

**WORK-RELATED INJURIES AMONG SLAUGHTERHOUSE
WORKERS IN NAIROBI CITY COUNTY, KENYA**

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.

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DEDICATION

To my husband Stephen Riechi for the financing, and children; Brian, Tom and Joan for loving and encouraging me to keep moving even during murkiness.

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I would like to express my gratitude towards God almighty for the wisdom

He has bestowed upon me, the strength and the peace of mind and good health in order to

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ABBREVIATIONS AND ACRONYMS

EOH	Environmental and Occupational Health
KDHS	Kenya Demographic and Health Survey
KES	Kenya Economic Survey
KII	Key Informant Interview
KNBS	Kenya National Bureau of Statistics
KUERC	Kenyatta University Ethics Review Committee
MCA	Meat Control Act
NACOSTI	National Commission for Science, Technology and Innovation
NCC	Nairobi City County
NSHW	Nairobi Slaughterhouse Workers
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
SI	Slaughterhouse Industry
USA	United States of America
CDVS	County Director of Veterinary Services
COK	Constitution of Kenya
WHO	World Health Organisation
WIBA	Work Injury Benefits Act
DOSH	Director of Occupational Safety and Health Services

OPERATIONAL DEFINITION OF TERMS

Batch slaughtering: All the processes, namely; bleeding, skinning, evisceration and cutting that are performed in the same spot.

Biological infection: Infections that have sources including bacteria, viruses, insects, plants, birds, animals, and humans

Chemical injuries: Injuries that occur when living tissue is exposed to a corrosive substance, such as a strong acid or base

Housekeeping: State of the workplace with regards to organization, obstructions and cleanliness.

Injury taxonomy: The dissection and classification of injury events using injury reports and investigations.

Injury: Any damage to one's body

Musculoskeletal system: Combination of the muscular and skeletal systems working together and includes the bones, muscles, tendons and ligaments of the body.

Physical injuries: Injuries that serious or permanent disfigurement, or serious impairment or health or loss or protracted impairment of the function of any bodily organ or limb caused by accidents, hits, falls, slips, machines and more.

Slaughterhouse worker: Refers to a person who performs tasks within the slaughter house.

Slaughterhouse/abattoir: place where animals are slaughtered for food.

Trained incapacity: The inability to respond to new or unusual circumstances or to recognize when official rules and procedures should not apply or may be doing harm

Work related injury: Injury that can be attributed to someone's work or occupation.

Prevalence: Refers to the number of new cases cases in a given population at a given time.

Incidence: Refers to the number of new cases that develop in a period.

“at will”: Willingness and ability to give the desired information without being coerced or inflated benefits arising from participation.

Accident: An unfortunate incident that happens unexpectedly, typically resulting in damage or injury.

Basic Statistics: Descriptive statistics for quantitative data in form of frequency tables, percentages, pie charts and bar graphs.

Inferential statistics: Done using Chi square tests to determine the association between study variables at 95% confidence interval (P-value <0.05).

Abattoir: A French word which has same meaning as slaughterhouse.

Animal: Any mammal/bird declared by the MMSK by notice in the Kenya gazette to be an animal to which this act applies (MCA, cap 356) of the laws of Kenya

Carcass: The body of any slaughtered animal after bleeding and dressing (MCA cap 356)

Export Slaughterhouse: A slaughterhouse that slaughters animals and produces carcasses/meat, processed meat products for export besides supply the local market.

Health: A state of complete physical, mental and social wellbeing not merely the absence of disease or infirmity (WHO, 1946)

Health and safety policy: A written outline of an organisation/s general policy for health and safety, including the arrangement for carrying out the policy.

Local Slaughterhouse: Any place kept for the purpose of slaughter of animals for human consumption within the county (MCA, cap356 laws of Kenya).

Meat processing plant: A facility that receives meat or carcasses from slaughterhouses and processes them into meat and meat products either for local consumption or export.

Occupational Safety and Health (OSH): The science of anticipation, evaluation and control of hazards arising in or from the workplace that could impair the health and wellbeing of workers taking into account the possible impact on the surrounding communities and general environment.

ABSTRACT

Workplace injuries are no longer accidents; they are preventable. Increased meat consumption demand in developed countries means production of meat and meat products is poised to significantly increase. Working conditions in the slaughterhouse industry are of public health concern across the globe as it affects majority of slaughterhouse workers. The Slaughterhouse Industry being risky, requires enhancement of its workers' safety and health as they are regularly exposed to unsafe situations. This study therefore sought to establish work-related injuries among slaughterhouse workers in Nairobi City County, Kenya. The study specifically focused on socio-demographic factors, prevalence of work related injuries, individual factors and attitude on work safety among respondents. The study adopted a cross-sectional descriptive study design in 3 export slaughterhouses, 2 local category B slaughterhouses, 6 local category C slaughterhouses and 3 meat processing plants in Nairobi city county, Kenya. Latitude Of 1170S and the longitude of 36490E with a total size of 696 sq. Kilometres with a population of 4,397,073 people (KNBS 2019). Clearance to conduct the study was obtained from Kenyatta University graduate school, Kenyatta University Ethical Review Committee, National Commission for Science, Technology and Innovation (NACOSTI) and County director of Veterinary Services (CDVS) Nairobi City County. Quantitative and qualitative data collection methods were used. Quantitative data was collected using semi-structured questionnaire administered by trained research assistants. Qualitative data collection utilized key informant interview guides and focused group discussion schedules. The study targeted a sample size of 291 slaughterhouse workers out of 846 slaughterhouse workers who were randomly selected from 11 slaughterhouses in Nairobi City County and interviewed. Three focused group discussions were held and 22 key informants interviewed. Statistical Package for Social Sciences version 22.0 was used to analyze quantitative data. Descriptive statistics were used to present quantitative data in form of frequency tables, percentages, pie charts and bar graphs. Qualitative data from focused group discussion sessions and key informants were triangulated with quantitative data as direct quotes or narrations from respondents. Inferential statistics were done using Chi Square tests to determine the association between study variables at 95% confidence interval ($p < 0.05$). The results revealed that the prevalence of work related among slaughterhouse workers in Nairobi City County was 36.2%. The common cause of work related injuries were slips and fall. Wounds or superficial injuries were the most reported injuries. Majority of socio-demographic factors such as age ($p=0.045$), income ($p=0.027$) and highest level of education ($p=0.024$) were significantly associated with occurrence of work related injuries. Most of the individual factors such as work experience ($p=0.007$), awareness ($p=0.002$), training (0.026), motivation on work safety ($p=0.001$) and willingness to use personal protective equipment were significantly associated with work related injuries. 55.6% of respondents had negative attitude on adherence to work safety. The level of attitude ($p=0.014$) was significantly associated with occurrence of work related injuries. The study concludes that the prevalence of work related injuries was 36.2% among slaughterhouse workers in Nairobi City County. Majority of socio-demographic factors influenced occurrence of work related injuries which were: Age, Income and level of education. Most individual factors played a key role towards occurrence of work related injuries which included: Work experience, Awareness,

Training on work safety, Motivation and willingness to use PPES. Also categories of slaughterhouses was linked with level of compliance to OSHA, 2007. There were negative attitude towards adherence on work safety among respondents. These findings shall inform the County government of Nairobi together with management of slaughterhouses to enforce adherence to the policies on sensitization of work place safety, fostering attitude change through; trainings, motivation, self-awareness and use of appropriate personal protective equipment among slaughterhouse workers and circulation of constant reminders to reduce prevalence of work related injuries. This will ensure prevention of work related risks which may lead to ever rising cases of injuries. The study recommends that the income earned by slaughterhouse workers should be reviewed for better payment to avoid rushes at work so as to reduce high employee turnout associated with hiring of inexperienced individuals. Slaughterhouses should innovate injury mitigation measures such as; rewarding workers that promote safety in the slaughterhouse environment, training of workers and mentoring inexperienced employees.

CHAPTER ONE: INTRODUCTION

1.1 Background to the study

Traditionally, injuries were thought to be “accidents” or unforeseen events. (Escobar and Gutiérrez, 2014). This resulted in a historical neglect of the event as a public health issue. However, in recent times, knowledge and understanding of the nature of injuries and its cause has resulted in perception change and, made the term “accident”, especially in the workplace, inaccurate (Haegerich *et al*, 2014; Reid *et al*, 2017).

Injuries are now described as preventable events that has significance in public health (Ramos *et al* , 2015). They are not considered events that occur by chance anymore but events that can be studied and prevented. In public health, injuries have been categorized into intentional and unintentional injuries (Lyons *et al* , 2016). Like other industries, work-related injuries are not exceptional in the Slaughterhouse Industry (SI).

In sub-saharan African countries, per capita consumption of meat products is on the increase (Shibia *et al*, 2017). Increased meat consumption demand in developed countries means production of meat and meat products is poised to significantly increase. More people will be recruited to work in slaughterhouses, and production lines in the slaughterhouses will seek to maximize ‘efficiency’. This may lead to trained incapacity and proliferation of worker injuries. There is astirred interest to ensure slaughterhouse worker safety due to this increased demand. Working

conditions and public health risks in slaughterhouses across the globe are of public health interest as majority of slaughterhouse workers are at risk (Cook *et al.*, 2017).

In Kenya, like other developing African countries, the informal sectors accounts for 82.7 per cent of the total jobs according to the Kenya Economic Survey (KIS) of 2015 (KNBS, 2015). Workers in the informal sector are the most prone to work-related injuries, mainly due to the insecurity surrounding their employment, and lack of control over their employment conditions (Rockefeller Foundation, 2013). Slaughterhouse workers form part of this category. For these, Occupational Safety and Health Administration (OSHA) data of 2014 shows that repetitive motion causes injuries among slaughterhouse workers at rates that are nearly seven times that of workers in other industries (Lowe, 2016).

Work-related injuries in slaughterhouses require robust surveillance so as to initiate fitting mitigate programs. An informed understanding of the predictors of such injuries is important for effective surveillance (Leibler & Perry, 2017). Governments, other stakeholders in the meat industry including owners and actors should take a first stance in social protection of slaughterhouse workers. Programs that offer slaughterhouse workers' health and safety surveillance have been initiated in some countries. Early detection and intervention for health and safety issues helps prevent the development of occupational diseases or injuries that may have affected effective functioning of the workers (Wagner & Refslund, 2016).

Proactive worker health and safety approaches have been undertaken in different ways. Assessment of personal health habits and health risk factors that could lead to death and other adverse health outcomes are important in the slaughterhouse industry (Holland *et al.*, 2015). Counselling and provision of feedback in the form of educational messages plays a significant role in changing behavior thus altering work related injuries (Venable, 2016). In this continuum, work levels affect the balance between human resources and work demands due to risk of sickness, absence from work, and work disability (Ahlstrom *et al.*, 2010). Worker health and safety surveillances remains good avenues to ensure slaughterhouse worker safety, as they can be undertaken by both the regulators and other industry stakeholders, including slaughterhouse owners themselves. The slaughterhouse owners should have a thorough safety and health audits of their workplace to be carried out at least once in a year by a safety and health advisor who shall issue a report of such audit containing the prescribed audit containing the prescribed particulars to the slaughterhouse owners in payment of a period of a presented fee and shall send a copy of the report to the Director (DOSHS). The report referred to in subsection (1) shall be preserved and kept available for inspection by the occupational health and safety office. Most slaughterhouses do not adhere to this legislation and subsidiary laws, OSH, 2007 chapter II section 1.

1.2 Statement of the Problem

Workers in the informal sector including slaughterhouse workers are more prone to work related injuries (Wagner, 2016). Slaughtering animals and processing their

flesh is an inherently dangerous industry. Priorities are focused on company profits rather than workers' health and safety (Ferrante, 2015). The rate of injuries among slaughterhouse workers is nearly seven times that of workers in other industries (Lowe, 2016). Slaughterhouse workers are most at risk as they handle tools and equipment which exposes them to work-related injuries. They work for long hours in poor working conditions. State agencies responsible for ensuring a safe and healthy work environment have failed to institute and enforce basic labor laws to protect the workers (Cook *et al.*, 2017). Issues of trained incapacity are most prevalent in most established slaughterhouses. Workers are trained to respond mechanically or mindlessly to the dictates of the job. Slaughterhouses are characterized by many tasks with little variety and a lot of repetition. Most slaughterhouses do not have safety and health committees at the workplace in accordance with the regulations prescribed by the minister according to the OSH Act 2007, section 95 subsection 1. Training and supervision of inexperienced workers is lacking in local slaughterhouses thus causing ill health or bodily injury. Thus they are not adhering to the OSH 2007, section 99 subsection 1.

In Kenya, there is increased demand for meat production and consumption. This has led to trained incapacity and proliferation of injuries since working conditions are not in line with the recommendations of the Meat Control Act (Cook *et al.*, 2017). Current facilities and practices may increase occupational exposure to disease or injury and contaminated meat may enter the consumer market. Nairobi City County has the largest slaughterhouses in the country. With its rapidly increasing population

and rise in demand for meat, it does not have slaughterhouse worker injury mitigative strategy.

Most studies done on slaughterhouse workers have focused on incidence of slaughterhouse injuries. Other studies have focused on zoonotic diseases and contamination of meat products in the meat market. There has been scanty information on the influence of attitude towards slaughterhouse safety as a determinant of work-related injuries. There has been a neglect in implementation of injury mitigation measures especially in Nairobi City. The study therefore sought establish the prevalence of work related injuries, and attitude towards work safety among slaughterhouse workers in Nairobi City County.

1.3 Justification of the Study

All Kenyans, including slaughterhouse workers have the right to good health and safety. The Constitution obligates the maintenance of conducive environments that foster individual growth to the government (GoK, 2010). Nairobi City County is most the populous county in Kenya with an ever increasing demand for meat thus requires proactive action to forestall injuries in its slaughterhouses. It has the largest slaughterhouses in the country. Little data existed on slaughterhouse worker injuries in Kenya before 2012 (Cook *et al*, 2012). This has encumbered informed planning and resource allocation towards slaughterhouse worker safety and good health by the National and County governments. Therefore, government regulators at

both national and county government levels need data to help them design policies and strategies better working conditions in the slaughterhouse industry.

1.4 Research Questions

- (i) What are the socio-demographic factors associated with work-related injuries among slaughterhouse workers in Nairobi City County, Kenya?
- (ii) What are the individual factors associated with work related injuries among slaughterhouse workers in Nairobi City County, Kenya ?
- (iii) What is the prevalence of work-related injuries among slaughterhouse workers in Nairobi City County, Kenya ?
- (iv) What is the attitude on work safety towards work-related injuries among slaughterhouse workers in Nairobi City County, Kenya ?

1.5 Research Objectives

1.5.1 General Objective

The general objective of this study was to establish work-related injuries among slaughterhouse workers in Nairobi City County.

1.5.2 Specific Objectives

- i. To determine socio-demographic factors associated with work-related injuries among slaughterhouse workers in Nairobi City County, Kenya.
- ii. To identify the individual factors associated with work related injuries among slaughterhouse workers in Nairobi City Count, Kenya .
- iii. To establish the prevalence of work-related injuries among slaughterhouse workers in Nairobi City County, Kenya.

- iv. To determine the attitude on work safety towards work-related injuries among slaughterhouse workers in Nairobi City County, Kenya.

1.6 Delimitations and Limitations

1.6.1 Delimitations

The study was carried in eleven selected slaughterhouses in Nairobi City County. The study was specifically bound to the 291 sampled slaughterhouse workers in the selected slaughterhouses. The site was ideal for this study since Nairobi City is the most populous cosmopolitan county in Kenya with people from diverse cultural and socio-economic backgrounds. There is also increased demand for meat supply and consumption which increases pressure on the slaughterhouse workers to deliver their services. The study mainly reported on results on socio-demographic, individual, attitude on work safety and prevalence of work-related injuries as shown in Nairobi City County. The study is only generalizable to slaughterhouses in urban centres which exhibit almost similar characteristics.

1.6.2 Limitations

The study encountered unresponsive respondents together with slaughterhouse managers who were not willing to give information or allow access to the study site due to disregard of standards and policies in slaughterhouse safety and health. This was solved by explaining to them that the study information was kept confidential and it was mainly used for academic purposes. Limited timelines which would significantly enhanced data validity and reliability were overcome by selecting a representative sample size and use of trained research assistants. There were other

problems related to the slaughterhouse industry that could have been investigated like language barrier which was encountered by interpreting the questions into local language or Kiswahili by field assistants in instances where respondents were not well versed in English.

1.7 Conceptual Framework

As can be seen from figure 1.1 below, work-related injuries can be as a result of several factors that expose individuals to be at risk in the slaughterhouse industry. The study specifically identified socio-demographic factors, individual factors and attitude towards health and safety policies as hypothesized risk factors of work-related injuries in slaughterhouse industry. The socio-demographic factors covered include age, sex, level of education and income. Individual characteristics included level of knowledge, awareness on work-related injuries, work experience and training on slaughterhouse injuries.

Slaughterhouse workers are bound to neglect the health and safety policies that have been put forth in their workplace despite it being a risk environment. Therefore, the study slotted attitude toward health and safety policies as the other independent variable. The main aspects included use of PPEs, housekeeping, reporting of risks and adherence to safety & health policies. The study further hypothesized prevalence of work-related injuries in form of the injuries suffered by workers in the course of working in the slaughter house industry. These included wounds, burns, scalds, bone fractures, backaches among other forms of injuries.

Laxity in the enforcement of existing frameworks, issues of hygiene, slaughtering sick animals, lack of training, batch slaughtering, and worker- issues, like sicknesses, are some of the triggers of slaughterhouse worker injury. Without interventions, these factors couple with issues related to ineffective policy, worker characteristics, and injury management protocols to result in impacts, such as high worker turnover, increased crime, contaminated meat, worker deaths, disintegrated families, and poor economic growth. It suffices that meat or meat products from a meat industry that lack intervention mechanisms to deal with the factors that lead to slaughterhouse injuries can have far-reaching consequences to the meat-eating and non-meat populations.

Interventions to prevent work related injuries can be triggered by governments, slaughterhouse owners, slaughterhouse workers, or professionals, including the academia. The academia's unique role is to highlight the issues through research, with the aim of enhancing injury prediction through predictive analytics of research findings. Governments can use findings from research to design informed policies and strengthen law enforcement, where laxities have been noted. This can also inspire workers to form support groups that agitate for improved slaughterhouse conditions.

