UNIVERSITY OF LUSAKA

SCHOOL OF MEDICINE AND HEALTH SCIENCES

ADHERENCE TO OCCUPATIONAL HEALTH AND SAFETY PRACTICES AT KONKOLA COPPER MINES, CHILILABOMWE DISTRICT ZAMBIA

BY

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BSc PUBLIC HEALTH

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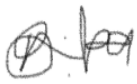
A dissertation submitted to the University of Lusaka in partial fulfillment of the requirements of a Degree in Bachelor of Science in Public Health

DECLARATION

Name of student and ID: Patience Mbughi Nalwamba

I declare that this proposal is my creative work and to the best of my acquaintance has not been presented for a degree in any other institution.

Signature: P.M.Nalwamba 

Date: 26th may,2023

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This dissertation has been submitted with my approval as a University of Lusaka (UNILUS) supervisor.

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Date: 26th may,2023

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DEDICATION

To my parents, Joyce Mbughi Silwamba and Elias Mbughi Silwamba who have supported me through my entire program with both financial and emotional support regardless of the circumstance. I will forever be grateful to them, for they have showed me the products of hard work and definitely taught me how to persevere and fight to get what I want.

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Last but not least, special thanks go to my supervisor Dr. Fredrick Chitangala who guided me through this research study, from the beginning of the study and gave me steps on how to go about it.

ACRONYM AND ABBREVATION

ILO……International labor Organization

KCM…….Konkola copper mines

OSHA……...Occupational Safety and Health Administration

PPE……Personal protective equipment

WHO……World health organization

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ABSTRACT

Background: In the majority of emerging nations, the modern period of globalization, fast industrialization, and urbanization have emerged as twin brothers. ILO standards on occupational safety and health provide essential tools for governments, employers, and workers to establish safe practices for providing maximum safety at work. The ISO 45001 standard serves as the foundation for the mining sector's occupational health and safety management systems in Zambia. It is probable that about 2.2 million people die annually from work related accidents and diseases, and a further 270 million workers fall victims of nonfatal occupational injuries. This results in substantial human and economic costs to workers and their families, employers, and society.

Objective: To assess the occupational health and safety practices at konkola copper mines.

Materials and methods: A facility based cross-sectional study was used among KCM underground miners prior to the study in 2023 in Chililabombwe district. A structure questionnaire was used to collect data. The data was analysed using STATA.

RESULTS: The minimum age of respondents was 22 years old and the maximum was 56 years old with the mean age of 36.8 (SD=6.8) years. The majority of the participants 90(23.7%) were between 31-40 years old. Females were the most responds who adhered to occupational health and safety guidelines 43(82.69) compared to males with (28.57). The majority of respondents attended Primary (50.00) education level who adhered to occupational health and safety guidelines compared to those who attended secondary and university (33.33) and (16.67) respectively.

Conclusion: awareness of emergency procedures and accident reporting and investigation vital for some enhancement. In general, the findings emphasize the significance of continuous education and preparation to maintain a safe and sound workplace, as well as the importance of ongoing observation and evaluation of workplace security strategies and practice

Recommendation: It may be necessary to enforce stricter adherence to safety guidelines and the use of personal protective equipment in order to improve safety and cut down on accidents. Training on safety rules and how to use personal protective equipment (PPE) should be given more frequently and more thoroughly.

CHAPTER ONE

1.0 BACKGROUND/INTRODUCTION

In the majority of emerging nations, the modern period of globalization, fast industrialization, and urbanization have emerged as twin brothers. Undoubtedly, industrialization helps the country become a global leader (Raj S, 2022). However, industrialization can also have a negative impact on the workforce, as can be shown in two fords. A dangerous and unclean workplace, as well as poor occupational health and safety measures, cause two things to happen: first, fundamental necessities like clean air and safe drinking water are lost, and second, the workers' health is lost and they contract various diseases. Occupational health and safety standards are crucial in directing all industries on issues relating to health and safety, with a greater emphasis on prevention.

Literature provides examples of laws, regulations, standards, and theories that can be used to reduce the high rates of accidents and fatalities in the mining industries. Due to the miners' ignorance of occupational regulation, the execution of occupational legislation and standards is seen as a substantial difficulty, and adherence is hampered as a result (Mogale, Pilusa, & Mogotlane, 2018). Africa has extensive legal frameworks governing health and safety requirements, as well as enforcement mechanisms. However, many organizations generally adhere to them poorly and with little resources. The safety of workers against work-related sickness, disease and injury forms a part of historical of ILO. It is probable that about 2.2 million people die annually from work related accidents and diseases, and a further 270 million workers fall victims of nonfatal occupational injuries. This results in substantial human and economic costs to workers and their families, employers, and society (ILO, 1996-2023). ILO standards on occupational safety and health provide essential tools for governments, employers, and workers to establish safe practices for providing maximum safety at work. Occupational health and safety Act. 36 of 2010 was established to the occupational health and safety institute and provide for its function; provide for the establishment of health and safety committees at workplaces and the health, safety and welfare of persons at work; provide for the duties of manufacturers, importers and suppliers of articles, devices, items and substances for use at work; provide for the protection of persons, other than persons at work, against risks to health or safety arising from, or in connection with the activities to persons at work; and provide for matters connected with; or incidental to; the foregoing. Zambia which produced 861,946 metric tonnes of copper in 2018

and has 6% of the world's known copper deposits, is the seventh-largest copper producer in the world. The traditional exports of the nation, copper and cobalt, generate well over 70% of its export revenue. The majority of Zambia's copper mines are located in the Copper-belt province, although within the past ten years, mines have been established in other regions as well, including the North-Western Province (Institute, 2022).

One of the largest companies operating on one of the highest-grade copper seams in the world, Konkola Copper Mines is situated in Zambia's copper belt province, with operations at Chingola and Chililabombwe (KCM, 2022). KCM is a leading Zambian integrated copper producer, which operates underground and open pit mines as well as metallurgical plants. Since Vedanta Resources plc. Acquired KCM in 2004, more than $3 billion has been invested to upgrade equipment, build new facilities and expand capacity. These investments have increased reserves, resources and extended the life of the mine by over 50 years.

1.1 STATEMENT OF THE PROBLEM

Each organization is in charge of ensuring the health and safety of its employees and other individuals impacted by its operations. The ISO 45001 standard serves as the foundation for the mining sector's occupational health and safety management system in Zambia. It is a management standard for occupational health and safety, and its objective is to lower occupational illnesses and injuries. Statistics of reported injuries and fatalities continue to climb, dating back to the 1965 Medical Examinations of Young Persons (Underground Work) Convention Act and the more recent Occupational Health and Safety Act of 2010 (ILO, 2012:13). With thus many workers, it may be challenging to adequately implement occupational and safety regulations; in 2019, 53 konkola copper mines KCM employees and 232 schoolchildren were hospitalized after a sulphur dioxide release from KCM's acid factory was allegedly caused by an electrical surge. On the safety front, it underlined a number of issues that have been published in the Zambian media, including a mortality at a smelter from June 2019, the trapping of 28 miners underground on October 28, and KCM's purported mismanagement since its liquidation in 2019 (Stoddard, 2019). An accident at the Konkola Copper Mines (KCM) in Chililabombwe area resulted in the death of one worker on September 17, 2014, according to Mwebantu media. Manager of Public Relations and Communications Shachinda verified the occurrence. More incidents were reported; on June 6, a 32-year-old miner from Chililabombwe's Konkola Copper Mines (KCM) passed away during an underground mine blasting (mfula, 2016). This may signify that either

implementation of Occupational health and safety regulations, monitoring and evaluation is not effective.

Despite the mines' effort to adhere to the ISO statutory, accidents and injuries have continued to increase in the mining industry on the Copperbelt Province of Zambia (Malama, 2018). Equally, a large number of OHHI remain unreported despite all these measure put in place.

