INVESTIGATING THE PUBLIC HEALTH CHALLENGES FACING MALARIA ELIMINATION IN CHIREDZI DISTRICT: A CASE STUDY OF CHIREDZI DISTRICT HEALTH OFFICE IN MASVINGO PROVINCE, ZIMBABWE

BY

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A RESEARCH REPORT SUBMITTED IN PARTIAL FULFILMENT FOR THE REQUIREMENT TOWARDS THE AWARD OF BACHELOR OF SCIENCE DEGREE IN PUBLIC HEALTH BY CHRESO UNIVERSITY, ZAMBIA.

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DECLARATION

I hereby declare that the work presented in this study for a Bachelor of Science in Public Health has not been presented either wholly or in part for any other Degree and is not being currently submitted for any other Degrees.

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ABSTRACT

Introduction: Given that it is a leading cause of death and morbidity in highly endemic areas, malaria is a serious problem in Zimbabwe. Up to 5,193,723 suspected and confirmed cases of malaria and up to 1209 confirmed deaths were recorded by the Ministry of health as of 2018 (Maureen 2020). In Zimbabwe, Masvingo Province continues to have the highest frequency of malaria cases (30%), according to the 2018 malaria indicator survey. This goes against the preventative measures that have been implemented, including the use of insecticide-treated mosquito nets (ITN), indo-residual spraying (IRS), managing childhood fever, and preventing malaria during pregnancy.

Methodology: The study was therefore conducted among the residents of Chiredzi district assessing the challenge associated with malaria elimination challenges. With the specific objectives of assessing people's knowledge and awareness attitudes and practices on malaria in Chiredzi district. Also to investigate the role of community health workers in in malaria preventive and control measures in Chiredzi district and to determine community leaders' participation in malaria preventive and control measures in Chiredzi district. The researcher used the sample size of 156. The study adopted a quantitative descriptive cross sectional study design using which used data from questionnaires, document check and interviews (Creswell, 2013).

Findings: The historical data was obtained from the District Heath System (DHS) and the DHIS2 that captures the activities of malaria elimination programs and projects. The DHIS 2, which is also used to monitor health interventions, is an open-source health management information platform that endeavors to enhance malaria surveillance, as it enables timeous data access.

Conclusion and recommendation: The researcher concluded the study that there is high illiterate level towards the practice and attitude towards malaria prevention in Chiredzi district and therefore people of Chiredzi needs more of sensitization and awareness programs

Key words: Malaria; Elimination and challenges

TABLE OF CONTENT

ACRONYMS

ACT - Artemisinin-based combination therapy

DDT - Dichlorodiphenyltrichloroethane

HIV - Human Immune Virus

IRS - indoor residual spraying

ITN - Insecticide treated nets

JBI - Joanna Briggs Institute

LLINs - long-lasting insecticidal nets

SDG - Sustainable development goals

PICO - Population, Intervention, Comparison, and Outcome

RDT - Rapid diagnostic tests

SSA - Sub- Sahara Africa

UN - United Nations

WHO - World Health Organization

MoHCC- Ministry of Health and child care

CHAPTER ONE: INTRODUCTION

1.1 Background

The protozoan Plasmodium is principally responsible for the vector-borne illness known as malaria. Protozoa Plasmodium are eukaryotic parasites with only one cell. Most of the time, these parasites infect humans by bites from infected Anopheles mosquitoes, sometimes known as "malaria vectors." According to studies, malaria predominantly affects tropical and subtropical areas of the world. Malaria is a common disease in 106 poor nations, including those in the Amazon, Central and South America, Central, South and Southeast Asia, and the Pacific. However, Zimbabwe is not an anomaly; poor nations are the most impacted. Nearly 3.2 billion people, or 50% of the world's population, are at risk of contracting malaria each year, according to a research from the World Health Organization (WHO, 2019).

Malaria is a fundamental main public health challenge and the leading cause of death developing countries (FAO, 2011). By classification, Zimbabwe is under the developing countries of which by definition a developing country is a country with low human development index below other countries (Kassahun, 2013).

Malaria occurs mostly in the tropical and the subtropical regions of the world. The prevalent is in 106 countries developing countries, in Africa, Amazon. Central and Southern America, central, south and southeast Asia, and Pacific. However, developing countries are the most affected countries. According to the world Health Organization report, about 3.2 billion People are at risk of malaria infection in developing countries each year about 50 percent of the global population (Yewhalaw,et al. 2013). According to the latest information, 214 million cases of malaria occurred globally in 2015 and 438,000 people died because of malaria infections at the same time (Yu, 2017). From 2000 to 2015, malaria incidence among the population group at risk fell by 37% globally. At the same time, malaria incidence mortality rates among the same population at risk decreased by 60%. There were an estimated 6.2 million malaria deaths prevented in 2001 (Yadav,et al 2014). Malaria is a severe public health problem and remains the leading cause of death in developing countries (Yu, (2017).

Malaria being the widespread in Africa and Asia, and World Health Organization (WHO) in recent report has considered it endemic in 76 countries (World Health Organization, 2018). Nevertheless,

in the recent years, there have been positive trends towards malaria shrinkage, such as, escalated investment and increase in the availability of protection tools to the needy population, particularly living in the endemic countries, (Dhiman et al., 2014). This happened as a result of elimination strategy that mainly emphasized on aggressive malaria control for radical elimination to shrink the disease spread in highly endemic countries by using improved and sustainable intervention tools accessible to entire at-risk population, (Yu et al., 2011). Massive scale up and substantial expansion of time-tested interventions contributed to about 37% decline in malaria cases and 60% mortality during the last few years, (WHO, 2017). In the year 2016 alone, approximately USD 2.7 billion was invested globally in malaria elimination efforts (Dhiman et al., 2014), while altogether 582 million insecticide treated bed nets (ITNs) were delivered in malaria endemic countries during 2014–2016. Of these > 86% ITN distributed alone in sub-Saharan Africa region inclined the household ownership and acceptability to about 80% in 2016 as compared to 50% in 2010. This can be considered as a positive progress in line with that not only the concerted and sustainable interventions but social, demographic, cultural and behavioral beliefs, and practices also play a pivotal role in malaria contraction, (Yadav et al., 2014).

Therefore, the relational behind this study is to find out why malaria elimination has been a challenge Chiredzi district. The reason is due to increased coverage of indoor residual spraying of mosquitos in a high-risk population and the use of insecticide-treated mosquito nets and long last insecticidal net. Among reasons that contributed to the decline was the economic development and increased access to health care, (Yadav et al., 2014). In line with the research done in South Sudan entitled malaria control, strategies, progress and challenges concluded that the prospect of malaria control and elimination is far from over in southern Sudan (Dhiman and Veer,2014). Weak healthcare systems, poor infrastructures, lack of enough human resource power were among the challenges. Among the two studies, both looked at one country.

1.2 Problem Statement

Malaria is among the top causes of mortality and morbidity in Zimbabwe. Efforts to control prevent, and eliminate it have been intensified in the past two decades which has contributed to reductions in malaria prevalence and under-five mortality. However, there was a 21% upsurge in malaria prevalence between 2010 and 2015. Zimbabwe is one of the only 13 countries to record

an increase in malaria among 91 countries monitored by the World Health Organization in 2015. (Mukumbuta, 2019).

In Zimbabwe, malaria is of high concern as it is a major cause of mortality and morbidity in highly endemic areas. As of 2018, the ministry of health reported presumed and confirmed cases of malaria of up to 5,193,723 and deaths of up to 1209 (Maureen, 2020).

According to the malaria indicator survey of the 2018, Masivingo province remained with the highest prevalence cases of malaria in Zimbabwe at 30%. This is against the preventive measures that have been put in place such as; the use of insecticide treated mosquito nets (ITN), the use of indo-residual spraying (IRS), and prevention of malaria during pregnancies and management of fever among children.

This increase in malaria prevalence in Masivingo province has not spared Chiredzi district where between 2020 and 2021 over 1000 cases of malaria were reported, the highest being in pregnant women and children (Alick M, 2021).

This has prompted the researcher to conduct research on the determinants of the increase in malaria occurrence in Chiredzi district of Masivingo province in Zimbabwe.

1.3 Purpose of the study

The reason behind this study is to explore the public health challenges facing malaria elimination in Chiredzi of Masivingo province being implemented by the Chiredzi District Health office. This study will therefore provide malaria program implementers, policymakers, and donors with information on how to further strengthen the fight against malaria in Zimbabwe and potentially plan to prevent future resurgences of malaria by examining the public health issues the malaria elimination fighters have been dealing with.

1.4 General Objectives

To investigate the public Health challenges facing malaria elimination in Chiredzi district.

1.5 Specific Objectives of the Study

1. To assess people's knowledge and awareness on malaria in Chiredzi district

2. Assess attitudes and practices of Chiredzi residents towards malaria preventive and control measures
3. To investigate the role of community health workers in in malaria preventive and control measures in Chiredzi district.
4. To determine community leaders participation in malaria preventive and control measures in Chiredzi district.
5. To explore the challenges faced by Chiredzi District Health Office in the control of malaria in the district.