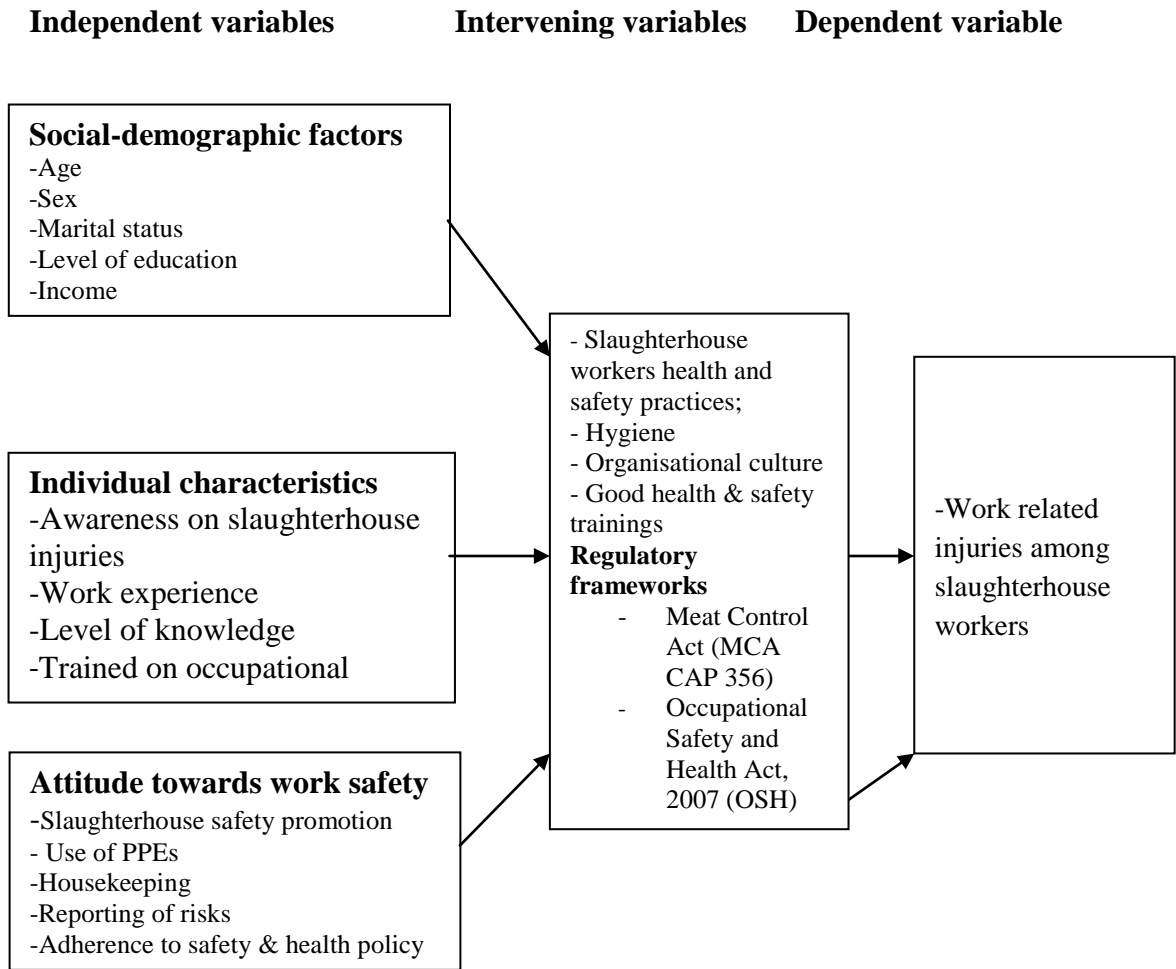


Fig 1.1: Conceptual framework

Source: Adopted and modified from the risk compensation theory (Wilde, 1982).

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature on slaughterhouse worker injuries, socio-demographic factors, worker characteristics and attitude towards slaughterhouse work safety. It also provides a summary of the literature review isolating the existing gaps.

2.2 Slaughterhouse Worker Injuries

There is an apparent lack of regard for safety, a myriad of injuries were reported to be common phenomena in the slaughterhouses. According to a study done on self-reported occupational injuries among industrial beef slaughterhouse workers in in Mid-Western United States, it was reported that 24.1% of slaughterhouse workers were suffering from work-related injuries (Leibler and Perry, 2017). In a study done on laceration injuries and infections among workers in the poultry processing and pork meat processing packaging industries, the prevalence of injuries suffered were 6.4% and 13.2% respectively (Kyeremateng-Amoah *et al.*, 2014).

Most of the slaughter house work is done by hands and majorly such injuries are manifested around the arms of workers. This may be attributed to the fact that slaughterhouse work is mostly manual work that involves working with dangerous tools/machines such as knives which may expose works to injure their fingers, arms or wrists. The consequence being that regard for safety, including wearing safety clothing was not prioritized. It also involves lifting materials using arms and fingers thus the more affected part of the body. According to Tirloni *et al.* (2017), most work related injuries affected fingers of poultry slaughterhouse workers. According

to Vieira (2017), he noted most affected parts of the body to be fingers, hands and wrist among slaughterhouse workers.

In another study done in the USA among slaughterhouse workers, it was noted that most work-related injuries suffered were head injuries (Smith, 2017). In the rush to outshine other slaughterhouses, speed in killing and selling were noted to characterize the slaughterhouses. In another study on occupational hazards among abattoir workers associated with non-compliance to the meat processing and waste disposal laws in Malaysia, sharp equipment such as knives caused most injuries (Abdullahi *et al.*, 2016). Being knocked by irate animals was so common that the workers no longer viewed it as an issue, but laughed at the affected worker. In Kumasi, Ghana, fighting among slaughterhouse workers was the most cause of injuries (Kumah *et al.*, 2015).

Working in slaughterhouses involves working with risk tools with poor working conditions, which may result to suffering some superficial injuries in the course of duty. Change of workers from one slaughterhouse to another are confronted with new working environments and designs, as a substantial cause of the injuries. Conclusions from Cook *et al.* (2017), showed that wounds were most prevalent type injury suffered among slaughterhouse workers. According to studies done in USA, it was reported that lacerations were the most common injury type among slaughterhouse workers (Leibler *et al.*, 2016).

There appears to be a resurgence of interest in the research, underpinned by the suspicion that abounds regarding the injury rates that are being reported by the existing official surveillance systems (Gerlock, 2016). This suspicion has arisen from the fact that when injuries are not reported and treated, future incidences can be expected to get worse, which presents profound consequences for the workers and the general populace. The interest has also been fanned by the fact that an unknown percentage of slaughterhouse workers are often undocumented. This is because slaughterhouse owners knowingly hire undocumented workers in an effort to satisfy the extremely high turnover rate of the industry (Cook *et al.*, 2017).

Many slaughterhouse workers are “at-will” employees, which means that they can be easily fired at a supervisor’s discretion. The threat of termination discourages workers from reporting safety concerns, injuries, or other serious issues (Jacques, 2015). In fact, slaughterhouse supervisors are reported to use a variety of intimidation tactics to suppress workers’ concerns and make it clear that other people are always available to replace them. The result is that workers get conditioned to accepting a hazardous and demeaning work environment, for them to remain employed (Pinetti and Buczek, 2015).

Slaughterhouse industry is characterized by busy work. This is because once one is given an off, it means you are not paid your daily dues since you are off from work. This therefore, forces those who suffer minor injuries to continue working as to meet their daily requirements. According to Leibrer and Perry (2017) on their study on

self-reported injuries among industrial beef slaughterhouse workers in USA, it was noted that majority of the workers who were injured were excluded from work. In a study done by Dionne *et al.* (2013), injured slaughterhouse workers were given day-offs to seek for treatment. Ribas (2016) on his study, revealed that giving slaughterhouse workers day-offs was treated as absenteeism from work where no remunerations were not honored.

Reporting rates of work related injuries in slaughterhouses has been marred with a number of challenges. This may be due to the inaction nature of the industry where little action is taken into consideration. Workers may see it as part of their job since injuries do occur a daily basis in their places of work. Supervisors and managers tended to blame workers and external factors for the injuries, this study's findings point to lack of standard designs for the slaughterhouses. Reports by workers and supervisors/managers indicated tendency for slaughterhouses to conceal information about injuries in their facilities (Gerlock, 2016). A study done on "slaughtering for a living; a hermeneutic phenomenological perspective on the wellbeing of slaughterhouse employees," injuries were reported to management of slaughterhouse industries (Victor & Bernard, 2016).

The slaughterhouse business is all about owners making more profit, and workers making more commission. In some slaughterhouses, not even an urgent need to answer the call of nature can interrupt the slaughterhouse business. Only severe cases are given priority as compared to minor cuts and wounds suffered at work. In many studies it has been suggested that there is need to expound extensively for injury

mitigation mechanisms in workplaces, without which injury occurrences would be inevitable (Chapman & Thompson, 2016). Slaughterhouse owners are business oriented and the workers are rushing while at work to meet their personal job demands. Ensuring health safety and policies are place through presence of trained first aiders has largely been marred by such motives. According to study done among slaughterhouse workers in Manabi, Ecuador, there were no trained first aiders in the industry (Delgado *et al.*, 2015).

Slaughterhouse worker injuries have been cited as the major source of morbidity and mortality among the animal workers, largely due to exposure to many hazardous situations in their daily practices (Abdullahi *et al.*, 2016). They include infections that are mostly contracted by the workers through iatrogenic or transmissible agents, including viruses, bacteria, fungi, and parasites and the toxins produced by these organisms. The major injuries suffered by the workers, however, include domains beyond infections, and can be generally grouped as physical, chemical, biological, psychological, musculoskeletal, and ergonomic injuries.

Studies have also shown that slaughterhouse workers exhibit lower levels of empathy (Dorovskikh, 2015). This has necessitated the need for desensitization of employees in this sector. A study undertaken on slaughterhouse workers revealed that they displayed high levels of somatization, anger and hostility (Emhan *et al.*, 2012). Exposure to the killings that go on in the slaughterhouses has also been reported to make the workers get very distressed and leave the job or become numb and begin to

display signs of apathy as well as start enjoying the infliction of pain (Dorovskikh, 2015). Increased crime in slaughterhouse neighbourhoods, including homicides, robbery, petty crimes, sexual harassment, rape, killings, has also been associated with less empathy of slaughterhouse workers living in those neighbourhoods.

The repetitive, strenuous and expeditious activities in slaughterhouses can have serious physiological effects on slaughterhouse workers. Lacerations have been reported to be the most common injuries with tendinitis, cumulative trauma disorders, back and shoulder problems and trigger finger also being very common (Dorovskikh, 2015). Repetitive cutting and other movements has been established to result into cumulative trauma disorders like Carpal Tunnel Syndrome and muscle strain among slaughterhouse workers (Fitzgerald *et al*, 2009). Neurologic illness has also been reported to result from working in a slaughterhouse with certain animal parts (Dorovskikh, 2015).

2.3 Socio-demographic factors

Socio-demographic have been associated to work-related injuries among many industries. This exposes workers to several risks especially in the slaughter house industry. For example, a number of studies have significantly associated age with occurrence of work-related injuries. However, a study South Eastern Iran revealed that there was no association between age- and work-related injuries among slaughterhouse workers (Esmseili *et al.*, 2016). According to a study done by Sundstrup *et al.* (2014) on high intensity physical exercise and pain in the neck and upper limb among slaughterhouse workers, it was revealed that the average age of

respondents was 44 years (Bertozzi *et al.*, 2015). In another study done on occupational health hazards as perceived by poultry processing slaughterhouse workers which showed that majority of the respondents were in their thirties (Saneya *et al.*, 2018 and Pinetti *et al.*, 2015).

The slaughterhouse industry is largely dominated by male workers across the globe. This is because it is seen as a highly demanding job that requires use of more energy where males are more preferred. A study done in Western Kenya on working conditions and public health risks in slaughterhouses, it was showed that majority of the respondents were male (Cook *et al.*, 2016). As reported by other studies, most slaughterhouse workers are men (Leibler & Perry, 2017; Tirloni *et al.*, 2017). In other studies done in Brazil among poultry slaughterhouse workers, it was however revealed that majority of workers in the reviewed slaughterhouses were female (Bertozzi *et al.*, 2015 & Pinetti *et al.*, 2015). Gender has been examined as a predictor of work related injuries. A study conducted by (Khan, *et al.*, 2017) found that women have less of a ‘tough guy’ attitude than their male colleagues, and suggested the need to deviate from the modernist hyper-masculine norms in workplaces, so as to inculcate positive impacts on work practices and injury outcomes.

Marital status may be of importance while looking at work related injuries among workers. This may have a significant impact on injuries due to pressure from families to meet demand with jobs with low wages. Hard economic times is affecting the social life of people including marriages as a results of higher living standards. A

study done on slaughterhouse workers in Sharkia Governorate, it was shown that majority of workers in the industry were single (Ahmed, 2013). In Kano Metropolis in Nigeria, analysis on work related musculoskeletal disorders among butchers indicated that majority of the respondents were married (Kaka *et al.*, 2016). A study done by Jacques (2015), revealed that there was a significant statistical association between marital status and work-related injuries. This was due to the fact that once married, risk-taking may be slowed by the attachment that the workers have towards their family which manages the extent of risk-taking for what it can cost their young families. Being married can also trigger one to take low-income jobs, work in stressful environments so as to take care of the welfare of their children and wives.

Slaughterhouse industry is characterized by low wages, where people are rewarded based on efficient. The meagre salaries are an indication of the poor remuneration strategies. This significantly exposes individuals to toil for long hours (manual work) to meet their targets and earn a living. Due to their lack of concern for worker rights, safety and well-being, slaughterhouses often pay low wages and hire unskilled personnel, which results in high levels of turnover and inexperienced workers at any given time (Cudworth, 2011). According to a study done in Denmark and Germany on understanding the diverging trajectories of slaughterhouse work, it was revealed that majority of the respondents were characterized by low income/wages (Wagner *et al.*, 2016). In another study, on “Slaughtering for a living; A hermeneutic phenomenological perspective on the wellbeing of slaughterhouse employees, it was shown that most individuals earned low incomes with limited family resources

(Victor & Bernard, 2016). In fact, low-income earners in slaughterhouse do most of the manual worker thus exposed to more injuries. According to Ribas *et al.*, (2016), income was significantly associated with increased work-related injuries among slaughterhouse workers.

Level of education has been seen as a key predictor of work-related injuries. In Kenya, most people have attained secondary level of attained a secondary level of education (KNBS, 2019). Higher levels of education means people have better access to information thus becoming aware on exposure to risks. Cook *et al* (2017), in their study established that most slaughterhouse workers in Western Kenya were primary school leavers. In another study on routinized killing of animals: Going beyond dirty work and prestige to understanding the wellbeing of slaughter house workers, majority of slaughterhouse workers had attained secondary level of education (Baran *et al.*, 2016). In a study done on occupational and health hazards as perceived by poultry processing slaughterhouse workers, education was found to play a significant role in work related injuries (Saneya *et al.*, 2018).

2.4 Individual factors associated with work-related injuries

The Food and Agriculture Organization of the United Nations (2010) has associated injuries to slaughterhouse workers to poor consciousness over hygiene, lack of ante and post mortem inspection, and inadequate awareness and training. This is especially the case in slaughterhouses that are characterized by batch slaughtering (Fitzgerald, 2010). The slaughterhouse industry is characterized by working in risk environments with little attention paid to adherence to work safety policy.

According to Andersen *et al.* (2017), it was noted that most workers were trained on slaughterhouse safety. In Malaysia, a study done on slaughterhouse safety showed that only those who were trained were allowed to work in an abattoir (Abdullahi *et al.*, 2016). Trained workers suffer less work-related injuries as compared to their counterparts. A study done by Sundstrup *et al.* (2013), training and guidance on work injuries ensured reduced slaughterhouse injuries. Elements of trained incapacity, a worker performing his/her tasks mechanically without engaging all his/her senses to it, for example, looking the other way while simultaneously cutting the meat, results to injuring oneself or other colleagues.

Working experience in the slaughterhouse industry may be viewed as a risk for exposed work-related injuries. However, slaughterhouse industry is associated with high turnover rates of employees as a result of increased risks coupled with poor working conditions. It witnesses workers moving from one slaughterhouse to the other in such of better places of work in terms of remuneration and working conditions. A study done in the United States of America, it was realized that most of the slaughterhouse workers had a work experience of less than 1 year (Penetti *et al.*, 2015).

According to reports by Leibler and Perry (2017), they noted that more than half of the slaughterhouse workers interviewed had a work experience of more than 5 years. It is thought that once one is repetitively doing the same piece of work enhances one with on-job skilling that serving longer in an industry that makes one undertake tasks mechanically without giving their thoughts to what they are doing. Ferrante (2014)

reported that the period a slaughterhouse worker had been in the industry was not significantly associated with work related injuries in slaughterhouse industries. He further explained that this was due to the fact that the slaughterhouse industry is of little variety and repetitive tasks. The amount of thought and time needed to perform a job also decreases. Injuries therefore results in such environments in consequence of instrumental rational action.

Awareness on work related injuries among slaughterhouse workers is of paramount importance. In the slaughterhouse industry, injuries are prone due to the nature of the working environment. According to studies conducted in Turkey and Sudan, it was revealed that slaughterhouse workers had low levels of awareness towards health and safety policies (Demirhan, 2016 and Mohamed, 2017). Awareness on work related injuries meant that those who were aware were more likely to be cautious in dispensing their duties. Ignorance on making use of safety policies especially in the slaughterhouse industries is compromised by poor implementation. It has become a daily norm not to adhere to workplace safety policy and guidelines which be seen as a waste of time by workers. Studies done across the world which have reported that most people are knowledgeable about occupational risks and workplace safety policy in slaughterhouse premises (Smigic *et al.*, 2016 and Ablah, 2017).

Motivation towards work place safety means people are committed to occupation and health policies in the work place. A study done by Dang-Xuan *et al.* (2016) showed that new slaughterhouse workers were motivated to learn work safety so as

to prevent unnecessary injuries. In another study on distribution and importance of meat inspection tasks in Finnish high-capacity slaughterhouse, it was shown that work motivation towards health and safety policies led to reduced work-related injuries (Luukkanien *et al.*, 2015).

Using drugs and other substances reduces judgmental thinking which may result in recklessness among workers in slaughterhouse industries. According to a study done on “slaughtering for a living; a hermeneutic phenomenological perspective on the wellbeing of slaughterhouse employees,” it was reported that pressure of work and stress of recurring nightmares and dreams forced some of the workers to engage in drug and substance abuse (Victor & Bernard, 2016). In another study it was concluded that substance and drug abuse was one of the leading causes of injuries among slaughterhouse workers (Lebwohl, 2016).

2.5 Attitude towards work safety in slaughterhouses

Adherence to occupational health and safety policies have been challenging especially in the slaughterhouse industry (Ferrante, 2015). This has a significant influence on mitigation measures to reduce the rising cases of work-related injuries especially in the slaughterhouse industry. Good housekeeping practices are taught to reduce such incidences. The work environment should ensure easy access to working tools and machines as well tidy working conditions. According to Bains *et al.* (2013), good housekeeping practices were likely to solve some of the injuries encountered in the slaughterhouse industries. In another study done among Immigrant Latin workers in USA, the findings showed that poor housekeeping posed

hazardous conditions predisposing slaughterhouse workers to injuries (Menger *et al.*, 2016).

