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PRACTICES LEADING TO EYE INJURIES IN CHILDREN ADMITTED AT SEKURU KAGUVI HOSPITAL AGED ONE TO SIXTEEN YEARS FROM FEBRUARY TO APRIL 2022

BY

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A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF POST-BASIC BACHELOR OF NURSING SCIENCES IN THE COLLEGE OF HEALTH, AGRICULTURE AND NATURAL SCIENCES

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Abstract

A retrospective study of 96 eyes of 96 children aged one to sixteen years who presented with eye injuries between February and April 2022 at Sekuru Kaguvi eye unit's admitting wards was conducted. The research was quantitative since the researcher explored onto the frequency of causes and practices leading to eye injuries in children with the mentioned age group. Sekuru Kaguvi Hospital is part of Parirenyatwa Group of Hospitals and a referral eye center for the whole of Zimbabwe. The purpose of the study was to find out practices leading to eye injuries in children admitted at Sekuru Kaguvi wards aged one to sixteen years from February to April 2022. Objectives of the study were to identify demographic factors related to the occurrence of eye injuries in children aged one to sixteen years admitted at Sekuru Kaguvi wards and to establish common causes leading to eye injuries in children aged one to sixteen years admitted at SKH wards. Relevant literature from different authors and researchers was reviewed. The researcher sought permission from Parirenyatwa Group of Hospitals management where data collection was done as well as from Africa University Research Ethics Committee and got a positive response. The sample size was 96. Systematic sampling method was used whereby the second parent presenting with a child for admission at SKH wards with eye injuries and within one to sixteen age group was chosen. The data collection instrument used was a questionnaire which presented in Shona and English. The study was retrospective since parents filled in questionnaires on what transpired when their child got injured and what the cause of injury was. The researcher did a pilot study by selecting five participants to fill in the questionnaires so as to test the feasibility of this instrument. The questions were well answered and no changes were made. Parents or guardians who are the participants signed the consent after some explanation from the researcher and filled in the questionnaires on their own. The researcher read through those filled in questionnaires and came out with study results. The study revealed that boys were the most affected as they constituted to 74% of the study sample and girls 26% meaning that almost 3 quarters were boys. The 6 to 10 years age group had the highest score of 42.71%, followed by 0 to 5years with 32.29%, 11 to 14 years scored 18.75% and lastly 15 to 16 years had a 6.25% score. The common cause of eye injuries was identified as sharp objects which scored 68%, injuries which occurred when children were playing summed up to 69%, assaults 2% and others 29%. The most common type of injuries presented were corneal and scleral perforations with a 62.24% score. There was no significant difference in the occurrence of eye injuries in children who stay in rural areas and those staying in urban areas. From this study the majority of the causes of eye injuries were preventable. Appropriate promotion of preventive eye care among children may help to reduce the burden of blindness from eye injuries. Parents need to strengthen their monitoring skills especially on boys who usually play outdoors.

Key words: Cornea, sclera, laceration, perforation, paediatric eye injuries, practices.

Declaration page

I declare that this proposal is my original work except where sources have been cited and acknowledged. The work has never been submitted, nor will it ever be submitted to another University for the award of a Degree.

Student's full name: Janet Makamure

Student's signature: Date: 15/05/2022

Main supervisor's full name: Doctor S. Chituku

Supervisor's signature: Date:

Copyright

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I wish to extend to extend my special thanks to the following people:

i) Doctor S. Chituku my supervisor who has been patient enough to correct some mistakes which I made until this research became a success.

ii) BSN Cohort 4 colleagues who helped me with some ideas which made this research a success.

iii) Parirenyatwa Group of Hospitals Head of Department for the eye unit who is also a Consultant, Doctor Macheka, Principal Nursing Officer N. Mpande and the Clinical Director who gave me the permission to carry out this study at this institution.

iv) At the center of it all is God, the Almighty who made it possible to start and finish this study with no hindrances.

v) Respondents are not left out since they provided data which was used in this research.

Dedication

This study is dedicated to my husband, Emmanuel Makamure, my children Prosper, Eminent and Prominent for the unwavering support throughout the study. Mr Chakanyuka, Parirenyatwa hospital librarian also gave support through provision of reading text books and ideas.

List of acronyms and Abbreviations

SKH: Sekuru Kaguvi Hospital

USEIR: United States Eye Injury Register

WHO: World Health Organization

AUREC: Africa University Research Ethics Committee

VA: Visual acuity

PGH: Parirenyatwa Group of Hospitals

Definition of key terms

Amblyopia- It is a visual disorder due to failure of cortical visual development in one or both eyes due to ocular pathology early in life (Blair, Cibis and Gulani, 2019)

Amblyopia occurs when one eye becomes weaker than the other during infancy or childhood. The brain will be favoring the better eye causing the weaker one to become worse over time. Amblyopia is also called 'lazy eye'. (Accessed on https://www.my.clevelandclinic.org/health on 24/02/2022).

Hyphema is defined as the presence of blood within the aqueous fluid of the anterior chamber and its most common cause is trauma (Nash and Dahl, 2019).

Hyphema is the medical term for bleeding in the anterior chamber of the eye which is the space between the cornea and the iris (Bedinghaus, 2021).

Eye injury or ocular trauma refers to any injury to the eye. The injury may be due to mechanical trauma (blunt or penetrating), chemical agents or radiation (Eva and Augsburger, 2018).

Risk refers to a situation involving exposure to danger (Soanes and Stevenson, 2016).

Tromans (2019) defines **corneal perforation** as accidental injuries or surgical trauma of the cornea penetrating through the layers of the cornea or following a persistent epithelial defect after a corneal ulcer.

The **cornea** is the transparent part of the eye that covers the front portion of the eye. It covers the pupil (the opening at the center of the eye), iris (colored part of the eye) and the anterior chamber (fluid-filled part of the eye). (Healthline Editorial Team, 2018).

Subconjunctival hemorrhage is bleeding inside the eye resulting in redness which appears as a patch of bright red blood on the white part of the eye which is the sclera (Bedinghaus and Johnstone, 2020).

The American Optometrist Association defined subconjunctival hemorrhage as an accumulation of blood underneath the conjunctiva (clear membrane covering the sclera).

Globe rupture is an eyeball with a full-thickness defect in part of the eye's wall meaning that all layers of the eye will have been disrupted resulting in prolapse of intraocular contents like uveal tissue which comprises of the iris, ciliary body or choroid. (Johnny Lippincott, 2017).

The word s**clera** comes from the Greek word 'skleros' which means hard. The sclera is a tough and fibrous tissue which protects the interior components of the eye from injury. It makes up the exterior coating of the eye surrounding the entire eye and provides structure for the internal contents of the eye. (Whitlock, J. (2020).

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CHAPTER 1: INTRODUCTION

1.1 Introduction

Eye injuries are any form of trauma which may be due to physical objects or chemicals causing visual morbidity. The researcher found no published statistics relating to practices leading to different types of injuries in children in Zimbabwe. At Sekuru Kaguvi Hospital (SKH) wards the admission register reveals that children with eye injuries are admitted on daily basis. In a study done at Wenzhou and Changsha in East China, out of the 1125 hospitalized children 73.8% were males and 26.2% were females. There were mechanical injuries, penetrating being the most common, followed by contusion and globe rupture.

11.5% of admissions done at SKH eye unit were penetrating eye injuries (Chirunga, 1995), eye injuries remained to be a problem at SKH as a population of 70 people was recruited within a period of 8 months by Mashaka (2013). Eye injuries are really a burden especially to school going children as reduces vision thereby affecting their performance at school. This study was done to establish common practices leading to eye injuries in children admitted at Sekuru Kaguvi wards aged one to sixteen years and ways to minimize them.

1.2 Study Background

Several authors had their research regarding eye injuries, some focusing specifically on certain types of injuries. There are about 1.6 million people blind due to eye injuries and these types of injuries measure about 8 to 14% of total childhood injuries (Qayum, Anjum and Rather, 2015). Ocular trauma is one of the leading cause of treatable visual morbidity and blindness with children at a greater risk due to careless activities and inability in understanding the nature of dangerous

objects (Qayum et al., 2015). Gaining an insight into circumstances leading to those injuries will help in designing how the problems can be prevented.