1.2 JUSTIFICATION OF THE STUDY

Hovering awareness on good Occupational health and safety practices among the miners will help impact them with proper knowledge about how they can avoid or prevent accidents in their various work stations and this will stimulate protective behaviours such as wearing personal protective equipment, ensuring that the environment is free from risk of accidents occurring among others. The public health personnel and the political sector in collaboration with the mining sector will make effective health-related decisions in terms of provision of resources to combat the rates of accidents in the mining sector. This research will nurture awareness to the public which will reduce the number of deaths and injuries associated with mining accidents, people will be made aware of how to take care of themselves when operating in hazardous conditions or environments. This research will assess the challenges that managers face in implementing the OHS and also identify the gaps that they miss, thus giving them a clear view on how to implement these OHS. Knowledge is power, if workers are made aware of the effects of not practicing good occupational health and safety they will take charge of their own health hence reducing the number of accidents and they will practice good occupational health and safety practices throughout the organizational structure. This will reduce the accident burden on the mining company, the government and families will not lose their loved ones.

1.3 Objectives

1.4 General Objective

To assess the occupational safety and health practices at Konkola Copper Mines.

1.5 Specific Objectives

1. To determine demographic factors that influences the implementation of OHS in the organizational setup at Konkola Copper Mines.
2. To identify types of injuries that occurs among worker at Konkola Copper mines.
3. To assess the level of employees' awareness of OHS policy and guidelines.

1.6 Research Questions

1. What demographic factors influence the implementation of OHS in the organizational setup at KCM?
2. What types of injuries occur among workers at KCM?
3. What is the level of employee awareness of the OHS policy?

CHAPTER TWO

2.0 LITERATURE REVIEW

2.0.1 Introduction

This section will air out some of the scholars who researched on the adherence of work-related health and safety practices and other related studies. Which will focus on the employees' knowledge at attitudes on OHS practices, Managers effort and challenges faced when implementing the OHS practices, political influence on OHS practices in the mines among other factors?

GLOBAL LAWS ON OCCUPATIONAL HEALTH AND SAFETY

International labour standards on occupational health and safety cliques forth the principle that workers must be secured from any form of sickness, disease and injury arising from their employment. However for millions of employees the reality is quite different. According to the most recent ILO global assessments, 2.8 million work-related deaths are recorded every year, of which 2.4 million are related to occupational diseases (ILO, 1996-2023). In addition to the immense suffering caused for the employees and their respective families, the allied economic costs are enormous for the enterprises, countries and the entire world at large. The damages in terms of compensation, lost work days, interjected production, training and reconversion as well as the health care expenditures, represent around 3.94 per cent of the world's annual GDP. Employers face costly early retirements due to medical complications, loss of skilled staff which can be attributed to injuries or death of the employee, absenteeism and high insurance premiums. Nevertheless, many of these tragedies are preventable through the implementation of sound prevention, reporting and inspection practices. ILO standards on occupational health and safety provide essential tools for government, employers and workers to establish such practices and provide for maximum safety at the workplace. ILO has adopted more than 40 standards specifically dealing with occupational and safety, as well as over 40 codes of practice. Under which is the Occupational health and safety convention, 1981(No.155) and its protocol of 2002. The convention provides for the adoption of a coherent national occupational safety and health policy, as well as action to be taken by governments and within enterprises to promote occupational safety and health and to improve

the working conditions. The protocol calls for the establishment and the periodic review of requirements and procedures for the recording and notification of occupational accidents and diseases, and for the publication of related annual statistics. Further convention on safety and health in mines convention, 1995(No.176) this instrument regulates the various aspects of safety and health characteristic for work in mines, including inspection, special working devices, and special protective equipment of workers.

ZAMBIAN LAWS ON OCCUPATIONAL HEALTH AND SAFETY

Just like any other industrious country, Zambia has two Acts that protect the health and safety of the workers that operate in dangerous sittings. The Factories and machinery Act (Cap 441) and the occupational health and safety Act 36 of 2010 deal with the occupational health and safety in Zambia. The factories Act require the employer to provide clean working environments, adequate ventilation, first aid, lighting, sanitary facilities and fire extinguishers. The factories Act also requires the employer to prevent overcrowding in the workplace. In accord with the occupational health and safety Act, it is the duty of the employer to ensure the health, safety and welfare of the employees at the workplace; and place and maintain the worker in an occupational environment adapted to the employee's physical and psychological ability. The employer must provide the work environment that is safe and without any risk to the health and safety of the employees. Employers are obliged to ensure that workers have been provided with proper training such as information, instructions, training and supervision, especially on a machine or process likely to cause bodily injury, to protect the health and safety of the employees at workplace. Other legislation that safeguards the employees includes; Compensation Act makes the provision of the establishment and administration of a Fund for a compensation of workers disabled by accidents to, or diseases contracted by such workers in the course of their employment, and for the payment of compensation of dependents of the workers who die as a result of such accidents or diseases.

IMPLEMENTATION OF OCCUPATIONAL HEALTH AND SAFETY PRACTICES BY MANAGEMENT

In a study by Vingard, (2013) alluded that government and regulation and control experts play a vital part in stimulating the excavating initiative to deliver safe and healthy working environments. The guideline and regulation is inadequate within an official budget, the cause may be low precedence and resource distribution by the government and problems in drawing and holding competent supervisors who can be paid higher wages somewhere else. In a

similar study conducted by Muchemwa and Karm, (2017) in excavating procedures, hazards produced within an organization may be compelled from absence of management, obligation or capability. In mandate to grow a successful health and safety plan, it is crucial that there be a resilient administration obligation and solid worker involvement in the struggle to generate and sustain a safe and healthy workstation. Almost all levels of management must make health and safety as a priority. If an organization fails to familiarize themselves with their authorized OSH responsibilities or keep up with the changes it may also place workforce at superior jeopardy of ailment and harm. On the edge between organization and the public subdivision, risks may ascend from lack of discussion, reduced observation and wilful violation from people's reaction to over description of measures. The implementation of OHS is contingent to priority since it depends on environmental situations for the management to make a decision. A study by Tan and Nasurdin (2011) on OHS and identified leadership styles, employees' attitudes, hiring practices as important elements of management practices for safety culture.

Most literatures are all focusing on reduced supervision and feeble prosecution of statute and guidelines and poor government involvement, the scholars did not highlight on the management and government can improve the systems. Therefore further studies can be done to develop some solutions to this factor.

TYPES AND CAUSES OF INJURIES IN MINES

Worldwide, quantitative studies have been conducted to create the types of body parts bruised. The injuries arising in mines such as cuts, ruptures, blisters, contusions, neck injuries, back and chest wounds have been well predicted in the writings (World Health Organization, 2016). In a study conducted by Moen (2016), results show that employees in subversive units had a higher injury occurrence ratio than employees in the open pits, probably related to dangerous manual responsibilities in limited spaces with high temperature and deprived radiance at underground spots. A review by Yang L et al (2021) brought out the human factor as a possible cause of accidents in underground mining, calamities occur from human inaccuracy or restrained circumstances and are associated with injuries such as blunders, tailed by rule-based and awareness mistake, memory failure and defilements.

A cross-sectional study conducted in Zimbabwe by Chimamise, (2010) focused on aspects related with severe harms at the mine. The results showed that employees who operated more than eight hours per shift were 14.5 times expected to get brutally wounded than those who

operated eight or less hours per shift, those who had goals to meet had a 43.4 times more jeopardy of getting incapacitated than those who did not have goals to meet. Debela et al (2021) made findings on the prevalence of occupational health injuries, stating that in developing countries between 2018 and 2019 fatal and non-fatal accidences were high among private and public sectors, health and safety regulations is not well applied, thus the problem of workplace harms is extremely high. There is deficiency of observance to good OHS practices and consequently these miners recurrently suffer accidents, which occasionally lead to losses, long-lasting disability, or abridged quality of life.