1.5 Research Questions

1. What is people's knowledge and awareness on malaria in Chiredzi district?
2. How are the attitudes and practices of Chiredzi residents towards malaria preventive and control measures?
3. What is the role of community health workers in in malaria preventive and control measures in Chiredzi district?
4. Do community leaders participate in malaria preventive and control measures in Chiredzi district?
5. What are some of the challenges faced by Chiredzi District Health Office in the control of malaria in the district?

1.6 Limitations of the study

1. Language barrier: This is a limitation because the interviewer will be interacting with different people who speak different languages and they might not be able to speak, interpret or understand the language the interviewer will be using and in the same case, the interviewer too might not be able to understand, interpret or speak their language.

CHAPTER TWO: LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

2.1 Global perspective on public health challenges facing malaria elimination

Malaria, a global public health problem, is endemic in 109 countries and territories in tropical and sub-tropical zones, throughout the world except Antarctica and Australia (WHO, 2010). In recent years, malaria control has been strengthened in endemic countries through financial support and technical assistance from the international community. As a result of these interventions, in china the malaria burden is being reduced (WHO, 2018). The number of malaria cases decreased from 244 million in 2005 to 225 million in 2009 (WHO, 2019). The number of deaths due to malaria decreased from 985,000 in 2000 to 781,000 in 2009 (WHO, 2010). Malaria elimination is on the global health agenda (WHO, 2007).

However the global faces some challenges patterning malaria elimination such as Health system and human resources; Malaria elimination requires skillful staff in health facilities at all levels. The facilities that treat malaria are understaffed. At the community level, anti-epidemic staff, whose work includes malaria, are frequently changing due to personal career development, payment and living conditions. New staff may be less familiar with malaria control measures. The system for disease control and prevention is relatively separate from the system for disease treatment (hospitals) in most countries (Matt, et al 2020). The latter is not willing to be involved in the prevention of malaria. Most staff in the treatment system has not been trained in malaria diagnosis and treatment. A survey carried out in early October 2020 showed only 6.40% (50/781) of physicians at provincial and prefecture levels has been trained in malaria diagnosis and treatment globally (YIPD, 2020). Also it has been reported that there is a shortage of qualified microscopists in many areas. Malaria microscopy cannot be conducted regularly in most hospitals. In the malaria control program, qualified malaria staff are only available in disease control and prevention areas with intrinsically high malaria transmission, (Yunf et al 2020).

Elimination of malaria requires universal detection and confirmation of malaria. The challenges faced include adequately trained microscopists, legislation implementation and accessibility in mountainous areas to diagnostic and treatment facilities. In 2010, the Yunnan Institute of Parasitic Diseases reread 11,589 slides previously reported as negative for malaria for microscopy quality

control. Eighty-four slides (0.73%) were false negative, which is higher than the slide positivity rate of 0.51% for the whole province (YIPD, 2020).

2.2 Regional Perspective

2.2.1 Challenges for malaria control in Southern Africa

The burden of malaria has decreased within the past several years in parts of sub-Saharan Africa, including regions of Southern Africa, (Morgan B, 2020). Important to effective regional malaria control in Southern Africa is the appreciation that the reductions in malaria have not been achieved uniformly, with some countries experiencing resurgence. However number of challenges faced by malaria fighters have been reported in various African countries .The example of Botswana demonstrates some of the practical difficulties faced by eradication initiatives. The longevity of asymptomatic reservoir infections is one of them, as are the substantial transfers of human illnesses within and across nations. Programmatically, difficulties include enhancing communication efficiency and enhancing completeness in responses to recently discovered situations, (Achia, T, 2020). If the nation is to effectively reach its eradication objective, it needs more sustainable initiatives that target infections.

The following paragraphs discuss the general challenges faced in eliminating malaria in Africa

2.2.2 Drug Resistance and Treatment Failure

Malaria drugs are meant to clear malaria parasites from the blood of an infected person and in the process diminish sources of infection in the community. Drug resistance defined as the ability of a parasite strain to survive and or multiply despite the administration and absorption of drug given in doses equal to or higher than those usually recommended but within the tolerance of the subject, is a major challenge in the fight against malaria. Chloroquine used to be the drug of choice against malaria but chloroquine resistance that swept across endemic countries in the 2007s was the reason for treatment policy change that gave rise to the use of Artemisinin-based combination therapy (ACT) as the current drug of choice. ACT has played a major part in reducing the number of deaths due to malaria over the past decade, (Wayn A, 2010). However, Artemisinin-resistant Plasmodium falciparum has recently spread across large parts of Southeast Asia, and now threatens to destabilize malaria control worldwide. With suspected cases of treatment failures which drug

resistance could be a factor, just as Nigeria have a research-based data on the status of ACT, vis-à-vis resistance to P. falciparum and any role in treatment failures, hence a challenge to overcome, (Miller, J. 2014).

Royd K, (2019) Related that drug resistance is treatment failure. A failure to clear malaria parasites or resolve clinical disease following drug treatment could be a function of no patency and not necessarily drug resistance as not all cases of treatment failure is a function of drug resistance. For example in Mozambique many factors that contribute to malaria treatment failure are incorrect dosing, non-compliance with the duration of dosing regimen, poor drug quality, drug interaction, and improper or misdiagnosis. The role of each of these in malaria treatment failures in Mozambique is not known and need to be studied in the effort to eliminate the disease, (Ashfus, et al 2018)

Global Warming and Climate Change Available data suggest that the temperature of the world is increasing, with the last decade recorded as having the highest temperature (Matt, 2018). This increase in global temperature mainly as a result of human activities, including burning of fossil fuel and deforestation, is known as global warming. Global warming changes the climate, and climatic factors play important roles in the spatial and temporal distribution of malaria, ((UNICEF, 2017)). The relationship between climatic variables and malaria transmission has been reported in many countries, Malaria has been identified as one of the most climate sensitive diseases (Michelo C, 2018), with studies suggesting significant associations between temperature and malaria incidence; Relative humidity and rainfall (Sichande, et. al .2014) have also been associated with malaria transmission. The spatial limits of the distribution and seasonal activity are sensitive to climatic factors, as well as the local capacity to control the disease. Climate change expressed through changes in temperature and precipitation influences habitat suitability and can potentially shift the geographical range of malaria. Warmer temperatures accelerate physiological processes of the mosquito vector, leading to increased activity such as biting rate, growth, development and reproduction. Extreme temperatures may also decrease survivorship of vectors, leading to a convex relationship between temperature and mosquito performance. In particular, temperature plays a key limiting role on malaria at the edge of the altitudinal distribution of the disease in highland regions, where the parasite is not likely to complete development during the lifetime of its vector, (Edward H, 2019). Climate change and drug resistance have been typically addressed as

independent drivers of malaria trends, and have been considered as alternative explanations for the exacerbation of the disease in East African highlands, (Gebreslasie, et al 2017). Drivers of malaria control and elimination need information to guide vector control challenges in an era of climate changes. Therefore, there is work to be done in this regard.

2.2.3 Conflicts, terrorism, insurgency, internally displaced persons and migration

Civil wars have many negative consequences which include the destruction of civil infrastructures and the loss of human lives. There are many other important consequences related with the health status of the surviving victims of the civil war which can have very long lasting effects on the productivity of the economy and the health conditions of the country,(WHO, 2014). The infection with the malaria parasite is one of these circumstances. The massive movement of non-immune people across areas infested with the malaria vector is one of the consequences of civil wars.

A typical example is the decades of war in Sudan which destroyed physical infrastructure, social structures and virtually collapsed the health system, (Shimaponda-Mataa, et. al 2017). The malaria control situation is threatened by the impact of refugees, returnees, internally displaced populations, and natural disasters, i.e. flooding, that put added strain on an already weakened system from years of conflict and that may destabilize whatever gains that have been made. The situation is aggravated by an increase in population due to refugees, returnees and internally displaced persons. Accordingly, the country experiences exceedingly high malaria transmission intensities with inherent high morbidity and mortality rates, (Semakula, et al 2016).

Nigeria today is plagued by conflicts, terrorism, insurgency, migration and internally displaced persons. Virtually all regions of the country are affected with the northeast bearing the highest burden. Every effort is needed to understand the dynamics of this issue in the effort to control and eliminate malaria.

2.2.4 Insecticide resistance

Anopheles mosquitoes are vectors of malaria parasites. Control of Anopheline vectors of malaria relies on the use of Long-Lasting Insecticide Nets (LLINs) and Indoor Residual Spraying (IRS). The benefits of the use of these methods have been noted in many countries, (Achuu, et. al, 2016). However, this success is being impeded by the development and spread of insecticide resistance

malaria vectors in Africa, which may compromise the use of these vector control strategies. Only 4 classes of insecticide (carbamates, organophosphates, organochlorines and pyrethroids) are available for IRS, whereas the use of LLINs depends exclusively on pyrethroids.

