

**AN ASSESSMENT OF OCCUPATIONAL, SAFETY AND HEALTH
HAZARDSON LIVELIHOOD EMPLOYMENT: A CASE OF MANUAL
STONE CRUSHINGAT MICHEWENI, PEMBA, TANZANIA.**

MUHAMAD SALEH JUMA

**A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS
ADMINISTRATION OF THE OPEN UNIVERSITY OF TANZANIA**

2017

CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the Open University of Tanzania a dissertation entitled “**An Assessment of Occupational, Safety and Health Hazards on Livelihood Employment in Zanzibar: A Case Study of Small Scale Manual Stone Crushing at Micheweni Pemba, Tanzania**” in partial fulfillment of the requirements for the degree of Master of Business Administration (MBA) of the Open University of Tanzania.

.....

Dr. Abdiel Abayo

(Supervisor)

.....

Date

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DECLARATION

I, **Muhamad Saleh Juma**, do hereby declare that this dissertation is my own original work and that it has not been presented and will not be presented to any University for a similar or any other degree award.

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Signature

.....

Date

DEDICATION

This work is dedicated to my beloved wife, Ashura, my elder son, Abubakar, and my daughter, Raiyan, who mostly missed my company while I was busy in my study. Now, let them get rest and fill comfortable in reading this document.

ACKNOWLEDGEMENT

The writing of the dissertation has been one of the most significant academic challenges I have never had to face. Without the support, patience and guidance of the following people, this study wouldn't have completed. It is to them that I owe my deepest gratitude.

I wish to give my special thanks to Dr. Abdiel Abayo of the Open University of Tanzania for his supervision, contributions and inputs, which made this work to be in this stage. I also wish to acknowledge the motivations and contributions I got from Dr. Ngatuni, P. and Prof. Deus Ngaruko, of The Open University of Tanzania (OUT) Headquarters who encouraged me during face-to-face sessions to energetically pursue the execution of this research with my utmost enthusiasm.

My sincere thanks should go to Mr. Juma Rashid, Coordinator (OUT) Pemba Centre and his colleagues for their encouragement and moral support. I wish to acknowledge the contributions of my family who gave me total support and encouragement towards my pursuit to obtain a Master Degree. Special thanks should go to my employer Officer In-charge of the Office of Controller and Auditor General of Zanzibar for his financial, material and time support during my study. I also wish to thank Mr. Abdulla Rashid and Mr. Addi Juma Faki for assisting me in data analysis with SPSS. To those who have helped me during the survey including data collection, I thank them all. Errors or omissions are solely mine.

ABSTRACT

This study assessed the livelihood employment on occupational, health and safety hazards: environmental condition, causes and the effects of occupational hazards in livelihood employment taking Michewni District in Pemba Island as the case study. The methodology adopted was descriptive case study with mixed approach. Secondary data, observation and face-to-face interview were used for data collection techniques while structured questionnaire was a major data collecting instrument. The study revealed that workers are affected from major occupational safety and health hazards, which include physical, chemical, ergonomic and psycho-social hazards. Physical hazards results injury, neck ache and general body pain, chemical hazards causes cough related diseases. Ergonomic hazards contributed mainly to equipment used, repetitive movement, manual work and posture. Psychosocial hazards stress and fatigue mentioned to large extent and long term consequences (impact) of occupational hazards to manual stone crushing. The study recommends on establishment of occupational health and safety policy which is sensitive to both formal and informal sector, supervising working environment in self employment, proper training on occupational safety and healthy, livelihood workers should form producers groups for collective effort in fighting against challenges and further survey and research should be conducted to depict the status of occupational hazards in the livelihood sector and the result to be communicated to relevant stake holders including the workers themselves.

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LIST OF ABBREVIATIONS

GNP	Growth National Product
ILO	International Labor Organization
MSC	Manual Stone Crushing
OHS	Occupational Health and Safety
WHO	World Health Organization
ZOHSP 2010	Zanzibar Occupational Health and Safety Profile 2010
ZSGPP II 2010	Zanzibar Strategy for Growth and Reduction for Poverty 2010

CHAPTER ONE

INTRODUCTION

1.1 Background to the Problem

In searching for livelihood, household members engage in different and various forms of gainful employment out of formal sectors in public or private enterprises. While formal sector absorbs just a fraction of the labor force in the world especially in developing countries, significant large portion of the labor force fall in informal sector with different working environmental conditions. While the formal sector is praised for adhering to some of occupational and employment standards including occupational safety and health, the informal sector is accused of little compliance with those standards and consequently workers facing high risk in occupational related hazards.

Usually, sectors responsible for the occupational accidents in the formal sector are investigated and known, the situation in the informal sector however, is generally not known. This may be due to the unconventional nature and location of the informal work. Informal workers are not protected by the institutions that have been designed to protect formal workers in formal work environments such as mines, offices and shops. Workers in the informal sector, have no bearing on the working conditions of most informal workers (Buhlebenkosi et al, 2013).

Livelihood employment is acknowledged by major macroeconomic policy documents of Zanzibar including Zanzibar Vision 2020, Zanzibar Strategy for Growth and Reduction for Poverty II (ZSGRP II) and Zanzibar Occupational Health

and Safety profile (2010). The overall Vision 2020's objective aspires to eradicate absolute poverty in the society. This is from the view that poverty is among greatest burden for the people of Zanzibar.

Indeed, it is not merely the lack of income that determines poverty; it is also the lack of accessibility to the basic needs of the people. Poverty eradication in both urban and rural areas means increasing the ability of the people to get the necessities of life, namely; food, better shelter/housing, adequate and decent clothing, improving democracy and social security. Other things remaining constant, poverty eradication could be synonymous to empowering people to successfully manage their lives and have a say on the course of their development (ZV2020).

In the same vein, the Zanzibar Strategy for Growth and Reduction of Poverty II (ZSGRP II) goal 1.2 seek to promote sustainable and equitable growth through improving the quality of the work force in key growth sectors specifically developing and implementing sectoral programs that strengthen skills of the labor force and enhancing working conditions and participation of vulnerable groups in key growth sectors (ZSGRP II, 2010).

The above policy framework put emphasis on the importance of livelihood to the both urban and rural communities' regardless type of gender with little concern on adopting proper standards of occupational safety and health for minimizing occupational hazards. The same is manifested in sector policies such as SMEs, Trade and industry policies and even in occupational health and safety related legislation such as The Occupational Safety and Healthy (Act No. 8, 2005).

At the same time the Zanzibar Occupational Safety and Health Profile (2010) is very rich in the Occupational Safety and Health (OSH) related information on the formal sector but totally neglected information on informal sector including manual stone crushing activities.

OSH related information in livelihood sector is very crucial in fighting against poverty since poor occupational safety and healthy might aggravating poverty incidence to the incumbent workers by inducing absenteeism and even committing significant amount of income for medical expenses and even the death of the bread earners for instance, there is seasonal fatal and frequent injury accidents reported in manual stone crushing activities in Michweweni district, but information on the working environment and the possible causes of occurrence of those accidents and their effects is so far very limited.

Researchers are also biased in conducting research to the formal sector at the expenses of informal sector on matters related to OSH. Based on the information above, it become evident that, there is inadequate information in the area of occupational safety and healthy in livelihood employment. There is a need to make a systematic enquiry to organize OSH related information in livelihood sector for reducing the incidence of work place injuries and accident in livelihood sector.

This is the motive behind conducting this study titled as assessment of livelihood employment on occupational health and safety. The study is supposed to be useful to decision and policy makers in general and employment, labor and human resource planners in particular. The study will be also important to academicians, researchers, development practitioners and the like for further research and policy deliberations

1.2 Statement of the Problem

While the informal sector contributes a large number of employment opportunities, economic development and claimed to be a source of income for those living in rural, remote, and poor areas of the population worldwide, there are numerous hazards, risks, injuries and diseases associated with work in the sector which affects staffs attendance, production and service delivery. Informal workers face substantial risks and vulnerabilities due to insecurity surrounding their employment areas and lack of control of the conditions of their employment. In addition, informal workers have limited access to affordable and appropriate health care for themselves and their families.

According to the World Health Organization (2006) cited in Rockefeller Foundation (2013) poor occupational health reduce working capacity of workers and cause economic loss of 10% -20% of the Gross National Product of a country. In the course of economic growth and poverty reduction in Zanzibar there is a call for people to engage in gainful employment to sustain their lives. Like other developing countries, large portion of the Zanzibar population fall in the livelihood employment sector, the sector is much accused for poor working conditions and standards on one hand which keep workers at high risk to occupational related diseases and injuries.

In other hand, the Zanzibar Occupational Safety and Health Profile(ZOSH2010) is very rich in the OSH related information including occupational risk and hazards of formal sector but totally neglecting those of informal sectors including manual stone crushing activities. OSH related information in livelihood sector is very crucial in fighting against poverty since poor occupational safety and healthy might

aggravating poverty incidence to the incumbent workers by inducing absenteeism and even committing significant amount of income for medical expenses and even the death of the bread earners. For instance, there is seasonal fatal and frequent injury accidents reported in manual stone crushing activities in Michweweni District, but information on the working environment and the possible causes of occurrence of those accidents and their effects is so far very limited.

While the working environments and possible causes of accident and injury in livelihood sector in Zanzibar are clearly unknown, this implies that effect of occupational hazards is not common and not understandable to various people including workers themselves, planners, decision makers and even the academia. Based on the importance of livelihood employment and associated risks, there is need to make a systematic enquiry to organize OSH related information in livelihood sector for reducing the incidence of work place injuries and accident in livelihood sector. This is the motive behind conducting this study. The study is supposed to be useful to decision and policy makers in general and employment, labor and human resource planners in particular. The study will be also important to academicians, researchers, development practitioners and the like for conducting further researches and policy deliberations.

1.3 Research Objectives

1.3.1 General Objective

The general objective of the study was to assess the effects of occupational safety and health hazards on livelihood employment in manual stone crushing at Micheweni District Pemba Island.

1.3.2 Specific Objectives

The specific objectives of the study were:

- (i) To investigate the environmental condition of occupational safety and health on livelihood employment.
- (ii) To investigate the causes of occupational, health and safety hazards on livelihood employment
- (iii) To examine the effect of poor occupational safety and healthy on livelihood employment.
- (iv) To explore the policy options and provide recommendations that can promote occupational safety and healthy in general and livelihood employment in Zanzibar.

1.4 Research Questions

1.4.1 General Research Question

The study will try to answer the question on how occupational health and safety is affected by the livelihood employment in Zanzibar?

1.4.2 Specific Research Questions

- (i) What are the environmental conditions leading to occupational, safety and health hazards in Micheweni manual crushers in Zanzibar?
- (ii) What are the causes of occupational, safety and health hazards in Micheweni manual crushers in Zanzibar?
- (iii) What is the effect of poor occupational safety and health in livelihood employment in Zanzibar?

- (iv) What policy measures could be taken to minimize work place hazards in work place generally and livelihood employment.

1.5 Significance of Study

The research is expected to be important in minimizing occupational hazards in livelihood employment, which lagged behind in the formal area of occupational safety and health. The study will become a starting point for including and mainstreaming occupational safety and healthy in all types of occupation regardless the type of work, so that the work is legal and derives livelihood benefit of the incumbent work holder. The study might develop a new turn in the area of occupational safety and healthy to amend or pass new legislation. Similarly, the outcome of this study will stimulate the researchers and academia to conduct more research in the area to give wide room for evidenced and informed planning and decision making in the area of work place safety and health management.

1.6 Study Limitation

For this research to be carried out effectively limitation on human resource, financial, time as well as research facilities will be the concern. The study will need various kinds of human resources to assist in different activities in order to be completed timely. The study will further be limited to time and financially because whole process will need a lot of money for buying research facilities.

1.7 Organization of the Research

Chapter one above composed of background information to the study, statement of the research problem, research objective and questions and assumption about study limitation. Chapter two is mainly literature review, which constitutes conceptual

definition, theoretical analysis and empirical analysis. Chapter three covers study methodology, which composed of study strategy, sampling design, data collection methods, instruments and data presentation and analysis methods. While data presentation and data analysis covered in chapter four and chapter five constitutes of study findings conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews the existing literatures under the study. In this section there shall be an overview of the major variables such as definitions of the terms, theoretical literature review, empirical literature review, and conceptual framework and research gap.

2.2 Definition of the Key Terms

2.2.1 Occupational Safety and Healthy

According to World Health Organization (WHO) occupational health deals with all aspects of health and safety in the workplace and has a strong focus on primary prevention of hazards. Health has been defined as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. Occupational health is a multidisciplinary field of healthcare concerned with enabling an individual to undertake their occupation.

International Labor Organization (ILO) and World Health Organization (Joint ILO/WHO) Committee on Occupational Health asserted that: "The main focus in occupational health is on three different objectives: (i) the maintenance and promotion of workers' health and working capacity; (ii) the improvement of working environment and work to become conducive to safety and health and (iii) development of work organizations and working cultures in a direction which supports health and safety at work and in doing so also it will promote a positive

social climate and smooth operation and may enhance productivity of the undertakings. The concept of working culture is intended in this context to mean a reflection of the essential value systems adopted by the undertaking concerned. Such a culture is reflected in practice in the managerial systems, personnel policy, principles for participation, training policies and quality management of the undertaking."

Occupational health should aim at: the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention amongst workers of departures from health caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in an occupational environment adapted to his physiological and psychological capabilities; and, to summarize, the adaptation of work to man and of each man to his job.

2.2.2 Livelihood Employment

A person's livelihood refers to their "means of securing the basic necessities -food, water, shelter and clothing of life". Livelihood is defined as a set of activities, involving in securing water, food, fodder, medicine, shelter, clothing and the capacity to acquire above necessities working either individually or as a group by using endowments (both human and material) for meeting the requirements of the self and his/her household on a sustainable basis with dignity. The activities are usually carried out repeatedly. For instance, a fisherman's livelihood depends on the availability and accessibility of fish. Chamber's definition embraces that; livelihood

comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stress and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (Chambers & Conway, 1991).

2.3 Theoretical Literature Review

There are various theories of accident causation dated back during industrial revolution in western countries. Industrial experts H.W. Heinrich and Alfred Lateiner are founders of occupational accident and injury at work place. Among their work was the genesis of Domino theory and their development to human factor and accident and incident theories. Other theories include system theory, epidemiological theory, the energy release theory and behavioral theory (Cleveland State University, n.m.d). In this juncture and for purposes of this study three theories was explained, they include Domino theory and their development, Human Factors/Error Theory of Accident Causation and multiple factor theory.

2.3.1 Domino Theory

Domino effect has been defined as "a cascade of events in which the consequences of a previous accident are increased by following one(s), as well spatially as temporally, leading to a major accident"(Clini, F. et al 2009 in Delvosalle, 1996). According to Heinrich the chain consists of five dominoes.

Domino one: personal injury (the final domino) occurs only as a result of an accident (someone getting hurt). Domino two: an accident occurs only as a result of a

personal or mechanical hazard (unplanned events). Domino three: Personal and mechanical hazards exist only through the fault of careless persons or poorly designed or improperly maintained equipment. This could represent a worker's behavior and unsafe job conditions. Domino four: Faults of persons are inherited or acquired as a result of their social environment or acquired by ancestry. This mainly represents a worker's attitude, level of knowledge, and physical and mental conditions. Domino five: The environment is where and how a person was raised educated which are the bases of life style and personality.

The theory is criticized its simplicity to control human behavior in accident causation and was updated to include the role of management (Bird 1974, Adam 1976 and Weaver, 1979). Similarly, Pertson (1971) criticized the domino theory arguing that, accident is not caused by single cause and adopted non- domino based model called multiple causation model (SeyyedShaibHusseinian et al 2012). The traditional Domino theory is depicted in Figure 2.1.

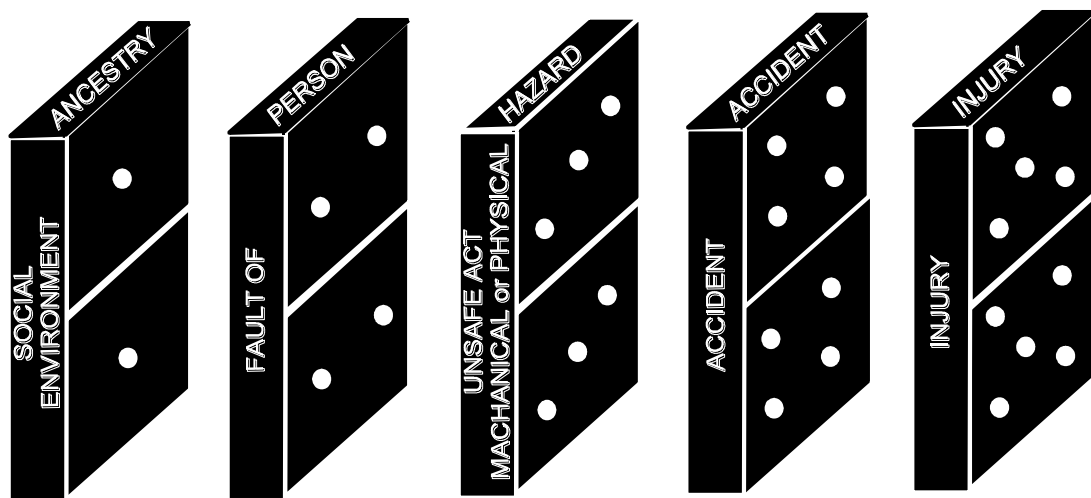


Figure 2.1: Traditional Domino Theory

Source: Anon. Health & Safety Management Lecturing Resource for Quarrying Related Degree Courses

Based on the work of Bird and Loftus (1976) the Domino theory was updated to consider the influence of management and managerial error and loss of the result of accident and could production losses, property damage wastage of other assets as well injuries. Bird and Loftus model include updated the domino sequence to reflect the management's relationship with the causes and effects of all incidents.

The model considers managerial functions of planning, organizing, leading, and controlling in original Domino theory. Other factor considered in the model Purchasing substandard equipment or tools, not providing adequate training, or failing to install adequate engineering controls are just a few examples represented by this domino.