Availability of PPEs in slaughterhouses does not guarantee usage by workers. There are also issues with consistency due to poor attitude towards their use. This exposes them to dangerous environments that are injurious to slaughterhouse workers. In Brazil, use of PPEs was associated to lowering incidences of injuries among slaughterhouse workers (Dias & Moro, 2019). In another study done on indicators of work accidents in slaughterhouse refrigerators and broiler processing, it was indicated that most accidents and injuries reported were attributed to non-use of PPEs (Takeda *et al.*, 2018).

Promotion of slaughterhouse safety has been largely left to government authorities and management while workers are not mostly concerned. Not knowing that work safety is a collaborative responsibility to ensure a safe working environment by adhering to work-safety in their places of work so as to reduce exposure to injuries. According to Occupational Safety and Health Act (OSHA 2007), it is the responsibility of the employer to ensure the working environment is safe (Manduku, 2017). At the same time, the employees should adhere to health and safety policies to reduce work related injuries (Balanay *et al.*, 2014). According to a study done by Dose-Rais *et al.* (2015), it was stipulated that it's the workers' responsibility to ensure that they are safe at work. In another study, it was shown that support and supervisory staff should keep watch on the safety of the workers (Parker, 2015).

Poor reporting trends are more prone in slaughterhouses. Risk situations should be reported immediately they are discovered to avoid resulting work related injuries. But because of the nature of the slaughterhouse industry where supervisors and managers try to conceal information on worker safety, most of the workers did not see the need to report such cases. In South Korea, studies done have revealed that slaughterhouse workers always take precautions by informing their fellow workers on potential hazards (Park et al., 2018). In another study done in Tanzania on occupational hazards associated with human brucellosis in abattoirs settings, it was shown that such risks are reported to public health authorities (Luwumba *et al.*, 2019).

Cases of neglect are always evident in most established slaughterhouses where people may be injured but there are no mitigation measures that are put in place to ensure work safety. Studies done across the world have revealed that actions are always taken to avert risk occurrences in slaughterhouse working environments (Doroviskikh, 2015 and Tirloni *et al.*, 2017). According to Baran *et al.* (2016), it was revealed that slaughterhouse workers feared that nothing can be taken even if they report. Normally people see adherence to health and safety policies as a punishment imposed on them. They lack consistency in following such rules which are meant to safeguard their health thus reduce work related injuries.

According to a study done in Malaysia among slaughterhouse workers, it was revealed that majority of the respondents had a positive attitude (Abdullahi *et al.*,

2016). In another study, there were cases of negative attitude towards work safety at slaughterhouse hence they did not wear masks and other PPEs (Jenpanich *et al.*, 2016). People with negative attitude on safety policies are more likely not to adhere to health and safety policies thus exposed to more work-related injuries. Nielsen *et al.* (2015), associated attitude towards work safety and suffering occupational injuries among slaughterhouse workers in his study.

2.6 Summary of the Literature Review and Gaps identified.

From the reviewed literature, it has been noted that majority of studies done on slaughterhouse workers have focused on incidence of slaughterhouse injuries. Other studies have focused on zoonotic diseases and contamination of meat products in the meat market. However, little has been done on aggravation of workers injuries as a result of the working conditions in the slaughterhouses. There has been scanty information on the influence of attitude towards slaughterhouse safety as a determinant of work-related injuries as documented by other researches. There has been a neglect in implementation of injury mitigation measures especially in Nairobi City, where the current working conditions are not in line with the recommendations of the Meat Control Act which may worsen the situation. The study therefore sought establish the prevalence of work-related injuries, influence of individual factors and attitude on work safety towards work related injuries among slaughterhouse workers in Nairobi City County.

CHAPTER THREE: MATERIALS AND METHODS

3.1 Introduction

This chapter presents the research methodology that was used in this study and, provides a general framework on how the research was undertaken. This specifically focuses on study design, target population, study population, sample and sampling procedures, description of research instruments, validity and reliability of instruments, data collection, data presentation and analysis, and ethical considerations that were adhered to while conducting the study.

3.2 Research Design

This study used a descriptive cross-sectional study design. Descriptive cross-sectional study designs align with the study's planned data collection approach by which individuals from a subset of the target population were selected and data collected from them (Mugenda and Mugenda, 2003). Study designs of this nature are often used for the purposes of public health planning. It was preferred because it ensured complete description of the situation of slaughterhouse and the prevailing environment in Nairobi City County thus reducing biasness in collecting study data. This was justified as it ensured the required information was captured at one point in time to answer the study questions of interest.

3.3 Study Variables

3.3.1 Independent Variables

The independent variables for this study included socio-demographic factors such as age, sex, marital status, level of education and monthly income.

Table 3.1 Demographic characteristics of respondents (n=279)

Variable	Respondent response	Frequency (N)	Percentage (%)
Age in years	18-27	101	36.2
	28-37	111	39.8
	38-47	39	14.0
	≥ 48	28	10.0
Gender	Male	268	96.1
	Female	11	3.9
Marital status	Single	117	41.9
	Married	105	37.6
	Widow/widower	46	16.5
	Divorced/separated	11	3.9
Income per month in Kenya shillings	≤10,000	46	16.5
	10,001-15,000	126	45.2
	15001-20,000	79	28.3
	≥20,001	28	10.0
Highest level of education attained	No formal education	17	6.1
	Primary	69	24.7
	Secondary	131	47.0
	Tertiary	62	22.2

Table 3.2 Individual characteristics of respondents

Independent Variable	Respondent response	Dependent variable (Suffered a work-related injury)	
		Yes (N=101)	No (N=178)
Work experience	Less than 2 years	71(13.9%)	105(86.1%)
	2-5 years	18(28.6%)	45(71.4%)
	6-10 years	7(38.9%)	11(61.1%)
	Over 10 years	5(22.7%)	17(77.3%)
Aware on work related injuries	Yes	85(41.7%)	119(58.3%)
	No	16(21.3%)	59(78.7%)
Trained on work place safety in the past 2 years	Yes	19(31.7%)	41(68.3%)
	No	82(34.4%)	137(62.6%)
Motivation towards work place safety	I have been injured before	50(36.5%)	87(63.5%)
	A friend was injured	38(60.3%)	25(39.7%)
	It is a work requirement	8(15.7%)	43(84.3%)
	It is a policy requirement	5(17.9%)	23(82.1%)
Covered by an insurance	Yes	36(30.8%)	81(69.2%)
	No	65(40.1%)	97(59.9%)
Willingness to use PPEs while at work	Yes	74(37.4%)	124(62.6%)
	No	27(33.3%)	54(66.7%)
Use of drugs or other substances when at work	Yes	12(30.0%)	28(70.0%)
	No	89(37.2%)	150(62.8%)
Knowledge of existing slaughter house safety policy	Yes	27(39.7%)	41(60.3%)
	No	6(26.1%)	17(73.9%)
	Don't know	68(36.2%)	120(63.8%)

Individual characteristics which included motivation towards work safety, use of drugs and/or other substances, work experience, training on slaughterhouse safety, awareness and knowledge on work related injuries as shown below;

Table 3.3 Attitude towards work safety in slaughterhouses
Responses on attitude towards work safety in slaughterhouses among respondents (n=279)

Independent Variable	Respondent response			
	Strongly disagree	Disagree	Agree	Strongly agree
Good housekeeping contributes to slaughter house work safety	45(16.1%)	34(12.2%)	123(44.1%)	77(27.6%)
Use of PPEs in slaughterhouse reduces chances of work-related injuries	39(14.0%)	62(22.2%)	83(29.7%)	95(34.1%)
Slaughterhouse safety promotion is part of my responsibility	99(35.5%)	73(26.2%)	50(17.9%)	57(20.4%)
I would inform someone to be cautious in case of unsafe, dangerous or risky situations	72(25.8%)	84(30.1%)	68(24.4%)	55(19.7%)
Slaughter house work safety is a priority in this facility to reduced work related injuries	88(31.5%)	79(28.3%)	50(17.9%)	62(22.2%)
Adherence to slaughterhouse health and safety policies is not a waste of time	106(38.0%)	39(14.0%)	94(33.7%)	40(14.3%)
I am confident that an action will be taken in the event of injuries	83(29.7%)	63(22.6%)	78(28.0%)	55(19.7%)

The attitude towards slaughterhouse work safety which included use of PPEs, slaughterhouse safety promotion, reporting of risks in the slaughter house, good housekeeping and adherence to health and safety policies. Socio-demographic and individual factors were measured using a checklist.

Table 3.4 Level of attitude towards work safety n=279 (measurements)

Variable	Respondent Response	Work related injury Yes(N=101)	No (N=178)	Level of measurement
Level of attitude	Negative	62(40%)	93(60%)	Negative (7-17)
	Positive	39(31.5)	85(68.5)	Positive (18-28)

Regarding attitude towards work safety, the respondents were given seven (7) statements in a Likerts scale of 4 scores where “1” means strongly disagree and “4” means strongly agree. The scores were summed and the statements had a minimum score of 7 and a maximum score of 28. The scores were further divided into two categories; negative attitude ranged from 7-17 and positive attitude ranged from 18-28.

55.6% of the respondents had negative attitude while 44.4% had positive attitude.

Attitude towards work safety was associated with occupational injuries.

3.3.2 Dependent Variables

The dependent variable for this study was prevalence of work-related injuries among slaughterhouse workers. To measure this, the respondents were asked whether they had suffered a work-related injury while dispensing their duties in the slaughterhouses.

3.4 Location of the Study

The study was conducted in Nairobi City County; a county with seventeen sub-counties, namely, Starehe, Kamukunji, Kasarani, Ruaraka, Roysambu, Makadara, Mathare, Embakasi east, Embakasi south, Embakasi central, Embakasi north, Embakasi south, Dagoretti north, Dagoretti south, Kibra, Langata and Westlands. The county has also 85 administrative wards. It covers an area of 696 sq. kilometres with a population density of 6,300 per sq kilometre. Demographically, according to the 2019 National Housing and Population Census, Nairobi City County had 4,397,073 people (KNBS, 2019). The county has 11 recognized slaughterhouses within its jurisdiction (Agriculture Committee of Nairobi County, 2014). They are, Kayole slaughterhouse, Njiru slaughterhouse, Lyntano slaughterhouse, Nyonjoro slaughterhouse, Kiamaiko slaughterhouse, Kariokor Poultry slaughterhouse, Burma Poultry slaughterhouse, Burma Maziwa slaughterhouse, Neema slaughterhouse, Choice Meat slaughterhouse, and Quality Meat Packers slaughterhouse. Table 3.1 presents details of the slaughterhouses.

Table 3.5: Local slaughterhouses in Nairobi City County

No.	Slaughterhouse	Location	Category of Slaughterhouses	Species handled
	Burma Poultry	Kamukunji	Local slaughterhouse (C)	Poultry
	Burma Maziwa	Kamukunji	Local slaughterhouse (C)	Cattle
3	Choice Meat Slaughterhouse	Kasarani	Export A	Cattle/Goats /Pigs/ Sheep
4	Kiamaiko	Starehe	Local slaughterhouse (C)	Sheep/Goats
5	Kariokor Poultry	Kamukunji	Local slaughterhouse (C)	Poultry
6	Kayole	Njiru District	Local slaughterhouse (B)	Cattle
7	Lyntano	Kasarani	Local slaughterhouse (B)	Pigs
8	Njiru	Njiru District	Local slaughterhouse (B)	Cattle
9	Nyonjoro	Dagoreti	Local slaughetrhouse (C)	Sheep/Goats
10	Neema slaughterhouse	Kasarani	Export A	Cattle/Goats /Pigs/Sheep
11	Quality Meat Packers (Former Hurlingham Butcheries)	Njiru	Export A	Cattle/Poultry/Goats

3.5 Target population

The study targeted slaughterhouse workers who were designed to work in slaughterhouses over eighteen years of age.

3.5.1 Inclusion Criteria

The study included sampled slaughterhouse workers in Nairobi City County who were working in the 11 slaughterhouses. Those who participated in the study were

those who were over 18 years and had worked in the selected slaughterhouses for at least 2 months hence had been familiarized with the slaughterhouse environment in Nairobi City County. All slaughter workers in the three categories were included. Only those who consented were recruited to participate in the study.

3.5.2 Exclusion Criteria

The study excluded workers who were on leave during the study period. Those who were sick and unable to communicate were excluded from participating in this study.

3.6 Study Population

The study population comprised of 846 slaughter house workers drawn from 11 slaughterhouse in Nairobi City County. These slaughterhouses had a private ownership. Workers in the slaughterhouses, from each of the three categories, namely; Export slaughter house, Local slaughter house, Category B; Local slaughter house Category C. The slaughterhouses were further classified as per the types of animals slaughtered in each, namely; cattle, goats, pigs, sheep and poultry. Information about workers in the slaughterhouses was initially obtained by visiting the slaughterhouses in the study area for purposes of recruiting respondents to the study.

3.7 Sample Size Determination and Sampling Techniques

3.7.1 Sample Size Determination

To determine sample size, Fishers et al (1998) formula was used for populations more than 10,000;

$$n = \frac{z^2 pq}{d^2}$$

$$n = \frac{1.96^2 \times (0.5)(0.5)}{0.05^2} = 384$$

For populations less than 10, 000, a correction formula was used;

$$nf = \frac{n}{1+n/N}$$

$$nf = \frac{384}{1 + \left(\frac{384}{846}\right)} = 264$$

Where;

n= the desired sample size (when target population is greater than 10,000.

nf= the desired sample size when the population is less than 10,000

N= Total population of slaughterhouse workers in Nairobi City County.

z= the standard normal deviation at 95 % confidence level.

p= assumed proportion of slaughterhouse workers with work related injuries (50%=0.5)

q=1-p=0.5

d= the level of statistical significance set at 5% =0.05

An addition 10% of respondents was done to cater for non-respondents making the total number of respondents selected to 291. Table 3.2 presents the proportionate sample size selected from each sub county.

Table 3.6: Sampling frame

Name of sub county	Number of slaughterhouses	Total No of slaughterhouse workers in Nairobi City County	Proportionate sample size
Dagoretti	1	119	41
Embakasi Central	3	190	65
Kamukunji	3	153	53
Kasarani	3	238	82
Starehe	1	146	50
Total	11	846	291

3.7.2 Sampling Techniques

Nairobi City County was purposively selected. It is a cosmopolitan county with people from diverse cultural background. The county is the third smallest county but which is the most populous with large domestic slaughterhouses thus increasing the demand for meat supply and consumption (Agriculture Committee of Nairobi County, 2014). Five sub-counties with slaughterhouses were sampled randomly. They were Embakasi Central, Kasarani, Kamukunji, Starehe and Dagoretti for this study based on computer generated random numbers. All slaughterhouses in the five sub-counties were selected for the study. To obtain study respondents, participants from each selected slaughterhouse were randomly selected using computer generated random numbers (Mugenda and Mugenda, 2003).

To obtain additional information, three Focused Group Discussions (FGDs) were held. Each category of slaughterhouses, namely; Export A, Local B, Local C held one FGD of 8 primary participants. To obtain the FGDs, one slaughterhouse house from each category was selected randomly and the FGD participants recruited based

on their willingness and ability to give the desired information. In addition, one manager and one supervisor were recruited as the key informants. A total of 22 key informant interviewees were selected. The KII were purposively chosen based on the position they held in the selected slaughterhouses to give additional information (Kothari, 2008). The KII were slaughter house managers and supervisors.

3.8 Data Collection Tools and Instruments

The study employed three data collection instruments: Questionnaires, focused group discussion guide and key informant interview schedules. The research instruments covered all the research objectives. The research instruments were structured in English version. The key areas included socio-demographic, prevalence of work-related injuries, individual characteristics and attitudes towards slaughterhouse health and safety policies. The research tools were pretested with 10% of respondents at Juja slaughterhouse in Kiambu County which is adjacent to Nairobi City thus exhibiting almost similar characteristics. This was to ensure validity and reliability of research instruments.

3.8.1 Validity

Validity was ensured through expert review of the study tools with the supervisors and fellow researchers. The study adopted sampling methods that resulted in a randomized and a representative sample. Random sampling techniques and uniformity of sampled population ensured internal validity. To ensure external validity, a large sample was randomly selected.

3.8.2 Reliability

Reliability was ensured through pre-testing of the data collection tools in the field to check their suitability and credibility. Additionally, contracted field assistants were properly selected and subjected to trainings for the purposes of data collection. This enhanced collection of reliable, accurate and consistent data.

3.9 Data collection techniques

Both Primary and secondary data were collected for the purposes of this study. Quantitative data was collected using structured questionnaires administered to 291 selected slaughterhouse workers in Nairobi City County to fill in their responses. They were guided by trained research assistants in case they needed help. Data collection tools were translated to Kiswahili by field assistants in instances where respondents were not well versed in English. The interview mode of questionnaire administration was used to ensure clarity of questions and completion of questionnaires (Jackie et al, 2008). The filled questionnaires were handed over to the principal researcher who kept them in locked cabinets to ensure privacy and confidentiality.

Qualitative data was also collected using FGD and KII guides. Three focused group discussions were held, with each selected category of slaughterhouse having one FGD. The sessions were moderated by the researcher in assistance with the research assistants. The respondents were probed to give more information on the status of slaughterhouses in the areas of work. Their inputs were recorded via tape recorder, photos and short notes taken by research assistants during FGD sessions. The

sessions were held in private rooms within the slaughterhouses selected. Twenty-two (22) key informants were also interviewed. One supervisor and one manager from each slaughterhouse was recruited. The sessions were held with appointment in their offices. Their inputs were also recorded in form of notes.

3.9 Data Presentation and Analysis

Data analysis comprised of examining, categorizing, tabulating or otherwise combining available evidence so as to assess behaviour of the study variables. As part of the analysis, quantitative data collected from the field was cleaned, appropriately coded and entered into Microsoft excel sheet. This was later exported to Statistical Package for Social Sciences version 22.0 for analysis. Basic statistics were calculated for quantitative data and presented as descriptive statistics. This was presented as frequency tables, graphs, pie-charts and percentages. To measure association between dependent and independent variables, inferential statistics were done using Chi-square tests done at 95% confidence interval with p-values of less than or equal to 0.05 considered significant. Qualitative data from FGD and KII sessions was analysed based on its content, and triangulated with quantitative data as direct/verbatim quotes or narrations from participants.