Al-Mahdi, Bener and Hashim (2011) did a study on ocular trauma in pediatric patients up to 16 years, 106 children were identified and the majority were boys (77.4%) and 22.6% were girls. The study was done from 2005 to 2009 which is a five year period and SKH statistics were obtained within a short period of time and are much higher than these thereby warranting what the causes of ocular trauma are. Okeigbemen and Kayoma (2013) had the following findings from their study, 64.8% were males, 35.2 females and lacerations 50%.

Chirunga (1995) did a study on penetrating eye injuries at SKH and they accounted for 11.5% of total admissions. A study on corneal perforations repaired at SKH by Mashaka (2013) with a study population of 70 within 8 months concluded that boys were at risk of having eye injuries compared to girls. Belmonte- Grau, Garrido-Ceca and Marticorena-Alvarez (2021) did a study on ocular trauma in an urban Spanish population which entailed epidemiology and visual outcome. They concluded that knowledge of the epidemiological characteristics is useful for implementing specific preventive measures and appropriate treatment strategies.

1.3 Problem Statement

Eye injuries result in reduced or loss of vision or even loss of the eye. At SKH the admission register reveals that 39 out of 85 (45.8%) admissions were due to eye injuries. These statistics accounted for a period of three months, from July to September 2021. Eye injuries among many eye conditions accounted for more than a third of the total admissions thereby warranting the study. Eye Rao, Sabnam, Pal, Rizwan and Thakur (2018) concluded that ocular morbidity involves a spectrum of eye diseases that critically impact the mental development, future education and

quality of life. A study done at Sagamu in Nigeria indicated that 55 million ocular injuries occur yearly and 1.6 million of those injuries result in blindness.

Bodunde, Alabi and Oyeni (2014 p215 to 217) suggested that prompt diagnosis and treatment of eye injuries can reduce morbidity. However, amblyopia in children below 7 years can occur even after treatment affecting vision. After treatment for the 33 out of 142 eye injuries who had follow up, 9.1% failed to have improved visual acuity (Bodunde et al., 2014).

1.4 Research objectives

1.4.1 Broad objective

The aim of the study is to find out practices leading to eye injuries in children admitted at SKH wards with eye injuries aged one to sixteen years from February to April 2022.

1.4.2 The study specific objectives

The study sought to:

i) Identify demographic factors related to the occurrence of eye injuries in children aged one to sixteen years admitted at Sekuru Kaguvi wards.

ii) Establish common causes leading to eye injuries in children aged one to sixteen years admitted at SKH wards

1.5 Research questions

i) What is the relationship between demographic factors and the occurrence of eye injuries in children aged one to sixteen years admitted at SKH wards?

ii) What are the common causes leading to eye injuries in children aged one to sixteen years admitted at Sekuru Kaguvi wards?

1.6 Significance of the study

Since the study was done at SKH which is a referral center, different causes of eye injuries were established from children with different types of eye injuries referred to this hospital. Finding out causes of eye injuries and how these injuries occur helped in establishing how awareness can be raised to the community, schools and primary care centers so as to minimize occurrence of eye injuries in future. Parents answered a question which gave suggestions on how best eye injuries can be avoided and what to do if the injuries occur accidentally.

Avoiding eye injuries maintains normal vision resulting in improvement in academic achievements in children who will serve the nation in future. This also reduces number of admissions in five year olds and below who are eligible for free treatment. Less admissions for this age group will lessen the burden on the country's economy. Input on causes of eye injuries will help health personnel at primary care centers realize the burden of eye injuries and give health education to parents as well as children in schools. The same knowledge can be added to the nursing body of knowledge and used by students in the nursing profession or other researchers. This study increased the researcher's knowledge and will help in acquiring the Bachelor in Nursing Science Degree by meeting the needed requirements which research project is one of them.

1.7 Delimitations of the study

The study was done to parents of children admitted at Sekuru Kaguvi wards aged one to sixteen years with eye injuries. Almost all parents with children referred to SKH for admission in the wards with eye injuries in the one to sixteen years age group were approached.

1.8 Study limitations

Research ethics were practiced and only parents or guardians of injured children willing to take part in the study participated and those not willing were left out.

The principle of confidentiality is hindering the researcher from publishing confidential information which may be useful in the prevention of eye injuries.

In 1 to 5 year age group history came from parents who were not sure what really transpired since some of the incidences happened when they were absent. The information they gave may not have been accurate since the subjects involved were not in a position to narrate what actually happened due to their age.

The study period was short and the researcher was not able to capture all eye injuries occurring due to different causes or circumstances.

The research was self-sponsored and lack of funding limited the research methods and tools used.

Summary

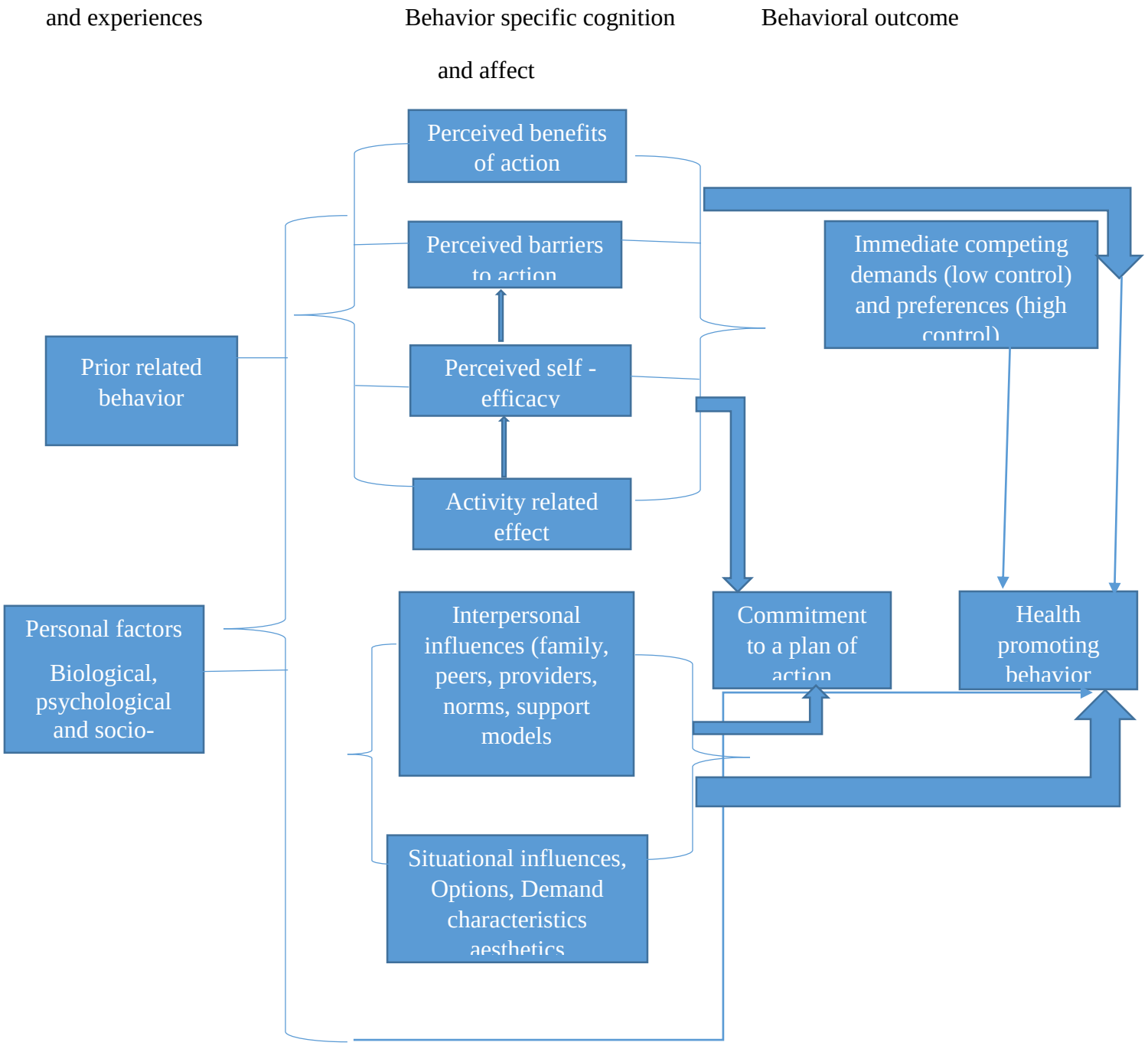
The chapter outlined the study introduction that is introducing the topic. The background and statement of the problem were explained as well. Research objectives were formulated and questions constructed. The study significance, limitations and delimitations of the study were also discussed. Related literature was reviewed, the next chapter will show review of literature which was done from different sources relating to the study topic. This helped in exploring what other researchers have found out on this topic and fill any gaps which were left.