In a descriptive study done in Zambia by Zambwe et al findings on abrasions presented the maximum percentage of burden with 30% prevalence, trailed by ruptures, and amputation at 29% and 17% correspondingly. Siziya et al in their reimbursement patterns in Zambia alluded that abrasions been the record communal type of injuries. A comparable study in Northwest Ethiopia established that punctures and ruptures were prevailing at 24% and 2.5 correspondingly. Nevertheless it recognized that ligaments and muscle injuries were the prominent injuries at 43.2%. Abrasions and amputations and all internal injuries were taken up together at 22% as second highest.

Despite the studies being conducted highlighting the types and causes of injuries, the studies did not highlight the preventative measures that can be put in place in order to combat such incidents. Therefore there is need for further studies that can highlight the preventative measures.

THE EMPLOYEES' LEVEL OF KNOWLEDGE ON OCCUPATION HEALTH AND SAFETY PRACTICES

Mogale. et al (2018) it is advantageous for staffs to know occupational regulation so that they are capable to conform with it and be able to enlighten employers if their workstation are hazardous. The challenge with the implementation of occupational legislation is inadequate and observance is thus diminished. A similar study by Mogale et al (2018) done in South Africa results show that those who have remained working for 5 years or less might not be knowledgeable enough at their work. Furthermore, it is probable that they could have not established enough training on occupational legislation from their employers or manager.

A similar study by Muthelo, (2022) findings show that miners who have more experience have a higher level of knowledge in their job, and also, that the level of obedience with health and safety guidelines is higher. A study done by Kleyn & Du-plessis, (2016) also alluded to

that the high proportion of the examinees were of the belief that they were not effectively trained in understanding the principles. This illustrates a resilient feeling among personnel that a lack of training and education on standard practices is the root cause of sub-standard practices. Form this conclusion can be drawn that employees who do not comprehend a standard would be highly likely to device the standard inaccurately not be able to identify sub-standard practices due to absence of understanding of the standard itself. Kleyn & Du plessis, (2016) 14% of interviewees claimed that they did not understand the consequences of sub-standard practices. Old employees apportioned the culpability on the new ones for execution of substandard acts.

All three scholars stressed out two similar points which can lead to employees not complying Occupational Health and Safety practices, they highlighted the fact that employees are unaware of the OHS practices, lack of training of proper OHS practices and also the factor of experience the more an employee is experienced they are highly likely to perform good OHS practice.

2.1 THEORETICAL FRAMEWORK

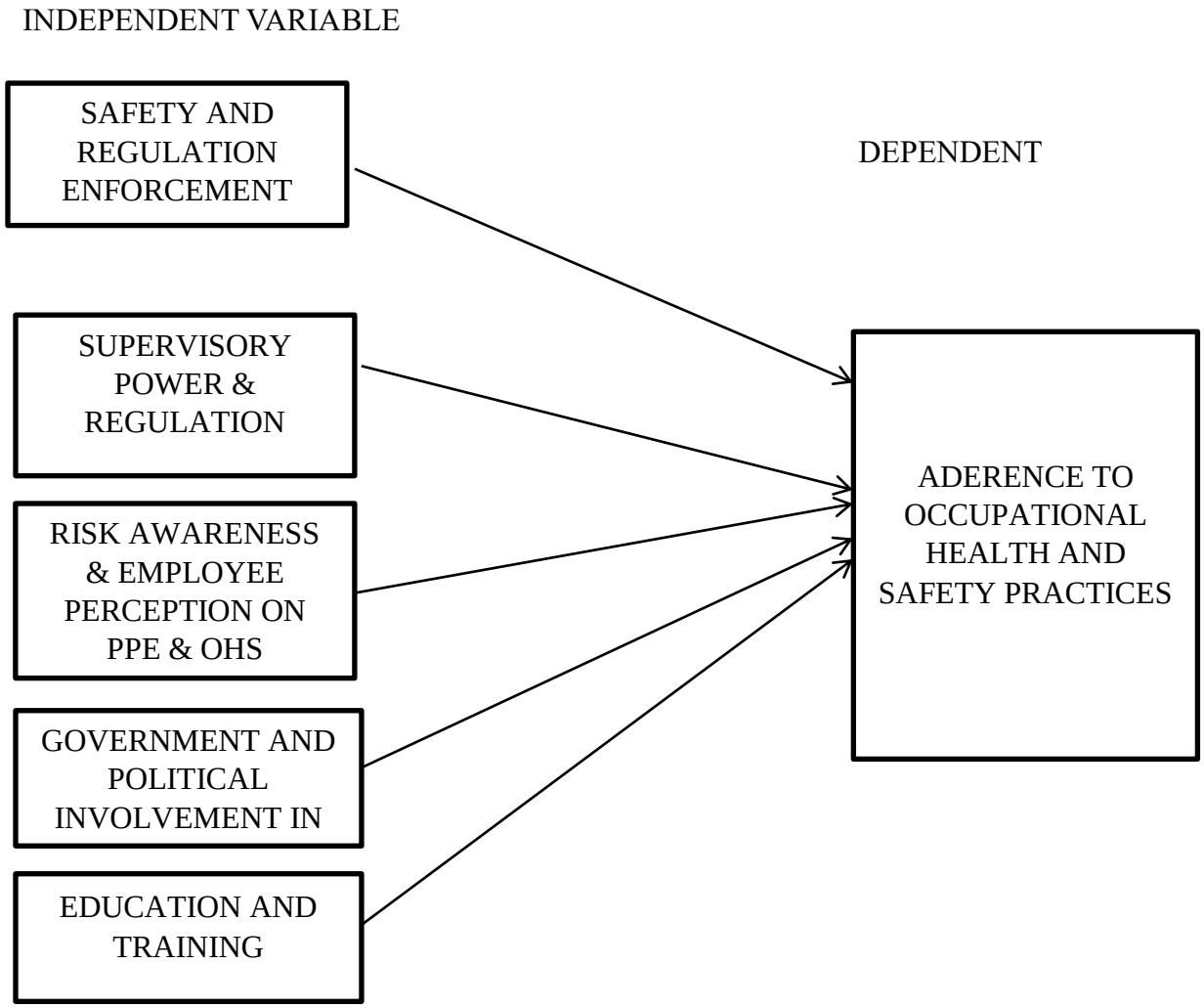
Theories are articulated to describe, predict, and comprehend phenomena and in numerous cases, to test and encompass existing information, within the parameters of the critical bounding conventions. The theoretical framework is the structure that can grasp or provide a theory of a research study. The theoretical framework presents and defines the theory which explicates why the research problem substitute exists. In recent years, the field of environmental health promotion gained new importance as awareness of physical environmental stressors and exposures has increased (Abdulaziz M Alsufyani, 2020). This study will examine how educational and behavioural models can reduce contact to environmental health risks. The two theories are best suited for this study. The purpose of this approach is to make available acquaintance and evidence, and to grow the essential expertise so that people can make knowledgeable adoptions about their health conduct (Key, 2017). The educational approach is based on a set of conventions about the association between information and conduct: that by increasing information, there will be change in the attitudes which will lead to modification in conduct. Educational/ behavioural approaches will provide information to health the managers/ employees to create an informed choice about their health conduct as the conduct their Job descriptions. This can be done through the provision of leaflets and booklets on the health and safety practices. This theoretical approach will help the KCM management and the Zambian Government to be knowledgeable about the barriers

and facilitators of noble Occupational health and safety put into practise in the mining diligences. This will enhance good decision making by managers concerning OHS practices, policy formulation and allocation of funds which will also change the mind-set, attitudes and behaviour towards the occupational health and safety practices. Moving forward employees they will make informed choices not only about OHS but also other diseases that require precautions which might befall the country. Knowledge is power.

