Epidemiology and Early Outcomes of Assault Injuries Among Trauma Patients Presenting at Kampala International University Teaching Hospital and Jinja Regional Referral Hospital

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REG. NO: MMED / 12122 / 181 / DU

A Research Dissertation Submitted to the Directorate of Research and Postgraduate Studies in Partial Fulfillment of the Requirements for the Award of the Degree of Master of Medicine in General Surgery of Kampala International University

November, 2021

Declaration

I, Daniel Asiimwe, declare that this research dissertation is my original work and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

Signature ..... Date 1/11/2021

Approval

This research dissertation titled ***''Epidemiology and early outcomes of assault injuries among trauma patients presenting at Kampala International University Teaching Hospital and Jinja Regional Referral Hospital"*** has been conducted under our supervision, and we hereby recommend it to be submitted to post graduate directorate in partial fulfillment of the requirements for the award of Master of Medicine in General Surgery of Kampala International University.

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Dedication

I dedicate this research dissertation to my family and friends, without whom, I would not have made it this far. Your love, encouragement, empathy, patience, guidance, and financial support have kept me going;

To my Mother, Jovia Mbabazi whose vision towards education has made me pursue the noble profession and for always encouraging me even in difficult times in life. My Father, the late Gideon Mbabazi for the love and support you always gave me during your life;

To my sisters, Gloria Akomugabe and Patience Guhirwa for the care and love, that have inspired me to achieve big. I am blessed to have you as my siblings; and to my nieces and nephews whom I love so much.

Acknowledgment

My deepest heartfelt gratitude goes to my supervisors, Dr. Herman Lule and Dr. Izimba Daniel for their ceaseless efforts. It is through your guidance that I was able to walk through the various stages to this dissertation. Everlasting thanks go to all Surgery specialists at KIU Teaching Hospital and the satellite teaching hospitals. I sincerely extend special thanks to the following; Dr. Maxwell Okello, Prof. Patrick Kyamanwa, Prof. Jorge Soria, Dr. Shaban Abdullah, Dr. David Wachaya, Prof. Husnain Haider, Dr. Francis Okedi, Dr. Samuel Ariho, Dr. Henry Dabanja, Dr. Phillips Anyama, Dr. Robert Masereka, and Dr. Egesa Ivan Walufu. These were inspirational and always gave me constructive challenges and feedback during my study.

I greatly acknowledge the leadership and staff of Kampala International University teaching Hospital and of Jinja Regional Referral hospital, for the support they gave me towards this dissertation. I acknowledge the administration of Kampala International University (KIU) for granting me the opportunity to advance my career in human medicine in the field of General Surgery.

I also acknowledge fellow General Surgery residents at KIU for their immeasurable contribution towards my career development in General Surgery and wonderful teamwork. To the other residents at KIU, thank you for your positive challenges, encouragement, and for making my stay in KIU a wonderful experience.

I forever remain grateful and in praise of the Almighty God for his mercies, guidance, and keeping us alive amidst challenges of the COVID-19 pandemic among others, and bringing me to this end.

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List of abbreviations

A&E	Accident and Emergency
ATLS	Advanced Trauma Life Support
CDC	Centers for Disease Control and Presentation
COVID-19	Coronavirus disease of 2019
DALYs	Disability Adjusted Life Years
HALE	Healthy Life Expectancy
ICC-U	Injury Control Center-Uganda
ICF	International Classification of Functioning, Disability, and Health
JRRH	Jinja Regional Referral Hospital
KIU	Kampala International University
KIU-TH	Kampala International University Teaching Hospital
KTS II	Kampala Trauma Score II
LMICs	Low and Middle-Income countries
MoH	Ministry of Health
NGO	Non-government Organization
RTS	Revised Trauma Score
SDG	Sustainable Development Goals
UBOS	Uganda Bureau of Statistics
UNCST	Uganda National Council for Science and Technology
WHO	World Health Organisation

Operational definitions

Assault: in this study assault referred to a violent physical attack that leads to body injury (Merriam-Webster, 2020).

Early outcome: referred to the follow up to discharge, referral,death or 30-days in-hospital outcome of victims of assault

Injury: was defined as damage resulting when a human body is subjected to intolerable levels of energy (Global Burden of Disease, 2016).

Intentional injuries; referred to a combination of self-harm (including suicide), interpersonal violence (such as homicide and physical and sexual assault), collective violence (or war), and legal intervention (such as police enforcement) (HALE Collaborators, 2016).

Interpersonal violence was defined as "the intentional use of physical force or power, threatened or actual, against a person or group that results in or has a high likelihood of resulting in injury, death, psychological harm, mal-development, or deprivation (Krug, Mercy, Dahlberg, & Zwi, 2002).

Characteristics of assualt injuries: in this study, characteristics of assualt injuries refer to severity of assault injuries assessed using KTS II, types of assault injures, injury pattern and weapons used.

Abstract

Background: Interpersonal violence is increasingly becoming a global public health concern and in Uganda, intentional injuries constitute 7.3% of the injury burden (Mutto, Lett, Lawoko, Nansamba, & Svanstrom, 2010).

Objective: To assess the epidemiology and early outcomes of assault injuries among trauma patients presenting at Kampala International University Teaching Hospital and Jinja Regional Referral Hospital.

Methods: This was a prospective observational cohort study conducted among of 439 trauma patients presented at KIU-TH and JRRH, 143 patients had assault injuries and 296 non-assault injuries. 140 eligible assault patients were actively followed up to achive study objectives. The ethical clearance number was UG-REC-023/2021-17. Data were obtained from all the participants using a questionnaire and analyzed using SPSS version 27. The analyzed data was then presented in form of frequency tables.

Results: Out of 140 eligible assault patients, the head was the most isolated body part injured accounting for 38(27.1%) and it was also part of 68 (48.6%) multiple injuries. The commonest type of injuries were cuts & Soft tissue injuries accounting for 96(68.6%). Based on Kampala Trauma Score II (KTS II), most 62(44.3%) of assaults injuries presenting were mild injuries, 49(35%) were moderate injuries and lastly, 29(20.7%) were severe injuries. The factors significantly associated with assault injuries were male sex (OR=1.67, 95%CI=(1.04-2.67), P-value=0.032), unemployment (OR=1.61, 95%CI=(1.04-2.47), P-value=0.030), and alcohol consumption (OR=1.70, 95%CI=(1.11-2.60), P-value=0.015). Majority 124(88.6%) were still alive by 30 days of the follow-up in the hospitals, and there were 8(5.7%) referrals and 8(5.7%) deaths. The average hospital stay for dead patient was of 2 days, the living one was 3.5 days and it took an average hospital stay of less than a day for an assault patient to be referred. At JRRH the average hospital stay was 3.2 days while at KIU-TH the average hospital stay was 3.5 days.

Conclusions: Assault is a significant health problem linked to many negative outcomes such as death and poor physical health. Therefore there is a need to create more job opportunities to reduce unemployment and putting in place policies aimed at regulating the consumption of Alcohol among communities to reduce the burden related to assault injuries

Keywords: epidemiology, assault, injury , interpersonal violence

CHAPTER ONE: INTRODUCTION

1.1 Background

1.1.1 Historical background

The mechanisms of injuries change from time to time, fractures, sprains, cuts, contusions, and many other forms of injury have been felt since the beginning of history (MacKenzie, 2001). In addition, mass killings, homicides, and assault injuries are also well documented in both the Old and New Worlds (Walker, 2001) with interpersonal attacks drawing the attention of public health practitioners as well as criminal justice officials (Moore, Prothrow-Stith, Guyer, & Spivak, 1994).

Bio-archaeological research shows that throughout the history of our species, interpersonal violence has been prevalent (Walker, 2001). More so, historical scholars suggests that the post-1960 increase in violent crime in most Western societies was preceded by a much longer period of decline. In Britain, the incidence of homicide has fallen by a factor of at least 10 to 1 since the 13th century, and the recent tripling of the rate is small by comparison. Evidence of long-term trends in the United States is obscured by the occurrence of three great surges of violent crime which began around 1850, 1900, and 1960 (Gurr, 1981). The last two upsurges are largely attributable to sharply rising homicide rates among blacks (Gurr, 1981).. Several other Western societies show 19th-century declines in violent crime. The long-term declining trend is a manifestation of cultural change in Western society, especially the growing sensitization to violence and the development of increased internal and external controls on aggressive behavior (Gurr, 1981). In the 1999 report "reducing the burden of injury," the institute of medicine recognized strides that have been made over the past three decades in defining the epidemiology of injuries (Bonnie, Fulco, & Liverman, 1999).

1.1.2 Theoretical background

This study employed the Health Belief Model (HBM) which is a social psychological health behavior change (Siddiqui, Ghazal, Bibi, Ahmed, & Sajjad, 2016) and was developed in the 1950s by Social scientists at U.S public Health services to understand the failure of people to adopt disease prevention strategies or screening tests for early detection of disease (Abraham & Sheeran, 2015). HBM also address lifestyle behaviors such as injury prevention and theorizes that people's beliefs about whether or not they are at risk for a disease or health problem, and their perceptions of the benefits of taking action to avoid it, influence their

readiness to take action (Sallis & Owen, 2008). In addition, HBM suggests that messages will achieve optimal behavior change if they successfully target perceived barriers, benefits, self-efficacy, and threats (Jones, et al., 2015).

In terms of injury prevention, threat perception includes two components, susceptibility to an injury and anticipated severity of the consequences of an injury. The behavioral evaluation consists of two distinct sets of beliefs: those related to barriers to change injury-related risk behaviors and those concerning benefits. In addition to threat perception and behavioral evaluation, the "cues to action" component was also included in the HBM. "Cues to action" refers to triggers to change injury-related risk behavior (Lajunen & Rasanen, 2004). Thus understanding the factors associated with assaults revealed the limiting and exposing factors to assault injuries. Whereas finding 30-day in-hospital outcomes among victims of assault revealed the danger/threat of assaults. Thus by using HBM in this study there would be optimal behavior change among assault injury patients as a result of effective adoption of preventive health behaviors.

1.1.3 Conceptual background

An injury is physical damage that results when a human body is suddenly subjected to energy in amounts that exceed the threshold of physiological tolerance (Sethi, 2006). Injury may be either unintentional (accidental) or deliberate (assaultive or suicidal)" (Committee on Trauma Research, 1985). Assaults may be classified as aggravated or simple with rape, attempted rape, and sexual assaults being excluded from this category, as well as robbery and attempted robbery (Morgan & Oudekerk, 2019). Aggravated assault refers to an attack or attempted attack with a weapon and attack without a weapon then serious injury results. While simple assault refers to an attack without a weapon resulting either in no injury, minor injury, for example, bruises, black eyes, cuts, scratches, or swelling (Morgan & Oudekerk, 2019). In addition, assault comes in several forms which include battery, rape, sexual assault, domestic violence, negligent homicide, and murder/homicide (Karen, 2008).

Several factors have been linked with assault injuries among which include sex, age group, (Olojede, et al., 2016), socio-economic factors such as employment status, place of residence and occupation (UBOS & ICF, 2018), place of assaults (Kobusingye, Guwatudde, & Lett, 2001), alcohol and substance abuse (Soper, 2014). Unlike other injuries, intentional injuries are important because, in theory, intentional injuries can be avoided by the intention of

human beings; this is not the case for most of the other injuries and diseases (HALE Collaborators, 2016).

1.1.4 Contextual background

The effect of injuries cannot be overlooked since every year, injuries caused by violence, road traffic accidents, falls, drowning, and burns, resulting in over 5 million deaths worldwide (WHO, 2016) accounting for 9% of deaths globally (WHO, 2014). This high number of deaths as a result of injuries surpasses the cumulative mortality from HIV-AIDS, malaria, and tuberculosis (3.8 million) (Lozano, Naghavi, & Foreman, 2012). One of the leading causes of preventable injuries worldwide is violence (Peek-Asa & Hyder, 2009) with interpersonal violence accounting for 37% of 1.6 million intentional injuries deaths worldwide in 2004 (WHO, 2009).

Significantly, almost 90% of injuries occur in low and middle-income countries (LMICs) (Mock, 2010) and in Africa, injuries rank among the top ten mortality causes (WHO, 2017) specifically with very high injury-related mortality and morbidity in Sub-Saharan Africa (Diamond, 2018). The Global Burden of Disease (GBD) study showed that mortality related to injury in Sub-Saharan Africa is estimated to be 14.6 per 100,000 persons as compared to 97 per 100,000 persons worldwide (Haagsma, Graetz, & Bolliger, 2016). A study in Ethiopia found the commonest mechanisms of injury were assault (49.9%) and road traffic accidents (48%) (Tadesse, Berihun, Gizachew, & Melkitu, 2017). While a study in Malawi conducted among 72488 trauma patients found that 34.5% suffered interpersonal violence (Maine, et al., 2018). A significant growing burden of traumatic injuries was demonstrated among East Africa countries such as Kenya, Sudan, and Tanzania (Tayeb, Abdalla, Morkve, Heuch, & Van den Bergh, 2014).

Survivors of trauma go on to bear massive health costs with estimates that injuries cost the global community an additional 300 million years of healthy life per year, a figure which represents 11% of disability-adjusted life years (DALYs) worldwide (Murray, et al., 2012). Also, families and communities are endlessly affected by deaths as a result of injuries, and people's lives have often changed permanently because of these tragedies (WHO, 2014).

However, there are few published reports from sub-Saharan Africa (excluding South Africa) related to injury (Govender, Matzopoulos, Makanga, & Corrigall, 2012). In Rwanda, it is estimated that approximately 22% of deaths are attributable to traumatic injury (Kim &

Byiringiro, 2015) while data from Kampala, Uganda revealed that 25% of all in-hospital deaths were attributed to injury (Hsia, et al., 2010).

However, there is a paucity of information on assaults in Bushenyi, Jinja, and other neighboring districts. Therefore based on unpublished data assault cases are increasing according to the data registries of Jinja regional referral hospital and KIU-TH. According to the Data Registry of Kampala International University's main Teaching Hospital Accident and Emergency Department, the assault cases increased from 9 cases in September to 15 cases in October 2019. Therefore the proposed study was seeking to document the epidemiology and outcome of assault-related injuries in two referral hospitals in Western and Eastern regions of Uganda.

1.2 Problem statement

Interpersonal violence is continuously increasing in sub-Saharan Africa (Haagsma, et al., 2016). In Uganda, intentional injuries constitute 7.3% of the injury burden (Mutto, Lett, Lawoko, Nansamba, & Svanstrom, 2010) and a study done at Mbarara regional referral hospital showed that most injuries had resulted from assault (Ruhinda, Kyamanywa, Kitya, & Bajunirwe, 2008). Considerably, between 1990 and 2016, deaths in Uganda due to intentional injuries led to an increase in deaths by 111% and years lived with disability (YLD) by 105% (Institute of health metrics and evaluation, 2016).

Still, in Uganda, violence, and assaults were ranked 4th, accounting for 11.8% of non-road traffic injuries and deaths among the leading causes of death and injuries other than road traffic accidents (UBOS & ICF, 2018). Furthermore, according to the Uganda Police Force report, the cases of common assault are very high varying between 30,794 cases in 2017 and 29,735 cases in 2019 (Uganda Police Force, 2019).

Recently a secondary analysis of cross-sectional data under the International Citizen Project (ICP) in April (2020) during the Coronavirus disease of 2019 (COVID-19) outbreak in Uganda, found that 40.1% of 1726 ICP study participants were victims of violence (Katana, et al., 2021). This high incidence of violence can be linked with anxiety, obsessive behaviors, paranoia, and depression as a result of COVID-19 lockdown that led to forced quarantine applied nationwide (Dubey, Biswas, Ghosh, & Chatterjee, 2020).

According to the Data Registry of Kampala International University's main Teaching Hospital Accident and Emergency Department, 48 cases of assault were registered in three months (11th September-11th December 2019). While at Jinja Regional Referral hospital, 76 cases of assault were registered in three months period (11th September-11th December 2019). Thus, regional interpersonal violence death and burden of disease rates may disguise large variations in trends between countries and within countries (UNODC, 2014). This made it necessary for the researcher to assess the epidemiology and outcome of assault injury victims presenting to Kampala International University Teaching Hospital and Jinja Regional Referral Hospital since they are in different regions of Uganda that is Western and Eastern regions respectively.

1.3 Broad objective

To assess the epidemiology and early outcomes of assault injuries among trauma patients presenting at Kampala International University Teaching Hospital and Jinja Regional Referral Hospital.

1.4 Specific objectives

i. To assess the injury characteristics of assault injuries among trauma patients presenting at Kampala International University Teaching Hospital and Jinja Regional Referral Hospital.
ii. To determine the factors associated with assault injuries among trauma patients presenting at Kampala International University Teaching Hospital and Jinja Regional Referral Hospital.
iii. To determine the early in-hospital outcomes of victims of assault presenting at Kampala International University Teaching Hospital and Jinja Regional Referral Hospital.

1.5 Research questions

i. What are the injury characteristics of assault injuries among trauma patients presenting at Kampala International University and Jinja Regional Referral Hospital?
ii. Which factors are contributing to assault injuries among trauma patients presenting at Kampala International University Teaching Hospital and Jinja Regional Referral Hospital?
iii. What are the early in-hospital outcomes of victims of assault injuries presenting at Kampala International University Teaching Hospital and Jinja Regional Referral Hospital?