CHAPTER 2: REVIEWED RELATED LITERATURE

2.1 Introduction

Literature has been reviewed from various authors to determine causes of eye injuries globally, regionally and locally. Sources like textbooks and journals were used. Comparison was made on the different views on practices leading to eye injuries by different authors. Eye injuries have functional impact especially in children who still have a future to lead. Identification of causes and risk factors associated with eye injuries in children helps in preventing eye injuries. Scruggs et al., (2007) mention eye injuries as the main cause of unilateral blindness affecting 40 000 to 60 000 patients annually.

2.2 Theoretical framework



Nola J Pender's Health Promotional Model.

Nola J Pender (1941 to present) is a nursing theorist who developed the Health Promotion Model in 1982. Her model indicates preventative health measures and describes nurses' critical function in helping patients prevent illness by self-care and bold alternatives. Nola Pender's model identifies background factors that influence health behavior. Its components are:

Individual characteristics and experiences. Under this component is prior related behavior where there is frequency of the same or similar health behavior in the past and personal factors such as biological, psychological and socio-cultural. How children socialize during play can lead to eye injuries. Cultural factors also determine the kind of tasks allocated according to one's gender which can lead to eye injuries. Age, personality structure, race, ethnicity and socio-economic status also can predispose to eye injuries.

Behavior specific cognitions and affect-Perceived benefits of action, one need to perceive positive effects or the reinforcing consequences of undertaking a health behavior. They should know that abstaining from risky behavior makes someone to live with healthy eyes which have normal useful vision. Health personnel should give health education to enhance clients' perception of self-efficacy and promote self confidence in performing the health behavior successfully. Health education can be given to these children as a group especially six to sixteen age group so as to engage their peers and achieve group attitude change towards health behavior thereby preventing eye injuries.

3 Behavioral outcome- the health promoting behavior. The last component is that of behavioral outcome where one decides to behave in a way that cannot predispose them to eye injuries. The Health Promotional Model has several assumptions which believe that individuals seek to actively

regulate their own behavior. This can only be done if they have the necessary information and knowledge on the benefits obtained from changing behavior and health workers have to provide such information.

Relevance of the theoretical Frame to the study

Nola J. Pender's theory emphasizes on health promotion. Health promotion involves equipping clients with the necessary resources to maintain good health. Equipping them with information involves giving of health education to clients by health care workers. For one to give health education to clients they need to know the demographic data as well as the root cause of the problem experienced by those clients.

On giving health education one should be able to know the age, gender so as to plan and choose teaching aides and place of residence for choice of venue where the health education will be done. From the literature reviewed by the researcher, the following findings were done. On demographic data Li, Lin, Xiao, Chen and Dai (2020) found the following in China, 73.8 % of children with eye injuries were males and 26.2 % were females, most of them were from rural areas and majority aged 3 to 8 years. In Columbia 67.21 % were males and 32.79 % were females. In both studies males constitute a higher percentage, Krisnainah (2006) and the United States Eye Injury Register (USEIR) also had the same conclusion.

In Malawi the most affected age groups were under 11 years with 61.5 % eye injuries occurring at home during play (Zungu, Mdala, Manda, Sumayya, Twabi and Kayange, 2021). In contrast, data from the studies contacted in India and Nepal identify mainly the farming environment (Khatry, 2004 and Krisnainah, 2006). MacEweni, Baines and Desai (2019) found the following in Scotland, 51 % of the eye injuries occurred at home, 5 to 14 age group sustained injuries while doing sporting

activities. Okpala, Enujioke and Onwasigwe in Nigeria found 69.39 % of eye injuries occurring at home, 20.41% at school, 7.41 % mostly from rural areas doing farming activities, 51.1% had injuries caused by playmates, self-inflicted injuries 27.55% and parents or guardians giving corporal punishment 9.18%.

Okeigbemen and Kayoma (2013) in their study found out that 50% of the injuries were lacerations, 53.7 % sharp objects and blunt objects 31.5%. In China penetrating eye injuries constituted to 68.4 %, contusion 17.2 %, sharp objects 48.4 % and fireworks 10.8 % (Li et al, 2020). Some authors had suggestions on prevention of eye injuries. Grieshaber and Stegmann (2005) suggested that underlying etiological factors be identified for effective preventive measures to be taken to reduce the incidence of such injuries in children. Prevention in different communities can be achieved through use of available different and effective resources. A conclusion was made on the need for preventive education of ocular injuries at both family and community level (Zungu et al, 2021).

Summary

The chapter reviewed literature for the study aiming at finding out practices predisposing to or causing eye injuries in children aged one to sixteen years. Many authors did studies regarding eye injuries and similarities are there. However, behavior and daily practices differ with age group, culture and socio-economic status. Findings about a similar community, age group or gender is going to be used to give eye injury preventive health education.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

The purpose of this chapter is to outline methods and techniques that have been used by the researcher to collect and analyze data in this study. The researcher described the target population and how the sample has been chosen, collection of data from guardians or parents of children admitted at Sekuru Kaguvi wards with eye injuries. The researcher explained the data analysis techniques which were used in this study.

3.2 Research design

Creswell (2014) considers research designs to be different types of enquiry within different approaches. An exploratory research design was used in this study. Practices predisposing or leading to eye injuries were identified using this research design. The study is quantitative since the researcher found out causes of eye injuries and the frequency of each cause. Parents responded on behalf of their children since they could not give consent due to their age.

3.3 Study population

The study population consisted of all children referred and admitted at Sekuru Kaguvi wards with eye injuries. The researcher chose to do the research at this hospital because children from different socio-cultural and socio-economic levels were referred to this hospital which made generalization of results easy. The researcher altered the study population from an age range of one to twelve to one to sixteen since time for data collection appeared to be less.

Systemic sampling method was used whereby the second parent who came with an injured child for admission was chosen.

3.3.1 Sample size calculation

The following formula was used to calculate the sample size because the study population was not known

$Z^2 * a^2/E^2$

n= required sample

z= Z score set at 1.96 corresponding to 95% Confidence Interval

a= standard deviation set at 20

E= error rate set at 4

n=1.96*1.96*(20*20)/ 4*4=96

Therefore a maximum of ninety-six participants was used for the purpose of gathering data.

3.3.2 Sampling procedure

All parents with children aged one to sixteen years admitted at SKH wards with eye injuries for the period of February to March 2022 were recruited. The researcher used systematic sampling where every second parent of a child aged one to sixteen years admitted at SKH wards with eye injuries was chosen.

3.4 Data collection instruments

A Shona and English questionnaire was used in this study and parents or guardians chose the type of language they felt comfortable with. Parents were left on their own to fill in the questionnaires

after having explanation from the researcher. The researcher collected the questionnaire and read through them to give meaning to their responses.

3.5 Pilot study

Questionnaires were distributed to five parents and the researcher went through their responses. The questions were answered well and no questions were changed. The researcher went on to use the proposed questionnaire.

3.6 Data collection procedure

Every second parent presenting with a child with an injured eye for admission at SKH wards was chosen to respond to questionnaire. The researcher introduced self and explained the purpose of the study as well as obtaining consent. Most of the parents were willing to participate after they were told that the information will help reduce eye injuries through health education and awareness. They completed questionnaires on their own. An Ophthalmic Nurse helped distributing questionnaires when the researcher was not on duty. The researcher collected the questionnaire and read through to give meaning to data provided.