3.10 Logistical and Ethical Considerations

Clearance to conduct the study was obtained from Kenyatta University graduate school, Ethical clearance from Kenyatta University Ethical Review Committee (KUERC), National Commission for Science, Technology and Innovation (NACOSTI), County Director of Veterinary Services (CDVS) Nairobi City County.

Before data collection, permission was also sought from the management of the selected slaughterhouses.

Informed consent was sought from study participants before interviews and importantly anonymity, confidentiality and privacy of information given was highly safeguarded. The entire process was voluntary, free of any coercion or inflated promise of benefits arising from participation.

CHAPTER FOUR: RESULTS

4.1 Introduction

This chapter presents the interpretation and explanation of study findings. This covers the socio-demographic factors, prevalence of work-related injuries, individual factors and attitude towards work-related injuries. To achieve this, 291 questionnaires were administered to selected slaughter house workers in Nairobi City County, Kenya. Duly filled questionnaires were taken into account and considered for analysis. After data checking and cleaning, 279 respondents participated in the study representing a response rate of 95.88%. This surpassed the minimum sample that this study targeted hence adequate for analysis.

4.2 Socio-demographic factors leading to work related injuries

4.2.1 Socio-demographic characteristics of respondents

Table 4.3 presents the socio-demographic characteristics of study participants: Results indicate that more than a third 39.8% of the respondents were aged between 28-37 years followed 36.2% who were aged between 18-27 years. Majority 96.1% of the respondents were male while 3.9% were females. Results revealed that 41.9% were single followed by 37.6% who were married.

Concerning the respondents' income per month, results indicated that 45.2% of them earned between Kshs 10,001-15,000 followed 28.3% who were earning a monthly income of between Kshs 15,001-20,000. 47.0% of the respondents had attained

secondary level of education followed by 24.7% who had attained primary level of education.

Table 4.1: Distribution of socio-demographic characteristics among respondents (n=279)

Variable	Respondent response	Frequency (N)	Percentage (%)
Gender	Male	268	96.1
	Female	11	3.9
Marital status	Single	117	41.9
	Married	105	37.6
Highest level of education attained	No formal education	17	6.1
	Primary	69	24.7
	Secondary	131	47.0
	Tertiary	62	22.2
Age in years	18-27	101	36.2
	28-37	111	39.8
	38-47	39	14.0
	≥48	28	10
Income per month in Kenya shillings	≤10,000	46	16.5
	10,001-15,000	126	45.2
	15,001-20,000	79	28.3
	≥20,001	28	10.0

4.2.2 Influence of socio-demographic factors on work related injuries

Table 4.4 presents the influence of socio-demographics factors on work related injuries among the respondents. The results showed that 72.1% of the respondents who were aged between 28-37 years had not suffered any work-related injury. There was a significant statistical association between age and suffering work related injuries ($p=0.045$).

64.6% of the respondents who were male had not suffered any work-related injury. There was no statistical association between gender and suffering work-related injury. 71.8% of the respondents who were single had not suffered any work-related injury. There was no association between marital status and suffering work-related injuries ($p=0.126$)

Concerning the monthly income of the respondents, results showed that 82.1% of those who earned more or equal to Kshs 20,001 had not suffered any work-related injury. There was a significant statistical association between monthly income and suffering work related injuries ($p=0.027$). Regarding to the highest level of education attained results revealed that majority 46 (74.2%) of those respondents who had attained tertiary education had not suffered any work-related injury. There was a significant statistical association between highest educational level attained and suffering work related injuries ($p=0.024$).

Table 4.2: Association between socio-demographic factors and work-related injuries among respondents (n=279)

Independent Variable	Respondent response	Dependent variable (Suffered a work-related injury)		Statistical significance
		Yes (N=101)	No (N=178)	
Gender	Male	95(35.4%)	173(64.6%)	$\chi^2=1.669$ df=1 p=0.196
	Female	6(54.5%)	5(45.5%)	
Marital status	Single	33(28.2%)	84(71.8%)	$\chi^2=5.728$ df=3 p=0.126
	Married	43(41.0%)	62(59.0%)	
	Widow/widower	20(43.5%)	26(56.5%)	
Highest level of education attained	No formal education	10(58.8%)	7(41.2%)	$\chi^2=7.605$ df=3 p=0.024
	Primary	33(47.8%)	36(52.2%)	
	Secondary	42(32.1%)	89(67.9%)	
	Tertiary	16(25.8%)	46(74.2%)	
Age in years	18-27	38(37.6%)	63(63.4%)	$\chi^2=9.223$ df=3 p=0.045
	28-37	31(27.9%)	80(72.1%)	
	38-47	17(43.6%)	22(56.4%)	
	≥ 48	15(53.6%)	13(46.4%)	
	Divorced/separated	5(45.5%)	6(54.5%)	
Income per month in Kenya shillings	≤10,000	17(37.0%)	29(63.0%)	$\chi^2=11.703$ df=3 p=0.027
	10,001-15,000	45(35.7%)	81(64.3%)	
	15001-20,000	34(43.0%)	45(57.0%)	
	≥20,001	5(17.9%)	23(82.1%)	

4.3 Individual factors leading to work related injuries

4.3.1 Individual factors associated with work related injuries

Table 4.5 presents results on the distribution of individual characteristics among respondents. The results showed that 63.1% of the respondents had a work experience of less than 2 years followed by 22.6% who had an experience of between 2-5 years. 73.1% of the respondents reported that were aware of work-

related injuries while 26.9% were not aware. Regarding training on work place safety in the past 2 years, results revealed that 78.5% had not been trained while 21.5% had been trained.

Concerning the motivation towards work place safety, results showed that 38.4% were motivated by the fact that they had been injured before followed by 33.3% who reported that the motivation came from seeing a friend getting injured. On whether the respondents were covered with any insurance, results revealed that 58.1% of them did not have any insurance while 41.9% had an insurance. 71.0% of the respondents revealed that they were willing to use PPEs while at work while 29.0% reported they weren't willing.

Regarding use of drug and substances while at work results showed that 85.7% of the respondents were not using any while 14.3% reported that they were using some form of drug and/or substances while at work. Further results indicated that 67.4% of the respondents did not have any Knowledge of existence or no existence slaughter-house safety policy followed by 24.4% who reported they had knowledge of existence of the policy.

Table 4.3: Distribution of individual characteristics among respondents (n=279)

Independent Variable	Respondent response	Frequency (N)	Percentage (%)
Work experience	Less than 2 years	176	63.1
	2-5 years	63	22.6
	6-10 years	18	6.5
	Over 10 years	22	7.9
Aware on work related injuries	Yes	204	73.1
	No	75	26.9
Trained on work place safety in the past 2 years	Yes	60	21.5
	No	219	78.5
Motivation towards work place safety	I have been injured before	107	38.4
	A friend was injured	93	33.3
	It is a work requirement	51	18.3
	It is a policy requirement	28	10.0
Covered by an insurance	Yes	117	41.9
	No	162	58.1
Willingness to use PPEs while at work	Yes	198	71.0
	No	81	29.0
Use of drugs or other substances while at work	Yes	40	14.3
	No	239	85.7
Knowledge of existing slaughter-house safety policy	Yes	68	24.4
	No	23	8.2
	Don't know	188	67.4

4.3.2 Influence of individual factors on work related injuries

Table 4.4 presents results on the influence of individual factors on work-related injuries among the respondents; results indicated that 77.3% of the respondents who had a work experience of over 10 years had not suffered any work-related injury. There was a statistical association between work experience and suffering work-related injuries ($p=0.007$). 78.7% of the respondents who weren't aware of work-related injuries did not suffer any work-related injury. There was an association

between awareness on work related injuries and suffering work related injuries ($p=0.002$). Results from qualitative results showed that those respondents who were aware of work-related injuries would try to look for ways of preventing themselves from getting injured as narrated by one FGD discussant who said;

“...since my friend got injured, I nowadays work with a lot of keenness and I do not rush like I used to do previously. His injury on the ankle made me realize that it is better to work slow and not hurt myself. Nowadays when I see any situation that can cause an accident, I try to avoid it or even move from that situation. I don't want to hurt myself and go to the hospital and spend money and also lose my job ...”

Results showed that 68.3% of the respondents who were trained on work place safety in the past 2 years did not suffer any work-related injury. There was a significant statistical association between being trained on work place safety in the past 2 years and suffering work-related injuries ($p=0.026$). Concerning motivation towards work place safety, results indicated that 84.3% of respondents who were motivated by the fact that it was a work requirement did not suffer any work-related injury. There was a statistical association between motivation towards work place safety and suffering work related injuries ($p=0.001$).

66.7% of the respondents who were not covered by any insurance did not suffer from any work-related injury. There was no statistical association between being covered by insurance and suffering from work related injuries ($p=0.109$). On the willingness to use personal protective equipment, results showed that 62.6% of those respondents who were willing to use did not suffer any work-related injury. There was an association between willingness to use PPEs and suffering work-related injuries

($p=0.024$). Results from qualitative results showed that many of workers did not fancy using PPEs as narrated by one FGD discussant who said;

“...Imagine wearing an overall and gum boots in this sunny day. I will be sweating the whole day which will affect my work performance and attaining the set daily targets. So I better remove my overall and work faster than use it and work for longer times. During the cold and rainy season, I usually wear the overall and gum boots but as at now I will not wear them unless the manager demands so...”

Regarding use of drugs and/or substances when at work, results revealed that 70.0% of those who reported that they were using suffered work-related injury. There was no statistical association between use of drugs and/or substances at the work place and suffering from work-related injuries ($p=0.378$).



Figure 4.1: A slaughterhouse worker with a fresh cut lesion perpetrated by his colleague that was reported to have been high on illicit drugs.

Results further showed that 73.9% of the respondents who did not have any Knowledge of existing slaughter house safety policy did not suffer from any work-related injury. However, there was no association between knowledge of existing slaughter house safety policy and suffering from work-related injuries among the respondents ($p=0.501$).

Table 4.4: Association between individual factors and work-related injuries among respondents (n=279)

Independent Variable	Respondent response	Dependent variable (Suffered a work-related injury)		Statistical significance
		Yes (N=101)	No (N=178)	
Work experience	Less than 2 years	71(13.9%)	105(86.1%)	$\chi^2=12.240$ df=3 p=0.007
	2-5 years	18(28.6%)	45(71.4%)	
	6-10 years	7(38.9%)	11(61.1%)	
	Over 10 years	5(22.7%)	17(77.3%)	
Aware on work related injuries	Yes	85(41.7%)	119(58.3%)	$\chi^2=9.817$ df=1 p=0.002
	No	16(21.3%)	59(78.7%)	
Trained on work place safety in the past 2 years	Yes	19(31.7%)	41(68.3%)	$\chi^2=3.048$ df=1 p=0.026
	No	82(34.4%)	137(62.6%)	
Motivation towards work place safety	I have been injured before	50(36.5%)	87(63.5%)	$\chi^2=29.243$ df=3 p=0.001
	A friend was injured	38(60.3%)	25(39.7%)	
	It is a work requirement	8(15.7%)	43(84.3%)	
	It is a policy requirement	5(17.9%)	23(82.1%)	
Covered by an insurance	Yes	36(30.8%)	81(69.2%)	$\chi^2=2.574$ df=1 p=0.109
	No	65(40.1%)	97(59.9%)	
Willingness to use PPEs while at work	Yes	74(37.4%)	124(62.6%)	$\chi^2=5.406$ df=1 p=0.024
	No	27(33.3%)	54(66.7%)	
Use of drugs or other substances when at work	Yes	12(30.0%)	28(70.0%)	$\chi^2=0.777$ df=1 p=0.378
	No	89(37.2%)	150(62.8%)	
Knowledge of existing slaughter house safety policy	Yes	27(39.7%)	41(60.3%)	$\chi^2=1.380$ df=2 p=0.501
	No	6(26.1%)	17(73.9%)	
	Don't know	68(36.2%)	120(63.8%)	

4.4 Prevalence of work-related injuries among the respondents

4.4.1 Ever been injured

Figure 4.5 below shows the prevalence of work-related injuries among the respondents. The study sought to establish whether the respondents had ever been injured in the course of tendering their duties in the present place of work. The results showed that 63.8% of the respondents had not suffered any work-related injury while 36.2% had suffered some form of injury at their work place. Results from qualitative results indicated work-related injuries were common as narrated by one FGD discussant who said;

“...Injuries are common, we cannot miss an injury a day. Some can be very serious but most are manageable here. Last week a young man slipped and injured his neck while working. He was rushed to the hospital and I think he is still admitted. Myself last year December I hurt my leg when rushing to dispose wastes here although it was not so serious, I won't like it to happen to my co-workers. Most of the accidents we can prevent them if we avoid too much rushing and also try to work as a team”

Table 4.5: Prevalence of work-related injuries

Independent Variable	Respondent response	Dependent variable (Suffered a work-related injury)	
		Yes (N=101)	No (N=178)
Work experience	Less than 2 years	71(13.9%)	105(86.1%)
	2-5 years	18(28.6%)	45(71.4%)
	6-10 years	7(38.9%)	11(61.1%)
	Over 10 years	5(22.7%)	17(77.3%)
Aware on work related injuries	Yes	85(41.7%)	119(58.3%)
	No	16(21.3%)	59(78.7%)
Trained on work place safety in the past 2 years	Yes	19(31.7%)	41(68.3%)
	No	82(34.4%)	137(62.6%)
Motivation towards work place safety	I have been injured before	50(36.5%)	87(63.5%)
	A friend was injured	38(60.3%)	25(39.7%)
	It is a work requirement	8(15.7%)	43(84.3%)
	It is a policy requirement	5(17.9%)	23(82.1%)
Covered by an insurance	Yes	36(30.8%)	81(69.2%)
	No	65(40.1%)	97(59.9%)
Willingness to use PPEs while at work	Yes	74(37.4%)	124(62.6%)
	No	27(33.3%)	54(66.7%)
Use of drugs or other substances when at work	Yes	12(30.0%)	28(70.0%)
	No	89(37.2%)	150(62.8%)
Knowledge of existing slaughter house safety policy	Yes	27(39.7%)	41(60.3%)
	No	6(26.1%)	17(73.9%)
	Don't know	68(36.2%)	120(63.8%)

Ever been injured among respondents**4.4.2 Part of the body injured/affected**

Figure 4.2 indicates the part of the body injured or affected by those respondents who revealed that they had suffered a work-related injury. The results showed that 36.6% of the respondents who had reported a work-related injury had injured/affected their fingers, arms and/or wrists followed by 24.8% who had injured

their legs and/or ankles:-16.8% suffered shoulder & neck while 15.8% had back injuries.

y-axis

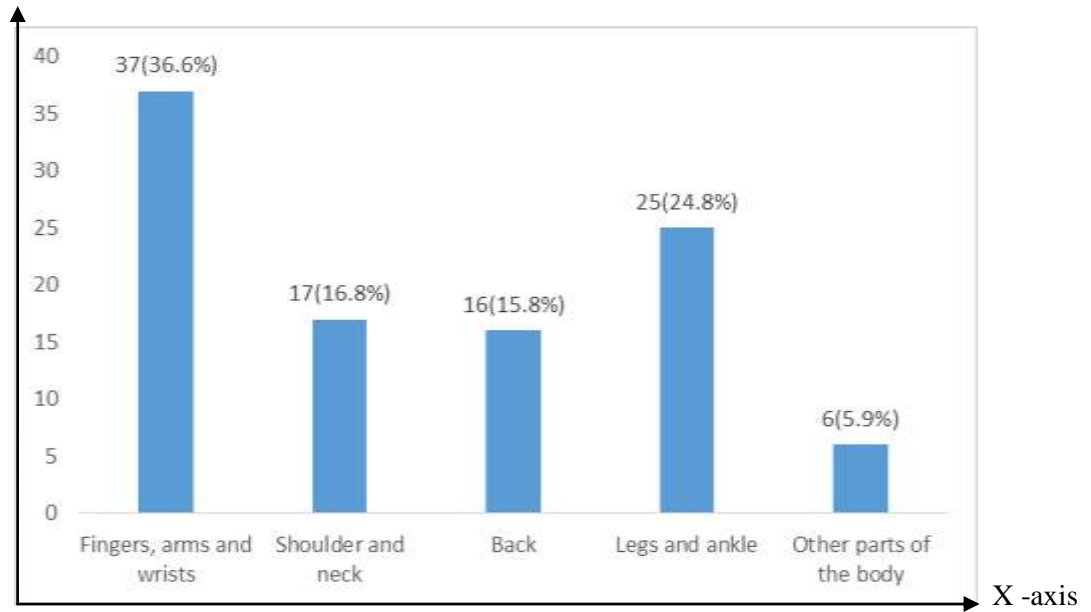


Figure 4.2: Part of the body injured/affected



Figure 4.3: A cut on the finger of a slaughterhouse worker accidentally meted by a colleague

4.4.3 Causes of injuries

Table 4.6 presents results on the causes of injuries among the respondents who had suffered work-related injuries. The results revealed that 34.7% of the respondents reported slips and falls as the main cause of injury, followed by 21.8% who reported cause of injury to be handling and lifting. 18.8% were injured by an object 10.9% were injured by an animal.

7.9% of injuries were caused by electrical faults, then lastly 5.9 % injuries ,were caused by fire

Table 4.6: Causes of injuries among respondents (N=101)

Cause of injury	Frequency (N)	Per cent (%)
Fire	6	5.9
Electrical problem	8	7.9
An animal	11	10.9
Struck by an object/machinery	19	18.8
Handling and Lifting	22	21.8
Slips and falls	35	34.7

4.4.4 Types of injuries suffered

Table 4.7 presents results on the types of injuries suffered among those respondents who reported work related injuries. The results revealed 50.5% of the respondents who had been injured had wound or superficial injury followed by 16.8% who reported burns, scald or frost bite injuries.

Table 4.7: Types of injuries suffered among respondents (N=101)

Type of injury	Frequency (N)	Per cent (%)
Concussion or internal injury	5	5.0
Bone fracture	6	5.9
Poisoning, infection or suffocation	6	5.9
Dislocation, sprain or strain	16	15.8
Burn, scald or frost bite	17	16.8
Poisoning, infection or suffocation	6	5.9

4.4.5 Provision of offs from work when injured

Figure 4.4 presents results of whether those respondents who had been injured were given off days after suffering injury. The results indicate that 64.4% of the respondents were not given offs from work after injury while the rest 35.6% were given offs. Results from qualitative results showed that worker did not want to be given off days as narrated by one FGD discussant who said;

“...When I get injured, I rather not tell my boss because if he gives me days off how will I cater for my family needs. I normally get go home with some meat for my family and also my dogs. One day I injured my hand and got admitted at the hospital for two weeks. During that time, I suffered paying the bills since I did not have any insurance and my family suffered without enough food. Since then I learned that I better bear with the pain and still continue working here than getting off days...”

