ANALGESICS USE FOR MUSCULOSKELETAL PAIN AND ITS ASSOCIATED FACTORS AMONG TANESCO WORKERS IN DAR ES SALAAM, TANZANIA

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ANALGESICS USE FOR MUSCULOSKELETAL PAIN AND ITS ASSOCIATED FACTORS AMONG TANESCO WORKERS IN DAR ES SALAAM, TANZANIA

By

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A Dissertation Submitted in (partial) Fulfilment of the Requirements for the Degree of Master of Public Health of the

Muhimbili University of Health and Allied Sciences

October, 2024

CERTIFICATION

The undersigned certify that has read and hereby recommend for acceptance by Muhimbili University of Health and Allied Sciences of the dissertation entitled "**Analgesics use for musculoskeletal pain and its associated factors among TANESCO workers in Dar es Salaam Tanzania**" in partial fulfillment of the requirements for the degree of Master of Public Health of Muhimbili University of Health and Allied Sciences.

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Dr. Monica Shabani

(Co-supervisor)

Date_____

DECLARATION AND COPYRIGHT

I, **Brigitte G Mchau**, declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other university for a similar or any other degree award.

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DEDICATION

This dissertation is dedicated to my beloved parents, my sisters and brothers for their endless support and all those who believed in me throughout this journey.

ABSTRACT

Introduction: Analgesics are a group of medicines used for relieving pain. These drugs function by reducing the perception of pain signals within the brain. The high incidence of musculoskeletal disorders is likely to lead to a growing demand for pain management drugs.

Objective of the study: The aim was to determine analgesics use for musculoskeletal pain and its associated factors among TANESCO workers in Dar es salaam, Tanzania.

Methods and Materials: This is a cross-sectional study involving 329 workers who randomly sampled from six TANESCO district offices in Dar es Salaam. A structured questionnaire was used to elicit responses on types of analgesics used, frequency of analgesics uses, knowledge of analgesics, and factors at work associated the use of analgesics for musculoskeletal pain. Modified Poisson regression approach was employed to examine the factors associated with analgesics use.

Results: The majority of workers were aged between 18 to 50 years (92.7%). The overall prevalence of analgesics use for musculoskeletal pain was 75% and 55.67% of workers were engaged in self-medication. More than half (57.7%) of the respondents used brands which contain paracetamol, aspirin and caffeine as the active ingredients and (68.6%) used the pain killers for more than three days in a week. More than half of the respondents had a medium level of knowledge on analgesics use for musculoskeletal pain. Modified Poisson showed that the type of job performed at work and age were significantly associated with the use of analgesics for musculoskeletal pain, ($p<0.05$). Long exposure to computers' screen in the working environments was also associated with the use of analgesics for musculoskeletal pain ($p<0.05$).

Conclusion and Recommendation: Knowledge on analgesic use and knowledge of probable serious side effects was inadequate. Pharmacists and other healthcare providers involvement in education of clients of the side effects of analgesics is highly recommended to minimize misuse. The Medicines and Medical Devices Authority should regulate the availability of analgesics in the market, especially in non-health facilities

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ABBREVIATIONS

Abbreviation	Description
GBD	Global Burden of Diseases
MUHAS	Muhimbili University of Health and Allied Sciences
NMQ	Nordic Musculoskeletal Questionnaire
NSAIDs	Non-Steroidal Anti-Inflammatory Drugs
OSHA	Occupational Safety and Health Authority
OTC	Over The Counter
PPE	Personal Protective Equipment
TANESCO	Tanzania Electric Supply Company
YLD	Years Lived with Disability

DEFINITIONS OF OPERATIONAL TERMS

Analgesics:

These are group of medicines used for relieving pain whereas the drugs function by reducing the perception of pain signals within the brain. There are types of analgesics, which are non-opioids and opioids.

Analgesics Use:

This refers to administration of pain-relieving medications to relieve pain, which involves selection and dosage of pain relievers, which can be non-opioid (like acetaminophen or ibuprofen) or opioid (like morphine or oxycodone).

Dose of analgesic:

This refers to the specific amount of medication prescribed or taken at one time or over a specific period.

Frequency of analgesic:

This refers to the number of times pain medications are taken within a specified time.

Medication:

This refers to a substance used to prevent, diagnose, treat, or alleviate symptoms of a medical condition. Medications can come in various forms, including tablets, capsules, liquids, injections and topical applications.

Musculoskeletal pain:

This refers to type of pain that is associated with the conditions that affect the musculoskeletal system components, including the joints, bones, muscles, tendons, ligaments, cartilage, and spinal discs.

Non-Steroidal Anti-inflammatory Drugs:

These are class of medication used for relieving pain, inflammation and fever whereas the drugs function by inhibiting the cyclooxygenase enzymes involved in the synthesis of

prostaglandins, substances that are involved in inflammation processes, pain and fever in the body.

Over the Counter:

This refers to medications that can be purchased without a prescription, where by these drugs are deemed safe and effective for public use when directions on their labels are followed.

Prescribed:

This refers to a specific medication that has been ordered by a qualified healthcare professional, such as a doctor or nurse practitioner, for a patient to use in the treatment of a particular condition.

Types of analgesics:

This refers to various categories of medications used to relieve pain. They can be broadly classified into two main types; opioids and non-opioids.

Work-related Musculoskeletal disorders:

These are conditions that affect the musculoskeletal system components, including the joints, bones, muscles, tendons, ligaments, cartilage and spinal discs due to work place activities.

CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND

Analgesics are pain-relieving drugs that reduce the perception of pain signals in the brain. Analgesics are of two groups, non-opioids and opioids. Non-opioids are analgesics that commonly used for mild pain. Examples are acetaminophen (paracetamol) and non-steroidal anti-inflammatory drugs (NSAIDs), these have antipyretic and anti-inflammatory properties and easily obtained over the counter. Opioids analgesics are derived from opium and are used for management of mild to severe pain. Examples are codeine, morphine and tramadol, these are more potent compared to the non-opioid analgesics. These can be administered orally, intramuscularly, intravascularly, or combined(1).

Musculoskeletal pain is a type of pain that is associated with the conditions that affect the musculoskeletal system components, including the joints, bones, muscles, tendons, ligaments, cartilage, and spinal discs. The Global Burden of Disease (GBD) data that was analyzed by the year 2019, showed that approximately 1.71 billion people worldwide have musculoskeletal disorders. That includes lower back pain, neck pain, fractures, and others. These disorders contribute mainly to years lived with disability (YLDs) worldwide with approximately 149 million YLDs(2).

The global analgesics market is growing due to the rise in musculoskeletal disorders, which affect the musculoskeletal system components. In a study done in China, reported an increase in analgesics utilization, opioids and NSAIDS were the main types of analgesics that were highly utilized. The most used opioids drugs were dezocine injection, remifentanil injection, and sufentanil injection solution and the most used NSAIDS were flurbiprofen injection, parecoxib injection, and celecoxib oral solution(3).

A review done on studies conducted in Sub-Saharan Africa about use of analgesics, more than 70% prevalence of OTC analgesics use was reported in these studies. The sources of OTC drugs being pharmacy and drug shops, and family, friends and relatives as well as leftover drugs from previous treatment. The main reasons for OTC drug use were challenges

in health service access, perception of illness as minor and knowledge gained from treating a previous illness. Information regarding self-medication came from family, friends and neighbors, pharmacies and reading leaflets either distributed in the community or at institutions of learning(4).

In Tanzania, analgesics medicines are classified into two, prescription only and over the counter. Analgesics that are classified as OTC do not require a prescription and hence widely used as pain relievers and for the treatment of mild fever. Reports have shown that there has been a surge demand of analgesics in Tanzania. In Tanzania, the revenue generated in the analgesics market in the year 2023/24 amounts to US$40.83m(26). This is due to increasing self-medication, availability of the analgesics and rising incidence of chronic conditions such as arthritis and back pain. All these have contributed to the growing demand of analgesics among the Tanzanian population.

1.2 PROBLEM STATEMENT

In Tanzania, analgesic medications fall into two categories: prescription-only and over-the-counter (OTC). Recent reports indicate a rising demand for the over the counter analgesic medications, with the analgesics market generating approximately $40.83 million in revenue for 2023/24(26). Factors driving this increase include a rise in self-medication, greater availability of these drugs, and a growing prevalence of chronic conditions like arthritis and back pain, all of which have boosted the need for analgesics among Tanzanians.

Even when taken as directed for short period of time, analgesics can lead to serious side effects. Some analgesics include psychotropic ingredients like caffeine and codeine, which can lead to addiction and subsequent misuse. Regular and excessive use of these medications may result in various health issues: aspirin can cause gastrointestinal bleeding and ulcers, acetaminophen may lead to liver damage, and ibuprofen can cause kidney failure. Unfortunately, many people using analgesics are often unaware of these potential risks(5).

The medicines regulatory authority in Tanzania is the Tanzania Medicine and Medical Devices Authority (TMDA) is mandated to regulate medicines in the country. It strengthens the regulations that are related to the sale and distribution of medicines(27). Together with the ministry of health conducting campaigns to raise awareness of the consequences of overusing pain medications. Also training healthcare providers on the prescription and dispensing of these pain medications. This reduces unnecessary prescriptions and improve the management of pain with alternative treatments when needed.

The increase in demand has necessitated the need to examine the magnitude of analgesics use and the factors that are associated with their use particularly among TANESCO workers with musculoskeletal pain, who by the nature of their profession are prone to pain and stress. Therefore, this study aimed at determining the analgesics use for musculoskeletal pain and its associated factors among TANESCO workers in Dar es Salaam, Tanzania.

1.3 CONCEPTUAL FRAMEWORK

The dependent variable is Analgesic use among workers and the independent variables are level of knowledge of analgesic use (low, medium, high), work-related issues, types of analgesics, frequency of use of analgesics and location of musculoskeletal pain. Work-related issues such as physical demands and conditions in the workplace may contribute to pain in particular body parts/locations. Poor ergonomic set up at work such as non-adjustable chairs, improper desk height may lead to back pain, neck and shoulder pain. Location of pain influences the type and frequency of analgesic use since different pain locations may require specific analgesic for effective management.

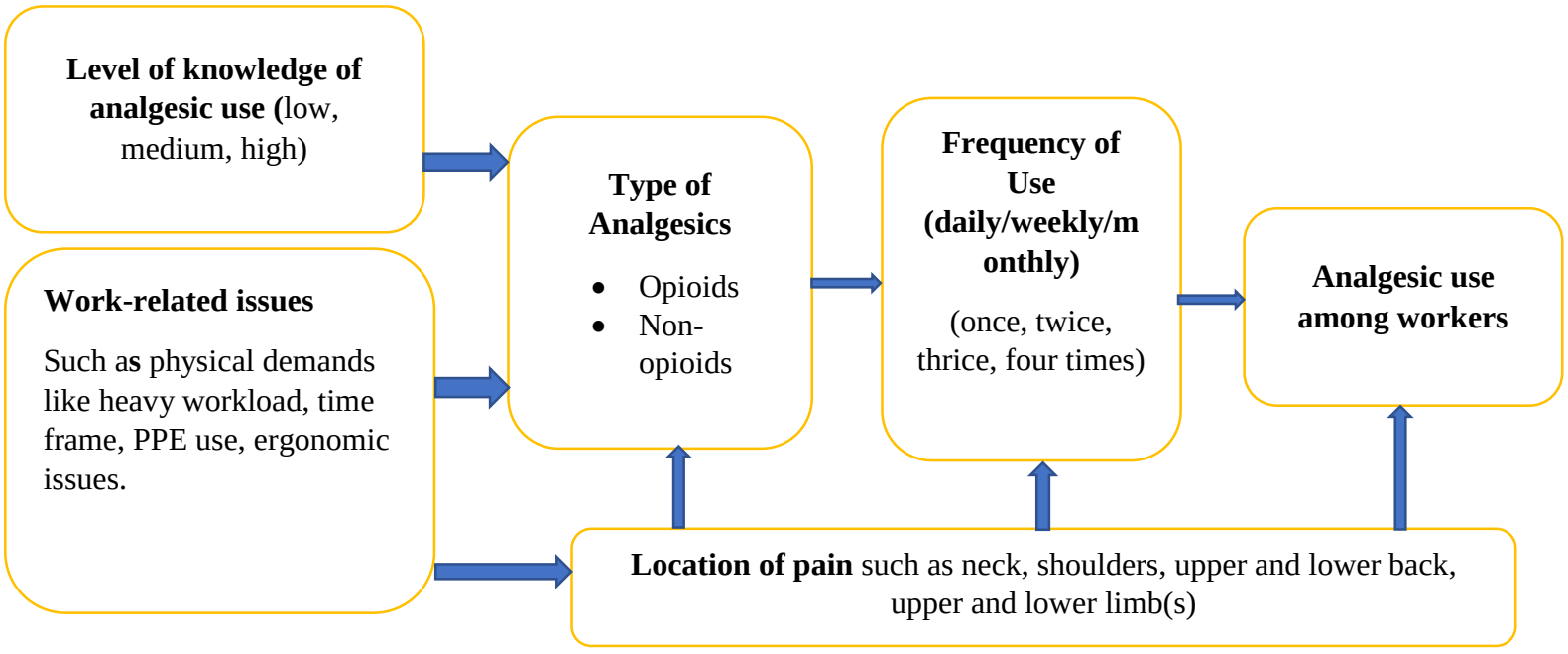


Figure 1: Conceptual Framework illustrating the factors associated with analgesic use

1.4 RATIONALE OF THE STUDY

The findings of the study aim to enhance understanding of pain management practices and identify factors influencing analgesic use. Findings will inform health policies, improve workplace safety, and guide future research on effective pain management strategies, ultimately contributing to better health outcomes for workers.