2.2 CONCEPTUAL FRAMEWORK

A conceptual framework comprises one or more official philosophies (in part or whole) as well as other notions and realistic discoveries from collected works, it is used to illustrate associations between these notions and how they relate to the research study

Figure1. Conceptual framework on the adherence to occupational health and safety guidelines at konkola copper mines Chililabombwe



Source: Created by researcher, 2023

CHAPTER THREE

3.0 METHODOLOGY

This chapter of the research gives an overview of the methods that were used in terms of research study approach used, the study design, study population, sample size, data collection tool, data analysis and the ethical considerations.

3.1 STUDY APPROACH

A Quantitative Approach was be used to collect data, study design, and data analysis on the possible factors that are contributing to the inadequate use of Occupational health and safety guidelines at Konkola Copper Mines.

3.2 STUDY DESIGN

A facility based cross-sectional study was used which was descriptive in nature. A cross-sectional study is a type of research design in which you collect data from many different individuals at a single point in time. In this type of study you observe variables without manipulating them.

3.3 STUDY POPULATION/ TARGET POPULATION

A study population refers to the established cluster of all the components on which the results of the research are to be applied (Shukla, 2020). In this study the study population was shaft four konkola copper mines workers of chililabombwe district. The study excluded workers who worked night shifts and also supervisors

3.4 SAMPLE PROCEDURES

Sample size was determined using Yamane formula at 95% confidence interval and 5% precision. Using 250 as our population as per findings, the sample size was calculated as follows;

n=M/1+M(e)2

=250/1+ 250(0.05)2

=250/1+250(0.0025)

=250/1.625

n=153

This study targeted male and female employees at KCM who worked in day shift; the sample size was 153 participants that were required for this study. The selection was by random sampling method and 114 from the sample took part in the study. Questionnaires were given out to participants.

3.5 DATA COLLECTION METHODS

Data collection methods that were used in this study are questionnaires, as this was a quantitative study. These methods provide the researcher with a statistical overview and in-depth of this phenomenon. According to Kheni and Braimah, (2014), using a questionnaire as research instrument for data collection provides a distinct benefit over other data gathering approaches, particularly in quantitative research. This study utilized a questionnaire since it is suitable for both illiterate and literate respondents and allows for collection of massive quantities of data in a short period of time. It is also simpler to measure statistically treat. A blend of closed and open-ended questions created by the researcher was utilized for this investigation, and English language was used in the administration of the questionnaires. However, for some who could not understand, the questions were read out and translated in the local language.

3.6 DATA ANALYSIS

The data analysis was done using STATA software to analyse the data which was obtained from the data tool. The software uses descriptive Statistics it includes chi-square, cross-tabulation, frequencies, and descriptive ratio statistics (william, 2022)

3.7 ETHICAL CONSIDERATION

The objective of this study was communicated to the participants ensuring the principle of informed consent is exercised. The information was made clear to the participants that under no circumstance should they decided to withdraw or not take part in the study no consequences will follow them. Confidentiality and anonymity was observed, by making sure that the participants' names are not by any chance mentioned during answering the questionnaires and also in the research study. The participants were given alternative markers in place of their names respectively. Ethical Clarence was obtained from the University respectively. Informed consent was ensued in such a way that all the participants were made aware of what the research is all about. None the less non-maleficence and beneficence were also ensured in the study by ensuring that no harm was caused to the participants who took part in this study and it is ensure the at most benefit for both the health of the workers and enhance knowledge to the body of knowledge for better decision making.

CHAPTER FOUR

4.0 RESULTS PRESENTATION

The data analysis was done using STATA software to analyse the data which was obtained from the data tool. The software uses descriptive Statistics it includes chi-square, cross-tabulation, frequencies, and descriptive ratio statistics (william, 2022).

The minimum respondents of age were 22 years old and the maximum was 56 years old with the mean age of 36.8 (SD=6.8) years. The majority of the participants 90(23.7%) were between 31-40 years old. Females were the most responds who adhered to occupational health and safety guidelines 43(82.69) compared to males with (28.57). The majority of respondents attended Primary (50.00) education level who adhered to occupational health and safety guidelines compared to those who attended secondary and university (33.33) and (16.67) respectively.

4.1 DEMOGRAPHIC CHARACTERISTICS AND ADHERENCE TO OCCUPATIONAL HEALTH AND SAFETY

Table1. Demographic factors such as age of the respondents, education of the respondents and gender. In this study it shows that there is no association between demographic factors and adherence to the occupational health and safety guidelines at KCM. However, in this study demographic factors were not statistically significant**.**

Table1: demographic characteristics on adherence to occupational health and safety.

aCharacteristics	adherence to OHS (%)			P-value
	Sometimes	fairly often	very often	
Education				
Primary	39	36	3	

	(69.64)	(69.23)	(50.00)	
Secondary	14	15	2	
	(25.00)	(28.85)	(33.33)	0.485
University	3	1	1	
	(5.36)	(1.92)	(16.67)	
Gender				
Female	40	43	5	
	(71.43)	(82.69)	(83.33)	
Male	16	9	1	0.354
	28.57	17.31	16.67	
Age				
20-25	0	1	6	
26-30	0	4	7	
31-40	0	26	45	0.832
41-50	0	11	9	
51-60	0	1	2	

Table2. Descriptive Statistics of Variables in the Dataset

Variable	Observation	Minimum	Maximum
Age	113	22	56
Gender	144	1	2

Education	144	1	3
Training on PPE	144	1	3
Attending safety meetings	144	1	4
PPE	144	2	4
Accidents	144	1	2
Safety guidelines	144	1	1
Knowledge about safety	144	1	2
Health condition	144	1	2
Do you report hazards	144	1	1
Income affecting work ability	144	1	2
Job tittle	144	1	4
Injuries	114	1	4

Table2. is displaying the descriptive statistics for a set of variables in the dataset. It provides information on the number of observations, mean, standard deviation, minimum and maximum values for each variable.

Table3. awareness of safety guidelines and use of PPE

PPE

Safety guidelines	Sometimes	Fairly often	Very often	Total
Yes	1	43	70	144
Total	1	43	70	144

From table 3, we can see that out of the 114 participants, all of them answered "yes" to whether they are aware of safety guidelines. Among those who answered "yes", 70 of them reported that they often or very often wear personal protective equipment (PPE) while working, while 43 of them reported that they wear PPE fairly often.

Table 4 awareness of safety guidelines and training on PPE

Training on PPE

Safety guidelines	Never	sometimes	Fairly often	Total
Yes	56	52	6	114
Total	56	56	6	114

Table 4. shows the relationship between safety guidelines and training on PPE. Among those who are aware of safety guidelines, only 6 of them reported receiving training on PPE fairly often, while 52 of them received training on PPE sometimes, and 56 of them never received such training. This suggests a lack of relationship between being aware of safety guidelines and receiving training on PPE.

Table 5.awareness of safety guidelines and attending safety meeting

Attending safety meeting

Safety guidelines	Never	sometimes	Fairly often	Very often	Total

Yes	4	19	61	30	144
Total	4	19	61	30	114

Table 5 shows the relationship between safety guidelines and attending safety meetings. Among those who are aware of safety guidelines, 30 of them reported attending safety meetings very often, 61 of them attend fairly often, 19 attend sometimes, and only 4 never attend. This suggests a positive relationship between being aware of safety guidelines and attending safety meetings, as the majority of those who are aware of the guidelines also report attending safety meeting.

