PREPAREDNESS OF ZIMBABWE'S HEALTH SYSTEM TO RESPOND TO EMERGING AND REEMERGING INFECTIOUS DISEASES; FOCUS ON PARIRENYATWA AND MPILO HOSPITALS

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DECLARATION AND APPROVAL

Declaration by the student

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

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DEDICATION

I dedicate my thesis to my family. A special feeling of gratefulness to my wife, Clotilda whose words of inspiration and encouragement.

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Firstly, I would like to acknowledge God who has given me the life and opportunity to embark on this study. His mercies have allowed me to get to this point. I would also like to acknowledge Dr Jackline Mosinya Nyaberi and Prof. Eliab Seroney Some who intently supervised me to make this research possible, their patience and focus were remarkable. Acknowledgement also goes to my fellow Mount Kenya MPH 2016 students for their assistance and support during the period of doing this research. Special mention goes to Thando L Sibanda and Malvin Tederera who took their precious time and resources to help me with gathering information and follow logistics. Finally, I also want to acknowledge the Ministry of Health officials, Clinical directors of Parirenyatwa and Mpilo hospitals in Zimbabwe as well as all the respondents from both hospitals that contributed to making this study possible.

ABSTRACT

Infectious diseases are responsible for a large number of deaths worldwide with Africa being the most affected. More than half of all deaths, 56 %, in low-income nations in 2016 were as a result of "Group I" conditions, which encompass communicable diseases. Some of these are emerging in countries where they were previously unknown such as Zika virus disease while others such as malaria are re-emerging. Recent outbreaks of plague in Madagascar and Marburg virus in Uganda have pointed to the need for health systems that are prepared to respond to infectious diseases, both emerging and re-emerging. The plague in Madagascar had 2348 confirmed cases and 202 deaths (case fatality rate 8.6 %) a situation, which may be extrapolated to other countries due to globalization. The study focus was to assess the preparedness of Zimbabwe's Health System to respond to emerging and re-emerging infectious diseases. To determine the preparedness of the health system, the research sort to establish the readiness of Mpilo and Parirenyatwa health facilities to respond to emerging and reemerging infectious diseases, to establish the readiness of health personnel, to ascertain the availability of medicines and to determine relevance of protocols for reemerging and emerging infectious diseases at the hospitals. An explanatory convergent mixed methods approach was employed in data collection. Only health workers were included in the study, those that are exposed and work with patients that are suffering from emerging and reemerging infectious diseases. 257 respondents were interviewed and a questionnaire administered using purposive and stratified random sampling methods. Research findings indicated that the health system was severely compromised and could not respond to emerging and re-emerging infectious diseases. Although the country is ready to respond to infectious diseases in terms of enough bedding to handle the influx of patients, 30.7% of respondents representing the majority disagreed that the hospitals had efficient and active communication systems. Altogether, 46.7% indicated that the hospitals were not ready to respond to both emerging and re-emerging infectious diseases whilst 33.5% indicated that the hospitals were ready. Lack of adequate human resources, shortage of qualified and health staff in infectious diseases, inexperienced and poorly motivated health personnel were highlighted by the study.. The study found that medicines for emerging and re-emerging infectious diseases are not always readily available, accessible and affordable. All responses relating to the perceived availability of medicines for emerging and re-emerging infectious disease response attained a mean composite score of 2.80 which implied that medicines for infectious disease response are not always readily available. A low composite index score for perceived relevance of protocols for re-emerging and emerging infectious diseases was calculated; the study concluded that protocols for re-emerging and emerging infectious diseases are irrelevant and inadequate for infectious diseases such as cholera, Ebola and Zika virus disease. The study concluded that the health system of Zimbabwe is not prepared for emerging and re-emerging infectious diseases. It is recommended that strategic frameworks for prevention and early warning and detection systems for infectious disease outbreaks are developed.

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LIST OF ABBREVIATIONS AND ACRONYMS

EID	Emerging Infectious Diseases
GNU	Government of National Unity
HIV	Human Immunodeficiency Virus
HPV	Human Papilloma Virus
PGH	Parirenyatwa Group of Hospitals
RID	Remerging Infectious diseases
SARS	Severe Acute Respiratory Syndrome
TB	Tuberculosis
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter introduces the research highlighting the background, statement of the problem, the purpose of the study, objectives of the study, research questions, hypothesis, and significance of the study, the scope of the study, study limitations, delimitations and assumptions of the study.

1.2 Background to the Study

It is commonly said prevention is better than cure. This is particularly true for most infectious diseases that can be prevented by healthy behaviour and conscious decisions to prevent spread and infections. Diseases such as Human Immunodeficiency Virus (HIV) and Human Papilloma Virus (HPV) can be prevented through condomization while others especially diarrheal infections can be prevented by the washing of hands and consuming safe food. However, for developing countries, responding and controlling of infectious diseases has been difficult, as stated by (Muhammad Ali Syed1, 2015) "The scenario is worse in the developing international locations which might be already tormented by poverty, starvation, loss of sources, infrastructure, political stability and determination".

Infectious diseases can be grouped into emerging and remerging diseases. Emerging Infectious Diseases(EID) according to (Fletcher, 2013) can be defined as, "an infectious disease whose incidence is growing following its first advent into a new host population or whose prevalence is increasing in an current host populace due to long-term changes in its underlying epidemiology' while 'Remerging Infectious diseases (RID) are

diseases that reappear after they have been on a significant decline', according to (University, 2021)

Infectious diseases have been known to spread rapidly among a population and across borders. Globalization is one major driver in the spread of infectious diseases. According to (Lee, 2000), 'Globalization may be described as a system that is changing the nature of human interplay across a wide range of spheres' (e.g. economic, political, social, cultural, technological, and environmental). In this regard, the movement of people from countries that are affected by certain infectious diseases has contributed to creating a burden in other countries that may not have been prepared for them. For instance, in 2003, Severe Acute Respiratory Syndrome (SARS) commenced in China and unfolded hastily across the globe due to the movement of people. According to (National Center for Immunisation and Respiratory Diseases, 2012), The World Health Organization (WHO) States that a total of 8098 people worldwide became sick with SARS for the duration of the 2003 outbreak and of those 774 died. A similar trend was observed in 2009 with swine flu. On March 18, an outbreak was reported in Mexico and by April 25 WHO had declared a public health emergency. Approximately 1000 cases were reported in 21 countries by May 5th. The spread of these infectious diseases can be all linked to globalization.