1.5 RESEARCH QUESTIONS

1.5.1 MAIN RESEARCH QUESTION

What is the analgesic use for musculoskeletal pain and its associated factors among TANESCO workers in Dar es Salaam, Tanzania?

1.5.2 SPECIFIC RESEARCH QUESTIONS

i. What is the prevalence of analgesics use for musculoskeletal pain among TANESCO workers?
ii. What are type of analgesics used for musculoskeletal pain among TANESCO workers?
iii. What is the frequency of use of analgesics for musculoskeletal pain among TANESCO workers?
iv. What are the work-related factors associated with the use of analgesics among TANESCO workers?
v. What is the level of knowledge of analgesics use for musculoskeletal pain among TANESCO workers?

1.6 RESEARCH OBJECTIVES

1.6.1 MAIN OBJECTIVE

To determine the analgesic use for musculoskeletal pain and its associated factors among TANESCO workers in Dar es Salaam, Tanzania.

1.6.2 SPECIFIC OBJECTIVES

i. To determine the prevalence of analgesic use for musculoskeletal pain among TANESCO workers.
ii. To identify the type of analgesics used for musculoskeletal pain among TANESCO workers.
iii. To determine the frequency of analgesics for musculoskeletal pain among TANESCO workers.
iv. To identify the work-related factors associated with the use of analgesics among TANESCO workers.
v. To determine the level of knowledge of analgesics use for musculoskeletal pain among TANESCO workers.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Prevalence of analgesic use for musculoskeletal pain

Different approaches are essential for effective management of musculoskeletal pain. Pharmacological, non-pharmacological, and interventional pain therapies are essential to improve patients' health and enhance quality of life. Pharmacological management is the most used approach by people in the general population. Analgesics are the most common medications used by people to manage pain though there are other medications such as anticonvulsants e.g. pregabalin that people use to manage particular type of pain. Different analgesics are used depending on the severity of pain. A study done in German among medical service personnel reported a prevalence of 52.76% of analgesics use, this was due to the higher prevalence of pain among the medical personnel(6). Health promotion measures were suggested in order to preserve health of the workers.

In Africa, a study conducted among the South African runners reported a prevalence of 80% of analgesics use. Whereby these runners used pain relieving medications before, during and after they have completed a run. And the use of such medications increased when one has sustained injuries due to running(7). Another study conducted in Ghana reported a prevalence of 97% of analgesics use among Suame magazine workers. This high prevalence was due to body pain experienced by the workers due to the working activities. The study suggested that improvement in the working areas is needed and health education should be provided to workers and the general population on safe medication practices(8).

In Tanzania, musculoskeletal pain is a problem to many of the workers and little is known among them about the management practices and specifically on analgesic use for musculoskeletal pain among workers.

2.2 Socio-demographic factors associated with the use of analgesics among workers.

Globally, individual factors that are associated with analgesic use for musculoskeletal pain include a range of individual characteristics and experiences that may influence the

individual decision to use pain relieving drugs. These factors factor include socio-demographic factors such age, sex, education level. A study done in German population on analgesic use showed that the prevalence was higher in women compared to men and the prevalence increased with age except for 85 years and above owing to their adverse effects such as renal failure and gastrointestinal bleeding which occur more frequently in the elderly(9).

The use of analgesics includes the use of opioids, opioids are indicated to be used for cancer pain management according to WHO guidelines. For non-cancer subjects' opioids should be used with proper caution and when other therapeutic options have not been effective when pain negatively affects the individual's quality of life. This is when the benefits to the patient have outweighed the potential risks(10).

In Zambia, a high prevalence on the use of analgesics for musculoskeletal pain among health workers was associated with age and sex. These factors were associated with the self-management of pain-killers(11). Different studies have stated the relationship between individual factors and analgesic use for musculoskeletal pain but it is not clearly stipulated in studies done in our country Tanzania regarding the individual factors that contribute to the use of analgesics for musculoskeletal pain.

2.3 Types of analgesics used for musculoskeletal pain

The musculoskeletal pain experienced by different people varies in duration and intensity, this is what defines the choice of analgesics. Pain relieving medications can be purchased from the community pharmacies, most of these are the non-opioids analgesics such as paracetamol, NSAIDs and some of the opioids including tramadol. Physicians normally prescribe both non-opioids and the opioids analgesics, but caution is on the opioid analgesics as they have high potential of being abused. A study reported that among those who participated 62% purchased the pain killers from community pharmacies and the rest used pain killers prescribed by their physicians. Paracetamol was frequently used 68.6% followed by NSAIDs (46.8%) and other analgesics mixture(21.9%) (12).

In Africa, a study done in Kenya and Zambia reported that among the participants that were identified with musculoskeletal issues, 62.3% were provided with therapeutic management. Another study done in Nigeria reported that 74% of those who had musculoskeletal disorders used a mixture of analgesics. The mixture of analgesics can be NSAIDs with caffeine, codeine and sometimes with paracetamol(13). The researchers highlighted that musculoskeletal problems are the common issues that make people to seek medical help (14).

In Tanzania, most of the studies done have under-reported the different types of analgesics used and hence this study aims at identifying the types of analgesics used for musculoskeletal pain among workers.

2.4 Frequency of analgesics use for musculoskeletal pain.

The severity of the pain and the effectiveness of the medication determine how frequent a person uses the anti-pain medication. And no matter how effective a drug, most of these analgesics have a shorter half-life. Forcing the users to use them more often whenever one is in severe pain. A study reported that among 1889 participants, 779 people used analgesics more than 10 ten days in a month (12).

In Africa, a study showed that there were different frequencies in analgesic use among the participants as follows; the proportion of those who used analgesics more than once in a week was 30.6%, where 42.3% used at least once in a week and 27% of those who participated used them daily. On the daily frequency, 3.3% reported to use analgesics four times a day, 16.7% used them thrice in a day, 46.7% reported to use analgesics two times in a day and 33.3% used pain killers only once(15) .

In Tanzania, the frequencies of analgesics use for musculoskeletal pain are underreported in the studies conducted among different populations.

2.5 Work-related factors associated with the use analgesics among workers.

Globally factors associated with musculoskeletal pain that lead to the use of analgesics among workers have been identified and evaluated in different studies. Studies done in Greece, the United Arab Emirates, and United Kingdom reported in their findings that occupational factors such as lifting or moving materials are linked with the development of

musculoskeletal disorders pain. Physical factors being the common risk factor among nurses who reported having musculoskeletal disorders pain in those studies. There are variations in proportions on how these factors relate to musculoskeletal disorders pain in these studies but they all inform interventions that are to be designed to prevent and reduce musculoskeletal disorders should target reducing these risk factors(16–18).

In Africa, studies done in Nigeria and Congo workers reported a high prevalence of musculoskeletal disorders and the condition was experienced mostly in wrist and hands due to the increased use of grip strength in doing different routine activities repetitively. Ergonomic factors such as static loads, inadequate rest, poor ergonomics in bending, lifting, sitting, and standing for a long time attributed to the increased prevalence of low back and shoulder work-related musculoskeletal disorders pain among workers(19,20).

In Tanzania, a study done at Bugando Medical Centre reported some of the risk factors associated with chronic low back pain which is one of the most common musculoskeletal disorder that leads to severe pain. The risk factors were pulling or pushing was the common in all the participants, awkward bending position, repetitive lifting by heavy loads and certain prolonged posture at work (21).

2.6 Level of knowledge of analgesics use for musculoskeletal pain

The use of a certain type of analgesic depends on the level of knowledge of the user. This depends on various factors such the education level, the training offered if available at one's work settings or in the communities and the media also plays a role in increasing awareness and knowledge to the population. A study done in Saudi Arabia, 96.9% of the participants used analgesics but most of the users had poor knowledge on analgesic use, they may misuse analgesics, use them for other indications apart from pain(22).

In Africa, a study done to determine the knowledge level on analgesic use reported that the participants had positive attitudes towards analgesics use but most of them had low knowledge on rational use of analgesics(23).

In Tanzania, the level of knowledge of analgesic use for musculoskeletal pain among different populations is understudied, hence this study aims at determining the level of knowledge of analgesics use for musculoskeletal pain among TANESCO workers.

CHAPTER THREE

3.0 MATERIALS AND METHODS

3.1 Study design

This study aimed at determining the analgesic use for musculoskeletal pain and its associated factors among workers at TANESCO in Dar es Salaam region at the same time, hence the study was a cross-sectional analytical study.

3.2 Study area

The study was carried out in Dar es Salaam region at TANESCO regional offices, which are Kinondoni North, Kinondoni South and Ilala. The study was done in TANESCO since the company includes workers that are in offices and in sites/field. TANESCO in Dar es Salaam has more workers, this is due to more workload compared to other regions in Tanzania.



Figure 2: A map of Dar es Salaam region showing the locations of TANESCO offices

3.3 Study population

Study population were workers in TANESCO who are in generation, transmission and distribution divisions. TANESCO workers both in offices and in field or sites.

3.3.1 Inclusion criteria

Every TANESCO employee with musculoskeletal pain within the last twelve months

3.4 Sample size and Selection

3.4.1 Sample size

The sample size for the study was calculated basing on the findings of a similar study done in Nigeria which reported a prevalence of 74% (13).

Using the formula; $n = z^2 p(100-p)/ \varepsilon^2$

Where n = the desired minimum sample size

z = the standard normal deviate (set at 95% confidence interval which is equal to 1.96)

p = the expected prevalence with a characteristic of interest obtained from a similar study (p = 74%)

ε = margin error = 5%

Therefore, $n = 1.96^2 \times 74(100-74)/ 5^2$

n = 296

10% will be assumed as a non-response.

For Adjusting the formula is, 1/R

Where R = 90% = 0.9, this is the response rate

Taking 1/0.9 = 1.11

The sample size = 296 x 1.11 = 329

The adjusted sample size will be 329.

3.4.2 Selection of study participants

A simple random sampling was used to select study participants from the distribution, customer service, finance, planning and procurement departments in TANESCO offices.

3.4.3 Sampling technique

A multi-stage cluster sampling method was used to obtain the study participants. Three stages were involved.

First stage: Selection of TANESCO regional offices in Dar es Salaam.

Three regional offices were selected out of four regional offices by simple random sampling.

Second stage: Selection of TANESCO district offices.

A list of all the district offices in each TANESCO regional office was obtained. Two district offices were selected from each by simple random sampling.

Third stage: Selection of participants.

At each district office, the total number of TANESCO workers was obtained from the respective managers. Then the number of people to be sampled was computed based on the proportionate contribution of each district office to the total population of TANESCO workers of the six district offices. This was done by dividing the number of TANESCO workers of a given district office by the sum of the six district offices and multiplied by the sample size for the study.

Table 2: Distribution of TANESCO workers and Sampling Procedure

Regional office	District office	Number of workers	Percent contributed	Number sampled
Ilala	City center	350	32%	97
	Tabata	100	9%	28
Kinondoni North	Mikocheni	220	20%	61
	Mbezi Beach	110	10%	31
Kinondoni South	Magomeni	230	21%	64
	Kimara	70	6%	19
Total		1080	100%	300

3.5 Variables

3.5.1 Dependent variable (outcome variable)

Prevalence of analgesics use for musculoskeletal pain among TANESCO workers.

3.5.2 Independent variables (explanatory variables)

Frequency of analgesic use, Type of analgesics, Level of knowledge of analgesics, Age, Sex, Education level, Location of pain, Work-related factors.