4.2 TYPES OF INJURIES THAT OCCUR AMONG WORKERS AT KCM

In this study the types of injuries and job description (coded in stata) it has p-value less than 0.05 which shows that it is statistically significant which means there is fairly association between job of the participants and injuries that occur at KCM **(Table 6)**

Table6. An association between job title and types of injuries

Variables	**Types of injuries (%)**				***p*-value**
	Slips and fall	**back**	**fracture**	**bruises**	
Job title					
Blaster	0(0.00%)	2 (5.88%)	1(5.88%)	0(0.00%)	
Heavy duty	19(32.76%)	15(44.12%)	6(35.29%)	1(20.00%)	
Operator					**0.017**
Electrician	21(36.21%)	5(14.71%)	1(5.88%)	4(80.00%)	
General worker	18(31.03%)	12(35.29%)	9(52.94%)	0(0.00%)	

4.3 LEVEL EMPLOYEE AWARENESS ON OHS GUIDELINES

The findings from this study on employees' awareness about occupational health and safety guidelines show that there is no statistical significance. Which means there is no association because the p-value is greater than 0.05, with the p-value been 0.567.

Table7. An association between the level of employee awareness and the OHS policy.

Variables	**knowledge about safety (%)**		***p*-value**
	Yes	**no**	
Job title			
Blaster	2 (2.30%)	1(3.70%)	
Heavy duty	33(37.93%)	8(29.63)	
operator			**0.567**
Electrician	21(24.14%)	10(37.04%)	
General worker	31(35.63%)	8(29.63%)	

CHAPTER FIVE

5.0 DISCUSSION

These research questions were illuminated by a number of key findings that emerged from the collected data analysis. These findings will be discussed in greater detail, with implications and suggestions for workplace safety policies and practices.

5.1 DEMOGRAPHIC CHARACTERISTICS AND ADHERENCE TO OCCUPATIONAL HEALTH AND SAFETY.

Demographic characteristics such as age, education, and gender play a crucial role in adherence to occupational health and safety in the mining industry.

Burgess-Limerick et al. (2018) investigated the impact of demographic factors on safety participation in the mining industry. The study found that age, education, and experience were significant predictors of safety participation. Older workers, those with higher education levels, and individuals with more experience were more likely to actively engage in safety-related activities and initiatives, indicating a higher level of adherence to OHS practices.

Age plays a significant role in safety attitudes and compliance with OHS practices in the mining industry. Zadow et al. (2015) conducted a study in the Australian mining sector and found that older workers exhibited more positive safety attitudes and had a greater perception of risk compared to younger workers. The study also revealed that older workers tended to demonstrate higher compliance with OHS practices. This finding suggests that age can influence workers' understanding of safety risks and their willingness to adhere to safety protocols.

Numerous studies have examined the relationship between demographic characteristics and adherence to occupational health and safety in the mining industry, providing valuable insights into the findings. Zohar et al. (2014) conducted research on safety climate and safety behavior in the mining industry. Their findings were similar both Zadow et al.2015 and Zohar et al. 2014 indicated that age was a significant predictor of safety compliance, with older workers demonstrating higher levels of compliance and adherence to safety protocols. In contrast, younger workers may require targeted interventions to improve their safety awareness and compliance (Mayton et al., 2013).

In terms of education, a study by Winder et al. (2017) explored the impact of education on safety behavior among coal miners. The results revealed that higher levels of education were associated with improved safety knowledge, better understanding of safety procedures, and greater compliance with safety regulations. Education plays a crucial role in equipping workers with the necessary knowledge and skills to identify and mitigate occupational hazards.

Similar study was done by Azadeh et al. (2016) investigated the role of education in shaping safety attitudes, perceptions, and behaviors among miners. The study revealed that higher levels of education were associated with more positive safety attitudes, increased awareness of safety regulations, and greater adherence to safety practices. Educated workers are likely to have a better understanding of the importance of OHS and the potential risks involved, leading to improved compliance with safety guidelines. However, other research suggests that educational qualifications may have limited direct effects on OHS compliance, with organizational and job-related factors playing more significant roles (Bofinger & Hamann, 2018).

Gender is an important consideration when examining adherence to OHS in mining industries. Nielsen and Jørgensen (2019) conducted a study exploring gender differences in risk perceptions and protective behaviors related to occupational health and safety. Although their study was not specific to the mining industry, it revealed that women generally had higher risk perceptions and were more likely to engage in protective behaviors compared to men. These findings imply that gender may influence workers' attitudes towards safety and their willingness to comply with OHS practices. Hämäläinen et al. (2018) conducted a similar study on gender differences in safety attitudes and behaviors in the mining and construction sectors. The findings revealed that women generally reported higher compliance with safety rules and regulations, as well as greater involvement in safety-related activities. This suggests that gender influences workers' attitudes towards safety and their commitment to following OHS practices.

Additionally, a study by Wuni et al. (2019) focused specifically on gender differences in occupational health and safety practices among small-scale artisanal gold miners in Ghana. The findings indicated that female miners were more likely to adhere to safety practices, such as wearing personal protective equipment (PPE) and seeking medical check-ups. The study also revealed that women miners tended to have better knowledge and awareness of

occupational hazards. This highlights the importance of considering gender-specific factors and designing targeted interventions to improve safety adherence in the mining industry.

Furthermore, it is worth noting that cultural and regional factors may also influence adherence to OHS in the mining industry. A study by Zhang et al. (2016) examined the effects of national culture on safety behavior among Chinese miners. The findings revealed that individualism and power distance, which are cultural dimensions, significantly influenced safety behavior. Cultural factors should be considered in addition to demographic characteristics to fully understand safety adherence in different mining contexts.

However, in this study the *P*-values were greater than 0.05 which shows that age, education and gender is not statistically significant which shows that there is no association between age, gender and education and adhering occupational health and safety guidelines.

5.2 AWARENESS OF SAFETY GUIDELINES AND TRAINING ON PPE

The higher proportion of "fairly often" and "very often" PPE use among those who always follow safety guidelines compared to those who do not indicates a positive relationship between adherence to safety guidelines and PPE use. As evidenced by the higher proportion of "very often" safety guideline adherence among those who always attend safety meetings as opposed to those who never attend, there is also a positive relationship between attending safety meetings and following safety guidelines. According to the findings, wearing personal protective equipment (PPE) and adhering to safety guidelines are strongly linked. 70 of the 114 people who responded said they used personal protective equipment and that they either occasionally, fairly frequently, or very frequently followed safety guidelines. It's interesting to note that none of the respondents who said they didn't follow safety guidelines said they used PPE. This recommends that there might be a positive relationship between observing security rules and utilizing PPE. In addition, the findings demonstrate a connection between attending safety meetings and adhering to safety guidelines, as none of the respondents who attended safety meetings very frequently reported not adhering to safety guidelines, while 19 respondents who attended safety meetings occasionally or fairly frequently did so. This could imply that attending safety meetings could encourage compliance with safety regulation. Stricoff and Groover (2004) alluded to that safety meetings played a crucial role in increasing safety behaviour and reducing accidents in the mining industry. The study identified that communication and education were some of the crucial factors that influenced the use of PPE. Safety meeting were deemed as a medium for communication and education, leading to

increased knowledge about safety regulations and importance of wearing PPE. In a similar study conducted by Chauvin et al. (2017) findings showed that implementation of various safety interventions, including safety meetings, resulted in a substantial increase in PPE usage in the mining sector. Additionally, a study by Kecojevic et al. (2015), finding showed that safety meetings improved worker participation in safety activities and use of PPE in the mining industry.

According to Ruff and Antonuccis, (2013), training and communication were the most effective means of improving safety practices. The study concluded that communication and training should constantly remind miners to adhere to safety guidelines. The study further asserted that on-going training is vital to maintaining the awareness of employees on safety guideline. In a study by Cho and Lee, (2019) on the relationship between safety leadership and employee safety behaviour, safety leadership positively affected employee safety behaviour. The study further revealed that effective communication, training and monitoring were crucial elements of safety leadership.

All the authors argued that there is indeed a positive relationship between miners attending safety meetings and the use of PPE, which therefore will raise awareness of the most effective and efficient use of PPE to reduce the exposure to hazardous substances and also ensure that everyone is well informed on the OHS policy of the company.