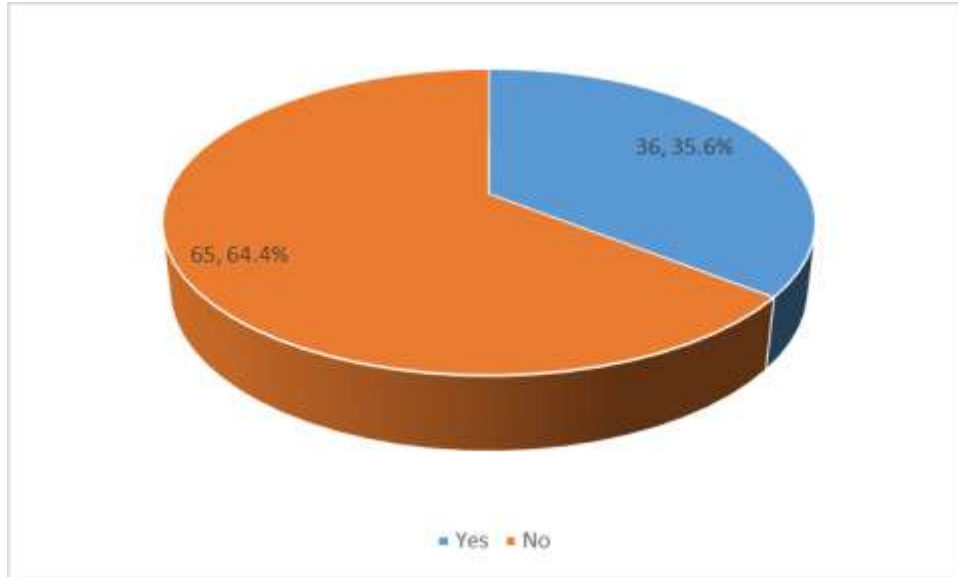


Figure 4.4: Were you given off when you were injured?

4.4.6 Reporting of injuries at the work place

Figure 4.5 presents results on injury reporting at the work place. Results revealed that 79.2% of the respondents who suffered work-related injuries reported to their fellow workers followed by 14.9% who reported to the manager while 5.9% reported to the supervisor.

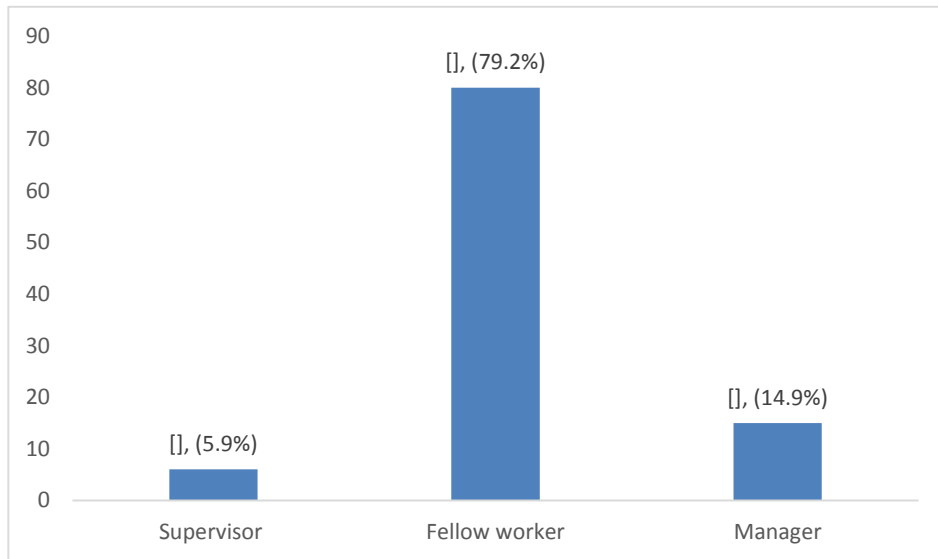


Figure 4.5: Whom the respondents reported to after the injuries.

4.4.7 Management of injuries

Figure 4.6 shows results on management of injuries suffered at the work place. The results showed that 48.5% of the respondents continued to work despite suffering an injury followed by 30.7% who received first aid after the injury. While 20.8% were taken to hospital.

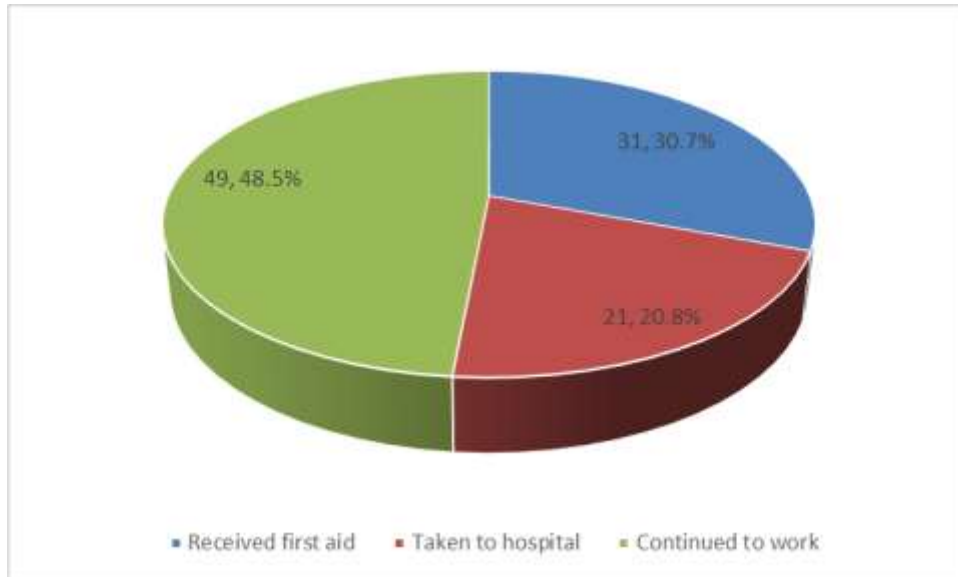


Figure 4.6: Type of treatment given after suffering an injury

4.4.8 Awareness of trained first aiders

Figure 4.7 presents results on presence of trained first aiders in the slaughter house, results showed that 58.4% of the respondents did not know whether there was a first aider in the slaughter house followed by 37.6% who reported that there was no presence of a first aider in the slaughterhouse and then 4% were aware of trained first aiders. Every slaughterhouse owner should provide and maintain first aiders so as to be readily accessible;- a first aid box, or cupboards of the prescribed standards should be present (OSH 2007, section 95).



Figure 4.7: Awareness of trained first aiders in the slaughter house

4.5 Attitude towards work-related injuries

4.5.1 Responses on attitude work-related injuries

Table 4.8 presents the attitude of respondents on work safety towards work related injuries among the respondents. Regarding attitude, the respondents were given seven (7) statements on a Likert scale of scores between 1-4 where “1” means strongly disagree and “4” means strongly agree. The results revealed that 71.7% of respondents of which 44.1% agreed and 27.6% strongly agreed that good housekeeping contributed to slaughter house work safety. The findings also showed that 63.8% of the respondents of which 34.1% strongly agreed and 29.7% agreed that use of PPEs in slaughterhouse reduces chances of work-related injuries.

Concerning slaughterhouse safety promotion responsibility, results indicated 61.7% of the respondents of which 35.5% strongly disagreed and 26.2% disagreed that it was their responsibility. 55.9% of which 30.1% disagreed and 25.8% strongly

disagreed that they would inform someone to be cautious in case of unsafe, dangerous or risky situations. 59.8% of the respondents of which 31.5% strongly disagreed and 28.3% disagreed that Slaughter house work safety was a priority in the facility to reduce work related injuries.

Research findings further revealed that 52.0% of the respondents of which 38.0% strongly disagreed and 14.0% disagreed that adherence to slaughterhouse health and safety policies was not a waste of time. Slightly more than half 52.5% of the respondents of which 29.7% strongly disagreed and 22.6% disagreed that they were confident that an action would be taken in the event of injuries.

Table 4.8: Responses on attitude towards work safety among respondents (n=279)

Independent Variable	Respondent response			
	Strongly disagree	Disagree	Agree	Strongly agree
Good housekeeping contributes to slaughter house work safety	45(16.1%)	34(12.2%)	123(44.1%)	77(27.6%)
Use of PPEs in slaughterhouse reduces chances of work-related injuries	39(14.0%)	62(22.2%)	83(29.7%)	95(34.1%)
Slaughterhouse safety promotion is part of my responsibility	99(35.5%)	73(26.2%)	50(17.9%)	57(20.4%)
I would inform someone to be cautious in case of unsafe, dangerous or risky situations	72(25.8%)	84(30.1%)	68(24.4%)	55(19.7%)
Slaughter house work safety is a priority in this facility to reduced work related injuries	88(31.5%)	79(28.3%)	50(17.9%)	62(22.2%)
Adherence to slaughterhouse health and safety policies is not a waste of time	106(38.0%)	39(14.0%)	94(33.7%)	40(14.3%)
I am confident that an action will be taken in the event of injuries	83(29.7%)	63(22.6%)	78(28.0%)	55(19.7%)

4.5.2 Level of attitude towards work safety on work related injuries

Figure 4.11 presents results on attitude towards work related injuries among respondents. The seven (7) statements concerning attitude had a minimum score of 7 and maximum score of 28. The scores were further divided into two categories. Negative attitude ranged from 7-17 and positive attitude ranged from 18-28. The

results revealed that 55.6% of the respondents had negative attitude towards work safety on work related injuries while 44.4% had positive attitude.

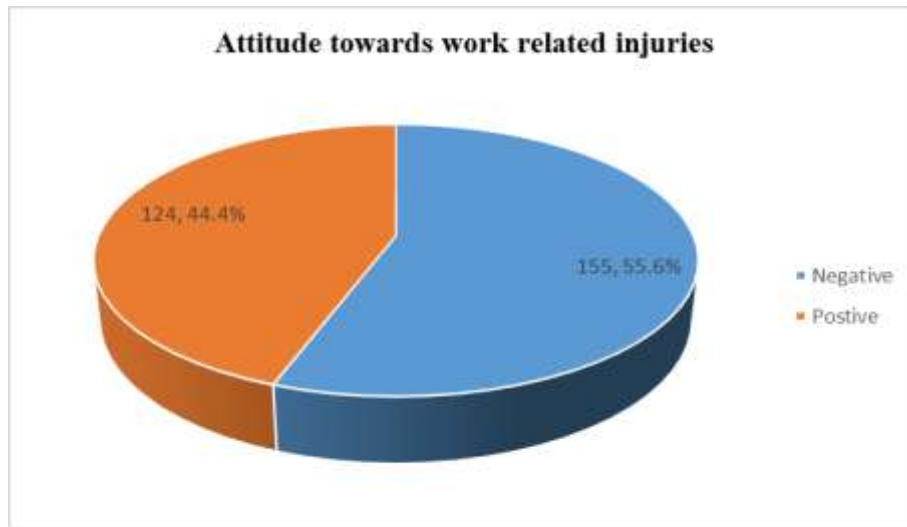


Figure 4.8: Level of attitude on work safety among respondents

4.5.3 Influence of attitude level on work related injuries

Fig 4.8 presents results on the influence of attitude on work safety towards work-related injuries among the respondents. The results indicated that 68.5% of the respondents who had positive attitude towards work place safety did not suffer any work-related injury. There was a significant statistical association between attitude and suffering work-related injuries ($p=0.014$). Results from qualitative results showed that negative attitude was attributed to safety on work-related injuries as narrated by one FGD discussant who said;

“...I have to work faster to make sure I attain my daily goals so that I can get paid. Sometimes I have to go to the other slaughterhouse when have finished my assigned work so that I can make more money and take care of my family needs. If I start worrying about safety here my family will sleep. I know it is for my best interest but my needs come first before thinking of my safety. In any case I have never gotten any serious injury apart from some normal slips and falls...”

Table 4.9: Association between attitude level and work-related injuries among respondents (n=279)

Independent variable	Ranges	Respondent response	Dependent variable (Suffered a work-related injury)		Statistical significance
			Yes (N=101)	No (N=178)	
Level of attitude	7-17(55.6%)	Negative	62(40.0%)	93(60.0%)	$\chi^2=11.062$ df=1 p=0.014
	18-28(44.4%)	Positive	39(31.5%)	85(68.5%)	

CHAPTER FIVE: DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter covers discussions, conclusions and recommendations on prevalence of work-related injuries, socio-demographic factors, individual factors and attitude towards work safety.

5.2 Discussions

5.2.1 Prevalence of work-related injuries

The study sought to establish whether the respondents had been injured in the course of tendering their duties in the present place of work. The results showed that 36.2% of slaughterhouse workers suffered work-related injuries. This is a significant number of people being affected due to the nature of the slaughterhouse industry where people are exposed to work under risk conditions. This also brings to light that safety at work is not fully observed. Dirty slaughterhouse floors, dangerously held slaughterhouse tools, like knives, and the fight to outwit each other were evident in the slaughterhouses.

With the apparent lack of regard for safety, a myriad of injuries were reported to be common phenomena in the slaughterhouses. The results were contrary to a study done on self-reported occupational injuries among industrial beef slaughterhouse workers in in Mid-Western United States where 24.1% of the respondents reported suffering from work-related injuries (Leibler and Perry, 2017). In a study done on

laceration injuries and infections among workers in the poultry processing and pork meat processing packaging industries, the prevalence of injuries suffered were 6.4% and 13.2% respectively (Kyeremateng-Amoah *et al.*, 2014).

Concerning the part of the body mostly affected/injured, the results showed that 36.6% of the respondents who had reported a work-related injury had injured/affected their fingers, arms and/or wrists. This may be attributed to the fact that slaughterhouse work is mostly manual work that involves working with dangerous tools/machines such as knives which may expose workers to injure their fingers, arms or wrists. The consequence being that regard for safety, including wearing safety clothing was not prioritized. It also involves lifting materials using arms and fingers thus the more affected part of the body. These results were similar to a study done by Tirloni *et al.* (2017) which revealed that most work-related injuries were on fingers among poultry slaughterhouse workers. According to Vieira (2017), he noted most affected parts of the body to be fingers, hands and wrist among slaughterhouse workers. In another study done in the USA among slaughterhouse workers, contrary results were reached where it was noted that most work-related injuries suffered were head injuries (Smith, 2017).

Regarding the causes of work-related injuries suffered in slaughterhouse industry, the results revealed that 34.7% of the respondents reported slips and falls. This may be because slaughterhouse work is done in such an environment which is ever dirty and working on slippery floors due to use of water to wash meat products. In the rush to outshine other slaughterhouses, speed in killing and selling were noted to

characterize the slaughterhouses. In another study on occupational hazards among abattoir workers associated with non-compliance to the meat processing and waste disposal laws in Malaysia, sharp equipment such as knives caused most injuries (Abdullahi *et al.*, 2016). Being knocked by irate animals was so common that the workers no longer viewed it as an issue, but laughed at the affected worker. The results were contrary to a study in Kumasi, Ghana where fighting among slaughterhouse workers was the most cause of injuries (Kumah *et al.*, 2015).

The study further showed that 50.5% of the respondents who reported to have suffered a work-related injury had a wound or superficial injury. Once again, working in slaughterhouses involves working with risk tools with poor working conditions, which may result to suffering some superficial injuries in the course of duty. Change of workers from one slaughterhouse to another are confronted with new working environments and designs, as a substantial cause of the injuries. The results were similar to conclusions from Cook *et al.* (2017) which revealed that wounds were most prevalent type injury suffered among slaughterhouse workers. According to studies done in USA, inconsistent results were also reported where lacerations were the most common injury type among slaughterhouse workers (Leibler *et al.*, 2016).

The results revealed that 64.4% of the respondents were not given offs from work after injury. Slaughterhouse industry is characterized by busy work industry. This is because once one is given an off, it means you are not paid your daily dues since you are off from work. This therefore, forces those who suffer minor injuries to continue

working as to meet their daily requirements. These clearly came out during the FGD sessions held with the slaughterhouse workers. According to Leibler and Perry (2017) on their study on self-reported injuries among industrial beef slaughterhouse workers in USA, it was noted that majority of the respondents who were injured were excluded from work by being given day-offs. Contrary results were also reported by Dionne et al. (2013) where those injured slaughterhouse workers were given day-offs to seek for treatment. Ribas (2016) on his study, revealed that giving slaughterhouse workers day-offs was treated as absenteeism from work where no remunerations were not honored.

The findings from this study revealed that 79.2% of the respondents who suffered work-related injuries reported to their fellow workers. This means that they feel comfortable sharing such information to their colleagues rather than their superiors in the name of managers and supervisors. Due to the nature of the industry, the workers may also see it as part of their job since injuries do occur day in day out basis in their places of work. Supervisors and managers tended to blame workers and external factors for the injuries, this study's findings point to lack of standard designs for the slaughterhouses. The results were consistent with reports by workers and supervisors/managers that indicated tendency for slaughterhouses to conceal information about injuries in their facilities (Gerlock, 2016). The results were contrary to a study done on "slaughtering for a living; a hermeneutic phenomenological perspective on the wellbeing of slaughterhouse employees,"

where majority of the respondents reported injuries to management (Victor & Bernard, 2016).

Regarding management of injuries suffered at the work place, the results showed that 48.5% of the respondents continued to work despite suffering an injury followed. This may be explained by the fact that majority of the injuries were minor injuries which workers opt to work with thus they don't see the need to attend hospitals. This slaughterhouse business is all about owners making more profit, and workers making more commission. In some slaughterhouses, not even an urgent need to answer the call of nature can interrupt the slaughterhouse business. During the FGD and KII sessions it was further revealed that severe cases were given priority as compared to minor cuts and wounds suffered at work. In many studies it has been suggested that there is need to expound extensively for injury mitigation mechanisms in workplaces, without which injury occurrences would be inevitable (Chapman & Thompson, 2016).

Finally, on the presence of trained first aiders in the slaughterhouse industry, the study findings revealed that 58.4% of the respondents did not know whether there was a first aider in the slaughterhouse. This may be due to the fact that profit maximization is the key priority in majority of the slaughterhouses and therefore absence of trained first aiders. This is because the owners are business oriented and the workers are rushing while at work to meet their personal job demands. It also means that the issues with keeping in toes with health safety and policies through presence of trained first aiders has largely been marred by such motives. The results

were consistent to another study done among slaughterhouse workers in Manabi, Ecuador where there were no trained first aiders in the industry (Delgado *et al.*, 2015).

5.2.2 Socio-demographic factors

The study sought to find out the socio-demographic factors associated with work related injuries among slaughterhouse workers in Nairobi City County. The results revealed that 39.8% of the respondents were aged between 28-37 years. This may be due to the fact that majority of the Kenyan population are aged between 24-35 years as per the results of the National Census 2019 (KNBS, 2019). The results were contrary to a study done by Sundstrup *et al.* (2014) on high intensity physical exercise and pain in the neck and upper limb among slaughterhouse workers which revealed that the average age of respondents was 44 years (Bertozzi *et al.*, 2015).