1.6 Scope of the study

1.6.1 Content scope

The study determined the injury chacteristics, early in-hospital outcomes and described factors associated with assault injuries among patients presenting at Kampala International University Teaching Hospital and Jinja Regional Referral Hospital. The patient factors such as (Age, sex, alcohol use at the time of the incident and socio-economic factors) and assault event (patterns and injury characteristics) was collected using investigator-administered structured questionnaires.

1.6.2 Geographical scope

The study was carried out at Kampala International University Teaching Hospital and Jinja regional referral hospital. KIU-TH serves people coming majorly from the districts of Bushenyi, Sheema, Mitooma, Kasese, Mbarara, and Rubirizi and to a minor extent from other districts of Uganda, and the Democratic Republic of Congo. However, Jinja Regional Referral Hospital, commonly known as Jinja Hospital serves people from Bugiri, Iganga, Jinja, Kaliro, Kamuli, Mayuge, Kayunga, and parts of Mukono. The choice for these hospitals was because according to UNODC (2014), regional interpersonal violence death and burden of disease rates may disguise large variations in trends between countries and within countries. Thus, the need to compare the epidemiology of assault injuries in the eastern (JRRH) and western (KIU-TH) regions of Uganda.

1.6.3 Time scope

After approving the proposal, the data collection process in this study started in June to August 2021. This was an adequate duration because the researcher was able to achieve the study sample size.

1.7 Justification of the study

Since the burden of injuries is said to be decreasing in high-income countries while increasing in sub-Saharan Africa (Adeloye, et al., 2016), it makes the sub-Saharan Africa region a priority for the success of the SDG. In Uganda, data from Kampala revealed that 25% of all in-hospital deaths were attributed to injury (Hsia, et al., 2010), yet, assault-associated injuries are a major cause of morbidity and mortality in those of productive age (21-40 years) in the developing world (Bhullar & Aggarwal, 2007). Between 1990 and 2016, deaths due to intentional injuries leading to death increased by 111% and years lived with disability (YLD) by 105% (Institute of health metrics and evaluation, 2016). In 2017 assault injuries were responsible for 35.8% of trauma injuries seen at the emergency department of Mulago National Hospital (Kuo, et al., 2017). Even though there is improved surveillance now in place, there are still high cases of murder and mob justice that is Uganda police Force reported a total of 29,735 cases of Assaults in 2018 (Uganda Police Force, 2019).

Therefore, understanding the epidemiology of injury in developing countries like Uganda can help in identifying risk factors for injury (Hsia, et al., 2010) and target interventions such as reducing violence through victim identification, care, and support programs (WHO, 2014) for prevention and treatment to decrease disability and mortality.

1.8 Significance of the study

The findings of this study are expected to be of benefit to the following,

1.8.1 Contribution to Policy

The findings from this study would help policymakers to draft and implement policies that could promote health and wellbeing, and develop guidelines for the prevention and management of assault injuries. The findings would also in turn help in identifying potential areas for intervention to reduce morbidity and mortality rate from such injuries.

1.8.2 Benefit to healthcare workers

The findings are expected to guide healthcare workers on the management of assault injuries to modify the factors associated with assault injuries and improve the outcomes of assault injuries.

1.8.3 Benefit to assault patients

The findings would be used to reduce morbidity and mortality of assault patients when implemented by clinicians and improve their quality of health.

1.8.4 Benefit to the community

The findings would be useful in guiding public awareness campaigns and critical in planning secondary and tertiary prevention alongside informing legal proceedings.

1.8.5 Contribution to science

The outcome of this study would provide a reference or benchmark for other researchers interested in assault injuries. The study outcome would also add to the existing body of knowledge on assault injuries in Uganda, Africa, and the world at large.

1.8.6 Benefit to Kampala International University Teaching Hospital and Jinja Regional Referral Hospital

The study outcomes are expected to guide KIU-TH and JRRH regarding the local policy for assaults injuries.

1.9 Conceptual Framework

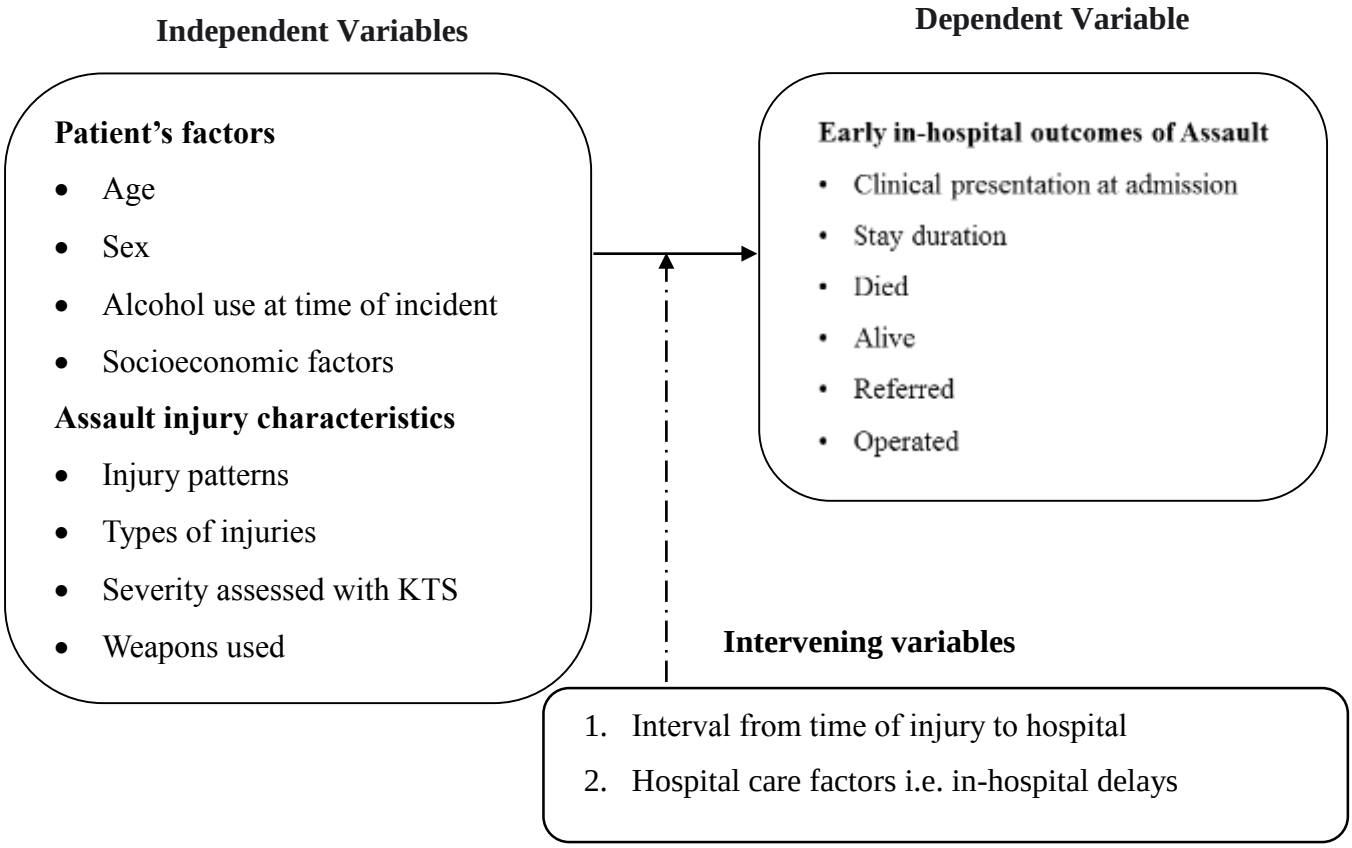


Figure 1: Conceptual Framework

1.9.1 Explanation of the conceptual framework

The conceptual framework shows the outcome of assault (dependent variable) which is likely to depend on assault events (independent variable) such as assault injury characteristics (Injury patterns, Types of injuries, Severity assessed with KTS and Weapons used) and patient factors such as age, sex, alcohol use at the time of the incident, and socio-economic factors although interval from the time of injury to hospital, and hospital care factors might influence the outcome (intervening variables).

CHAPTER TWO: LITERATURE REVIEW

2.0 Socio-demographic profile of assault patients

2.0.1 Sex predilection

A study conducted among 19000 cases in Australia showed that hospitalized assault injury among men and boys was 110 per 100,000 compared with 55 of women and girls (McKenna & Pointer, 2018). Another study was done in India of the pattern of non-fatal injuries due to assault of 360 cases also showed that males were 78.3% (Rao, 2014).

In sub-Saharan Africa, a study conducted at Witbank General Hospital concluded that males constituted 71.8% of victims (Nkombua, 2010). This agrees with the study done at Kamuzu Central Hospital (KCH) in Lilongwe, Malawi from 2009 to 2013, whose results revealed that the male gender was associated with increased odds of intentional injury (Gallaher, Wildfire, Mabedi, Cairns, & Charles, 2016). Also, a one-year prospective study of assault-related maxillofacial injuries treated at the Department of Oral-Maxillofacial Surgery, Dental Centre, General Hospital, Lagos, Nigeria showed that the higher male preponderance reported is in support of other similar studies in Nigeria (Olojede, et al., Pattern Of Assault-Related Maxillofacial Injuries Treated At The General Hospital, Lagos, Nigeria, 2016).

A study that assessed the epidemiology of childhood and young adulthood injuries in Uganda found that intentional injuries are skewed with males doubling females' prevalence of victimization (Mutto, Lett, Lawoko, Nansamba, & Svanstrom, 2010). A study conducted in Uganda at Mbarara Regional referral hospital showed that the victims for abdominal assault injuries were more likely to be women, and this is echoed by other studies (Ruhinda, Kyamanywa, Kitya, & Bajunirwe, 2008).

2.0.2 Age group preponderance

The burden of injury is highest between the ages of 15 and 45 years (WHO, Burden: mortality, morbidity and risk factors, 2008). In addition, the observation made in Mpumulanga, South Africa at General Hospital Mpumulanga (Nkombua, 2010)showed that the majority of victims 86.9% were in the age group of 17-45 years (Nkombua, 2010). However, a study done in China found that the majority (65%) of assault/intentional injuries are among children (Choi, et al., 2016).

In sub-Saharan Africa, a one-year prospective study of assault-related maxillofacial injuries treated at the Department of Oral-Maxillofacial Surgery, Dental Centre, General Hospital, Lagos, Nigeria showed that the peak age incidence for assault was found to be 20-29 years (Olojede, et al., Pattern of Assault-Related Maxillofacial Injuries Treated at the General Hospital, Lagos, Nigeria, 2016). According to the Uganda Bureau of statistics, violence/assaults were ranked 2nd leading cause of injury-related deaths, with age groups of 25-34 years and 35-44 years being most affected (UBOS & ICF, 2018). Another study that assessed the epidemiology of childhood and young adulthood injuries in Uganda found that intentional injuries are skewed, peaking at 21 years (Mutto, Lett, Lawoko, Nansamba, & Svanstrom, 2010).

2.0.3 Economic/employment status.

A study to assess the epidemiology of childhood and young adulthood injuries found that students, casual laborers, and housewives are most at risk of experiencing intentional injuries (Mutto, 2011).

2.0.4 Place of residence

According to the Uganda Bureau of statistics, concerning urban and rural residence, violence/assaults were ranked 3rd and 4th respectively according to residence among the leading causes of death and injuries other than road traffic accidents (UBOS & ICF, 2018).

2.1 Injury characteristics attributable to assault injuries

2.1.1 Pattern of injuries due to assault

Trauma follows the same epidemic pattern as any other disease that is agent, host, and environment interacting together to produce injury or damage (Peden & Sminkey, 2004). Patterns of mechanism and intent of injury vary significantly by age, race, and gender (Ellen, 2000). Despite variations of injury patterns, it was stated that research methods applied to one segment of injury analysis may be relevant to others (National Academies Press (US), 1985). This section, therefore, discusses the pattern of injuries due to assault as indicated below;

The face constitutes the first point of contact in various human interactions and as such, it is frequently the preferred target (Kapoor & Kalra, 2012). The maxillofacial injuries are thus a common presentation in Accident and Emergency departments of hospitals either as an isolated injury or as a part of multiple injuries to the head, neck, chest, and abdomen (Durrani, 2015). A study conducted in Bangalore, India showed that the face and right upper

limb were vulnerable parts of the body and the abdomen was least vulnerable (Rao, 2014). In the same study done in India contusions and abrasions formed the majority of the injuries and the region most affected in the body where the upper limbs (37.7%) due to defensive and instinctive reactions of the victim towards the external attack by extending his upper limbs (Rao, 2014). This was contrary to the observations made in Witbank General Hospital Mpumalanga (Nkombua, 2010)where the victims' upper limb involvement was only 12.3%; the head and face was the second most common region affected contributing to 33.3% of the body involved.

A descriptive study carried out among law enforcement officers in the United State found that nearly 60% of primary wounds in fatal assaults were received to the head, neck, or throat while nearly 50% of primary wounds in nonfatal assaults were received to the arms/hands or below the waist (Crifasi, Pollack, & Webster, 2016). A study conducted among 19000 cases in Australia showed the head and neck areas were most affected followed by the trunk, wrist, hand, shoulder, and upper limb respectively (McKenna & Pointer, 2018). A retrospective study done at the National University of Malaysia, Kuala Lumpur, Malaysia revealed that 61.8% of patients whose injuries were caused by assault had frontal bone fractures, whereas the maxilla (53.1%) was the most affected among road traffic victims. The frontal bone being part of the upper face and relatively tough is not commonly injured among assault patients (Rajandram, Syed, Rashdi, & Abdul, 2014).

In Africa, a prospective study of assault-related maxillofacial injuries treated at the Department of Oral-Maxillofacial Surgery, Dental Centre, General Hospital, Lagos, Nigeria found that the most frequently seen soft tissue injury was contusion which accounted for 51.5% of cases. While 39% of the patients' sustained mandibular fracture which was the most common hard tissue injury (Olojede, et al., Pattern Of Assault-Related Maxillofacial Injuries Treated At The General Hospital, Lagos, Nigeria, 2016). In Uganda, a study conducted at Mbarara regional referral Hospital more than 10 years ago showed that Assault accounted for 29.4% of abdominal injuries. The common pattern of abdominal injury was blunt abdominal injury (85.7%) with a prevalence of 14.23% (Ruhinda, Kyamanywa, Kitya, & Bajunirwe, 2008).

2.1.2 Severity of injury

Following an injury, a timely description of the anatomical and physiological severity of injuries in trauma patients is important (Husum & Strada, 2002). Several scoring systems have been developed to assess the severity of the injury and determine patient outcomes. The trauma and injury severity score (TRISS) and the injury severity score (ISS) have been widely used for estimating mortality and morbidity of patients with multiple trauma (Tohira, Jacobs, Mountain, Gibson, & Yeo, 2011). The ISS summarises the condition of patients with multiple injuries. The injury severity score considers six parts of the body including the head, neck, face, chest, abdomen, and external areas (Ashraf, Ghayoor Karimiani, Ehsaei, & Sarreshtedar, 2014). New Severity Injury Score (NISS) was introduced as a modification of improving the accuracy of the ISS (Osler, Baker, & Long, 1997) and many studies show that the NISS is superior to the ISS (Hwang, et al., 2012).

In Uganda, following the introduction of a trauma registry at Mulago Hospital in 1996, a new severity score, Kampala Trauma Score (KTS), was developed (Kobusingye & Lett, Hospital-based trauma registries in Uganda, 2000). The tool has been validated and shown to perform comparably to the RTS and ISS when evaluated statistically (MacLeod, et al., 2003). On comparison of Kampala Trauma Score II with the New Injury Severity Score in Mbarara University Teaching Hospital in Uganda, it was revealed that the KTS II was as reliable a predictive score as is the NISS. In addition, the KTS II makes the documentation of the epidemiology of trauma more feasible in resource-poor settings (Mutooro, Mutakooha, & Kyamanywa, 2010). Therefore to assess the severity of injuries in this study, we will employ the Kampala Trauma Score II (KTS II) as illustrated below.

	Description	Score
A	Age (in years)	
	5-55	1
	<5 OR > 55	0
B	Systolic blood pressure on admission	
	More than 89 mmHg	2
	Between 89-50 mmHg	1
	Equal or below 49 mmHg	0
C	Respiratory rate on admission	
	10-29 /minutes	2
	30+	1
	< or equal 9/minute	0
D	Neurological status	
	Alert	3
	Responds to verbal stimuli	2
	Responds to painful stimuli	1
	Unrensponsive	0
E	The score for serious injuries	
	None	2
	One injury	1
	More than one	0
Kampala Trauma score total = A+B+C+D+E		
Mutooro, S., Mutakooha, E., & Kyamanywa, P. (2010, March/April). A Comparison of Kampala Trauma Score II with the New Injury Severity Score in Mbarara University Teaching Hospital in Uganda. *East and Central African Journal of Surgery*, *15*(1), 62-72.		

The table above shows the Kampala Trauma Score II (KTS II) used to classify the severity of injuries in this study. The severity was classified using Kampala Trauma score total (A+B+C+D+E) where the total ≤ 6 meant severe state, total 7-8 meant moderate state, and last total core 9-10 meant mild state.

Based on Kampala Trauma Score II, a study done in Uganda based on 4359 injury patients from Mulago, Nsambya, Mengo, Rubaga, and Kibuli, found that the majority of the patients (97%) had minor injuries, 2% had moderate injuries, and only 1% had severe injuries (Kobusingye O. , Guwatudde, Owor, & Lett, 2002). While a study conducted at Soroti Regional Referral Hospital (SRRH) in Uganda showed that sufficient data were available to calculate a KTS value for 52.1% of patients, of this 83.3% had mild injuries, 16.0% had moderate injuries and lastly, 0.7% had severe injuries (Zheng, et al., 2021).