Exposure to accidents in the work place

From a maximum of 2, the mean proportion of employees who have been in an accident is 1.36, indicating that accidents are relatively uncommon in the sample. The higher proportion of employees who have not been in an accident who wear PPE "fairly often" and "very often" in comparison to those who have is evidence that there is a positive relationship between PPE use and accident prevention. Additionally, there is a positive correlation between accident prevention training and PPE,

According to the findings, employees who do not wear personal protective equipment or receive training on how to use it properly are more likely to have accidents. Of the 73 people who said they had been in an accident, 49 said they used PPE a lot or a lot of the time, and only 21 said they used PPE sometimes. This could imply that wearing PPE on a regular basis might make accidents less likely. In addition, the findings suggest that receiving instruction on how to use PPE is linked to fewer accidents. Only two of the 73 respondents who said

they had been in an accident said they had received training on how to use personal protective equipment fairly often, and 34 of them said they had never received such training. This suggests that educating workers on the importance of PPE could help cut down on accidents. Interestingly, the findings also demonstrate that attending safety meetings or adhering to safety guidelines is not associated with accidents. In a similar study done in Zambia by Sikana, (2020), to examine OSH systems in selected mining companies on the copper belt province of Zambia alluded to that training in the area of PPE is necessary for various reasons. As the findings indicted that most of the employees did not know what PPE should be used for a particular task and environment in which to use it. The study further stated that there is need to train employees on health and safety according to their tasks and site in order for them to know what health and safety measures they should put in place to have a health and safe working environment. A study by Aram et al (2021) showed that the use of personal protective equipment PPE among miners was 77.4%. overall, higher probabilities of personal protective equipment use was among workers who work in good health and safety conditions compared to those who work in poor health and safety conditions. In similar study by Nakua and Owusu-Dabo et al (2019) results showed that majority of the respondents did not know of any safety regulations at their place of work. However, of those who knew safety regulations, the majority did observe them. It was further indicated that a few workers had ever had safety training; nonetheless these factors were not associated with risk of injury.

By and large, these discoveries recommend that utilizing PPE and getting preparing on the most proficient method to appropriately utilize it are key elements in forestalling mishaps in the working environment. In order to foster a safer work environment, it may be beneficial for businesses to give priority to providing PPE and training to employees. Attending safety meetings could also help spread safety policies and procedures throughout the workplace.

5.3TYPES OF INJURIES THAT OCCUR AMONG WORKERS AT KCM

The mining industry is considered to be one of the most dangerous industries due to the high number of work-related injuries and fatalities. Slip/fall injuries and back injuries are amongst the most reported in the mining industry. Finding in table 6 indicates that there is statistical significance between the workers' job title and the type of injuries. The most common type of injuries were slips and falls with 21 respondents at (36.21%), followed by back injuries (44.12%). A consenting study by Nakua and Owusu-Dabo et al. findings showed that injuries were mainly caused by machinery/tools 66(46.1%), followed by slip/falls. Slip/fall injuries

are common in the mining industry, accounting for about 20% of all reported injuries. According to a study conducted by the national institute of occupational safety and health (NIOSH), slip/fall incidents accounted for 40% of all deaths in the mining industry between 2011 and 2015 (CDC,2018). The majority of slip/fall injuries occur in underground mining operations due to the uneven surfaces and wet conditions. Back injuries are also common in the mining industry, accounting for about 25% of all injuries reported. According to a study conducted by NIOSH, about 50% of miners experience back injuries NIOSH, (2019). According to an analysis by NIOSH researcher of MSHA data, about 22% of all non-fatal injuries reported to the mine safety and health administration (MSHA) between 2014 and 2018 were associated with slip, trip, and fall incidents. Over 50% of MSHA issued imminent danger orders at mental/non-mental mines were also associated with fall risk (2010-2017). Schutte and Shaba (2003), augured that over the period 1999 to 2002, a total of 2027 accidents were involving slipping and falling were reported. Further, stating that 69% of these accidents occurred at Gold mines, 13% at platinum mines and 5% at collieries. A total number of 442 (218. %) accidents were associated with failing in shafts or excavations, or from structures, and 1585 (78.2%) accidents were the result of people slipping, tripping over objects, stumbling or overbalancing. A similar study by Singo and Moyo et al. (2022) in Zimbabwe, indicted that slips, trips, and falls were the most recorded accidents at ASGM (52.6%) . this was attributed to workers been hit by tools or machines, and hit by pieces of stones. This study also reported other injuries that were not reported in this report, the collapse of the mines, underground trappings and instant deaths. Michelo and Bratveit (2009) established that fall of rocks was the most cause of fatality; handling of materials and tools such as pneumatic drills, jumpers, jacks and hammers was the most frequently reported mechanism of injuries. The large size and weight of these tools may increase the likelihood of them slipping and dropping. Another consenting study by Kecojevic, (2007) in USA, 54% of incidents were related to material handling, 23% to machinery and hand tools, 16% to slip or fall of persons, 10% to roof falls and 8% to powered haulage. The world has changed drastically due to the high rise of industrialization across the globe. Mining activities are generally associated with poor working conditions and accidents that result in injuries, labour inefficiency and low productivity due to the lost days caused by the injury. These accidents have become a major concern in both industrialized and developing countries. Accidents cannot be eliminated entirely, however implementing strategies to combat these accidents at organizational level and national level is vital to ensure that the economies keep running smoothly and the health and lives of the people is preserved. It is important to note that most

of the scholars in literature all add similar findings on the common types of accidents that are experienced by miner. This study did not examine the causes of these common injuries. However, some literature suggests that some of the common causes of these injuries may include;

- Poor lighting

  Low visibility is a common cause of slip, trips, and falls.
- Improper lifting

  Lower back strains and shoulder injuries are common causes among workers who use improper lifting techniques.

5.4 LEVEL EMPLOYEE AWARENESS ON OHS GUIDELINES

The purpose of the third research question was to ascertain how well KCM employees were aware of the OHS policy. The survey determined whether or not the employees were aware of the OHS policy in order to answer this question. The outcomes showed that out of the 114 respondents, 87 (76.32%) knew about the OHS strategy, while 27 (23.68%) didn't know about it. This result suggests that the OHS policy is well-known to a significant number of the company's employees. Since awareness of the OHS policy is a crucial component of ensuring workplace safety and reducing accidents, this is a positive sign (Eyiah et al.,2019). when representatives know about the OHS strategy, they are bound to follow security conventions and play it safe to forestall mishaps. In a study conducted in Ghana by Siabi and Donkor et al, (2022) results show that respondent's knowledge of OSH policies education is positively related to the health and safety policies. The results showed that most of the responds did not have an in-depth knowledge about the health and safety pratices at ASGM. The study further suggested that an increase in the ASGM policies will lead to a 20% increase in the level of knowledge of the respondents as there was a positive relationship between the knowledge of respondents on OHS policies and the presence of health and safety committee at 1% significance level. However, it is troubling that some employees are unaware of the OHS policy. Employees who are unaware of the OHS policy may disregard the policy's safety guidelines and procedures, which may raise the likelihood of accidents. Subsequently, it is vital to guarantee that all representatives know about the OHS strategy and grasp its substance and significance. Employees could be educated about the OHS policy and its significance to ensuring a healthy and safe workplace through training and awareness programs.

5.2 LIMITATIONS TO THE STUDY

The researcher encountered a few challenges during the process of carrying out the study. Below are some of the challenges;

- The population intended to be under study was 153 only 114 took part in the study as due to lack of willingness from participants some questionnaires were not answered as such the participants that didn't not give consent could not take put in the study.
- The miners are very busy which made prolonged the collection of the data .
- Being a student chasing around the busiest group of miners in this sector was quite cumbersome in terms of communication and getting the full data of what the research is needed.
- Collecting data was quite difficult due to rescheduling of when to go to the site and collect the data because of the busy construction operation schedules.

