocular injuries should be adopted by the relevant authorities to increase awareness of the dangers, causes, predisposing factors, and burden of ocular trauma in the community.

Keywords: Ocular trauma, Health education, Non-therapeutic drugs.

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Background

Ocular trauma refers to any injury to the eyeball, its adnexa, orbit, and periorbital structures due to direct contact with fixed or mobile, blunt or sharp objects (mechanical energy being transferred to for example by rapid deceleration), hot objects (thermal), chemical substances, sources of electrical power and different types of radiation (UV X-ray, microwave). The injury is either a blunt closed globe injury (CGI) or an open globe injury (OGI). The adnexa includes eyelids, eyebrows, and the lacrimal system. Ocular trauma is the leading cause of monocular loss of vision (International Journal of Ophthalmology and Clinical Research, 2021). Ocular trauma is usually the third and fourth cause of binocular and monocular blindness, respectively (Bian et al, 2022). There are 16 million cases of blindness caused

by eye injuries annually, 23 million cases of low vision due to eye injuries, and 19 million cases of monocular blindness due to eye injuries.

The most common cause of unilateral blindness in pediatric age groups especially in developing countries is ocular trauma. (Kaçer et al, 2022). In developed countries, the incidence of blindness due to injury is 9/100000 people but in developing countries, the rate is 75/100000, and 90% of the global injury burden occurs in developing countries (Feng K, 2019). In Africa, a study in Nigeria showed that Nigeria had a high magnitude of injuries with a prevalence rate ranging between 24.3% and 31.1% (Oyedina, et al 2021). Measures to create awareness and sensitization about early health-seeking behaviors would result in a great decrease in ocular morbidity and mortality due to ocular trauma. However, this may not be possible

without knowledge of the factors under which individuals are exposed to ocular trauma. Mass awareness regarding potential risk factors and agents causing injury can prevent several ocular injuries. (Jitendra et al, 2019). In Uganda, it was reported that the frequency of ocular trauma among children attending Mulago Hospital was high, one in every five children seen at the eye clinic had ocular trauma (John Mayeka, 2017). The study aims to assess Factors associated with 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 at 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 services provided include, 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 $n = (z^2pq)/d^2$

Where:

n=sample size

z=is the standard normal deviation estimated at 1.96 (adopted from z distribution table) at 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

$n = (1.96 \times 1.96 \times 0.07 \times 0.93) / (0.05 \times 0.05)$

$n = 100.03$

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 patient, he/she would direct the patient to the principal investigator for assessment.

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.

Exclusion Criteria

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

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 for 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

Occupational factors

Environmental factors

Dependent variables

Ocular trauma

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 aimed at evaluating the validity and reliability of the questionnaire. The data tool was therefore revised to suit realities through reconstructing questions and elimination of grammar errors and useless questions.

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.

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.

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.

**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 the Ophthalmic Clinical Officer’s

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

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

In 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 (50%), followed by Baganda with 20%, Bagwere 10%, Banyankole 4%, and the least among others with 16%.

Figure 1: Shows age distribution among respondents with ocular injuries

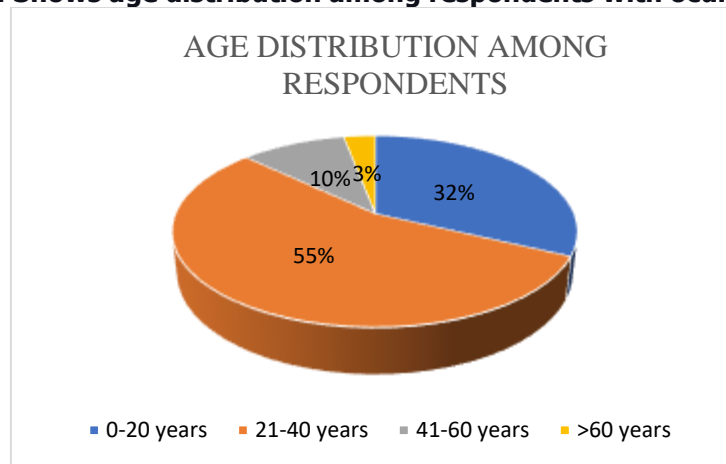


Figure 1 indicates that 21-40 years was the most affected age group (55%) followed by 0-20 age group with 32%, 41-60 age group with 10% and >60 years was the least affected age group (3%).