Because of the evolution of some of the infectious diseases such as influenza through processes such as Antigenic Drift and Antigenic Shift and antibiotic resistance of others such Tuberculosis (TB), it has become increasingly complex to prevent infectious diseases outbreaks. (David E. Bloom, 2019) states that "Despite its track record, whether the global health system as currently constituted can provide effective protection against an expanding and evolving array of infectious disease threats has

been called into question by recent outbreaks of Ebola, Zika, dengue, Middle East respiratory syndrome (MERS), severe acute respiratory syndrome (SARS), and influenza, as well as the looming specter of rising antimicrobial resistance (AMR)", such as those of TB, a situation, which calls for new ways to be developed to respond to their occurrence.

Of note in the struggle with infectious diseases are the recent outbreaks that occurred in Uganda and Madagascar. In Uganda, there were reports of the Marburg virus, which resulted in the death of one person and exposure of more than 200 people who attended the traditional burial of the first casualty as stated by (Organisation, World Health Organisation, 2017). WHO reported that it was monitoring the situation in the Kween province in Uganda, however in Madagascar as reported by (Senthilingam, 2017) a plague outbreak has infected 1192 people and resulted in 124 deaths.

In the struggle to combat infectious diseases many African governments with the help of international donor agents, have done immensely well in eradicating diseases such as measles and polio. This has however been affected by the emergence of previously known diseases known as reemerging infectious diseases and emerging infectious diseases.

In efforts of combating infectious diseases, governments rely on the effectiveness and capacity of their health systems. WHO defines a health system as coordination between organizations, people and activities whose primary intention is to encourage, reestablish or preserve health. Some countries in Africa have some parts of the system or the entire system compromised due to lack of resources, corruption or mismanagement that results in these countries being unable to combat infectious diseases as highlighted by (Center, 2019), stating that the Ebola outbreak in the Democratic Republic of Congo

was due to deteriorated public health systems in distress from decades of weak organizations and conflict , making conditions susceptible to corruption and mistrust . According to (John Osika, 2010), “the Zimbabwean health care system is well described in its shape regarding authority, useful resource allocation, statistics reporting, division of care services, and referrals of patients, although, critical management and genuine observance to defined systems are vulnerable throughout the system”.

The research focused on Zimbabwe’s two largest hospitals in terms of complexity of services given to patients’, number of medical staff, number of beds and facilities, financing and medical supplies. Located in Harare, Parirenyatwa hospital is the largest in the country followed by Mpilo hospital located in Bulawayo. These two health institutions were used in the research to give a representation of how Zimbabwe’s health system responds to infectious diseases. It is against this background that the research was conducted.

1.3 Statement of the Problem

Infectious diseases, both emerging and reemerging have caused high rates to mortality and morbidity in most countries including Zimbabwe. As stated by (Medicine, 2021) “Infectious diseases are a leading cause of death worldwide, particularly in low-income countries, especially in young children”. According to (Zulfiqar A Bhutta, 2014), HIV/AIDS deaths increased to 1.5 million and malaria deaths increased to 1.7 million worldwide in 2010 while TB killed 1.2 million in the same year. Most infections of TB, HIV and Malaria happen low-income countries such as most countries in Africa.

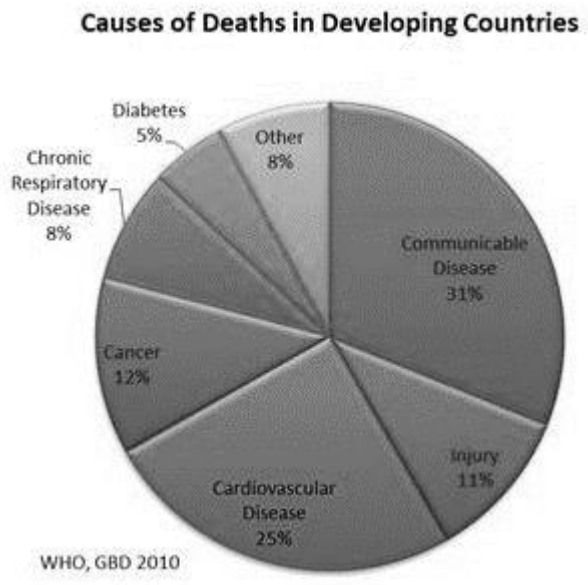


Figure 1.1: *World Health Organization: Global Burden of Diseases, 2010*

In the case of Zimbabwe, there have been outbreaks of cholera and dysentery and Typhoid over the years. Consistent outbreaks of typhoid and many mortality cases from malaria have been reported starting from 2016. In December 2016 (Fund, 2017) reported 2 deaths and 2352 cases of typhoid and number that continued to increase in 2017. According to the Ministry of Health and child welfare, 89000 cases of malaria were reported with 151 deaths in the first 9 weeks of 2017.

Questions can be raised about why the outbreaks of these emerging diseases such as typhoid and reemerging disease such as Malaria have succeeded to cause high rates of morbidity and mortality. There has not been conclusive evidence as to whether Zimbabwe's health system is prepared to respond or can respond to both emerging and reemerging infectious diseases if and when they arise.

In 2019, an emerging infectious disease called Covid-19 emerged .According to (Medicine, 2021) , "The most recent coronavirus to emerge is named SARS-CoV-2; It causes the disease known as Covid-19. The effects of Covid-19 pandemic have been felt around the worldwide". This research proposed to assess Zimbabwe's health

system's preparedness and response to emerging and reemerging infectious diseases. Without a thorough knowledge of the mechanisms that are present or lacking in the health system, focusing aid and assistance and containment of diseases in times of outbreaks may prove to be impossible hence the need for the study.

1.4 Objectives of the Study

Main objective

The primary objective of the study is:

To assess the preparedness of Zimbabwe's health system to respond to emerging and reemerging infectious diseases with a focus on Parirenyatwa Hospital and Mpilo Hospital.

Specific Objectives

The primary objective is supported by these four subsidiary ones.

i) To establish the readiness of Mpilo and Parirenyatwa health facilities to respond to emerging and reemerging infectious diseases.
ii) To establish the readiness of health personnel at Mpilo and Parirenyatwa hospitals to respond to Emerging and Reemerging diseases.
iii) To ascertain the availability of medicines at Mpilo and Parirenyatwa hospitals for emerging and reemerging infectious disease response
iv) To determine relevance of protocols for reemerging and emerging infectious diseases at Mpilo and Parirenyatwa hospitals.

1.5 Research Questions

The research questions outlined below echo the objectives spelt out above.

i) What is the level of readiness at Mpilo and Parirenyatwa to respond to re-emerging and emerging infectious diseases?

ii) What is the level of readiness of health personnel at Mpilo and Parirenyatwa hospitals to respond to Emerging and Reemerging diseases?

iii) Which medicines are available at Mpilo and Parirenyatwa Hospitals for emerging and reemerging infectious disease response?

iv) What are relevant protocols available to deal with infectious diseases in Mpilo and Parirenyatwa Hospitals?