3.7 Analysis and organization of data

Descriptive statistics were used by the researcher to analyze obtained data. Questionnaires were coded to enable summarizing of raw data and putting it into meaningful categories. A hypothesis was done deriving it from the relation of obtained data to the variables through generation of scores. Presentation of data was done through use of tables, graphs and pie-charts. Open coding was also done where the researcher went through the questionnaire making notes then give meaning to the notes made.

3.8 Ethical consideration

The researcher obtained ethical approval from the Africa University Ethical Review Committee (AUREC). Permission was sought from Parirenyatwa hospital administration where data was collected. Information regarding purpose of study, anonymity and confidentiality issues was explained to parents or guardians when the study sample was being recruited. Parents or guardians were also given information regarding research benefits and the option of withdrawal from the study anytime they felt like. It was also explained to them that withdrawal would not cause loss of their right to treatment. Parents signed consent after they understood without any coercion. Completed questionnaires are kept under lock and key by the researcher to ensure confidentiality.

3.9 Summary

The chapter highlighted methods used to collect data. The quantitative design was used. Questionnaire was the main instrument used which presented in Shona and English language. Ethical issues were considered during the data collection procedure. The researcher read through the questionnaire so as to summarize and give meaning to the data. Data was presented for easy interpretation and the next chapter will give explanation on data presentation, analysis and interpretation.

CHAPTER 4: DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

The chapter explains how the collected data was presented. The chapter covers data analysis and how the data was interpreted. Presentation of data was done by using graphs, tables and pie charts for easy analysis as shown in the next topic. Research objectives which were set to guide the study were to identify demographic factors related to the occurrence of eye injuries in children aged one to sixteen years admitted at SKH wards and to establish common causes leading to eye injuries in children aged one to sixteen years admitted at SKH wards.

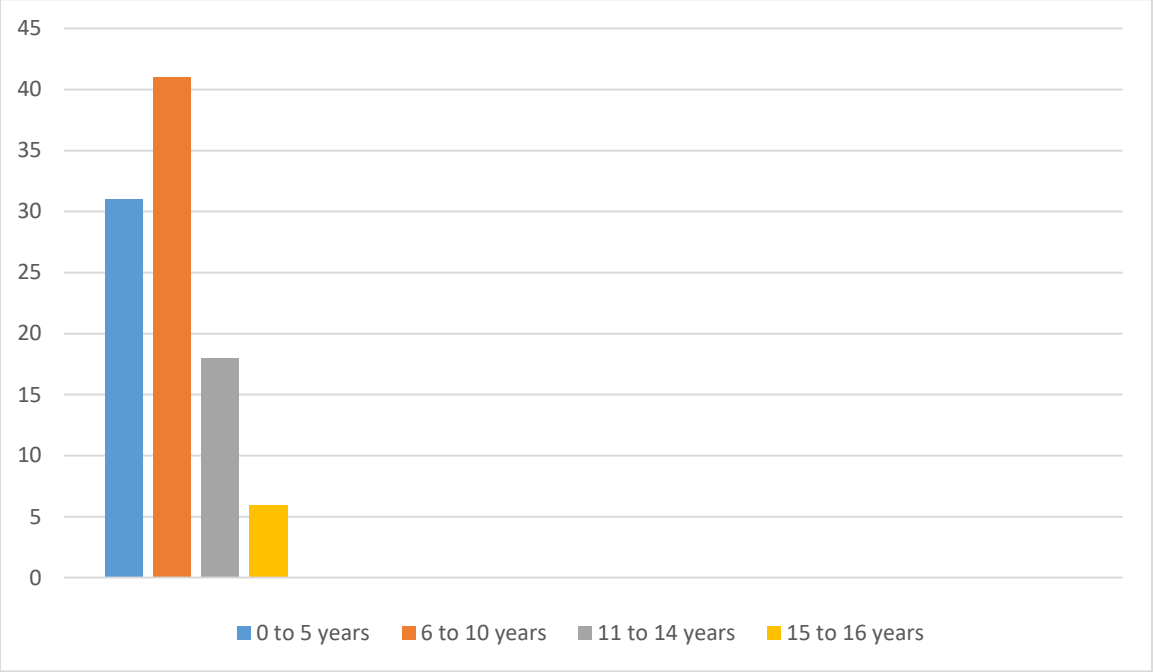
4.2 Data presentation and analysis

Descriptive statistics were used by the researcher to analyze obtained data. Questionnaires were coded to enable summarizing of raw data and putting it into meaningful categories. Generation of scores was done to represent demographic factors such as gender, age, place of residence and place of injury. Causal factors such as object causing injury, activity which led to the injury as well as type of injury were considered as well. The researcher used open coding by going through the questionnaires making notes to summarize meaning from the data generated in those questionnaires. After quantifying the variables the data was then presented using tables, bar graphs and pie charts.

4.2.1 Demographic data

4.2.1.1 Distribution of admitted children according to age groups

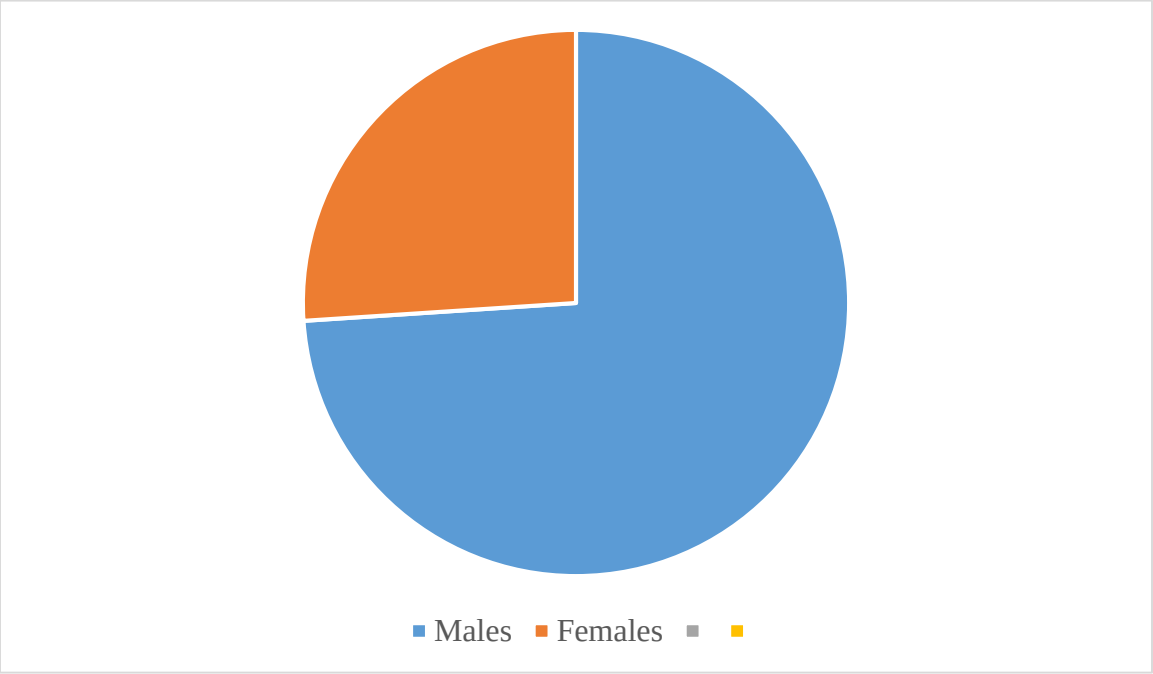
n=96



The above graph illustrates occurrence of eye injuries in different age groups. 0 to 5 years there were 31 out of 96 (32.29%) children admitted with eye injuries, 6 to 10 years 41 (42.71%), 11 to 14 years 18 (18.75%) and lastly 15 to 16 years 6 (6.25%).