Table 1: Shows occupational factors and environmental factors associated with ocular trauma

Variable	Category	Number of respondents	Percentage (%)
OCCUPATIONAL FACTORS			
Type of work	Farmer	15	15
	Cyclist	17	17
	Business and Factory	60	60
	Others	8	8
	Total	100	100
Cause of injury	Accident	18	18
	Foreign body	40	40
	Work-related	20	20
	Assault related	17	17
	Chemical	5	5
	Total	100	100
Availability of awareness programs on ocular trauma	Yes	40	40
	No	60	60
	Total	100	100
Availability of eye protective equipment at the workplace	Yes	35	35
	No	65	65
	Total	100	100
ENVIRONMENTAL FACTORS			
Type of housing	Permanent	40	40
	Semi-permanent	52	52
	Temporary	8	8
	No Shelter	0	0
	Total	100	100
Source of water	Tap	30	30
	Protected stream	50	50
	Wells	15	15
	River	05	5
	Total	100	100
Workplace	43	43	

Location where the injury was obtained from	Bar	25	25
	Home	17	17
	School	15	15
	Total	100	100
Use of non-therapeutic drugs	Yes	55	55
	No	45	45
	Total	100	100

Table 2 shows that most of the respondents who sustained ocular trauma were business and factory workers (60%) followed by farmers with 17%, followed by farmers with 15% and the least were among others with 8%. The table also shows that most of the injuries were caused by foreign bodies (40%) followed by work-related activities with 20%, accidents with 18%, assault-related actions with 20%, and the least were chemical injuries with 5%. Most of the respondents who sustained ocular trauma didn't have eye protective equipment (65%) while those who had protective eye equipment were 35%. 40% of the respondents knew about awareness programs on ocular trauma while 60% had not received these programs

Concerning environmental factors, table 2 above shows that most of the respondents who sustained ocular trauma had semi-permanent houses (52%), 40% had permanent houses, and 8% with temporary houses. Most of the respondents obtained ocular trauma from the workplace (43%), 25% obtained ocular injuries from bars, 17% from homes, and 15% from schools. 55% of the respondents with ocular injuries had used nontherapeutic drugs like alcohol. 50% of the respondents were using water from protected streams, 30% were using water from taps, 15% were using water from wells and the least were those using water from rivers (05%).

Figure 2: shows the cause of the injury that led to ocular trauma.

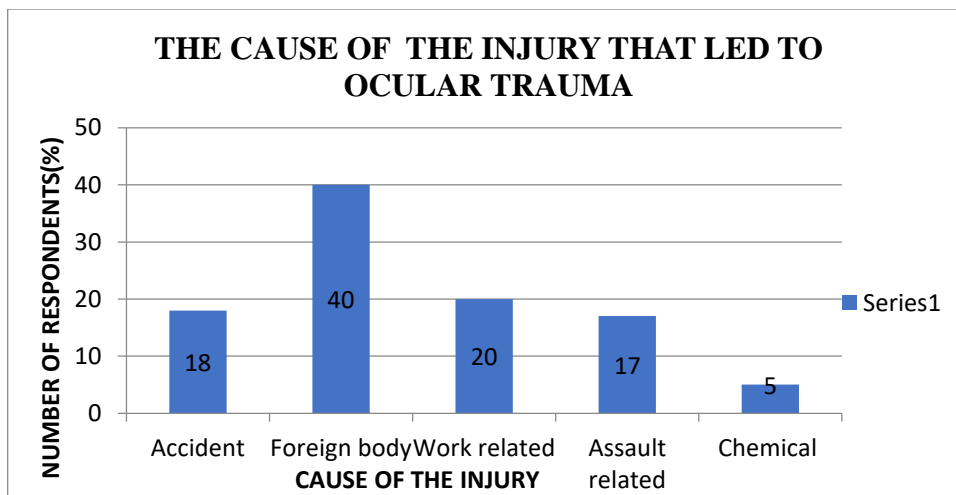
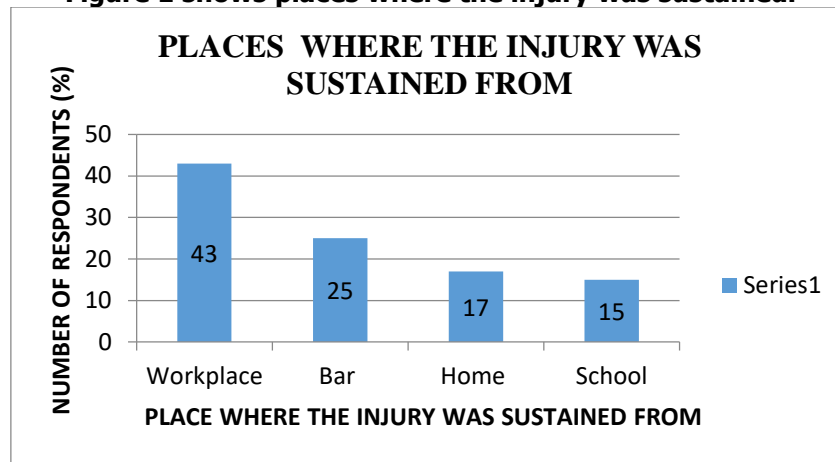