In Botswana, Anopheline vector resistance to DDT and pyrethroids have been reported (Mukaratirwa, et. al, 2017). The emergence of pyrethroid and DDT resistance in the major Afro-tropical malaria vectors would have considerable implications for the success of vector intervention and the monitoring of ongoing control programs. Hence, there is a strong need for the development of appropriate tools to monitor resistance in field populations of Anopheles mosquitoes in order to benefit from the contributions of the appropriate use of chemical insecticides in malaria elimination in Botswana, (Wellis B, 2018)

2.3 Local perspective

Malaria elimination in Zimbabwe is a realistic possibility. Sustained efforts are critical to addressing the identified challenges. Local effort is the key and individual person the target. Surveillance systems must be refined and regularly updated for targeted interventions and to ensure the information required to inform an elimination agenda are routinely collected. Stakeholders should therefore act with a shared and focused goal however some of the challenges faced in the fight of Malaria in Zimbabwe are discussed below;

Attitude and Behavior Change in Zimbabwe has got much hindrance of malaria elimination where the Perceptions about malaria illness, particularly households' perceived susceptibility and beliefs about the seriousness of the disease, are important preceding factors for decision-making concerning preventive and curative actions, (Yu, et. al, 2018). The understanding of the possible causes, modes of transmission, and individual preference and decision-making about the adoption of preventive and control measures vary from community to community and among individual households, (Sande, et al 2016). Misconceptions concerning malaria still exist [36] and practices for the control of malaria have been unsatisfactory, (Chinwada, et al. 2016). Attitudes and practices about malaria and the effective use of intervention tools by households and individuals contribute immensely to sustainable control of the disease. It is important in Zimbabwe to understand the culture and traditions of malaria endemic communities, as these form the basis of community members' values, which shape community members' attitudes on topics like malaria control and

elimination. Often these local beliefs influence community members' action or inactions more than any other factor in the fight against the disease, (Sande, et al 2016).

Malaria treatment using safe and effective antimalarial has been cornerstone of malaria elimination programs. Among the human infecting *Plasmodium* species, the increasing proportion of drug resistant *P. falciparum* is alarming and imputed to rapidly emerging drug resistance in endemic countries mainly in WHO SEAR, (Dhiman et al 2018). Over the fifty years, countries in WHO SEAR have been epicenter for the evolution of resistance in malaria parasite to almost all classes of antimalarial drugs and subsequent spread to other WHO regions.

After the use of chloroquine in malaria treatment for a long time and sulfadoxine-pyrimethamine for a brief time, the artemisinin based combination therapy has been the first-line treatment for *P. falciparum* malaria in SEA countries, (Maharaj N. 2005). Although artemisinin and its derivatives are effective in isolation, but reason behind artemisinin combination therapy is to use this fast acting drug with a long acting drug to ensure that malaria parasite is completely cleared in human body. Artemisinin resistance to *P. falciparum* was first observed in Cambodia in 2008 and subsequently reported in different neighbouring countries including Laos, Myanmar, Vietnam and Thailand, (Ashley et al, 2014). Later on, the mutation in the *kelch 13* propeller gene which was associated with this resistance, was found spread in multiple countries including India, (Takala-Harrison S. 2015).

2.3.1 Socio-cultural hindrance in malaria elimination

Malaria intervention efforts largely focus on the parasite as causal agent, human as host and mosquito as vector, however human behavior, which is diverse and complex, is grossly neglected and not considered in adopting intervention strategies. This is probably because intervention experts are not well aware about how people keep with the disease and deployed control tools. An improved knowledge and understanding of community perception and beliefs about malaria as a disease and its causative agents could be useful in designing control programs. The effective intervention tools under poor acceptability and increasing resistance are either less effective or impressive under certain conditions only, (Wanjala et al. 2015).Therefore high acceptance of

intervention tools which are effective to a limited extent is decisive for reigning of control programs.

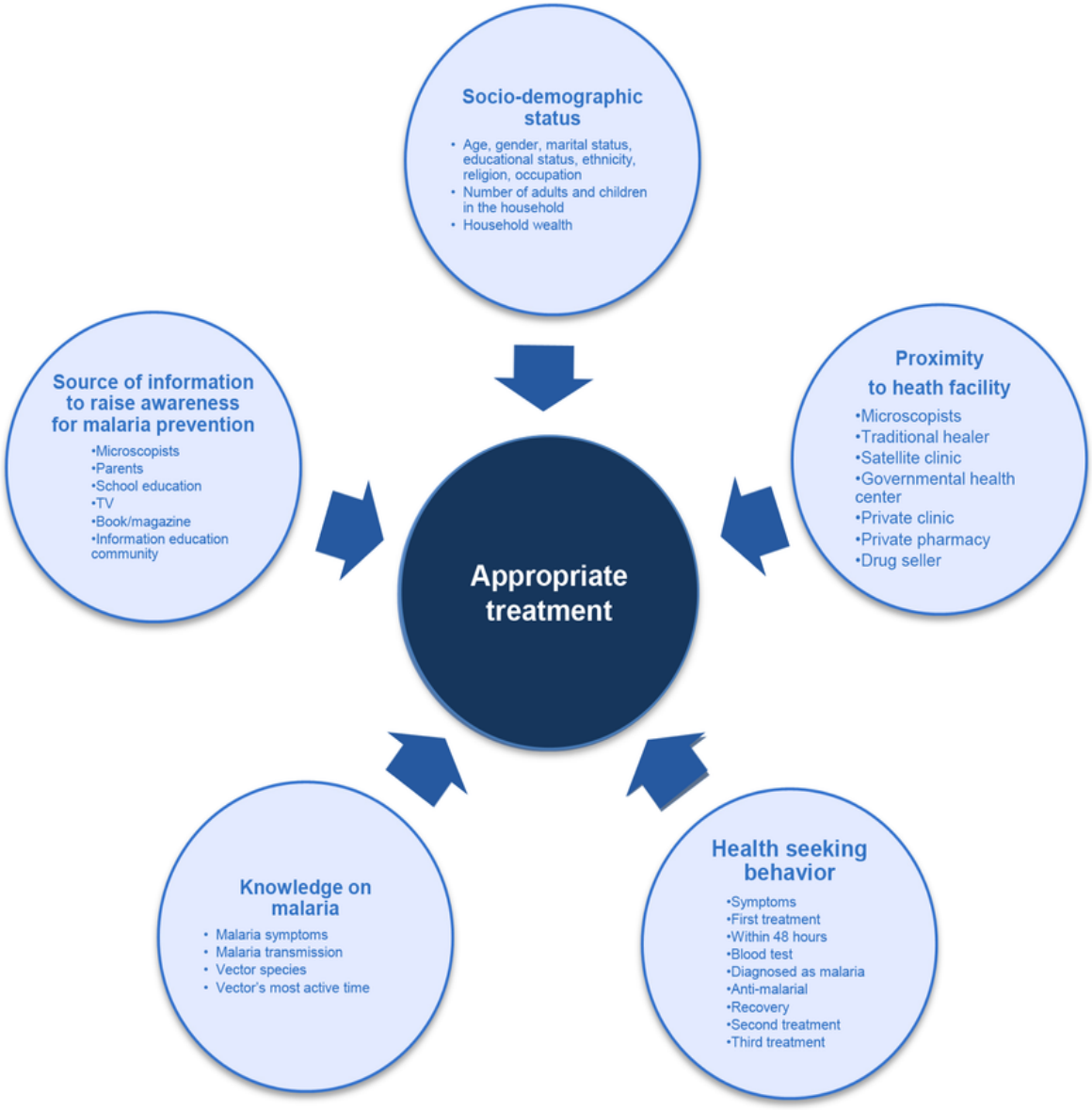
Serious malaria control efforts cannot afford to disregard human context and involvement that brace different perceptions and beliefs of malaria, malaria vectors and their management at community level, (Wanjala, et al. 2015). Control efforts could be able to bring down malaria incidences at larger level, but may not efficiently clear disease burden at local level. This has been evident in the unprecedented decline in malaria cases in Greater Mekong Sub-Region over the past few years, but not in community populations despite the affordability to own available intervention measures, (Wanjala et al. 2015). In a recent study conducted in Zimbabwe emphasized that community behavior including delay in seeking medical attention, staying outdoors until late and maintaining stagnant water are not supportive to the national program. (Yadav et al. 2014), in their study conducted in endemic north-eastern region of India reported that socio-demographic factors in remote communities significantly influence the malaria situation. Disease was more prevalent among those who have low income, poor knowledge of basic malaria facts, inhabit remote areas and hesitate to use bed nets. These communities are probably marginalized by the health assistance available in the region and have less access to ongoing control and prevention measures. Such people are not able to afford personal protection measures all the time and are vulnerable to ineffective treatment due to various cultural and financial limitations, (Dhiman S, Veer V. 2014).

2.10 Conceptual Frame work

The authors hypothesize that an association exists between appropriate treatment and challenges and the following multi-directional variables: “socio-demographic status,” “proximity to health facility,” knowledge on malaria,” and “participation in community awareness-raising activities for malaria prevention.” Sub-variables of each variable are in the circles of the conceptual framework.

Depending on the epidemiology of malaria, people are at risk of acquiring infection due to factors related to environment, demographic and socio-economic status. Strong health-care systems (and malaria control program (MCP)) with adequate global and national support, prevention and control of malaria using early diagnosis & prompt treatment, and vector-control strategies have a significant impact on reducing malaria morbidity and mortality. Prevention methods inhibit the

establishment of infection or suppress the progression of the parasite after infection. Access to early diagnosis and prompt treatment with effective anti-malarial drugs significantly reduce the severity of the illness, which will ultimately affect malaria mortality. A related factor is the perception of people about what causes malaria, their understanding of early treatment with appropriate anti-malarial, and the use of personal prevention methods and participation in disease prevention.