3.6 Data collection method

The participants in this study were selected using simple random method in different TANESCO offices that will be selected in Dar es Salaam. The participants were those who were fully employed by TANESCO. All participants that had experienced musculoskeletal pain in the past twelve months were invited to participate in the study and consent was obtained from them before administering the questionnaire. A self-administered questionnaire was given to the participants with questions on their sociodemographic information (age, sex, job title, education level and health status). Then the following questions were asked according to the objectives. The first objective; The respondents who reported on the pain experienced and the pain management used when on experience the pain reported, data on analgesics was collected. The second objective; If the respondent used pharmacological management, then he/she had to report on what type of analgesics and where the medication was obtained (OTC/prescribed). On the third objective; the respondents had to report on the frequency of use of analgesics. Then for the fourth and fifth objective, participants had to respond on the questions regarding the working factors that influence analgesics use and knowledge on analgesics use respectively. The participants were advised to fill and complete their questionnaires independently. The completed questionnaire forms were collected and then placed in appropriate envelopes and later be handed to chief investigator who stored them in a secured place. The envelopes containing the completed filled forms were later on unsealed for data capturing.

3.7 Investigation tools

The tool used for investigation in this study was a self-administered questionnaire. Consisted of three sections; Socio-demographic section, information on the musculoskeletal pain that leads to the use analgesics and the information on types of analgesics used and frequency of use of analgesics.

3.8 Validity and Reliability Issues

Standardized Nordic Musculoskeletal Questionnaire and Quantitative Analgesic Questionnaire was adopted from literatures and then modified to fit the needs of where they were going to be applied. The NMQ was also in studies done in Tanzania and Nigeria, were found to have validity and reliability (24). Furthermore, concerning validity test the gathered data have Kaiser-Mayer Olkin (KMO) and Bartlett's Test score of 0.683 (68.3%) which means there is good measurement of data and sample adequacy. Additionally, reliability test was conducted by using Cronbach's Alpha test. According to our results Cronbach's Alpha test based on standardized Items is 0.784 which is 78.4% this means that there is excellent internal consistency of the variables in the scale of measurement.

3.9 Data Analysis

For the numerical variables, like age, descriptive statistics were used; if the distribution was normal, means and standard deviation were used for summary; if the distribution was skewed, either to the right or left, median and range were used for summary; and when it comes to categorical variables, like sex, job title, education level, location pain, working hours, and working environment, frequency and proportion were used to summarize.

Table 3: Indicating Data Analysis plan per each objective.

S/N	Objectives	Independent variables	Dependent variables	Data analysis
1.	To determine the prevalence of analgesic use for musculoskeletal		Analgesic use	-The proportion of analgesic use for musculoskeletal pain was calculated among all

	pain among TANESCO workers in Dar es Salaam, Tanzania.			workers that were interviewed.
		Socio-demographic factors	Analgesic use	The proportion and frequencies of all the respondents according to their socio-demographic characteristics such age, sex, education level and job title were calculated.
2.	To identify the types of analgesic use among TANESCO workers in Dar es Salaam, Tanzania		Analgesic use	-The proportion of different types of analgesics used reported by the participants was calculated.
3.	To determine the frequency of analgesics for musculoskeletal pain among TANESCO workers in Dar es Salaam, Tanzania		Analgesic use	-The proportion of the respondents that had used analgesics at least once in a month, weekly, daily. -Among those who use daily, proportion of who use analgesics once, twice, thrice and four time in a day.

4.	To identify the work-related factors associated with analgesic use for musculoskeletal pain among TANESCO workers in Dar es Salaam, Tanzania.	1. Working hours 2. Poor ergonomics 3. Overtime hours 4. Work environment conditions such inadequate PPE, prolonged sitting	Analgesic use	Univariate modified Poisson regression was be used to determine work-related factors associated with analgesic use for musculoskeletal pain at work. Variables with a p-value less than 0.25 were taken to multivariate analysis -Multivariate modified Poisson regression was used to assess the association between independent variables and Analgesic use, the dependent variable. A variable with a p-value less than 0.05 was regarded as statistically significant.
5.	To determine the level of knowledge of analgesics use for musculoskeletal pain among TANESCO workers in Dar		Analgesic use	-Total number of questions is ten. Each score is one, hence total score is equal to ten. -one point was scored if question was answered correctly, if scored points are 8 to 10 points, this was

	es Salaam, Tanzania.			regarded as “High knowledge”. -If scored points are 5 to 7 points, this was regarded was regarded as “Medium knowledge”. -If scored points are 0 to 4 points, this was regarded as “Low knowledge”.

3.10 Ethical Issues

3.10.1 Ethical clearance

The study requested an ethical clearance from the Institutional Board for Review and Muhimbili University of Health and Allied Sciences Ethical Committee. An approval for conducting the study was granted by TANESCO regional offices in Dar es Salaam.

3.10.2 Ethical considerations

Participants were given a detailed explanation of the study's purpose and how their confidentiality will be protected before their informed permission is sought. Written informed consent were obtained.

CHAPTER FOUR

4.0 RESULTS

4.1 Socio-demographics characteristic of TANESCO workers

Among 320 participants, 300 completed the questionnaires. The majority of participants were male (65.3%) and the rest proportion being female (34.7%). Around 92.7% of the participants were aged between 18 to 50 years, including 18-30 years (16%), 31-40 years (59%), 41-50 years (17.7%) and 51 years and older (7.3%), with a median age of 39. As to educational level of the participants, 6.3% held a certificate, less than two thirds (60.7%) of the participants held a diploma, more than a quarter (28.7%) held a bachelor's degree and 4.3% obtained higher education (masters). In terms of occupation of the participants, 65.3% worked in the engineering department which included Engineers (3.3%), technicians (6.7%) and artisans (55.3%), 15.3% worked in procurement and supply, 9.7% were accountants, 5% were drivers and administration were 4.7%. In location of musculoskeletal pain, 18.3% of the respondents had neck and shoulder pain, more than one third (45%) had upper and lower back pain, 6.7% had wrists, hands and elbow pain and 30% had hips, thigh, knee and ankles pain. In accessing medical care, almost half of the respondents (49.3%) never/rarely accessed medical care for musculoskeletal pain, 11% accessed occasionally and 39.7% did it regularly.

Table 4: Socio-demographic characteristics of the participants (N=300)

Characteristic	Category	Frequency	Percent (%)
Age	Median (I.Q.R)	39 (35 – 45)	
Age Distribution	18-30 Years	48	16
	31-40 Years	177	59
	41-50 Years	53	17.7
	51 Years and above	22	7.3
Sex	Male	196	65.3
	Female	104	34.7
Education Level	Certificate	19	6.3

Characteristic	Category	Frequency	Percent (%)
	Diploma	182	60.7
	Degree	86	28.7
	Masters	13	4.3
Job category	Engineering		
	Engineers	10	3.3
	Technicians	20	6.7
	Artisans	166	55.3
	Accountants	29	9.7
	Procurement and Supply	46	15.3
	Drivers	15	5
	Others (administrative)	14	4.7
Location of pain	Neck and shoulder	55	18.3
	Upper and lower back	135	45
	Wrists, hands and elbow	20	6.7
	Hips, thighs, knees and ankles	90	30

4.2 Prevalence of analgesics use for musculoskeletal pain

The prevalence of analgesics use for musculoskeletal pain among TANESCO workers was found to be 75%. This high prevalence underscores the commonality of musculoskeletal pain issues within this workforce and highlights the reliance on medication for pain management. Among 300 participants more than half (55.67%) purchased the analgesics for musculoskeletal pain from the community pharmacies and 44.3% reported to have used the ones prescribed by the physicians. Those who reported to have used analgesics for

musculoskeletal pain 65.8% were male and 34.2% were female. 16% were aged between 18 and 30 years, more than half of them (60.4%) were aged between 31 and 40 years, 20.4% were aged between 41 and 50 years and 3.1% were aged 51years and older. In terms of education level, 5.3% held a certificate, more than two thirds (72.4) held a diploma, 21.3% held a bachelor's degree and 0.9% held a masters. More than two thirds (74.7%) of those who reported to use analgesics for musculoskeletal pain worked in engineering department 3.5% being engineers, 7.5% being technicians and 63.7% being artisans, 11% worked in finance, 6.7% were drivers, 4% worked in procurement and supply and 3.6 % were in administrative departments. 18.1% used analgesics for neck and shoulder pain, almost half of the respondents (44.9%) used for upper and lower back pain, 7.2% used analgesics for wrists, hands and elbow pain and almost one third of the respondents (29.8%) used analgesics for thighs, hips, knees and ankles. Among those who reported to use analgesics for musculoskeletal pain, almost half (44.9%) never/rarely seek medical care from health professionals, 12.4% seek medical care occasionally and 42.6% of them regularly seek medical care from health professionals.

Table 5: Prevalence distribution of analgesics use across socio-demographic characteristics

Variable Name	**Prevalence distribution of analgesics (%)**	
	Yes N (%)	**No N (%)**
Age distribution		
18-30 Years	36 (16.0)	12 (16)
31-40 Years	136 (60.4)	41 (54.7)
41-50 Years	46 (20.4)	7 (9.3)
51 Years and above	7 (3.1)	15 (20)
Sex		
Male	148 (65.8)	48 (64.0)
Female	77 (34.2)	27 (36.0)

Variable Name	Prevalence distribution of analgesics (%)	
	Yes N (%)	**No N (%)**
Education Level		
Certificate	12 (5.3)	7 (9.3)
Diploma	163 (72.4)	19 (25.3)
Degree	48 (21.3)	38 (50.7)
Masters	2 (0.9)	11 (14.7)
Job category		
Engineering		
Engineers	8 (3.5)	2 (2.7)
Technicians	17 (7.5)	3 (4)
Artisans	143 (63.7)	23 (30.7)
Accountants	25 (11)	4 (5.4)
Drivers	15 (6.7)	0 (0)
Procurement and Supply	9 (4)	37 (49.3)
Others (administrative)	8 (3.6)	6 (8)
Location of pain		
Neck and shoulder	41 (18.1)	14 (18.7)
Upper and lower back	101 (44.9)	34 (45.3)
Wrists, hands and elbow	16 (7.2)	4 (5.3)
Hips, thighs, knees and ankles	67 (29.8)	23 (30.7)

4.3 The type of analgesics used for musculoskeletal pain

The types of analgesics used for musculoskeletal pain among the participants revealed a varied usage pattern. The most commonly used brands were those that contained paracetamol, aspirin and caffeine as active ingredients (57.7%), followed by 39% of

respondents used brands that contained Non-Steroidal Anti-inflammatory Drugs as active ingredients. NSAIDs included diclofenac tablets used by 30.7% of the participants, followed by ibuprofen tablets used by 15.7%, naproxen tablets (12.6%) then followed by topical treatments such as ketoprofen gel and diclofenac gel (41.0%). And 3.3% of the respondents used multiple formulations of medications (both tablets/capsules and topical treatments) at the same time.

Table 6: The type of analgesics used for musculoskeletal pain among participants

Active ingredients contained in different medications used for musculoskeletal pain	**Frequency N (%)**
i. Paracetamol tabs, aspirin and caffeine	**130 (57.7)**
ii. NSAIDS	**88 (39)**
Diclofenac tabs	*27 (30.7)*
Ibuprofen tabs	*14 (15.7)*
Naproxen tabs	*11 (12.6)*
Diclofenac gel and ketoprofen gel	*36 (41.0)*
iii. Multiple formulations (tablets/caps and topical) at the same time	**7 (3.3)**

4.4 The frequency of analgesics used for musculoskeletal pain

4.4.1 Number of days in a week which analgesics are taken

Figure 3 below shows the data on the frequency of days per week that participants typically take pain medication showed a varied pattern. More than half of respondents (64.6%) used medications for one to three days in a week ((20%) one day, (22.3%) two days and (22.3%) three days). 21.3% reported using pain medication daily in a week, 12% reported using it for five days and 2% reported using pain medication for four days a week.

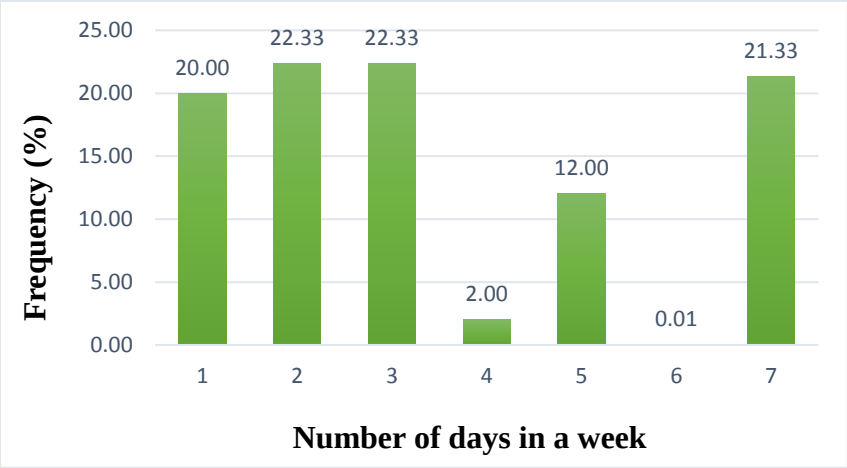


Figure 3: Number of days in a week which analgesics are taken

4.4.2 Number of times in a day which analgesics are taken

Figure 4 below shows the number of times per day that TANESCO workers take pain medication. 66% used medication thrice in a day, 18.3% used twice a day, and 14% used once a day. Only a small percentage (1.7%) reported taking pain medication four times a day.