Similarly, the model introduced the basic, the immediate causes, the incident contact and people- property-loss and Personal factors such as lack of knowledge or skill, improper motivation, and/or physical or mental problems. Concurrently, job related factors were considered to include inadequate work standards, inadequate design or maintenance, normal tool or equipment wear and tear, and/or abnormal tool usage such as lifting more weight than the rated capacity of an overhead crane. These basic causes explain why people engage in substandard practices. On immediate Causes(s)—Symptoms it consider unsafe acts and unsafe conditions. “When the basic causes of incidents that could downgrade a business operation exist, they provide the opportunity for the occurrence of substandard practices and conditions (sometimes called errors) that could cause this domino to fall and lead directly to loss” (Bird and Loftus, 1976, p. 44). In case of incident—Contact, undesired event

that could or does make contact with a source of energy above the threshold limit of body or structure was identified. On the other, People-Property-Loss refer as the adverse results of the accident. It is often evaluated in terms of property damage, as well as the effects upon humans, such as injuries and the working environment. The central point in this theory is that management is responsible for the safety and health of the employees. Like Heinrich's theory, the Bird and Loftus domino theory emphasizes that contact incidents can be avoided if unsafe acts and conditions are prevented. Using the first three dominos to identify conditions permitting incidents to occur, and then ensuring the appropriate management activities are performed, can eliminate accidents and related losses according to this theory. The updated domino theory was justified to take the following picture depicted in Figure 2.2.

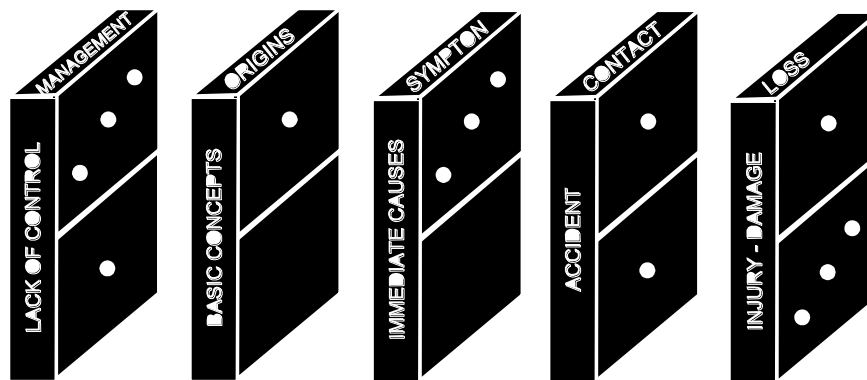


Figure 2.2: Modern Domino Theory

Source: anon. Health & Safety Management Lecturing Resource for Quarrying Related Degree Courses

On the other hand Peterson (1978) argued that, behind every accident is a result of many contributing factors, causes and sub-causes and put the theory of multiple causation is the model that these factors combine together, in random fashion, causing accidents. So, during accident investigations, there is a need to identify as

many of these causes as possible, rather than just one for each stage of the domino sequence.

2.3.2 Human Factors/Error Theory of Accident Causation

The theory was propounded by Russell Ferrell a Professor of human factors at the University of Arizona. He argued that, accident causation is attributed to a chain of events ultimately caused by human error. He claimed that human error is consequently caused by one of the three situations to include Overload, Inappropriate respond and inappropriate activities (Reason 1990).

Overload is defined as amounts to an imbalance between a person's capacity at any given time and the load that person is carrying in a given state. A person's capacity is the product of such factors as his or her natural ability, training, and state of mind, fatigue, stress, and physical condition. The load that a person is carrying consists of tasks for which he or she is responsible and added burdens resulting from environmental factors (noise, distractions, and so on), internal factors (personal problems, emotional stress, and worry), and situational factors (level of risk, unclear instructions, and so on). The state in which a person is acting is the product of his or her motivational and arousal levels.

Likewise, Inappropriate Response and Incompatibility is another source of human error. It is how a person responds in a given situation can cause or prevent an accident. For example if a person detects a hazardous condition but does nothing to correct it, he or she has responded inappropriately. Similarly if a person removes a safeguard from a machine in an effort to increase output, he or she has responded

inappropriately. The same case applies if a person disregards an established safety procedure, he or she has responded inappropriately. Such responses can lead to accidents. For the case of Inappropriate activities and Human error an inappropriate activity is a person who undertakes a task that he or she does not know how to do. Another example is a person who misjudges the degree of risk involved in a given task and proceeds based on that misjudgment. Such inappropriate activities can lead to accidents and injuries example for employees that say “the safe way is the right way”.

2.3.2.1 Multiple Factors Theory

Manuele (1997), believes the domino theories are too simplistic and he proposes the term unsafe act also be eliminated. He suggests the chief culprits in accident causation are less-than-adequate safety policies, standards, and procedures; and inadequate implementation accountability systems. Manuele attempts to pull different causation theories together into one working theory. In developing Manuele's work, Grose put the concept of four Ms to represent factors causing an accident. The four 4M include Machine, Media, Man, and Management (Brauer, 1990).

In this respect Machine refers to tools, equipment, or vehicles contributing to the cause of an accident. In case of machine, direction was directed to examination of machinery characteristics including design, shape, size, or specific type of energy used to operate the equipment. In case of media it includes the environmental conditions surrounding an accident, such as the weather conditions or walking surfaces. For instances snow or water on a roadway, temperature of a building, and

outdoor temperature can be characteristics of media which bear impact to accident causation. On the other hand, man deals with the people and human factors contributing to the incident. Man are characterized by psychological state; gender; age; physiological variables (including height, weight, or condition); and cognitive attributes (such as memory, recall, or knowledge level).

In case of management, it incorporates the other three Ms, looking at the methods used to select equipment, train personnel, or ensure a relatively hazard-free environment. Characteristics of management could include safety rules, organizational structure, or policy. The multiple factors theories attempt to identify specific workplace characteristics that reveal underlying, and often hidden, causes of an accident by pointing to existing hazardous conditions.

2.4 Empirical Literature Review

2.4.1 Empirical Literature Review Worldwide

It is estimated that, 270 million occupational accidents and 2 million work-related deaths occur each year. Sub-Saharan Africa appears to have the greatest rate per worker of occupational injuries followed by Asia (excluding China and India) (ILO,2004 cited Lund and Marriott, 2011).

The source caution the accuracy of the data since many of the activities of the informal sector passed without or with little record officially. Based on People's Security Survey (PSS) conducted by the ILO between 2000 and 2003 in 15 countries exposures to dangerous chemicals with no protection ranging from 6% of casual laborers and wage workers in Gujarat, India and 74% of workers in Indonesia; high

percentages of workers reporting that their general working conditions are unsafe including nearly 50% of all wage workers in Bangladesh, 30% of workers in Russia, 24% of workers in Argentina, 17% of workers in Chile and Brazil and in Tanzania 40% of all workers but 80% of casual agricultural workers. In Tanzania, one in seven workers had experienced work-related injuries or illnesses, while in Bangladesh, 16% of rural workers had suffered a work-related injury that required them to miss a week of work (ILO, 2004 cited in Lund and Marriott, 2011).

Similarly a survey of 1585 informal workers in rural and urban Zimbabwe found similar occupational injury and mortality rates to those found in the formal economy, but higher rates of occupational illness (Loewenson 1998 cited in Lund and Marriott, 2011). In this and other studies in Southern Africa, informal workers reported problems of poor work organization, poor access to clean water and sanitation, ergonomic hazards, hazardous hand tools and exposure to dusts and chemicals' (Loewenson 1999,cited in Lund and Marriott,2011).

There is also evidence that women may be disproportionately vulnerable to musculoskeletal disorders that are rapidly becoming one of the prime causes of work-related injuries and diseases (ILO 2004) because more women are employed in jobs characterized by monotonous rapid-pace work that require static postures and place static loads on muscles (Roskam 2003 cited in Lund and Marriott, 2011). Female workers may also be more vulnerable to toxic chemicals such as pesticides due to the fact that women in general have more body fat and that there is a high risk of adverse effects on unborn children if a woman is exposed during pregnancy (ILO 2004 cited in Lund and Marriott, 2011).

On the other hand, the highly hazardous mining and construction industries still contain proportionately more men than women. It would take an occupation- and sector-specific analysis to get a more comprehensive picture of men's and women's different vulnerabilities at work. What is clear is that a focus on occupational injury alone at the expense of occupational illness might severely underestimate the negative impact of unsafe working conditions on women workers.

2.4.2 Empirical Literature Review in Developing Countries

Khan (2012) reported higher serum level of creatine in stone crush workers compared to the persons not exposed to stone dust in Pakistan. He adds more that, the significantly higher level of serum creatine represents adverse effect of stone dust exposure on the kidneys of stone crushers workers. Similarly quarrying related activities affects health of the incumbent workers in Kenya, some of the hazards involved with the quarrying activities were indicated as: manual handling of heavy loads, being hit by the tools, exposure to dust and falling of rock block. Some of the harms suffered by the respondents in the quarry while on duty were contusion with intact skin surface, pain/problem in nose, throat, sinuses, back, shoulder and neck (Wanjiku, 2015).

On the same vein, study conducted in Nigeria shows that there is a higher occurrence of respiratory diseases symptom among the quarry worker compared to other work (Ugboju, 2009). The study reported further that, manual quarry workers are also exposed to other heavy metals, namely iron, cadmium, chromium, barium, beryllium, and aluminium. Inhalation of excessive amounts of dust causes pneumoconiosis; beryllium causes berylliosis while barium causes siderosis. All these conditions

except berylliosis are relatively benign. The exposure of these manual quarry workers is worrying, especially as they operate in rural areas and do not have access to modern healthcare facilities. High exposure to cadmium may cause kidney damage (Ugboju, 2009).

In Philippines women in small scale mining are at risk to various hazards. They lack proper education and training on safety work practices. They lack awareness on the hazards posed by the chemicals they handle (JinkyLeilanie Lu, 2012). He added that, there is a need for surveillance and regulation by both national and local governments on this type of economic activity. Gender sensitive approaches that center on occupational health and safety of women in small scale mining should be implemented. Developmental projects of governments, however, should include provision of a more environmentally viable and sustainable employment for women.

2.4.3 Empirical Literature in Tanzania

In Tanzania, MereraniArusha it has been discovered that, the poor technology used in extraction of tanzanite, the inability to invest in safe working equipment and tools, the lack of technical know-how and the poor sanitary conditions in the mining camps, are some of the factors that threaten the miners' health and safety. Different studies have shown that the rate of mining accidents in the pits is low compared to the health hazards and illnesses occurring in the settlements (Phillips et al.1997).

Lack of adequate sanitation facilities and scarcity of water increases miner's health hazards. Poor ventilation in deep underground pits leads to accidents due to lack of adequate air circulation. Poor circulation of fresh air leads to depletion of oxygen and

the buildup of other toxic gases. Suffocation from accumulation of toxic gases like carbon monoxide, hydrogen sulphide, sulphur dioxides and others, are common incidents. In areas where drilling is carried out using drilling equipment, e.g. jackhammers, there are rarely any measures to suppress the dust.

In correct usage, drilling equipment for underground work is provided with a special connection for water that is used to suppress dust and for cooling. Most miners use machines designed for surface work underground, where ventilation is limited and thus are exposed to large amounts of dust. The dangers from dust exposure are made worse by the fact that miners usually lack protective gear, in this case, dust masks. The introduction of mining equipment such as jackhammers, crushers and grinding mills without provision for protective gear is bound to have negative effects on the miner's health and safety.

Apart from exposure to dust, which has been discussed above, noise from such equipment is a health hazard to their operators. Drillers in the underground pits usually work in very confined spaces without any ear protectors. Hearing problems are very common amongst underground drillers. Loose morals and the spendthrift atmosphere in mining settlements make women vulnerable to sexual abuse, and communicable diseases, including sexually transmitted diseases spread easily.

This has been found to affect mostly young girls and single women with no permanent attachments. Safety in mines accidents in most working areas can be attributed to poor technology and lack of technical know-how. Likewise, lack of

adequate scaffolding leads to accident from collapsing walls and tunnels. Stabilizing the shafts requires engineering knowledge and the willingness and ability to take adequate measures. Lack of protective gear makes the miners more vulnerable to accidents.

Most miners work barefoot, without gloves, safety belts, helmets and even adequate lighting for underground works. Domestic torches are commonly used for underground lighting with their batteries exposed openly. They provide inadequate light, and the used batteries are an environmental hazard, one of the known sources of mercury contamination. Poor storage and negligence in handling explosives resulted in the death of two mine workers at Mererani in October 1999. Several nearby mines developed cracks and some collapsed.

2.5 Research Gap

Several studies have been conducted on occupational safety and health worldwide and few in Zanzibar but no exclusive study has been reported that seeks to find out the working environments, causes of physical, chemical, agronomics and psychosocial hazards in livelihood sector in Zanzibar. Similarly, no formal and scientific answer has been given to the question on the extent to which the livelihood sector affects occupational safety and health of the incumbent workers him/herself and the household.

2.6 Theoretical Framework

Framework of the study can be summarized as level of occupational health and safety on livelihood employment is determined by; noise, distractions, personal

problems, emotional stress, un- clear instruction and risk level. Other includes; un-corrected hazard, safe-guards removed from machines, ignoring safety issues and risk neglecting.

Table 2.1: Concepts Assigned Indicators to give Measured Variables for Data Collection

Concept	Indicator	Variable
Dust	Time in hours/day	Time of dust exposure
Sunlight	Time in hours/day	Time of sunlight exposure
Overwork	Time in hours/day	Working time
Noise	Time in hours/day	Time to noise exposure
Distraction	Time in hours/day	Frequency of distractions
Personal problem	Problem type	Type of personal problem
Emotional stress	High/low	Level of emotional stress
Unclear instruction	Clear/not clear	Frequency of time
Risk level	High/low	Risk level
Uncorrected hazard	High/low	Frequency time
Safeguard removing from machine	High/low	Frequency time
Ignoring safety issues	High/low	Frequency time
Risk neglecting	High/low	Frequency time
Training	High/low	Frequency time

2.7 Conceptual Framework

Conceptual framework was constructed based on human factors theory of accident and injury at workplace. The theory propound that, accident/ injury in workplace is determined by the interaction of both human and environmental factors.

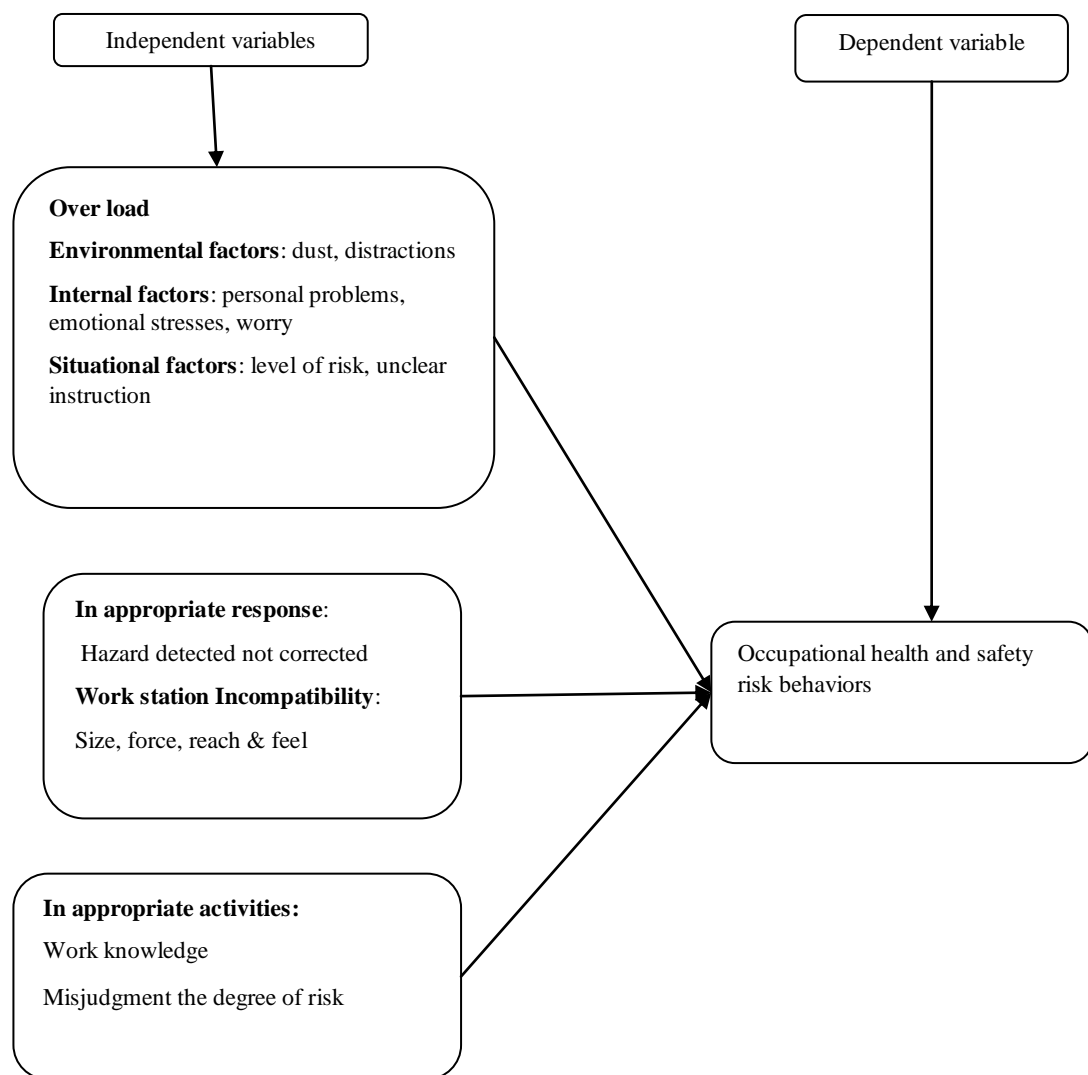


Figure 2.3: The Conceptual Framework that Link Livelihood Employment and Occupational Health and Safety

According to this model there are Independent variables, which are Overload, Inappropriate responses and inappropriate activities.

2.7.1 Overload

Overload amounts to an imbalance between a person's capacity at any given time and the load that person is carrying in a given state. A person's capacity is the product of such factors as his or her natural ability, training, and state of mind, fatigue, stress, and physical condition. The load that a person is carrying consists of tasks for which he or she is responsible and added burdens resulting from environmental factors (noise, distractions, and so on), internal factors (personal problems, emotional stress, and worry), and situational factors (level of risk, unclear instructions, and so on). The state in which a person is acting is the product of his or her motivational and arousal levels.

2.7.2 Inappropriate Response and Incompatibility

How a person responds in a given situation can cause or prevent an accident. If a person detects a hazardous condition but does nothing to correct it, he or she has responded inappropriately. If a person removes a safeguard from a machine in an effort to increase output, he or she has responded inappropriately. If a person disregards an established safety procedure, he or she has responded inappropriately. Such responses can lead to accidents. In addition to inappropriate responses, this component includes workstation incompatibility. The incompatibility of a person's workstation with regard to size, force, reach, feel, and similar factors can lead to accidents and injuries.