2.1.3 Weapon used commonly used in assault cases

According to WHO reports, nearly 9 in 10 cases of all hospitalized assault injury cases among men and boys were due to either bodily force 61%, sharp object 13% or blunt object 13% (Enie, Na'aya, Musa, Lawan, & Chinda, 2009). While fist punches were the most common weapon according to a study done at Kamuzu Central Hospital (KCH) in Lilongwe, Malawi from 2009 to 2013 (Gallaher, Wildfire, Mabedi, Cairns, & Charles, 2016).

A study conducted at Soroti Regional Referral Hospital (SRRH) in Uganda found that penetrating mechanisms including stabbing/cuts, animal bites, and gunshot wounds were relatively infrequent (6.8%) (Zheng, et al., 2021).

2.2 Factors associated with injuries due to assault

2.2.1 Sex predilection

A study that reviewed data from the 2004 Survey of Inmates in State Correctional Facilities of the united states found that sex as a statistically significant predictor of both violence-related injuries that is female prisoners were 66% less likely to have been injured for violence compared to male prisoners (Sung, 2010). While a case-control study conducted on 3,940 victims of violence in Denmark showed that being male was significantly associated with violence-related injuries is being male increased the chances of being a victim of violence-related injuries by 14% as compared to being female (Murphy, Kruse, Elklit, & Brink, 2019).

A retrospective study conducted in the state of Qatar using data were retrieved from the Qatar national trauma registry for all patients who were admitted with violence-related injuries between June 2010 and June 2017 found male gender was a predictor for interpersonal violence injuries that being male increased the odds of being a victim of violence by 7.570 (Mollazehi, El-Menyar, Mekkodathil, Consunji, & Al-Thani, 2020).

A study was done at Kamuzu Central Hospital (KCH) in Lilongwe, Malawi from 2009 to 2013, whose results revealed that the male gender was associated with increased odds of intentional injury (Gallaher, Wildfire, Mabedi, Cairns, & Charles, 2016).

A study conducted in Uganda at Mbarara Regional referral hospital showed that the victims of abdominal assault injuries were more likely to be women, and this is echoed by other studies (Ruhinda, Kyamanywa, Kitya, & Bajunirwe, 2008).

2.2.2 Age group preponderance

A study done India among 67,226 women between the ages of 15 and 49 years found that age was significantly associated with violence-related injuries that are younger-aged women were 2% less likely to have experienced violence-related injuries compared to those residing in older women (Sabri, Renner, Stockman, Mittal, & Decker, 2014).

In sub-Saharan Africa, a study at Kamuzu Central Hospital (KCH) in Lilongwe, Malawi from 2009 to 2013 showed that increasing age was associated with increased odds of intentional injury (Gallaher, Wildfire, Mabedi, Cairns, & Charles, 2016).

A study conducted in Uganda at Mbarara Regional Referral Hospital showed that young adults are the most affected by abdominal assault (Ruhinda, Kyamanywa, Kitya, & Bajunirwe, 2008).

2.2.3 Economic / Employment status

A case-control study conducted on 3,940 victims of violence in Denmark showed that employment was significant associated with violence-related injuries that are being outside the labor force increased likelihood of having violence-related injuries by 2.54 as compared to being employed, being a student increased likelihood having violence-related injuries by 35% as compared to being employed, and being involved with child protective services increased likelihood having violence-related injuries by 91% as compared to employed (Murphy, Kruse, Elklit, & Brink, 2019).

A study done India among 67,226 women between the ages of 15 and 49 years found that socio-economic status was significantly associated with violence-related injuries that are women of low and middle socio-economic status increased the odds of having violence-related injuries by 26% compared to those of socio-economic status (Sabri, Renner, Stockman, Mittal, & Decker, 2014).

In Uganda, a study to assess the epidemiology of childhood and young adulthood injuries found that students, casual laborers, and housewives are most at risk of experiencing intentional injuries (Mutto, 2011).

2.2.4 Marital status

A case-control study conducted on 3,940 victims of violence in Denmark showed that marital status was significant associated with having violence-related injuries that are being divorced

increased the likelihood of having violence-related injuries by 2.07 as compared to being married and being unmarried increased the likelihood of having violence-related injuries by 25% as compared to being married (Murphy, Kruse, Elklit, & Brink, 2019).

A study done India among 67,226 women between the ages of 15 and 49 years found that education was significantly associated with violence-related injuries that are Women who were married or widowed were 46-47% less likely than separated/divorced women to have experienced injuries (Sabri, Renner, Stockman, Mittal, & Decker, 2014).

2.2.5 Education level

A case-control study conducted on 3,940 victims of violence in Denmark showed that education was significantly associated with exposure to violence that is having attended compulsory education (primary) increased the likelihood of being exposed to violence by 1.44 as compared to those secondary levels of education (Murphy, Kruse, Elklit, & Brink, 2019).

A study done India among 67,226 women between the ages of 15 and 49 years found that education was significantly associated with violence-related injuries that are being a woman of no formal education increased the odds of having violence-related injuries by 2.53 compared to those of high education level and being a woman low education level increased the odds of having violence-related injuries by 2.22 compared to those of high education level (Sabri, Renner, Stockman, Mittal, & Decker, 2014).

2.2.6 Place of residence

A study done in India among 67,226 women between the ages of 15 and 49 years found that education was significantly associated with place of residence that is women residing in mega cities were 29% less likely to have experienced IPV injuries compared to those residing in rural areas. (Sabri, Renner, Stockman, Mittal, & Decker, 2014).

A study at Kamuzu Central Hospital (KCH) in Lilongwe, Malawi from 2009 to 2013 showed that urban setting for injury was associated with increased odds of intentional injury (Gallaher, Wildfire, Mabedi, Cairns, & Charles, 2016).

According to the Uganda Bureau of statistics, concerning urban and rural residence, violence/assaults were ranked 3rd and 4th respectively according to residence among the leading causes of death and injuries other than road traffic accidents (UBOS & ICF, 2018).

2.2.7 Place of assault

In the United States, a study carried out at St. Louis Children's Hospital and Cardinal Glennon Children's Medical Center showed that most of the assaults occurred home (74.2%) and were either self-inflicted (37.9%) or caused by a person known to the victim (40.4%) (Choi, et al., 2016). A study conducted in rural and urban areas of Uganda among 1673 households showed that at home 29% of the deaths as a result of injuries happen, and 45% of disabling injuries occur and 46% of recovered injuries. While on the roads 29% of the deaths happen, 38% of disabling injuries occur and 22% of recovered injuries happen on the road (Kobusingye, Guwatudde, & Lett, 2001). A study carried out at Mbarara Regional referral Hospital showed that half of the abdominal injuries occurred at home, the rest at the workplace (Ruhinda, Kyamanywa, Kitya, & Bajunirwe, 2008).

2.2.8 Alcohol and drug abuse

There is an extensive evidence-base regarding the association between substance use and a history of violence (Russo, Katon, & Zatzick, 2013). The few emergency department-based studies of youth with acute assault injuries have reported high levels of depressive symptoms and alcohol/substance use (Anixt, Copeland-Linder, Haynie, & Cheng, 2012). In addition, substance abuse has been found to co-occur in 40-60% of Intimate partner violence (IPV) incidents across various studies (Soper, 2014).

Regardless of whether or not the victim was also using substances, it has been showing that victim injury was more likely in assaults involving substance use (Brecklin & Ullman, 2010). Alcohol is the most commonly used substance in assaults, and victims who are drinking are usually assaulted by drinking offenders (Abbey, Clinton-Sherrod, McAuslan, Zawacki, & Buck, 2003). A study conducted in Uganda at Mbarara Regional referral Hospital found alcohol consumption as one of the major predisposing factors to abdominal injuries. The hallmark of trauma management is prevention, thus initiatives to minimize trauma must be geared towards it (Ruhinda, Kyamanywa, Kitya, & Bajunirwe, 2008).

A case-control study conducted on 3,940 victims of violence in Denmark showed alcohol consumption was significant associated with having violence-related injuries that are having a diagnosis of alcohol and/or substance use disorders increased the likelihood of having violence-related injuries by 3.62 compared to no alcohol and/or substance use disorders (Murphy, Kruse, Elklit, & Brink, 2019).

A retrospective study conducted in the state of Qatar using data were retrieved from the Qatar national trauma registry for all patients who were admitted with violence-related injuries between June 2010 and June 2017 found alcohol use as a predictor for interpersonal violence that is using alcohol increased the odds of being a victim of violence by 2.393 (Mollazehi, El-Menyar, Mekkodathil, Consunji, & Al-Thani, 2020).

In India, a study done among 67,226 women between the ages of 15 and 49 years found that women's alcohol use had no significant effect on their victimization, alcohol use by their husbands was significant and increased in the odds of experiencing injurious violence by 88% (Sabri, Renner, Stockman, Mittal, & Decker, 2014).

2.2.9 Time of assault

In the United States, a study carried out at St. Louis Children's Hospital and Cardinal Glennon Children's Medical Center found that majority of injuries were categorized as assault/intentional (65%) and occurred between 6:00 pm and midnight, outside the curfew hours enforced by the city (Choi, et al., 2016).

2.2.10 Perpetrator

In the United States, a study carried out at St. Louis Children's Hospital and Cardinal Glennon Children's Medical Center showed that most of the assaults were caused by a person known to the victim (40.4%) (Choi, et al., 2016).

2.2.11 Prior criminal conviction

A case-control study conducted on 3,940 victims of violence in Denmark showed prior criminal conviction was significant associated with having violence-related injuries that are having prior criminal conviction increased the likelihood of having violence-related injuries by 3.54 compared to no participants with no 3.54 prior criminal conviction (Murphy, Kruse, Elklit, & Brink, 2019).

2.3 Outcomes among victims of assault

The traumatic experience of physical assault may have complications for victims that extend beyond direct consequences (i.e. physical injuries) and lead to disruption across a wide range of functions (Shapland & Hall, 2007). For example, concussions or loss of consciousness are common post-assault problems with memory and concentration despite the rare cases of life-threatening injury or serious traumatic brain injuries (TBI) (Georgina, 2015). In addition, violence victimization is a significant public health problem linked to many negative

outcomes such as injury, aggression, poor physical health, emotional distress, and substance use (Lilly & Graham-Bermann, 2010).

Violence against children has lifelong impacts on the health and well-being of children which can result in death from Homicide, which often involves weapons such as knives and firearms, is among the top three causes of death in adolescents, with boys comprising over 80% of victims and perpetrators. Also, violence in children leads to severe injuries that are for every homicide, there are hundreds of predominantly male victims of youth violence who sustain injuries because of physical fighting and assault (WHO, 2019).

In 2015 in the Eastern Mediterranean Region, 35,626 individuals died due to interpersonal violence, and 143,858 individuals died due to collective violence and legal intervention. These numbers show a significant increase from those in 1990, 152% increase for interpersonal violence, and 1027% increase for collective violence and legal intervention. In comparison, during the same time, the number of deaths in other parts of the world due to interpersonal violence increased by 12% and decreased by 67% for collective violence and legal intervention (Mokdad, et al., 2018).

A study done in south Iran found that of 1117 in-hospital deaths studied, 25 (2.2%) were assaults deaths of which 12 (48%) happened within 24 hours and 13 (52.0%) happened beyond 24 hours (Abbasi, Bolandparvaz, Yodollahi, Avar, & Farahgol, 2017).

A study carried out at Mulago hospital Kampala, Uganda showed that thirty-three percent of acid assault patients suffered partial or complete blindness. The mean length of stay in the hospital was 49.5 days and all patients survived (Asaria, et al., 2004).

CHAPTER THREE: METHODOLOGY

3.1 Study design

This was a prospective observational cohort study.

3.2 Study setting

The study was conducted at the Accident and Emergency (A&E) departments and other surgical departments (surgical ward and ICU) of KIU-TH and JRRH. Each of these hospitals has an A & E department where trauma patients present for initial assessment and trauma resuscitation after which definitive management is given by the specialized units manned by Surgeons, Senior House Officers, Intern Doctors, and Trainee medical students. These hospitals provide general surgical services without specialized departments like neurosurgery.

3.3 Study population

3.3.1 Target population

All patients with injuries during the study period were targeted.

3.3.2 Accessible population

Trauma victims who were attending JRRH and KIUTH during the study period.

3.3.3 Study population

All trauma patients who attended the A&E unit and other surgical departments (surgical ward and ICU) at KIU-TH and Jinja regional referral hospital during the study period meet the eligibility criteria and gave informed consent to participate in the study.

3.4 Sample size estimation

For all three objectives Cochran (1963:75) documented by (Bartlett, Kotrlik, & Higgins, 2001) formula was used.

$$n_o = \frac{Z^2 PQ}{e^2}$$

Where n_o is the sample size

Z is the abscissa of the normal curve that cuts off an area α at the tails (1 - α equals the desired confidence level, e.g., 95%) = 1.96

E is is the desired level of precision = 0.05

P is the estimated proportion of an attribute that is present in the population (hospital admission prevalence of assault injuries in a study done in Kampala, Uganda by Kobusingye , et al., 2002) which was 33%

q is 1-p =0.67

Substituting these values to the equation above, $N=1.96^2\times0.33(0.67)/ (0.05)^2$

N= 340 injured victims. Plus 10% to increase the internal validity of the study giving a sample size of 374.

Therefore, the minimum sample size required for this study was 374.

Since the study was conducted in two hospitals the portion of 374 participants to take part from each hospital was calculated using records for three months between 11th September-11th December 2019 at KIU and Jinja, as shown below;

Total injury cases from 11th September-11th December 2019 at KIU and Jinja = 504

Total injury cases from 11th September-11th December 2019 at KIU = 152

Total injury cases from 11th September-11th December 2019 at Jinja = 352

Therefore a portion sample size at KIU = $\frac{152}{504}(374) = 113$

At Jinja = 374-113 = 261

Therefore, the minimum number of partcipants required from KIU-TH and Jinja RRH for the study was 113 and 261 respectively. However 436 trauma patients were consuctively recruited, 142 from KIU-TH and 294 from Jinja RRH respectively during the study period.

3.5 Sampling technique

The consecutive recruitment method was used on eligible participants until the required sample size was achieved.

3.6 Eligibility criteria

3.6.1 Inclusion criteria

All trauma patients who attended the A&E unit and other surgical departments (surgical ward and ICU) at KIU-TH and Jinja regional referral hospital with injuries who were able to respond to questions or with legally authorized representatives, and willing to offer consent were recruited in the study.

3.6.2 Exclusion criteria

Patients with isolated sexual assault-related injuries were excluded. This is because they require a full medical-forensic examination such as the collection of forensic specimens, labeling, packaging, and transporting of forensic specimens to maintain the chain of custody of the evidence. This long and complex process makes it difficult to make a final diagnosis in due time.

3.7 Data collection

3.7.1 Training of research assistants

The data collection was conducted by the principal investigator with the help of research assistants. The team of 4 research assistants ware sensitized on how to collect data with the data collection tools.

3.7.2 Data collection tools

Data from this study was obtained using questionnaires administered through a face-to-face interview completed by a checklist sheet.

3.7.3 Pre-testing

The questionnaire interview checklist was pretested by the principal investigator at KIU-TH in a similar study population using 15 participants for 2 weeks and necessary adjustments were made before it was used to collect the final data. The patients recruited for the pre-test were not included in the study

3.7.4 Injury severity grading/classification

Severity was assessed using Kampala Trauma Score II with three categories of mild 9-10, moderate 7-8, and severe ≤ 6. KTS II components include age, systolic blood pressure on admission, the respiratory rate on admission, neurological status, and score for serious

injuries (Mutooro, Mutakooha, & Kyamanywa, 2010), and each component was assigned a score. The sum score for the components of KTS II was classified as mild, moderate, and severe.

3.8 Study procedure

Patients were admitted to the A&E units of KIU-TH and JRRH and were resuscitated following Trauma care protocol until they are hemodynamically stable. Those who met the inclusion criteria were requested to participate in the study.

Participants' demographics (age, sex, employment status, occupation, and place of residence), details of the injury (time of the assault, type of injuries, the weapon used, perpetrator, and body part injured), and severity of injuries were computed using Kampala Trauma Score II.