1.6 Significance of the Study

This study generated valuable information in regard to the weaknesses and strengths in the health system. These will be exposed ,and that will aid the Ministry of Health and other interested stakeholders in diseases prevention and control such as international agencies and aid organizations to see where resources need to be focused and where their efforts are yielding results in combating infectious diseases.

1.7 Scope of the Study

The research looked at Zimbabwe's health system as a whole expanding on each element, that is, organization of people, institutions, and resources that deliver health care services that target preventing infectious diseases. The focus was on Parirenyatwa Hospital and Mpilo Hospital, and information was sort concerning emerging diseases such as Typhoid and reemerging infectious such as Tuberculosis and malaria. The study lasted 12 months

1.8 Study Limitations

Bureaucratic processes hindered access to information pertinent to the research. The researcher directly approached direct people with vital information formally and informally.

Data on infectious diseases was not fully recorded and documented because of the lack of computers and technology and secondary sources were consulted.

1.9 Delimitations

The study is delimited to Zimbabwe's health system, which is clearly structured with all its components boundaries clearly established.

Only two hospitals are the object of the study. The researcher is familiar with Parirenyatwa Hospital and Mpilo Hospital hence obtaining information in terms of interviews and questionnaires was easy.

The study was delimited to infectious diseases such as typhoid, Cholera and non-communicable diseases were not part of the study. These were used as a reference on how the system was prepared to respond in event of occurrence.

1.10 Assumptions of the Study

Truthful responses from participants were anticipated because the researcher indicated that the information was strictly for research purposes and all information from participants would be verified.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section of the research aimed at outlining different views that were aired by other researchers in relation to infectious diseases, health systems and responses and preparedness in combating both emerging and reemerging infectious diseases. Furthermore, terminologies related to the variables of the research were highlighted in this chapter.

2.2 Empirical Literature

2.2.1 Emerging and Re-emerging diseases

Though the health systems of some governments especially those in the developed countries have managed to contain infectious diseases and stop outbreaks, however, some infectious diseases have reemerged. According to (Medicine, 2021) , "Measles, a highly contagious and serious infection that was eliminated from the U.S. in 2000 and from the Western Hemisphere in 2016, has returned in certain areas due to an increase in the number of people opting to take nonmedical vaccine exemptions for reasons of personal and philosophical belief."

Infectious diseases remain a major challenge for developing world governments. (Kendyl Salcito, 2014) States that, "Poverty and inequality generate situations for infectious diseases to increase, and the diseases, in turn, engage with social-ecological structures to promulgate poverty, inequity and mortification", a situation which may then affect health systems response and preparedness to infectious diseases. Most developing countries' governments lack skills and resources to manage and strengthen

their health systems and prepare them to respond to unpredictable emerging and reemerging infectious diseases.

The African continent has been associated with almost all diseases because of the environment, which is conducive for bacteria growth, poverty and poor sanitation and vector transmission as evidenced by the increase in malaria cases in 2019. According to (Prevention C. f., 2019) , In 2019, malaria cases and malaria deaths increased in Zimbabwe compared to the previous year with approximately 310,000 malaria cases were reported in 2019, equivalent to an incidence rate of 22 cases per 1,000 population This raised a question as to whether these deaths could not have been prevented if African countries had health systems that were prepared to respond to outbreaks of both reemerging and emerging infectious diseases.

Not one person can claim to know what new disease will emerge, hence the public health system must be equipped at all times for an unanticipated disease outbreak. This alludes to the fact that disease outbreaks and events can happen at any time and place, therefore, a mechanism must be available to counter and contain the emerging diseases. Planning and putting measures in place at the time of occurrence may be too late and could result in an excessive number of deaths and morbidity.

Apart from poor sanitation and the presence of a conducive environment infectious disease agent multiplication, the vast population of animals such as pigs and buffalos and vectors such as mosquitos and tsetse flies contribute to the infection of humans . According to (Organisation, World Health Organisation, 2019) , “Vector-borne diseases account for more than 17% of all infectious diseases, inflicting greater than 700 000 deaths yearly”. Zoonotic diseases are a primary participant in EIDs. A tremendous majority of zoonotic diseases are difficult to track, those which can be vector-borne are at once affected by environmental dynamics. Climate change is expected to have a

profound impact at the emergence of infectious illnesses with zoonotic vectors inside the coming decades, changing disease incidence and placing millions of people at danger.

Zoonotic diseases are a major player in EIDs. A vast majority of zoonotic diseases are challenging to track; those that are vector-borne are directly affected by environmental dynamics. “Climate change is predicted to have an intense influence on the advent of infectious diseases with zoonotic vectors in the coming eras, modifying disease incidence and placing millions of more people at peril” (Association, 2015).

Faced with the threat of diseases outbreaks of all kinds Governments and the international community have tried to handle them to the best of their abilities but their unpredictability and lack of reporting it have proved to be a mammoth task for them. (Prevention, 2011) , the Center for Disease Control says because of the unpredictability of infectious diseases, any flaws in these public health fundamentals can have far-reaching consequences. For example, the vivid declines in TB that began in the mid-20th century led to a disassembling of most state and local TB control programs, leaving many communities unprepared for the rise in TB cases that started inside the mid-1980s.