2.7.3 Inappropriate Activities

Human error can be the result of inappropriate activities. An example of an inappropriate activity is a person who undertakes a task that he or she doesn't know

how to do. Another example is a person who misjudges the degree of risk involved in a given task and proceeds based on that misjudgment. Such inappropriate activities can lead to accidents and injuries.

The theoretical framework could be summarized to derived the bases for study as the occupational health and safety risk behaviors are determined by environmental factors, internal factors, situational factors, work station incompatibility and inappropriate activities.

Symbolically

OHSRB (dependent variable) = f (EF, IF, SF, WSI, IA) (Independent variables)

Where by

OHSRB represents occupational health and safety risk behaviors

EF, IF, SF, WSI, IA represent environmental factors, internal factors, situational factors, workstation incompatibility and inappropriate activities respectively.

2.8 Conclusion

In chapter two above literature review were made to cover major concepts, theoretical foundation of the study, and empirical analysis. Available data on the subject matter were extracted at global, developing countries, Tanzania both mainland and Zanzibar. In nutshell occupational health and safety data are still is the matter of concern to the formally sector where data colleting infrastructure have been invested to the expenses of the informal sector. This is a global phenomenon but in developing countries Tanzania Zanzibar inclusive, the condition is more devastating. This condition justifies undertaking this kind of the study in Zanzibar.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Overview

The objectives of this part are to describe the research methods and procedures in the data collection. This chapter has about 8 sections that are research strategy, survey population, study area, sampling design and procedure, variable and measurement, methods of data collection, data processing and analysis.

3.2 Research Strategy

This study used descriptive case study strategy to assess the occupational, safety and health practices in the course of livelihood employment in small scale manual stone crushing. Data were collected qualitatively and quantitatively. The survey was conducted rather than census for the efficient purposes. The case study strategy alternative was preferred for narrowing the scope for intensive digestion and easy understanding.

3.3 Survey Population

Sampling frame consisted of the name of household whose member(s) practiced manual stone crushing in Micheweni District. The list was developed at shehia level by the author in collaboration with shehia council leaders. The unit of inquiry constituted households practicing manual stone crushing in four shehia of Majenzi, Micheweni, Maziwang'ombe and MjiniWingwi. These four shehia were selected because they are dominant in manual stone crushing in the District compared to other shehia.

3.4 Study Area

The study was conducted in Michweni District in Pemba Island, Zanzibar Tanzania. Micheweni District is located at northern part of Pemba Island. The area is characterized by two distinct environments. The first one, area with high rainfall, loamy soil and dense forest, this condition is mainly seen in western part of the District and the dominant activity is crop production. Contrary, the eastern part of the District is dominated by coral land with little annual rainfall; the major activities of the area are fishing, livestock keeping and quarrying including stone crushing. It is in this area where the study was conducted.

3.5 Sampling Design and Procedures

The study was conducted in Micheweni district and cover four shehiaviz: Majenzi , Micheweni, Maziwang'ombe and MjiniWingwi. The shehia were selected based on manual stone crushing dominance in the shehia compared to others. Households working in manual stone crushing was used as unit of inquiry and selected by probabilistic sampling, simple random sampling (SRS) was adopted in order to make the sampling neutral and objective as well as to improve validity and reliability of the research findings. Through the use of random sampling procedures, the sample was drawn from sampling frame. 20% of the population was considered adequate for validity and representativeness.

The available data from local authority (shehia) depict the following figures regarding households practicing manual stone crushing in the District.

Table 3.1: Households Practicing Manual Stone Crushing

Shehia Name	Number of Households Practicing on Manual Stone Crushing
Majenzi	130
Micheweni	95
Mjiniwingwi	187
Maziwang'ombe	88
Total Population	500(20%)
Samle Size	100

Therefore the sample size observed was 100 households whose members engage in manual stone crushing.

3.6 Variable and Measurement

Variable identified in the conceptual framework were measured by using fine point Likert scale. Data were collected using structured questionnaires and face-to-face interview. Based on the general causes of occupational safety and health hazards so far known, the variables were grouped into four categories (i) physical hazards (ii) chemical hazards (iii) agronomic hazards and (iv) psycho-socio hazards (Rejeice, S. Dana A., & Albert A. 2013; Rejeice, S. 2011). According to American Occupational Health Centre (OHC, 2016), the three types of Occupational hazards can be explained as;

3.6.1 Physical Hazards

This is the most common type of workplace hazards. Examples of physical hazards include slips, trips, falls, exposure to loud noises, working from heights, vibrations, and unguarded machinery.

3.6.2 Ergonomic Hazards

Every occupation places certain strains on a worker's body. Ergonomic hazards occur as a result of physical factors that can harm the musculoskeletal system. This type of hazard is not easily identified; examples of this hazard are poor lighting, repetitive motion, awkward movements, and poor posture.

3.6.3 Chemical Hazards

Chemical hazards are present anytime workers are exposed chemical substances. Examples include cleaning solutions and solvents, vapors and fumes, carbon monoxide and any other gases. The summary of the variable and their corresponding questions are show in the Table 3.2.

Table 3.2 The summary of the Variable and their Corresponding Questions

Physical hazards (variables)	Questions in Questionnaire
Time of dust exposure	Q4, Q5, Q6,Q7,Q8 Q9, Q12 ,Q13
Long exposure to Sunlight	
Overwork/load	
Long exposure to loud Noise	
Physical injury-cut, wound	
Poor sanitation	
Distraction	
Chemical hazards	
Fume inhalation	Q5,Q6, Q9,Q10,Q12,13
Time exposure to dust	
Time exposure to other chemicals	
Agronomics	
Posture – long sitting /standing	Q4,Q 6,Q7, Q11,Q12,Q13
Emotional stress	
Unclear instruction	
Risk level	
Uncorrected hazard	
Safeguard removing from equipment	
Ignoring safety issues	
Repetitive movement /manual work	
Risk neglecting	
Work knowledge	
Psycho-socio hazards	
Fatigue	Q12,Q13
Stress	
Sexual abuse	
Harassment from government officials /police	

3.7 Methods for Data Collection

Data was collected from household members who are practicing small scale manual stone crushing. Also data was solicited from District hospital, Ministry of labour and shehia council. Face to face interview was employed in data collection. Major data collection instruments included desk review for secondary data. Primary data was collected through structured questionnaire and observation. Also consultation with Labor, Environment Official's District Hospital, Ministry of Labour and Shehia Council were used to enhance our understanding.

3.8 Data Processing and Analysis

Findings are presented in table, charts and the like. Also data was kept in the form of ratio, percentages and fractions. In data analysis descriptive statistics tools like frequencies, arithmetic mean, range and standard deviation were used. Likewise Microsoft office excels, SPSS software were aided in data analysis and Microsoft word was used in research report writing.

The answer to each research question was based on collected data, secondary data from literature review and data from field observations. Data to be solicited from the questionnaires were constructed in such a way that they directly related to research questions. Furthermore conclusion was drawn from research results and comparison from similar studies.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Overview of the Chapter

In this part there is presentation; interpretation and discussion of data obtained from the field. Analysis and presentation of data were made based on four specific research objectives and all significant information collected from different sources including field, report from District hospital, Ministry of labor and Shehia Council.

4.1.1 Demographic Information of the Respondents

In dealing with individuals it very important to understand their characteristics as it enable researcher to know the kind of people he/she is dealing with. Apart from knowing the number of shehia involved in manual stone crushing at Micheweni District, this study set personal characteristics of respondents such as Gender, Marital Status, Age, and Level of Education.

4.1.2 Shehia Distribution of the Respondents

In this study, Shehia was used as determinant criteria of the number of people obtained from different villages who were involving in the MSC at the District. Distribution of respondents consists of 26% from Majenzi, 17% Micheweni, 18% Maziwang'ombe and MjiniWingwi 39% as depicted in Table 4.1.

Table 4.1: Shehia Distribution of Respondents

Shehia of respondents	Frequency	Percent	Cumulative Percent
Majenzi	26	26.0	26.0
Micheweni	17	17.0	43.0
Maziwang'ombe	18	18.0	61.0
Mjiniwingwi	39	39.0	100.0
Total	100	100.0	

Source: Field Survey (2016)

4.1.3 Gender Distribution of Respondents

Gender distribution of the respondents is presented in Table 4.2 which indicate that 66% of the respondents are female and 34% are male. This shows that women are the majority in MSC at Micheweni District as compared to men.

Table 4.2: Gender Distribution of Respondents

Gender Distribution	Frequency	Percent	Cumulative Percent
Male	34	34.0	34.0
Female	66	66.0	100.0
Total	100	100.0	

Source: Field Survey (2016)

4.1.4 Marital Status Distribution of Respondents

Marital status of MSC are presented in Table 4.3 which show that 53% of respondents are married, 31% are single, 8% are divorced and 8% widowed.

Table 4.3: Marital Status Distribution of Respondents

Marital Status	Frequency	Percent	Cumulative Percent
Married	53	53.0	53.0
Single	31	31.0	84.0
Divorced	8	8.0	92.0
Widower/Widowed	8	8.0	100.0
Total	100	100.0	

Source: Field Survey (2016)

4.1.5 Distribution of Age of the Respondents

Distribution of age of the respondents presented in figure 4.0 which shows that 5% of the respondents have age between 15-20, 10% have age between 20-25, and 16% have age range of 25-30. Similarly the 18%, have age range of 30-35, 27%, have age which range between 35-45, 19% have age which range between 45- 55 while 5% of the respondents carry the age of 55+ Similarly, those data are supported by mean age which is ranked to be 5.29 that correspond to the age range of 35-45. The data reveal that the majority of manual stone crushers have age between 35- 45 years.

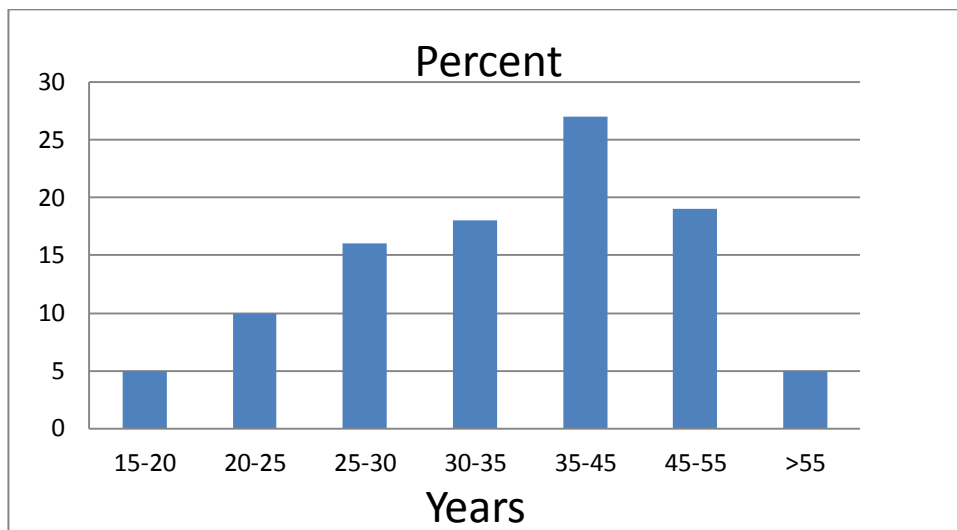


Figure 4.1: Distribution of Age of the Respondents

Source: Field Study (2016)

4.1.7 Educational Level of Respondents

The data as presented in Table 4.5 observe that the respondents that involve in MSC at Micheweni District show that 54% of the respondents have completed their studies in Standard VII, 9% have completed form IV years of formal education, 1% have Advanced level of education and 36% of the respondents have no formal education at all.

Table 4.4: Educational Level of Respondents

Education level	Frequency	Percent	Cumulative Percent
> 7	54	54.0	54.0
8-12	9	9.0	63.0
13-14	1	1.0	64.0
None	36	36.0	100.0
Total	100	100.0	

Sources: Field Study (2016)

4.1.8 Years of Service of the Respondents in MSC

The Table 4.5 represent years of services that respondents have been doing the activities in MSC. 13% of respondents have less than one year in doing MSC, 2% have one to five years in MSC, 34% have 15 to 20 year, 25% have about 20 to 25 year and 14% have about 25 to 30 years in doing the activities of MSC.

Table 4.5: Years of Services of Respondents in Manual Crushing

Years of services	Frequency	Percent	Cumulative Percent
<1	13	13.0	13.0
1-5	2	2.0	15.0
10-15	12	12.0	27.0
15-20	34	34.0	61.0
20-25	25	25.0	86.0
25-30	14	14.0	100.0
Total	100	100.0	

Source: Field Survey (2016)

4.2 Activities Involved in Manual Stone Crushing

The question was asked to what extent the manual stone crushers involve in stone collection. Responses were in five Likertscale (1-5). Mean, Median and Mode were 5 respectively. This mean, median and mode responded very large extent, which means that at 100% all respondents involve in stone collection. This is shown in the Table4.6.

Table 4.6: Stone Collection to Crushing Site

Stone collection	Frequency	Percent	Cumulative Percent
Very large extent	100	100.0	100.0

Source: Field Survey (2016)

The researcher wanted to know to what extent the respondents involved in stone extraction. The responses were in five likert scale 1 to 5. Mean response was 4, median and mode also was 4 each. The mean, median and mode corresponded large extent, meaning that all respondents do stone extraction at 100%. This is presented in Table 4.7.

Table 4.7: Stone Extraction by Respondents

Stone Extraction	Frequency	Percent	Cumulative Percent
Large extent	100	100.0	100.0

Source: Field Survey (2016)

The responses on the extent to which the respondents were involved in stone loading at the crushing site are given in five point Likert scale (1 to 5). The mean, median and mode were 4 for each. This figure corresponds to large extent, which implies that all respondents involve in stone loading to crushing sites. This is presented in Table 4.8.

Table 4.8: Stone Loading to Crushing Site

Stone loading	Frequency	Percent	Cumulative Percent
Large extent	100	100.0	100.0

Source: Field Survey (2016)

The question was asked to what extent the respondents involve in stone crushing to small particles. The mean, median and mode was 5 respectively. This mean, median and mode correspond to very large extent that means at 100%, all correspondents involve in stone crushing to small particles. This is presented in Table 4.9.

Table 4.9: Stone Crushing to Small Particles

Stone loading	Frequency	Percent	Cumulative Percent
Large extent	100	100.0	100.0

Source: Field Survey (2016)

4.3 Causes of Physical Hazards

The question was asked to what extent walking to and from cause physical hazards while collecting stones. 28% of the respondents perceived that waking to and from for stone collection exert moderate effect, while 47% were perceived to exert large extent and 25% very large effect. On the same case the mean is 3.97, median and mode both are 4. The 3 scores correspond to large extent which implies that 47% of respondents are faced by physical hazards while collecting stone for crushing, as presented in Figures 4.2.

The question was asked to what extent stung by sharp object causes physical hazards while collecting stones for crushing. 48% of the respondent's observed no extent, 51% show low effect and 1% moderate effect. Likewise the mean is 1.53, median and mode are for 2 respectively. The mean, median and mode match with 2 which support at 51% that correspond to low extent, as shown in Table 4.10.

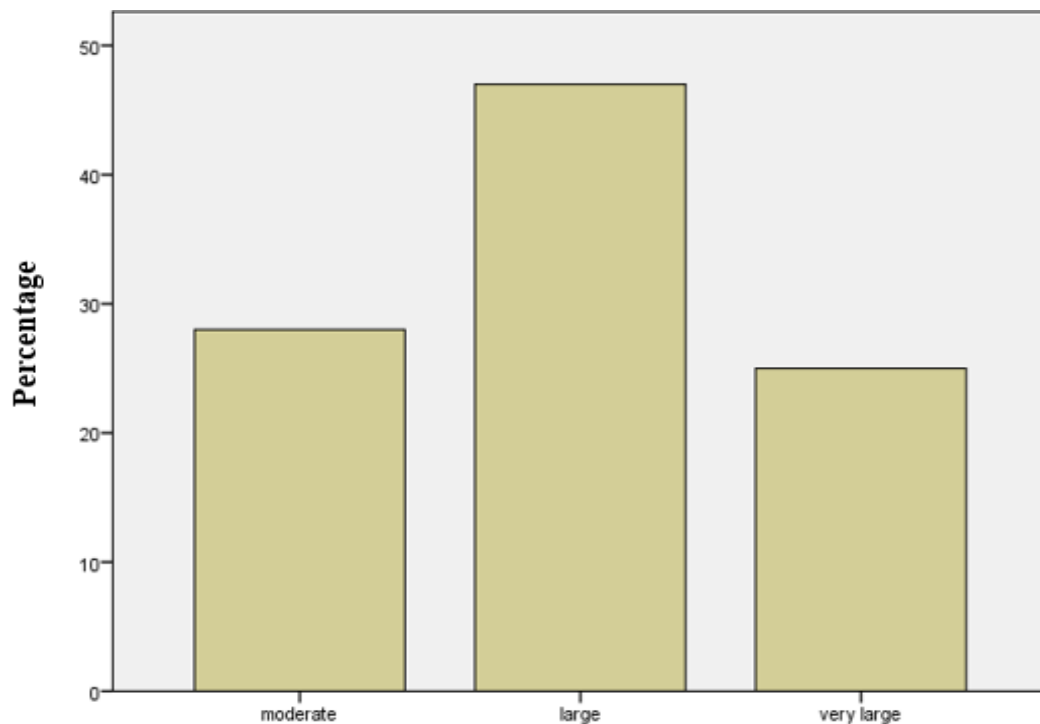


Figure 4.2: Walking to and from While Collecting Stone for Crushing

Source: Field Survey (2016)

Table 4.10: Injured by Sharp Objects While Collecting Stones

Injuredby sharp objects	Frequency	Percent	Cumulative Percent
No extent	48	48.0	48.0
Low	51	51.0	99.0
Moderate	1	1.0	100.0
Total	100	100.0	

Source: Field Survey (2016)

The question wanted to know to what extent fall down and got injured can cause physical hazards while collecting stones for crushing. Responses were in five scales 1 to 5. Mean was 1.24, median and mode were 1 respectively. This observe that all 3 score correspond to no extent, which means that 76% of respondents do not fall down and got injured while collecting stone for crushing as shown in Table 4.11.

Table 4.11: Fall Down and got injured while Collecting Stones for Crushing

Fall down and got injured	Frequency	Percent	Cumulative Percent
No extent	76	76.0	76.0
Low	24	24.0	100.0
Total	100	100.0	

Source: Field Survey (2016)

The questions asked to what extent fall by heavy objects cause injury on your body. The responses were in five scales 1 to 5. Mean was 1.26, median and mode was 1 each. 74% of the respondents perceive being fell by heavy object while collecting stone marked no extent, and 26 % perceived to exert low effect. The mean, median and mode all are at 1 which correspond 74% which means respondents do not fell by heavy objects and cause injury while collecting stones for crushing as shown in Table 4.12.