Figure 2 indicates that the majority of the ocular injuries were caused by foreign bodies (40%) followed by work-related injuries (20%), accidents (18%), and assault-related injuries (17%) while the least was caused by chemicals (5%).

Figure 1 shows places where the injury was sustained.



In Figure 3 concerning the place where the ocular injury was sustained, most respondents (43%) mentioned the workplace, 25% mentioned bars, 17% mentioned homes and 15% mentioned schools.

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, and 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 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 JRRH 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.

Occupational and environmental factors associated with ocular trauma.

The majority of the respondents (60%) with ocular trauma were business and factory workers while 17% were cyclists, farmers were 15%, and the least (8%) were among others. This was attributed to most of them not having safety gadgets (65%). This concurs with Fabriziomario et al (2017) who observed that among all cases of ophthalmological departments, occupational eye

injury ranges from 30% to 70%. And adults are more affected by trauma at occupation.

The study also revealed that most of the respondents interviewed (55%) used nontherapeutic drugs like alcohol. This probably predisposed them to endogenous factors like exploration drive, independence-seeking behaviors, tendency to fight, and tendency to take risks. This is in line with the findings of Wagh et al (2022) who reported that Road traffic accidents were the commonest causes of ocular trauma among patients who attended a rural hospital in central India.

The majority of the respondents (43%) obtained ocular injuries while at their workplace. This was probably due to lifestyle factors such as limited use of eye protective gear when conducting an activity. This finding agrees with a study conducted by Adong, 2016 which showed that lifestyle factors such as limited use of protection for eyes when conducting an activity were significantly associated with the occurrence of eye injuries.

Conclusion

Most cases of ocular trauma were obtained from workplaces; these included factories, business places like welding places, farms followed by roads, and recreational activities.

Ocular trauma was sought to be associated with the use of non-therapeutic drugs like alcohol. The most affected age group was 21-40 years; males were more affected than females i.e. 70%:30% respectively. The most affected people were the literates.

Recommendations

Ophthalmic clinical officers, ophthalmologists, and other members of the district health team should health educate the community about the dangers of alcoholism because it predisposes them to assaults, aggression, and accidents which may lead to ocular trauma.

Factory and business managers should procure enough protective gear for their factory workers and ensure that they are properly used while on duty to prevent ocular trauma, this should be supervised and emphasized by the

district health team to reduce the incidence of ocular trauma among factory workers.

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List of abbreviations

CGI	Closed Globe Injury
HIV	Human Immune Virus
JRRH	Jinja Regional Referral Hospital
OGI	Open Globe Injury
OPD	Outpatient Department

Source of funding

The study was not funded.

Conflict of interest

The author did not declare any conflict of interest.

Author Biography

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

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