Source; World Health Organization. (2017). A framework for malaria elimination.

CHAPTER THREE: METHODOLOGY

3.1 Study Design

This study adopted a quantitative descriptive cross-sectional study design using data from questionnaires, document check and interviews (Creswell, 2013). The historical data was obtained from the District Heath System (DHS) and the DHIS2 that captures the activities of malaria elimination programs and projects. The DHIS 2, which was also used to monitor health interventions, is an open-source health management information platform that endeavors to enhance malaria surveillance, as it enabled timeous data access.

3.2 Location of the study

The study was conducted in Chiredzi district of Masivingo Province in South East Zimbabwe, the place is located near the Runde River which has the tributary called the Chiredzi as the administrative center for Chiredzi district, it is where both the rural and district councils are based Population is approximately 275,759 (2022 census) With Chiredzi general hospital being the large accommodating health facility in the district (Ministry of health and child care, (MoHCC, 2020)

3.3 Target population

The research was conducted in Chiredzi District targeting the Chiredzi District Health Office and the surrounding health facilities. The study population for the research were the health environmentalists who implement the malaria elimination programs in Chiredzi district of Masivingo Province

1.4 Inclusion criteria

The study included Public Health practitioners, District health directors and environmental health Technologists who were working under Chiredzi District Health Region

1.5 Exclusion Criteria

People who were eligible for the research but decline to give their permission were not included.

3.6 Sample size determination

The sample size for this study wias calculated using the formula below:

$$N = \frac{(Z\alpha/2)2\ (P1-P)}{D2}$$

$$N = \frac{(1.96)2\ (0.5)\ (1-0.5)}{(0.05)2}$$

N = 384

Where Z=1.96, P=50%, d=0.05, accordingly the sample size is 384.

Therefore, the desired sample size (n) is calculated as:

$$n = \frac{ni}{1+ (ni/N)}$$

$$n = \frac{384}{1+ (384/14)}$$

$$n = \frac{384}{1+ (5.04)}$$

n = 138

Where n was the required sample size, n*i* is the initial sample size calculated by single proportion formula (384), N is the total number of available participants at the research sites (14).

3.7 Data collection tool

The questionnaire was used to collect information from participants recruited in the study. The questionnaire were made with pre-coded response choices (closed-ended questions with a few open-ended questions). The questionnaire were also translated into the local language (Shangaan) to make it easier to communicate with respondent. The questionnaires were administered using face-to-face interview with selected participants at their health facilities. Information was collected on the public health challenges in elimination of malaria.

3.7.1 Pre-Testing

Pre-testing of questionnaire was carried out at one of the similar compound not included in the study. This meant to check for clarity, sequence and applicability of the questions and estimating the duration for each questionnaire.

3.8 Statistical analysis

Data collected was entered in Microsoft excel. Cleaning of data for any errors was carried and later exported to SPSS V.22 for analysis. Means with associated standard deviations were used to summarise and describe continuous variables. Multiple logistic regressions were used to identify the challenges faced in malaria elimination at 95% significance level. In addition, tables were used in presentation of the results.

3.9 Ethical consideration

A research ethical clearance to conduct this study was obtained from Chreso University Ethics Committee and permission from MOH before commencement of the study. Before going to the field, communication was made from the local health facility to conduct the study in their area. All participants in the study were informed about the study and participated on voluntary basis. Prior to commencement of the interviews, the purpose and importance of the study was explained to the selected participants to be interviewed. Consent was obtained from each of the selected participant in the interviews. During interviews, confidentiality was maintained by ensuring that each participant was interviewed individually in a scheduled place.

CHAPTER FOUR: PRESENTATION AND ANALYSIS OF FINDINGS

4.0 INTRODUCTION

The presentation of the results is done in this chapter. Along with providing a thorough presentation and analysis of the results depending on the objectives, it also provides the demographic characteristics of the respondents.

4.1 Demographic Characteristics of the respondents.

The demographic characteristics considered in this study were gender, age and education level (Table 2).

Table 2: Demographic characteristics of the respondents

	N=138		
Variable	Category	Frequency	Percentage
Gender	Female	171	63.3
	Male	99	36.7
Age	Below 30 years	34	12.6
	30-40 years	57	21.1
	41-50years	105	38.9
	Above 50 years	73	27.0
	No Response	3	1.1
Education Level	No formal Education	162	60.0
	Primary Level	7	2.6
	Secondary Level	25	9.3
	Certificate Level	34	12.6
	Diploma Level	31	11.5
	Bachelor's Degree Level	6	2.2
	Master's Degree Level	3	1.1
	No Response	3	1.1

The above table shows that majority of the respondents were female 171 (63.7%), were in the age category, 41-50 years 105(38.9%) and those with no formal education 162 (60.0%).

4.2 KNOWLEDGE ON MALARIA

The levels of awareness on malaria were different in the study participants.

Of all the participants 267 (98.9%) heard about malaria as shown in the figure below

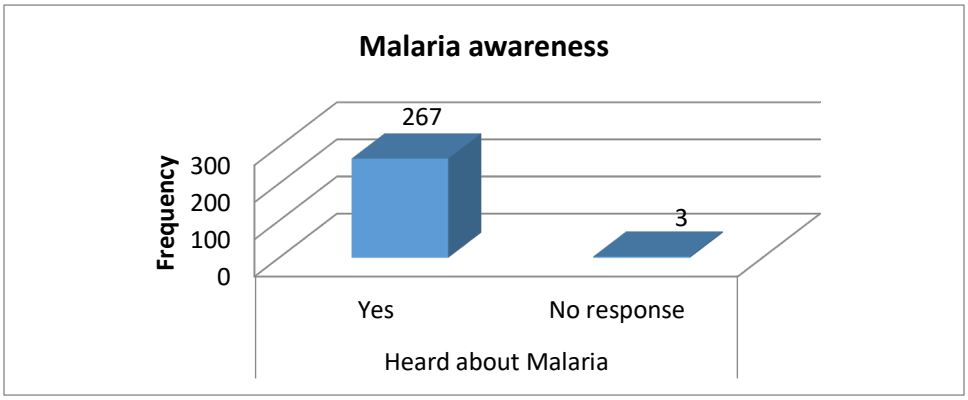


Figure 3: Heard about malaria

All participants knew that a mosquito is the primary cause of malaria when questioned about it. In a similar vein, every one of the ten focus group members stated that a mosquito was the source of malaria.

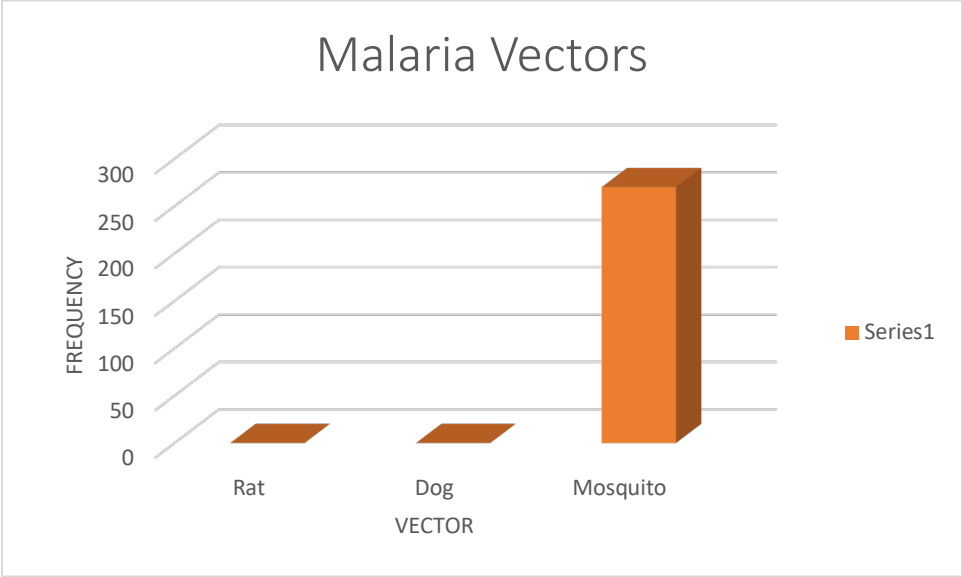


Figure 4: Vectors that transmit malaria to humans

All the participants were also aware that if not treated, malaria would kill as shown in figure three below.