All patients received the necessary medical care as per the injury (s) sustained and surgical management was carried out wherever indicted then actively followed up to determine the in hospital outcomes for assault injuries (live, death, or referred) as shown below;

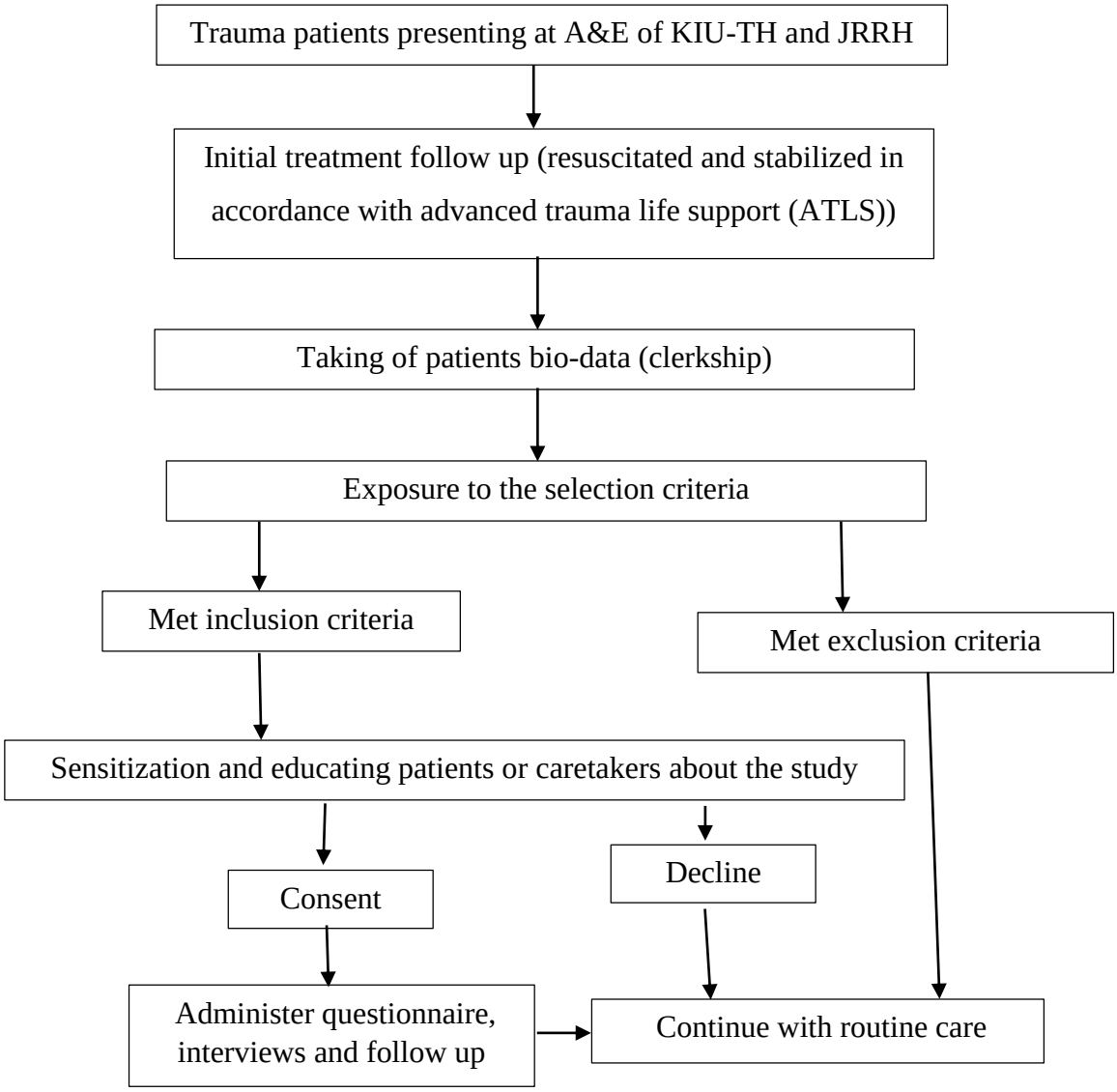
The eligible assault participants were seen three times where possible for the follow up :

On initial assessement of patient by the doctor upon arrival at A&E (0 hours): KTS was done to determine the severity of injury and patterns of injury

On 24 hours : Seen to determine wheather the patient was operated on , procedure done, refered, discharged or death and on discharge or 30th day in the hospital.

Patients were followed on daily basis until the end point of death, discharge from hospital, or referral to another facility.

3.9 Data collection procedure flow chart



3.10 Data quality control

The questionnaire was pretested to check whether it extracted the desired information.

The principal investigator and 4 trained research assistants (fellow doctors) collected the data. Data were checked for completeness by sampling 10 percent of the checklists and checking for completeness every week during the period of the study.

The data were double entered into the statistical package for social sciences version 27.0 (SPSS), cleaned, and analyzed with the guidance of a bio-statistician.

3.11 Data management

Data were checked for completeness, entered, cleaned, and coded in SPSS v 27.0 for analysis. The data was backed up in a pass-word protected portable hard disc to ensure data safety. Hard copies were kept cardboard which was locked and only left accessible to the principal investigator whereas softcopies were archived at the end of the data collection period.

3.12 Data analysis

Data were analyzed using SPSS version 27.0. Univariate analysis for continuous variables was presented using a distribution plot while categorical variables were analyzed using appropriate methods including proportions and presented in form of frequency tables.

To achieve the first objective about injury characteristics, percentages were computed for the various patterns of injuries due to assault by body parts, types of injuries, percentages of severity of injuries graded as mild, moderate and severe according to Kampala Trauma Score II and also percentages were computed for bodily force and different types of weapons used.

To achieve the second objective, a binary variable of injuries resulting from trauma was used generated and used as the dependent variable coded 0=Non-assault injuries and 1= assault injuries. Information taken from patients during clerkship (bio data and alcohol consumption) was used as independent variables in this analysis. In Bivariate analysis, based on both Chi-square test and Logistic regression, repeated analysis comparing independent variables with a dependent variable was done. Unadjusted odds ratios with their corresponding 80 % CI was reported. All factors with p-value <0.2 in bivariate analysis were considered in the multivariate analysis which was performed to control confounding. Assumptions for use of multiple logistic regression, e.g. the absence of multi-collinearity among the independent variables, were explored. A variable was considered significant in this analysis if it had a p-value<0.05.

For the third objective, the percentages were computed for patients who are alive or dead by the end of follow-up and whether the patient was discharged, referred for further care, or still admitted to the ward.

Results were then presented in form of tables

3.13 Validity of data collection instruments

The Content Validity Index was used as illustrated by Yaghmaie (Yaghmaie, 2003). Three experts in the field were requested to rate each item in the questionnaire based on relevance, clarity, simplicity, and ambiguity on a four-point scale as; not relevant-1, needs some revision-2, relevant but needs minor revision-3, or very relevant/clear-4. The agreement of more than 75% was a measure that the items of the questionnaire can give us the true picture of the factors associated with assault injuries.

3.14 Reliability of data collection instruments

This was determined using Cronbach's alpha statistical test. By using the Cronbach's coefficient alpha of more than 0.8, it considered that the items of the questionnaire are reproducible and consistent.

3.15 Ethical considerations

3.15.1 Scientific validity

The study was conducted in line with the national guidelines for research involving human participants (UNCST, 2014). Ethical clearance was obtained from the Research and Ethical committee of Kampala International University-Western Campus (KIU-REC-023/2021-17). Permission to conduct the study was obtained from the executive director of KIU-TH and the hospital director of JRRH.

3.15.2 Informed consent and respect for participants

Study participants were asked for written voluntary consent as evidenced by the participants' signature or thumbprints of their legally authorized representatives before being enrolled in the study. Assent was concurrently obtained from the participant after clearly explaining the purpose of the study. They were also clearly informed that any participant can withdraw from the study at any time if he/she wishes without compromising the healthcare provided.

3.15.3 Risks and adverse events to study participants

There were no foreseeable risks to the participants except the risk of social harm if there is a breach of confidentiality. However, this was mitigated by ensuring that most confidentiality is upheld. The other risk was contracting COVID 19 which was forgone by following COVID 19 standard operating procedures such as putting on facemasks by investigators and participants were done.

3.15.4 Benefits of the research

There were no material benefits for participating in the study.

3.15.5 Privacy and confidentiality

Privacy during interviewing and confidentiality of information was guaranteed. Participants were interviewed and in case they knew one of the researchers, they could be interviewed by someone else or withdraw from the study if they wished. Participants were not required to give their names to avoid information being traced back to them. The information collected was only accessible to the research team.

3.15.6 Selection of participants

The consecutive sampling method was used to select participants to ensure an equal chance of being selected for the study. Eligibility criteria were strictly adhered to with equitable distribution of risks and benefits. Priority was not given in terms of tribe, interest group, race, or religion.

3.15.7 Incentives and reimbursement

No monetary or any other form of incentives was offered to the participants but compensation and reimbursement based on the data you collected, there was no way a participant would spend a coin during ur data collection offered where applicable.

3.15.8 Approval procedure

The study was conducted in line with the national guidelines for research involving human participants (UNCST, 2014). Ethical clearance was obtained from the Research and Ethical committee of Kampala International University-Western Campus (UG-REC-023/2021-17). Permission to conduct the study was obtained from the Executive Director of KIU-TH and the hospital director of JRRH. After approval by the KIU-REC, the study was registered with Uganda National Council for Science and Technology (UNCST) which provided a permit for the research to be done. The permit was then presented to the hospital administration of KIU-TH and JRRH for permission to the conducted study.

3.16 Dissemination of results

Study results will be disseminated to the department of Surgery Kampala International University, KIU-TH, JRRH, presented at a conference and published.

CHAPTER FOUR

PRESENTATION AND INTERPRETATION OF THE RESULTS.

4.1 Study participants

According to figure 2, of a total of 439 trauma patients presented at KIU-TH and JRRH, 143 patients had assault injuries and 296 non-assault injuries. . All eligible trauma patients were consecutively enrolled in the study (142 patients from Kampala International University - Teaching Hospital (KIU-TH) and 294 patients from Jinja regional referral hospital (JRRH)). 140 patients with assault injuries were followed up to determine their early in hospital outcome. Details are showed in figure 2 below.

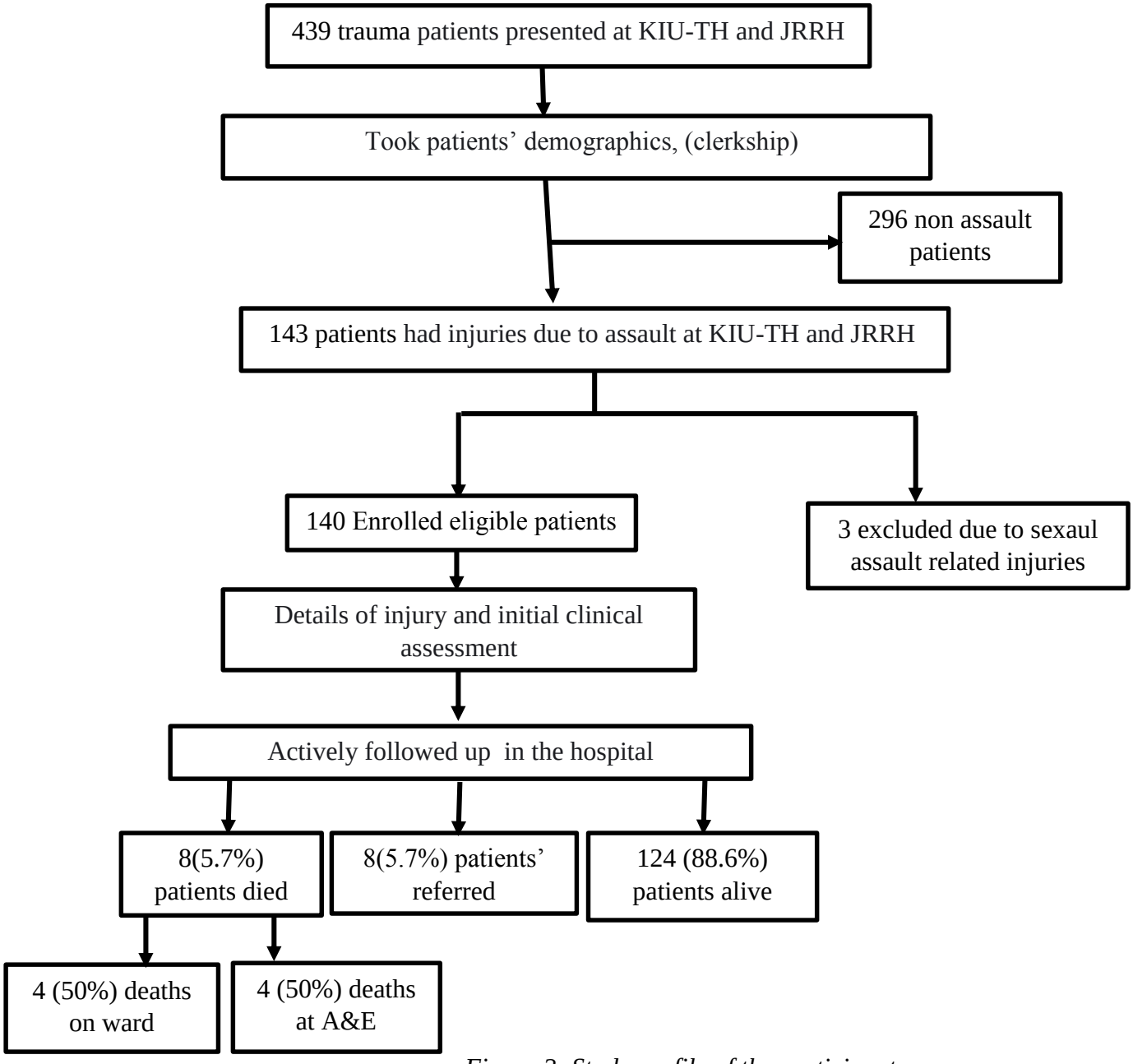


Figure 2: Study profile of the participants

4.2 Socio-demographic profile of assault study participants

According to table 1, most (50; 35.7%) of the study participants were aged 25-34 years; the majority (108; 77.1%) were males; most of the participants (61; 43.6%) were of secondary level of education, 94(67.1%) were unemployed, 51(36.4%) were casual workers and lastly majority of the participants 71(50.7%) lived in urban areas. These results are detailed in table 1.

Table 1: Sociodemographic profile of assault study participants

Variable	Frequency (n)	Percentage (%)
Age (years)		
0-14	10	7.1
15-24	36	25.7
25-34	50	35.7
35-44	26	18.6
45-54	11	7.9
≥55	7	5.0
Sex		
Female	32	22.9
Male	108	77.1
Level of education		
Not attended	15	10.7
Primary	61	43.6
Secondary	52	37.1
University	4	2.9
Other training	8	5.7
Employment status		
Unemployed	94	67.1
Employed	46	32.9
Occupation		
Student	21	15.0
Civil servant	4	2.9
Casual labor	51	36.4
Private employee	18	12.9
Small business owner	25	17.9
Farmer	21	15.0
Place of residence		
Urban (Town)	71	50.7
Rural (Village)	69	49.3

4.3 Injury characteristics of assault injuries among study participants

4.3.1 Body region injured by assaults

According to table 2, the head was the most injured body part among study participants accounting for 38(27.1%) as an isolated part or as part of 68 (48.6%) multiple injuries identified in most of the participants. The details are shown in table 2.

Table 2: Distribution of assault injuries according to body region injured

Variable	Frequency (n)	Percentage (%)
Body region injured		
Head	38	27.1
Neck	3	2.1
Chest	5	3.6
Abdomen	5	3.6
Back	1	0.7
Pelvis	2	1.4
Upper limbs	10	7.1
Lower limbs	8	5.7
Multiple (2 or more injured body parts)	68	48.6

4.3.1 Type of assault injuries

According to table 3, most of the injuries 96(68.6%) in this study were cuts & Soft tissue injuries followed by multiple injuries 33 (23.6%). These results are detailed in table 3.

Table 3: Type of assault injuries

Variable	Frequency (n)	Percentage (%)
Type of injury		
Fracture	4	2.9
Tendon	1	0.7
Cuts and Soft tissue injuries	96	68.6
Burns	4	2.9
Strangulation	2	1.4
Multiple (2 or more injury types)	33	23.6

4.3.2 Severity of injury

Based on Kampala Trauma Score II (KTS II) as showed in Appendix XIII, most 62(44.3%) of assaults injuries presenting were mild injuries (51(82.3%) at JRRH and 11(17.7%) KIU-TH), 49(35%) were moderate injuries (27(55.1%) at JRRH and 22(44.9%) KIU-TH) and lastly, 29(20.7%) were severe injuries (20(68.9%) at JRRH and 9(31.1%) KIU-TH).

Table 4: Severity of injuries at KIU-TH and JRRH

			Hospital	
		n (%)	JRRH	KIU-TH
Kampala_Trauma_Score	Mild	62(44.3%)	(51(82.3%)	11(17.7%)
	Moderate	49(35%)	27(55.1%)	22(44.9%)
	Severe	29(20.7%)	20(68.9%)	9(31.1%)

4.3.3 Weapons used in assault injuries

According to table 3, most of the assault injuries 112(80.0%) involved the use of weapons 48 (34.3%) and in 44 (31.4%) assault cases there was the use of blunt weapons used. These results are detailed in table 3.

Table 5: Distribution of assault injuries according to the weapon used

Variable	**Frequency**	**Percentage**
Weapon used		
No (bodily force)	28	20.0
Yes	112	80.0
Type of weapon		
Sharp	48	34.3
Blunt	44	31.4
Gun short	16	11.4
Paraffin or petrol or hot water	4	2.9

4.4 Factors associated with assault injuries among study participants.

4.4.1 Bivariable analysis of factors associated with assault

As shown in Table 4 below, only sex, economic status, alcohol consumption, and place of residence had p-values less than 0.2 proceeded for the next stage (multivariate stage).