2.2.2 Health System of Zimbabwe

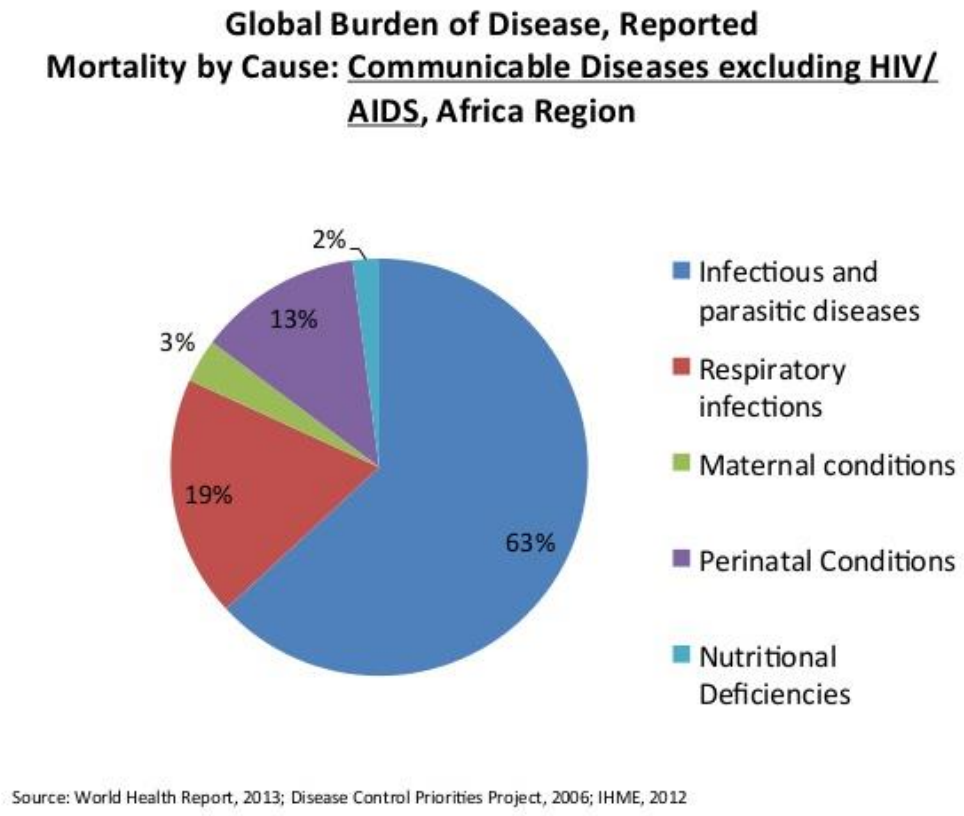


Figure 1.2: *World Health Report, 2013, Disease Control Priorities Project, 2006; IMHE,2012*

As indicated by Fig 2, infectious diseases had the largest percentage of disease burden at 63 % in the African region in 2013 according to (Oberservatory, 2014). It is important to note that Zimbabwe, a developing country in Africa, has had numerous experiences with infectious diseases and many lives lost in the process. Through its health system, which is, well-structured efforts have been made to control and combat infectious diseases. The system has been through leaps and bounds, from 1980 when the country got independence the system was thriving being backed up by a strong economy until 2000 when the land appropriation caused severe damage to the country. (Knoema, 2021) says “In 2018, health expenditure as a share of GDP for Zimbabwe

was 4.7 %. Health expenditure as a share of GDP of Zimbabwe fell gradually from 6.9 % in 2012 to 4.7 % in 2018". This leads to a surge of infections, with Cholera in 2008-2009 being significant.

"Experts say the health crisis has its roots in the country's wider economic collapse which has brought back hyperinflation, shut factories, pushed the official unemployment rate to an estimated 90% and seen the majority of the population sink deeper into poverty and hardly able to afford a square meal" as stated by (24, 2020). Dire and scarcity of medicines in Zimbabwe is exacerbating the spread of deadly infections such as typhoid and cholera across the country, as the ailing economy worsens the nation's failing public health system. (C. Nicholas Cuneo, 2017) , "The 2008–2009 cholera epidemic in Zimbabwe resulted in 98,585 reported cases and 4,287 reported deaths, making it the largest and deadliest in the history of Zimbabwe" – an outbreak UNICEF has described as one of the worst ever recorded in low and middle-income countries (LMIC) – compounded with the aid of terrible sanitation and restrained access to healthcare (Times, 2016).

One has to wonder however if indeed Zimbabwe s health system is crippled or there is still life in it to respond to infectious diseases both emerging and reemerging. Preparedness and response can only be possible if there is a willingness to improve and uphold policy in that direction. Previous cases of outbreaks that have happened in the past will assist in shaping response and preparedness. According to (Safety, 2018) , "The ability of the health system to adequately manage risks of emergencies and provide access to good-quality care is often affected by those very emergencies because they disrupt a range of important elements of health care provision"; preparedness is based on programs learned from both actual and simulated response situations.

Mortality rates, prevalence and other related statistics have been used as indicators of the effects of infectious diseases. These have helped shape policy and alert relevant stakeholders of critical areas that are prone to infectious disease outbreaks. However, even with ample information and statistics, some Governments have failed to prepare and respond to outbreaks of infectious diseases. According to (Future, 2016), "Strong public health structures and competences are the base of strong health systems and the first line of defense against infectious disease outbreaks that could become pandemics and yet far too many countries have been ineffective in building the necessary aptitudes and infrastructure".

It should be noted that most populated areas in Zimbabwe are rural, and it has been noted that there are usually health inequalities between the population in urban areas and that in the rural. Because of location and inaccessibility, some areas are difficult to reach, health response is slow and information relating to diseases may arrive late to relevant departments and individuals. According to (EK Quinn, 2015), rural and remote areas are challenging in the provision of health services and access to care.

2. 3 Theoretical Framework

Many theories exist, which endeavour to explain infectious disease causation and health systems.

2.3.1 The health care system theory

The healthcare system theory is one that is important to this research. It focuses on the prevention of diseases through coordinated efforts from the government, international donor agencies, finance, human resources and health institutions. According to

(Cordon, 2013), “a Healthcare System is an arrangement with various levels of intricacies and it involves decision-makers, policymakers, and clusters of people in organizations, organizations, and agencies that shape the way in which health care is provided to society”. The focus of this approach is on how health care is provided to the sick, thus it becomes useful for this research as it seeks to establish the response to the infected people and what proactive measures exist to handle known and previously unknown infectious diseases that have arisen in the population.

2.3.2 Health system assessment approach

According to (project, 2017), “the health systems assessment approach is an indicator-based method for rapid assessment of the health system, using secondary data, document review, and stakeholder interviews ,intended to allow detection of health system performance by recognizing system strengths and weaknesses and then mounting strategies and recommendations based on an understanding of priorities and programming gaps in the country”. The health systems approach will give a platform of observable indicators of the health system which can give information on preparedness or response. Examples of these indicators include health workers, health facilities both district and rural, household heads and individual infectious diseases outbreaks.

In respect of both theories, the health care system approach and the health system assessment approach, the research utilized the health system assessment approach more vigorously as it can give observable units of analysis on the health system’s preparedness and response.

2.4 Conceptual Framework

2.4.1 Relationship between Health Systems and Infectious Disease

Preparedness to reemerging and emerging disease is based on the premise that health systems are structured not only to handle the sick in the population but also to be ready to respond to infectious diseases events. According to (Duchin, 2016), “Preventing, preparing for, and responding to infectious disease epidemics demands a sustained and forward-looking investment in public health”. A relationship can be established between readiness mechanisms and the health system in which the mechanisms operate. For example, an emergency protocol set up to handle an outbreak of an emerging disease is established after a realization that a disease such Ebola may arise and the system will need to respond.

Because of the ability of infectious diseases to spread rapidly from a single person to a community and the whole country, preparedness must exist from grass root stages of the health system to a nationwide level. One of the aspects of preparedness worth mentioning is Hospital Preparedness. Hospital facilities should have an effective communication system, equipment as well as adequate bedding. According to (Drayi, 2019), “Despite the glitches caused by hospital bed shortages, existing beds also have tremendous impacts on health”. This preparedness could also be in the form medical doctors, paramedics’ laboratory technicians and other people involved in delivering patients to the hospitals.