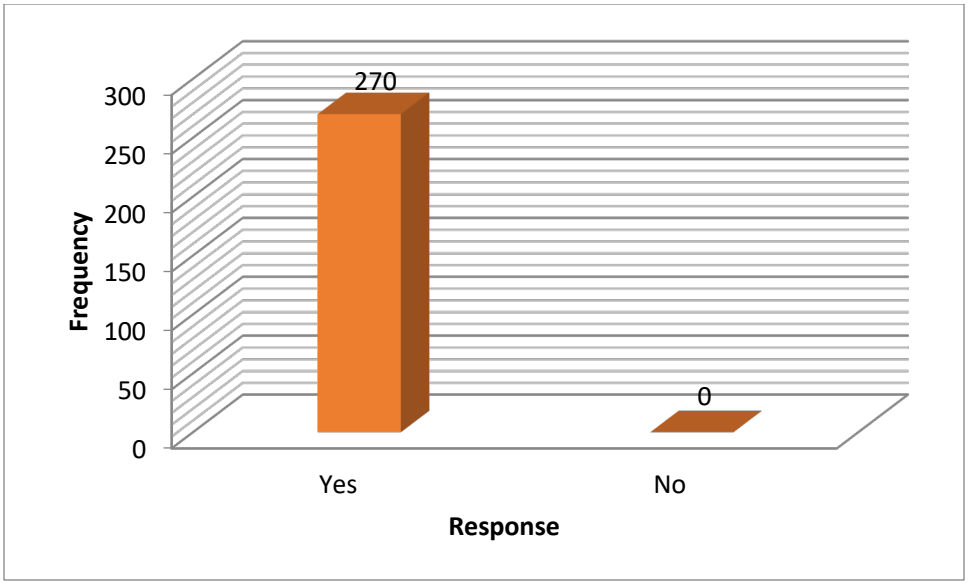


Figure 5: Malaria can kill if not treated

In order to have a deeper understanding of the respondents' knowledge on malaria, additional questions about what causes malaria were posed to them. Below are their replies.

Table 3: Malaria Transmission

Malaria transmission	**Frequency**	**%**
Drinking contaminated water	5	1.9
Eating contaminated food	1	0.4
Eating a lot of Mangoes	15	5.6
Bite of mosquito	87	98.1
Coming into close contact with a malaria patient	74	77.0

From the table above, it is clear that even though participants knew that malaria was transmitted by the bite of a mosquito 265 (98.1%), there were still misconceptions on malaria transmission such as being in contact with a malaria patient 208 (77%), eating a lot Mangoes 15(5.6%), drinking contaminated water 5(1.9%) and eating contaminated food 1(0.4%).

Table 4: Participants responses to Malaria Symptoms

Malaria Symptoms	Response	Frequency	Percentage
High temperature/Fever	Yes	138	100.0
	No	0	0.0
Loss of energy	Yes	1	0.4
	No	137	99.6
Vomiting	Yes	138	100.0
	No	0	0.0
Sweating	Yes	7	2.6
	No	131	97.4
Headache	Yes	135	99.3
	No	2	0.7
Body pains	Yes	10	3.7
	No	128	96.3
Itching	Yes	8	3.0
	No	130	97.0
Loss of appetite	Yes	16	5.9
	No	122	94.1
Chills	Yes	132	97.8
	No	6	2.2
Dizziness	Yes	6.0	2.2
	No	132.0	94.1

The majority of the participants were aware that high temperature/fever 138 (100%) , vomiting 138 (100%), headache , 268 (99.3 %) chills 264 (97.8%) were Malaria symptoms .However poor knowledge regarding loss of energy,1(0.4%) , sweating,7 (2.6%) , body pains, 10 (3.8%) , loss of appetite, 16 (5.9%) and dizziness 6 (2.2%) as Malaria symptoms was observed amongst the participants.

When asked on the Malaria preventive and control strategies, the following responses were given.

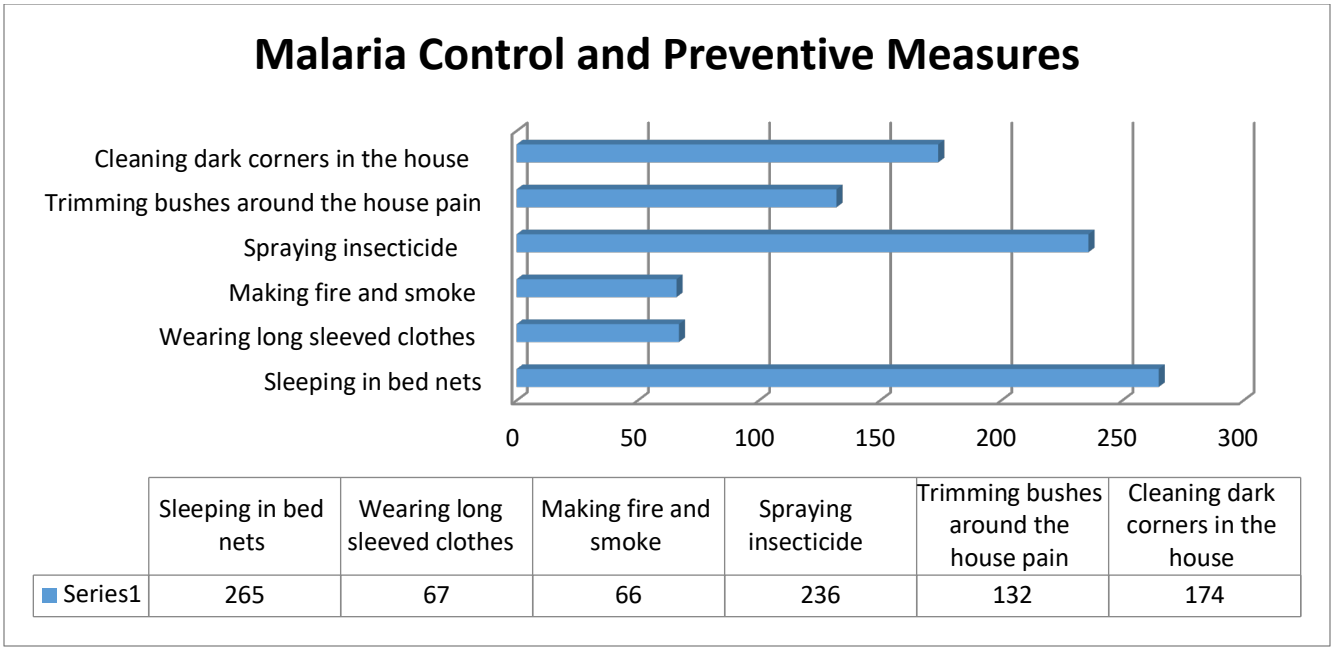


Figure 5: Participants responses to malaria control and preventive strategies.

Sleeping in ITNs and spraying insecticides topped on the list of control and preventive measures

Table 5: Study participant's information sources on Malaria

Information Source	Response	Frequency	Percent
Family member (at home)	Yes	34	23.3
	No	104	76.7
	Total	**138**	**100.0**
Neighbors (in the village)	Yes	10	6.7
	No	128	93.3
	Total	**138**	**100.0**
Radio	Yes	121	88.5
	No	17	11.5
	Total	**138**	**100.0**
Television	Yes	70	51.1
	No	68	48.9
	Total	**138**	**100.0**
Newspapers	Yes	65	47.4
	No	73	52.6
	Total	**138**	**100.0**
Posters/pamphlets	Yes	55	40.7
	No	83	59.3

	Total	**138**	**100.0**
School	Yes	73	53.7
	No	65	46.3
	Total	**138**	**100.0**
Church	Yes	110	81.1
	No	28	18.9
	Total	**138**	**100.0**
Health centre/clinic	Yes	137	99.3
	No	1	0.7
	Total	**138**	**100.0**
Community health worker	Yes	118	86.7
	No	20	13.3
	Total	**138**	**100.0**

Most of the information on Malaria was from Health Centers, 268 (99.3%), Community Health Workers, 234 (86.7 %), Radio, 239 (88.5%) and the Church, 219 (81.1%).

4.3 ATTITUDES TOWARDS MALARIA PREVENTION

4.3.1 Prevalence of Malaria

The prevalence of malaria was assessed by asking the participants if they or any member of their family or households suffered from malaria in the last six months. The responses are given below.

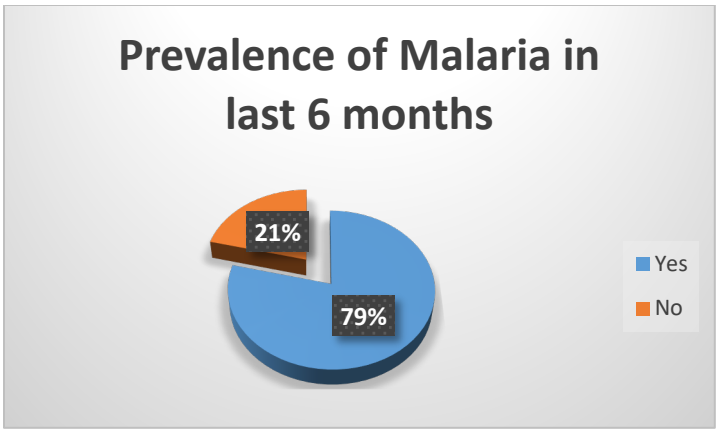


Figure 6: Participants response to them or any member of their household suffering from Malaria in the last six months.

From the chart above, the prevalence of malaria in the last six months in the province was 79% (213).

4.3.2 TREATMENT SEEKING BEHAVIOUR

The participants were then asked where they would go to seek treatment if they had symptoms of malaria as shown in figure 7 B below.