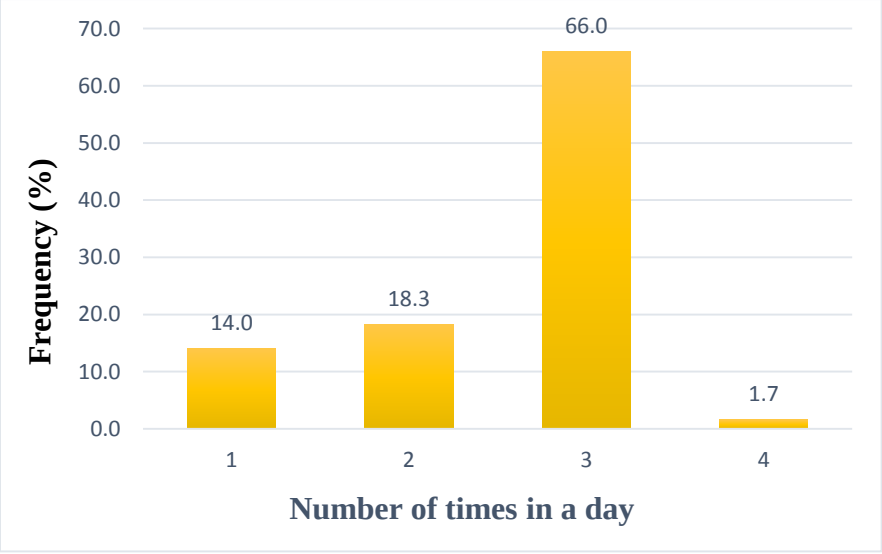


Figure 4: Number of times in a day in which analgesics are taken

4.5 The level of knowledge of analgesics use for musculoskeletal pain among TANESCO workers

The results from table 5, show the frequencies of responses of the questions asked on knowledge related to pain medication use among TANESCO workers. Majority of the participants (89.7%) knew what analgesics are and 10.3% responded that analgesics are drugs used for flu and malaria sometimes. More than half of the participants (65.7%) responded correctly that analgesics are used by anyone with pain and 34.3% of the participants responded incorrectly. Majority of the participants (80%) responded correctly that analgesics should be obtained from either community pharmacies as OTC or hospital as prescribed and 20% responded incorrectly. More than two thirds (73.3%) of the participants responded correctly that analgesics should be taken after a meal and 26.7% responded incorrectly that analgesics should be taken before a meal and some were not sure. Minority of the participants (14.3%) responded correctly that children, pregnant women and elderly people, all need special consideration concerning analgesics use. Majority of the participants (85.7%) responded incorrectly. On the usage and dosage of analgesics, 38.3% and 39.3% respectively responded correctly on the questions. Among the 300 participants, 79% of them responded correctly that health professionals from health facilities or community pharmacies are the appropriate source of information on analgesics use and 21% of the respondents had incorrect answers which were internet, advertisement and family or friends. On the question regarding potential side effects of analgesics use 81.3% responded that they are not aware of the potential side effects. And 89% of the participants do not know on the long-term use related complications of analgesics.

Generally, according to the results, most of TANESCO workers responded five to seven questions correctly, this indicated a medium level of knowledge regarding the analgesics use for musculoskeletal pain as derived from a Likert scale (25). Participants are familiar with the basic uses and but not fully aware of the potential side effects of analgesics.

Table 7: Questions and responses on knowledge of Analgesics use among TANESCO workers.

QUESTIONS	RESPONSE	FREQUENCY N (%)
What are analgesics drugs?	Drugs for pain	269(89.7%)
	Drugs for flu	27(9%)
	For Malaria sometimes	4(1.3%)
Who uses analgesics?	Anyone	59(19.7%)
	Anyone with pain	197(65.7%)
	In severe pain	44(14.6%)
Where can you obtain analgesics?	Anywhere	56(18.7%)
	Pharmacy/Hospital	240(80%)
	Shops	4(1.3%)
When should someone take analgesics?	After having a meal	220(73.3%)
	Anytime	66(225)
	Before having a meal	8(2.7%)
	Am not sure	6(2%)
Which group of people require special consideration while using analgesics	Children	41(13.7%)
	Pregnant women	212(70.7%)
	Elderly people	4(1.3%)
	All of the above	43(14.3%)
How many times should someone use analgesics?	Depends on Doctor/Pharmacist instruction	53(17.7%)
	Depends on type	115(38.3%)
	Three times a day	132(44%)
What is the dose of analgesics	Depends on Doctor/Pharmacist instruction	53(17.7%)
	Depends on medication	118(39.3%)
	Two tablets	129(43%)
What/who is an appropriate source of Analgesics use	Health professionals in health facilities/community pharmacies	237(79%)
	Families/friends	40(13.3%)
	Internet	15(5%)
	Advertisement	8(2.7%)
What are the potential side effects that can occur while on use of Analgesics	Dizziness/Drowsiness	19(6.4%)
	Stomach upset	37(12.3%)
	I don’t know	244(81.3%)

What is long-term use related complications of analgesics use	Aspirin-Stomach ulcers	5(1.7%)
	Ibuprofen/Diclofenac-kidney complications	2(0.7%)
	Paracetamol-liver toxicity	26(8.6%)
	I don't know	267(89%)

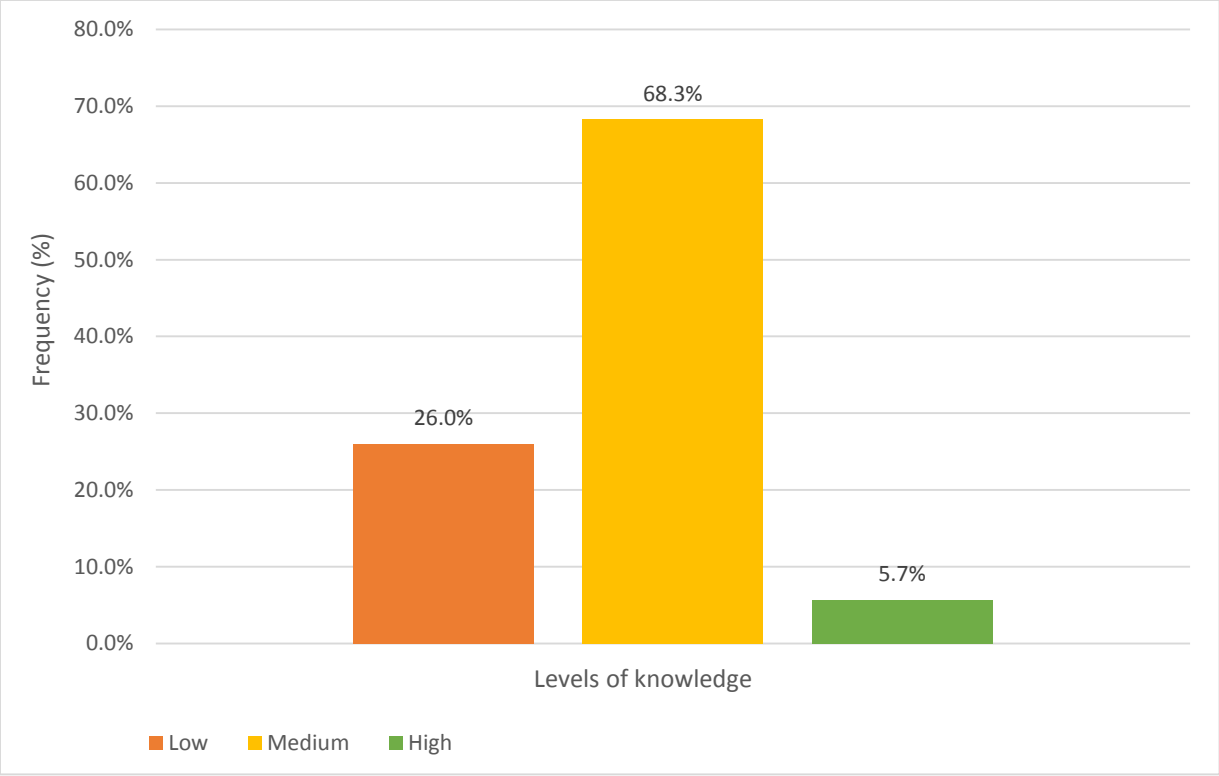


Figure 5: A graph showing the frequency of levels of knowledge on analgesic use among TANESCO workers

4.6 Work-related factors associated with analgesic use for musculoskeletal pain among TANESCO workers

The results from table 6, show the frequencies of responses of the questions asked on work-related factors associated with pain medication use among TANESCO workers. Among 300 participants, 24.6% responded to be working more than eight hours in a day, 66.7% work more than six hours and 8.7% work less than six hours in a day. 35.3% of participants reported to be working more than four times overtime in a month, 52.7% reported to work

overtime more than twice in a month and 12% work two to four times in a month overtime. More than half of the participants (65.3%) reported that the working conditions were fair. 27.3% of the participants reported that sitting for a long time at affected their work efficiency, 23% reported that long exposure to computers' screen affected their work efficiency, 13.3% and 11.7% reported on inadequate PPE and noise respectively as the factors that affect their work efficiency and 24.7% reported no conditions or factors affect their work efficiency.

Table 8: Questions and responses on work-related factors associated with Analgesics use among TANESCO workers

QUESTIONS	RESPONSE	FREQUENCY N (%)
How many hours do you work in a day	Less than 6 hours	26(8.7%)
	6-8 hours	200(66.7%)
	More than 8 hours	74(24.6%)
How many times in a month are you required to work overtime	Not more than twice	158(52.7%)
	Two to four times	36(12%)
	More than four times	106(35.3%)
How are your working conditions	Very bad	42(14%)
	Bad	16(5.3%)
	Fair	196(65.3%)
	Good	46(15.4%)
What conditions/factors affect your working environment	None	74(24.7%)
	Long exposure to computers screen	69(23%)
	Prolonged sitting	82(27.3%)
	Inadequate PPE	40(13.3%)
	Noise	35(11.7%)
How can you rate your workload in a day	Very bad	30(10%)
	Bad	12(4%)
	Fair	154(51.3%)
	Good	104(34.7%)

4.6.1 Univariate Modified Poisson regression analysis.

Univariate regression analysis was done for the purpose the relative risk of analgesics uses basing on each independent variable.

Table 9: Factors associated with the use of analgesics for musculoskeletal pain among the TANESCO workers.