Table 6: Results of bivariable analysis of factors associated with assault

Variable	Trauma n (%)		cOR (80% C.I)	p-value
	Assault	Non-assault		
Age				
0-14	10(31.2)	22(68.8)	1	
15-24	36(31.6)	78(68.4)	1.11(0.43 - 2.87)	0.883
25-34	50(31.8)	107(68.2)	1.01(0.48- 2.10)	0.983
35-44	26(33.3)	52(66.7)	1.01(0.512-2.01)	0.979
45-54	11(32.4)	23(67.6)	1.14(0.54-2.41)	0.813
≥ 55	7(33.3)	14(66.7)	1.25(0.53-2.91)	0.731
Sex				
Male	108(36.0)	192(64.0)	1.69(1.25-2.29)	**0.029**
Female	32(23.5)	104(76.5)	1	
Level of education				
Not attended	15(31.3)	33(68.8)	1.47(1.35-1.66)	0.665
Primary	61(32.4)	127(67.6)	1.04(0.48-1.84)	0.920
Secondary	52(31.9)	111(68.1)	1.31(0.48-1.74)	0.865
University	4(30.8)	9(69.2)	1.31(0.46-4.34)	0.688
Other trainings	8(33.3)	16(66.7)	1	1
Economic status				
Employed	52(26.1)	147(73.9)	1	
Unemployed	88(37.1)	149(62.9)	1.58(1.10-2.28)	**0.102**
Occupation				
Student	21(31.8)	45(68.2)	1	
Civil servant	4(33.3)	8(66.7)	1.04(0.54-1.98)	0.935

Casual labor	51(32.1)	108(67.9)	1.26(0.44-3.63)	0.776
Private employee	18(31.6)	39(68.4)	0.88(0.56-1.39)	0.734
Small business owner	25(32.1)	53(67.9)	1.16(0.60-2.24)	0.764
Farmer	21(32.8)	43(67.2)	1.30(0.74-2.29)	0.549
Place of residence				
Urban	71(32.1)	150(67.9)	1	
Rural	69(32.1)	146(67.9)	1.01(0.73-1.35)	**0.195**
Alcohol consumption				
Yes	61(41.5)	86(58.5)	1.88(1.43-2.47)	**0.003**
No	79(27.3)	210(72.7)	1	

4.4.2 Multivariable analysis of factors associated with assault

According to table 5, sex (male Vs. female), employment (employed Vs. unemployed), and alcohol consumption (alcohol consumers Vs. non-alcohol consumption) were significantly associated with assault injuries since their P-values < 0.05 that is being male increased the risk having assault injuries by 1.67 odds while being unemployed increased the risk having assault injuries by 1.61 odds. Participants who consumed alcohol were 1.71 times more likely to have assault injuries than the non-alcohol consumers. The details are shown in table 5

Table 7: Results of multivariable analysis of factors associated with assault

Variable	aOR (95% C.I)	p-value
Sex		
Male	1.67(1.04-2.67)	0.**032**
Female	1	
Economic status		
Employed	1	
Unemployed	1.61(1.04-2.47)	0.**030**
Place of residence		
Urban	1	
Rural	0.89(0.58-1.36)	0.611
Alcohol consumption		
Yes	1.70(1.11-2.60)	**0.015**
No	1	

4.5 Early in-hospital outcomes among study participants

According to figure 3 below, the majority of the patients 124(88.6%) were still alive by 30 days of the follow-up, and there were 8 referrals and 8 deaths. Of the 8 referrals, 7 (87.5%) were referred for Neurosurgery and 1 (12.5%) were referred for maxillofacial surgery. While of the 8 deaths, 4 (50%) occurred at ward/intensive care unit and 4 (50%) occurred at accident and emergency.

Table 8: Early in-hospital outcomes among study participants

Outcome	Frequency (n)	Percentage (%)
Alive	**124**	**88.6**
Died	**8**	**5.7**
Place of death (n=8)		
Ward	4	50
Accident and emergency	4	50
Referred	**8**	**5.7**
Reasons for referral (n=8)		
Neurosurgery	7	87.5
Maxillofacial surgery	1	12.5

4.5.3 Proportion of the participants that were operated

Of the 140 participants, 118 (84.3%) participants were operated on, and the commonest type of operations were surgical toilet and suturing operations accounting for 71.2% of all operations, followed by Orthopedic procedures accounting for 17.8% of all operations. These are detailed in table 7.

Table 9: Types of operation

Variable	Frequency (n)	Percentage (%)
Operated		
Yes	118	84.3
No	22	15.7
Type of operation		
Surgical toilet and suturing	84	71.2
Orthopedic procedures	21	17.8
Laparatomy	7	5.9
Others	6	5.1

4.5.4 Duration of hospital stay

According to table 7, an average hospital stay for dead was 2 days, the living one was 3.5 days and it took an average hospital stay of less than a day (0.3 days) for an assault patient to be referred. At JRRH the average hospital stay was 3.2 days while at KIU-TH the average hospital stay was 3.5 days. The detailed results are showed in table 7.

Table 10: Duration of hospital stay

N=140

	Number	Mean	Standard Deviation	Minimum	Maximum
30-day in-hospital outcomes					
Alive	124	3.5	3.64	0	16
Dead	8	2.0	2.78	0	8
Referred	8	0.3	0.46	0	1
Hospital					
Jinja	98	3.2	3.75	0	16
KIU	42	3.5	3.19	0	15

CHAPTER FIVE:

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

5.0 Socio-demographics profile of assault study participants

Sex

In this study, most of the assaults injuries 108(77.1%) were presented by males. This finding is consistent with results in a study done in India by Rao, (2014) which found that 78.3% of 360 assault cases were among males, and finding in a study by Nkombua, 2010 which found that 71.8% of assault cases were males. Another finding in line with the study finding was found by the Australian Institute of Health and Welfare, (2016) where hospitalized assault injuries among men and boys doubled those of women and girls that is 110 per 100,000 vs 55 per 100,000.

However, contrary findings were revealed by a study done by Ruhinda, et al., (2008) at Mbarara Regional referral hospital in Uganda which showed that the victims of abdominal assault injuries were more likely to be women. Therefore, males are the most victims of assaults injuries this could be because in many communities men play key roles such as the money makers, and being family providers. This puts them at high risk of attacks from strangers and no strangers.

Age

In this study majority of assault injuries, 112(80.0%) were aged 15-44 years with 50(35.7%) of these presented participants aged 25-34 years. These findings solely agree with a study by Olojede., et al., (2016) in Nigeria which showed that the peak age incidence for assault was found to be 20-29 years. This finding was also consistent with the range 15 and 45 years found to the high-risk group of injuries according to WHO, (2008). Other similar findings were shown in the observation made by Nkombua, (2010) in Mpumulanga, South Africa at General Hospital Mpumulanga showed that the majority of victims 86.9% were in the age group of 17-45 years. This study also agrees with UBOS & ICF, (2018) which showed that it was found that age groups of 25-34 years and 35-44 years were most affected by assaults.

However, contrary findings were showed by a study done by Choi, et al., (2016) in China which found that the majority (65%) of assault/intentional injuries are among children. Other contrary findings were showed by a study done by (Mutto, Lett, Lawoko, Nansamba, &

Svanstrom, 2010) to assess the epidemiology of childhood and young adulthood injuries in Uganda which found that intentional injuries are skewed, peaking at 21 years. Therefore, people aged 15-45 years are mostly affected by assaults. This could be because many people aged 15-45 years are youth who could be members of Gang groups such as a group riot, motorcycle racing, and carrying a weapon in the community, thus are more likely to hurt one another.

Employment status/occupation

In this study, many 94(67.1%) assault injuries were presented by unemployed participants, and 51(36.4%) assault victims were casual workers. This finding is consistent with results in a study done by Mutto, (2011) in Uganda which found that found that students, casual laborers, and housewives were most at risk of experiencing intentional injuries. Therefore, the unemployed, and participants of occupations are mostly affected by assaults.

Place of residence

In this study, many 71(50.7%) assault injuries were presented to participants from urban areas. This is consistent with results in a study done by (Gallaher, Wildfire, Mabedi, Cairns, & Charles, 2016) at Kamuzu Central Hospital (KCH) in Lilongwe, Malawi from 2009 to 2013 which showed that urban setting for injury was associated with increased odds of intentional injury. UBOS & ICF, (2018) also showed that urban residence was ranked 4th as cause violence/assaults while the rural residence was ranked 4th. Therefore, participants living in an urban residence, are mostly affected by assaults.

5.1 Injury characteristics attributable to assault injuries among study participants

5.1.1 Body region injured

The head was the most injured body part accounting for 38(27.1%) of assault injuries in addition to being part of 68 (48.6%) multiple assault injuries in this study. This was followed by upper limbs accounting for 7.1% and lower limbs accounting for 5.7% of assault injuries in this study.

Regarding the most affected body part, this finding agrees with the results of a study done by Durrani, (2015) at a tertiary care hospital in Lahore Pakistan which suggested that maxillofacial injuries are a common presentation in Accident and Emergency departments of

hospitals either as an isolated injury or as a part of multiple injuries to the head, neck, chest, and abdomen.

The study finding is also in line with the observations made in Witbank General Hospital Mpumalanga (Nkombua, 2010) where the head and face were the most common region affected contributing to 33.3% of the body involved in assaults. The other similar finding was showed by (Rajandram, Syed, Rashdi, & Abdul, 2014) in a retrospective study done at the National University of Malaysia, Kuala Lumpur, Malaysia which revealed that 61.8% of patients whose injuries were caused by assault had frontal bone fractures (upper face).

The reason for the head being the most affected in assault victims can be linked to the suggestion by Kapoor & Kalra, (2012), which shows that the face/head constitutes the first point of contact in various human interactions, and as *such*, it is frequently the preferred target.

Nevertheless, not all studies have the face/head being the most affected body part. A study conducted in Bangalore, India by Rao, (2014), showed that the region most affected in the body were the upper limbs (37.7%) due to defensive and instinctive reactions of the victim towards the external attack by extending his upper limbs.

Other findings contrary to having the face/head as the most affected body part were shown by a study conducted by (Australian Institute of Health and Welfare, 2016) among 19000 cases in Australia where the head and neck areas were most affected. Similar findings were showed by a descriptive study carried out among law enforcement officers in the United State by (Crifasi, Pollack, & Webster, 2016) where nearly 60% of primary wounds in fatal assaults were received to the head, neck, or throat. This finding can be reasoned by the fact that the neck, throat, and head/face are body parts close to one another.

Though abdominal injuries were 5(3.6%) in this study. A study conducted at Mbarara regional referral Hospital in Uganda by Ruhinda, et al., (2008) found that assault accounted for 29.4% of the abdominal injuries with the common pattern of abdominal injury being blunt abdominal injury (85.7%) with a prevalence of 14.23%. Thus, this relationship between assaults injuries and abdominal injuries can't be overlooked since studies on assaults are few in western Uganda.

5.1.2 Type of injury

In this study, most of the injuries 96(68.6%) were cuts and soft tissue injuries in addition to being part of the 33 (23.6%) multiple injuries. This was followed by fractures and burns accounting for 2.9% of each.

Regarding the most common type of injury, this is in line with a study done by Rao, (2014) who showed that contusions and abrasions formed the majority of the injuries. The other consistent results were shown by a prospective study of assault-related maxillofacial injuries treated at the Department of Oral-Maxillofacial Surgery, Dental Centre, General Hospital, Lagos, Nigeria by (Olojede, et al., 2016) where it was found that the most frequent injuries were seen soft tissue injury accounting for 51.5% cases.

Therefore, cuts & soft tissue injuries are mostly presented by assault victims. The high prevalence of cuts and soft tissue injuries in this study might be due to the impact of falls following punches or kicks and dodging of harms from weapons.

5.1.3 Severity of assault injuries

Based on Kampala Trauma Score II (KTS II), this study found that most 62(44.3%) of assaults injuries presenting at KIU-TH and JRRH were mild injuries, 50(35.7%) were moderate injuries and lastly, 28 (20%) were severe injuries. This finding presents a more significant problem compared to results in a study done by Kobusingye, et al., 2002 which showed that the majority of the patients (97%) had minor injuries, 2% had moderate injuries, and only 1% had severe injuries based Kampala Trauma Score II. Another less significant problem was shown in a study done by Zheng, et al., 2021 which found that sufficient data were available to calculate a KTS value for 52.1% of patients, of these 83.3% had mild injuries, 16.0% had moderate injuries and lastly, 0.7% had severe injuries.

The reason for a more significant problem-based KTS II in the study could have resulted from being limited to assault injuries rather than all injuries. Therefore assault injuries could lead to more severe injuries though this is not conclusive because of limited information on the severity of assault injuries.

5.1.4 Weapons used in assault injuries

In this study, most of the assault injuries 112(80.0%) happened with the use of weapons and 28(20.0%) were a result of bodily force. The common type of weapons used sharp weapons used in 48 (34.3%) assault cases and blunt weapons used in 44 (31.4%) assault cases. This

study finding contradicts results in a study by Eni, et al., 2009 which showed that assault injury cases among men and boys were due to either bodily force 61%, sharp object 13%, or blunt object 13%. The reason for contradicting results could have been from the study population which was all assaults patients in this study other than studying only men and boys.

Another contradicting finding was revealed by a retrospective study done by Gallaher, et al., (2016) at Kamuzu Central Hospital (KCH) in Lilongwe, Malawi among children (<18 years old) from 2009 to 2013 which found that fist punches were the most common weapon. The reason for contradicting results could have been from the difference of study population (all assault patients Vs children < 18 years) and geographical location (Malawi Vs Uganda).

Nevertheless, a results in a study conducted at Soroti Regional Referral Hospital (SRRH) in Uganda by Zheng, et al., 2021 found that penetrating mechanisms including stabbing/cuts, and gunshot wounds were relatively infrequent (6.8%). Thus the reason for inconsistent results with this study could have resulted from studying all injuries other than only assault injuries like this study.

Therefore, this study finding for "use of weapons" in most assault injuries could have resulted from studying all assaults cases regardless of age, and sex.

5.2 Factors associated with assault injuries among study participants.

5.2.1 Sex predilection

In this study sex was significantly associated with assault injuries that is being male increased the risk of having assault injuries by 67%. This is consistent with a case-control study conducted on 3,940 victims of violence in Denmark by Murphy, et al., (2019) which showed that being male was significantly associated with violence-related injuries and that being male increased the chances of being a victim of violence-related injuries by 14% as compared to being female. Other consistent findings were showed in a retrospective study conducted in the state of Qatar using data that was retrieved from the Qatar national trauma registry for all patients who were admitted with violence-related injuries between June 2010 and June 2017 by Mollazehi, et al., (2020) which found that male gender was a predictor for interpersonal violence injuries that being male increased the odds of being a victim of violence by 7.570. A study done by Gallaher, et al., (2016) at Kamuzu Central Hospital (KCH) in Lilongwe,

Malawi from 2009 to 2013, also revealed that the male gender was associated with increased odds of intentional injury.

More so, other findings were showed in a study by Sung, (2010) on Inmates in State prisoners which found that sex as a statistically significant predictor for violence-related injuries and that female prisoners were 66% less likely to have been injured for violence compared to male prisoners.

Therefore, regardless of country/geographic location male gender is associated with increased odds of domestic violence among some defined populations like prisoners. This could be because in many communities men play key roles such as the money makers, and being family providers. This puts them at high risk of attacks from strangers and no strangers.

5.2.2 Economic / Employment status

In this study employment is significantly associated with assault injuries and being unemployed increased the risk having assault injuries by 61%. This is consistent with a study done by Murphy, et al., (2019) on 3,940 victims of violence in Denmark which showed that employment was significant associated with violence-related injuries that is being outside the labor force increased likelihood of having violence-related injuries by 2.54 as compared to being employed, being a student increased likelihood having violence-related injuries by 35% as compared to being employed, and being involved with child protective services increased likelihood having violence-related injuries by 91% as compared to employed.

Other consistent results were revealed in a study done India by Sabri, et al., (2014) among 67,226 women between the ages of 15 and 49 years which found that socioeconomic status was significantly associated with violence-related injuries that are women of low and middle socioeconomic status increased the odds of having violence-related injuries by 26% compared to those of socio-economic status. In addition, a study to assess the epidemiology of childhood and young adulthood injuries in Uganda found that students, casual laborers, and housewives are most at risk of experiencing intentional injuries (Mutto, 2011).

Therefore people that earn less or no income have increased odds of having assault injuries. This can be explained by the fact that many unemployed, casual workers, students, and housewives earn little income, thus are more likely to be mistreated by their bosses, some engage in crimes such as robberies, and some become victims of gender-based violence.

5.5 Study limitations and their mitigations

This study was conducted for a shorter period as well as a limited follow-up that may not depict long-term outcomes of assault-related injuries.

5.2.3 Alcohol and drug abuse

According to Russo, Katon, & Zatzick, (2013) there is an extensive evidence-base regarding the association between substance use and a history of violence. In agreement with Russo, Katon, & Zatzick, (2013) this study found that alcohol consumption was significantly associated with assault injuries and that participants who consumed alcohol were 1.71 times more likely to have assault injuries than the non-alcohol consumers. This is consistent with a case-control study conducted by Murphy, et al., (2019) on 3,940 victims of violence in Denmark which showed alcohol consumption was significant associated with having violence-related injuries and that having a diagnosis of alcohol and/or substance use disorders increased the likelihood of having violence-related injuries by 3.62 compared to no alcohol and/or substance use disorders. Similar findings were also reported by a retrospective study conducted by Mollazehi, et al., (2020) in the state of Qatar which showed that alcohol use as a predictor for interpersonal violence that is using alcohol increased the odds of being a victim of violence by 2.393.

Though a study done in India by Sabri, et al., (2014) among 67,226 women between the ages of 15 and 49 years found that women's alcohol use had no significant effect on their victimization, alcohol use by their husbands was significant and increased in the odds of experiencing injurious violence by 88%. Therefore alcohol use especially by men is significantly associated with increased chances of having assault injuries.