Table 4.12: Fell by Heavy Objects and Cause Injury

Fallen by heavy object	Frequency	Percent	Cumulative Percent
No extent	74	74.0	74.0
Low extent	26	26.0	100.0
Total	100	100.0	

Source: Field Study (2016)

The question was asked to what extent Got staked and fell with loaded stone cause injury while collecting stone. 98% of the respondents perceive being got staked and fall with loaded stone while collecting stone marked no extent, and 2 % perceived to exert low effect. Mean value is 1.02, median and mode is both 1. The mean, median and mode correspond at 98% which signify that, being got staked and fall with loaded stone while collecting have no effect to occupational hazards in stone collection. This is represented in Table 4.13.

Table 4.13: Got Staked and Fell with Loaded Stones

Got staked and fell with loaded stone	Frequency	Percent	Cumulative Percent
No extent	98	98.0	98.0
Low extent	2	2.0	100.0
Total	100	100.0	

Source: Field Study (2016)

The question wanted to know to what extent other factors cause occupational hazards during stone collection, where by 75% marked no extent at all while 25% marked low extent. This indicates that other factors do not cause occupational hazards when collecting stones for crushing. This is presented in Table 4.16.

Table 4.14: The Extent other Factors Cause Hazards while Collecting Stones for Crushing

Other factors	Frequency	Percent	Cumulative Percent
No extent	75	75.0	75.0
Low	25	25.0	100.0
Total	100	100.0	

Source: Field Study (2016)

4.4 Health Hazards in Extracting Stone for Crushing

The question was asked to what extent long time exposure to sun light cause physical hazards when extracting stones. 51% of the respondents perceived that exposure to sunlight exert moderate effect during stone extraction, while perception in exerting large effect occupied by 48%, and 1% is missing in system Similarly, mean is 3.48, median and mode are both 3. Based on the mean, median and mode exposure to dust exert moderate effect to occupational hazards during stone extraction as presented in Figure 4.3.

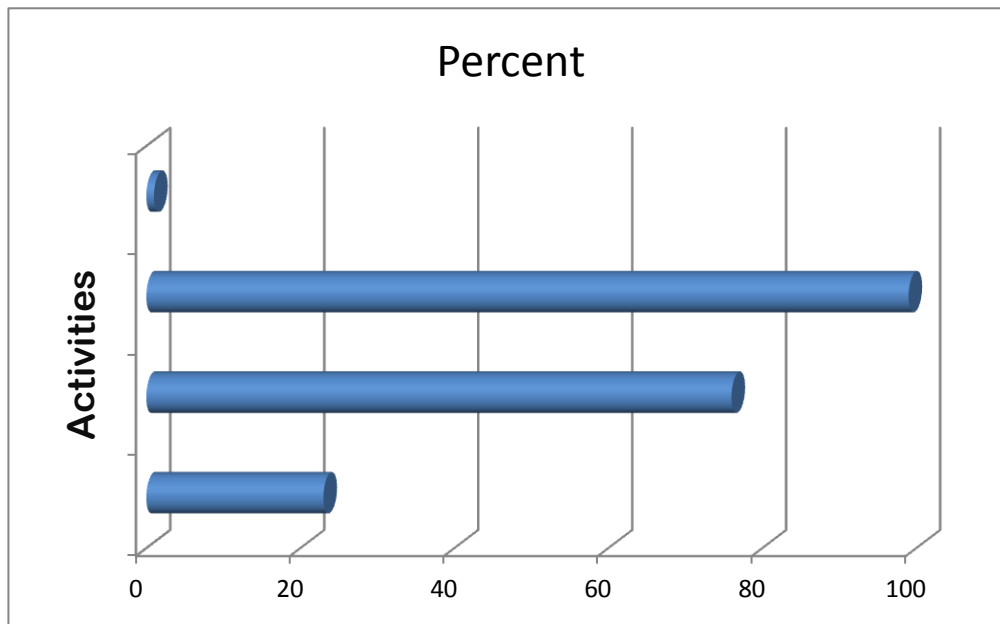


Figure 4.3: Long Exposures to Sunlight while Extracting Stone

Source: Field study 2016

The researcher wanted to know to what extent long time exposures to dust cause health hazards during stone extraction. 23 % of the respondents perceived that exposure to dust exert low effect during stone extraction, while 76 % show moderate effect and 1% is missing. Similarly the mean, median and mode scored are 2.77, 3 and 3 respectively which almost correspond to moderate extent. This indicates that 76% of respondents occupy moderate effect on occupational hazard during stone extraction as presented in Table 4.15.

Table 4.15: Long Time Exposures to Dust

Long time exposure to dust	Frequency	Percent	Cumulative Percent
Low	23	23.0	23.2
Moderate	76	76.0	100.0
Total	99	99.0	
Missing System	1	1.0	
Total	100	100.0	

Source: Field Study (2016)

The question was asked to what extent fell down and get injured cause health hazards during stone extraction, 51 % of the respondents perceived that fall down causes physical injury exert moderate effect during stone extraction, while perception in exerting low effect occupied by 19 % and 30% exert no extent at all. Similarly the mean value is 2.21 median and mode scored is 3 each, respectively which almost correspond to moderate extent. While the mean correspond to low extent (2 score), the median and the mode correspond to moderate (extent (both are 3) this indicates that causes of physical injury between moderate and low effect on occupational hazard during stone extraction as indicated in Figure 4.4.

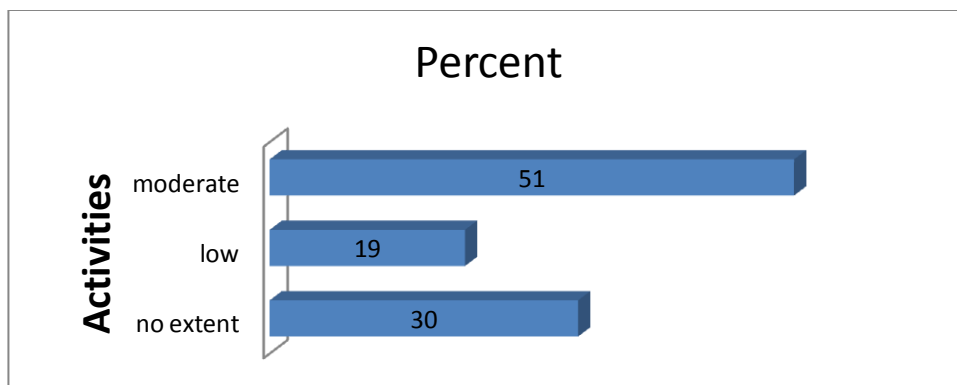


Figure 4.4: Fell Down and Got Injured while Extracting Stone

Source: Field Survey (2016)

The researcher wanted to know to what extent being fallen by heavy objects on the body and got injured cause health hazards during stone extraction. 30% of the respondents perceived that the occurrence of being fell by heavy stone have no extent during stone extraction, while perception in exerting low effect occupied by 70%. Likewise the mean, median and mode scored are 1.7, 2 and 2 respectively which almost correspond to low extent. This indicates that occurrence of being fell by heavy stone during stone extraction has low effect on occupational hazard during stone extraction as shown in Table 4.16.

Table 4.16: The Fallen by Heavy Objects and Got Injured

Fallen by heavy objects	Frequency	Percent	Cumulative Percent
No extent	30	30.0	30.0
Low extent	70	70.0	100.0
Total	100	100.0	

Source: Field Survey (2016)

4.4.5 Injured by Working Equipment while Extraction Stone for Crushing

The question was asked to what extent working equipments causes physical hazards during stone extraction. 81 % of the respondents perceived that the equipments used have no effects during stone extraction, while 19 % of the respondents observed low extent. Likewise the Mean, Median and Mode scored are 1.19, 1 and 1 respectively which almost correspond to no extent. This indicates that equipments used have no effect on occupational hazard during stone extraction as indicated in Table 4.17.

Table 4.17: Injured by Working Equipment while Extraction Stone for Crushing

Injured by working equipment	Frequency	Percent	Cumulative Percent
No extent	81	81.0	81.0
Low extent	19	19.0	100.0
Total	100	100.0	

Source: Field Survey (2016)

The researcher wanted to know to what extent the other factors cause physical hazards during stone extraction. 32% of the respondents perceived that the occurrence of other factors have no effects during stone extraction, while 38% exert low effect and 30 % perceived to moderate effect. Likewise the mean, median and Mode scored are 1.98, 2 and 2 respectively which almost correspond to low extent. This indicates that occurrence of other factors exert low effect on occupational hazard during stone extraction as shown in Table 4.18.

Table 4.18: Injury by other Factors while Extraction Stones for Crushing

Other factors	Frequency	Percent	Cumulative Percent
No extent	32	32.0	32.0
Low	38	38.0	70.0
Moderate	30	30.0	100.0
Total	100	100.0	

Source: Field Survey (2016)

4.5 The Level of Health Hazards when Loading Stones to Crushing Site

The question was asked to what extent long exposures to sun light cause health hazard during stone loading to crushing site. The responses were in five Likert scale (1 to 5). The mean score is 2.95, median and mode are both 3. 3% of the respondents perceived that exposure to sunlight exert no effect during stone loading, while perception in exerting low effect account for 19% of the respondents, 58% moderate extent and 20% large extent. Based on the mean, median and mode exposure to sun light exert moderate effect to occupational hazards during stone loading as indicated in and Figure 4.5.

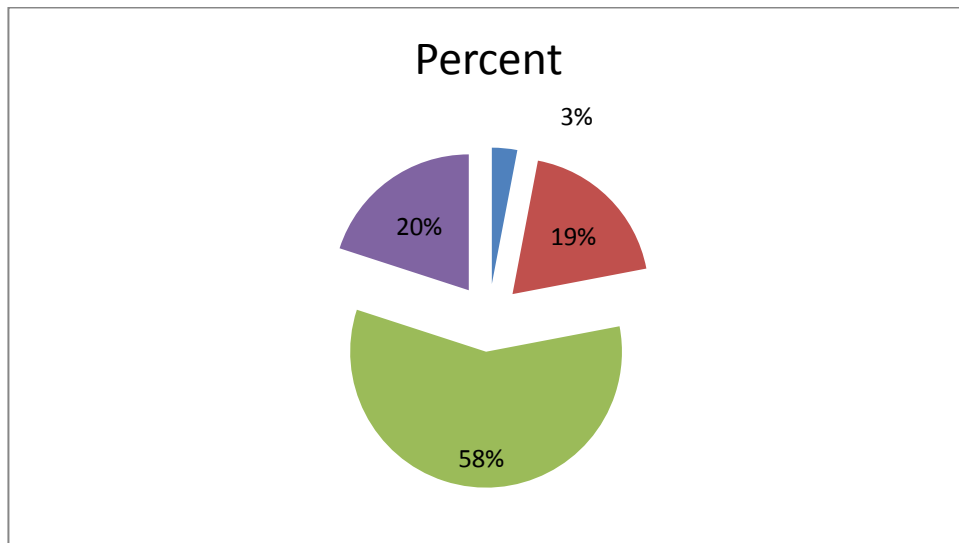


Figure 4.5: Exposures to Sunlight while Loading Stones to Crushing Site

Source: Field Survey (2016)

The question was asked to what extent long exposures to dust cause health hazard during stone loading to crushing site. 20 % of the respondents perceived that exposure to dust exert no effect during stone loading, while perception in exerting low effect account for 54% of the respondents, and 20% moderate extent. Similarly the mean score is 2.95 median and modes are both 3. 6% is missing in system. Based on the mean, median and mode exposure to dust exert moderate effect to occupational hazards during stone loading as presented in Table 4.19.

Table 4.19: Exposures to Dust while Loading Stones to Crushing Site

Exposures to dust	Frequency	Percent	Cumulative Percent
No extent	20	20.0	21.3
Low	54	54.0	78.7
Moderate	20	20.0	100.0
Total	94	94.0	
Missing System	6	6.0	
Total	100	100.0	

Source: Field Survey (2016)

The question was asked to what extent fell down and got injured cause health hazard during stone loading to Crushing site. 59% of the respondents responded to no effect during stone loading, while low effect was, 19% of the respondents and 22% moderate extent. Similarly the mean, median and mode values are 2 each. Based on the mean, median and mode fell down and got injured cause low effect at (19%) to occupational hazards during stone loading as shown Table 4.20.

Table 4.20: Extent of Fell Down and Got Injured During Stone Loading To Crushing Site

Fell down and got injured	Frequency	Percent	Cumulative Percent
No extent	59	59.0	59.0
Low extent	19	19.0	78.0
Moderate	22	22.0	100.0
Total	100	100.0	

Source: Field Survey (2016)

The question was asked to what extent fell down by heavy objects and got injured cause health hazard during stone loading. 42 % of the respondents perceived being fell by heavy object exert large effect during stone loading, while perception in exerting very large effect account for 58% of the respondents.

Table 4.21: Extent of Heavy Stones Fell on the Body and Got Injured

Heavy stones fell on the body	Frequency	Percent	Cumulative Percent
Large	42	42.0	42.0
Very large	58	58.0	100.0
Total	100	100.0	

Source: Field Survey (2016)

Similarly, the mean value is 5.48, the median and mode values are 5 each. Based on the mean, median and mode fall of large objects exert very large effect to occupational hazards during stone loading as shown in Table 4.21.

4.6 The Level of Physical Hazards while Crushing Stone to Small Parts

The question was asked to what extent long exposures to sun light cause health hazards while crushing to small parts. 20 % of the respondents perceived that exposure to sunlight exert no effect during crushing to small particles, while perception in exerting low effect accounted for 40% of the respondents, and 40% moderate effect. Similarly the value for mean, median and mode is 2 for each Based on the mean, median and mode exposure to sunlight exert low effect during stone crushing to small particles, as shown in Figure 4.6.

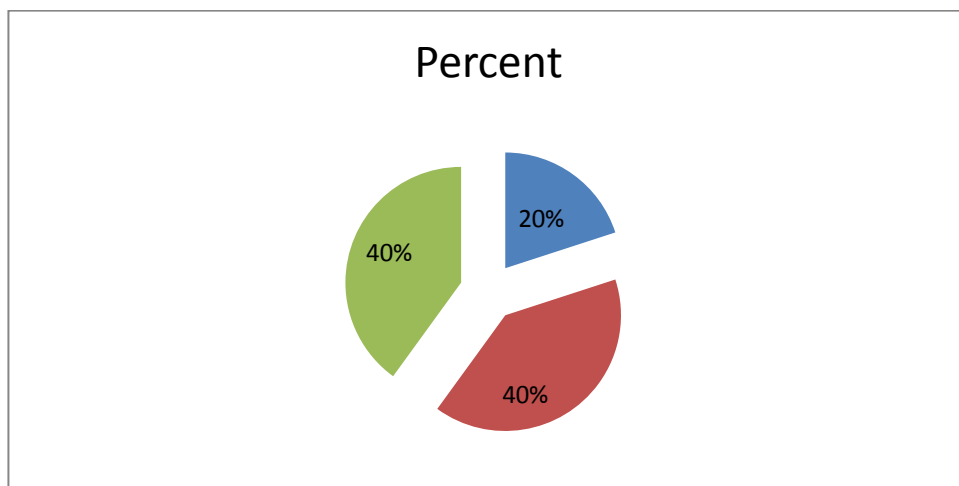


Figure 4. 6: Long Exposures to Sunlight while Crushing to Small Parts

Source: Field Survey (2016)

The question was asked to what extent long exposures to dust cause health hazard while crushing to small parts. Responses were in five Likert scales (1 to 5). 20 % of the respondents perceived that exposure to dust exert moderate effect, while crushing

to small particles, while perception in exerting large effect account for 60 % of the respondents, and 20% very large effect. Similarly the value for mean, median and mode is 4 for each. Based on the mean, median and mode exposure to dust exert large effect (60%) during stone crushing to small particles, as presented in Figure 4.7.

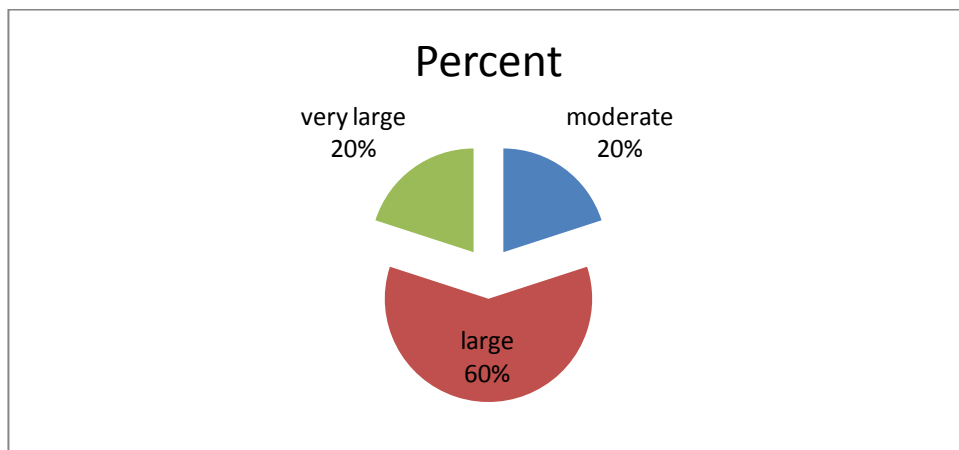


Figure 4.7: Long Exposures to Dust while Crushing to Small Parts

Source: Field Survey (2016)

The question was asked to what extent some parts bounced and cause eye injury while crushing stones to small parts. The responses were in five Likert scale (1 to 5), 20% of the respondents perceived that the occurrence of some parts to bounce and to cause eye injury exert no effect, 20% perceived low extent and 60% perceived moderate effect. Similarly the value for mean is 2.4, while median and mode value of 3 and. Based on the mean, median and mode occurrence of some parts to bounce and to cause eye injury exert moderate effect (60%) during stone crushing to small particles as indicated in Table 4.22.

The question was asked to what heavy stones fall on the leg/arm while crushing to small parts. The responses were in five Likert scales (1 to 5).80 % of the respondents

perceived that the occurrence of heavy object to fall on the workers leg/arm exert no effect, 20% perceived low extent.