UNIVARIATE MODIFIED POISSON REGRESSION ANALYSIS			
Characteristics	**UPR**	**95%CI**	**P-value**
Sex			
Male	Reference		
Female	0.975	0.848-1.122	0.729
Job Title			
Engineers	1.408	1.081-1.832	**0.011**
Drivers	1.061	0.653-1.725	0.810
Accountants	1.342	0.96-1.86	**0.077**
Others	1.516	1.08-2.11	**0.014**
Procurement and supply Officers	Reference		
Education level			
Certificate	Reference		
Degree	0.847	0.66-1.085	0.19
Diploma	0.912	0.731-1.139	0.42
Masters	0.933	0621-1.401	0.739
Location of pain			
Neck and shoulder	Reference		
Upper and Lower back	1.128	0.933-1.363	**0.212**
Wrists, Hands, Elbow	0.987	0.707-1.378	0.940
Hips, Thighs, Knees and Ankles	1.002	0.808-1.243	0.979

Age			
31-40	Reference		
18-30	0.944	0.775-1.150	0.571
41-50	0.996	0.840-1.182	0.969
51 and above	1.169	0.991-1.379	**0.064**
Special consideration in analgesic use			
All of the above	Reference		
Children	0.832	0.636-1.090	0.183
Elderly people	1.264	1.084-1.475	**0.003**
Pregnant women	0.954	0.803-1.133	0.596
Working overtime			
Not more than twice a month	1.059	0.913-1.228	0.447
Two to four times a month	1.123	0.919-1.372	0.255
More than four times	Reference		
Workload rating			
Bad	Reference		
Fair	1.004	0.715-1.410	0.980
Good	1.025	0.727-1.446	0.885
Very bad	0.888	0.587-1.344	0.577
Working hours			
6 to 8 hours	Reference		
Less than 6 hours	1.084	0.951-1.236	**0.224**
More than 8 hours	0.607	0.397-0.927	**0.021**
Analgesic definition			

Drugs for flu	Reference		
Drugs for pain	1.018	0.806-1.286	0.876
Drugs for malaria	1.35	1.079-1.688	**0.009**
Analgesic side effects			
Drowsiness/dizziness	Reference		
I don't know	0.944	0.740-1.205	0.648
Stomach upset	0.958	0.713-1.288	0.779
Long-term complications			
Aspirin-Stomach ulcers	Reference		
I don't know	1.279	0.622-2.628	0.502
Ibuprofen/diclofenac -kidney problems	1.666	0.813-3.413	0.163
Paracetamol-liver toxicity	0.961	0.436-2.11	0.922
Working Environment			
Inadequate PPE	Reference		
Long exposure to computers' screen	1.460	1.136-1.878	**0.003**
Noise	1.28	0.955-1.714	0.098
None	1.189	0.902-1.566	0.217
Prolonged sitting	1.0536	0.791-1.403	0.721

4.6.2 Multivariate Modified Poisson regression analysis

In multivariate modified regression analysis, it was found that several predictors were significantly associated with analgesics use for musculoskeletal pain which were age, job title, working hours and working environment. With regards to sex, educational level, location pain, working overtime, workload rating, and knowledge of analgesics use had no significant difference concerning analgesics use. With regards to occupation, the likelihood of using analgesics for musculoskeletal pain among engineers whereby most were artisans

who worked in fields/sites was 39.5% higher in comparison to other workers (APR = 1.395, 95%CI: 1.068-1.822). And among administrative workers, the likelihood of using analgesics for musculoskeletal pain was 46% higher compared to workers in other departments (APR = 1.464, 95%CI: 1.030-2.082). In terms of age, the likelihood of using analgesics for musculoskeletal pain among those who were aged 51 years and above was 18% higher compared to workers in other age groups (APR = 1.18. 95%CI: 1.005-1.392). It was also found that the likelihood of using analgesics for musculoskeletal pain among those who work for more than eight hours was 43% lower in comparison to those who work for six to eight hours (APR = 0.566, 95%CI: 0.367-0.873). And among those who had long exposure to computers' screen, the likelihood of using analgesics for musculoskeletal pain was 43.9% higher compared to those who were affected by other conditions or factors in their working environment such as prolonged sitting, noise and inadequate PPE (APR = 1.439, 95%CI: 1.119-1.850)

Table 10: Factors associated with analgesic use for musculoskeletal pain among TANESCO workers

MULTVARIATE MODIFIED POISSON REGRESSION ANALYSIS			
Characteristics	**APR**	**95%CI**	**P-value**
Sex			
Male	Reference		
Female	0.973	0.845-1.121	0.709
Job Title			
Procurement and supply	Reference		
Engineers	1.395	1.068-1.822	**0.015**
Drivers	1.045	0.639-1.709	0.859
Accountants	1.296	0.927-1.811	0.129
Administrative-Receptionist, Planning officer, Customer care	1.464	1.030-2.082	**0.033**

Age			
31-40	Reference		
18-30	0.950	0.776-1.164	0.626
41-50	0.996	0.840-1.180	0.964
51 and above	1.183	1.005-1.392	**0.043**
Education level			
Certificate	Reference		
Degree	0.881	0.681-1.141	0.338
Diploma	0.938	0.750-1.172	0.576
Masters	0.957	0.635-1.443	0.836
Location of pain			
Neck and shoulder	Reference		
Upper and lower back	1.115	0.902-1.378	0.312
Wrists, hands and elbow	0.934	0.666-1.310	0.695
Hips, thighs, knee and ankles	0.953	0.756-1.201	0.686
Working overtime			
More than four times	Reference		
Not more than twice a month	1.060	0.913-1.230	0.438
Two to four times a month	1.109	0.910-1.351	0.304
Workload rating			
Bad	Reference		
Fair	1.007	0.715-1.419	0.964
Good	1.037	0.734-1.464	0.836
Very bad	0.886	0.586-1.341	0.569

Working hours			
6 to 8 hours	Reference		
Less than 6 hours	1.059	0.926-1.211	0.399
More than 8 hours	0.566	0.367-0.873	**0.010**
Analgesic side effects			
Drowsiness/dizziness	Reference		
I don't know	0.960	0.754-1.223	0.745
Stomach upset	0.968	0.724-1.29	0.828
Long-term complications			
Aspirin-stomach ulcers	Reference		
I don't know	1.247	0.614-2.531	0.540
Ibuprofen/diclofenac-kidney problems	1.619	0.797-3.287	0.182
Paracetamol-liver toxicity	0.952	0.438-2.071	0.903
Working environment			
Inadequate PPE	Reference		
Long exposure to computers' screen	1.439	1.119-1.850	**0.005**
Noise	1.29	0.958-1.736	0.092
None	1.172	0.888-1.545	0.261
Prolonged sitting	1.039	0.779-1.385	0.792

CHAPTER FIVE

5.0 DISCUSSION

This study was done to determine the prevalence of analgesics use for musculoskeletal pain and its associated factors that influence the use among TANESCO workers. The study showed that three quarter of the participants (75%) used analgesics for musculoskeletal pain. Where by more than half (55.57%) of the participants self-medicated themselves. Factors that were significantly associated with use of analgesics for musculoskeletal pain included age, job title, working hours and working environment.

The result aligns with other studies done in different work settings. This prevalence is higher compared with the prevalence of analgesics use for musculoskeletal pain (52.76%) reported in the study conducted among medical service personnel in Germany(6). This can be due to ergonomics practices and Working conditions in Tanzania work settings may differ greatly from those in Germany. Poor ergonomics and a lack of preventive measures in physically demanding employment might increase discomfort, thus high analgesics use. Also, analgesics may be more accessible without prescription in Tanzania compared to Germany where prescription rules sometimes limit access. This difference may lead to increased self-medication rates among TANESCO workers.

The study result can also be compared with study done among construction workers in Ghana where prevalence of analgesics use for musculoskeletal pain was 66.4%(5). Another study carried out in Ghana among mechanics working at magazine industry reported a prevalence of analgesics use for musculoskeletal pain to be 97%(8). In low-middle-income countries like Tanzania and Ghana, the affordability and availability of analgesics as over-the-counter medicines may influence their use. Workers may use such medications to manage pain at a very low cost than obtaining proper medical care.

The study showed socio-demographic characteristics of the participants and their outcomes. More than two thirds of the participants were male (65.3%) and the median age was 39,

aligning with the most of studies done on use of analgesics for musculoskeletal pain likely due to the nature of the work settings. A study of mechanics in Ghana reported majority (89%) of the workers were male and at their youth age, reflecting gender composition and young workforce in physically demanding jobs(8). This increased male presence in both studies may be linked to the nature of the work environments, where males are frequently found in the said difficult/tough posts in their occupations such as engineering and technical positions. This gender gap can have an impact on pain treatment measures, as male workers may have different health-seeking behaviors than female workers.

In this study the most used analgesic for musculoskeletal pain among TANESCO workers was paracetamol tablets (57.7%), the followed by NSAIDS (39%), where by NSAIDS consist of diclofenac tablets (30.7%), ibuprofen tablets (15.7%), ketoprofen gel (12.6%) and diclofenac gel (41.0%). The 3.3% of the respondents used multiple formulations, both tablets/capsules and gel when managing pain. Paracetamol was the most commonly used pain killer due to its immediate effect to relieve pain, easy accessibility even in local shops, cost effective and it is incorporated in most of pain medications as a combination drug example aspirin and codeine. This pattern differs from the one reported from a German study where ibuprofen was the most commonly used (86.09%), diclofenac (24.35%), Paracetamol (17.83%), acetylsalicylic acid (11.30%), with no mention of topical analgesics(6). The increased prevalence of diclofenac uses and the inclusion of topical gels in our study may be due to differences in availability, healthcare processes and cultural preferences between Tanzania and Germany.

Our study findings align with results from a study done among patients with chronic musculoskeletal pain in a South African chiropractic teaching clinic, which also found a high prevalence of paracetamol (58%) and NSAIDs (70%)(15). The high use of topical analgesics in our study shows a preference for localized pain alleviation, most likely due to the physically demanding nature of the TANESCO workers. This emphasizes the significance of developing personalized pain treatment strategies that include both oral and topical choices, as well as addressing self-medication habits in occupational health programs to encourage safe and effective analgesic usage.

Our study findings reported about two thirds of respondents (64.6%) took medications for one to three days and almost one quarter (21.3%) took daily in a week. This is similar to the study done on the South African runners reported 64% of them used analgesics, primarily NSAIDs, both before and after exercise(7). These studies show a common trend of self-medication among physically active people, though our study shows that TANESCO workers use analgesics more frequently and in larger quantities. This difference may reflect differences in work demands and pain management approaches, highlighting the importance of educational initiatives to promote safe analgesic use and treat the underlying causes of pain, ensuring that people do not rely only on medication for relief.

Our findings showed that most of TANESCO workers had a medium level of knowledge regarding the analgesics use for musculoskeletal pain as the participants were familiar with the basic uses and some side effects of analgesics. Majority of the participants (89.7%) knew what analgesics are and more than half of the participants (65.7%) responded correctly that analgesics are used by anyone with pain. Though on the usage and dosage of analgesics, only 38.3% and 39.3% respectively responded correctly on the questions. This aligns with The Saudi Arabian survey that discovered that 93.5% of respondents were aware of over-the-counter (OTC) analgesics, with 88.6% having used them previously. However, the survey indicated that only 37.8% of participants read the directions on the drug label, and 31.8% did not know the maximum daily dose(22).

Furthermore, our study reported that more than half of TANESCO employees (21%) learned about medication use through the internet and friends/family, rather than from healthcare experts. Also, majority (81.3%) responded that they were not aware of the potential side effects and 89% of the participants did not know on the long-term use related complications of analgesics. The reliance on possibly untrustworthy sources contribute to the lack of knowledge and safe behaviors seen. This was highly observed in the study done in Ghana that reported that a large proportion of construction workers were persuaded by media marketing rather than professional advice and were unaware of the potential adverse effects of analgesics(5).

Studies emphasize on the importance of increasing education and knowledge about the proper use of analgesics, particularly over-the-counter drugs. And the need of occupational health treatments that emphasize on training on safe medication use, together with encouraging workers to rely on healthcare professionals while limiting the influence of untrustworthy sources.

In this study TANESCO employees who aged 51years and above, those who were in engineering and administrative departments and those who had long exposures to computers' screen had a higher likelihood to use analgesics for musculoskeletal pain. The artisans in engineering department worked in field/sites, their work included lifting heavy loads (utility poles), installing and maintaining electrical equipment compared to others in the same department who have supervising roles. This is consistent with the studies done in Nigeria and Congo, where by a high prevalence of musculoskeletal pain was reported influencing a high analgesic use. The ergonomic factors such as static loads, inadequate rest, poor ergonomics in bending, lifting, sitting and prolonged standing to the high prevalence of musculoskeletal pain(19,20).

5.1 Study limitation and Mitigation

5.1.1 Limitation:

Findings from this study may be limited to self-reported bias. Whereby, several potential sources of bias including recall bias and social desirability bias would have occurred.

5.1.2 Mitigation:

This was controlled through ensuring anonymity and confidentiality to reduce social desirability bias. And shorter recall periods were emphasized to reduce the risk of memory distortion.

6.0 CHAPTER SIX

7.0 CONCLUSION AND RECOMMENDATIONS

7.1 Conclusion

The study revealed a significant prevalence of analgesic use for musculoskeletal pain among TANESCO workers, with Paracetamol tablets being the most commonly used medication. Additionally, participants exhibited a medium level of knowledge regarding analgesic use. Factors such as job title, age, and prolonged exposure to computer screens were significantly associated with analgesic consumption. These findings underscore the urgent need for targeted initiatives aimed at promoting safer analgesic practices and enhancing health awareness among employees. By addressing these issues, TANESCO can foster a healthier workplace environment and improve overall employee well-being.

7.2 Recommendations

1. There is the need for collaboration between the Tanzania Medicines and Medical Devices Authority, the Pharmacy Council and the media to sensitize the public on the effects of the extensive self-medicating of analgesics.
2. Regular workshops and training sessions should be implemented to enhance employees' knowledge about analgesic use, including safe practices, potential side effects, and alternative pain management strategies.
3. Periodic health assessments should be conducted to workers and improvement of workplace ergonomics should be done to reduce the incidence of musculoskeletal issues.
4. Investment on employees’ health by considering both environment and occupational health measures as a result of ergonomics and emphasis on use of preventive and protective equipment to protect them from attributable triggers of musculoskeletal pain hence decrease to analgesic use for TANESCO workers.
5. Encouraging the workers to practice early health care seeking behaviour and hence early diagnosis of any issues thus early management before worsening of

musculoskeletal pain and hence decreased or no analgesic use for exposed TANESCO workers.