5.3 Early in-hospital outcomes among study participants

According to GBD, (2018), in the Eastern Mediterranean Region, 35,626 (24.7%) individuals died due to interpersonal violence, and 143,858 individuals died due to collective violence and legal intervention. A study done by Abbasi, Bolandparvaz, Yodollahi, Avar, & Farahgol, (2017) also showed off 1117 in-hospital deaths studied, 25 (2.2%) were assaults deaths. These studies, in combination with the results of this study (8 deaths) reflected that assault is a life-threatening problem that can lead to death.

In addition to being a life-threatening problem that can lead to death, assault injuries in this study led to 8 (5.7%) referrals, 118(84.3%) operations, and an average hospital stay of 3.3

days. These findings agree with a study done by Shapland & Hall, (2007) which showed that the traumatic experience of physical assault may have complications for victims that extend beyond direct consequences (i.e. physical injuries) and lead to disruption across a wide range of functions. Therefore as suggested by Lilly & Graham-Bermann, (2010) assaults present a significant public health problem linked to many negative outcomes such as injury, death, poor physical health, emotional distress, and financial stress resulting from delayed hospital and operations done as reflected by this study.

Regarding deaths in this study, 4 (50%) deaths occurred in the ward or intensive care unit (ICU) and 4 (50%) deaths occurred at the emergency department. This is in line with a study done by Abbasi, Bolandparvaz, Yodollahi, Avar, & Farahgol, (2017) which showed off 25 assaults deaths, 12 (48%) happened within 24 hours (the emergency department) and 13 (52.0%) happened beyond 24 hours (onward). Therefore, about 50% of assaults deaths happen before admission to the ward or intensive care unit (ICU).

Therefore, assault is a significant health problem linked to many negative outcomes and can even lead to direct death with limited investigations, and treatment.

5.4 Conclusion

In conclusion, the head was the primary target for assaults, and therefore assault victims had higher chances of having their head/face injured. The commonest type of injuries were cuts & soft tissue injuries. Based on KTS II, assault injuries present a more significant problem in terms of severity, and most assault injuries involved the use of weapons.

Regarding factors, sex, employment status and alcohol consumption significantly increased the likehood having assault injuries.

Assault is a significant health problem linked to many negative outcomes such as death and poor physical health.

5.6 Recommendations

There is a need to establish special units such as neurosurgery to offer specialized services at KIU-TH and JRRH, creation of more job opportunities to reduce unemployment and putting in place policies aimed at strict regulation of alcohol consumption. Further research is also recommended to study the long term outcomes

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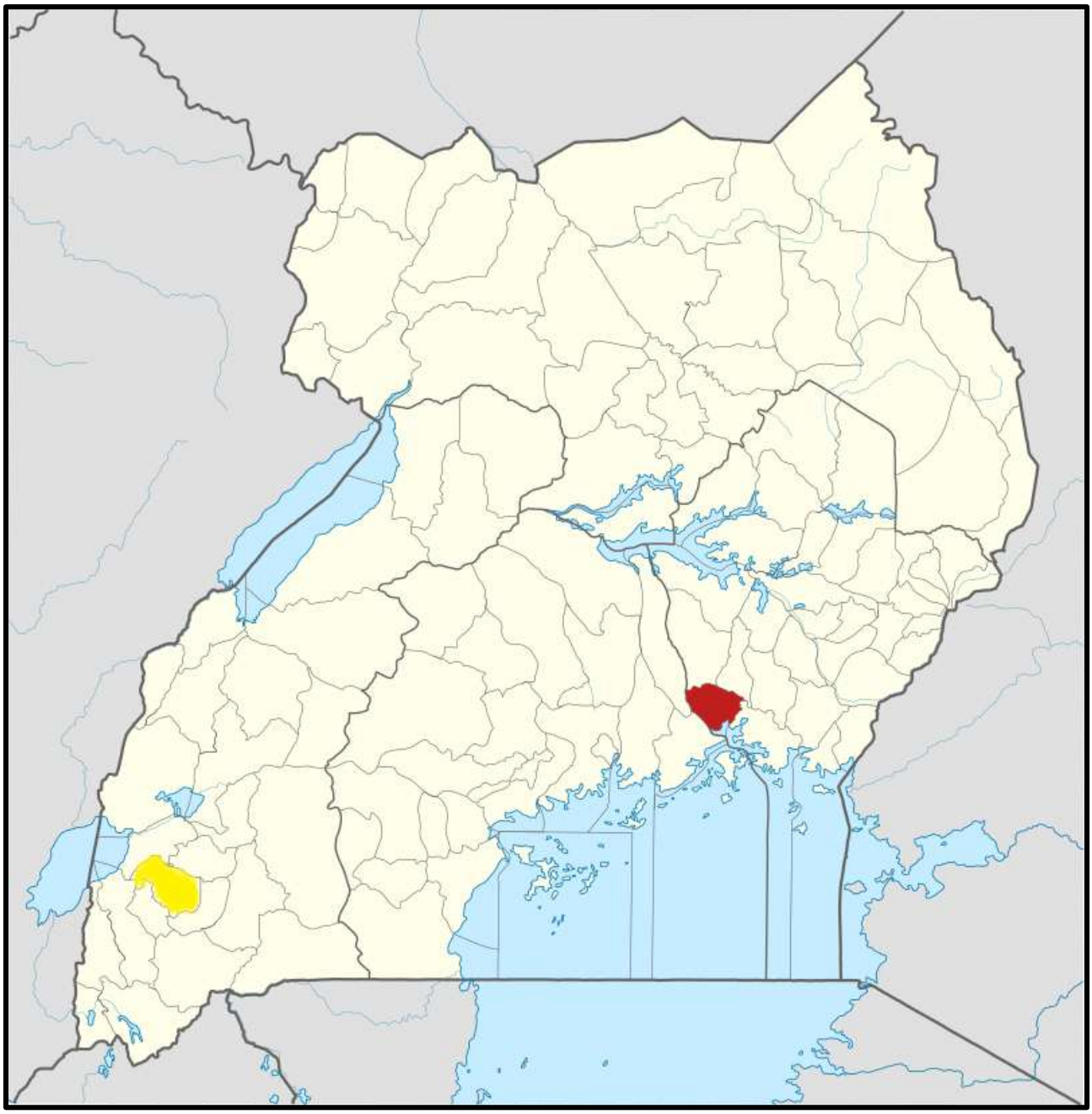
APPENDICES

Appendix I: Map of Uganda showing Jinja and Bushenyi district

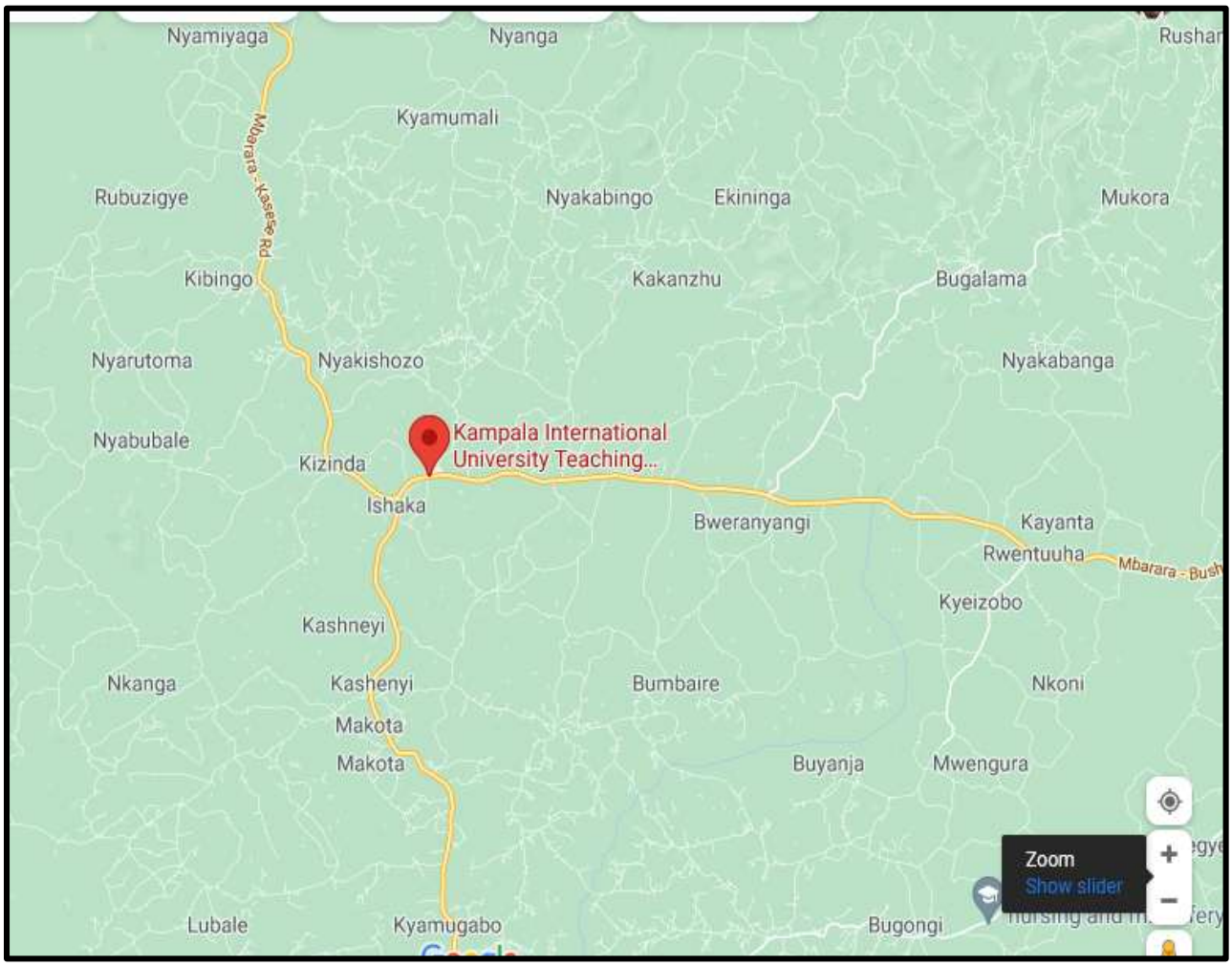


Key

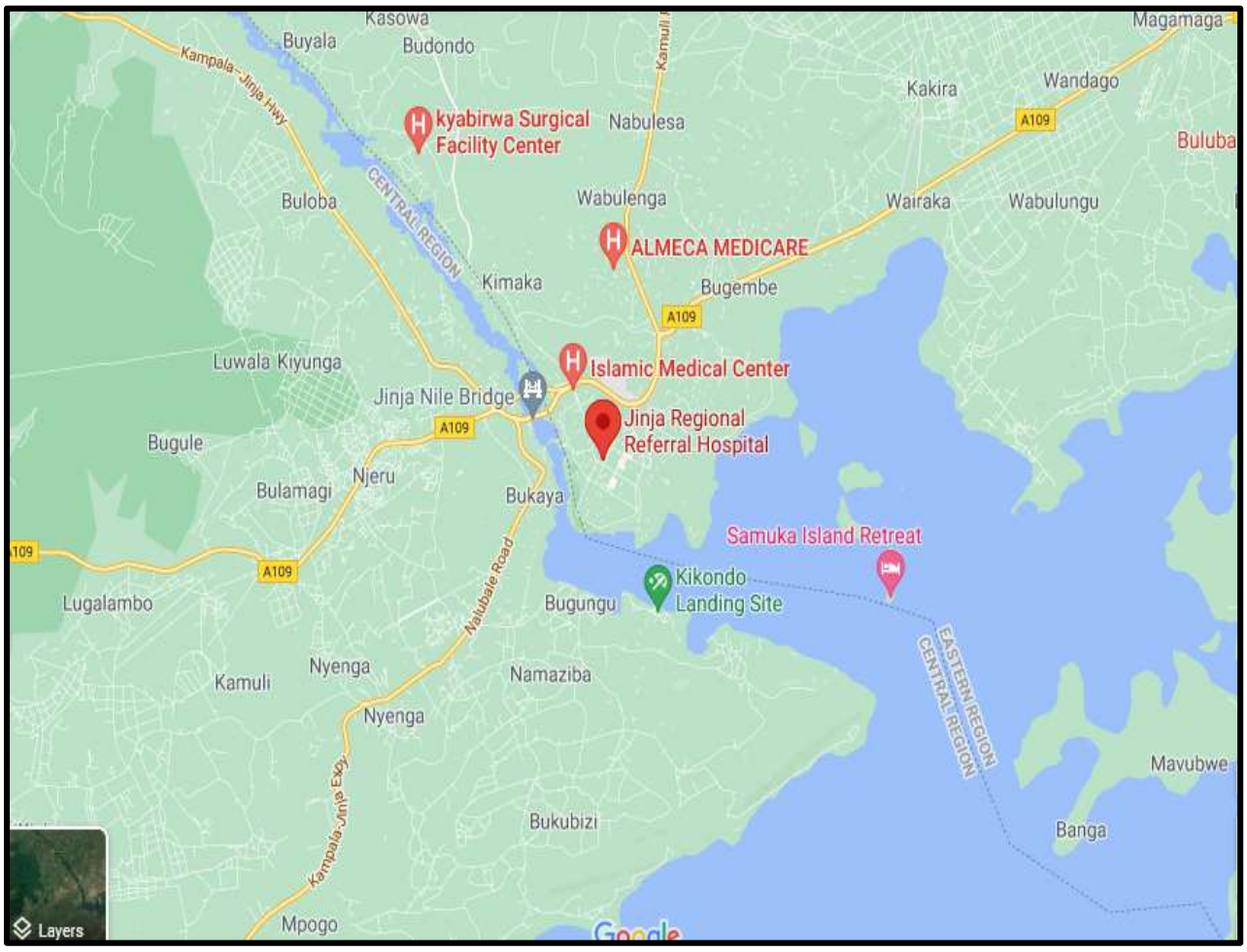
Bushenyi

Jinja

Appendix II: Google map showing Kampala International Teaching Hospital



Appendix III: Google map showing Jinja Regional Referral Hospital



Appendix IV: English Informed Consent

KAMPALA INTERNATIONAL UNIVERSITY (KIU) WESTERN CAMPUS (WC)

RESEARCH ETHICS COMMITTEE (REC)

PO Box 71, Bushenyi, Uganda; Tel: +256 758 096 775

E-mail: kiurec2017@kiu.ac.ug; Website: www.kiu.ac.ug

INFORMED CONSENT DOCUMENT

Study Title:

Epidemiology and early outcomes of assault injuries among trauma patients presenting at Kampala International University Teaching Hospital and Jinja Regional Referral Hospital

Principal Investigator: Dr. ASIIMWE DANIEL

INTRODUCTION

What you should know about this study

- You are being asked to join this research study voluntarily;
- This consent form explains the research study and your part in the study;
- Please read it carefully, and take as much time as you need to understand it well;
- You can choose not to take part; and if you join, you may quit at any time. There will be no penalty if you decide to leave the study.

Leave blank (for REC Office only): NAME OF REC CHAIR: ***Dr. Patrick Mbyemeire*** TELEPHONE: ***+256 772601482*** KIU REC STAMP:	**For REC Office use only:** APPROVAL DATE: 8th June 2021 APPROVED CONSENT REC VERSION NUMBER: 02 PI's NAME: Dr. Daniel Asiimwe REC NO: ***UG-REC- 023/2021-17***

VERSION: TWO

KIU RESEARCH ETHICS COMMITTEE(REC)
APPROVED
VALID UNTIL
08 JUN 2022
P.O. Box 71, Bushenyi - Ishaka

Brief background to the study

One of the leading causes of preventable injuries worldwide is violence with interpersonal violence accounting for 37% of 1.6 million intentional injuries deaths worldwide. In Uganda, deaths due to intentional injuries led to an increase in deaths by 111% and years lived with disability (YLD) by 105%. In addition, violence and assaults were ranked 4th, accounting for 11.8% of non-road traffic injuries.

Purpose of the research project.

This study is intended to assess the epidemiology and early outcomes of assault injuries presenting at Kampala International University Teaching Hospital and Jinja Regional Referral Hospital.

Why you are being asked to participate?

We are selecting a total of 89 participants that is 34 participants from KIU-TH and 55 participants from Jinja regional referral hospital to take part in the study to provide information. Your participation will be of great importance to the KIU-TH community, Jinja regional referral hospital community, Bushenyi community, Jinja community, and Uganda at large. This information will also help to generate the required protocol for the management of assault injuries in these institutions.

Procedures.

If you agree to participate, you will answer some questions related to assault injuries and their early outcomes.

Leave blank (for REC Office only): NAME OF REC CHAIR: ***Dr. Patrick Mbyemeire*** TELEPHONE: ***+256 772601482*** KIU REC STAMP:	**For REC Office use only:** APPROVAL DATE: 8th June 2021 APPROVED CONSENT REC VERSION NUMBER: 02 PI's NAME: Dr. Daniel Asiimwe REC NO: ***UG-REC- 023/2021-17***

VERSION: TWO

KIU RESEARCH ETHICS COMMITTEE(REC)
APPROVED
VALID UNTIL
08 JUN 2022
P.O. Box 71, Bushenyi - Ishaka

Risks/Discomforts.

There are no major foreseeable risks to the participants except the risk of social harm if there is a breach of confidentiality. However, this will be mitigated by ensuring that most confidentiality is upheld.

Benefits.

There will be no material benefits for participating in the study apart from the medications that will be prescribed. It is also anticipated that the results of the study will help the management of the facilities and other stakeholders to develop treatment protocols for managing assaults.

Incentives/Rewards for Participating.

There will be no cash rewards or any other incentives for participating in this study although some reimbursements and refreshments may be given when warranted. Only indirect benefit in form of treatment to the participants will be given.