However, it would not be enough to use Hospital preparedness as the only measure of how prepared a system is to emerging and reemerging infectious diseases. Other queries such as Communication and movement of information in times of outbreaks can also be used to establish preparedness and responds a system has. According to (Elena Savoia,

2013) , “Communication to the community is critically vital in public health emergency preparedness. It is one of 15 public health emergency preparedness capabilities developed by the Centers for Disease Control and Prevention (CDC)”.

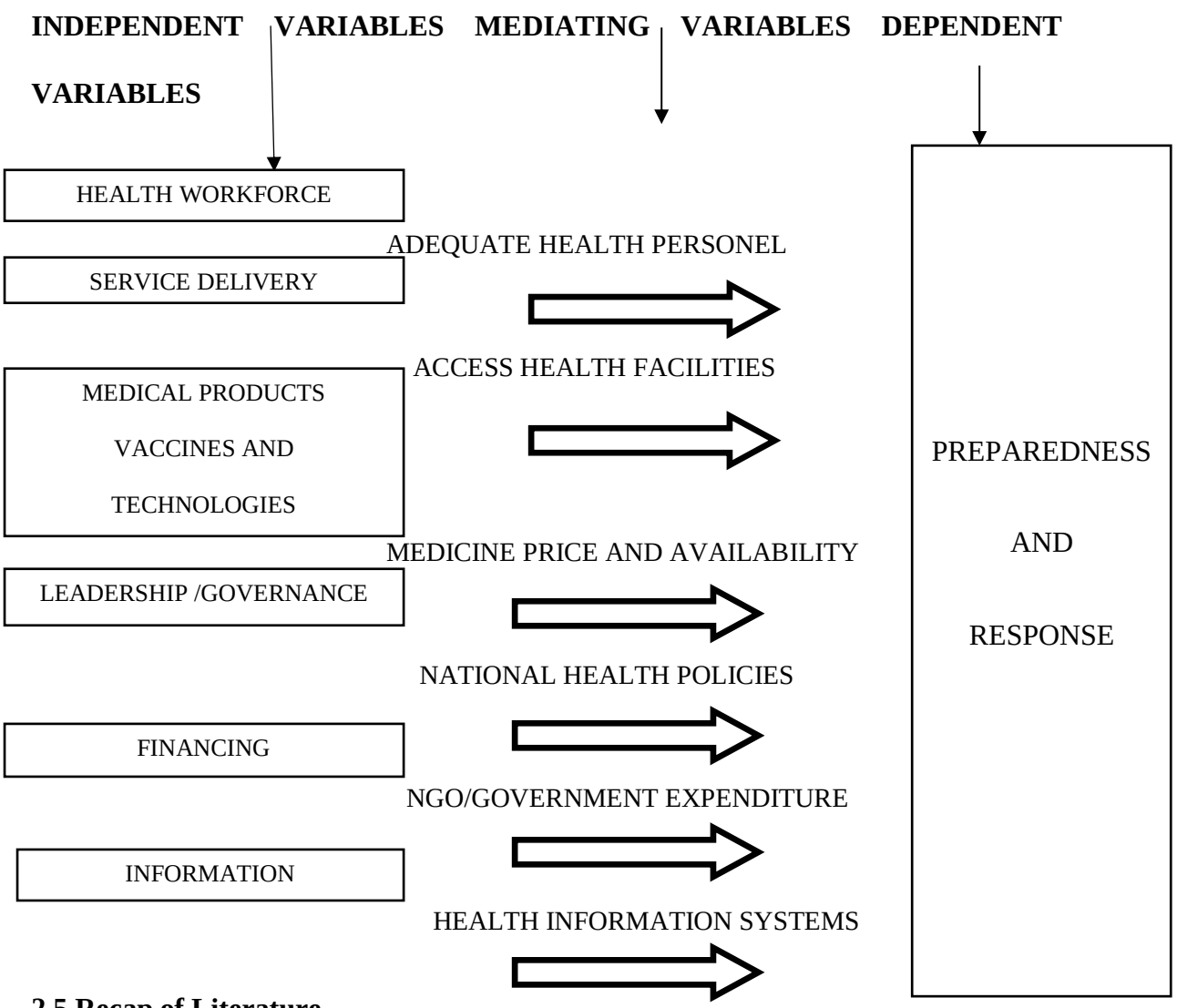
Leadership and governance is an important block in a health system .It relates to the responsible management of institutions and careful application of laws that uphold policies set by Governments and donor agencies. Response to infectious diseases would be possible if Governments had strong leadership and governance skills. However, most African countries struggle with upholding their own health laws and mismanagement is rampant. (Chigozie J. Uneke, 2012) , alludes to the fact that lack of operational governance and leadership is a challenge in low-income countries. (Nahitun Naher, 2020) also states that , “Implementing regulations remain constrained not only due to lack of institutional capacity but also political commitment”.

Access to health is a basic human right as enshrined in the United Nations charter. Access to medical products, vaccines and technologies has remained a significant challenge to most low-income countries such as Zimbabwe. Lack of financing due to a non-performing economy and negative international community political atmosphere has seen Zimbabwe lacking essential medicines which in some cases led to the stoppage of surgeries due to lack of basic drugs as anesthetics and insulin as reported by (NewsDay, 2017). Due to lack of financing another block in the health system, Health workforce is affected. The result would be an unmotivated workforce. As stated by (Manyazewal, 2017) , “There exist job dissatisfaction and demotivation of the public health workforce, with potential impacts on the overall health system”.

Technology is essential in health for all kind of diseases .In ascertaining and diagnosing the type of infectious agent affecting a certain population, reliable equipment in

hospitals and laboratories must be available. Knowledge on the use of technology may not be available or finance to procure the equipment may not be available creating a challenge in responding to infectious diseases.

CONCEPTUAL FRAMEWORK: HEALTH SYSTEM AND PREPAREDNESS



2.5 Recap of Literature

Emerging and reemerging infectious diseases are a major concern in Africa were weather conditions, poor sanitation and poverty prevail. Nearly all countries have health systems in place to try and contain such diseases. Theories such as health care system

theory and health system assessment approach have been used to develop health systems that are prepared to respond to infectious diseases. Zimbabwe has a health system that has been compromised by turbulent economic woes. As indicated in Fig .1 developing countries have 31 % disease burden of communicable diseases which prompted the research into the preparedness of Zimbabwe's health system to respond to both emerging and reemerging infectious diseases.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter focused on the research methodology. It highlighted the Research design, Location of the study, Target population, Sampling procedures and techniques, Sample population, Construction of research instruments, testing for validity and reliability/trustworthiness, Data collection methods and procedures, Proposed data analysis techniques and procedures, Ethical Considerations. The explanation is given why a particular method has been chosen over others.