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9.0 APPENDICES

9.1 Appendix I: Consent form: English version

CONSENT FORM TO PARTICIPATE IN RESEARCH

INTRODUCTION

This Consent form consists of 2 parts:

- **PART 1: Information sheet**
- **PART 2: Consent**

PART 1: INFORMATION SHEET

Introduction

Hello, my names are Brigitte G Mchau, a student pursuing Masters of Public Health at Muhimbili University of Health and Allied Sciences. I am doing a research study on the analgesic use for musculoskeletal pain among workers at TANESCO headquarter in Dar es Salaam, Tanzania. I would like to provide you with an insight on this study and invite you to participate.

For the matter of clarification on any part of this consent form, please do not hesitate to ask me for clarification on the matter.

Purpose of the research

Musculoskeletal pain is a problem in our general population but most of the people who are affected are the working groups, working in different work settings. Various management strategies are used by workers who experience pain in different parts of their body but the most used method is thought to be the use of analgesics to alleviate the pain. In developing countries information about the use of analgesic for musculoskeletal pain, little is documented in studies. Therefore, determining the prevalence of analgesic use for musculoskeletal pain will inform different non-governmental and governmental institutions such as OSHA and WCF on the extent of work-related musculoskeletal disorders leading to the use of analgesics. This affects the workers' quality of life and reduce their productivity at work. This study is required for the completion of this course and is also a requirement for the Masters of Public Health degree.

What does your participant involve?

Your involvement will require consenting to answer questions that the research assistant will provide to you in order to offer information.

Confidentiality

The information that you will provide will be stored safely and will only be used for the purpose of this study only. There will be no any document that will reveal your identity.

Right to withdraw

Participation in this study is voluntary. You have the right to refuse to participate or withdraw at any time during the study. This will not bring any effect on you or any other person related to you.

Benefits

Participating in this study will not benefit you directly but your participation will assist in the provision of useful information which might be used in planning the appropriate interventions that will benefit you and other workers.

Risks

The researchers do no foresee any negative effects with your participation in this study.

Whom to contact in case of any question or query

Please get in touch with the lead researcher, Brigitte G Mchau, a MUHAS student, at P.O.BOX 65001 Dar es Salaam, or phone number +255763947564. If you have questions/ concerns about your rights as a participant, you may contact Dr. Nahya Masoud, the director of MUHAS Research and Publications Committee, P.O. BOX 65001, Dar es Salaam or phone number +25521503026.

Signature (Researcher)_____

PART 2: CONSENT

I have been invited to participate in a study to determine the prevalence of analgesic use for musculoskeletal pain among workers at TANESCO headquarter Dar es Salaam, Tanzania.

I have read the basic information on this study. I have understood the aim of the study, my participation, rights and benefits. I agree to participate without any undue influence.

Participant's signature_____

Date _____

9.2 Appendix II: Consent form: Swahili version

FOMU YA RIDHAA YA KUSHIRIKI KATIKA UTAFITI

UTANGULIZI

Fomu hii ya ridhaa ina sehemu mbili:

- **Sehemu ya kwanza: Fomu ya maelezo**
- **Sehemu ya pili: Fomu ya ridhaa**

SEHEMU YA KWANZA: FOMU YA MAELEZO

UTANGULIZI

Habari, Majina yangu ni Brigitte G Mchau mwanafunzi kutoka Chuo Kikuu cha Afya na Sayansi Shirikishi Muhimbili, ninasoma Shahada ya Uzamili kwenye Afya ya Jamii. Ninafanya utafiti kuhusu matumizi ya dawa za kupunguza maumivu kwa ajili ya maumivu ya misuli na mifupa kwa wafanyakazi wa ofisi ya makao makuu ya TANESCO mkoa wa Dar es Salaam, Tanzania. Ningependa kukupa taarifa kuhusu utafiti huu na kukukaribisha kushiriki.

Kwa ufafanuzi wa sehemu yoyote ya fomu hii ya ridhaa, tafadhali usisite kuniuliza wakati wowote.

Dhumuni la utafiti

Maumivu ya misuli na mifupa ni tatizo kubwa katika jamii kwa sasa. Ila kundi linaloathirika sana ni watu wanaofanya kazi zinazohusisha matumizi ya viungo na misuli kwa muda mrefu.

Kazi hizi husababisha maumivu makali katika viungo mara kwa mara na wengi wao utafuta mbinu za kuweza kuondoa au kupunguza maumivu hayo. Moja wapo ya mbinu hzo na ni mbinu inayotumika na wafanyakazi wengi mi kutumia dawa za kupunguza maumivu. Nchi nyingi zinazoendelea ikiwemo Tanzania taarifa kuhusu matumizi ya hizi dawa za kupunguza maumivu kwa wafanyakazi hazijulikani. Hvyoo kwa kubaini matumizi ya dawa hizi za kupunguza maumivu kwa wafanyakazi, kutawajuza taasisi zisizo za serikali na za serikali kama Wakala wa Usalama mahali pa Kazi (OSHA) na WCF kuhusu ukubwa wa tatizo la maumivu ya viungo na misuli kwa wafanyakazi inayopelekea matumizi ya dawa hizi za kupunguza maumivu. Utafiti huu pia ni sehemu ya hitaji la kukakamilisha Shahada ya Uzamili kwenye Afya ya Jamii.

USHIRIKI WAKO UNAHUSISHA NINI?

Ushiriki wako utahusisha kukubali kutoa taarifa kwa kujibu maswali ambayo utapewa na msaidizi wa utafiti

UTUNZAJI WA SIRI

Taarifa utakazotoa zitahifadhiwa kwa usalama na zitatumika kwa dhumuni la utafiti huu pekee. Hakuna nyaraka itakayofichua utambulisho wako.

HAKI YA KUJIONDOA

Kushiriki katika utafiti huu ni kwa hiari. Una haki ya kukataa kushiriki au kujiondoa wakati wowote wa utafiti. Hii haitaleta athari yoyote kwako au mtu mwingine yeyote anayehusiana nawe.

FAIDA

Kushiriki katika utafiti huu hakutakunufaisha wewe binafsi, lakini ushiriki wako utasaidia katika utoaji wa taarifa muhimu ambayo inaweza kutumika katika kupanga hatua zinazofaa ambazo zitanufaisha wewe na wafanyakazi wengine.

HATARI YA KUSHIRIKI

Watafiti hawaoni madhara yoyote hasi yanayohusiana na ushiriki wako katika utafiti huu.

MAWASILIANO KWA MAELEZO ZAIDI

Kama una maswali yoyote tafadhali wasiliana na mtafiti kiongozi, Brigitte G Mchau mwanafunzi kutoka MUHAS, S.L.P 65001, Dar es Salaam, simu namba; +255763947564. Ukiwa na maswali kuhusu haki zako kama mshiriki, unaweza kuwasiliana na Dkt**.** Nahya Masoud, mkurugenzi wa kamati ya Utafiti na Machapisho, MUHAS, S.L.P 65001, Dar es Salaam, simu namba; +25521503026.

Sahihi (Mtafiti) _____

SEHEMU YA PILI: RIDHAA

Nimealikwa kushiriki kwenye utafiti wa kubaini matumizi ya dawa za maumivu kwa ajili ya maumivu ya viungo na misuli kwa wafanyakazi wa ofisi za makao makuu TANESCO mkoani Dar es Salaam, Tanzania.

Nimesoma maelezo ya msingi kuhusu utafiti huu. Nimeelewa lengo la utafiti na manufaa yake. Kwa hiari na bila ushawishi wowote ninakubali kushiriki katika utafiti huu.

Sahihi ya mshiriki _____

Tarehe _____

9.3 Appendix III: English version Questionnaire

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

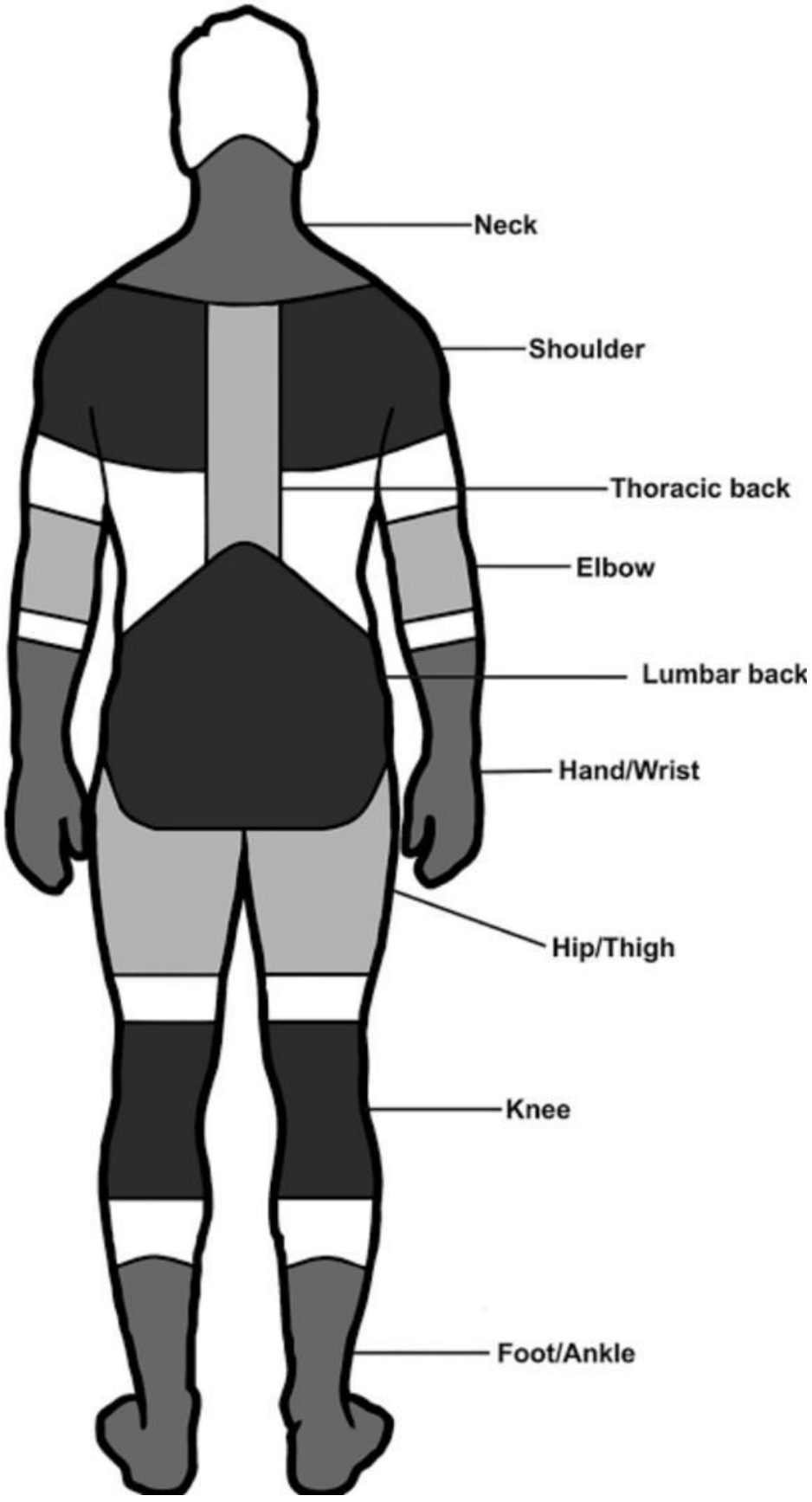
SECTION ONE: SOCIO-DEMOGRAPHIC INFORMATION

1. Age (in years) _____
2. Sex: _____ (M/F)
3. Highest level of Education:
   a) Certificate
   b) Diploma
   c) Degree
   d) Masters
4. Job title

   _____

SECTION TWO: MUSCLESKELETAL PAIN SECTION (NORDIC MUSCULOSKELETAL PAIN QUESTIONS)

TROUBLE WITH LOCOMOTIVE ORGANS										
5) Have you at any time during the last 12 months had trouble in:			**To be answered only by those who had trouble**							
			6)Have you at any time during the last 12 months been prevented from doing your normal work because of the trouble		**7)Have you had trouble at any time during the last 7 days?**		**8)What is the total length of time that you have had trouble during the last 12 months?**			
							1-7 days	**8-30 days**	**More than 30**	**Everyday**
Neck	YES	NO	YES	NO	YES	NO				
Shoulder	YES	NO	YES	NO	YES	NO				
Elbows	YES	NO	YES	NO	YES	NO				
Wrists/hands	YES	NO	YES	NO	YES	NO				
Upper back	YES	NO	YES	NO	YES	NO				
Low back	YES	NO	YES	NO	YES	NO				
Hips/thighs	YES	NO	YES	NO	YES	NO				
knees	YES	NO	YES	NO	YES	NO				
Ankles/Feet	YES	NO	YES	NO	YES	NO				