CHAPTER SIX

6.0 RECOMMENDATIONS AND CCONCLUSION

6.1 Conclusion

In conclusion, significant findings from the survey data regarding occupational health and safety in the manufacturing sector can serve as a foundation for the creation of workplace safety procedures. The high proportion of respondents who reported being aware of safety policies, wearing personal protective equipment (PPE), and attending safety meetings indicates that employees generally have a good understanding of occupational health and safety (OHS) policies and guidelines. Nevertheless, there is a need for additional support and preparation for these strategies and rules, particularly in areas such as the use of PPE and PPE preparation. Additionally, the data suggest that awareness of emergency procedures and accident reporting and investigation could benefit from some enhancement. In general, the findings emphasize the significance of continuous education and preparation to maintain a safe and sound workplace, as well as the importance of ongoing observation and evaluation of workplace security strategies and practices. Adherence to occupational health and safety guidelines is a key component of Konkola Copper mines' operations. The company has put in places comprehensive measures to ensure the safety and well-being of its employees and the community. By following OSH measures KCM has minimized some accidents and occupational hazards and improved employee productivity and well-being.

To cultivate a culture of security and prosperity in the work environment, it is recommended that organizations consistently assess their wellbeing strategies and practices, distinguish regions for development, and put resources into progressing schooling and preparing for representatives.

6.2 RECOMMENDATIONS

- In terms of adherence to safety guidelines and PPE use, it appears that there is room for improvement based on the findings. While most of workers revealed utilizing PPE some of the time or off and on again, there were still some who detailed never utilizing it. Moreover, just a minority of workers detailed going to somewhere safe and secure gatherings or getting preparing on PPE. In order to address these issues, it may be beneficial to offer more extensive and frequent training on safety guidelines and PPE usage. Incentives for attending safety meetings and stricter adherence to safety guidelines and the use of personal protective equipment may also be beneficial.

- Use of personal protective equipment (PPE) and following safety guidelines are linked to accidents. Workers who detailed utilizing PPE all the more regularly were less inclined to have been engaged with a mishap. In addition, accidents were more likely to occur among those who said they had never received PPE training. It may be necessary to enforce stricter adherence to safety guidelines and the use of personal protective equipment in order to improve safety and cut down on accidents. Training on safety rules and how to use personal protective equipment (PPE) should be given more frequently and more thoroughly.
- Although the majority of employees were aware of the OHS policy, there were still some who were not, according to the findings. It may be beneficial to provide more frequent reminders of the policy, such as through regular safety meetings or workplace signage, to increase employee awareness. Offering more in-depth instruction on the policy and its implications for employee safety may also be beneficial. Last but not least, in order to ensure that employees take the policy seriously, it may be necessary to provide incentives for following it and enforce penalties for breaking it.
- The next researcher should use qualitative study
- The next researcher should use multivariate analysis which will help in reducing biasness which can be determined in this study as the researcher used chi-square to analyse the data.

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APPENDICES

DATA COLLECTION TOOL

CONSENT FORM

SCHOOL OF MEDICINE AND HEALTH SCIENCES

My name is Patience Mbughi Nalwamba a fourth year Public Health Student at the University of Lusaka Pursuing a Bachelor's Degree in Public Health. I am conducting a study on Adherence to Occupational Health and Safety practices at Konkola Copper mines in Chililabmbwe district. This research is one of the requirements for aquiring a Bachelor's Degree in Public Health.You are chosen for this study on purpose. Therefore, your involvement is however, entirely voluntary and are no concequences if you refuse to participate. Please be assured that your identity and responses to this form will be entirely private.

QUESTIONNAIRE FORM FOR ADHERENCE TO OCCUPATIONAL HEALTH AND SAFETY PRACTICES AT KONKOLA COPPER MINES CHILILABOMBWE DISTRICT, ZAMBIA

Section A: Demographic information

1. Age …….
2. Gender ……..
3. Department ……..

4. Education level ……..
5. Job title……..
6. Marital status

a. Single

b. Married

c. Divorced

7. Employment status

a. Full-time

b. Part-time

c. Temporal/casual

Section B

8. How often do you attend safety meetings?

a. Never

b. Sometimes

c. Fairly often

d. Very often

9. How often do you wear personal protective equipment (PPE) such as safety glasses, hard hats, and safety shoes?

a. Never

b. Sometimes

c. fairly often

d. very often

10. Have you received training on the correct use of PPE?

a. Yes

b. No

11. Have you been involved in any accidents or near-misses in the past year?

a. Yes

b. No

12. Do Years of experience in the mining industry have an effect on your working ability?

a. yes

b. no

13. Does Attitude and behavior towards safety affect your working ability?

a) Yes

b) No

14. Have you received training on occupational health and safety guidelines practices?

a) Yes

b) No

15. Are you aware of the hazards and risks associated with your job role?

a) Yes

b) No

16. Do you know the correct procedures for reporting hazards and risks?

a) Yes

b) No

17. Have you ever witnessed a safety incident or near-miss at the mine?

a) Yes

b) No

18. Are safety guidelines and procedures regularly reviewed and updated at the mine?

a) Yes

b) No

19. Do you feel that the mine prioritizes safety as a core value?

a) Yes

b) No

20. Do you know how to report a hazard or safety concern to your supervisor or OHS representative?

Yes

No

21. Are you aware of the responsibilities of your supervisor and employer in regards to OHS?

Yes

No

22. Have you read and understood the OHS policy and guidelines of your workplace?

Yes

No

23. Do you feel that you have the necessary knowledge and resources to work safely?

Yes

No

24. Does monthly salary received affect your working ability?

Yes

No

25. Do you have any health conditions that affect your working condition?

Yes

No

26. Do you have a suitable and sufficient first aid equipment and assistance at your work place?

Yes

No

27. Does your organization have written health and safety policy?

Yes

No

28. Within your work place, do you know where to report if accidents occur?

Yes

No

29. What type of injury have you experienced?

a. slips and fall

b. fractures

c. bruises

d. back injury

THANK YOU FOR YOUR PARTICIPATION

Source; institue for work and health

STUDY TIME FRAME

Activity	NOV 2022	DEC2022- JAN 2023	JAN – MAR 2023	APR –JUN 2023
Finalize research proposal				
Ethical Clearance from UNILUS- REC and funding authorities				
Data collection, management				
Data analysis				
Draft report writing				
Submission of first Draft report and finalization				

BUDGET SUMMARY

ITEM	ZMW
Transport	1000
Stationary	1400
Internet and bundles	450
Lunch	400
Research Assistants	400
Contingency funds	250
Grand Total	3900

CONSENT FORM

NATIONAL HEALTH RESEARCH AUTHORITY
Lot No. 18961/M, off Kasama Road, Chalala, P.O. Box 30075, LUSAKA
Tell: +260211 250309 | Email: znhrasec@nhra.org.zm | www.nhra.org.zm

Ref No: NHRA0007/12/05/2023 **Date:12th May 2023**

The Principal Investigator,
Ms Nalwamba Mbughi Patience,
UNIVERSITY OF LUSAKA
Lusaka, Zambia.

Dear Ms Nalwamba,

Re: Request for Authority to Conduct Research

The National Health Research Authority Is in Receipt of Your Request for Ethical Clearance and Authority to Conduct Research Titled **"Adherence to Occupational Health and Safety Guidelines at Konkola Copper Mines Chililabombwe, Zambia."**

I wish to inform you that following submission of your request to the Authority, our review of the same and in view of the ethical clearance, this study has been **approved** on condition that:

1. The relevant Provincial and District Medical Officers where the study is being conducted are fully appraised;
2. Progress updates are provided to NHRA bi-annually from the date of commencement of the study;
3. The final study report is cleared by the NHRA before any publication or dissemination within or outside the country;
4. After clearance for publication or dissemination by the NHRA, the final study report is shared with all relevant Provincial and District Directors of Health where the study was being conducted, University leadership, and all key respondents.