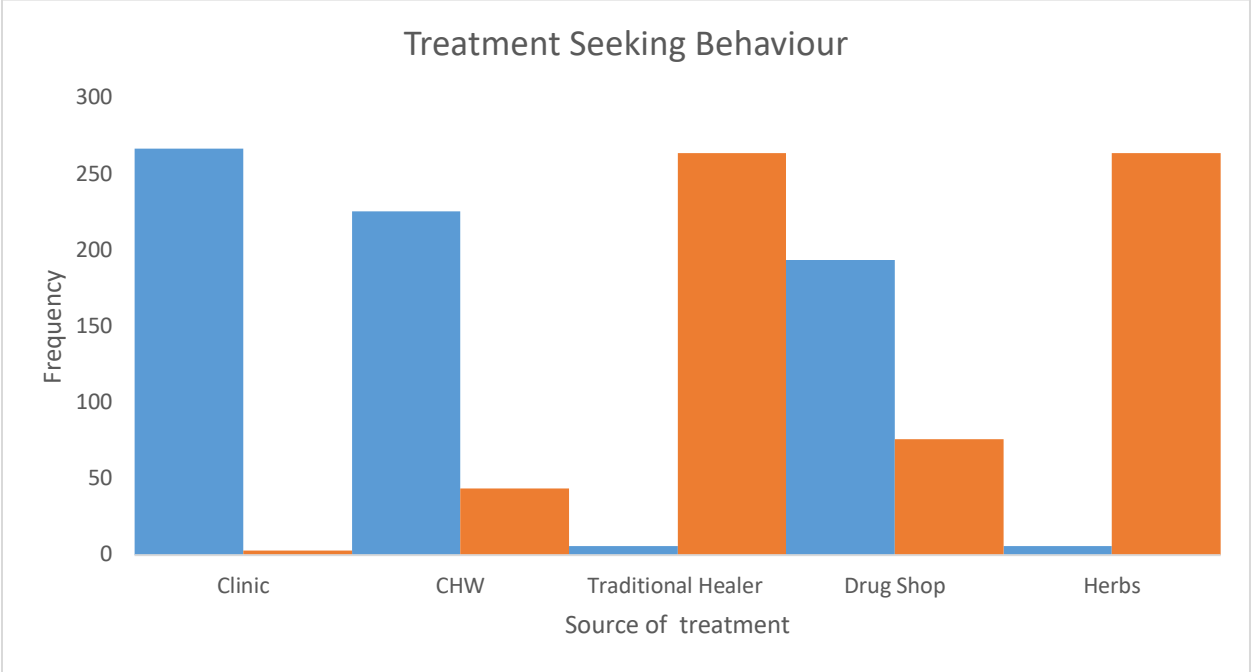


Figure 7: Participants treatment seeking behaviour

Clinics, community health workers, Drug shop or pharmacy, Tradition healers as well as herbalists were mentioned as sources of treatment by the participants when they suspect they have malaria.

The participants were further asked how soon they would seek treatment if they suspect that they have malaria. The table below shows the responses.

Table 6: Participants promptness to seek treatment when suspecting Malaria.

Question	Response	Frequency	%
How soon after suspecting Malaria would you seek treatment?	One day	3	1.1
	2-3 days	134	98.1
	4-6 days	1	0.4
	7 days or more	1	0.4
	Total	**138**	**100.0**

According to table 5 above, participants' attitude towards seeking treatment early were very poor as only 1.1 % (3) indicated that they would seek prompt treatment if they suspected that they had malaria.(Also include results from FGD in sentence form since there were two groups only)

Table 7: Participants Attitudes towards Malaria Control

Attitude Towards Malaria	Response			Total Respondents
I think that Malaria is a serious and life-threatening disease	Disagree	Agree102(37.8))	Strongly Agree	
	102(37.8)	102(37.8)	168(62.2)	138
Malaria can be transmitted from one person to another like the common cold	9(3.3)	99(36.7)	162(60.0)	138
I think the best way to prevent myself getting Malaria is to avoid getting mosquito bites cold	5(1.9)	103(38.1)	162(60.0)	138
I am sure that anyone can get Malaria	Strongly Disagree	6	2.22	
	Disagree	1	0.37	
	Agree	51	37.78	
	Strong Agree	81	59.6	
	Total	138	100.0	

I believe sleeping under a mosquito net during the night is one way to prevent myself getting Malaria	Strongly Disagree	3	1.1
	Disagree	8	3.0
	Agree	24	39.3
	Strong Agree	103	56.7
	Total	138	100.0
I am sure that I can treat myself if I get Malaria	Strongly Disagree	202	74.8
	Disagree	8	3.0
	Agree	7	2.6
	Strong Agree	53	19.6
	Total	138	100.0
In my opinion, only children and pregnant women are at risk of Malaria	Strongly Disagree	96	35.6
	Disagree	7	2.6
	Agree	21	7.8
	Strong Agree	146	54.1
	Total	138	100.0
I think that one can recover spontaneously from Malaria without any treatment	Strongly Disagree	183	67.8

Table 7: Participants Attitudes towards Malaria Control

Attitude Towards Malaria	Response			**Total Respondents**
I think that Malaria is a serious and life-threatening disease	Disagree	Agree102(37.8))	Strongly Agree	
	102(37.8)	102(37.8)	168(62.2)	138
Malaria can be transmitted from one person to another like the common cold	9(3.3)	99(36.7)	162(60.0)	138
I think the best way to prevent myself getting Malaria is to avoid getting mosquito bites cold	5(1.9)	103(38.1)	162(60.0)	138
I am sure that anyone can get Malaria	Strongly Disagree	6	2.22	
	Disagree	1	0.37	
	Agree	102	37.78	
	Strong Agree	161	59.6	
	Total	138	100.0	
	Strongly Disagree	3	1.1	
	Disagree	8	3.0	

I believe sleeping under a mosquito net during the night is one way to prevent myself getting Malaria	Agree	53	39.3	
	Strong Agree	64	56.7	
	Total	138	100.0	
In my opinion, only children and pregnant women are at risk of Malaria	Strongly Disagree	96	35.6	
	Disagree	7	2.6	
	Agree	21	7.8	
	Strong Agree	65	54.1	
	Total	138	100.0	
I think that one can recover spontaneously from Malaria without any treatment	Strongly Disagree	183	67.8	
	Disagree	3	1.1	
	Agree	11	4.1	
	Strong Agree	73	27.0	
	Total	138	100.0	
If someone has got Malaria, people should avoid having close contact with him/her	Strongly Disagree	4	1.5	
	Disagree	12	4.4	
	Agree	184	68.1	
	Strong Agree	70	25.9	
	Total	138	100.0	
I might be at a greater risk of getting Malaria if I work and sleep overnight in the garden or forest	Strongly Disagree	1	0.4	
	Disagree	9	3.3	
	Agree	141	52.2	
	Strong Agree	119	44.1	
	Total	138	100.0	
I think that it is dangerous when Malaria medicine is not taken completely	Strongly Disagree	2	0.7	
	Disagree	8	3.0	
	Agree	164	60.7	
	Strong Agree	96	35.6	
	Total	138	100.0	
I can buy anti-Malaria drugs from the drug shop/pharmacy to treat myself when I get Malaria	Strongly Disagree	11	4.1	
	Disagree	4	1.5	
	Agree	187	69.3	
	Strong Agree	68	25.2	
	Total	138	100.0	
I think that I should go to the health centre/clinic to have my blood tested as	Strongly Disagree	1	0.4	
	Disagree	10	3.7	

soon as I suspect that I have suffered from Malaria	Agree	182	67.4	
	Strong Agree	77	28.5	
	Total	138	100.0	
I will seek for advice or treatment when I get Malaria	Strongly Disagree	2	0.7	
	Disagree	7	2.6	
	Agree	174	64.4	
	Strong Agree	87	32.2	
	Total	138	100.0	
	Total	138	100.0	

From the table above, some negative attitudes and misconceptions were noticed. These included, malaria being transmitted from one person to another like common cold (96.7%) and hence people must avoid making contact with those with malaria and that only children and pregnant women are at risk of malaria (61.9%). Other negative attitudes included the misconception about self-treatment with 53 participants (19.6%) strongly agreeing to it and 68 (25.2%) saying they can easily buy anti-malarial drugs from the local pharmacy.

Another negative attitude observed is where respondents believe they can spontaneously recover from malaria without seeking any medical treatment. This is shown by 73 (27%) participants strongly agreeing and 11 (4.1%) agreeing to the assertion.

4.4 PRACTICES TOWARDS MALARIA PREVENTION

Participants were asked several questions on practice.

Table 8: Practices towards malaria prevention

Practices Towards Malaria	Response	Frequency	Percentage
How often do you sleep in a mosquito net?	Always	65	56.7
	Sometimes	73	42.2
	Never	3	1.1
	Total	138	100.0
How often do other members of the household sleep in mosquito nets?	Always	8	3.0
	Sometimes	130	95.6
	Never	4	1.5
	Total	138	100.0

How often do you check for holes/repair mosquito nets	Sometimes	119	44.1
	Never	151	55.9
	Total	138	100.0
How often do you use mosquito repellent coils on your house?	Always	14	5.2
	Sometimes	241	89.3
	Never	15	5.6
	Total	138	100.0
How often do you use anti-mosquito spray in your house?	Always	5	1.9
	Sometimes	257	95.2
	Never	8	3.0
	Total	138	100.0
How often do you clean/cut bushes around your house?	Always	1	0.4
	Sometimes	261	96.7
	Never	8	3.0
	Total	138	100.0
How often do you clean stagnant water near your house	Always	1	0.4
	Sometimes	258	95.6
	Never	11	4.1
	Total	138	100.0

From the table above, even though some practices were positive, the participants were only acting sometimes when they should have always been doing what they were required.