The results were consistent with a study done on occupational health hazards as perceived by poultry processing slaughterhouse workers which showed that majority of the respondents were in their thirties (Saneya *et al.*, 2018 and Pinetti *et al.*, 2015). There was a significant statistical association between age and suffering of work related injuries ($p=0.045$). This may be attributed to the fact young people tend to do their work in hurry without being so keen as compared to their older counterparts thus may result to injuries. The results were contrary to a study done in South Eastern Iran which revealed that there was no association between age- and work-related injuries among slaughterhouse workers (Esmaeili *et al.*, 2016).

The results further revealed that 96.1% of the respondents were male. In a true African society, working in a slaughterhouse has largely been termed as the work of men. This may be associated with the nature of the hard work done in such environments which requires more of physical strength. The results were similar to a study done in Western Kenya on working conditions and public health risks in slaughterhouses which showed that majority of the respondents were male (Cook *et al.*, 2016).

Consistent results were also reported by other studies which revealed that majority slaughterhouse workers are men (Leibler & Perry, 2017; Tirloni *et al.*, 2017). In other studies done in Brazil among poultry slaughterhouse workers, inconsistent results were reported where majority of the respondents were female (Bertozzi *et al.*, 2015 & Pinetti *et al.*, 2015). There was no significant statistical association between gender and suffering work-related injury ($p=0.196$). This may be explained by the fact that majority of the respondents were male thus they overwhelmed their female counterparts. This finding aligns with those of the study conducted by (Khan *et al.*, 2017) and found that women have less of a 'tough guy' attitude than their male colleagues, and suggested the need to deviate from the modernist hyper-masculine norms in workplaces, so as to inculcate positive impacts on work practices and injury outcomes.

Regarding marital status, the results revealed that 41.9% of the respondents were single. This may be as a result of the fact that majority of the respondents were younger male people who significantly marry at an advanced age as compared to

their female counterparts since they are looking to stabilize before settling with a family. Also, hard economic times may bar individuals from getting married especially in the towns such as Nairobi city with higher standards of living. The results were in agreement with a study on slaughterhouse workers in Sharkia Governorate which revealed that majority of the respondents were single (Ahmed, 2013).

The results were contrary to a study done in Kano Metropolis in Nigeria, on analysis on work related musculoskeletal disorders among butchers which revealed that majority of the respondents were married (Kaka *et al.*, 2016). There was no significant statistical association between marital status and suffering work-related injuries ($p=0.126$). The results were contrary to a study done by Jacques (2015) who revealed that there was a significant statistical association between marital status and work-related injuries. This was due to the fact that once married, risk-taking may be slowed by the attachment that the workers have towards their family which manages the extent of risk-taking for what it can cost their young families. Being married can also trigger one to take low-income jobs, work in stressful environments so as to take care of the welfare of their children and wives.

Concerning the respondents' income per month, results indicated that 45.2% of them earned between Kshs 10,001-15,000. The slaughterhouse industry is characterized by more manual work with low remuneration rates. The results were consistent with a study done in Denmark and Germany on understanding the diverging trajectories of slaughterhouse work where it was revealed that majority of the respondents were

characterized by low income/wages (Wagner *et al.*, 2016). Similar results were also reached in another study on “Slaughtering for a living; A hermeneutic phenomenological perspective on the wellbeing of slaughterhouse employees where majority of the respondents earned low incomes with limited family resources (Victor & Bernard, 2016).

There was a significant statistical association between monthly income and suffering work related injuries ($p=0.027$). More injuries were among those who earned significantly less monthly income. In fact, low-income earners in slaughterhouse do most of the manual worker thus exposed to more injuries. Those who earned more were probably their managers and supervisors, thus may have not been exposed to slaughterhouse work related injuries. The results concur with another study done by Ribas *et al.*, (2016) which reported that income was significantly associated with increased work-related injuries among slaughterhouse workers.

Finally, the results revealed that 47.0% of the respondents attained secondary level of education. This is a through reflection of the Kenyan population where majority of the people have at least attained a secondary level of education (KNBS, 2019). This can be explained further by the government’s efforts to ensure 100% transition from primary to secondary education. The results were contrary to another Kenyan study which revealed that majority of slaughterhouse workers are primary school leavers (Cook *et al.*, 2017). In another study on routinized killing of animals: Going beyond dirty work and prestige to understanding the wellbeing of slaughter house workers,

similar results were reported where majority of the respondents had attained secondary level of education (Baran *et al.*, 2016).

There was a significant statistical association between highest educational level attained and suffering work related injuries ($p=0.024$). This may be attributed to the fact that those who had higher levels of education were better informed on injuries in the workplace and were more cautious. It could also be due to those who had higher education levels were designated as supervisors or managers thus less exposed to manual work which is associated to work related injuries in the slaughterhouse industry. The results were in agreement with a study done on occupational and health hazards as perceived by poultry processing slaughterhouse workers where education played a significant role in leading to work related injuries (Saneya *et al.*, 2018).

5.2.3 Individual factors

The study also sought to determine individual characteristics that are hypothesized to cause work related injuries among slaughterhouse workers. The results showed that 63.1% of the respondents had a work experience of less than 2 years. This is because slaughterhouse industry is associated with high turnover rates of employees as a result there is increased risks coupled with poor working conditions. It witnesses workers moving from one slaughterhouse to the other in such of better places of work in terms of remuneration and working conditions. The results concurred with a study done in the United States of America which revealed that most of the slaughterhouse workers had a work experience of less than 1 year (Penetti *et al.*, 2015). In another study done by Leibler and Perry (2017), they noted that more than

half of the slaughterhouse workers interviewed had a work experience of more than 5 years.

There was a significant statistical association between experience at work and suffering work-related injuries ($p=0.007$). It is thought that once one is repetitively doing the same piece of work enhances one with on-job skilling that serving longer in an industry that makes one undertake tasks mechanically without giving their thoughts to what they are doing. Contrary results were reported by Ferrante (2014) who explained that the period a slaughterhouse worker had been in the industry was not significantly associated with work related injuries in slaughterhouse industries. He further explained that this was due to the fact that the slaughterhouse industry is of little variety and repetitive tasks. The amount of thought and time needed to perform a task also decreases and thus injuries results in such environments in consequence of instrumental rational action.

Regarding awareness on work related injuries among respondents, the results showed 73.1% of the respondents aware of work related injuries in the slaughterhouse environment. This may be as a result of either having injured or seen a friend was affected/injured. Also, in the slaughterhouse industry, injuries are prone due to the nature of the working environment. The results were contrary to other studies conducted in Turkey and Sudan which revealed that the slaughterhouse workers had low levels of awareness towards work related injuries respectively (Demirhan, 2016 and Mohamed, 2017). There was an association ($p=0.002$) between awareness on work related injuries and suffering work related injuries. Awareness on work related

injuries meant that those who were aware were more likely to be cautious in dispensing their duties.

Regarding training on work place safety in the past 2 years, the results revealed that 78.5% had not been trained. As explained early, slaughterhouse industry is characterized by working in risk environments but with little attention paid to adherence to work safety policy. This explains as to why majority of the respondents reported not to have engaged in any safety training. The results were contrary to a study done by Andersen et al. (2017) who noted that majority of respondents had been trained on slaughterhouse safety. In Malaysia, a study done on slaughterhouse safety revealed that only those who were trained were allowed to work in an abattoir (Abdullahi *et al.*, 2016).

There was a significant statistical association between being trained on work place safety in the past 2 years and suffering work-related injuries ($p=0.026$). Those who were trained suffered less work-related injuries as compared to their counterparts. The results were similar to a study done by Sundstrup *et al.* (2013) who training and guidance on work injuries and suffering of work-related injuries among slaughterhouse workers. Among the workers, elements of trained incapacity, a worker performing his/her tasks mechanically without engaging all his/her senses to it, for example, looking the other way while simultaneously cutting the meat, results to injuring oneself or other colleagues.

Concerning the motivation towards work place safety, results showed that 38.4% were motivated by the fact that they had been injured. This means that once beaten twice shy and hence people were more cautious not to get injured again. The results were similar to a study done by Dang-Xuan *et al.* (2016) which revealed that majority of new workers who were recruited in the slaughterhouse industry were motivated to learn work safety so as to prevent unnecessary injuries. There was a statistical association between motivation towards work place safety and suffering work related injuries ($p=0.001$). In another study on distribution and importance of meat inspection tasks in Finnish high-capacity slaughterhouse, it was shown that work motivation towards health and safety policies led to reduced work-related injuries (Luukkanien *et al.*, 2015).

Regarding use of drug and substances while at work, the results showed that 85.7% of the respondents were not using any. Using drugs and other substances reduces judgmental thinking which may result in recklessness among workers in slaughterhouse industries. According to a study done on “slaughtering for a living; a hermeneutic phenomenological perspective on the wellbeing of slaughterhouse employees,” it was reported that pressure of work and stress of recurring nightmares and dreams forced some of the workers to engage in drug and substance abuse (Victor & Bernard, 2016). However, there was no statistical association between use of drugs and/or substances at the work place and suffering from work-related injuries ($p=0.378$). This may be attributed to the fact that only few of the respondents interviewed were on drugs. In another study it was contrary results were revealed

where it was concluded that substance and drug abuse was one of the leading causes of injuries among slaughterhouse workers (Lebwohl, 2016).

Further results indicated that 67.8% of the respondents were not knowledgeable on existence slaughter-house safety policy. This may be due to ignorance on making use of safety policies especially in the slaughterhouse industries where implementation has been marred by a number of challenges. It has become a daily norm not to adhere to workplace safety policy and guidelines which be seen as a waste of time by workers. The results were inconsistent with studies done across the world which have reported that majority of the people were knowledgeable about occupational risks and workplace safety policy in slaughterhouse premises (Smigic *et al.*, 2016 and Ablah, 2017). However, there was no association between knowledge of existing slaughter house safety policy and suffering from work-related injuries among the respondents ($p=0.501$). This may be probably due to the nature of working conditions in the slaughterhouse industry.

5.2.4 Attitudes towards workplace safety in slaughterhouses

The study sought to determine the attitude of respondents on work safety and its influence on work related injuries. The results revealed that 71.7% agreed that good housekeeping contributed to slaughter house work safety. This is because proper arrangement of the work environment ensures easy access of working tools and machines as well tidy working conditions. This in the long run ensures that there are reduced work-related injuries especially in slaughterhouse industries. The results

were similar to a study by Bains *et al.* (2013) which reveals good housekeeping practices are likely to solve some of the injuries encountered in the slaughterhouse industries. In another study done among Immigrant Latin workers in USA, the findings showed that poor housekeeping posed hazards/unsafe conditions which predisposed slaughterhouse workers to injuries (Menger *et al.*, 2016).

The findings also showed that 63.8% of the respondents agreed that use of PPEs in slaughterhouse reduces chances of work-related injuries. However, as much as PPEs may be available, they were not consistently used by some individuals which showed that they had poor attitude towards their use. This significantly exposes them to dangerous environments that are injurious to slaughterhouse workers. The findings were similar to a study done in Brazil where use of PPEs was associated to lowering of injuries among slaughterhouse workers (Dias & Moro, 2019). In another study done on indicators of work accidents in slaughterhouse refrigerators and broiler processing, it was indicated that most accidents and injuries reported were attributed to non-use of PPEs (Takeda *et al.*, 2018).

Concerning slaughterhouse safety promotion responsibility, results indicated that 61.7% of the respondents disagreed that it was their responsibility. This may be because individual slaughterhouse workers thought that it was the responsibility of may be the management and government systems that are mandated to ensure workplace safety. Not knowing that work safety is a collaborative responsibility to ensure a safe working environment by adhering to work-safety in their places of work so as

to reduce exposure to injuries. According to Occupational Safety and Health Act (OSHA, 2007), it is the responsibility of the employer to ensure the working environment is safe (Manduku, 2017). At the same time, the employees should adhere to health and safety policies to reduce work related injuries (Balanay *et al.*, 2014). The results were similar to a study done by Dose-Rais *et al.* (2015) which stipulated that it's the workers' responsibility to ensure that they are safe at work. Contrary results were reported by another study which showed that support and supervisory staff should keep watch on the safety of the workers (Parker, 2015).

55.9% disagreed that they would inform someone to be cautious in case of unsafe, dangerous or risky situations. Risk situations should be reported immediately they are discovered to avoid resulting work related injuries. But because of the nature of the slaughterhouse industry where supervisors and managers try to conceal information on worker safety, most of the workers did not see the need to report such cases. The results were inconsistent to a study done in South Korea where majority of the slaughterhouse workers revealed that they always take precautions by informing their fellow workers on potential hazards (Park *et al.*, 2018). In another study done in Tanzania on occupational hazards associated with human brucellosis in abattoirs settings, it was shown that such risks are reported to public health authorities (Luwumba *et al.*, 2019).

52.5% of the respondents disagreed that they were confident that an action would be taken in the event of injuries. This is due to the fact that slaughterhouse industries are

associated with high risks where injuries are reported daily. Cases of neglect are always evident where people may be injured but there are no mitigation measures that are put in place to ensure work safety. Studies done across the world have revealed that actions are always taken to avert risk occurrences in slaughterhouse working environments (Doroviskikh, 2015 and Tirloni *et al.*, 2017). According to Baran *et al.* (2016), it was revealed that slaughterhouse workers feared that nothing can be taken even if they report.

Regarding the overall attitude of worker on adherence to work safety policies, the results revealed that 55.6% of the respondents had negative attitude. Normally people see adherence to health and safety policies as a punishment imposed on them. They lack consistency in following such rules which are meant to safeguard their health thus reduce work related injuries. The results were contrary to a study done in Malaysia among slaughterhouse workers where it was revealed that majority of the respondents had a positive attitude (Abdullahi *et al.*, 2016). In another study, similar results were reported whereby negative attitude towards work safety at slaughterhouse hence they did not wear masks and other PPEs (Jenpanich *et al.*, 2016). There was a significant statistical association between attitude on work safety policies and suffering work-related injuries ($p=0.014$). Those who had negative attitude on safety policies were more likely not to adhere to health and safety policies thus exposed to more work-related injuries. The results concur with a study done by Nielsen *et al.* (2015) which associated attitude towards work safety and suffering occupational injuries among slaughterhouse workers.

5.3 Conclusions

- The study concludes that majority of socio-demographic factors were influenced occurrence of work-related injuries among slaughterhouse working in Nairobi City County Kenya. The following socio-demographic factors influenced occurrence of work-related injuries; age, income and level of education.
- The study further concludes that most of the individual factors played a key role towards occurrence of work-related injuries which were; work experience, awareness, training on work safety, motivation and willingness to use PPEs.
- The findings of this study showed that the overall prevalence of work-related injuries among slaughterhouse workers in Nairobi City County was 36.2%. Fingers, arms and wrists were mostly affected. Wounds or superficial injuries were mostly prevalent. The main cause of work-related injuries were slips and falls.
- Finally, the study concludes that the overall attitude towards work safety among slaughterhouse workers was negative. Attitude level influenced occurrence of work-related injuries in Nairobi City County.

5.4 Recommendations

5.4.1 Recommendations from the study

- (i) Slaughterhouses should innovate injury mitigation measures that among others; reward workers that promote safe in the slaughterhouse environments, training of workers.
- (ii) The study recommends that the income earned by slaughterhouse workers should be reviewed for better payment to avoid rushes at work so as to reduce high employee turnover associated with hiring of inexperienced individuals.
- (iii) The county government of Nairobi City together with management of slaughterhouses should enforce adherence to safety policies such as use of PPEs and circulation of constant reminders to reduce the prevalence of work-related injuries.
- (iv) Management together with other actors in the slaughterhouse industry should foster attitude change towards slaughterhouse work safety through holding regular safety talks and seminars to advise workers on the importance of adherence towards work safety as a way of reducing slaughterhouse work related injuries.

5.4.2 Recommendations for Further Research

Further research is needed to:

- i. Establish the statistical significance of having more women working as slaughterhouse workers, and how that is managed with the slaughterhouse environments that appear to be very hostile to women as demonstrated from studies that associate them with sexual harassment, rape, etc; and
- ii. Identify injury mitigation mechanisms safe for different slaughterhouse types.

REFERENCES

- Abdullahi, A., Hassan, A., Kadarman, N., Junaidu, Y. M., Adeyemo, O. K., & Lua, P. L. (2016). Occupational hazards among the abattoir workers associated with noncompliance to the meat processing and waste disposal laws in Malaysia. *Risk management and healthcare policy*, *9*, 157.
- Ablah, A. I. T. (2017). Assessment of Food Safety Knowledge, Attitudes and Practices among Slaughterhouses Workers in Khartoum State-Sudan (Doctoral dissertation, Sudan University of Science & Technology).
- Ahlstrom, L., Grimby-Ekman, A., Hagberg, M., & Dellve, L. (2010). The work ability index and single-item question: associations with sick leave, symptoms, and health—a prospective study of women on long-term sick leave. *Scandinavian journal of work, environment & health*, 404-412.
- Ahmed, A. S. (2013). Occupational Dermatoses among poultry slaughterhouse Workers in Sharma Governorate: *an epidemiological study*.
- Andersen, L. L., Persson, R., Jakobsen, M. D., & Sundstrup, E. (2017). Psychosocial effects of workplace physical exercise among workers with chronic pain: randomized controlled trial. *Medicine*, 96(1).
- Bains, P., Kaur, S., Saint, S. K., & Singh, A. (2013). Health Promoting Workplaces. ” &, 61.
- Balanay, J. A. G., Adesina, A., Kearney, G. D., & Richards, S. L. (2014). Assessment of occupational health and safety hazard exposures among working college students. *American journal of industrial medicine*, 57(1), 114-124.
- Baran, B. E., Rogelberg, S. G., & Clausen, T. (2016). Routinized killing of animals: Going beyond dirty work and prestige to understand the well-being of slaughterhouse workers. *Organization*, 23(3), 351-369.
- Bertozzi, L., Villafañe, J. H., Capra, F., Reci, M., & Pillastrini, P. (2015). Effect of an exercise programme for the prevention of back and neck pain in poultry slaughterhouse workers. *Occupational therapy international*, 22(1), 36-42.