Table 4.22: Extent of Some Parts Bounced and Cause Eye Injury while Crushing to Small Parts

Some parts bounced	Frequency	Percent	Cumulative Percent
No extent	20	20.0	20.0
Low extent	20	20.0	40.0
Moderate	60	60.0	100.0
Total	100	100.0	

Source: Field Survey (2016)

Similarly the value for mean is 1.2, median and modal value of 1 for each. Based on the mean, median and mode occurrence of heavy stone to fall on the workers leg/arm exert very minor effect (80%) to occupational hazards during stone crushing to small particles as indicated in Table 4.23.

Table 4.23: Extent of Heavy Stones Fall on the Leg/Arm while Crushing to Small Parts

Heavy stones fall on the leg/arm	Frequency	Percent	Cumulative Percent
No extent	80	80.0	80.0
Low extent	20	20.0	100.0
Total	100	100.0	

Source: Field Survey (2016)

The question was asked to what extent some parts bounced to the nose and caused face injury while crushing stones to small parts. 60% of the respondents perceived that the occurrence of parts to bounce on worker's nose exert low effect, 40% perceive to exert moderate effect. The mean value is 2.4 while median and

mode both are 2. Based on the mean, median and mode occurrence of parts to bounce on worker's nose exert low effect (60%) of respondents during stone crushing to small particles as shown on Table 4.24.

Table 4.24: Extent of some Parts Bounced and Cause Nose Injury while Crushing to Small Parts

Some parts bounce and cause nose injury	Frequency	Percent	Cumulative Percent
Low	60	60.0	60.0
Moderate	40	40.0	100.0
Total	100	100.0	

Source: Field Survey (2016)

4.7 The Level of Health Effects when Crushing Stone to Aggregate Level

The question was asked to what extent long exposures to sun light cause health hazards while crushing stone to aggregate level. The response were in five Likert scales 1 to 5. 20 % of the respondents perceived that exposure to sunlight exert large effect during crushing to aggregate, while perception in exerting very large effect account for 80% of the respondents. Similarly the value for mean is 4.8, median and modal value are both 5. This distribution of data signifies that exposure to sunlight exert very large effect (80%) of the respondents to occupational hazards during crushing to aggregate level as shown in Table 4.25.

The question was asked to what extent long exposures to dust cause health hazards while crushing stone to aggregate level. The responses were in five Likert scales 1 to 5. 80 % of the respondents perceived that exposure to dust exert large effect during crushing to aggregate, while perception in exerting very large effect account for 20% of the respondents.

Table 4.25: Extent of Long Exposures to Sun Light while Crushing Stone to Aggregate Level

Long time exposures to sun light	Frequency	Percent	Cumulative Percent
Large	20	20.0	20.0
Very large	80	80.0	100.0
Total	100	100.0	

Source: Field Survey(2016)

Similarly the value for mean is 4.2, median and mode values are both 4. This distribution of data signifies that exposure to dust exert large effect (80%) to occupational hazards during crushing to aggregate level as indicated on Figure 4.8.

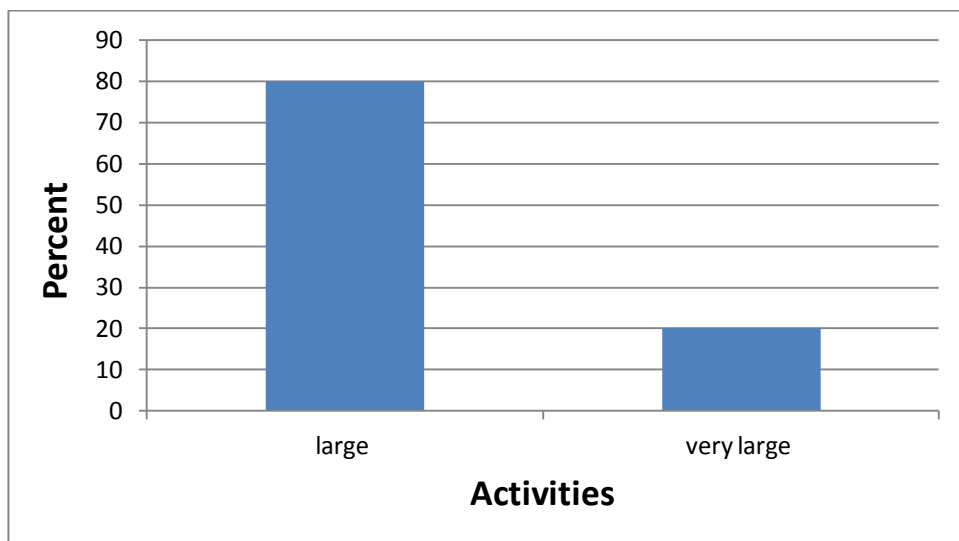


Figure 4.8: Extent of Long Exposures to Dust while Crushing Stone to Aggregate Level

Source: Field Survey (2016)

The question was asked to what extent some parts bounced to eye and cause injury while crushing stones to aggregate. 100% of the respondents perceived the occurrence of parts to bounce during crushing to aggregate exert moderate effect as indicated on Table 4.26.

Table 4.26: Extent of Some Parts Bounced and Cause Eye Injury while Crushing to Aggregate Level

Some parts bounced	Frequency	Percent	Cumulative Percent
Moderate	100	100.0	100.0

Source: Field Survey (2016)

The question was asked to what extent heavy stones fall on the leg/arm while crushing to aggregate level. 100 % of the respondents perceived the occurrence of heavy object fall on worker's leg/arm during crushing to aggregate exert very large effect as shown on Table 4.27.

Table 4.27: Extent of Heavy Stones Fall on the Leg/Arm while Crushing to Aggregate

	Frequency	Percent	Cumulative Percent
Valid Very large	100	100.0	100.0

Source: Field Survey (2016)

The question was asked to what extent some parts bounced to nose and cause injury while crushing stones to aggregate. 20 % of the respondents perceived that occurrence of parts to bounce on workers face during crushing to aggregate exert moderate effect and 80% large effect. Similarly the value for mean is 3.8, median and modal values are both 4. This distribution of data signifies that occurrence of parts to bounce in workers face exert large effect at (80%) to occupational hazards during crushing to aggregate stage as presented in Table 4.28.

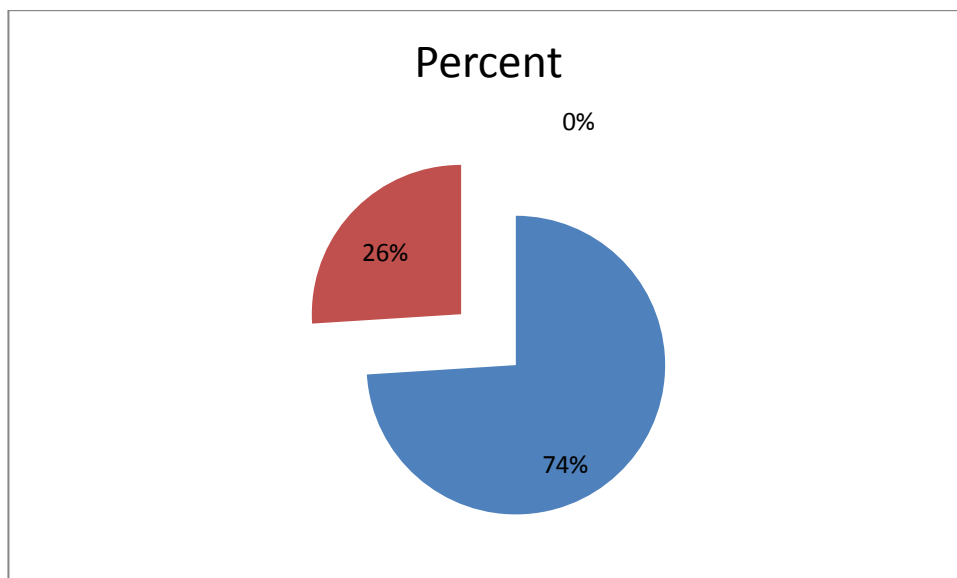
**Table 4.28: Extent of Some Parts Bounced and Cause Eye Injury while
Crushing to Aggregate**

	Frequency	Percent	Cumulative Percent
Moderate	20	20.0	20.0
Large	80	80.0	100.0
Total	100	100.0	

Source: Field Survey (2016)

4.8 The Extent have the Following Items Cause Health Hazards at your Work Place

The question was asked to what extent long exposures to sun light cause health hazards at your work place. 74 % of the respondents' perceived long exposure to sunlight exerts no extent to health hazards, while 26% perceived to exert low health hazards. Similarly the value for mean is 1.26, median and mode values are both 1. These mean median and mode corresponded 74% which signifies that exposure to sun light exert minor effect to physical hazards as presented in Figure 4.9.



**Figure 4.9: Extent of Long Exposures to Sun Light to Health Hazards at your
Work Place**

Source: Field Survey (2016)

The question was asked to what extent loud noise cause health hazards at work place. 100 % of the respondents perceived that loud noise have no effect at all in physical hazards as shown in Table 4.29.

Table 4.29: The Extent of Loud Noise to Health Hazards at Work Place

Loud noise	Frequency	Percent	Cumulative Percent
No extent	100	100.0	100.0

Source: Field Survey (2016)

The question was asked to what extent overload can cause health hazards at your work place. 76% of the respondents perceived over load has moderate effect to physical hazards, while 24% perceived large effect. Similarly the value for mean is 3.24, median and mode values are both 3. These mean, median and mode corresponds to 3 which represent (76%) moderate extent which signifies that over load exert moderate effect to physical hazards as presented in Table 4.30

Table 4.30: Extent of Overload to Health Hazards at your Work Place

	Frequency	Percent	Cumulative Percent
Moderate	76	76.0	76.0
Large	24	24.0	100.0
Total	100	100.0	

Source: Field Survey (2016)

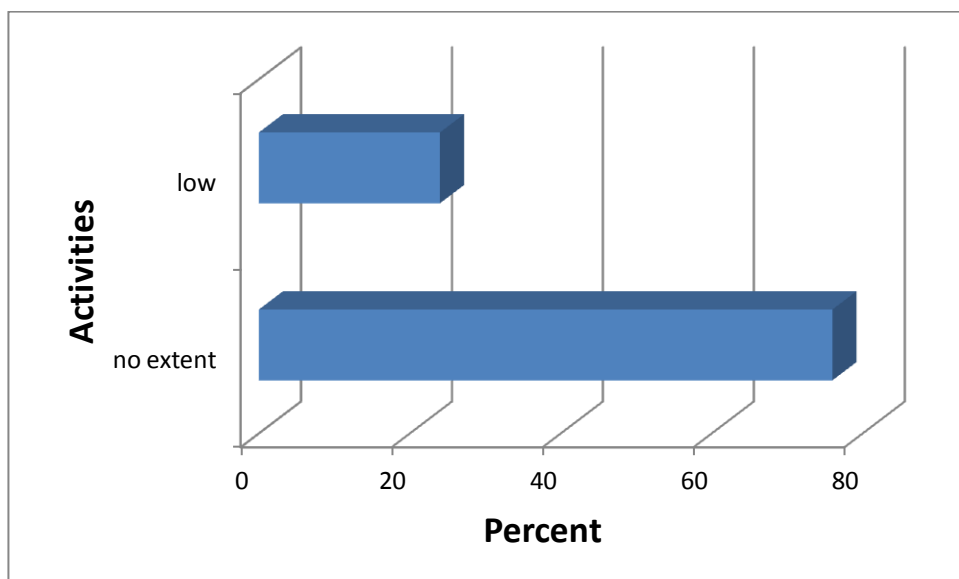
The question was asked to what extent distraction cause health hazards at your work place. 51% of the respondent's perceived distraction has no effect to health hazards while 49% perceived low extent. This distribution of data signifies that distraction has minor effect to health hazards at work place as shown in Table 4.31.

Table 4.31: Extent of Distraction to Health Hazards at your Work Place

Distraction	Frequency	Percent	Cumulative Percent
No extent	51	51.0	51.0
Low extent	49	49.0	100.0
Total	100	100.0	

Source: Field Survey (2016)

The question was asked as to what extent do physical injury cause health hazards at your work place. 76 % of the respondents perceived that physical injury like cut and wound have no effect at all to physical injury while 24% perceived low effect. Similarly the value for mean was 1.24, median and modal value are both 1. The mean, median and mode correspond to 1 which reflects to 51%, which signifies that physical injury like cut and wound have no effect to physical hazards at work place as indicated in Figure 4.10.

**Figure 4.10: Extent of Physical Injury to Health Hazards at your Work Place**

Source: Field Study (2016)

The question was asked to what extent poor sanitation can cause health hazards at your work place. 76 % of the respondents perceived that poor sanitation have no effect at all to physical injury while 24% perceived low effect. Similarly the value for mean was 1.24, median and mode values are both. The mean median and mode correspond to 76% which signifies that physical injury like cut and wound have no effect to physical hazards, as indicated in Table 4.32.

Table 4.32: Extent of Poor Sanitation to Health Hazards at your Work Place

Poor Sanitation		Frequency	Percent	Cumulative Percent
Valid	No extent	76	76.0	76.0
	Low extent	24	24.0	100.0
	Total	100	100.0	

Source: Field Survey (2016)

4.9 The Extent of Fume Inhalation that Cause Chemical Hazards at Work Station

The researcher wanted to know at what extent fume inhalation can cause chemical hazards at work station. 42 % of the respondents responded that fume inhalation has no effect in causing of chemical hazards, 15% perceived low effect, 14% moderate effect and 29% large effect. Similarly the value for mean is 2, median value is 2, modal value is 1. The mean, median and mode corresponded at 2, which support (42%). This distribution of data signifies that fume inhalation exert no effect to chemical hazards as shown in Figure 4.10.

The researcher wanted to know to what extent long exposures to dust can cause chemical hazards at work station. 11 % of the respondents perceived long exposure to

dust exert low effect to chemical hazards 26% exert moderate effect, 34% exert large effect and 29% exert very large effect.

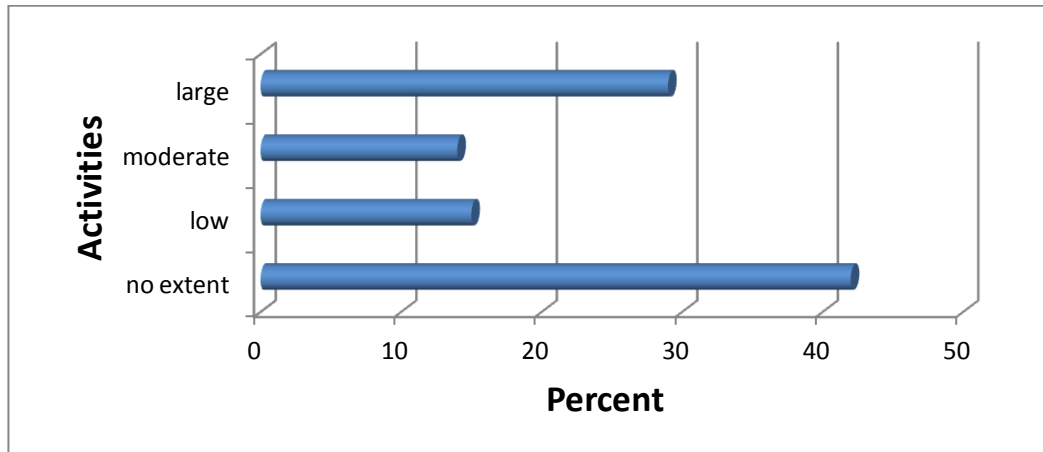


Figure 4.11: The Extent Fume Inhalation that Cause Chemical Hazards at Work Station

Source: Field Study (2016)

Likewise the value of mean was 3.81, median value was 4 and modal value was 4. The mean, median and mode correspond to 4, which reflect to large effect 34%. This distribution of data signifies that long exposure to dust can cause chemical hazards to a large extent as shown in Figure 4.12.

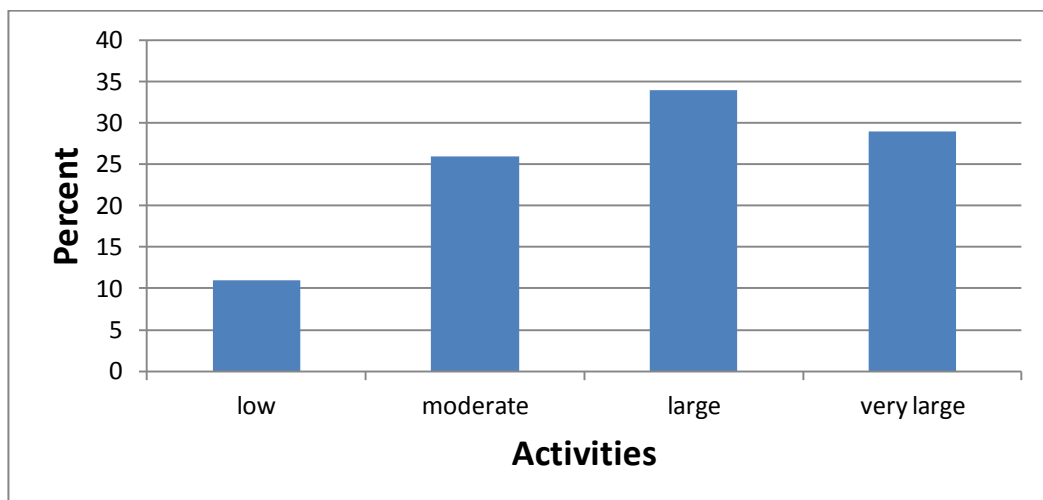


Figure 4.12: The Extent of Long Exposures to Dust, which Cause Chemical Hazards at Work Station

Source: Field Survey (2016)

The researcher wanted to know to what extent other chemicals cause chemical hazards at work station. 58 % of the respondents perceived that other factors exert no effect to chemical hazards 11% low effect, 11% large effect and 20% very large effect. Likewise the value of mean was 2.35, median and modal value are both 1. This distribution of data signifies that other factors have non to low effect in causing chemical hazard at work station as indicated in the Table 4.33.

Table 4. 33: The Extent to which Other Factors cause Chemical Hazards At Work Station

Other factors	Frequency	Percent	Cumulative Percent
No extent	58	58.0	58.0
Moderate	11	11.0	69.0
Large	11	11.0	80.0
Very large	20	20.0	100.0
Total	100	100.0	

Source: Field Survey (2016)

4.10 The Extent of Ergonomic Hazards at Work Station

The researcher wanted to know to what extent the equipment used cause ergonomic hazards at workstation. 33 % of the respondents perceived that the equipment used in the chain of stone crushing effect moderately to ergonomic hazards and 67% perceived large effect. Also the value of mean was 3.67, the median and mode values are both 4. The mean, median and mode corresponded at 4, that mean 67% of respondents said that equipment used caused large effect to ergonomic hazards at work station as indicated in Table 4.34.