Practices Towards Malaria	Responses (%)			Total Respondents
	Always	Sometimes	Never	
How often do you clean stagnant water near your house	1(0.4)	258 (95.6)	11 (4.1)	138

Participants were asked how soon they go to the clinic to seek treatment when they suspected that they had malaria. The responses had the majority (98.1%) indicating between 2 – 3 days as indicated in the table 9 below:

Table 9: Urgency of seeking malaria treatment

Question	Response	Frequency	Percent
How soon after suspecting Malaria would you seek treatment?	One day	3	1.1
	2-3 days	265	98.1
	4-6 days	1	0.4
	7 days or more	1	0.4
	Total	138	100.0

CHAPTER 5: DISCUSSION OF FINDINGS

5.0 INTRODUCTION

This chapter discusses the findings of the study according to the objectives of the study.

5.1 KNOWLEDGE ON MALARIA

The findings of this study indicated that the levels of knowledge on malaria within the community were high with 100 % of the participants having heard about the disease and 99.3% knowing that the disease is transmitted by a mosquito. According to the results obtained in this study, pooled knowledge score on malaria from the participants was generally average (High (17.7%), Medium (72.7%) and low (9.2%). These findings are in agreement with the findings of a research conducted by Nzooma *et al*. (2016) in four districts in Zimbabwe, which found that knowledge of the mosquito as a vector of malaria was quite high (89.6%). The global picture also seems to be in agreement with this finding as shown in the study by Saha *et al*. (2019) where more than two-thirds of the participants knew that a bite from an infected female mosquito is the way of contracting malaria.

However, regarding knowledge and within the same community and from the same participants of which some indicated that malaria was caused by the bite of an infected mosquito, myths on the transmission of malaria such as eating a lot of mangoes, drinking contaminated water, eating contaminated food and coming into close contact with a person who has malaria were also reported. The findings on the myths on malaria transmission were also observed by Jumbani *et al*. (2020), in their study in Eastern Province of Zimbabwe, where participants had the notion of eating contaminated food and drinking water were given as causes of malaria. Other misconceptions on malaria transmission in Zimbabwe were also reported by Kanyangarara *et al*. (2018) in a study done in Choma District of the Southern Province of Zimbabwe, where drinking dirty water and dirty surroundings were linked to malaria transmission and in most areas in Zimbabwe, there is a misconception that malaria comes about after being soaked by the rains. Another study in Ethiopia found that members of the community believed that they could prevent malaria by avoiding a sinful nature or guilty behavior (Kabede *et al*., 2017), it is therefore not surprising that members of the community in this study also sought help from traditional healers and agreed to use local herbs to treat malaria.

Regarding the misconception on malaria being transmitted by drinking contaminated water or eating contaminated food, other researchers have guided that in areas were malaria and cholera are endemic; the misconceptions arise due to little understanding of the transmission dynamics of the two diseases (Jumbani *et al*., 2020). This assertion is true for Masvingo province which apart from being a malaria hotspot, episodes of cholera are also reported in the region. The fact that these misconceptions have persisted despite health education campaigns on malaria then calls for paradigm shift on how the malaria messages are being disseminated.

The observed myths and misconceptions on malaria transmission could pose a challenge especially when coming up with malaria control and preventive strategies (Kabede *et al*., 2017). This partly explains why despite a good proportion of the participants knowing that malaria was transmitted by the bite of a mosquito, only an average number admitted using mosquito nets as a malaria preventive strategy. FDGs findings showed that mosquito nets were being used for fishing in the area and it is therefore, the more reason why the prevalence of malaria is very high in the province. Moreover, health promotion messages must focus on reversing the myths and misconceptions on malaria transmission and also in line with the MIS report finding of 2015 which advocated for educational campaign messages focusing on the link between the bite of a mosquito and malaria transmission (MIS, 2015). Specifically for Masvingo, where over 60% of the participants had no formal education, the messages must be tailored in such a way that they fit in the local language and terminologies.

The study noted that participants understood that malaria is a serious disease that could kill if not treated immediately and correctly. Even with this understanding, not all the participants correctly identified all the symptoms of the disease. However, all of them (100%) identified the most common symptoms as being fever, headache and vomiting. This is in agreement with another study done by Forero *et al*. (2014) which showed Zimbabwe's success in the "all households must know fever as a key predictor of malaria" policy.

CHWs perspective on malaria knowledge was more advanced compared to the pregnant women. These findings on community health workers are also consisted with the findings of a similar study done in Rwanda which showed that community health workers had good understanding of malaria prevention, management and control (Habinyama, 2016

In response to the questions on malaria prevention and control, 265 (98.1%) indicated that sleeping under an insecticide treated mosquito net and having their homes sprayed with insecticides were some of the measures; with only 67 indicating that wearing long sleeved clothes could help in the prevention and control of malaria. 132 participants indicated that clearing bushes around the homes and 174 admitted that cleaning dark corners in the house could also be measures to control and prevent malaria.

The results on the malaria prevention and control were in consistency with the results report by Saha *et al*. (2019), where filthy surroundings of households along with puddles or places where polluted and contaminated water can accumulate were some other causes of malaria quoted by a majority of FGD participants. “Those who have a dirty household, have bushes around the house, they can also get malaria easily. As mosquitos breed more often in those places, so the risk of malaria also increases in that kind of houses.”

5.2 ATTITUDES ON MALARIA

The results attitude towards malaria showed that attitudes were negative. This was in agreement with those reported elsewhere Sunjay *et al*., 2014). They noted that attitude, “a compound of affect, cognition and behavior is an important component of malaria control programs especially in the generation of health promotion messages though this is one area that has not been given enough attention.

Positive and negative attitudes towards malaria were observed in this study. The participants in this study exhibited positive attitude towards avoiding mosquito bites, anyone getting malaria, pregnant women and children being at the greatest risk and going to the health facility for malaria test when they suspected that they had malaria among others. This is similar with findings of the study by Appiah-Darkwah & Badu-Nyarko (2011) in Uganda where, on the whole, the attitude tended towards positive, and was confirmed via FGDs where participants affirmed that residents of Nsaabwa take malaria as a serious problem because now they know that it kills and many children have died from it. However, the positive attitudes did not translate into practicing malaria preventive behavior amongst respondents. There could be factors responsible for this as behavior depends on more than just knowledge and attitude. Examples might include local customs, taboos, perceived benefits, etc. These are areas a good BCC campaign could address (Vincent, 2001).

The negative attitudes and misconceptions regarding malaria according to this study as reported; Malaria being transmitted from one person to another like the common cold, participants thinking they can treat themselves if they got Malaria, being able to recover spontaneously from Malaria without any treatment and that if someone has got Malaria, people should avoid having close contact with them. These findings are in line with a similar study done in Ethiopia by Kabede *et al*. (2017). However, those who exhibited negative attitudes in this study were more compared to the Ethiopian study. This can be attributed to the high number of those with no formal education in this study (60%) compared to only 10.1% in the Ethiopian study. This finding underscore the need for coming up with health promotion messages on malaria prevention and control that are illiterate friendly.

5.3 PRACTICES ON MALARIA

The practices regarding malaria control in this study were generally negative. Other than sleeping under an ITN, 262(97.03%), the other practices towards Malaria control were negative as the participants only indicated putting the malaria interventions into practice only sometimes 138(100%) and in some cases never 1 (0.4%) (Table 16).

These findings have demonstrated that having knowledge on Malaria does not translate into practice and is consistent with what has been observed in Zimbabwe. Despite the knowledge on malaria being high in the population, one would expect that this would translate into low prevalence of malaria but it is not the case in this study where the reported prevalence of malaria in the last 6 months stood at 78.9 %. For example, findings from Zooma *et al.* (2017), in a study on Malaria in Zimbabwe concluded that the translation of knowledge to improved practice was inadequate. The study demonstrated that interaction with community health workers was significantly related with seeking malaria treatment early, as well as using antimalarial drugs as an alternative to seeking healthcare from formal health facilities. Other studies have also demonstrated failure at translating knowledge into prevention practices, (Hwang *et al*. 2010) in insisting on chloroquine as an antimalarial therapy based on attitudes; and, in understanding what aspects of malaria were important, such as differentiating mosquitoes as a nuisance as opposed to mosquitoes as a source of infection. Further, Zurovac et al. (2014) found that the use of chloroquine for uncomplicated malaria was successfully discontinued in Zimbabwe, the change of policy to

treatment with artemether did not translate to adequate point-of-care use of the drug, where both chloroquine and sulphadoxine pyrimethamine in conjunction with artemether lumefantrine were in use.