Protecting data privacy and confidentiality.

Privacy during interviewing and confidentiality of information is guaranteed. You will be interviewed separately from other clients and in case you know one of the researchers, you can be interviewed by someone else or withdraw from the study. You are not required to give your name to avoid information being traced back to you. The information collected will only be accessible to the research team.

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Right to refuse/withdraw.

Participation in this study will not in any way be compulsory. Detailed information about the study will be explained to the participants and after demonstrating understanding of all the details of the study, informed consent forms will be issued and signed by the participants before the interviews and clinical examination. Any participant who will feel uncomfortable continuing with the study will be allowed to withdraw without any penalty.

Who do I ask/call if I have questions or a problem?

In the event of something abnormal happening, the participant is expected to contact or call the chairperson of KIU-REC on this address: P.O Box 71, Bushenyi Mobile: +256-772601482; Email: kiurec@kiu.ac.ug; Principal investigators' contact: +256 783565839; email: dr.asiimwedaniel@gmail.com

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What does your signature (or thumbprint/mark) on this consent form mean?

Your signature on this form means that you have:

- Been informed about this study's purpose, procedures, and possible benefits and risks;
- Been given the chance to ask questions before you sign; and
- Voluntarily agreed to be in this study.

_____	_____	☐	_____
Name of participant	Signature of participant	Thumbprint	Date

_____	_____	☐	_____
Name of the person obtaining Consent	Signature	Thumbprint	Date

_____	_____	☐	_____
Name of the witness	Signature of witness	Thumbprint	Date

Leave blank (for REC Office only):	**For REC Office use only:**
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TELEPHONE: ***+256 772601482***	APPROVED CONSENT REC VERSION
KIU REC STAMP:	NUMBER: 02
	PI's NAME: Dr. Daniel Asiimwe
	REC NO: ***UG-REC- 023/2021-17***

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Appendix V: English questionnaire

Title; Epidemiology and early outcomes of assault Injuries among trauma patients presenting at Kampala International University Teaching Hospital and Jinja Regional Referral Hospital.

Patient's Demographic Factor Reg. No……/S. No……..Phone……..…

Phone number of (NOK) ……....

Section A: Trauma Patient's Demographic and medical factors

1. **Age of the patient……**
2. **Sex:** Male: ☐ Female: ☐
3. **Level of Education**

Not attended: ☐ University ☐

Primary: ☐ Other training ☐

Secondary: ☐

4. **Employment:**

Employed ☐

Unemployed ☐

5. **Occupation**

Student ☐

Civil servant ☐

Casual labor ☐

Private employees ☐

Small business owners ☐

Farmer ☐

Other specify …….

6. Place of Residence

Rural (Village) ☐ Urban (Town) ☐

7. History of alcohol consumption?

Yes ☐ No ☐

8. Type of Trauma

Assault ☐

Non-Assault ☐

Section B: Assault Event

1.When did the assault happen?

Day Time a) Morning (6 am to 12 Noon) ☐ afternoon (12 non to 7 pm) etc ☐

Night Time (b) before midnight ☐ past mid-night ☐

2.Where did the incident happen?

Home ☐ Work ☐ Others …….

3.Weapon Used

Involved no weapon ☐ Involved weapon use ☐

If involved weapon use, specify ……

4.Perpetrator

Known ☐ unknown ☐

Precise relationship if known…….

Section C: Type of Injury (ies) Sustained

1. **Body region injured /diagnosis**

Head injury ☐ Spine ☐

Neck ☐ Pelvis ☐

Chest ☐ Upper limbs ☐

Abdomen ☐ Lower limbs ☐

Type of Injury

Fracture ☐ Cuts & soft tissue injuries ☐

Dislocation ☐ Burns ☐

Tendon ☐ Strangulation ☐

2. Kampala Trauma Score 11 (Total = A+B+C+D)

Mild 9 -10 ☐ Moderate 7 -8 ☐ Severe ≤ 6 ☐

Category	Clinical parameters	Description	Score
A	Age (years)	5 - 55	1
		< 5 > 55	0
B	Systolic BP on admission	>89 mmhg	2
		89 - 50	1
		< = 49	0
C	Respiratory rate on admission	10 – 29 bpm	2
		>=30	1
		< = 9	0
D	Neurological Status	A	3
		V	2
		P	1
		U	0
E	Score for serious injuries	None	2
		One	1
		> one	0

3. Prehospital transport by

Relative ☐ Nurse from the hospital ☐

Police ☐ Others ☐

4. Arrival interval to hospital arrival

< One hour	☐	> 12-24 hours	☐
>1-6 hours	☐	> 24-48 hours	☐
>6-12 hours	☐	> 48 hours	☐

Section D: Early in-hospital outcomes

Treated and discharged from ED	☐	Referred	☐
Operated and admitted	☐	Died at ED	☐
Admitted in the ward	☐	Death in the ward/ICU	☐

If referred, why and where

……

If operated and admitted specify the operation

Surgical Toilet and suturing ☐

Orthopedic procedure ☐

Laparotomy ☐

Other specify ……

Appendix VI: Runyankore Informed consent

KAMPALA INTERNATIONAL UNIVERSITY (KIU) WESTERN CAMPUS (WC)
RESEARCH ETHICS COMMITTEE (REC)

PO Box 71, Bushenyi, Uganda; Tel: +256 758 096 775
E-mail: kiurec2017@kiu.ac.ug; Website: www.kiu.ac.ug

OKUSHABWA OKWIKIRIZA OKWETABA OMUKUCONDOOZA

Omutwe gw'omushomo:

Okucondooza ebirikuretera obuhuta oburikuruga aha muntu kuhutaza mugyenzi we hamwe nebirikuruga omu buhuta obwo ahonaho ahabarweire abarikwija aha irwariro erya Kampala International University Teaching Hospital na Jinja Regional Referral Hospital

Mukuru w'okucondooza: Dokita Asiimwe Daniel

OKWANJURA

Ekyoshemereire kumanya aha kucondooza oku:

- Noshabwa kwetaba omumushomo ogw'okucondooza oku oyekundiire
- Egyi ebaruha neshoborora ahakucondooza oku hamwe nekichweka kyawe omumushomo ogu
- Noshabwa okugishoma nobwegyendesereza kandi ogihe obwiire obukumara
- Nobasa kwanga okwegaita omukucondoza oku, kandi na kworasharemu okugwetabamu , oine orusa kurugamu eshaaha yoona. Tihariho kufubirwa kwoona waheza kurugamu

Okucondoza oku omu bugufu

Omu Uganda, abantu kuhutaza bagyenzi baabo hamwe nokukoresa amaani gekifuba narishi ebindi bikwato byokurwanisa ebirikubasa kuhutaza mutahi waawe, ninga okutinatinisa abantu bikashangwa byatwara omwanya gwa kana kandi bikuretera obucweka 11.8 ahari igana omubantu abarikutunga obuhuta obutari bwa butandu hamwe nabari kufa.

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Omugasho gw'okucondooza oku

Okucondoza oku nikugyezaho okureeba ebyakubaasa kuba nibyo birikuretera obuhuta oburikuruga aha muntu kuhutaza mugyenzi we hamwe nebirikuruga omu buhuta obwo ahonaho ahabarweire abarikwija aha irwariro erya Kampala International University Teaching Hospital na Jinja Regional Referral Hospital okwenda ngu tukamanya embeera okweyemereire hati haza kituhwera kutekaho emiringo emwe nemwe eyakubasa kukyendeza ahamuhendo gw'abantu abarikuhutazibwa hamwe nabarikufa ahabw'obuhuta obwo.

Nahabwakyi oshabirwe kwegaita omukucondooza oku?

Kworabe wahikwaho obuhuta burikuruga ahakuhutazibwa omuntu mutahi waawe, oine ebirikwetagisa okwegaita omukucondooza oku. Turikutorana abantu 89 okuruga omumarwariro aga okwejumbira omukucondoza oku. Okwegaita kwawe omukucondoza oku nikuza kuba okwomugasho muhango omumarwariro aga hamwe nabantu boona.

Nkokuturakore

Kworayikyirize okwegaita omukucondoza oku, mukuru w'okucondoza oku narishi orabe namuyambaho naija kugyira ebiyakubuzaho ebikwatiraine n'obuhuta obuwatunga kandi agume nakukuratirira obwo orikuhebwa obujanjabi.

Okuteganisibwa

Tihariho kuteganisibwa kwona okuturikutekateka ngu nikuza kubaho, oyihireho shana twayatura ebihama byawe. Beitu kandi hoona ekyi tikyirabeho. Hoona nabwe nobasa kuteganisibwa omu bwongo bwawe waaba noijuka ebyabireho orikuza kugyira obuhuta obu. Mukuru w'okucondoza oku naija kuyamba abo boona abarateganisibwe okwijuka ebyabireho barikuza kutunga obuhuta ari kubohoreza ow'omushaho orikuhumuriza.

Okuganyirwamu

Tihariho sente ezirahebwe ahabw'okwegaita omukucondoza oku, beitu hoona nitutekateka ngu ebirarugye omukucondoza oku nibyija kuyamba amarwariho hamwe nebindi bitongore omu ihanga okutekaho amateka agarayambe kandi gakagyezaho okuzibira obuhuta obu ngu butabaho.

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Ebirabo

Tihariho sente ninga ebindi birabo ebirahebwe ahabw'okwegaita omukucondoza oku konka nihabasa kubonekaho akasente kokukuyamba okutambura hamwe nebyokunywa , katugyire ngu mukuru w'okucondoza yaaba nayenda ngu ogume oije ahairwariro abashaho bakurebe.

Okubiika ebihama.

Okubiika ebihama byawe nitutekwa kukyikora. Noija kubuzibwa ori wenka hatariho abandi bantu, kworashangye ngu oine oworikumanya omuri abo abarabe nibabuuza ebibuzo, oine orusa okutorana ondijo omuntu otarikukumanya narishi nobasa kurugamu omukucondoza. Otakahereza amaziina gaawe kugyira ngu ebihama byawe bitakamanywa ahabwa amaziina gaawe. Ebiturakwiheho byoona nibiza kuba nibimanywa abari omukucondoza boonka.

Oine orusa okuruga omukucoondoza oku

Okwegaita omukucondoza oku nokwa nyekundiire. Okushobororwa omubwijwiire ebikwatirine nokucondoza oku nibiza kuhebwa abantu boona abarayejumbire mu, nihija kuba hariho ebaruha yokutaho omukono erikworeka ngu wayikyiriza kwegaita omukucondoza oku tutakatandikire yintervyu nari okukyeberwa kwoona. Orahurire ntu tiyabasa kwenda kugumizamu nokucondoza oku naija kuhebwa orusa okurugamu hatariho kufubirwa kwona narishi okumwima obujanjabi.

Nimpikirira oha naabanyine ekibuuzo narishi natuunga ekizibu?

Kuwakuhikwaho ekizibu kyoona narishi okenda kushoborekyerwa nobaasa kuhikirira orikwebembera okucondoza oku Dr Asiimwe Daniel +256783565839; email dr.asiimwedaniel@gmail.com

Narishi orikwebembera akakiiko kokucondooza omuri KIU Dr Mbyemeire Patrick 0772 601482; Email: kiurec@kiu.ac.ug.

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Okuta omukono gwawe ninga ekinkumu kyawe aha baruha egi nikimanyisaki?

Omukono gwawe aha baruha egi nikimanyisa ngu;

- Omanyisiibwe aha bigyendererwa by'okucondooza oku, emitwarize, ebirungi hamwen'ebizibu ebikwatireeine nakwo
- Oheibwe omugisha kubuuza ebibuzo otakateireho omukono oba ekinkumu kyaawe
- Oyikiriize kandi oyekundeire kuza omukucondooza oku

…….. …..……..…….. ……..

Eizina ry'owayetaba omukocondooza Omukono oba ekinkumu kye Ebiro byokweezi

…….. ……..

……..

Eiziina ry'omucondozi Omukono gwe Ebiro byokweezi

…….. …… ……

Eiziina rya owaabaariho nkomuzurizi Omukono oba ekinkumu kye Ebiro byokweezi

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Appendix VII: Runyankore Questionnaire

Omutwe gw'omushomo:

Okucondooza ebirikuretera obuhuta oburikuruga aha muntu kuhutaza mugyenzi we hamwe nebirikuruga omu buhuta obwo ahonaho ahabarweire abarikwija aha irwariro erya Kampala International University Teaching Hospital na Jinja Regional Referral Hospital

Ebirikukwata aha murweire ; enaaba ……/S. No……..esimu…….…. Enaamba y'esimu ey'omuntu orikumureberera ……....

EKICWEKA KY'OKUBANZA: Ebirikukwata aha murwaire

1. **Emyaaka y'omurwaie:……..**
2. obuhangwa : omushaija: ☐ omukazi: ☐
3. **Rurengo kyi orwoshomire**

   Tindashomire : ☐ yunivesite ☐

   Purayimare: ☐ agandi matendekyero ☐

   Senior: ☐
4. **Employment:**

   Ninkora ☐

   Tindikukora ☐

5. **omurimo**

omwegyi ☐

ninkora na gavumenti ☐

ninkoresa emikono ☐

ninyekoresa ☐

nyine ka buzinesi kakye ☐

omuhingyi ☐

6. **Omwanya ogworikuturamu**

Ekyaaro ☐ omu Tauni ☐

Ekickweka kya kabiri: ebikwatirine nokuhutazibwa

1. wahutazibwa shaaha zingahi?
   a) **Eshaaha zeihangwe:** omukasheshe (ahagati ya 12 zakasheshe kuhisya 6 zeihangwe) ☐
      omwihangwe (ahagati ya shaaha 6 kuhisya shaaha 1 yomwabazyo) ☐
   b) **Eshaaha z'ekiro:** zitakahikyire shaaha mukaaga zekiro ☐ zaba zarengyire shaaha 6 zekiro ☐

2. byaberaho nkahi?
   Omuka ☐ ahamurimo ☐ ahandi …….

3. Nikyirwaniso kyi ekyakoresibwa
   Tihaine kyirwaniso ekyakoresibwa ☐ hariho ekyirwaniso ekyakoresibwa ☐

Kuharabe hariho ekyirwaniso ekyakoresibwa , kitugambire

……

4. Nonywa amarwa?
   Eego ☐ Ngaaha ☐
5. Owakuhutaza

   Nimumanya ☐ tinkumumanya ☐

Ekickweka hya kashatu: watunga kikakyi ky'obuhuta

7. ekicweka ky'omubiri ekyahutazibwa

omutwe	☐	omugongo	☐
amaraka	☐	omumanyanya	☐
ekyifuba	☐	emikono	☐
ahaibondo	☐	amaguru	☐

8. Ekika ky'obuhuta

nahendeka	☐	banshara kandi nagyira obuhuta bw'enyama	☐
eigufa ryateruka	☐	banyostya	☐
ekitsi kyahutara	☐	baniganiga	☐

9. Kampala Trauma Score 11 (Total = A+B+C+D)

☐ ☐ ☐

Mild 9 -10 Moderate 7 -8 Severe ≤ 6

Category	Clinical parameters	Description	Score
A	Age (years)	5 – 55	1
		< 5 > 55	0
B	Systolic BP on admission	>89 mmhg	2
		89 – 50	1
		< = 49	0
C	Respiratory rate on admission	10 – 29 bpm	2
		>=30	1
		< = 9	0
D	Neurological Status	A	3
		V	2
		P	1
		U	0
E	Score for serious injuries	None	2
		One	1
		> one	0

10. Wakoresa ntamburakyi otakahikyire omwirwariro

omunyabuzaare ☐ omunasi kuruga aha irwariro ☐

Police ☐ ezindi ☐

11. wamara eshaaha zingahi okuhika aha irwariro

eshaaha tiyahika ☐ hagati yeshaaha 12 kuhika 24 ☐

hagati ya shaaha 1 kuhika 6 ☐ hagati yeshaaha 24 kuhika 48 ☐

hagati ya shaaha 6 kuhika 12 ☐ hanyima yeshaaha 48 ☐

Ekicweka kyakana: omubiro 30 ori omwirwariro habirehokyi

Nkaragurirwa kandi nasiburwa ☐ bakanyohereza omwirwariro erindi ☐

Nkashemezibwa kandi nahebwa ekitnda ☐ akafa ☐

Bakampa ekitanda aha woodi ☐ akafera aha woodi/ICU ☐

Kworabe wayoherezibwe omwirwariro erindi, ahabwenkyi?

……

Ebiro ebiwamazire omwirwariro ……..

kworabe washemezibwe kandi okahebwa ekitanda, tushobororere ekyiwashemezibwe

bakambaziira ☐

okushemezibwa kw'amagufadure ☐

bakashemeza ahanda ☐

ebindi, shoborora ……

Appendix VIII: Lusoga consent form

KAMPALA INTERNATIONAL UNIVERSITY (KIU) WESTERN CAMPUS (WC)

RESEARCH ETHICS COMMITTEE (REC)

PO Box 71, Bushenyi, Uganda; Tel: +256 758 096 775
E-mail: kiurec2017@kiu.ac.ug; Website: www.kiu.ac.ug

Omutwe gwokunhonhereza:

Okunhoonhereza ebileeta, obubendhe obuvaamu no omuwendo gwaabantu abatuusibwaaku obuvunhe ni banaibwe mwa'abo abaidha mu indwaaliro lya Kampala International University Teaching Hospital ni Jinja Regional Referral Hospital

Omunhonhereza omukulu : Omusawo Asiimwe Daniel

Okwandhula:

Kyolina okumanha ku kunhonhereza kunho

- Osabibwa okweyunga kukunhonhereza kuno kyeyeendeire;
- Olupapula lunho lwiinhonhola okunhonhereza nomulimo gwo mu kwoo;
- Kale lusome nhobweegendhereza otwaale obwiire bwo okulutegeera;
- Oliweidhembe obutaigaita ku kunhonhereza kuno ,atee ni bwooba weegeisee ku, osobola okuvaamu akaseera koonakoona..ezira kunenia singa ovaamu.