3.2 Research Design

The convergent mixed-method approach was useful for this research because it brought both methods quantitative and qualitative together to complement data. In this study, a health survey and a health workers survey was done to ascertain preparedness and response of the health system to both EIDs and RIDs with interviews, focus group discussions and questionnaires being used to strengthen and complement results obtained.

According to (Bhattacherjee, 2012), states, “While descriptive research scrutinizes the what, where, and when of an occurrence, explanatory research seeks solutions to why and how types of enquiries.” The qualitative design of this research was explanatory, seeking to find answers to the preparedness of the health system to respond to infectious diseases. Data collection of the qualitative aspect of the research utilized interviews and questionnaires of health personnel and administrators of the selected health facilities. The researcher used a questionnaire as a data-gathering tool about the operations of the health facilities, equipment and the actions of health personnel in respect of infectious

diseases to ascertain the level of preparedness. Focus group discussions were utilized and included Nurses, Training Officers, and Junior Resident Medical Officers.

The questionnaire was also used to ascertain what percentage of workers in the health facilities who were are aware or understand procedure during infectious diseases outbreaks. The questionnaire also sought to quantify the number of workers who trained in infectious diseases response. The flow of the convergent mixed methods research used is indicated below:

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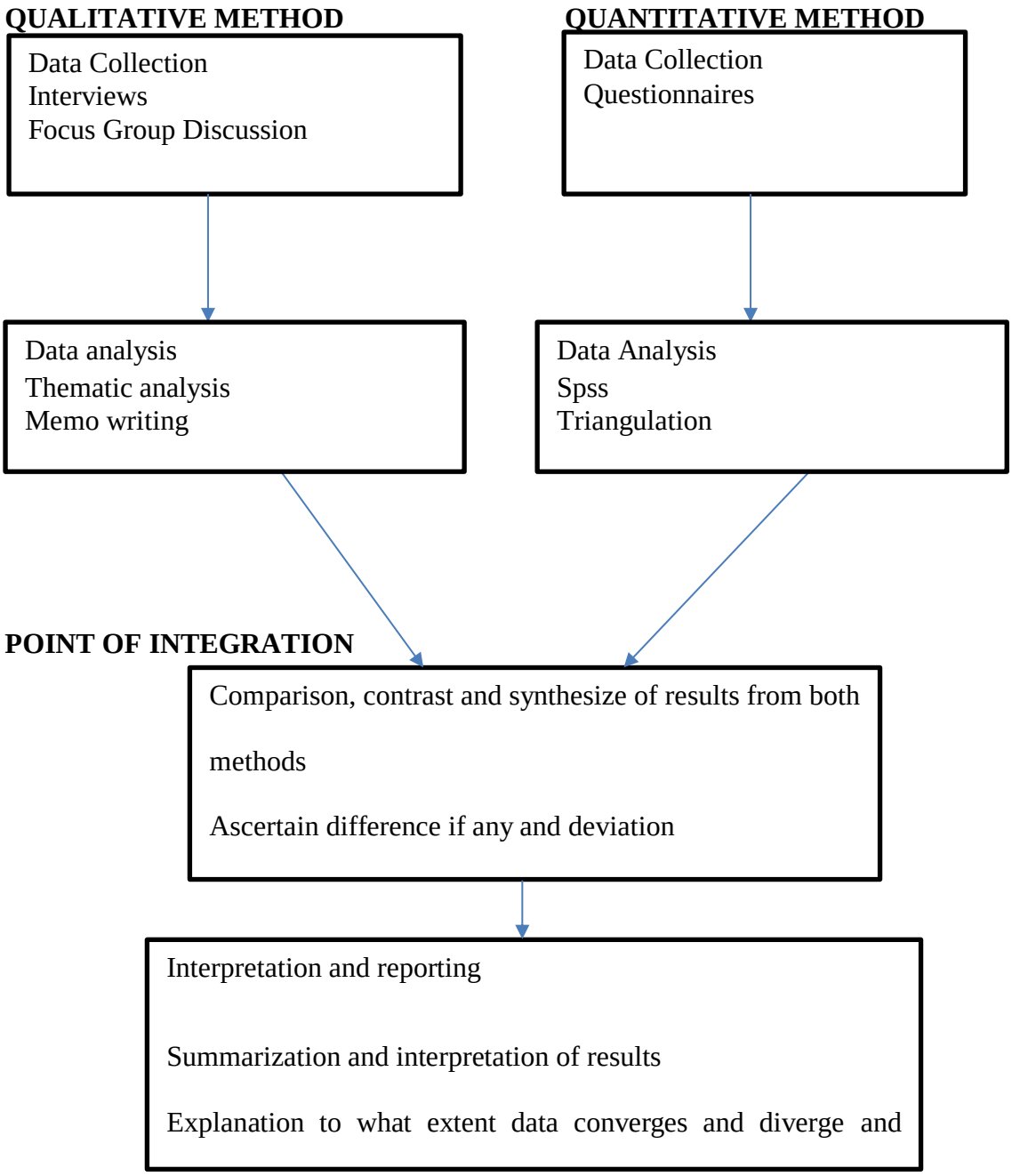

This study was a cross sectional survey. The data was collected once only and no follow-up data collection sessions were done since this was not a longitudinal study. No study cohorts were used in this study. The data was collected from two study sites that are Parirenyatwa Hospital in Harare and Mpilo Hospital in Bulawayo. The main aim of the study was to understand the holistic view the health system in Zimbabwe. Therefore, the study did not aim to compare the results of the two research sites. The

study was meant to explore the Zimbabwean health system and determine its readiness to deal with infectious and reemerging diseases. Due to this study design, the study could not compare the results of the two study sites instead the data was used complementary to achieve precise and concise research results.

Research Approach

This study adopted both the inductive and deductive approach. The deductive approach was used to ascertain on matters aspects of this this research that the researcher had an understanding on. On the other hand, an inductive approach was used to collect detailed data in the grey areas of this research phenomenon. The questionnaires were administered under the deductive approach. The researcher used a questionnaire that had more closed questions as opposed to open ended questionnaires. This allowed the researcher to evaluate the respondent's opinions on particular variables that the researcher was using to determine the readiness of the Zimbabwe's health system to deal with infectious and reemerging diseases.

The inductive approach utilized focus group discussions and interviews to yield rich data that was explanatory of the research phenomenon. A flexible interview guide and focus group discussions were used to engage the research participants on matters that needed a detailed exploration. This mixed approach helped the research to obtain a detailed and well balanced account and discussion of the research scenario. Also the mixed approached helped the researcher to close the information gaps that any one of these approaches could have caused.