Neck
Shoulder
Thoracic back
Elbow
Lumbar back
Hand/Wrist
Hip/Thigh
Knee
Foot/Ankle

SECTION THREE: MANAGEMENT OF PAIN

9. How do you usually manage musculoskeletal pain? (select one)
    a) Rest
    b) Medication management
    c) Cold compress
    d) Physical therapy
    e) Others (please specify): _____
10. If the answer is Medication management, what type of medication (analgesics) was is
    a) Prescribed by the physician
    b) Over the counter

SECTION FOUR: TYPES OF ANALGESICS

11. What is/was the pain medication(s) that you used/your using

_____

S/N	BRANDS OF PAIN MEDICATIONS
1	DAWA TATU
2	DICLOPAR TABLETS
3	DICLOPAR-MR TABLETS
4	PANADOL ADVANCE TABLETS
5	PANADOL EXTRA TABLETS
6	PARACETAMOL TABLETS
7	VIVIAN PLUS (DICLOFENAC TABLETS)
8	IBUFEN (IBUPROFEN TABLETS)
9	M-CAM 7.5 (MELOXICAM TABLETS)
10	M-CAM 15 (MELOXICAM TABLETS)
11	PIROLAN (PIROXICAM CAPSULES)
12	MUSCLE PLUS TABLETS

13	DICLORAN 50 (DICLOFENAC SODIUM DELAYED-RELEASE TABLETS
14	DUFENAC (DICLOFENAC SODIUM DUAL RELEASE ENTERIC-COATED CAPSULES
15	TIZIGESIC 4 (TIZANIDINE TABLETS 4MG)
16	ROYSAN (TIZANIDINE)
17	FASTUM (KETOPROFEN 50MG)
18	BRUSTAN (IBUPROFEN AND PARACETAMOL TABLETS)
19	SORAL (TENOXICAM 20MG TABLETS)
20	ZERODOL (ACECLOFENAC TABLETS)
21	TAMEPYN (PARACETAMOL+CODEINE+DOXYLAMINE SUCCINATE+CAFFEINE)
22	BACLOFEN TABLETS
23	OLFEN-100 SR (DICLOFENAC SODIUM PROLONGED-RELEASE CAPSULES
24	DICLOKANT (DICLOFENAC GEL)
25	DICLOKANT HC GEL (DICLOFENAC, DIETHYLAMINE, LINSEED OIL, METHYL SALICYLATE WITH LEVOMENTHOL GEL
26	INFLAZONE OINTMENT
27	VIVIAN GEL
28	NAUMA BAUME
29	RHEUMAC GEL
30	VOLINI GEL
31	MENTHO PLUS BALM
32	ACTION TABLETS
33	MIFUPEN TABLETS
34	HEDON TABLETS
35	HEDEX TABLETS

12. Do you use more than one pain medication simultaneously?
    1) Yes
    2) No

SECTION FIVE: FREQUENCY OF ANALGESICS USE

13. How many tablets/capsules do you take in a day?
    a) 1-2
    b) 3-4
    c) 5-6
14. How many days a week do you usually take this pain medication(s)?
    a) 0
    b) 1
    c) 2
    d) 3
    e) 4
    f) 5
    g) 6
    h) 7
15. How many times in a day do you take the pain medication(s)?
    a) 1
    b) 2
    c) 3
    d) 4

SECTION SIX: KNOWLEDGE ON ANALGESIC USE

16. What are analgesics drugs?
    a) Treat malaria
    b) Drugs for flu
    c) Drugs for pain

d) Other

17. Who uses analgesics?
    a) Anyone
    b) Anyone with pain
    c) In severe pain only
    d) Others
18. Where can you obtain analgesics?
    a) Anywhere
    b) Pharmacy/Hospital
    c) Shops
    d) Others
19. When should someone use take analgesics?
    a) Anytime
    b) Before having a meal
    c) After having a meal
    d) Am not sure
20. Which group of people require special consideration while using analgesics?
    a) Children
    b) Pregnant women
    c) Elderly
    d) All of the above
21. How many times should someone use analgesics?
    a) Depends on Doctor/Pharmacist instruction
    b) Depends on type
    c) Three times a day
    d) Am not sure
22. What is the dose of analgesics?
    a) Depends on Doctor/Pharmacist instruction
    b) Depends on medication
    c) Two tablets

d) Am not sure

23. What/who is an appropriate source of Analgesics use?
    a) Family/friends
    b) Internet
    c) Health professionals in health facilities/community pharmacies
    d) Advertisement
24. What are the potential side effects that can occur while on use of Analgesics?
    a) Dizziness/Drowsiness
    b) Stomach upset
    c) Nausea/Vomiting
    d) I don't know
25. What is long-term use related complications of analgesics use?
    a) Aspirin-stomach ulcers
    b) Ibuprofen/Diclofenac-kidney complications
    c) Paracetamol-liver toxicity
    d) I don't know

SECTION SEVEN: WORK-RELATED FACTORS

26. How many hours do you work in a day?
    a) Less than 6 hours
    b) 6-8 hours
    c) More than 8 hours
27. How many times in a month are you required to work overtime?
    a) Not more than twice
    b) Two to four times
    c) More than four times
    d) None
28. How are your working conditions?
    a) Very bad

b) Bad
c) Fair
d) Good

29. What conditions/factors affect your working environment?

a) None
b) Long exposure to computers screen
c) Prolonged sitting
d) Noise
e) Inadequate PPE

30. How can you rate your workload in a day?

a) Very bad
b) Bad
c) Fair
d) Good

9.4 Appendix IV: Dodoso la Kiswahili

CHUO KIKUU CHA AFYA NA SAYANSI SHIRIKISHI MUHIMBILI

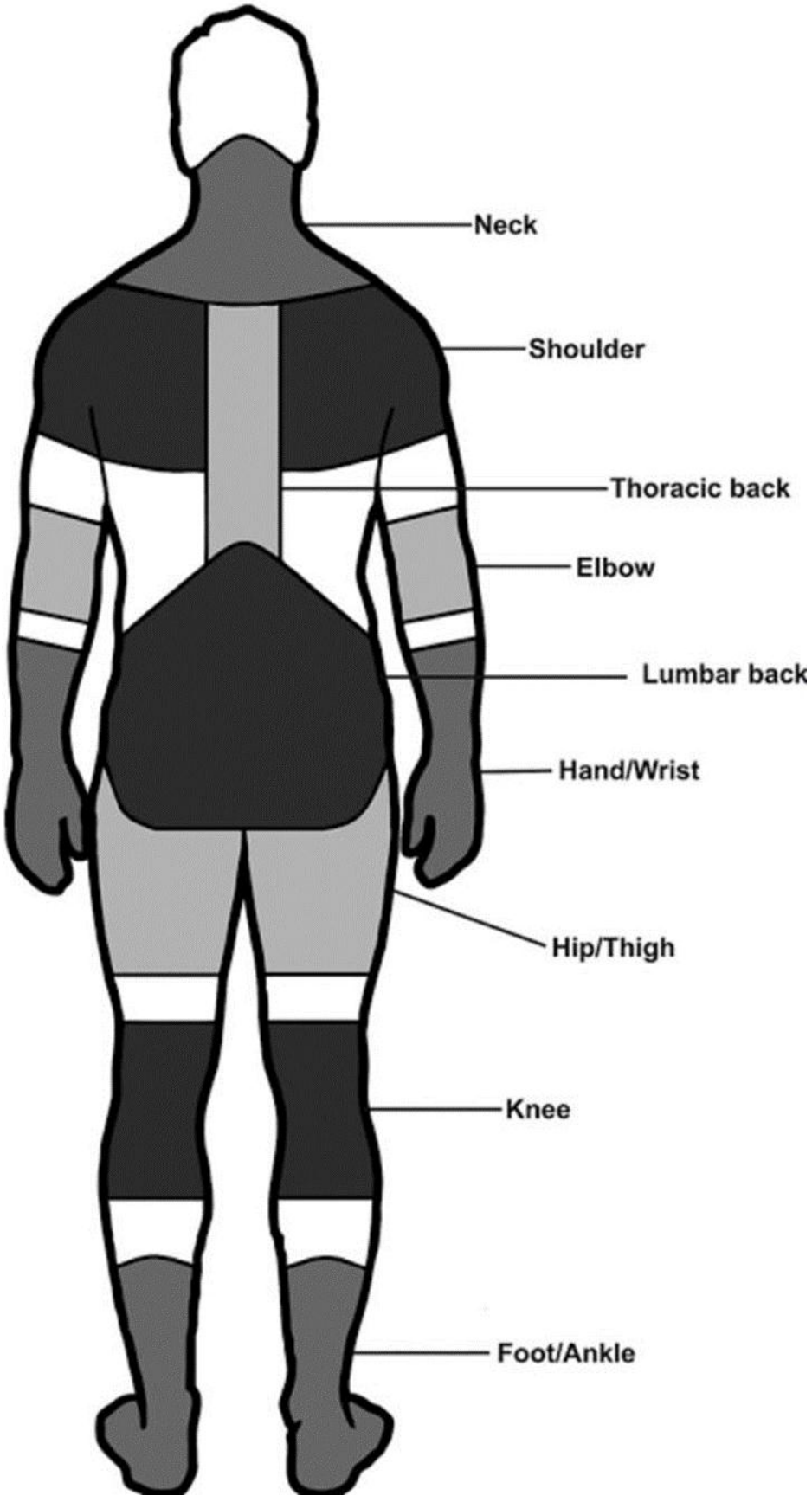
SEHEMU YA KWANZA: TAFADHALI ZUNGUSHIA JIBU SAHIHI

TAARIFA BINAFSI

1. Umri (katika miaka) _____
2. Jinsia: _____ (M/KE)
3. Ngazi ya Elimu:
   a) Sijasoma
   b) Shule ya Msingi
   c) Shule ya Sekondari
   d) Diploma
   e) Chuo Kikuu
4. Nafasi yako kazini_____

SEHEMU YA PILI: TAARIFA ZA MAUMIVU YA VIUNGO NA MISULI

MATATIZO YA VIUNGO										
5)Je, wewe wakati wowote katika miezi 12 iliyopita alikuwa na matatizo katika:			**Kujibu tu kwa wale ambao walikuwa na matatizo**							
			6) Je, wakati wowote katika miezi 12 iliyopita umezuiwa kufanya kazi yako ya kawaida kwa sababu ya shida		**7)Umewahi kuwa na matatizo wakati wowote katika siku 7 zilizopita?**		**8)Ni muda gani wa muda ambao umekuwa na shida katika miezi 12 iliyopita?**			
							Siku ya 1-7	**Siku 8-30**	**Zaidi ya 30**	**Kila siku**
Shingo	**NDIYO**	**HAPANA**	**NDIYO**	**HAPANA**	**NDIYO**	**HAPANA**				
Mabega	**NDIYO**	**HAPANA**	**NDIYO**	**HAPANA**	**NDIYO**	**HAPANA**				
Kiwiko	**NDIYO**	**HAPANA**	**NDIYO**	**HAPANA**	**NDIYO**	**HAPANA**				
Mikono	**NDIYO**	**HAPANA**	**NDIYO**	**HAPANA**	**NDIYO**	**HAPANA**				
Sehemu ya juu ya mgongo	**NDIYO**	**HAPANA**	**NDIYO**	**HAPANA**	**NDIYO**	**HAPANA**				
Sehemu ya chini ya mgongo	**NDIYO**	**HAPANA**	**NDIYO**	**HAPANA**	**NDIYO**	**HAPANA**				
Mapaja	**NDIYO**	**HAPANA**	**NDIYO**	**HAPANA**	**NDIYO**	**HAPANA**				
Magoti	**NDIYO**	**HAPANA**	**NDIYO**	**HAPANA**	**NDIYO**	**HAPANA**				
Nyao/miguu	**NDIYO**	**HAPANA**	**NDIYO**	**HAPANA**	**NDIYO**	**HAPANA**				


Neck
Shoulder
Thoracic back
Elbow
Lumbar back
Hand/Wrist
Hip/Thigh
Knee
Foot/Ankle

SEHEMU YA TATU: NJIA ZA KUPUNGUZA MAUMIVU YA VIUNGO NA MISULI

9. Kawaida unadhibitije maumivu ya misuli na viungo? (Chagua yote ambayo unatumia)

a) Kupumzika
b) dawa za kupunguza maumivu
c) matumizi ya barafu
d) Tiba yaviungo
e) Njia nyingine (tafadhali taja): _____