4.2.1.2 Distribution according to gender

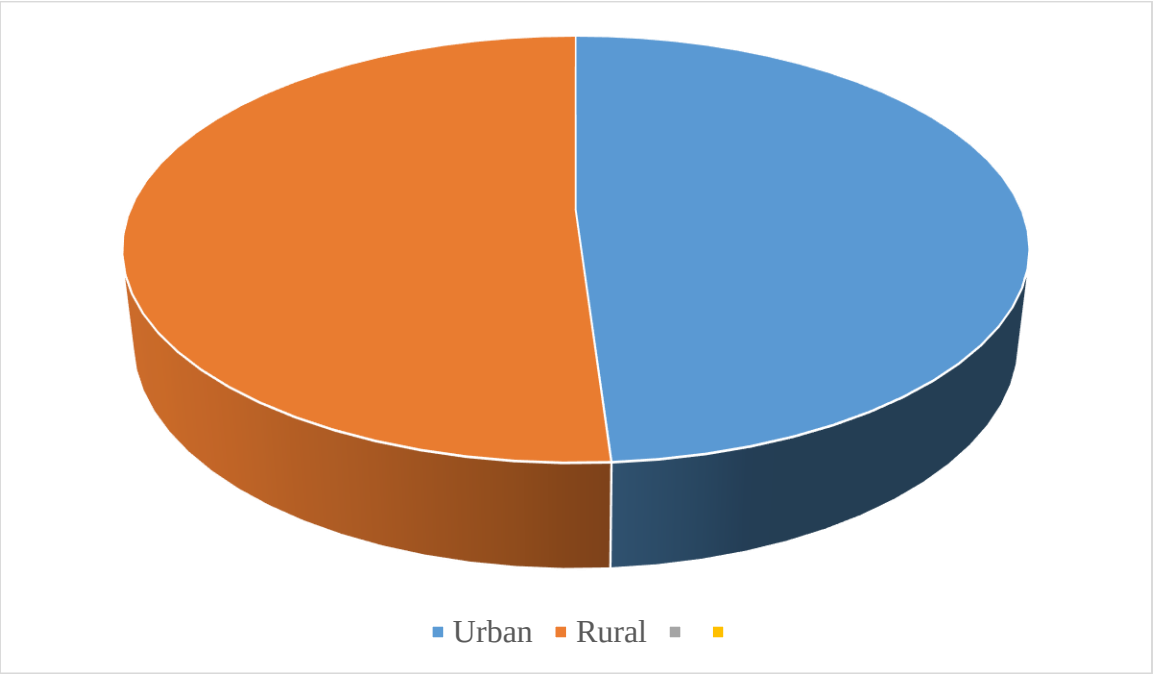
n=96



The above pie chart illustrates occurrence of eye injuries according to gender whereby males constitutes 71 out of 96 which is 74% and females constitutes 25 out of 96 which is 26%.

4.2.1.3 Distribution according place of residence

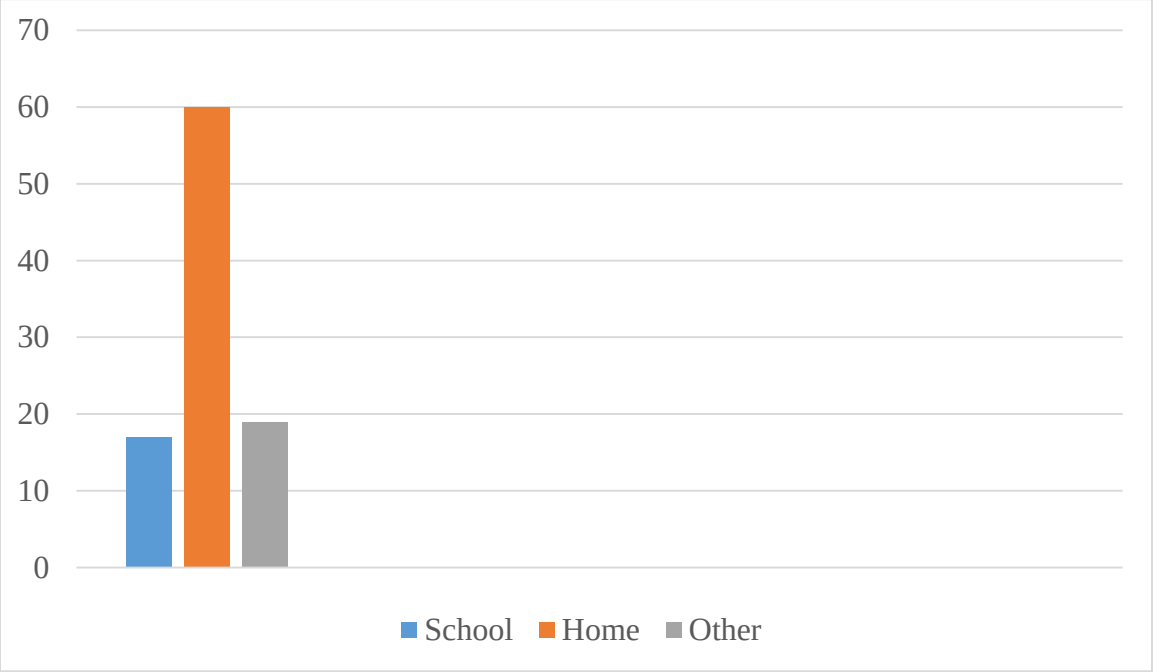
n=96



The pie chart above illustrates place of residence for injured children, 47 out of 96 (49%) were from urban areas and 49 out of 96 (51%) from rural areas.

4.2.1.4 Distribution according to place where injury took place

n=96

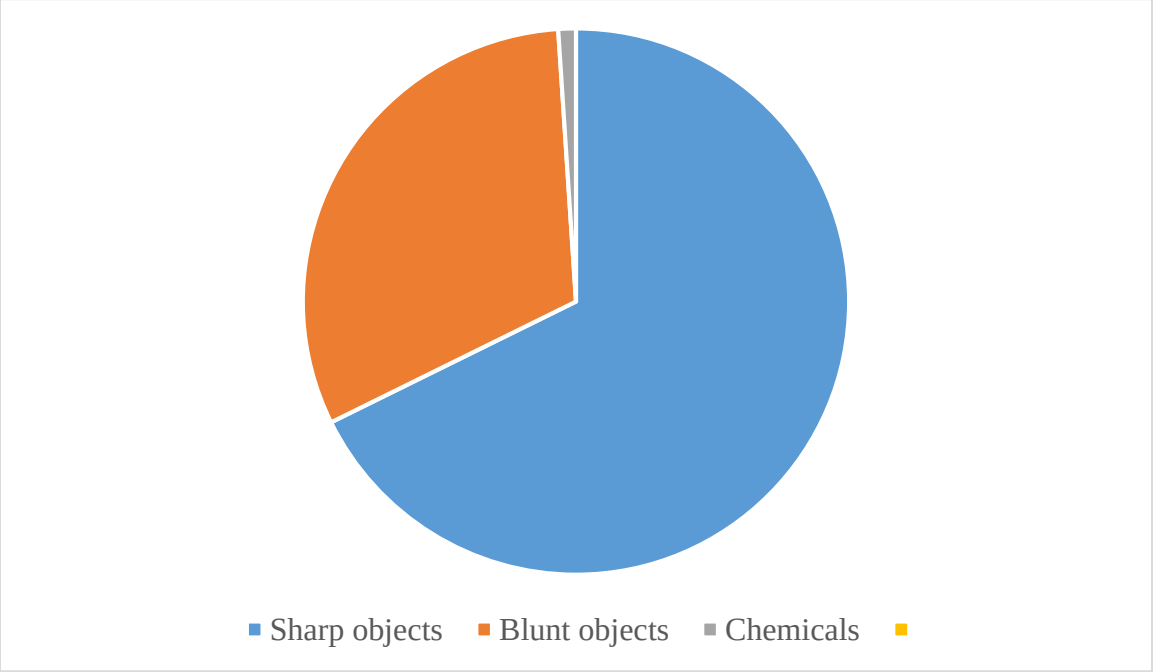


The graph illustrates places where injuries took place. 17 out of 96 (17.71%) occurred at school, 60 (62.5%) at home and 19 (19.79%) occurred in other places like in fields or paddocks.