- Chapman, M., & Thompson, K. (2016). Preventing and Investigating Horse-Related Human Injury and Fatality in Work and Non-Work Equestrian Environments: *A Consideration of the Workplace Health and Safety Framework. Animals* , 633, doi:10.3390/ani6050033.
- Cook, E. (2014). The epidemiology of zoonoses in slaughterhouse workers in Western Kenya.
- Cook, E. A., de Glanville, W. A., Thomas, L. F., Kariuki, S., Bronsvort, B. M., & Fevre, E.M. (2017). Working conditions and public health risks in slaughterhouses in western Kenya. *BMC Public Health* , 17 (14), 1- 12.
- Cook, E., Glanville, W., Thomas, L., Kariuki, S., Bronsvort, B., & Fevre, E. (2016). Risk factors for leptospirosis seropositivity in slaughterhouse workers in western Kenya. *Occupational and Environmental Medicine* .
- Cudworth, E. (2011). Social lives w/h other animals. Tales of sex, death and love. *Springer*.
- Dang-Xuan, S., Nguyen-Viet, H., Meeyam, T., Fries, R., Nguyen-Thanh, H., Pham-Due, P. & Unger, F. (2016). Food safety perceptions and practices among smallholder pork value chain actors in Hung Yen Province, Vietnam. *Journal of food protection*, Z9(9), 1490-1497.
- Delgado, D., Roque, P., Cedeño, P., & Villoch, C. (2015). Analysis of the fulfillment of the Good Working Practices in five municipal slaughterhouses at Manabi, Ecuador. *Revista de Salud AnflTiol*, 37(2), 69-78.
- Demirhan, M. F., Demirhan, S. A., & Helen, B. (2016). State of Health and Safety in Animal Husbandry In Turkey. *Gaditia LXI BroJ* 66, 36.

- Dias, N. F., & Moro, A. R. P. (2019, June). Ergonomic Risk Evaluation of the Manual Handling Task of Bovine Quarters in a Brazilian Slaughterhouse. In *Advances in Physical Ergonomics and Human Factors: Proceedings of the AHFE 2019 International Conference on Physical Ergonomics and Human Factors, July 24-28, 2019, Washington DC, USA* (Vol. 967, p. 57). Springer.
- Dionne, C. E., Bourbonnais, R., Frémont, P., Rossignol, M., Stock, S. R., & Laperriere, E. (2013). Obstacles to and facilitators of return to work after work-disabling back pain: The workers' perspective. *Journal of Occupational Rehabilitation, 2J(2)*, 280-289.
- Dorovskikh, A. (2015). Killing for a living: Psychological and physiological effects of alienation of food production on slaughterhouse workers. *Undergraduate Honors Theses*.dos Reis, D. C., Ramos, E., Reis, P. F., Hembecker, P. K., Gontijo, L. A., & Moro, A. R. P. (2015). Assessment of risk factors of upper-limb musculoskeletal disorders in poultry slaughterhouse. *Procedia Manufacturing, 3*, 4309-4314.
- Emhan, A., Yildiz, A., Bez, Y., & Kingir, S. (2012). Psychological symptom profile of butchers working in slaughterhouse and retail meat packing business: A comparative study. *Kafkas Universitesi Veteriner Fakultesi Dergisi*, 18 (2), 319-322.
- Escobar, F., & Gutiérrez, M. (2014). Injuries are not accidents. *Colombia Medica*, 45 (3), 132-138.
- FAO. (2010). Abattoir development. Options and designs for hygienic basic and medium sized abattoirs. *Rome: Food and Agriculture Organization of the United Nations*.
- Esmaili, S., Naddaf, S. R., Pourhossein, B., Shahraki, A. H., Amiri, F. B., Gouya, M. M., & Mostafavi, E. (2016). Seroprevalence of brucellosis, leptospirosis, and Q fever among butchers and slaughterhouse workers in south-eastern Iran. *Plot one, 17(1)*.
- Farmer, E. (2012). End market analysis of Kenyan livestock and meat.' a desk study USAID micro reportt #184. Micro links.

- Ferrante, I. (2015). *Sociology: A Global perspective*. Boston, USA: Cengage Learning.
- Fitzgerald, A., Kalof, L., & Dietz, T. (2009). Slaughterhouses and increased crime rates - an empirical analysis of the spill over from 'the jungle' into the surrounding community. *Organization & Environment* , 22 (2), 158-184.
- Fitzgerald, A., Kalof, L., & Dietz, T. (2010). Slaughterhouses and increased crime rates: An empirical analysis of the spill over from "the jungle" into the surrounding community. *Organization & Environment*, 1-27.
- Food Empowerment Project (2017). *Responsible Eating and Living*. Retrieved September 21, 2017.
- Gerlock, G. (2016). Slaughterhouse injuries are being hidden from regulators. Retrieved October 30, 2016, from <https://www.organicconsumers.org>: <https://www.organicconsumers.org/news/slaughterhouse-injuries-are-being-hidden-regulators>
- Government of Kenya. (2012). *Meat Control Act. Revised Edition*. Nairobi, Kenya: Council for Law Reporting.
- Government of Kenya (GoK).(2010).*The Constitution of Kenya*.Nairobi, Kenya:*Government Printers*
- Haegerich, T., Dahlberg, L., Simon, T., Baldwin, G., Sleet, D., & Greenspan, A. (2014). Prevention of injury and violence in the USA. *Lancet* , 384 (9937), 64-74.
- Holland, B., Soer, R., de Boer, M., Reneman, M., & Brouwer, S. (2015). Workers' health surveillance in the meat processing industry: work and health indicators associated with work ability. *Journal of Occupational Rehabilitation* , 25 (3), 618-626.
- Jacques, J. R. (2015). The slaughterhouse, social disorganization, and violent crime in rural communities. *society & animals*, 23(6), 594-612.

- Jenpanich, C., Unger, F., Alter, T., & Chaisowwong, W. (2016). Food safety knowledge, attitudes and practices among food handlers in Chiang Mai Province, Thailand.
- Kaka, B., Idowu, O. A., Fawole, H. O., Adeniyi, A. F., Ogwumike, O. O., & Toryila, M. T. (2016). An analysis of work-related musculoskeletal disorders among butchers in Kano Metropolis, Nigeria. *Safety and Health at Work*, 7(3), 218-224.
- Kenya National Bureau of Standards (KNBS). (2019). Kenya Demographic and Health Survey (KDHS. Nairobi: KNBS
- Khan, Y., Davis, A., & Taylor, J. (2017). Ladders and lifting: How gender affects safety behaviours in the fire service. *Journal of Workplace Behavioural Health*, 32 (3), 206-225.
- Kothari, C. (2008). Research methodology. Methods and techniques. New Delhi: Wiley Eastern Ltd.
- Kothari, C. R. (2004). Research methodology.' Methods and Techniques (2nd Ed.). New Delhi: New Age International Ltd.
- Kumah, D. B., Bisiw, J. D., Abdul—Kabir, M., & Osae, E. A. (2015). Ocular conditions among singed—hide butchers at The Kumasi abattoir. *mercury*, 14, 18.
- Kyeremateng-Amoah, E., Nowell, J., Luty, A., Lees, P. S., & Silbergeld, E. K. (2014). Laceration injuries and infections among workers in the poultry processing and pork meatpacking industries. *American journal of industrial medicine*, 57(6), 669-682.
- Kyeremateng-Amoah, E., Nowell, J., Luty, A., Lees, P. S., & Silbergeld, E. K. (2014). Laceration injuries and infections among workers in the poultry processing and pork meatpacking industries. *American journal of Industrial medicine*, 57(6), 669-682.
- Lebwohl, M. (2016). A Call to Action: Psychological Harm in Slaughterhouse Workers. *Yale Global Health Review*.

- Leiber, J. (2017). Self-reported occupational injuries among industrial beef slaughterhouse workers in the Midwestern United States. *Journal of Occupational and Environmental Hygiene*, 14 (1), 23-30.
- Leibler, J. H., & Perry, M. J. (2017). Self-reported occupational injuries among industrial beef slaughterhouse workers in the Midwestern United States. *Journal of occupational and environmental hygiene*, 14{1), 23-30.
- Leibler, J. H., Jordan, J. A., Brownstein, K., Lander, L., Price, L. B., & Perry, M. J. (2016). Staphylococcus aureus nasal carriage among beefpacking workers in a Midwestern United States slaughterhouse. *PloS one*, 11(2).
- Lowe, P. (2016, August 11). Working 'the chain,' slaughterhouse workers face lifelong injuries.
- Luukkanen, J., Kotisalo, N., Fredriksson-Ahomaa, M., & Lundén, J. (2015). Distribution and importance of meat inspection tasks in Finnish high-capacity slaughterhouses. *Food control*, 57, 246-251.
- Luwumba, D., Kusiluka, L., & Shirima, G. (2019). Occupational hazards associated with human brucellosis in abattoir settings: A case study of Dodoma abattoir in Tanzania.
- Lyons, B., Fowler, K., Jack, S., Betz, C., & Blair, J. (2016). Surveillance for violent deaths - National Violent Death Reporting System, 17 States. *Surveillance Summaries*, 65 (10), 1-42.
- Manduku, F. M., & MUNJURI, D. M. (2017). Extent of the implementation of the Occupational Safety and Health Act 2007 in the Sarova Group of Hotels in Nairobi. *International Journal of History Research*, 1(1), 1-17.
- Menger, L. M., Pezzutti, F., Tellechea, T., Stallones, L., Rosecrance, J., & Roman-Muniz, I. N. (2016). Perceptions of health and safety among immigrant Latino/a dairy workers in the US. *Frontiers in public health*, 4, 106.
- Mohamed, S. M. F. (2017). Importance of Implementation of OHSAS 18001 on the Performance of Slaughterhouse at Khartoum State (Doctoral dissertation, Sudan University of Science & Technology).

- Mugenda, O., & Mugenda, A. (2003). Research methods. Quantitative and qualitative approaches. Nairobi: ACT.
- Mutugi A. and Maingi N. (2011). Challenges of establishing the correct diagnosis of outbreaks of acute febrile illness in Attica: the case of a likely brucella outbreak among nomadic pastoralists, northeast Kenya, March-July 2005. *American Journal of Tropical Medicine and Hygiene* , 85, 909-912.
- Nielsen, K. J., Hansen, C. D., Bloksgaard, L., Christensen, A. D., Jensen, S. Q., & Kyed, M. (2015). The impact of masculinity on safety oversights, safety priority and safety violations in two male-dominated occupations. *Safety science*, 7d, 82-89.
- Park, J. H., Hwang, S. D., Acharya, D., Lee, S. H., Hwang, K. J., Yoo, S. J., & Lee, K. (2018). xenoreactivity and Risk Factors Associated with *Coxiella burnetii* Infection among Cattle Slaughterhouse Workers in South Korea. *International journal of environmental research and public health*, 15(10), 2264.
- Parker, S. K. (2015). Job design. *Wiley Encyclopaedia of Management*, 1-5.
- Pernetti, A. C. H., & Bezek, M. R. (2015, August). Ergonomic work analysis in a Brazilian poultry slaughterhouse cutting room. In *Proceedings 19th Triennial Congress of the IEA* (Vol. 9, p. 14).
- Ramos, E., dos Reis, D. C., Tirloni, A. S., & Moro, A. R. P. (2015). Thermographic analysis of the hands of poultry slaughterhouse workers exposed to artificially cold environment. *Procedia Manufacturing*, 3, 4252-4259.
- Refslund, B., & Wagner, I. (2018). Cutting to the bone: Workers' solidarity in the Danish- German slaughterhouse industry. In *Book conference. Reconstructing solidarity. Labour unions, precarious work, and the politics of institutional change in Europe*. *Oxford University Press*.

- Reid, S., & Gentius, J. (2017). Type and context of alcohol-related injury among patients presenting to emergency departments in a Caribbean Country. *International Journal of Environmental Research and Public Health*, 14 (877), 1-12.
- Ribas, V. (2016). *On the line. Slaughterhouse lives and the making of the New South*. University of California Press.
- Rockefeller Foundation. (2013). Training models for employment in the digital economy.
- Saniya, M., Hana, H. M., & Ebtasam, M. (2018). Occupational Health Hazards as Perceived by Poultry Processing Slaughterhouse Workers. *The Medical Journal of Cairo University*, 86(June), 1129-1138.
- Shepherd, M., Kool, B., Ameratunga, S., Bland, V., Hassall, I., Chambers, J., et al. (2013). Preventing child unintentional injury deaths: prioritizing the response to the New Zealand child and adolescent injury report card. *Australian and New Zealand Journal of Public Health*, 37 (5), 470-474.
- Shiba, M., Rahman, S., & Chid mi, B. (2017). Consumer demand for meat in Kenya. an examination of the linear approximate almost ideal demand system (No. I 377-2016-109929).
- Smigic, N., Antic, D., Blagojevic, B., Tomasevic, I., & Djekic, I. (2016). The level of food safety knowledge among meat handlers. *British Food Journal*.
- Smith, S. M. (2017). How Safe are the Workers Who Process Our Food. *Monthly Lab. Rev.*, 140, 1.
- Sundstrup, E., Jakobsen, M. D., Jay, K., Brandt, M., & Andersen, L. L. (2014). High intensity physical exercise and pain in the neck and upper limb among slaughterhouse workers: cross-sectional study. *BioMed research international*, 2014.
- Takeda, F., Moro, A. R. P., Machado, L., & Zanelli, A. L. (2018). Indicators of Work Accidents in Slaughter Refrigerators and Broiler Processing. *Brazilian Journal of Poultry Science*, 20(2), 297-304.

- Tirloni, A. S., dos Reis, D. C., Ramos, E., & Moro, A. R. P. (2017, July). Evaluation of bodily discomfort of employees in a slaughterhouse. In International Conference on Applied Human Factors and Ergonomics (pp. 153-162). Springer, Cham
- Tirloni, A., Reis, D., Ramos, E., & Moro, A. (2017). Thermographic Evaluation of the Hands of Pig. *International Journal of Environmental Research and Public Health*, 14, 838.
- Venable, J. (2016). Shared oppression. The relationship between the exploitation of nonhuman animals and workers in slaughterhouses (Doctoral dissertation, Texas Woman's University).
- Victor, K., & Barnard, A. (2016). Slaughtering for a living: A hermeneutic phenomenological perspective on the well-being of slaughterhouse employees. *International journal of qualitative studies on health and well-being*, 11(I), 30266.
- Vieira, E. R., Serra, M. V. G. B., de Almeida, L. B., Villela, W. V., Scalon, J. D., & Quemelo, P. R. V. (2015). Symptoms and risks for musculoskeletal disorders among male and female footwear industry workers. *International Journal of Industrial Ergonomics*, 48, 110-116.
- Wagner, 1., & Refslund, B. (2016). Understanding the diverging trajectories of slaughterhouse work in Denmark and Germany: A power resource approach. *European journal of industrial relations*, 22(4), 335-351.

APPENDICES

Appendix 1: Informed consent

Researchers' Statement

Goodmorning/afternoon, my name is Jane Mogute. I am a masters student at Kenyatta University. Today I am here to carry out a study on predictors of work related injuries among slaughterhouse workers in Nairobi County. This form will give you information you need, so that you can make a decision on whether to participate or not to in the study. There are no wrong or right answers. You will be given time to consider if you would like to be in the study. Please read the form well and ask where you don't understand. Please be honest and truthful in answering the questions. I assure you that the information you give will be totally confidential and you will not be required to identify yourself by name.

Purpose

The information obtained from this study will be used to inform occupational health and safety policy makers, health programme funders, researchers, resource allocation, priority setting and investment in health and safety services meant to improve the lives of slaughterhouse workers in Nairobi County.

Procedure:

You will be interviewed using a self-administered questionnaire (You will be assisted in case you are unable to read or write). The interview will last for about half an hour and participants will be required to give answers to all the questions. Participants will have the opportunity to make suggestions and give information on this study.

Risks

People in the county could learn of your involvement in the study. To protect you from this risk, all information you will give us will be kept confidential within our research team. All the data will be stored in a password protected computer.

Benefits

There is no financial compensation or other personal benefits from participating in the study. However, your participation and/or answers to the questions may provide useful insights into developing and implementing strategies for mitigating the occurrences of work-related injuries among slaughterhouse workers.

Confidentiality

No names will be used on any of the reports from the study. All the respondents will be given different identification numbers and the information relating to each participant will be strictly confidential, available only to the study team. Notes and any other recordings done will be destroyed once summary is prepared.

Voluntary participation

Your participation is voluntary, and you may therefore refuse to answer any question or stop the interview at any time without suffering any consequences.

Instructions

When you sign below, it shows that you have agreed to participate in the study. If you do not understand any part of the information that has been read to you/you have read, be sure to ask questions. Do not sign until you have understood all that is expected or required.

Respondent's **Signature**.....
date.....

Researcher's
(interviewer).....**date**.....

Signature.....Date.....

Appendix 2: Questionnaire for Respondents

KENYATTA UNIVERSITY SCHOOL OF PUBLIC HEALTH

WORK-RELATED INJURIES AMONG SLAUGHTERHOUSE WORKERS IN NAIROBI CITY COUNTY, KENYA

DECLARATION:

Data captured in this questionnaire is confidential and will be used purely for the academic purpose of investigating the factors causing injuries among slaughterhouse workers in Nairobi County

INSTRUCTIONS:

1. You are requested to answer all questions correctly and with truthfulness. Freely express your views, opinions and concerns;
2. Do not write your name or contact information anywhere on this form; and
3. Please tick appropriate answer(s) or briefly explain where necessary.