Table 4.34: The Extent the Equipment used Cause Ergonomic Hazards at Work Station

Equipment used	Frequency	Percent	Cumulative Percent
Moderate	33	33.0	33.0
Large	67	67.0	100.0
Total	100	100.0	

Source: Field Survey (2016)

The researcher wanted to know to what extent detecting hazards but not correcting them cause effects at work station. 33 % of the respondents perceived that detecting hazards but not correcting them has low effect to ergonomic hazards and 67% perceived moderate effect. At the same time the value for the mean, was 4.67, the median and modal value are both 3. This distribution of data signifies that risk neglecting at work station perceived to exert moderate effect to ergonomic hazards as shown in Table 4.35.

Table 4.35: The Extent of Detecting Hazards but not Correcting Them

Detecting Hazards	Frequency	Percent	Cumulative Percent
Low	33	33.0	33.0
Moderate	67	67.0	100.0
Total	100	100.0	

Source: Field Survey (2016)

The researcher wanted to know to what extent removing safe-guards cause ergonomic hazards at work station. 33 % of the respondents perceived that safe-guards removing perceived have no effect to ergonomic hazards and 67% perceived low effect. At the

same time the value for mean was 1.67, the median and modal value are both 2. The mean, median and mode correspond to 2, meaning that 67% of respondent said that safe-guards removing at work station have low effect to agronomic hazards as indicated in Figure 4.13.

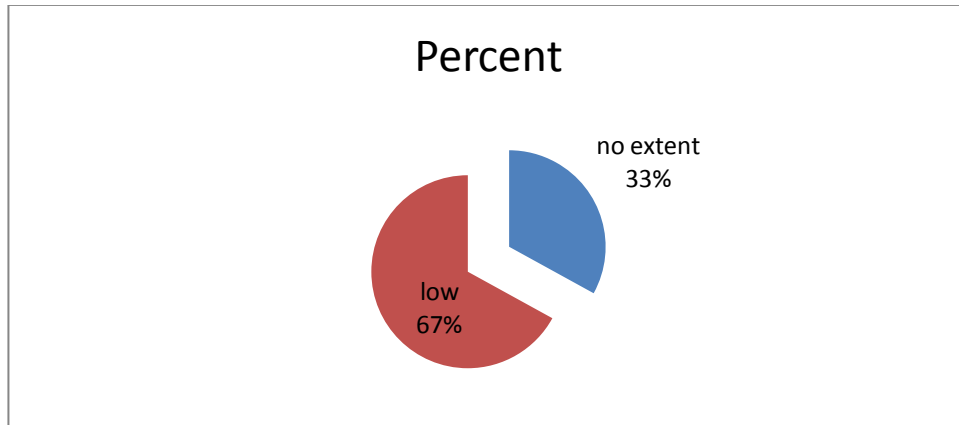


Figure 4.13: The Removing Safe-Guards which Cause Ergonomic Hazards at Work Station

Source: Field Survey (2016)

The question was asked to what extent lack of work knowledge cause ergonomic hazards at work station 33 % of the respondents perceived that work related knowledge perceived to exert low effect to ergonomic hazards, 33% perceived moderate effect and 34% exert large effect.

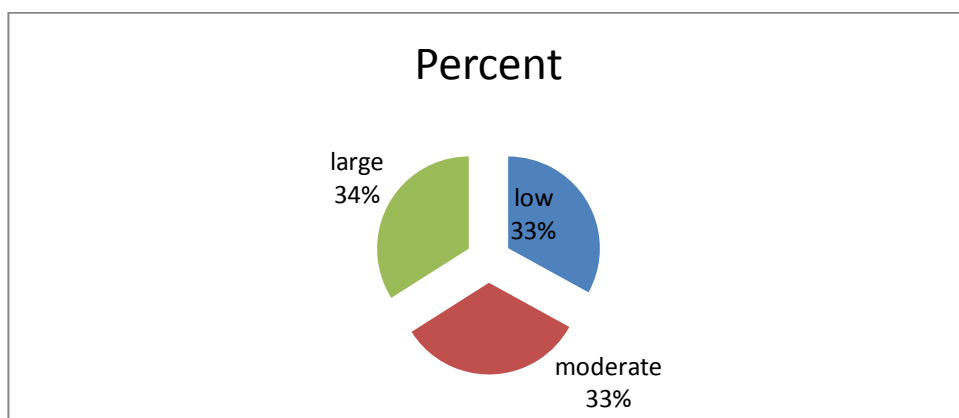


Figure 4.14: Lack of Work Knowledge Cause Ergonomic Hazards at Workstation

Source: Field Survey (2016)

At the same time the value for the mean, is 3, the median and modal value are both 4. Based on the values of mean, median and mode the data signifies that lack of work knowledge at work station perceived to exert moderate to large effect to ergonomic hazards as shown in Figure 4.14.

The question was asked to what extent postures-long time sitting cause ergonomic hazards at work station. 33 % of the respondents perceived that posture like long sitting have moderate effect to ergonomic hazards and 67% perceived large effect. At the same time the value for the mean was 3.67, the median and mode values are both 4. Based on mean, median and mode values 4, this distribution of data signifies that posture like long sitting perceived to exert large effect (67%) to ergonomic hazards. This is presented as shown in the Figure 4.14.

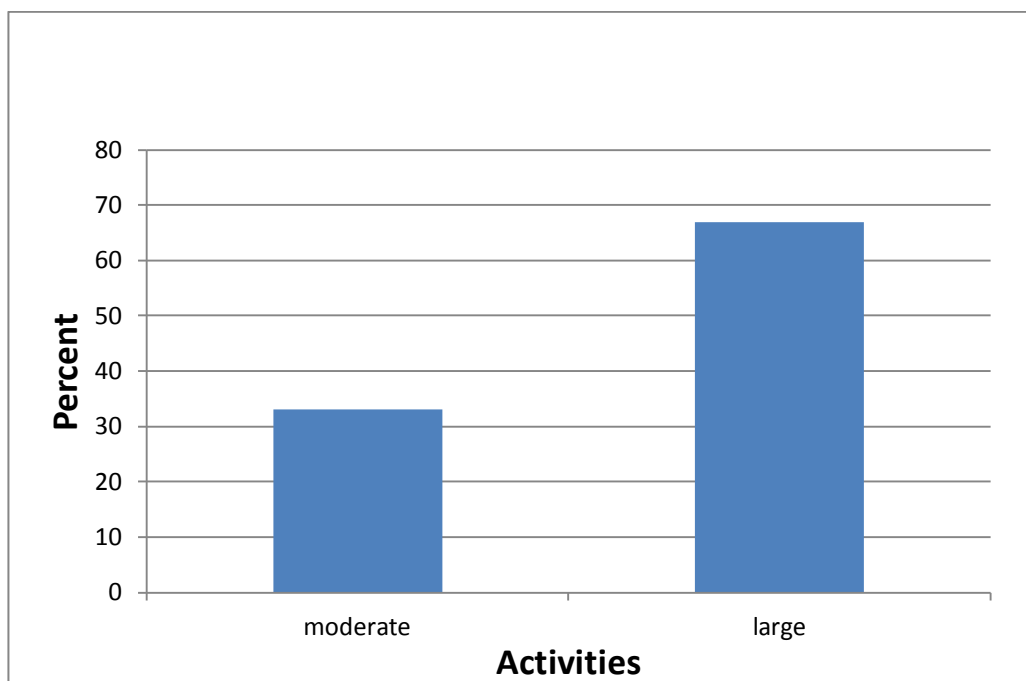


Figure 4.15: Postures-Long Time Sitting Cause Ergonomic Hazards at Work Station

Source: Field Survey (2016)

The question was asked to what extent repetitive movement and other manual tasks can cause ergonomic hazards at work station. 33 % of the respondents perceived that repetitive movement of and other manual task moderately affect agronomic hazards and 67% perceived to exert large effect. At the same time the value for the mean was 3.67, the median and mode values are both 4. Based on mean, median and mode values this distribution of data signifies that repetitive movement of and other manual task perceived to exert large effect to agronomic hazards as presented in Figure 4.16.

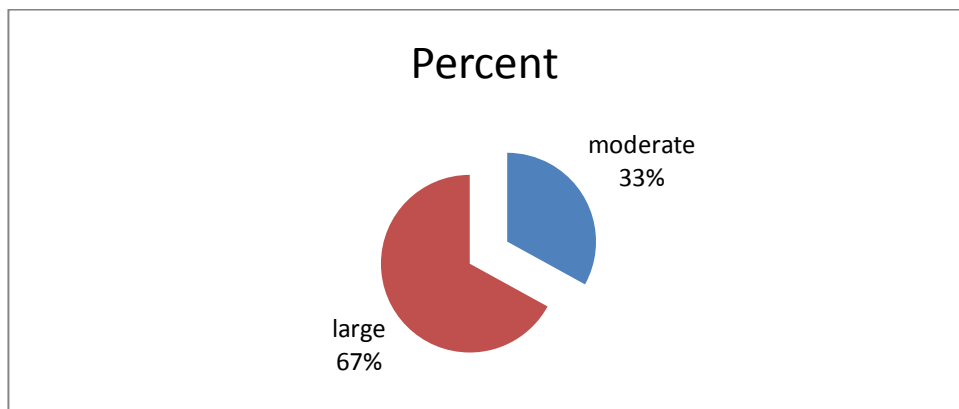


Figure 4.16: The Extent of Repetitive Movement and other Manual Tasks
Source: Field Survey 2016

4.11 The Causes Of Psycho-Social Hazards at Work Station

The question was asked to what extent fatigue cause psycho-social hazards to your work station. 48 % of the respondents perceived that fatigue repetitive exert moderate affect to psycho-social hazards and 52 % perceived to exert large effect. At the same time the value for the mean was 3.52, the median and mode values are both 4 for each. The mean, median and mode corresponded to 4, which means that 52% of correspondents said that fatigue cause large effects to psycho-social hazards at work station as shown in the Figure 4.17.

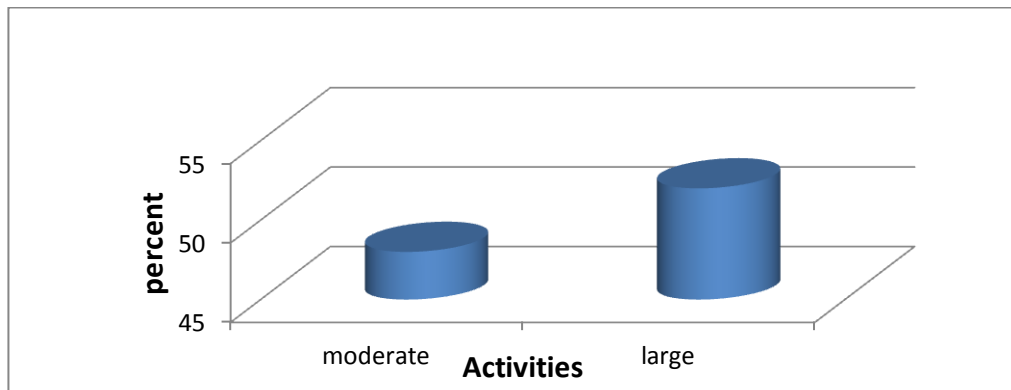


Figure 4.17: The Extent of Fatigue that Cause Psycho-Social Hazards to your Work Station

Source: Field Survey (2016)

The question was asked to what extent stress cause psycho-social hazards to your work station. 52 % of the respondents said stress exerts moderate affect to psycho-social hazards and 48 % perceived to exert large effect. The mean was 3.48, the median and mode values were both 3, which all corresponded to (52%) at moderate effects. This distribution of data signifies that fatigue perceived to moderate effect to ergonomic hazards at work station as indicated in Figure 4.18.

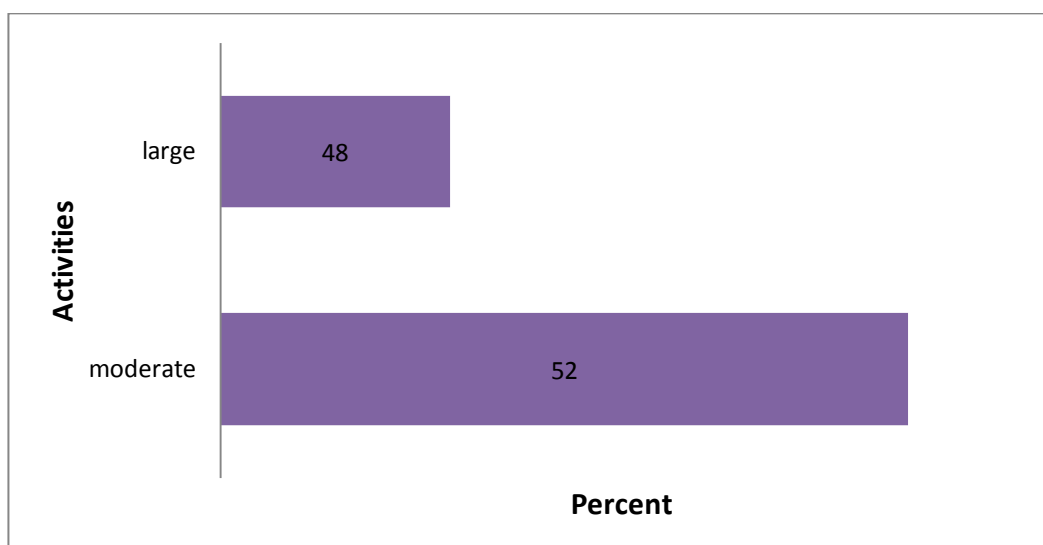


Figure 4.18: The Extent That Stress Cause Psycho-Social Hazards to your Work

Source: Field Survey (2016)

The question was asked to what extent sexual abuse cause psycho-social hazards to your work station. 100% of respondents reported that sexual harassment do not contributed to psychosocial hazards at work station as indicated in the Table 4.36.

Table 4.36: The Extent of Sexual Abuse Cause Psycho-Social Hazards to your Work Station

	Frequency	Percent	Valid Percent	Cumulative Percent
No extent	100	100.0	100.0	100.0

Source: Field Survey (2016)

The question was asked to what extent harassment from government official cause psycho-social hazards to your work station. 100% of respondents reported that government harassment do not contributed to psychosocial hazards at work station as shown in Table 4.37.

Table 4.37: The Extent of Government Official Cause Psycho-social Hazards

	Frequency	Percent	Valid Percent	Cumulative Percent
No extent	100	100.0	100.0	100.0

Source: Field Survey 2016

The question was asked to what extent other factors cause psycho-social hazards to your work station. 48% of the respondents perceived that other factors exert low affect to psychosocial hazards while 52 % perceived to exert moderate effect. At the same time the value for the mean is 2.52, the median and modal value are both 3. The mean, median and mode values were 3 which corresponded moderate effects which means that 52% of respondents said that fatigue perceived to exert moderate effect to agronomic hazards at work station as shown in Table 4.38.

Table 4.38: The Extent of other Factors Cause Psycho-Social Hazards to Work Station

Other factors	Frequency	Percent	Valid Percent	Cumulative Percent
Low	48	48.0	48.0	48.0
Moderate	52	52.0	52.0	100.0
Total	100	100.0	100.0	

Source: Field Survey (2016)

4.12 The Extent of Ailment Effects at your Work Station

The question was asked to what extent malaria ailment effects experienced at your work station. 73% of the respondents perceived to experience no effect to malaria while doing manual stone crushing, while 27% perceived low experience to malaria. At the same time the value of mean was 1.27, the median and modal value are both 1 for each. The mean, median and mode corresponded to 1, which means (73%) of respondents experienced no effects to malaria in the course of manual stone crushing at their work station as shown in the Table 4.39.

Table 4.39: Effects of Malaria Ailment at Work Station

	Frequency	Percent	Cumulative Percent
No extent	73	73.0	73.0
Low extent	27	27.0	100.0
Total	100	100.0	

Source: Field Survey (2016)

The question was asked to what extent abnormal pain experienced at your work station. 50% of the respondents are experienced to moderate effect and also 50% perceived large effect. Likewise the value for mean and median are both 3.5 for

each, modal value is 3. This distribution of data signifies that abdominal pain is experienced to large effect in manual stone crushing as shown in Table 4.40.

Table 4.40: The Extent of Abnormal Pain Experienced at Work Station

Abnormal Pain		Frequency	Percent	Cumulative Percent
Valid	Moderate	50	50.0	50.0
	Large	50	50.0	100.0
	Total	100	100.0	

Source: Field Survey (2016)

The question was asked to what extent skin rashes effects experienced at your work station. 72% of the respondents said that they do not experienced by skin rashes while 28% experience low effect. The mean value was 1.28, the median and mode values are both 1 for each. The mean, median and mode corresponded to 1 which signifies that (72%) of respondents are no longer experienced by skin rashes in the course of manual stone crushing as indicated in the Table 4.40.

Table 4.41: The Extent of Skin Rashes Effects Experienced at Work Station

	Frequency	Percent	Cumulative Percent
No Extent	72	72.0	72.0
Low	28	28.0	100.0
Total	100	100.0	

Source: Field Survey (2016)

The question was asked to what extent eye infection experienced at your work station. 23 % of the respondents said no effect to eye infection while doing manual stone crushing, while 49% perceived low experience to, and 28% experience moderate effect. At the same time the value for the mean was 2.05, the median and

modal value are both 2 for each. The mean, median and mode values are 2 which imply that 49% of correspondents are experienced low eye infection in the course of manual stone crushing presented in Figure 4.19.