4.2.2 Causes

4.2.2.1 Distribution according to object causing injury

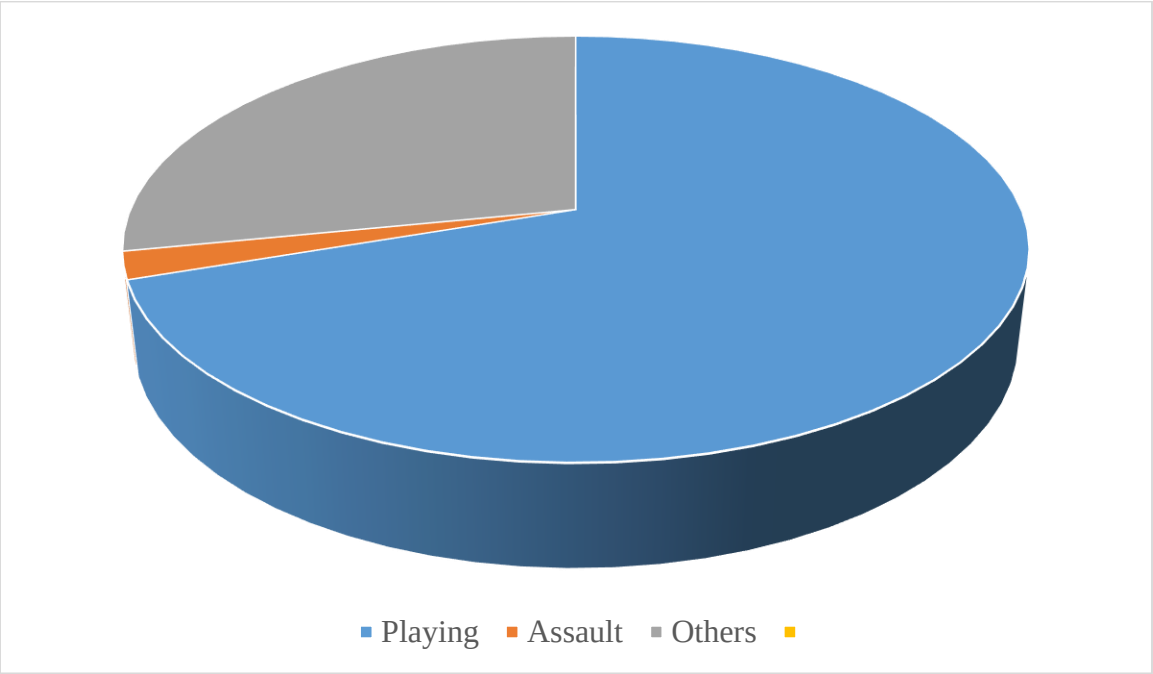
N=96



The above pie chart shows injuries caused by different objects. Sharp objects constituted to 65 out of 96 (68%) injuries, blunt objects 30 (31%) and chemicals 1 (1%) injury.4.2.2.2 Activity leading to the injury

4.2.2.2 Distribution according to activity leading to eye injury

n=96



The pie chart above shows different activities and frequency of causation of eye injuries. Injuries which occurred during play were 67 out of 96 (70%), assault 2 (2%) and others 27 (28%).

4.2.2.3 Nature of injury

n=96

Nature of injury	**Number of children affected**
Corneal and scleral lacerations	60
Chemical injuries	1
Globe rupture	2
Blunt trauma	27
Lid laceration	6
Total	**96**

The above table illustrates nature of injury or diagnosis made following the injury. Blunt trauma resulted in hyphema, globe rupture and subconjunctival haemorhages. Globe rupture also occurred as a result of penetrating eye injuries. Corneal lacerations constituted to 60 out of 96 which is 62.5%, chemical injuries 1 (1.04%) globe rupture 2 (2.08%), blunt trauma 27 (28.13%) and lid lacerations 6 (6.25%)

4.3 Interpretation

Males were the most affected (74%) and under activities most children were injured while they were playing (70%). Only a smaller percentage (28%) was affected doing work activities such as farming or fetching firewood. The higher percentage in boys may be due to their courage to play with harmful objects, for example playing with sparrow toys. Health education should be given to children from 6 to 16 years even the younger ones who can make sense out of it to avoid playing with harmful objects. Parents should be educated on monitoring children when playing or doing risk jobs such as cutting fire-wood to avoid eye injuries.

Sharp objects (68%) caused many eye injuries and parents are left with the task to monitor proper use of home utensils such as forks and knives which were some of the objects causing eye injuries. Teachers also need to monitor those who play with objects like pens, pencils and mathematical campus and punish them to avoid loss of the eyes at tender ages. Occurrence of eye injuries were almost the same in rural areas (51%) and urban areas (49%). Most injuries took place in home settings (62.5%) which leaves the task to parents to give information to children on eye injuries and their consequences. Young children are not supposed to be left alone, they should always be monitored by older siblings if parents are not present. Protective goggles can be used when doing sporting activities or when doing tasks such as cutting firewood. 0 to 5 (32.29%) and 6 to 10 (42.71%) years age groups had higher percentages and the number decreased as children grew older maybe because of awareness to eye injuries.

Summary

The chapter highlighted how data was presented, analyzed and interpreted. The data obtained was presented through use of tables, bar graphs and pie charts. Questionnaires answered the research questions and the researcher had to explore meaning by reading through them. Analysis and interpretation of the meaning extracted from the results were made such as the most affected age group which is 6 to 10 years and males were the most affected.

CHAPTER 5: DISCUSSION, CONCLUSION AND RECOMMENDATIONS

Introduction

The chapter presents on discussion of research findings, implications of the results to patients' health and the nursing profession as a whole. The researcher also stated the conclusion and gave recommendations for further research.

Discussion of results

Demographic factors related to the occurrence of eye injuries in children aged one to sixteen years admitted at SKH wards

Age group

The most affected age group was the 6 to 10 years age group with a 42.71% score followed by the one to 5 years age group with a 32.29 percentage, in Malawi, Zungu et al (2021) had similar results where under 11 year age group had 61.5% eye injuries. The number of children affected decreased with increase in age range as the 11 to 14 years age range had an 18.75% score and 15 to 16 years 6.25% score. The first two age groups with high scores indulge in dangerous games and often lack understanding in consequences associated with those kind of games. Parental monitoring is therefore needed in these age groups. Parents and children aged 6 to 10 years need awareness through health education to reduce the occurrence of eye injuries. Decrease in number of children affected with eye injuries in the last two age groups may be due to understanding of risk factors leading to eye injuries, however, group health education should be given on use of protective equipment when doing risky activities like cutting fire-wood.

Gender

Males with eye injuries scored 74% while females scored only 26%. Males often play risky games like using own made bows and arrows which are sharp enough to cause corneo-scleral perforations. In China Li, Lin, Xiao, Chen, and Dai (2020) had males leading as well with a score of 73.8%. Okpala, N. E., Umeh, R. E., and Onwasigwe, E. N. had different findings where females had a higher score of 52.8% than males who had 47.2%. In this study males are mostly affected considering the nature of duties allocated to them for example herding cattle in rural areas or cutting fire-wood in urban areas.

Respondent's/ participant's place of residence

Occurrence of eye injuries is almost the same for urban and rural areas but slightly higher for rural children (51%). Ashok, H. M., Rajesh, S. J., and Preeti, D. W (2020) had similar results where there was no significant difference between rural (54.1%) and urban (45.9%). The younger age groups are equally involved in risky games for both urban and rural. Girls in rural are equally affected as boys as they do tasks like fetching fire-wood in bushes.

Place of injury

Most of the injuries occur at home (62.5%). Children will be playing dangerous games or doing household chores, parental monitoring will help reduce the burden. Injuries occurring at school scored 17.71%, teachers need to be sensitized on occurrence of eye injuries as well so as to gain their cooperation on monitoring children when they are at school.