3.3 Location of the Study

The research was conducted in Zimbabwe focusing on the two largest hospitals located in Harare and Bulawayo as shown in the appended map, Appendix 8. Parirenyatwa hospital is located in the centre of the capital city Harare. Most urban to rural migration occurs to Harare and as a result, the city has a population of over 2 million people according to (Agency, 2012). Parirenyatwa hospital services provinces in the Eastern, Northern and Southern parts of Zimbabwe namely Harare Province, Manicaland Province, Mashonaland Central Province, Mashonaland East Province, Mashonaland West Province, and Masvingo Province. Harare is where most businesses and government offices are located.

The second-largest hospital, Mpilo hospital is located in the second capital city of Zimbabwe, Bulawayo. The city is located on the western side of Zimbabwe and has a population of approximately 653 337 according to (Agency, 2012). Mpilo hospital services provinces in the western side of Zimbabwe namely Bulawayo Province, Matabeleland North Province, Matabeleland South Province and Midlands Province.

The largest population of Zimbabwe resides in the rural areas located in all 10 provinces. Because of the severe economic hardships that have been faced by Zimbabwe for the past two decades, developments in all its facets has been nonexistent or stagnate in these areas. As a result to get treatment for any complicated or severe case of illness people would have to find their way to either Parirenyatwa or Mpilo Hospital. It must be noted that there are other health facilities such as district hospitals and mission hospitals in these provinces however they are not equipped as the two main hospitals under study. Overpopulation in these cities, such as in the case of Harare, has led to outbreaks of diseases such as Typhoid and Cholera

3.4 Target Population

The target population for the study was hospital workers from the two largest hospitals in Zimbabwe. The focus was on the health personnel that work and practice there. The target population is classified accordingly to the study design, the qualitative and quantitative designs.

Quantitative Design

The target population for the quantitative design includes the Heads of Department speciality, Specialist Consultants, Medical Officers, Casualty Hospital Officers, Senior Registrars, and Senior Resident Medical Officers. Questionnaires were used to collect data from these participants. A stratified random sampling technique was used to enumerate proportional and representative sample sizes from each of the mentioned sample categories. Quantitative data was obtained and analyzed with SPSS and integrated with qualitative data obtained from the other qualitative sample groups.

Qualitative Design

The target population for qualitative design was Nurses, Training Officers, and Junior Resident Medical Officers. Focus group discussions and interviews were used to collect data from these research subjects. Qualitative data was obtained and was integrated with the quantitative data obtained from the questionnaires.

3.4.1 Inclusion Criteria

Inclusion criteria were based on the profession of the workers. Only health workers were included in the study. Those that are exposed and work with patients that are

suffering from emerging and reemerging infectious diseases or handle documentation that relates to infectious diseases.

3.4.2 Exclusion Criteria

The exclusion criteria for workers were that workers that are not medical or health practitioners were excluded. Health workers who are specialists in fields that do not relate to infectious diseases were excluded. These included gynecologists, neurosurgeons and physiologists. Auxiliary workers such as electricians, janitors, plumbers and receptionists were excluded because they lack pertinent information and knowledge on infectious diseases.

3.5 Sampling Procedures and Sample Size Determination

The research utilized purposive sampling and stratified random sampling. Creswell (2013) suggests that purposeful sampling must be done by recognizing and selecting individuals or elements that are particularly conversant with and proficient in the phenomenon of interest, thus participants and facilities were chosen based on that criterion for this research. The participants chosen to partake in this study had served for a considerably long period enough for them to understand how the Zimbabwean health system was prepared in dealing with infectious and reemerging diseases. Furthermore, the criterion included those that were dealing with infectious and reemerging diseases.

For the qualitative dimension, Purposive Sampling was used in the research in selecting the hospitals to be studied and health personnel that were interviewed in the research.

The focus groups comprised of:

1) Junior Resident Medical Officers

2) Registered nurses or student nurses

3) Training Officers

A questionnaire was utilized for collection of quantitative data. Selection of participants was done using stratified random sampling which is probability sampling. A random sample was taken from the stratum or subgroups according to health professions that they are engaged in that have the potential of exposing them to infectious disease cases.

3.5.1 Sample Population

The sample was comprised of medical personnel who are involved with morbidity and mortality cases due to emerging and reemerging infectious diseases at these facilities. The sample population was derived from both Parirenyatwa Hospital and Mpilo Hospital.

Table 3.1: *Health Personnel for Parirenyatwa and Mpilo Hospitals*

Name	**Parirenyatwa Hospital**	**Mpilo Hospital**	**Total**
HOD Specialty	11	9	20
Specialist Consultants	48	40	89
Senior Registrars	48	30	78
Medical Officers	20	15	35
Training Officers	39	30	69
Casualty Hospital Officers	15	10	25
Senior Resident Medical Officers	66	50	116
Junior Resident Medical Officers	80	38	118
Nurses	400	250	650
Total	728	472	1200

3.5.1.1 Sample Size Determination

Minimum sample size calculation

The minimum sample size was calculated by the following equation:

$$n = \left(\frac{Z^*}{ME}\right)^2 p^*(1 - p^*)$$

$$n = \left(\frac{1.96}{0.05}\right)^2 0.3(1 - 0.3)$$

$$n = 323$$

n = sample size

Z= 95% confidence

ME= margin of error 5%

P*=No prior estimate of the proportion of sample 0.3

A stratified random sample for health personnel

The equation below will be used to determine the number of respondents per strata.

$$n = \frac{ss}{ps}(ls)$$

$$n = \frac{323}{1200}20$$

n =sample size of strata

ss =size of entire sample

ps =population size

ls =layer size.

Table 3.2: *Sample Size Determination*

Name	**Parirenyatwa Hospital**	**Mpilo Hospital**	**Total**	**Sample per strata**
HOD Specialty	11	9	20	6
Specialist Consultants	48	40	89	24
Senior Registar	48	30	78	21
Medical Officers	20	15	35	10
Training Officers	39	30	69	19
Casualty Hospital Officers	15	10	25	7
Senior Resident Medical Officers	66	50	116	32
Junior Resident Medical Officers	80	38	118	32
Nurses	400	250	650	175
Total	728	472	1200	326

3.5.2 Construction of Research Instruments

3.5.2.1 Key Informant Interviews (electronic and one-on-one)

Key informant interviews were the primary research instrument, which were conducted done by the researcher with key hospital staff. The advantage of interviews over other research instruments is that interviews will give respondents a platform to explain their experiences, observations and beliefs in respect to preparedness and response to infectious diseases. An interview schedule was constructed

3.5.2.2 Focus Group Discussion (FGD)

Focus groups were set up to have discussions with the researcher to get an insight and their views in terms of preparedness of the health system to respond to infectious diseases. The groups comprised of at least seven members and a written survey was given and was to be answered as the discussion was being carried out.