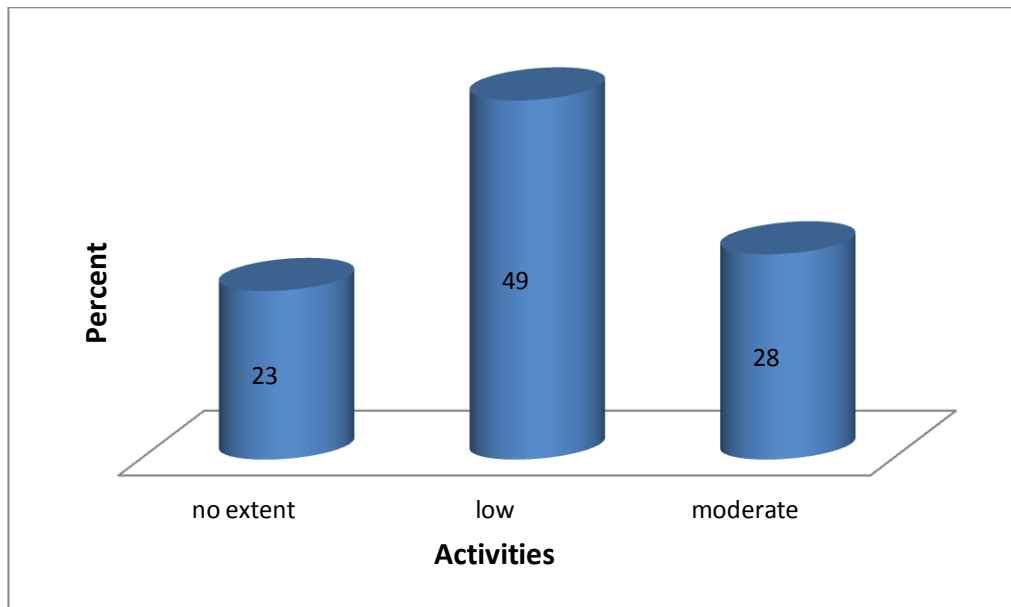


Figure 4.19: The Extent of Eye Infection Experienced at Work Station

Source: Field Survey 2016

The question was asked to what extent Occupational asthma effects experienced at your work station. 75% of the respondents perceived to experience no effect to occupational asthma while doing manual stone crushing, while 25% perceived low experience. At the same time the value for the mean was 2.25, the median and modal value are both 1 each. The mean, median and mode data signifies that occupational asthma is not experienced in the course of manual stone crushing as indicated in the Table 4.42.

The question was asked to what extent injuries effects experienced at your work station. 25% of the respondents perceived to experience low effect to injury when doing manual stone crushing, while 75% perceived moderate experience to injury.

At the same time the value for the mean was 2.75, the median and modal value are both 3 for each.

Table 4.42: Extent of Occupational Asthma Effects Experienced at Work Station

	Frequency	Percent	Cumulative Percent
No Extent	75	75.0	75.0
Low	25	25.0	100.0
Total	100	100.0	

Source: Field Survey (2016)

The mean, median and mode values corresponded to 3 which show that a good number of respondents signify that injuries is moderately experienced in the course of manual stone crushing as indicated in the Table 4.43.

Table 4.43: The Extent of Injuries Effects Experienced at Work Station

	Frequency	Percent	Cumulative Percent
Low	25	25.0	25.0
Valid Moderate	75	75.0	100.0
Total	100	100.0	

Source: Field Survey 2016

The question was asked to what extent neck ache experienced at your work station. 25% of the respondents perceived to experience low effect to neck ache, while 74% perceived moderate experience. At the same time the value for the mean is 2.75, the median and mode values are both 3 for each. The mean, median and mode values were 3 which corresponded moderate experience at (74%), therefore the data

signify that neck ache is moderately experienced in the course of manual stone crushing as indicated in Figure 4.20.

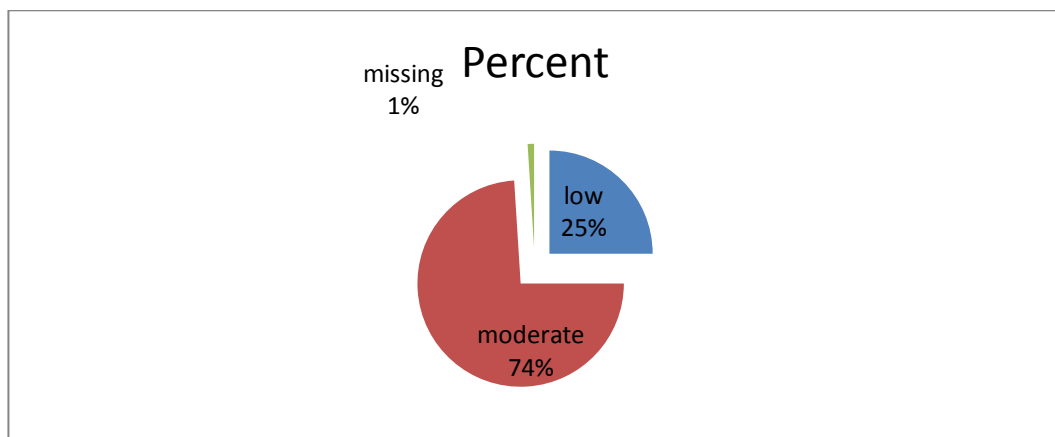


Figure 4.20: The Extent of Injuries Effects Experienced at Work Station

Source: Field Survey (2016)

The question was asked to what extent muscular skeleton experienced at your work station. 2% of the respondents perceived to experience low effect to muscular skeleton, while 73% perceived moderate experience. At the same time the value for the mean is 3.22, the median and mode values are both 3 for each.

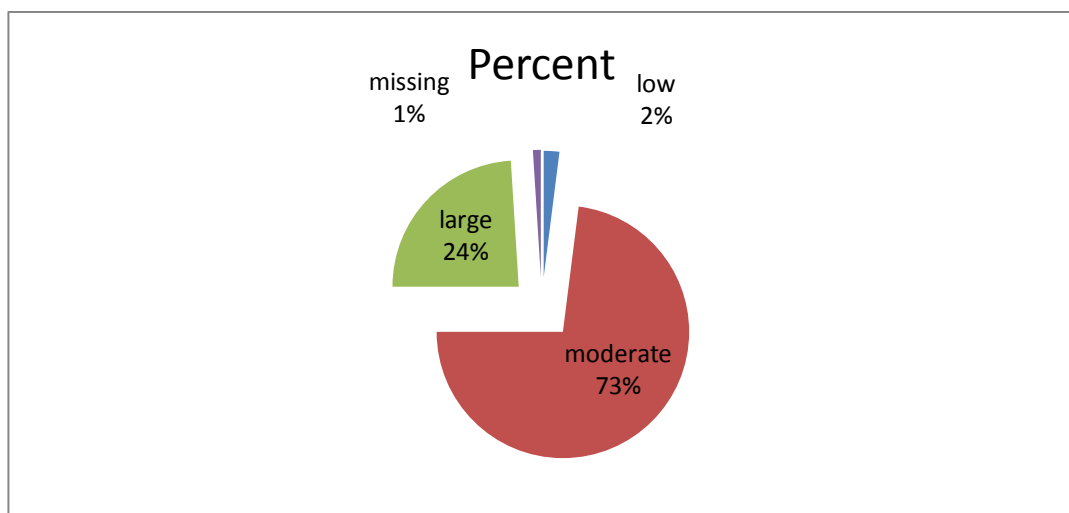


Figure 4.21: The Extent of Muscular Skeleton Experienced at Work Station

Source: Field survey 2016

The mean, median and mode values are 3 respectively which corresponded to moderate experience (73%). This data signifies that muscular skeleton is moderately experienced to in the course of manual stone crushing as indicated in Figure 4.21.

4.13 The Extent that has Effectuated Occupational Related Problems

The question was asked to what extent increase in medical expenses can cause occupational problems. 56% of the respondents perceived no effect of increase in medical expenses resulted from occupational hazards, while 44% perceived low effect. The mean value is 1.44, the median and mode values are both 1 for each. The average mean, median and mode values are 1 which correspond to no effect that means at (56%) of respondents said that there is no increase in medical expenses resulted from occupational hazards in the course of manual stone crushing as presented in Table 4.44.

Table 4.44: Effects of Increase in Medical Expenses Due to Occupational Hazards

	Frequency	Percent	Cumulative Percent
No extent	56	56.0	56.0
Low	44	44.0	100.0
Total	100	100.0	

Source: Field Survey (2016)

The question was asked to what extent increase in shortage of necessities can cause occupational problems. 56 % of the respondent's perceived moderate effect of shortage of necessities resulted from occupational hazards, while 41% perceived large effect. The mean value is 3.41, the median and mode values are both 3 each. The mean, median and mode are 3 for each which corresponded moderate effects.

The data signifies that at 59% of respondents said that is moderate effect to shortage of necessities like food and clothes resulted from occupational hazards in the course of manual stone crushing as indicated in Figure 4.22.

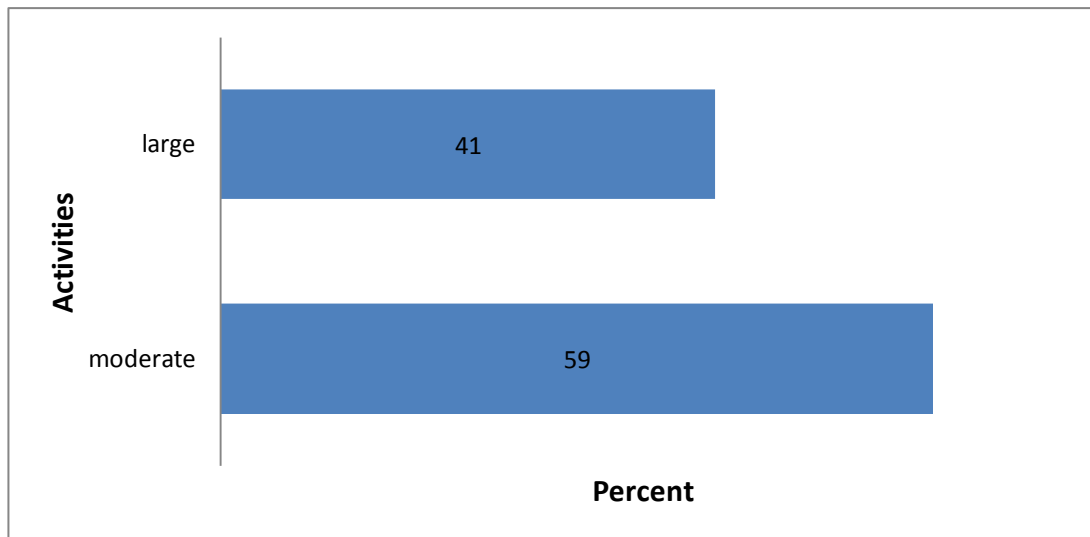


Figure 4.22: The Extent if Increase in Shortage of Necessities Due to Occupational Hazards

Source: Field survey 2016

The question was asked to what extent absence from social gathering cause occupational problems. 78 % of the respondents' perceived moderate effect on absence from social gathering resulted from working in manual stone crushing, while 22% perceived large effect. The mean value is 3.22, the median and mode values are both 3. Mean, median and mode values were 3 which corresponded to moderate effect. The data signifies that (78%) of respondents said that there is moderate effect on absence from social gathering resulted from occupational hazards in the course of manual stone crushing as indicated in Figure 4.23.

The question was asked to what extent loss of income cause occupational problems. 78% of the respondents perceived moderate effect of loss of income

resulted from occupational hazards, while 22% perceived large effect. The mean value is 3.22, the median and mode values are both 3.

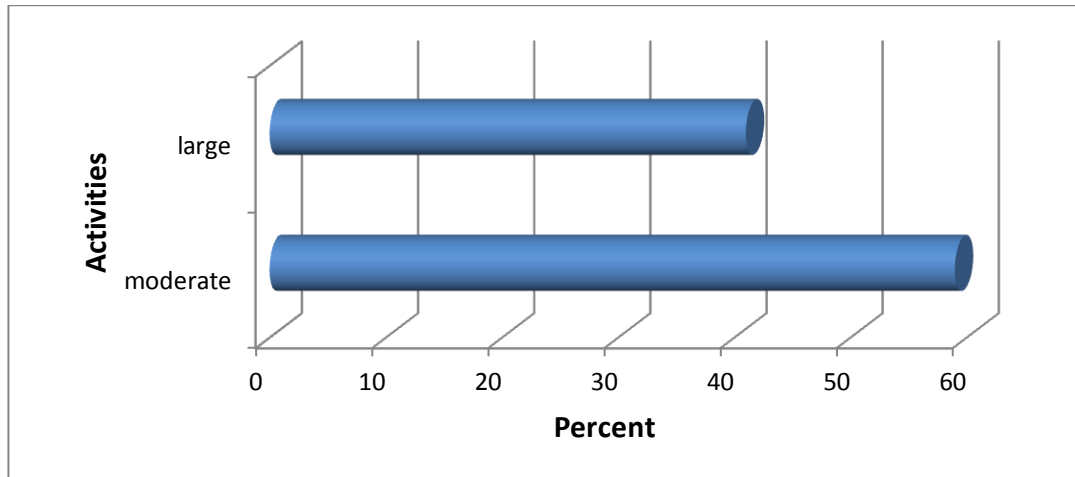


Figure 4.23: The Extent of Absence from Social Gathering Due to Occupational Problems

Source: Field Survey (2016)

These values corresponded to moderate effects, means that 78% of respondents said that loss of income resulted from occupational hazards cause moderate effects in the course of manual stone crushing as shown in Table 4.45.

Table 4.45: The Extent of Loss of Income Due to Occupational Hazards

Loss of Income	Frequency	Percent	Cumulative Percent
Moderate	78	78.0	78.0
Large	22	22.0	100.0
Total	100	100.0	

Source: Field Survey(2016)

4.14 Suggestion of Means and Ways of Improving Working Conditions in Stone Crushing Industry

The researcher wanted to know which means and ways should be taken in order to improve condition in manual stone crushing industry. 62% of the respondents recommended on equipment related support. They said that the tools that are used are

poor so they need modern equipments which will facilitate their work of extracting, loading, crushing etc, while 33% recommended training related support. They claimed that there are no training that they have obtained on their work so far therefore training is needed on how to do their work effectively and accurately and 4% of respondents mentioned other factors. The Table 4.46 represents the data as follow.

Table 4.46: The Ways of Improving Working Condition of Manual Stone Crushing

Ways of improving working condition	Frequency	Percent	Cumulative Percent
Equipment support	62	62.0	62.6
Training support	33	33.0	96.0
Other policy support	4	4.0	100.0
Total	99	99.0	
Missing System	1	1.0	
Total	100	100.0	

Source: Field Survey (2016)

The researcher wanted to know which means and ways should be taken in order to improve condition in manual stone crushing industry. 54% of the respondents said that, there should formation of work related groups that will improve the working condition in manual stone crushing, while 34% recommend establishment of First Aids Kits at work station and 11% recommended other policies. This distribution of data signifies that formation of groups and establishment of First Aids Kits at work station is a recommended policy to the manual stone crusher themselves as presented in Figure 4.24.

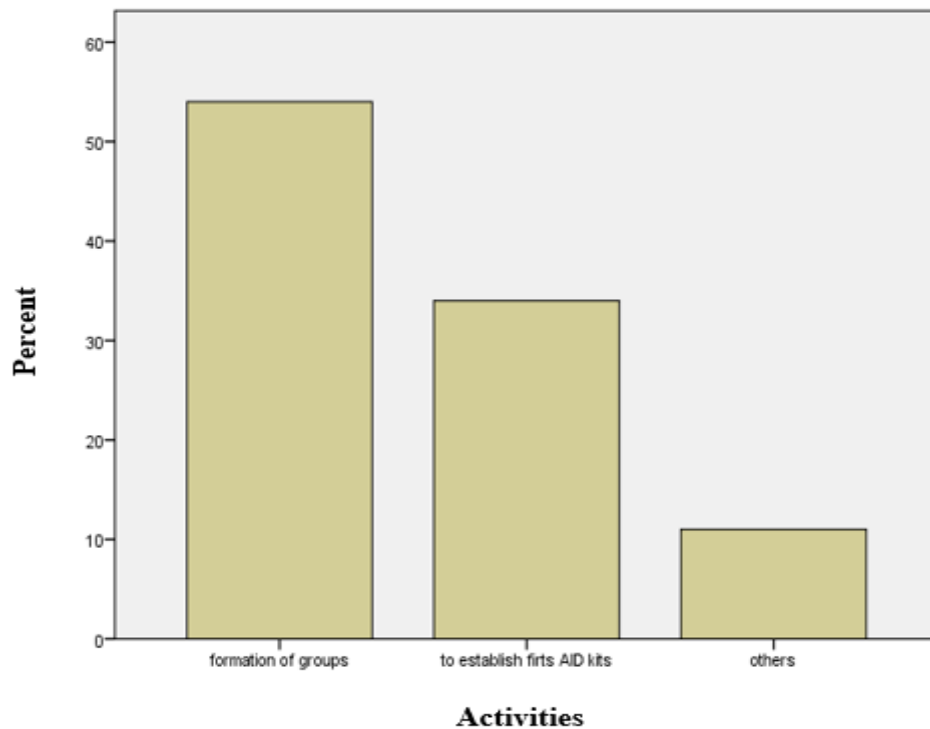


Figure 4.24: The Ways that should be taken in order to Improve Condition of MSC

Source: Field Survey (2016)

4.15 Discussion of Findings

4.15.1 Environmental Conditions of Occupational Safety and Health in Manual Stone Crushing

To assess environmental condition imposed occupational hazards in manual stone crushing, six questions were used (i) to what extent the activities listed below involved in manual stone crushing – the activities were; stone collection, stone extraction/mining, loading to crushing site, crushing to small particles, crushing to aggregate and others. The study found that all respondents (100%) under take stone collection, stone loading, crushing to small particles and crushing to aggregate to very large extent while all respondents (100%) undertake stone extraction to large extent. Data revealed that, the work of manual stone crushing should include; stone

collection, stone extraction, stone loading, crushing to small particles before crushing to aggregate (ii) to what extent have you faced the following hazards while collecting stone for crushing. The assessed hazards were; too much walking to and from, stung by sharp object, fell down and got injured, being fell by heavy object on the body, got stacked and fell with loaded stone and got injured and others. Variables imposed hazards to large intensity during stone collection is posture like repetitive movement (mean 3.94). The remaining variable shows either low intensity of no intensity at all.

(iii) To what extent have you faced the health hazards listed below while extracting stone for crushing – listed hazards were; long exposure to sunlight, long exposure to dust, down fall and got injured, heavy object fall on your body, fell down in the pit, injured by equipment, and other. While there is no variable imposed very large and large effect during extraction, variable imposed moderate effect include exposure to sunlight (mean 3.48), exposure to dust (mean 2.77) and the occurrence of fall down and got injured (mean 2.77).

The remaining variables either depicted low effect or no effect at all. (iv) To what extent have you faced the following health hazards while loading stones to the crushing site – listed hazards were; long exposure to sunlight, long exposure to dust, fell down and got injured, heavy stone fell on your body, overload which lead to physical injury and others. Variable, which show very large intensity is fall down with loaded stone and caused injury (mean 4.58), while exposure to sunlight exert moderate effect (mean 2.95), and low effect marked in exposure to dust (mean 1.99) and overload (mean 2). The remaining variable show either low of no effect at all. (v) to what extent have you faced the following health hazards while crushing

particles – listed hazards were; long exposure to sunlight, long exposure to dust, some parts bounced and cause eye injury, heavy stone fell in my leg/arm and cause injury, parts bounced and caused face injury and others. Variable detected to exert very large effect in the course of crushing to small particles was exposure to dust on one hand, on the other hand, variable with large effect is exposure to dust (mean 4), followed by low effect marked at exposure to sun light (mean 2.20) to part bounced and injury the noise (mean 2.40) and parts bounced and resulted eye injury (mean 2.40). The remaining variable depicted no effect at all. (vi) to what extent have you faced the listed health effects while crushing to aggregate level- the listed effects were; long exposure to sunlight, long exposure to dust, some aggregate bounced and cause eye injury, heavy stone fell leg/arm, aggregate bounced on face and caused injury and others. Study depicted that 20 % of the respondents perceived the occurrence of parts to bounce in workers face during crushing to aggregate exert moderate effect and 80% large effect. Similarly the value for mean is 3.8, median and mode values were both 4.