Causes of eye injuries in children aged one to sixteen years admitted at SKH wards

The most common cause of eye injuries was found to be sharp objects (68%). Ashok et al (2020) had slightly different findings as their results showed sports related causes (41.86%) to be most common followed by wooden stick (32.56%) and lastly fire-crackers (25.58%). Parents and children from six years and above need to be health educated on the dangers of using sharp objects either when playing or doing household tasks such as cooking or doing farm work. Protective goggles need to be used when doing risky activities like cutting fire-wood or when doing sporting activities. Awareness is needed for causes with less scores like chemicals and blunt objects.

Conclusion

From the findings injuries occurred during play with sharp objects. Health education and awareness will help reduce these injuries. Day to day activities in the younger age groups need monitoring from parents or older siblings or use of eye protective equipment like goggles.

Implications of the research findings

Most children are injured by sharp objects and while playing. Health education should be given to parents so that they monitor children and to children above six years to create awareness and change of behavior. Parents should also provide children with personal protective equipment such as goggles when doing risky tasks like cutting fire-wood.

Recommendations

The research was done within a short period of time and the researcher recommends other researchers who can do data gathering over a relatively long period. A long duration can help on finding out trends of eye injury occurrence, for example types of eye injuries occurring most on festive seasons like Christmas. Follow up of injured children is easily done over a long period of time to rule out any complications.

Suggestions for further research

The researcher did not concentrate much on time of presentation at hospital from time the injury took place because of less time. One can do a research on the common complications occurring following eye injuries which include recording of visual acuity (VA) after injury and after medical intervention.

Data dissemination

Research findings will be disseminated to parents and children old enough to understand the message. The objectives of the dissemination process are to create awareness in children and parents on causes of eye injuries and encourage change of behavior in children to prevent eye injuries. The researcher will give health talks at schools, growth monitoring and immunization points and leave pamphlets with pictures showing different types of eye injuries and causes of those injuries. The researcher will discuss with parents ways of preventing eye injuries and add onto their suggestions.

Summary

Research findings were discussed on in this chapter. Demographic factors such as age, gender, respondent's/ participant's place of residence were discussed in relation to occurrence of eye injuries. Sharp objects were the most common cause of eye injuries. The researcher discussed on how the findings will be disseminated and that the target audience will be parents and children above six years.

List of References

Mashaka, W. (2013). An analysis of the visual acuity outcomes following surgical repair for penetrating corneal injuries at Sekuru Kaguvi Hospital, Eye Unit at Parirenyatwa Group of Hospitals.

Kanski, Jack. J. (6th ed.). A systematic approach: Trauma, chapter 23 page 858.

Grieshaber, M. C., and Stegmann, R. (2005). Penetrating eye injuries in South African children, Etiology and visual outcome. Retrieved from https://www.nature.com

Chunyan, L., Yaoyao, L., and Minhui, D. (2020). To review the demographic and characteristic distribution of data on serious rural paediatric eye injuries in Wenzhou. Retrieved from https://bmcophthalmol.biomedcentral.com.

Zheng, L., He, L.W., Xiao, W., Bai, Y., Tan, J.L., (2019). Analysis of the injury factors and clinical features of paediatric ocular traumatic children. Chin J Chi Health Care. Retrieved from https://www.ncbi.nlm.nih.gov

MacEwen, C. J., Baines, P. S., and Desai, P. (2019). An investigation the current causes and outcomes of paediatric ocular trauma. Retrieved from https://wwwresearchgate.net.

Burnard, P., Gill, P., Stewart, K., Treasure, E., and Chadwick, B. (2008, 26 April*). British Dental Journal*, 204 (8). Retrieved from https://www.nature.com.

Yalcin, O., Tok, L., Eraslan, E., Ozkaya, D., Ornek, F., and Bardak, Y. (2011). Prognostic factors influencing final visual acuity in open globe injuries. Retrieved from https://www.ncbi.nlm.nih.gov.

Aghadoost, D., Fazel, M. R., and Aghadoost, H. R. (2012). Pattern of paediatric ocular trauma in Kashan. Retrieved from https://www.ncbi.nlm.nih.gov

Al-Mahdi, H. S., Bener, A., and Hashim, S. P. (2011). Clinical pattern of pediatric ocular trauma in fast developing country. Retrieved from www.ncbi.nlm.nih.gov.

Acar, U., Tok, O. Y., Acar, D. E., Burcu, A., and Ornek, F. (2011). A new ocular trauma score in pediatric penetrating eye injuries. Retrieved from www.ncbi.nlm.nih.gov.

Tromans, C. (2019). *Contact lenses 6th edition*. Retrieved from www.sciencedirect.com.

Jarreau, P. (2015). All the Science That Is Fit to Blog: An Analysis of Science Blogging Practices. Retrieved from www.nihr.ac.uk.

Tarlan, B., and Kiratli, H. (2013). Subconjunctival hemorrhage: risk factors and potential indicators. Retrieved from https://bmcophthalmol.biomedcentral.com.

Sahinoglu-Keskek, N., Cevher, S., and Ergin, A. (2013). Analysis of subconjunctival hemorrhage. Retrieved from https://bmcophthalmol,biomedcentral.com.

Hughes, E., and Fahy, G. (2020). A 24-month review of globe rupture in a tertiary referral hospital. Retrieved from www.ncbi.nlm.nih.gov.

Desai, T., Vyas, C., Desai S., and Malli, S. (2013). Pattern of ocular injuries in paediatric population in West India. Retrieved from https://bmcophthalmol.biomedcentral.com

Ashok, H. M., Rajesh, S. J., and Preeti, D.W. (2020) *Clinical Ophthalmol*. 2020; 14: 1003-1009. Retrieved from https://www.ncbi.nlm.nih.gov.

Appendices

Appendix 1: Proposal letter

8572 Whitecliff

Harare

08 February 2022

The Clinical Director

Parirenyatwa Group of Hospitals

P. O Box CY 198

Causeway Harare

Dear Sir

REF: REQUEST TO CARRY OUT A STUDY AT PARIRENYATWA GROUP OF HOSPITALS

I am a final year student at Africa University and am hereby seeking for your permission to carry out a study at your hospital on practices leading to eye injuries in children aged one to sixteen years admitted at SKH wards. The study is in partial fulfilment of the Bachelor of Science in Nursing Program.

Your response is greatly appreciated.

Yours sincerely

Janet Makamure

Appendix 2: Response from AUREC and Parirenyatwa Group of Hospitals Management (PGH)

AFRICA UNIVERSITY
A United Methodist-Related Institution
Investing in Africa's future

AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE (AUREC)

P.O. Box 1320 Mutare, Zimbabwe, Off Nyanga Road, Old Mutare-Tel (+263-20) 60075/60026/61611 Fax: (+263 20) 61785 website: www.africau.edu

Ref: AU2402/22 8 March, 2022

Janet Makamure
C/O CHANS
Africa University
Box 1320
MUTARE

RE: PRACTICES LEADING TO EYE INJURIES IN CHILDREN ADMITTED AT SEKURU KAGUVI HOSPITAL AGEDONE TO SIXTEEN YEARS FROM FEBRUARY TO APRIL 2022

Thank you for the above titled proposal that you submitted to the Africa University Research Ethics Committee for review. Please be advised that AUREC has reviewed and approved your application to conduct the above research.

The approval is based on the following.
a) Research proposal
b) Data collection instruments
c) Informed consent guide

- **APPROVAL NUMBER** AUREC 2402/22
  This number should be used on all correspondences, consent forms, and appropriate documents.
- **AUREC MEETING DATE** NA
- **APPROVAL DATE** March 8, 2022
- **EXPIRATION DATE** March 8, 2023
- **TYPE OF MEETING** Expedited
  After the expiration date this research may only continue upon renewal. For purposes of renewal, a progress report on a standard AUREC form should be submitted a month before expiration date.
- **SERIOUS ADVERSE EVENTS** All serious problems having to do with subject safety must be reported to AUREC within 3 working days on standard AUREC form.
- **MODIFICATIONS** Prior AUREC approval is required before implementing any changes in the proposal (including changes in the consent documents)
- **TERMINATION OF STUDY** Upon termination of the study a report has to be submitted to AUREC.