Ebitono ebisiinziilwaku okunhonhereza kuno

Mu Uganda, obusambeituko no kutagandhulwa byaagema kya kuna nobutundhu 11.8% ku buvunhe nookufa okutali kwa biidhuka.

Ekigendererwa kyo kunhonhereza kuno

Okunhonhereza kuno kuluubililwaamu okufunha ensaansaana no kutangiramu obulumbagani neebiva mu bulumbagani eri abantu abatwalibwa mu Kampala International University Teaching Hospital ne Jinja Regional Referral Hospital tusobole okufuna ekifaananye kyabuti ekinayamba mu kufuna ebifo ebyeetaagamu okulongosa mukukendeeza omuwendho gwa abafa nabalwaala olwo obuvunhe bunho.

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Lwaaki osabiibwa okwenhigiramu?

Bwooba wafunaku obuvunhe nga buviira kubutabanguko obwaletebwa omuntu owundi, otuukana okwenhigira mu kunhoonhereza kuno. Tulikuloondha omugeite gwa bantu kyendha na bataanu okuva mu malwaaliro gano basobole okutuwa obubaka obwo. Okwenhigiraamu kwo kujyakuba kwa mugaso inho eeri amalwaaliro gano nekitundu okutwaalila walala.

Byooja okubitamu.

Bwoikiriza okwenigiramu, omunhonhereza omukulu ooba omumyuuka we, ajaakubuuza omukobere kubyaakutuukaku mubuvunhe atandiike okulondhoola nga bwofunha obwiidhandhabi

Obubendhe/okunhigirizibwa

Wazira bubendhe bwaamaanhi busuubirwa kutuuuka kubenigiramu okutoolaku akabendhe ko kukolagana naabantu singa ebintu tibikuumibwa nga kyaama. aaye kinho kiidhakolebwaaku nga tukuuma ebyaama ebisinga obunji. neekindi,oyinza okutulugunizibwa mu bwongo okwidukira akaire ako akazibu abazigu webakutuusaaku obuvunhe. Omunhonhereza ajya kugemaganha nomusawo wabalwaire beemitwe okuyamba abannaba bakoseibwa mu kinho..

Ebyokufunhamu

Tiwajakubaawo byakufunha ebibonhebwaaaku ,aaye kisuubilwa nti ebinhaava mu kunhoonhereza kuno bija kuyamba mukutambuza amalwaalilo gano nokuyamba aboobuyinza abandhi mwi ighanga okubaga amateeka aganhaayamba mu kwiidhandhaba no kutangira obuvunhe nga buva kubulumbagani.

Ebirabo eeri abeinigiiremu

Tibajakuweebwa sente oba birabo olwokweinigiramu okutoolaku entambula oba nebyokunwa/ebyokulya ebiyinza okubaweebwa.okugeza nga omunhoonhereza ajya kulondoola okuswiika wooghangalila mwiidwalilo .kuganhulwa kwabweetaavu nga obwiidhandhabi kwonka nookujya okugabibwa .

Leave blank (for REC Office only): NAME OF REC CHAIR: ***Dr. Patrick Mbyemeire*** TELEPHONE: ***+256 772601482*** KIU REC STAMP:	**For REC Office use only:** APPROVAL DATE: 8th June 2021 APPROVED CONSENT REC VERSION NUMBER: 02 PI's NAME: Dr. Daniel Asiimwe REC NO: ***UG-REC- 023/2021-17***

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Okukuuma ebyaama bya bantu nobubaka.

Ebyaama nebidhuubo oluvainhuma lwokubuzibwa biidha kukuumibwa butiribiri. Baidha kukubuuza nga oliwenka mukifo ate bwoba nga oidigani no munhoonhereza, baidha kukuwa omuntu owundi ooba okusalawo okuva mu kunhonhereza kuno.Tosabiibwa kuwaayo linha lyo okweewala abantu okutegeera ebidhuubo byo oba obubaka bwo . obubaka obwiidha okusolozebwa bwidha kubonebwaaku ekikunsu kya abanhonhereza bonka.

Eidhembe okudheema/okuvaamu.

Okwenhigira mukunhonhereza kuno kwa kyeeyendeire. Ebigemagana no kunhonhereza kuno biidha kwinhonholwa abantu abaidha okwenigiramu. Oluvainhuma lwo kubonha nti babitegeire, baidha kuweebwa empapula edhokwidhuza okwiikiriza kwaibwe na banhonhereza nga bakaali kutandiika kubuuzibwa oba okubakebera. Omuntu yeenayeena anaafunamu ookaluubizibwa mu kunhonhereza kuno, aidha kwiikirizibwa okuvaamu awazira kibonherezo waile okumutoolaku byalina okufuna .

Aani gwembuuza/gwe nkubila bwemba neekibuuzo oba ekizibu ?

Wewabaawo ekizibu ooba okweebuza ,osuubilwa okukubila omunhonhereza omukulu Dr asiimwe Daniel ku Tel: +256783565839; email dr.asiimwdaniel@gmail.com chairperson Dr. Mbyemeire Patrick of KIU-REC on this address:P.O Box 71, Bushenyi;Mobile: +256-772601482; Email: kiurec@kiu.ac.ug.

Leave blank (for REC Office only): NAME OF REC CHAIR: ***Dr. Patrick Mbyemeire*** TELEPHONE: ***+256 772601482*** KIU REC STAMP:	**For REC Office use only:** APPROVAL DATE: 8th June 2021 APPROVED CONSENT REC VERSION NUMBER: 02 PI's NAME: Dr. Daniel Asiimwe REC NO: ***UG-REC- 023/2021-17***

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Okusaininga kwo(sayyini oba ekinkumu) kitegeezaa ki ku lupapula luno?

Okusaininga kwo kitegeeza inti:

- Bakukobeire ebigemagana no okunhonhereza kuno mu nsonga lwaki bakukoze,ebyokubitamu,omugaso ogusuubirwa no bubendhe obwandibaamu
- Oweireebwa akikisa okubuuza ebibuuzo nga okaali kusayininga; eraa
- Oikiriiza kyeyendeire okuba mu kunhoonhereza kuno.

_____ _____ ☐ _____

Amainha goo saiyyin yo / ekinkumu enaku dhoomweezi

Omukiise womumateeka

_____ _____ ☐ _____

Amainha go omuntu afuna olukusa Saiyyini ☐ enaku dhomwezi

_____ _____ ☐ _____

Amainha gho mudhulizi sayyini yo mudhulizi ekinkumu ennaku dhomewzi

Leave blank (for REC Office only): NAME OF REC CHAIR: ***Dr. Patrick Mbyemeire*** TELEPHONE: ***+256 772601482*** KIU REC STAMP:	**For REC Office use only:** APPROVAL DATE: 8th June 2021 APPROVED CONSENT REC VERSION NUMBER: 02 PI's NAME: Dr. Daniel Asiimwe REC NO: ***UG-REC- 023/2021-17***

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P.O. Box 71, Bushenyi - Ishaka

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Appendix IX: Lusoga questionnaire

Omutwe gwokunhonhereza: Okunhoonhereza ebileeta, obubendhe obuvaamu no omuwendo gwaabantu abatuusibwaaku obuvunhe ni banaibwe mwa'abo abaidha mu indwaaliro lya to Kampala International University Teaching Hospital ni Jinja Regional Referral Hospital

Enhamba……/S. No…….. Eisumu…….….

Enhamba yeisimu ey'omugenza ……....

Section A: Ebigemagana no'mulwaire

1. **Emyaaka dho omulwaile**

   :……..

2. Eikula: Musaadha: ☐ Mukazi: ☐
3. **Okusoma kwo**

   Tyaasoma: ☐ University ☐

   Primary: ☐ Other trainings ☐

   Secondary: ☐
4. **Gyo okolera:**

   Ndhina omulimo ☐

   Nzila mulimo ☐

5. **Omulimo gwo**

   Musomi ☐

   Mukozi gha Gavumenti ☐

   Mele yaa leero ☐

   Neekozesa ☐

   Musuubuzi ☐

   Mulimi ☐

6. **Ekifo gyo ghaangaalila**

Mukyaalo ☐ Mutawuni ☐

Section B: Akaseera ko'buvunhe

1.Wagwaali mu bazigu?

Misanha a) Kunkyo (6am to 12 Noon) ☐ Kyeigulo (12 Noon to 7pm) ☐

Bwiire (b) Dhikaaliwera mukaaga ☐ Kuswiika mukaaga ☐

2.Kinho kyaakutuukiraku gha?

Ghaka ☐ Kumulimo ☐ Aghaandi …….

3. Ekyoogi kyaa kozesebwa

Ezila kyogi kyakozesebwa ☐ Baa kozesa ekyoogi ☐

Bwebaba baakozesa ekyoogi, kyoogi kii?…… …….

4. Wali onwyeileku ku mwenge?

Yee ☐ Mbee ☐

6. Omulabe /omuzigu

Mmwiidhi ☐ Timwiidhi ☐

Section C: Ekika ky'obuvenhe bwe ghafunha

7. Ekitundhu kyoomubiri ekya kosebwa

Omutwe ☐ Mugongo ☐

Enkoto ☐ Munkeende ☐

Ekifuba ☐ Bigere ☐

Muunda ☐ Mikono ☐

8. Ekika kyo buvunhe

Kumeneka ☐ Ebisale no kunuubulwa ☐

Kubinuka ☐ Kwookyebwa ☐

Tendon ☐ Kutugibwa ☐

9. Kampala Trauma Score 11 (Total = A+B+C+D)

Mild 9 -10 ☐ Moderate 7 -8 ☐ Severe ≤ 6 ☐

Category	Clinical parameters	Description	Score
A	Age (years)	5 – 55	1
		< 5 > 55	0
B	Systolic BP on admission	>89 mmhg	2
		89 – 50	1
		< = 49	0
C	Respiratory rate on admission	10 – 29 bpm	2
		>=30	1
		< = 9	0
D	Neurological Status	A	3
		V	2
		P	1
		U	0
E	Score for serious injuries	None	2
		One	1
		> one	0

10. Entambula okutuuka kwi edwaaliro

Abeekika ☐ Musawo wa idwaaliro ☐

Baapoliisi ☐ Abandhi ☐

11. Okutuuka kuu edwaaliro

☐

< One hour ☐ > 12-24 hours

>1-6 hours ☐ > 24-48 hours ☐

>6-12 hours ☐ > 48 hours ☐

Section D:Ebyaava mu bwiidhandhabi mu'naku asatu agaasooka mwi dwaliro

Bandidhandhaba ba nsiibula ku kazwalite ☐ Baatwongerayo ☐

☐

Bannhongoosa bampa neekitanda ☐ Yafiira ku kazwalite

Bampa ekitanda ku woodhi ☐ Yafiira ku woodhi ☐

Okwoongerayo awandi, lwaaki?

……

Enaku dhewamala mu idwaaliro ……..

Oba baakulongosa baakuwa nekitanda, baakulongoosa kii??

Kutunga nakutaaku bandegii ☐

Byamagumba ☐

Muunda ☐

Ebindhii ……

Appendix X: Approval letter from Research Ethics Committee

KAMPALA INTERNATIONAL UNIVERSITY

Western Campus
P O BOX 71 Ishaka, Uganda
Tel: +256 758 696 775
Email: kiurec2017@kiu.ac.ug
Website: www.kiu.ac.ug

RESEARCH ETHICS COMMITTEE (REC)

Our ref: KIU-2021-17

08th June 2021

Daniel Asiimwe
MMED/12122/181/DU
Student

APPROVAL OF YOUR PROPOSAL

Submitted Proposal: EPIDEMIOLOGY AND EARLY OUTCOMES OF ASSAULT INJURIES AMONG PATIENTS PRESENTING AT KAMPALA INTERNATIONAL UNIVERSITY TEACHING HOSPITAL AND JINJA REGIONAL REFERRAL HOSPITAL
Nr. KIU-2021-17

Reference is made to the above Protocol, which you submitted to the Research Ethics Committee (REC) for ethical review and approval. It has been noted that all the concerns raised earlier by the Committee, in its meeting of **28th April 2021**, have been properly responded to.

This is, therefore, to inform you that your study has been approved. You may now proceed with preparations to implement the research. Please note that this approval is for a period of one year.

As Principal Investigator, you are expected to fulfill the following conditions; which are part of the approval process regarding your study:

1. You are required to register the Protocol with the Uganda National Council for Science and Technology, according to the guidelines of the Council, for final clearance to undertake the research.

2. Any changes/amendments and/or additions to the Protocol, Consent Form and/or Data Collection Tools must be submitted to the REC for review and approval prior to activation of the changes.

3. Reports of unanticipated problems involving risks to participants should be submitted to REC.

KAMPALA
INTERNATIONAL
UNIVERSITY

Western Campus
P O BOX 71 Ishaka, Uganda
Tel: +256 788 096 775
Email: kiurec2017@kiu.ac.ug
Website: www.kiu.ac.ug

4. Only the approved Consent Forms should be used in enrolling participants. For that purpose, therefore, you should retain all signed Consent Forms on file.

5. In order to continue with the study beyond the approved period, a Continuing Review Application must be submitted to the REC ten weeks prior to the indicated expiration date of the approval.

The documents approved in this Application Process are listed below:

Document	Language	Version
Protocol	English	Version 2
Protocol Application Form	English	Version 1
Data Collection Tools (Questionnaire)	English, Runyankole & Lusoga	Version 2
Informed Consent Document	English, Runyankole & Lusoga	Version 2

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Mr. Claude Kirimuhuzya
Vice Chair, REC

Appendix XI: Authorization letter from KIU-TH

Kampala International University, W-C

Department of surgery

PO Box 71, Ishaka, Uganda

June 10th, 2021

The Director Clinical Services

Kampala International University- Teaching Hospital

PO Box 71, Ishaka

Dear Sir,

RE: PERMISSION TO CONDUCT RESEARCH STUDY AT KAMPALA INTERNATIONAL UNIVERSITY- TEACHING HOSPITAL

I am writing to humbly request permission to have my research study done at your Hospital.

I am a final year resident of surgery at Kampala International University, and am at the stage of collecting data and thereafter analyze so to have my Master's Thesis written. The study title is " Epidemiology and early outcomes of assault injuries among patients presenting at Kampala International University Teaching Hospital and Jinja Regional Referral Hospital ".

I hope your office will grant me permission to have participants recruited on emergency department and surgical ward within a period of three months. During the course of this study, I promise to be mindful of ethical issues as per UNCST guidelines.

Please enclosed is my KIU- REC approval letter.

Your positive response will be greatly appreciated.

Thank you

Yours sincerely,

.....

Dr. Asiimwe Daniel

0783565839

Appendix XII: Authorization letter from Jinja Regional Referral Hospital

MINISTRY OF HEALTH

JINJA REGIONAL HOSPITAL

JINJA HOSPITAL RESEARCH AND ETHICS COMMITTEE (JREC)

30th June, 2021

Our Ref: JREC 136/2021

To
Dr. Asiimwe Daniel
Investigator

Dear Sir,

RE: APPROVAL TO DO DATA COLLECTION AT JINJA REGIONAL HOSPITAL

I am glad to let you know that after reading through your research proposal titled:-

"Epidemiology and early outcomes of assault injuries among patients presenting at Kampala International university Teaching Hospital and Jinja Regional Referral Hospital ", I have found your study to be meeting the minimum technical and ethical standards for doing research at Jinja Regional Referral hospital

I hereby grant you approval to do data collection. Please note that all research undertakings should comply with guidelines for protection of human subjects in research.

This approval is granted under registration number *JREC* **136/2021** and should never be used for any other research process in the hospital apart from this study.

During the study period, keep in touch with the chairperson Jinja Hospital Research and Ethics Committee Dr. Tagoola Abner 0772408100 for any inquiries or email the secretary kasib4god@gmail.com.

Yours Sincerely,

FOR HOSPITAL DIRECTOR
30 JUN 2021
JINJA REGIONAL REFERRAL HOSPITAL
P O BOX 43 JINJA

Dr. Tagoola Abner (Sen. Cons. Pae
Chairperson JREC

cc. file

Appendix XIII: Kampala trauma score II

	Description	Score
A	Age (in years)	
	5-55	1
	<5 OR > 55	0
B	Systolic blood pressure on admission	
	More than 89 mmHg	2
	Between 89-50 mmHg	1
	Equal or below 49 mmHg	0
C	Respiratory rate on admission	
	10-29 /minutes	2
	30+	1
	< or equal 9/minute	0
D	Neurological status	
	Alert	3
	Responds to verbal stimuli	2
	Responds to painful stimuli	1
	Unrensponsive	0
E	The score for serious injuries	
	None	2
	One injury	1
	More than one	0
Kampala Trauma score total = A+B+C+D+E		
Mutooro, S., Mutakooha, E., & Kyamanywa, P. (2010, March/April). A Comparison of Kampala Trauma Score II with the New Injury Severity Score in Mbarara University Teaching Hospital in Uganda. *East and Central African Journal of Surgery, 15*(1), 62-72.		

Appendix XIV: Turnitin plagiarism receipt and report

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Dr Daniels

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