PART A: GENERAL

CODE	DESCRIPTION	DETAIL	CODE	DESCRIPTION	DETAIL
1	Questionnaire No.	<input type="text"/>	3	Slaughterhouse	<input type="text"/>
2	Date of Interview	<input type="text"/>	4	Location	<input type="text"/>

PART B: SOCIO-DEMOGRAPHIC CHARACTERISTICS

1.	Sex of Respondent	1	M	<input type="checkbox"/>
		2	F	<input type="checkbox"/>
2.	Marital Status	1	Single	<input type="checkbox"/>
		2	Married	<input type="checkbox"/>
		3	Widow/Widower	<input type="checkbox"/>
		4	Divorced/Separated	<input type="checkbox"/>

3.	No. of Children	1	Nil	<input type="text"/>
		2	1-2	<input type="text"/>
		3	3-4	<input type="text"/>
		4	5-6	<input type="text"/>
		5	7 and above	<input type="text"/>
4.	Age of Respondent	1	Between 18-25	<input type="text"/>
		2	26-35	<input type="text"/>
		3	36-45	<input type="text"/>
		4	46 and above	<input type="text"/>
5.	Level of Education of Respondent	1	None	<input type="text"/>
		2	Primary	<input type="text"/>
		3	Secondary	<input type="text"/>
		4	College	<input type="text"/>
		5	University	<input type="text"/>
6.	How long have you lived here?	1	Less than 2 years	<input type="text"/>
		2	Between 2-5 years	<input type="text"/>
		3	Between 6-10 years	<input type="text"/>
		4	Between 11-20 years	<input type="text"/>
		5	21 years and above	<input type="text"/>

PART C: EFFORTS TOWARDS WORKPLACE SAFETY

7.	Do you know of any policies to promote slaughterhouse worker safety in this County, Kenya	1	Don't Know	<input type="text"/>
		2	No	<input type="text"/>

3 Yes

--

8. If yes, give some highlights/examples?

1

2

3

9. Have you heard of any efforts aimed at enhancing worker safety in this industry?

1 Don't Know

2 No

3 Yes

10. If yes, give some highlights/examples?

1

2

3

11. Have you ever done anything to improve your safety and that of slaughterhouse workers?

1 Don't Know

2 No

3 Yes

12. If yes, give some cases/uses

1

2

3

13. Would you recommend what you have done or have heard done to improve slaughterhouse worker safety?

1 Don't Know

2 No

3 Yes

14. Please give reasons for your answer 1

2

3

15. Please give suggestions on how slaughterhouse worker safety can be enhanced 1

2

3

16. Please rate the worker safety efforts in Your slaughterhouse 1 Don't Know

2 Poor

3 Fair

4 Good

5 Excellent

PART D: KNOWLEDGE & PRACTICE ON SLAUGHTERHOUSE WORKER HEALTH AND SAFETY

17. Do risks exist with some slaughterhouse worker safety measures? 1 Yes

2 No

3

18. If yes, which ones?
- 1
 - 2
 - 3

19. How did you become aware of these risks?
- | | | |
|---|----------------------|--------------------------|
| 1 | Common sense | <input type="checkbox"/> |
| 2 | Learnt from a friend | <input type="checkbox"/> |
| 3 | Training | <input type="checkbox"/> |
| 4 | Experience | <input type="checkbox"/> |
| 5 | N/A | <input type="checkbox"/> |
| 6 | Others (Specify) | <input type="checkbox"/> |

.....

20. How can we deal with these risks as a way of promoting slaughterhouse Worker health and safety?
- | | | |
|---|----------------------|--------------------------|
| 1 | Have guidelines | <input type="checkbox"/> |
| 2 | Awareness creation | <input type="checkbox"/> |
| 3 | Promote alternatives | <input type="checkbox"/> |
| 4 | Regular inspection | <input type="checkbox"/> |
| 5 | N/A | <input type="checkbox"/> |
| 6 | Others (Specify) | <input type="checkbox"/> |

.....

21. How did you learn how to deal with Slaughterhouse worker risks?

-
- 1 Common sense
 - 2 Learnt from a friend
 - 3 Training
 - 4 Experience
 - 5 N/A
 - 6 Others (Specify)

.....
.....
.....
.....

22. What motivates you to want abattoirs worker safety?

- 1 N/A
- 2 I have been injured/affected
- 3 A friend has been injured/affected
- 4 Community requirement
- 5 Policy requirement
- 6 Others (Specify)

.....
.....
.....
.....

- | | | | | |
|-----|---|---|------------|--|
| 23. | Are you able to identify simple safety ways used in making a slaughterhouse less risky? | 1 | Don't Know | |
| | | 2 | No | |
| | | 3 | Yes | |
| | | | | |
| 24. | If you noticed any slaughterhouse to be unsafe, dangerous or risky, would you tell someone else to be wary of the slaughterhouse? | 1 | Don't Know | |
| | | 2 | No | |
| | | 3 | Yes | |

PART E: SLAUGHTERHOUSE HOUSEKEEPING OUTCOME FACTORS

- | | | | |
|-----|---|---|-------|
| 25. | What are some of the benefits that you have noticed from adoption abattoir housekeeping measures, like wearing Protective clothing, no smoking, no eating at work, hygiene, etc | 1 | ..... |
| | | 2 | ..... |
| | | 3 | ..... |
| | | 4 | ..... |
| | | 5 | ..... |
| | | | |
| 26. | What are some of the challenges that you have noticed from adoption of Abattoir housekeeping measures? | 1 | ..... |
| | | 2 | ..... |
| | | 3 | ..... |
| | | 4 | ..... |
| | | 5 | ..... |

**PART F: ATTITUDE TOWARDS HOUSEKEEPING IN
SLAUGHTERHOUSES**

To the following statements, indicate whether you (1) Agree, (2) Disagree or (3) Are Neutral

- | | | |
|---|---|--------------------------|
| 27. Slaughterhouse safety promotion is | 1 | <input type="checkbox"/> |
| | 2 | <input type="checkbox"/> |
| | 3 | <input type="checkbox"/> |
| The work of the governments | 1 | <input type="checkbox"/> |
| | 2 | <input type="checkbox"/> |
| | 3 | <input type="checkbox"/> |
| 28. Slaughterhouse worker safety saves on | 1 | <input type="checkbox"/> |
| | 2 | <input type="checkbox"/> |
| | 3 | <input type="checkbox"/> |
| money and can enhance profiteering | 1 | <input type="checkbox"/> |
| | 2 | <input type="checkbox"/> |
| | 3 | <input type="checkbox"/> |
| 29. Housekeeping contributes towards | 1 | <input type="checkbox"/> |
| | 2 | <input type="checkbox"/> |
| | 3 | <input type="checkbox"/> |
| Slaughterhouse worker safety | 1 | <input type="checkbox"/> |
| | 2 | <input type="checkbox"/> |
| | 3 | <input type="checkbox"/> |
| 30. Slaughterhouse safety contributes to | 1 | <input type="checkbox"/> |
| | 2 | <input type="checkbox"/> |
| | 3 | <input type="checkbox"/> |
| employment creation | 1 | <input type="checkbox"/> |
| | 2 | <input type="checkbox"/> |
| | 3 | <input type="checkbox"/> |
| 31. Slaughterhouse worker safety is not | 1 | <input type="checkbox"/> |
| | 2 | <input type="checkbox"/> |
| | 3 | <input type="checkbox"/> |
| a priority to warrant emphasis by this | 1 | <input type="checkbox"/> |
| | 2 | <input type="checkbox"/> |
| | 3 | <input type="checkbox"/> |
| slaughterhouse | 1 | <input type="checkbox"/> |
| | 2 | <input type="checkbox"/> |
| | 3 | <input type="checkbox"/> |
| 32. With the advent of Counties in Kenya | 1 | <input type="checkbox"/> |
| | 2 | <input type="checkbox"/> |
| | 3 | <input type="checkbox"/> |
| emphasis on slaughterhouse worker | 1 | <input type="checkbox"/> |
| | 2 | <input type="checkbox"/> |
| | 3 | <input type="checkbox"/> |
| will improve | 1 | <input type="checkbox"/> |
| | 2 | <input type="checkbox"/> |
| | 3 | <input type="checkbox"/> |

- | | | | |
|-----|---------------------------------------|---|--|
| 33. | Governments are not reliable in | 1 | |
| | Ensuring slaughterhouse worker | 2 | |
| | Safety, so housekeeping is essential | 3 | |
| | | | |
| 34. | Slaughterhouse housekeeping is not | 1 | |
| | applicable in our slaughterhouse | 2 | |
| | because of its ownership and category | 3 | |

PART G: INJURIES

37. What specific risks are associated with this facility? Rank the risk (1-12)

- a) Manual handling []
- b) Noise []
- c) Knives ‘safety []
- d) Hazardous substances []
- e) Mechanical Hazards []
- f) Electrical Hazards []
- g) Temperature extremes []
- h) Confined spaces []
- i) Zoonotic diseases []
- j) Slips and falls []
- k) Being knocked by an animal []
- l) Vehicle Accident []

36. Have you been injured while working?

- a) No [] b) Yes []

38. If the answer to question 37 is yes, which part of your body was affected?

- Fingers, arms and wrist [] b) Shoulders and neck [] c) Back []
 d) Legs []
 e) Ankle []

39. What caused the injury?

- a) An animal [] b) An object struck me [] c) While handling and lifting []
 d) Slips and fall [] e) Machinery [] f) Transport [] g) Electrical problem []
 h) Fire []

i) Aggression, fright, shock and violence []

40. Which types of injuries have affected you?

- a) Wound or superficial injury []
]
- b) Bone fracture []
]
- c) Dislocation, sprain or strain []
]
- d) Concussion, internal injury, burn, scalds or frost bite []
]
- e) Poisoning, infection, suffocation (asphyxiation) []
]
- f) Other types []
]
- g) None at all []
]

41. In the course of last year, have you been injured and given off?

a) No [] b) Yes []

42. If yes, how many days were you off from duty as a result of the injury?

- a) 4-6 days []
- b) 7-13 days []
- c) 14-20 days []
- d) 21-30 days []
- e) 1 month-3 months []
- f) 3months – 6 months []
- g) 6 months and over []

43. Have you been sick in the course of last year?

a) No [] b) Yes []

44. If the answer to 43 is yes, was the sickness related to

- a) Bone, Joint or muscle problem []
- b) Breathing or lung problem []
- c) Hearing problem, headache []
- d) Stress, depression anxiety []
- e) Skin problem []

PART I: MANAGEMENT OF INJURY OUTCOMES

45. If you have been injured in the course of your duty, whom did you report to?

a) My supervisor [] b) My fellow worker [] c) The manager []

46. How were you treated after the accident/injury?

- a) Received first aid treatment []
- b) Taken to hospital as outpatient by the management []

c) Taken to hospital and admitted by the management []

d) Continued to work and never reported []

47. Did anybody carry out the accident investigation to determine the exact cause of the accident?

a) No [] b) Yes [] c) I don't know []

48. Do we have trained aiders in this facility?

a) No [] b) Yes [] c) I don't know []

49. Do we have first aid rooms in this facility?

a) No [] b) Yes [] c) I don't know []

50. As an employee in this organisation, are we insured as you work here?

a) No [] b) Yes [] c) I don't know []

THANK YOU VERY MUCH

Appendix 3: Interview Guide for Key Informants

Name.....

Position/Title.....

**WORK-RELATED INJURIES AMONG SLAUGHTERHOUSE WORKERS
IN NAIROBI CITY COUNTY, KENYA**

KEY INFORMANT INTERVIEW GUIDE:

PART I:

Go through the consent statement [Appendix 1, Part II: Verbal Consent]

PART II:

1. How long have you been in this facility?
2. Have you ever organised any training for your workers in this facility?
(a)if yes, which one and who was the trainer?
(b) if no, why?
3. Have you ever had cases of injuries in your facility?
Yes/no...explain
4. What is the most severe case of injury among workers you have ever experienced as a manager or supervisor?
5. Has there been any fatality ever since you became a manager/supervisor?
6. What are the main challenges with regards to preventing injuries and deaths in the facility?
7. What are the predictors of work-related injuries in this area?
8. How can knowledge of these factors remedy the situation?
9. What major efforts are planned or underway with respect to enhancing slaughterhouse worker safety in this area/county/country?
10. How have these predictors influenced/ reduced slaughterhouse worker safety?

11. What common approaches have been used in enhancing slaughterhouse worker safety in this area/county/country, and what has been the trend regarding their success?

THANK YOU VERY MUCH

Appendix 4: Observation Checklist

DATE.....

NAME OF FACILITY.....

S/NO.	ITEM	YES	NO	COMMENT
1	What is the status of the Slaughterhouse at the time of the interview?			
2	What are the levels of hygiene standards in the Slaughterhouse?			
3	Perimeter Containment for animals			
4	Offloading point of animals			
5	Lairage in the facility			
6	Is stunning done? (Indicate type in the remarks)			
7	Are workers working in heights?			
8	Are floors slippery?			
9	Is cleaning of the floor continuous?			
10	Do you see first aid boxes?			
11	If yes, any items in the box?			
12	Are fire extinguishers available?			
13	Are fire exit signs available?			
14	Do we have hazardous materials in the facility?			
15	If yes, are pictograms clearly indicated?			
16	If yes in 13, is material safety data sheet available?			
17	Are workers in PPE in this facility			
18	Are appropriate PPES being used for manual handling and hand tools			
19	Are there appropriate PPES being used			

	for crushing/grinding like safety goggles. Dust masks, respirators			
20	Is processing, chopping of the meat done by knife, cleaver chopping machine			
21	Do chopping/splitting and grinding machines have inspection sticker(s)?			
22	In processing, are high speed machines guarded to protect the workers from rotating blades?			
23	Can you see machines used in mincing and grinding of meat?			
24	Are machines used in this facility electrically operated?			
25	Are electrical wires concealed?			
26	Are there any records for health and safety trainings for slaughterhouses?			
27	Is there shift rest available?			

Appendix 5: Research authorization from Kenyatta University Graduate School



KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke

Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 8710901 Ext. 57530

Our Ref: Q22/CTY/PT/31406/2015

DATE: 31st January, 2018

Director General,
National Commission for Science, Technology
and Innovation
P.O. Box 30623-00100
NAIROBI

Dear Sir/Madam,

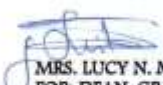
RE: RESEARCH AUTHORIZATION FOR JANE MOGUTE – REG. NO. Q22/CTY/PT/31406/2015

I write to introduce Ms. Jane Mogute who is a Postgraduate Student of this University. She is registered for M.Sc degree programme in the **Department of Environmental and Occupational Health**.

Ms. Jane Mogute intends to conduct research for a M.Sc Proposal entitled, **"Predictors of Work-Related Injuries in Recognized Slaughterhouses in Nairobi City County, Kenya"**.


Any assistance given will be highly appreciated.

Yours faithfully,


MRS. LUCY N. MBAABU
FOR: DEAN, GRADUATE SCHOOL

30/rwn

Appendix 6: Ethical clearance from KU Ethics and Review Committee



**KENYATTA UNIVERSITY
ETHICS REVIEW COMMITTEE**

Fax: 8711242/8711575
 Email: kuerc.chairman@ku.ac.ke
kuerc.secretary@ku.ac.ke
 Website: www.ku.ac.ke

P. O. Box 43844,
 Nairobi, 00100
 Tel: 8710901/12

Our Ref: KU/ERC/ APPROVAL/VOL.1 (239) Date: 13th February, 2019

Jane Mogute
 P.O Box 43844-00100
 Nairobi

Dear Jane,

**APPLICATION NUMBER: PKU/912/1 972*PREDICTORS OF WORK-RELATED
 INJURIES IN RECOGNIZED SLAUGHTERHOUSES IN NAIROBI CITY COUNTY,
 KENYA***

1. IDENTIFICATION OF PROTOCOL

The application before the committee is with a research topic **"Predictors of work-Related Injuries In Recognized Slaughterhouses In Nairobi City County, Kenya"** received on 9th September, 2018 and discussed on 12th February, 2019* received on 9th September, 2018 and discussed on 12th February, 2019

2. APPLICANT

Jane Mogute

3. SITE

Nairobi City County, Kenya

4. DECISION

The committee has considered the research protocol in accordance with the Kenyatta University Research Policy (section 7.2.1.3) and the Kenyatta University Ethics Review Committee Guidelines and **APPROVED that the research may proceed for a period of ONE year from 12th February, 2019**

Appendix 7: Research authorization from National Council for Science, Technology and Innovation



**NATIONAL COMMISSION FOR SCIENCE,
TECHNOLOGY AND INNOVATION**

Telephone: +254-20-2213471,
2241349,3310571,3219420
Fax: +254-20-318245,318249
Email: dg@nacosti.go.ke
Website : www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref. No **NACOSTI/P/18/79755/24124**

Date **7th August, 2018**


Jane Riechi Mogute
Kenyatta University
P.O. Box 43844-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *“Predictors of work-related injuries among slaughterhouse workers in Nairobi City County, Kenya”* I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for the period ending **7th August, 2019.**

You are advised to report to **the County Commissioner and the County Director of Education, Nairobi County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit a **copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.


DR. STEPHEN K. KIBIRU, PhD.
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Nairobi County.

The County Director of Education
Nairobi County.



9/11/2018/2018

**COUNTY COMMISSIONER
NAIROBI COUNTY
P.O. Box 30124-00100, NAI
TEL: 341666**


Appendix 8: Research permit from National Council for Science, Technology and Innovation

THIS IS TO CERTIFY THAT:
MS. JANE RIECHI MOGUTE
of KENYATTA UNIVERSITY, 30075-100
Nairobi, has been permitted to conduct
research in Nairobi County

on the topic: PREDICTORS OF
WORK-RELATED INJURIES AMONG
SLAUGHTERHOUSE WORKERS IN
NAIROBI CITY COUNTY, KENYA

for the period ending:
7th August, 2019

Permit No : NACOSTI/P/18/79755/24124
Date Of Issue : 7th August, 2018
Fee Received :Ksh 1000





[Signature]
Applicant's
Signature

[Signature]
Director General
National Commission for Science,
Technology & Innovation

CONDITIONS

1. The Licence is valid for the proposed research, research site specified period.
2. Both the Licence and any rights thereunder are non-transferable.
3. Upon request of the Commission, the Licensee shall submit a progress report.
4. The Licensee shall report to the County Director of Education and County Governor in the area of research before commencement of the research.
5. Excavation, filming and collection of specimens are subject to further permissions from relevant Government agencies.
6. This Licence does not give authority to transfer research materials.
7. The Licensee shall submit two (2) hard copies and upload a soft copy of their final report.
8. The Commission reserves the right to modify the conditions of this Licence including its cancellation without prior notice.


REPUBLIC OF KENYA


National Commission for Science,
Technology and Innovation

RESEARCH CLEARANCE
PERMIT

Serial No.A 19950
CONDITIONS: see back page

Appendix 9: Research authorization from Nairobi City County

NAIROBI CITY COUNTY

Telegram: "MINAG"
 Telephone: 020 3536843
 Fax 020 3523948
 Email address-
 pdvsnairobi@yahoo.com



County Director of
 Veterinary Services
 Nyayo House (14th floor)
 P. O. Box 40851-00100
 NAIROBI, KENYA

VETERINARY SERVICES

When replying please quote
REF.CDVS/NB/RC/VOL.I/15 10th August, 2018.

Officers-In-Charge of Slaughter Houses,
NAIROBI CITY COUNTY.

REQUEST TO COLLECT DATA IN THE NAIROBI COUNTY SLAUGHTER FACILITIES-MOGUTE JANE.

This is to introduce Ms. Jane Mogute who is a Postgraduate Student of Kenyatta University and intends to conduct research for her MSc. Proposal entitled, "Predictors of Work-Related Injuries in Recognized Slaughterhouses in Nairobi City County, Kenya".

This is to request you to offer her all the assistance required.

Thanks,

COUNTY DIRECTOR OF VETERINARY SERVICES
 P. O. BOX 40851 - 00100
 NAIROBI

[Signature]
Dr. Kabatha J.M.M.
For: COUNTY DIRECTOR OF VETERINARY SERVICES
NAIROBI COUNTY.

Appendix 10: Map of Nairobi County