AFRICA UNIVERSITY
RESEARCH ETHICS COMMITTEE (AUREC)
APPROVED
P.O. BOX 1320, MUTARE, ZIMBABWE

Yours Faithfully

MARY CHINZOU –
ASSISTANT RESEARCH OFFICER: FOR CHAIRPERSON
AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE

All communications should be addressed to
"THE GROUP CHIEF EXECUTIVE"
Telephone: 701520-701554/7
Fax: 706627
Website:www.parhosp.org

PARIRENYATWA GROUP OF HOSPITALS
P.O Box CY 198
Causeway
Zimbabwe

15 February 2022

RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH STUDY AT

PARIRENYATWA GROUP OF HOSPITALS : MS JANET MAKAMURE

The above matter refers.

The Parirenyatwa Group of Hospitals hereby grants you permission to conduct research on:-

A study to find out the practices leading to eye injuries in the children admitted at Sekuru Kaguvi Hospital aged one to twelve years from February to April 2022.

The permission is granted subject to the following conditions:-

1. The researcher will provide all sundries necessary for sample collections. ☑
2. The researcher sponsors all payments for the tests involved. ☑
3. The hospital incurs no cost in the course of the research. ☑
4. All relevant departments are notified in advance and the Head of section/ward signs acknowledgement of such notification. ☑
5. The conduct of the research does not interfer or interrupt the daily service provision by the hospital. ☑
6. Formal written feedback on research outcomes must be given to the Director of Clinical Services. ☑
7. Permission for publication of research must be obtained from the Director of Clinical Services. ☐

PARIRENYATWA GROUP OF HOSPITALS
CLINICAL DIRECTOR
17 FEB 2022
P. O. BOX 198, CAUSEWAY
HARARE, ZIMBABWE

DR. M. MHLANGA

ACTING CLINICAL DIRECTOR

APPENDIX 3: Informed consent

English

Proposal title: A study to establish practices leading to eye injuries in children aged one to sixteen years admitted at Sekuru Kaguvi wards for the period of February 2022 to April 2022**.**

Name of researcher: Janet Makamure (final year Bachelor of Nursing Science student at Africa University).

Cell Number: 0772 494 930/ 0719 494 930

Project Description: To explore into practices leading to eye injury and discuss possible ways of minimizing these eye injuries from occurring.

Your rights

Before volunteering to be part of the study, one must understand the purpose of the study, its benefits, risks (if any). Understanding the above and agreeing to take part in the study is called an informed consent.

Purpose of the study

To identify demographic factors related to the occurrence of eye injuries in children aged one to sixteen years admitted at Sekuru Kaguvi wards.

To establish common causes leading to eye injuries.

Potential benefits

Knowledge gained could be used in preventing eye injuries in future**.**

Prevention of eye injuries will reduce eye morbidity thereby maintaining normal visual acuity in children if there are no any other eye disease possibly leading to low vision.

Study withdrawal

One can choose to enter or withdraw from the study anytime without loss of treatment benefits.

Confidentiality

The researcher will keep all the records.

No information will be disclosed to the third person without the patient's consent.

Problem/Queries

The patient is free to ask questions about the consent or study before signing the consent or at any point in future where queries may arise.

Authorization

I have read about the study or it was read to me and now understand the possible risks and benefits of the study. It is my choice to be in the study and I have knowledge on withdrawing from the study whenever I decide to do so without losing my treatment benefits.

Patient/Guardian's name: **Signature:**

Name of researcher: **Signature:**

Witness signature:

If you have any questions concerning this study or consent not already answered by the researcher involving the research, your rights as a research participant or any incident of unfair treatment. There is room to speak to someone other than the researcher, simply contact the Africa University Research Ethics Committee on telephone (020) 60075 or 60026 extension1156 or send an email on aurec@africau.edu

Shona

Zita retsvakiridzo

Ongororo yemaitiro anonyanya kukonzera kukuvara kwemaziso muvana vane gore rimwechete kusvikira pamakore gumi nematanhatu vakapiwa mubhedha paSekuru Kaguvi kubvira mumwedzi waKukadzi 2022 kusvikira munaKubvumbi 2022.

Zita remuongorori: Janet Makamure (Mudzidzi wemugore rekupedzisira rezvidzidzo zvedhigiri rehukoti paAfrica University).

Nhamba dzenhare: 0772494930 kana 0719494930

Tsanangudzo yetsvakurudzo

Kuongorora maitiro anowanzokonzera kukuvara kwemaziso uye kudzivirirwa kwazvo.

Kodzero yemurwere

Musati mapinda mutsvakiridzo iyi munofanira kuziva chinangwa nebetsero yetsvakiridzo iyi. Iyi ndiyo inonzi mvumo yenyu kubva mutsvakiridzo ino.

Zvinangwa zvetsvakiridzo

Kutsvaka kuti ndivanani vari kukuvara maziso uye vachiitei.

Kuongorora maitiro anokonzeresa kukuvara kwemaziso.

Zvingatibatsire kubva mutsvakiridzo iyi.

Ruzivo ruchawanikwa mutsvakiridzo iyi rwuchashandiswa kudzivirira kukuvara kwemaziso.

Tsvakiridzo iyi ichabatsira kuti maziso asakuvare kuvana vemakore anobvira pane rimwechete kusvika pagumi nematanhatu zvichiita kuti vaone zvakanaka.

Kubuda mutsvakiridzo

Ikodzero yenyu kubuda mutsvakiridzo iyi pamunenge musingachadi asi muchiramba muchingowana rubatsiro sevamwe vari mutsvakiridzo.

Kuchengetedzwa kwezvinyorwa mutsvakiridzo

Zvose zvinyorwa zvemutsvakiridzo zvichachengetedzwa nemuongorori pakavanzika.

Hapana anobvumidzwa kuziva zvemutsvakiridzo pasina mvumo yemurwere.

Mibvunzo

Munobvumidzwa kubvunza zvose zvamungade pamusoro petsvakiridzo iyi chero nguva yamunenge mava nemubvunzo.

Mvumo yemurwere/ Muchengeti wake

Ndaverenga/ Ndaverengerwa bepa iri ndikanzwisisa zvinodiwa pamwe nebetsero yetsvakiridzo iyi. Ndanzwisisa kuti kuva mutsvakiridzo iyi kuzvisarudzira. Ndinogona kusava mutsvakiridzo iyi ndichingowana betsero sevamwe vari mutsvakiridzo.

Zita remurwere/ muchengeti: **Sainecha:**

Runyoro rwemuongorori: **Sainecha:**

Runyoro rwemufakazi: **Sainecha:**

Kana muine imwe mibvunzo isina kupindurwa nemuongorori panyaya yeongororo kana kuti muchinzwa kuti pane pamusina kubatwa zvakanaka pane vamunokwanisa kubata. Batai vakuru veAfrica University Ethics Review Committee panhare dzinoti (02021) 60075 kana 60026 extension 1156 kana kunyora paemail inoti aurec@africau.ed

Appendix 4: Questionnaire

English

Name: Surname:

Age: Sex: Male ( ) Female ( )

Place of residence:

Eye affected: Right ( ) Left ( )

Date of injury:

Date when they presented to a health service center:

Any use of traditional medicine before presenting to hospital:

Place of injury: Home ( ) School ( ) Other ( ).

Object which caused injury.....

Describe how the injury occurred:

Type of injury: (to be completed by the researcher).....

Give a suggestion on what should have been done to prevent the injury.....

Mibvunzo neChishona

Zita:

Mutupo/ Zita redzinza:

Makore ako:

Musikana ( ) Mukomana ( )

Kero yemurwere:

Ziso rakakuvara: Rerudyi ( ) Reruboshwe ( )

Zuva rekukuvara kweziso:

Zuva rekuenda kunorapwa kuchipatara:

Nzvimbo yakakuvarira ziso: Kumba ( ) Kuchikoro ( ) Imwewo nzvimbo ( )

Chinhu chakakonzera kukuvara kweziso:

Tsanangura kuti ziso rakakuvara sei

Mhando yekukuvara kweziso (Apa panozadziswa namuzvinatsvakurudzo).....

Unofunga kuti chii chingadai chakaitwa kudzivirira kukuvara kweziso?.....