Regarding practices, sleeping under bed nets was the most prevalent method of malaria prevention and control in this study with 57% participants saying they always use ITNs and 42% said they sometimes used ITNs. Despite the high prevalence of bed nets, an FGD with CHWs revealed that many community members did not use nets properly. They reported that some people use bed nets for fishing. The study by Appiah-Darkwah & Badu-Nyarko 2011 in Ghana had similar findings indicating that sleeping under bed nets was the most prevalent method of malaria prevention and control (87%) although, an FGD with VHTs/CHWs revealed that many community members did not use nets properly as some use them as curtains in their homes

5.4 HEALTH CARE PROVIDERS ATTITUDES TOWARDS MALARIA CONTROL

In this study, health workers usually had a good understanding of malaria prevention, management and control (Habinyama, 2016) and therefore, the success of the malaria control program largely depends on them. All the health care providers indicated that malaria is a major problem especially during the rainy season. Pregnant women were cited being at the greatest risk. Common symptoms identified by the health care providers were fever, headache, vomiting, abdominal pain, dizziness and convulsions in severe malaria as symptoms during the FGDs.

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

6.1 CONCLUSIONS

Findings from this study have demonstrated that even though knowledge levels on malaria were high, and comparable to other studies, attitudes and practices were negative amongst the participants. On the contrary, healthcare providers had the right attitude towards malaria prevention and control. This study has also established that Community Health Workers are very important in the fight against malaria.

6.2 RECOMMENDATIONS

6.2.1 RECOMMENDATIONS FOR POLICY

i. Health promotion messages should be customized to the target populations with special attention to local situation and high illiterate levels in the province. This will help to reduce the chances of misconception or misinformation among community members.
ii. CHWs must be supported by incentives to help them perform better.
iii. Local traditional leadership must be included as key stake holders in Malaria fight.

6.2.2 RECOMMENDATIONS FOR FUTURE RESEARCH

Even though the findings indicate that perceptions about malaria are positive in the communities, and both ITN and IRS are accepted strategies, research is needed on a better understanding of underlying reasons for potential misalignment between presence of mosquitoes and perception of malaria risk at household level.

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APPENDIX I:

THE INFORMATION SHEET

My name [….], a Bachelor of Science in Public Health Student at Chreso University I am kindly inviting you to participate in my research, which I believe will contribute greatly to understanding the knowledge, attitudes and practices towards malaria in Chiredzi district. I would, therefore, like to ask a few questions about my proposed research. This interview will take approximately 10 to 15 minutes.

There are no direct benefits, compensation or incentives to you for participating in this study. However, the information that you will provide will contribute to the improvement in the incidence and management of malaria in pregnant women in your community and in Zimbabwe.

I have requested you to be part of my study because as a resident of Chiredzi, I believe that your contribution will be helpful to the development of policies on malaria control. The answers to the questions will be treated as confidential and your name will not appear anywhere. In order to ensure confidentiality, no names or house numbers will be recorded. In this regard, study participants will be assigned numbers. The information obtained from this study will be used for the purposes of this study and will not be availed to any other person not connected to the study.

You have the right to withdraw or refuse to participate in the study before questions are asked or during questioning if you become uncomfortable with answering the questions being asked.

Any information about you will be treated utmost confidence and will not be able to be linked to you.

However, should you have any concerns or further queries, kindly do not hesitate to contact the following persons:

The Chairperson

Chreso University Research Ethics Committee

GO Centre

LUSAKA

APPENDIX 2 INFORMED CONSENT SHEET:

The above information has been explained to me clearly and I fully understand and consent myself to participate in the research.

Signature/thumb print ……..

Date……..

APPENDIX II: STUDY QUESTIONNAIRE:

CHRESO UNIVERSITY

FACULTY OF HEALTH SCIENCES

DEPARTMENT OF PUBLIC HEALTH

Dear respondent, this questionnaire is part of a study aimed at gathering information for academic purpose only. Every information given will be handled with utmost confidentially.

You are therefore advised not to indicate your personal details.

Your participation will highly be appreciated.

Kindly tick [√] in the appropriate box to answer the questions in this questionnaire or where applicable fill in the spaces provided.

Part A: DEMOGRAPHIC INFORMATION

1. Gender

Male	
Female	

2. Age (kindly indicate your age range)

15 – 29 years	
30 – 39 years	
40 – 49 years	

50 years and above	

3. What is your highest level of education?

No education	
Primary Level	
Secondary Level	
Tertiary Level	

PART B. KNOWLEDGE ON MALARIA

1. Have you ever heard about Malaria?

Yes ☐

No ☐

Not sure ☐

2. Which vector can transmit Malaria to humans? (Tick one only)

Rat ☐

Dog ☐

Mosquito ☐

Not sure ☐

3. Malaria can be transmitted to humans by?

Drinking contaminated water ☐

Eating contaminated food ☐

Eating a lot of mangoes ☐

Bite of mosquito infected with Malaria ☐

Coming into close contact with a Malaria patient ☐

4. Which of these are ways to prevent and control Malaria? (Tick all that apply)

Sleeping in bed nets ☐

Wearing long sleeved clothes ☐

Making fire and smoke ☐

Spraying insecticide ☐

I don't Know ☐

5. What personal protection measures do you use to guard against Malaria? (Tick all that apply)

Use repellents ☐

Close windows and doors ☐

Use mosquito nets ☐

Do nothing ☐

Others (specify) ☐

6. Does everyone sleep under mosquitos?

Yes ☐

No ☐

7. Have you ever heard or received any information related Malaria? (Tick only one)

Yes ☐

No ☐

10 (a) If yes, from which sources have you heard or received information about Malaria? (Tick all that apply)

Neighbour (in the village)	☐
Radio	☐
Television	☐
Posters/pamphlets	☐
School	☐
Health centre/clinic	☐
Community health worker	☐
Others	☐

PART C: ATTITUDE TOWARDS MALARIA PREVENTION

Treatment seeking behaviors

1. Have you or any member of the household suffered from Malaria in the last six months (Tick only one)

Yes	☐
No	☐

2. How soon after suspecting Malaria would you seek treatment?

One day (within 24 hours)	☐
2-3 days	☐
4-6 days	☐
7 days or more	☐
I don't Know	☐

3. If you do not seek treatment immediately (within 24 hours), what would you do?

…….

ATTITUDES TOWARDS MALARIA (Tick one only)

	Strongly Disagree	**Disagree**	**Agree**	**Strongly Agree**
I think that Malaria is a serious and life-threatening disease				
Malaria can be transmitted from one person to another like the common cold				
I think the best way to prevent myself getting Malaria is to avoid getting mosquito bites cold				
I am sure that anyone can get Malaria				
I believe sleeping under a mosquito net during the night is one way to prevent myself getting Malaria				
I am sure that I can treat myself if I get Malaria				
In my opinion, only children and pregnant women are at risk of Malaria				
I think that one can recover spontaneously from Malaria without any treatment				
9.If someone has got Malaria, people should avoid having close contact with him/her				
I might be at a greater risk of getting Malaria if I work and sleep overnight in the garden or forest				
I think that it is dangerous when Malaria medicine is not taken completely				

I can buy anti-Malaria drugs from the drug shop/pharmacy to treat myself when I get Malaria				
I think that I should go to the health centre/clinic to have my blood tested as soon as I suspect that I have suffered from Malaria				
I will seek for advice or treatment when I get Malaria				
In my opinion, it is very important to check for an expiry date of the drug before taking it				

PART D: PRACTICES TOWARDS MALARIA PREVENTION (tick one only)

	Always	**Sometimes**	**Never**
How often do you sleep in a mosquito net?			
How often do other members of the household sleep in mosquito nets?			
How often do you check for holes/repair mosquito nets			
How often do you use mosquito repellent coils on your house?			
How often do you use anti-mosquito spray in your house?			
How often do you clean/cut bushes around your house?			
How often do you clean stagnant water near your house			
How often do you visit the health centre when you fall sick?			

APPENDIX V: INTERVIEW GUIDE FOR COMMUNITY HEALTH WORKERS

CHRESO UNIVERSITY

FACULTY OF HEALTH SCIENCES

DEPARTMENT OF PUBLIC HEALTH

Dear respondent, this questionnaire is part of a study aimed at gathering information for academic purpose only. Every information given will be handled with utmost confidentially.

You are therefore advised not to indicate your personal details.

Your participation will highly be appreciated.

COMMUNITY LEADERS PARTICIPATION IN MALARIA PREVENTIVE AND CONTROL MEASURES IN CHIREDZI DISTRICT

1. How is the Malaria situation in Chiredzi District?
2. Who is the most affected?
3. What is your role in the control of malaria in the district?

APPENDIX III: INTERVIEW GUIDE FOR DISTRICT HEALTH OFFICE

CHRESO UNIVERSITY

FACULTY OF HEALTH SCIENCES

DEPARTMENT OF PUBLIC HEALTH

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CHALLENGES FACED BY CHIREDZI DISTRICT HEALTH OFFICE IN THE CONTROL OF MALARIA IN THE DISTRICT?

1. How is the malaria situation in Chiredzi?
2. What control measures have you put in place a District Health office?
3. What challenges have you been facing in the execution of your duties regarding malaria control?