Yours faithfully,

NATIONAL HEALTH RESEARCH AUTHORITY

Ms. Sandra Chilengi-Sakala,
ACTING DIRECTOR/CHIEF EXECUTIVE OFFICER

SCHOOL OF MEDICINE AND HEALTH SCIENCES LEOPARDS HILL CAMPUS

Plot No. 37413, Off Alick Nkhata Mass Media. P. O Box 36711, Lusaka.
Phone: +260211258505, 258409 Fax +260211233409; Cell +260976075850,961917862,
E-mail:unilus@zamnet.zm,ictar@zamnet.zm

Date: 15th DECEMBER, 2022

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PERMISSION FOR **PATIENCE MBUGHI NALWAMBA - BSPH19216765 TO** CONDUCT A RESEARCH STUDY AT YOUR FACILITY/ INSTITUTION/ORGANIZATION

Reference is made to the above subject matter

The University of Lusaka, School of Medicine and Health Sciences here by requests for permission for **PATIENCE MBUGHI NALWAMBA** Public Health Student to conduct research at your facility/ institution/ organization, entitled; **ADHERENCE TO OCCUPATIONAL HEALTH AND SAFETY PRACTICIES AT KONKOLA COPPER MINES, CHILILABOMWE DISTRICT ZAMBIA.** The research is in partial fulfillment of the requirements for the degree of Bachelor of Science Public Health. This is purely for academic purposes and information gained in such a way will not be used in the public domain without prior authorization from the institutions/ organizations involved.

The research topic has been cleared by the University of Lusaka, School of Medicine and Health Sciences Research Ethics Committee as per the attached copy. Data collection is expected to be done from **1st January, 2023 to 31st March, 2023**.

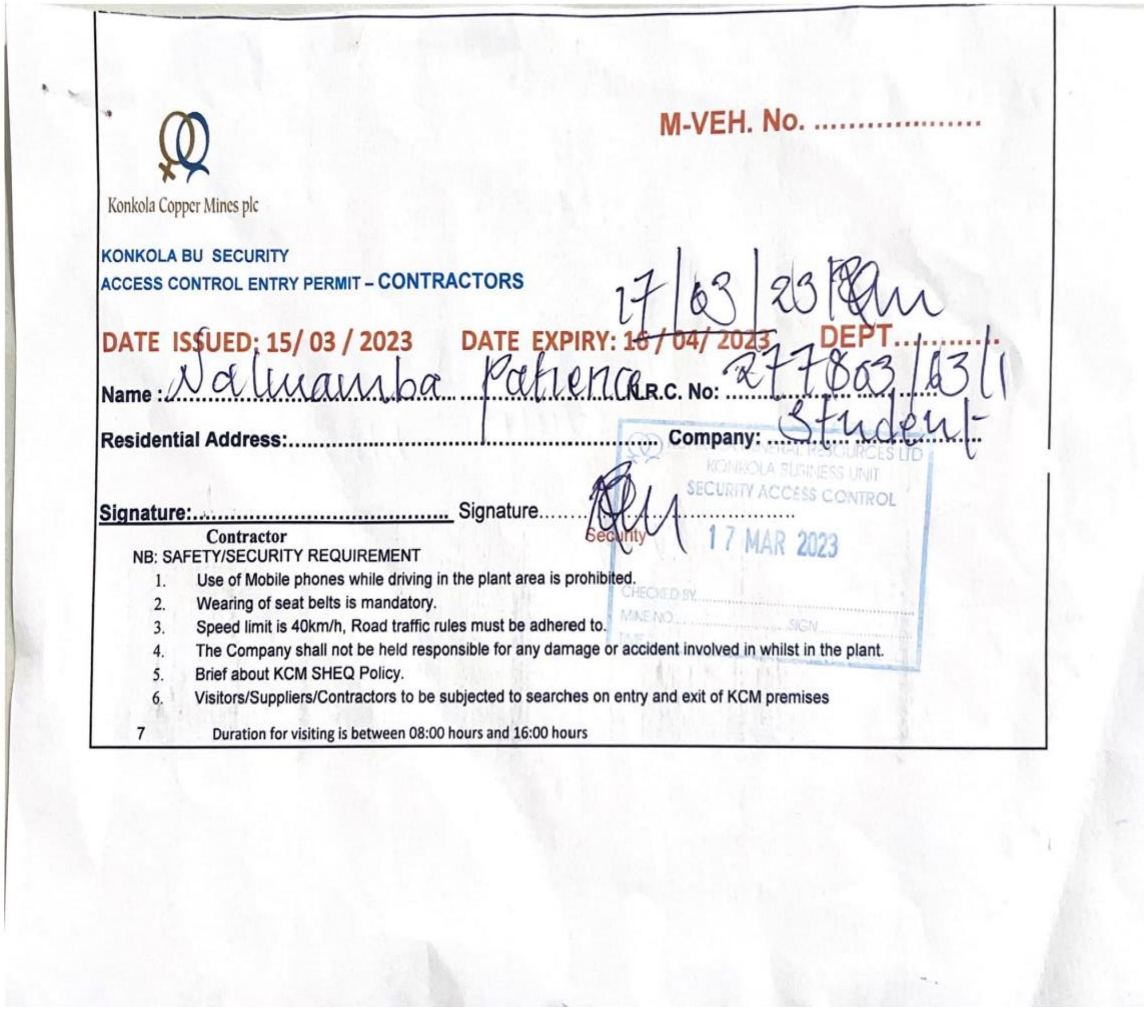
The University of Lusaka avails itself of this opportunity to review to your office the assurances of its highest considerations and looks forward to your timely and favorable response.

Prof Kasonde Bowa
MSc(Glasgow),M.Med(UNZA),FRCS(Glasgow),FACS,FCS,DPH(ESTMH),MPH(UCL)
Chairman- UNILUS REC
Professor of Urology and Consultant Urologist
Executive Dean University of Lusaka and University Teaching Hospital School of Medicine and Health Sciences.

KONKOLA MINERAL RESOURCES LTD
KONKOLA BUSINESS UNIT
17 MAR 2023
ENVIRONMENT HEALTH AND SAFETY DEPARTMENT

KONKOLA MINERAL RESOURCES LTD
KONKOLA BUSINESS UNIT
15 MAR 2023
ENVIRONMENT HEALTH AND SAFETY DEPARTMENT

KONKOLA MINERAL RESOURCES LTD
15 MAR 2023
KONKOLA MINE HOSPITAL



M-VEH. No. .....

Konkola Copper Mines plc

KONKOLA BU SECURITY

ACCESS CONTROL ENTRY PERMIT – CONTRACTORS

17/03/23

DATE ISSUED: 15/ 03 / 2023 DATE EXPIRY: ~~16 / 04/ 2023~~ DEPT.....

Name : Nalwamba Patience N.R.C. No: 277803/63/1

Residential Address:..... Company: Student

Signature:..... Signature.....

Contractor

KONKOLA BUSINESS UNIT
SECURITY ACCESS CONTROL
17 MAR 2023
CHECKED BY
MINE NO. SIGN

Security

NB: SAFETY/SECURITY REQUIREMENT

1. Use of Mobile phones while driving in the plant area is prohibited.
2. Wearing of seat belts is mandatory.
3. Speed limit is 40km/h, Road traffic rules must be adhered to.
4. The Company shall not be held responsible for any damage or accident involved in whilst in the plant.
5. Brief about KCM SHEQ Policy.
6. Visitors/Suppliers/Contractors to be subjected to searches on entry and exit of KCM premises
7. Duration for visiting is between 08:00 hours and 16:00 hours