From the theoretical point of view, the finding could be related with accident causation theory of Manuele (1997). He attempted to pull different causation theories together into one working theory and developed the concept of four Ms to represent factors causing an accident. The four 4M include Machine, Media, Man, and Management (Brauer, 1990). From Manuele's theory media it includes the environmental conditions surrounding an accident, such as the weather conditions or walking surfaces. For instances snow or water on a roadway, temperature of a building, and outdoor temperature can be characteristics of media, which bear impact

to accident causation. The theory supports the finding on the environmental conditions to contribute to occupational hazards. Likewise, the study results support some previous studies as reported that quarrying related activities affects health of the incumbent workers in Kenya, some of the hazards involved with the quarrying activities were indicated as: manual handling of heavy loads, being hit by the tools, exposure to dust and falling of rock block (Wanjiku 2015). Other studies in Southern Africa, informal workers reported problems of poor work organization, poor access to clean water and sanitation, ergonomic hazards, hazardous hand tools and exposure to dusts and chemicals' (Loewenson 1999,cited in Lund and Marriott,2011).

4.15.5.1 Causes of Occupational, Health and Safety Hazards

In assessing the causes of occupational, health and safety hazards, three were formulated in questionnaire. The questions were(i) to what extent the following items caused physical hazards in your work place – long exposure to sun light , loud noise exposure, long exposure to rains, overload, distraction, physical injury, poor sanitation and others. The study found that physical hazard is exerted moderately by exposure to sunlight (mean 3.01) and overload (mean 3.24). (ii) To what extent has the following caused chemical hazards- the list composed of fume inhalation, exposure to dust and other chemical. The study noted that, the variable exert large intensity to chemical hazards is exposure to dust (mean 3.80) and include fume inhalation (mean 2.30) which exert low effect. (iii) to what extent has the following caused ergonomic hazards at your work station - the list composed of equipment used , risk level/neglecting of work station, detecting but not corrected hazards, safeguard removing, work related knowledge, posture, repetitive movement/ manual

task and others. The study found that, variable exert very large effect to ergonomic hazards is neglecting risk at work station (4.67), large effect is exerted by equipment used (mean 3.67), work related knowledge (mean 3.67) repetitive movement (mean 3.67) and posture (3.67). Likewise, detected but not corrected hazards exert moderate effect (mean 2.67). Other factors exert no effect at all (iv) to what extent has the following caused psycho-social hazards at your work station - the list composed of stress, sexual abuse, harassment from government officials and others.

The study found that, there is no variable that exert very large effect to psychosocial hazards on one hand, on the other hand stress and fatigue are marked to exert large effect to it. Other factors like sexual harassment and harassment from government officials have no effect at all. The finding does support the multiple factors theory that accident has multifaceted causes and, there is no one specific cause. Similarly, the results support some previous studies like Khan (2012), Ugboju (2009).

4.15.2 Effect of Occupational Hazards

In assessing the effect of poor occupational hazards, one question was formulated in the questionnaire. The question stated that, to what extent are the following ailments experienced at your work station – the list consisted of malaria, abdominal pain, skin rashes, chronic cold, general body pain, and eye infection, occupational asthma, injuries, neck ache, musculoskeletal disorder and others.

Data revealed that abdominal pain is largely experienced (mean 3.50) in this study. Variables exerted moderating effect on general body pain (mean 2.48) injuries (mean 2.75), neck ache (mean 2.75) and musculoskeletal (mean 3.22).

The findings do support previous studies as noted by the statement that evidenced that women may be disproportionately vulnerable to musculoskeletal disorders that are rapidly becoming one of the prime causes of work-related injuries and diseases (ILO 2004)

4.15.3 Impact of Occupational Hazards

Long term consequences (impact) of occupational hazards to manual stone crushing workers were assessed using one question in the questionnaire. The question stated that, to what extent you have been affected by work place related hazards- the list consisted of increase medical expenditure, shortage of necessities like food and clothes, absence from social gathering, loss of income and other. The consequences (impact) of occupational hazards to manual stone crushing workers range from moderate to shortage of necessities(mean 3.4), absence from social gathering (mean 3.4), and loss of income (mean 3.22. This implies that, occupational hazard impact negatively to social and economic life of the incumbent workers beyond average.

CHAPTER FIVE

SUMMMARY OF FINDINGS, CONLUSION AND RECOMMENDATION

5.1 Summary of Findings

The main objective of this study was to assess the effects of occupational, safety and health hazards on livelihood employment in Zanzibar a case study of manual stone crushing in Micheweni District Pemba Island.

The sample size of the study was 100 respondents who participated. Distribution of respondents consists of 26% from Majenzi, 17% Micheweni, 18% Maziwang'ombe and 39% MjiniWingwi. Gender distribution of the respondents showed that 66 % of the respondents are female and 34% are male. This indicates that women are the majority in manual stone crushing at Micheweni District. Distribution of years of formal education of the respondents shows that, the mean year of formal education is below 12 years.

Three research objectives and research questions were analyzed to answer the research questions. The research objective were to investigate the environmental conditions of occupational, safety and health hazardson livelihood employment, to investigate the causes of occupational, health and safety hazards on livelihood employment, to examine the effect of poor occupational safety and healthy on livelihood employment and to exploring policy options and recommendation that can promote occupational safety and healthy in general and livelihood employment in Zanzibar.

Data revealed that, the work of manual stone crushing included; stone collection, stone extraction, stone loading, crushing to small particles before crushing to aggregate and almost all respondents were undertook that activities to very large extent. Similarly, the study found that, variables imposed hazards to large intensity during stone collection is posture like repetitive movement.

Likewise, while there is no variable found to impose very large and large effect during extraction, variable imposed moderate effect include exposure to sunlight, exposure to dust and the occurrence of fall down and got injured. During stone loading, variable which show very large intensity is fall down with loaded stone and caused injury, while exposure to sunlight exerts moderate effect and low effect marked in exposure to dust and overload.

There was variable detected to exert very large effect in the course of crushing to small particles which were exposure to dust on one hand, on the other hand, variable with low effect marked at exposure to sun light, to part bounced and injured the noise and parts bounced and resulted eye injury were also marked low. Therefore, the objective of assessing environmental conditions of occupational safety and health in manual stone crushing was attained. The second objective was to investigate the causes of occupational, health and safety hazards on livelihood employment.

The study found that physical hazards were contributed moderately to exposure to sunlight and overload while causes of chemical hazards found to be exposure to dust and fume inhalation which exerted low effect, in case of ergonomic hazards found that neglecting risk at work station caused large effect, equipment used, work related

knowledge and repetitive movement and posture also marked to cause large effects. In psychosocial hazards stress and fatigue are marked to exert large effect to it.

Therefore, the study achieved the objective of assessing the causes of occupational, health and safety hazards. The third objective was to examine the effect of poor occupational, health and safety hazards. The study found that abdominal pain is largely experienced. Variables exerted moderate effect include general body pain, injuries, neck ache, and musculoskeletal.

Long term consequences (impact) of occupational hazards to manual stone crushing workers were assessed using one question in the questionnaire. The question stated that, to what extent have you been affected by work place related hazards- the list consisted of increase medical expenditure, shortage of necessities like food and clothes, absence from social gathering, loss of income and other. The depicted consequences (impact) of occupational hazards to manual stone crushing workers range from moderate to shortage of necessities, absence from social gathering, and also to loss of income. This implies that, occupational hazard impact negatively to social and economic life of the incumbent workers beyond average. Therefore, the third objective also was attained.

5.2 Conclusion

The study was about assessing the effects occupational safety and health in livelihood employment in Pemba Island. Conclusion drawn based on the set objectives and the findings and compared with related reviewed literature from chapter two. The objectives were as follow:

5.1.1 To investigate the environmental condition of occupational, safety and health hazards

5.1.2 To investigate the causes of occupational, health and safety hazards

5.1.3 To examine the effects of poor occupational safety and health hazards

The study found that, the status of occupational and safety is not convincing. The incumbent workers are affected by many occupational related diseases including Physical hazards which results injury, neck ache and general body pain, chemical hazards which causes cough related diseases. Likewise ergonomic hazards contributed mainly to equipment used, repetitive movement manual work and posture. On the Psychosocial hazards cause stress and fatigue.

The activities which are hazardous include; stone extraction, collection including carrying to crushing sites, crushing to small particles level and crushing to aggregate level. Similarly the study conform with common theories of occupational hazards including Domino theory (Bird and Loftus;1976), Human factor theory/Error theory of Accident Causation (Ferrell, R.; n,d), and Multiple factor theory (Manuele; 1997and Grose in Brauer;1990).

Likewise, the study results support some previous studies likeLikewise, the study results support some previous studies as reported that quarrying related activities affects health of the incumbent workers in Kenya, some of the hazards involved with the quarrying activities were indicated as: manual handling of heavy loads, being hit by the tools, exposure to dust and falling of rock block (Wanjiku 2015). Other studies in Southern Africa, informal workers also reported problems of poor work

organization, poor access to clean water and sanitation, ergonomic hazards, hazardous hand tools and exposure to dusts and chemicals' (Loewenson 1999,cited in Lund and Marriott,2011).

5.3 Recommendation

Manual stone crushing is the dominant activities in Micheweni district and sustain the livelihood of certain households. The sector is facing poor occupational hazards and safety and consequently not only the health of the workers but also their income. To improve the occupational safety and health of the workers in the livelihood sector the study come up with the following recommendations

- (i) Establishment of occupational health and safety policy. the policy should cover the interests of all groups of establishment including the livelihood sector with gender concern
- (ii) OSHA related department should take special consideration in supervising working environment in self employment and advice them in taking proper means in reducing the risk working behavior
- (iii) Proper training on occupational safety and healthy should be conducted. various stakeholders including central and local governments, local and international NGOs, politicians and traders in construction industries should mobilize resources to support such kind of training
- (iv) The incumbent's livelihood workers should form producers groups for collective effort in fighting against challenges they face including poor working environment. The group should work on provision of first aid kits with necessary equipments and appropriate training to use the kit. Likewise the

group should mobilize funds within and outside the group to acquire some proper working and safety equipments including overall, gum boot masks, carrying equipments like wheel barrows and others. Group members should use some equipment in sharing manner

- (v) Survey and research should be conducted to depict the status of occupational hazards in the livelihood sector and the result to be communicated with relevant stake holder including the workers themselves. Similarly the Zanzibar Occupational Health and Safety profile data collected annually should give room to incorporate data related to livelihood if not to conduct regular and special survey for collecting Occupational Health and Safety profile data for livelihood sector since the sector is the employment hub for poor majority.

5.4 Area for Further Study

To enrich well articulated information in the area, the same case study could be replicated in other district of Zanzibar with similar economic characteristics like Mkoani district in Pemba Island and South district in Unguja. Similarly the kind of study could be conducted in other livelihood employment mushrooming in Zanzibar including vegetable farming.

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APPENDECES

THE OPEN UNIVERSITY OF TANZANIA

Appendix A: Questionnaire for MSC

Dear respondent,

I, MuhamadSaleh a student from Open University of Tanzania, I am conducting a research on Assessment of Occupational, Safety and Health Hazards on livelihood Employment a case of Manual Stone Crushing at Micheweni District in Zanzibar. This research is purely for academic purpose and is not intends to victimize any worker of MSC and the response of the questions will be treated strictly confidential. Therefore do not write your name anyway in this questionnaire and if you don't know the question leave it blank. Your participation in this matter will be highly appreciated. Thank you.

PART A: PERSONAL INFORMATION

Background information

Name of shehia -----

1. Gender

A. Female B. Male.

2. Marital status

A. Married B. Single C. Divorced D. Widow E. Separated

3. Age (years)

A. Below 15 years B. 15 – 20 years C. 20 – 25years D. 25 – 30 years

E. 30 – 35 years F. Above 50years

4. Educational Level

A. Below Standard VII B. Form II C. Form IV D. Form VI E. Above VI

5. How many years have you been working in manual stone crushing work?

A. Below 1year B. 1 – 5 years C. 5 – 10 year D. 10 – 15 year E. 15 – 20 year

F. Above 20 year

PART 2. MANUAL STONE CRUSHING ACTIVITIES

The question below asks you to choose and tick the number according to your opinion.

Number 5 means Very large extent, 4 means Large extent, 3 means Moderate extent, 2 Low extent and 1 No extent

3. To what extent are the activities listed below involved in MSC?

Activity	Very large extent	Large extent	Moderate extent	Low extent	tent
Stone collection					
Stone					

extraction/mining					
Loading to crushing site					
Crushing to small parts					
Crushing to aggregate					
Others					

The question below asks you to choose and tick the number according to your opinion.

Number 5 means Very large extent, 4 means Large extent, 3 means Moderate extent, 2 low extents and 1 No extent.

The question below asks you to tick the number according to your opinion. Number 5 means

4. To what extent have you faced the following health hazards listed below while collecting stones for crushing?

Activity	Very large extent	Large extent	Moderate extent	Low extent	No extent
	5				1
Too much walking to and from the field					

Stung by sharp object/thorny threes					
Fell down and got injured					
Heavy object fell on your body					
Got staked and fell with loaded stone and got injured					
Others (mention)					

The question below asks you to choose and tick the number according to your opinion.

Number 5 means Very large extent, 4 means Large extent, 3 means Moderate extent, 2 low extents and 1 No extent.

5. To what extent have you faced the health hazards listed below while extracting stones for crushing?

Activity	Very large extent	Large extent	Moderate extent	Low extent	No extent
	5	4	3	2	1
Long exposure to sunlight					
Long exposure to					

dust					
Down fall and get injured					
Heavy object fall on your body					
Injured by equipment					
Others (mention)					

The question below asks you to choose and tick the number according to your opinion.

Number 5 means Very large extent, 4 means Large extent, 3 means Moderate extent, 2 low extents and 1 No extent.

6. To what extent have you faced the following health hazards while loading stones to the crushing site?

Activity	Very	Large extent	Moderate extent	Low extent	No extent
	5	4	3	2	1
Long exposure to sunlight					
Long exposure to dust					
Fell down and got					

injured					
Heavy stone fell on your body					

The question below asks you to choose and tick the number according to your opinion.

Number 5 means Very large extent, 4 means Large extent, 3 means Moderate extent, 2
low extents and 1 No extent.

7. To what extent have you faced the following health hazards while crushing small parts?

Activity	Very large extent	Large extent	Moderate extent	Low extent	No extent
	5	4	3	2	1
Long exposure to sunlight					
Long exposure to dust					
Some parts bounced and causes eye injury					
Heavy stone fell on your leg/arm					
Parts bounced on nose and caused face injury					

The question below asks you to choose and tick the number according to your opinion.

Number 5 means Very large extent, 4 means Large extent, 3 means Moderate extent, 2 low extents and 1 No extent.

8. To what extent have you faced the listed health effects while crushing stone to aggregate level?

Activity	Very large extent	Large extent	Moderat e extent		ent
Long exposure to sunlight					
Long exposure to dust					
Some parts caused eye injury					
Heavy stone fell on your leg/arm					
Some parts bounced on your face and caused injury					

The question below asks you to choose and tick the number according to your opinion.

Number 5 means Very large extent, 4 means Large extent, 3 means Moderate extent, 2 low extents and 1 No extent.

9. To what extent have the following items caused health hazards in your work place

Activity	Very large extent	Large extent	Moderate extent	Low extent	No extent
	5	4	3	2	1
Long exposure to sunlight					
Loud noise exposure					
Overload					
Distraction					
Physical injury – cut , wound etc					
Poor sanitation					

The question below asks you to choose and tick the number according to your opinion.

Number 5 means Very large extent, 4 means Large extent, 3 means Moderate extent, 2 low extents and 1 No extent.

10. To what extent have the following caused chemical hazards at your work station?

Activity	Very large extent	Large extent	Moderate extent	Low extent	No extent

	5	4	3	2	1
Fume inhalation					
Long exposure to dust					
Other chemicals					

The question below asks you to choose and tick the number according to your opinion.

Number 5 means Very large extent, 4 means Large extent, 3 means Moderate extent, 2 low extents and 1 No extent.

11. To what extent have the following caused agronomic hazards at your work station?

Activity	Very large extent	Large extent	Moderate extent	Low extent	No extent
	5	4	3	2	1
Equipment used					
Risk level/neglecti ng of work station					
Detecting but not correcting hazards					
Safeguard removing					
Work related knowledge					

Posture – long sitting					
Repetitive movement/manual task					
Others					

The question below asks you to choose and tick the number according to your opinion.

Number 5 means Very large extent, 4 means Large extent, 3 means Moderate extent, 2 low extents and 1 No extent.

12. To what extent have the following items caused psycho-social hazards at your work station?

Activity	Very large extent	Large extent	Moderate extent	Low extent	No extent
	5	4	3	2	1
Fatigue					
Stress					
Sexual abuse					
Harassment from government officials					
Others					

The question below asks you to tick the number according to your opinion. Number 5 means most experienced, 4 means experienced, 3 moderately experienced, 2 little experienced and 1 not experienced at all.

13. To what extent are the following ailment effects experienced at your work station

Ailment	Most experienced	Experienced	Moderately experienced	Little experienced	Not
	5	4	3	2	1
Malaria					
Abdominal pain					
Eye Infection					
Occupational asthma					
Injuries					
Neck ache					

Musculoskeletal disorder(overall joints pains)					
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The question below asks you to choose and tick the number according to your opinion.

Number 5 means Very large extent, 4 means Large extent, 3 means Moderate extent, 2 low extents and 1 No extent.

14. To what extent have you been affected by the listed occupational related problems

Activity	Very large extent	Large extent	Moderate extent	Low extent	No extent
	5	4	3	2	1
Increase medical expenses					
Shortage of necessities such as food and clothes					
Absence from social gathering					
Loss of income					

15. Kindly, suggest means and ways for improving working conditions in stone

crushing industry:

16. Can you say something about improving the status of working conditions of the livelihood sector including manual stone crushing? Comment on government perspective (central and local)

Thank you for your esteemed corporation