10. Kama jibu ni dawa za maumivu, ni njia gani ulitumia kupata hiyo dawa ya maumivu

a) Niliandikiwa na daktari
b) Nilinunua famasi (duka la dawa muhimu

SEHEMU YA NNE: AINA ZA DAWA ZA KUPUNGUZA MAUMIVU

11. Ni nini / ilikuwa dawa ya maumivu ambayo ulitumia

_____

S/N	AINA ZA DAWA ZA KUPUNGUZA MAUMIVU
1	DAWA TATU
2	DICLOPAR TABLETS
3	DICLOPAR-MR TABLETS
4	PANADOL ADVANCE TABLETS
5	PANADOL EXTRA TABLETS
6	PARACETAMOL TABLETS
7	VIVIAN PLUS (DICLOFENAC TABLETS)
8	IBUFEN (IBUPROFEN TABLETS)
9	M-CAM 7.5 (MELOXICAM TABLETS)
10	M-CAM 15 (MELOXICAM TABLETS)
11	PIROLAN (PIROXICAM CAPSULES)

12	MUSCLE PLUS TABLETS
13	DICLORAN 50 (DICLOFENAC SODIUM DELAYED-RELEASE TABLETS
14	DUFENAC (DICLOFENAC SODIUM DUAL RELEASE ENTERIC-COATED CAPSULES
15	TIZIGESIC 4 (TIZANIDINE TABLETS 4MG)
16	ROYSAN (TIZANIDINE)
17	FASTUM (KETOPROFEN 50MG)
18	BRUSTAN (IBUPROFEN AND PARACETAMOL TABLETS)
19	SORAL (TENOXICAM 20MG TABLETS)
20	ZERODOL (ACECLOFENAC TABLETS)
21	TAMEPYN (PARACETAMOL+CODEINE+DOXYLAMINE SUCCINATE+CAFFEINE)
22	BACLOFEN TABLETS
23	OLFEN-100 SR (DICLOFENAC SODIUM PROLONGED-RELEASE CAPSULES
24	DICLOKANT (DICLOFENAC GEL)
25	DICLOKANT HC GEL (DICLOFENAC, DIETHYLAMINE, LINSEED OIL, METHYL SALICYLATE WITH LEVOMENTHOL GEL
26	INFLAZONE OINTMENT
27	VIVIAN GEL
28	NAUMA BAUME
29	RHEUMAC GEL
30	VOLINI GEL
31	MENTHO PLUS BALM
32	ACTION TABLETS
33	MIFUPEN TABLETS
34	HEDON TABLETS

35	HEDEX TABLETS

12. Je, unatumia zaidi ya dawa moja ya maumivu kwa wakati mmoja?
    a) Ndiyo
    b) Hapana

SEHEMU YA TANO: MATUMIZI YA DAWA ZA MAUMIVU

13. Je unatumia vidonge vingapi kwa siku?
    a) 1-2
    b) 3-4
    c) 5-6

14. Ni siku ngapi kwa wiki kwa kawaida unatumia dawa hii ya maumivu?

    a) 0
    b) 1
    c) 2
    d) 3
    e) 4
    f) 5
    g) 6
    h) 7

15. Ni mara ngapi kwa siku unatumia dawa za maumivu?

    a) 1
    b) 2
    c) 3
    d) 4

SEHEMU YA SITA: MAARIFA KUHUSU MATUMIZI SAHIHI YA DAWA ZA MAUMIVU

16. Dawa za maumivu zinatumika kwa ajili ya nini?
    a) Kutibu malaria
    b) Dawa za mafua
    c) Dawa kwa ajili ya maumivu
    d) Matumizi mengine

17. Nani hutumia dawa za maumivu?
    a) Mtu yeyote

b) Mtu yeyote mwenye maumivu
c) Maumivu makali tu
d) Wengine

18. Wapi unaweza kupata dawa za maumivu?
    a) Mahali popote
    b) Dawa ya dawa / Hospitali
    c) Maduka ya kawaida
    d) Wengine

19. Ni wakati gani mtu anapaswa kutumia analgesics?
    a) Wakati wowote
    b) Kabla ya kula chakula
    c) Baada ya kula chakula
    d) Sina uhakika

20. Ni kundi gani la watu wanaohitaji kuzingatia umaalumu wakati wa kutumia analgesics?
    a) Watoto
    b) Wanawake wajawazito
    c) Wazee
    d) Wote hapo juu

21. Ni mara ngapi mtu anapaswa kutumia dawa za maumivu?
    a) Inategemea na maelekezo ya daktari / mfamasia
    b) Inategemea aina ya dawa
    c) Mara tatu kwa siku
    d) Sina uhakika

22. Ni dozi gani ya dawa za maumivu unapaswa kutumia?
    a) Inategemea maelekezo ya daktari / mfamasia
    b) Inategemea dawa
    c) Vidonge viwili
    d) Sina uhakika

23. Ni nani / nini chanzo sahihi cha matumizi za maumivu?
    a) Familia/marafiki
    b) Internet
    c) Wataalamu wa afya katika vituo vya afya/maduka ya dawa za jamii
    d) Matangazo

24. Ni madhara gani yanayoweza kutokea wakati wa matumizi ya dawa za maumivu?
    a) Kizunguzungu/Kusinzia
    b) Kukasirika kwa tumbo
    c) Kichefuchefu/kutapika
    d) Sijui

25. Ni matumizi gani ya muda mrefu yanayohusiana na matatizo ya matumizi ya dawa za maumivu?
    a) Aspirin-vidonda vya tumbo
    b) Ibuprofen/Diclofenac-matatizo ya figo
    c) Paracetamol-matatizo ya ini
    d) Sifahamu

SEHEMU YA SABA: UHUSIANO WA KAZI

26. Unafanya kazi masaa mangapi kwa siku?
    a) Chini ya masaa 6
    b) Masaa ya 6-8
    c) Zaidi ya masaa 8

27. Ni mara ngapi kwa mwezi unahitajika kufanya kazi kwa muda wa ziada?
    a) Sio zaidi ya mara mbili
    b) Mara mbili hadi nne
    c) Zaidi ya mara nne
    d) Hakuna

28. Mazingira yako ya kazi yakoje?
    a) Mabaya sana
    b) Mbaya
    c) Kawaida
    d) Nzuri

29. Ni hali gani / sababu zinazoathiri mazingira yako ya kazi?
    a) Hakuna
    b) Kutazama kompyuta kwa muda mrefu
    c) Kukaa kwa muda mrefu
    d) Kelele
    e) Upungufu wa vifaa binafsi vya kujilinda

30. Kazi zako za siku unazielezeaje?
    a) Mbaya sana

b) Mbaya
c) Kawaida
d) Nzuri

9.5 Appendix V: Ethical letters

UNITED REPUBLIC OF TANZANIA
MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY
MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES
OFFICE OF THE DIRECTOR – RESEARCH, PUBLICATIONS AND INNOVATIONS

Ref. No.DA.282/298/01.C/2280 Date: 31/05/2024

MUHAS-REC-05-2024-2280
BRIGITTE G MCHAU
SHOOL OF PUBLIC HEALTH AND SOCIAL SCIENCES
MUHAS

RE: APPROVAL FOR ETHICAL CLEARANCE FOR A STUDY TITLED: FACTORS ASSOCIATED WITH ANALGESICS USE FOR MUSCULOSKELETAL PAIN AMONG TANESCO WORKERS IN DAR ES SALAAM, TANZANIA

Reference is made to the above heading,

I am pleased to inform you that the Chairperson has on behalf of the University Senate, approved ethical clearance of the above-mentioned study, on recommendations of the Senate Research and Publications Committee meeting accordance with MUHAS research policy and Tanzania regulations governing human and animal subjects research.

APPROVAL DATE: 31/05/2024
EXPIRATION DATE OF APPROVAL: 31/05/2025

STUDY DESCRIPTION:
Purpose:
The purpose of this observational cross-sectional study is to determine the factors associated with analgesic use for musculoskeletal pain among TANESCO workers in Dar es Salaam, Tanzania.

The approved protocol and procedures for this study is attached and stamped with this letter, and can be found in the link provided: https://irb.muhas.ac.tz/storage/Certificates/Certificate%20-%2015644.pdf and in the MUHAS archives.

The PI is required to:

1. Submit bi-annual progress reports and final report upon completion of the study.
2. Report to the IRB any unanticipated problem involving risks to subjects or others including adverse events where applicable.
3. Apply for renewal of approval of ethical clearance one (1) month prior its expiration if the study is not completed at the end of this ethical approval. You may not continue with any research activity beyond the expiration date without the approval of the IRB. Failure to receive approval for continuation before the expiration date will result in automatic termination of the approval for this study on the expiration date.
4. Obtain IRB amendment (s) approval for any changes to any aspect of this study before they can be implemented.
5. Data security is ultimately the responsibility of the investigator.
6. Apply for and obtain Data Transfer Agreement (DTA) from NIMR if data will be transferred to a foreign country.
7. Apply for and obtain Material Transfer Agreement (MTA) from NIMR, if research materials (samples) will be shipped to a foreign country.
8. Apply for and obtain permission to publish the results from National Institute for Medical Research. The application should be before submitting to a publisher and not concurrently through the email publications@nimr.or.tz.
9. Any researcher, who contravenes or fail to comply with these conditions, shall be guilty of an offence and shall be liable on conviction to a fine as per NIMR Act No. 23 of 1979, PART III section 10 (2)
10. The PI is required to ensure that the findings of the study are disseminated to relevant stake holders.
11. PI is required to be versed with necessary laws and regulatory policies that govern research in Tanzania. Some guidance is available on our website https://drp.muhas.ac.tz/.



Dr. Nahya Salim Masoud,
Chairperson, MUHAS Research and Ethics Committee

9.6 Appendix VI: Introduction letter

UNITED REPUBLIC OF TANZANIA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

OFFICE OF THE DIRECTOR – POSTGRADUATE STUDIES

In reply quote;
Ref. No. HD/MUH/T.648/2023

6th June, 2024

THE REGIONAL MANAGER,
TANESCO ILALA REGIONAL OFFICE,
DAR ES SALAAM.

RE: INTRODUCTION LETTER OF BRIGITTE G. MCHAU

We would like to inform you that the carrier of this letter is Brigitte G. Mchau with registration number HD/MUH/T.648/2023 a student in the School of Public Health and Social Sciences at Muhimbili University of Health and Allied Science (MUHAS), pursuing Master of Public Health- Regular Track.

As part of her studies, she will be doing an elective research titled **"FACTORS ASSOCIATED WITH ANALGESICS USE FOR MUSCULOSCELETAL PAIN AMONG TANESCO WORKERS IN DAR ES SALAAM".**

The Ethical Clearance for doing the said research has been given by the University.

Kindly request your assistance and cooperation to our student.

Yours Sincerely,

Ms. Victoria Mwanilwa
For: DIRECTOR, POSTGRADUATE STUDIES
cc: Brigitte G. Mchau

9 United Nations Road; Upanga West; P.O. Box 65001, Dar Es Salaam: Tel. G/Line: +255-22-2150302/6; Ext. 1015; Direct Line:+255-22-2151378;Telefax:+255-22-2150465;E-mail:dpgs@muhas.ac.tz;Web:https://www.muhas.ac.tz

9.7 Appendix VII: Permission letter

"Tunayaangaza Maisha Yako" TANESCO "We Light Up Your Life"

SHIRIKA LA UMEME TANZANIA
TANZANIA ELECTRIC SUPPLY COMPANY LIMITED

Head Office, P.O.Box 453 Dodoma, Tanzania. Tel: + 255 026 2323456/7, Web: www.tanesco.co.tz

Our Ref: Date:

ILL /RHRO/RS/03B/47

11/ 07/2024

PRINCIPAL,
MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCE
DAR ES SALAAM.

Dear Sir/Madam,

RE: RESEARCH ATTACHMENT.

The above heading is captioned.

2. We acknowledge the receipt of your letter dated for the above mentioned student who is pursuing **MASTERS OF PUBLIC HEALTH** (Attachment) dated **11 July 2024 to 12 July 2024** in respect of **BRIGITTE G MCHAU** for his research attachment.

Your request has been **ACCEPTED** as per your date of allocations of **One Day (01) accordingly**, further be informed that, the company shall not be in position for any cost associated to practical attachments for your students during the course

4. TANESCO shall always be cooperative in all development matters and you are welcomed for any further concern.

Yours sincerely,

For: TANZANIA ELECTRIC SUPPLY COMPANY LIMITED

Eng. Regina Mvungi
REGIONAL MANAGER-ILALA.