3.5.3.3 Questionnaires

A questionnaire was to be used in gathering information from health workers .The questionnaire was based on the Likert-type scale. The questions were closed-ended questions which sought to get a perspective on the health system from the worker's point of view.

3.6 Testing For Validity and Reliability

In mixed-methods validity has to encompass both qualitative and quantitative research. Validity in research is focused with the accuracy and honesty of scientific outcomes and according to (Marilynn J Wood, 2011), "Reliability is concerned with the consistency, stability and repeatability of the informant's accounts as well as the investigators' ability to collect and record information accurately."

3.6.1. Validity

To achieve internal validity of the study data was collected from various respondents using multiple data collection methods. If data and findings gathered from key informant interviews and focus group discussions were consistent and complementing data and finding from questionnaires, the internal validity was strengthened. In this study, the results from questionnaires and the opinions given during the interviewing session were consistent. These strengthened the internal validity of this study.

The questionnaires were completed in the presence of the researcher or research assistant as a way of preventing respondents from giving others to complete them on their behalf. (Rusticus, 2014) States that content validation "plays a primary role in the development of any new instrument, provides evidence about the validity of an instrument by assessing the degree to which the instrument measures the targeted construct." .In order to achieve content validation, the questionnaire was given to

experts in the field of research for expert advice and input in the structuring of the questions. Expert advice was sort from a statistician and academic supervisors from Mount Kenya University. In that regard questions added to the questionnaire were able to provide meaningful data which could be analyzed.

3.6.2 Reliability

As highlighted by (Marilynn J Wood, 2011) , "reliability is concerned with the dependability, stability and repeatability of the informant's accounts as well as the investigators' ability to collect and record information accurately." During the interviews, reliability was sort by restating questions in slightly different forms at later periods during the interviews to ensure consistency of responses. In the study, semi-structured interviews were used as a means of data collection. This allowed participants to be treated as unique respondents giving unbiased information. , the dependability of the interviews was evaluated by equating it with answers that were obtained from the questionnaire. Lastly, the reliability of the data was done through Triangulation.

Cronbach's Alpha Reliability Test

The Cronbach's Alpha was used to test the reliability of the research used in this study. The test results are presented below.

Reliability Statistics		
Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.824	.713	8

The reliability test results indicate a score of 0.824. This shows that the research tool was highly reliable in consistent in yielding the required results. The reliability results indicate that the questionnaires were a suitable and reliable tool that could yield consistent results.

3.7 Data Collection Methods and Procedures

3.7.1 Qualitative tools of data collection

A narrative approach was used for qualitative methods. According to (Clandinin, 2011), 'A Narrative Approach is a way of illustrating the phenomena of human practice and its study which is appropriate to many social science fields'. This approach was used to collect data from the personal experiences of individuals and stories they have as a way of understanding the preparedness of the health system. In this regard, Focus group discussions and Key Informant Interviews were utilized.

3.7.2 Quantitative tools of data collection

A questionnaire was used to collect quantitative data. According (Pahwa, 2019) "A questionnaire is a research instrument consisting of a set of standardized questions to gather statistically useful information on some subject from one or more respondents." Questionnaires were distributed and collected within 2 days at each site.

3.8 Data Analysis and Management

The research employed a grounded theory approach with a focus on axial coding as a way of discovering relationships and similarities in data and consequently develop a theory on the preparedness of the health system to respond to emerging and reemerging infectious diseases.

3.8.1 Pre-Coding

Pre-Coding is a process of systematically grouping ideas and concepts from respondents in a way that allows their responses to be analyzed. Pre-Codes were developed during the process of interviews and questionnaires. The codes factored into broader themes that were used in the thematic analysis. Information that was coded was information that was mostly focused on answering the research questions or were responses that are beneficial in achieving the objectives of the research.

3.8.2 Thematic Analysis

According to (Braun, 2013) , "Thematic Analysis is a method for recognizing and examining patterns in qualitative data." Main themes of the research were based on the independent variables identified in the theoretical framework of the research.

For the purpose of obtaining concise data, a phenomenological approach was used. This approach focused on the respondent's views, beliefs and experiences with the health system. Codes and main themes that were used are as follows:

Table 3.3: *Thematic Analysis*

Codes	**Main themes**	**Global theme**
Adequacy of health personnel	Health workforce	**Preparedness and response**
Accessibility of health facilities	Service delivery	
Medicine price and availability	Medical products vaccines and technologies	
National health policies Ngo/government expenditure	Leadership /governance	
Health information systems	Information	
Readiness of health facilities Adequacy of protocols to infectious diseases	Medical countermeasures and personnel deployment	
Readiness of health facilities	Emergency operations and centres	
Diseases mortality and morbidity cases	Reporting	

3.8.3 Thick Description

This involved giving a detailed description of the study from the researcher's point of view to allow stakeholders to clearly follow the flow of the research from beginning to end. This account allowed for judgment to be given in relation to the study.

3.8.4 Data Analysis

SPSS is software used in the analyses of collected data in research and aid in making conclusions based on the outcomes provided by the software in terms of graphs, correlation, regression and other functionalities. In this research, SPSS was used to analyze data collected from the questionnaires.

3.8.5 Methodological triangulation

According to (Abir K Bekhet, 2012)‘Methodological triangulation involves using more than one method to study a phenomenon. It has been found to be beneficial in providing confirmation of findings, more comprehensive data, increased validity and enhanced understanding of studied phenomena’. The research was a mixed-method and therefore will require a methodological triangulation of data. This aided in correlating and interpretation of all the data collected from both quantitative and qualitative sources. Validity was sort after comparing data obtained from interviews, observations and focus groups.

3.9 Ethical Considerations

The researcher sought ethical clearance from Mount Kenya University Ethics and Review Committee and Postgraduate School. Further authorization was sought from the Government of Zimbabwe through the Ministry of Health and Child Care letter of approval.

Hospital staff has an ethical obligation to provide service to their patients in total confidentiality. This was respected by the researcher and did not seek any invasive information rather only information pertaining to the study was sought. All participants were informed that all information obtained was for research purpose and not to be used for any other purpose.

A consent form was given to participants to inform them that they are engaged in the research and they agreed to participate and that they were giving information on their own accord, not under duress.

3.10 Dissemination Plan

This thesis sought to generate valuable information in regard to the readiness of Zimbabwe's health system .The results of the research were disseminated through the annual Mount Kenya University Postgraduate Seminar .Additional dissemination was done through publishing in the International Journal of Innovative Research in Multi-disciplinary Field (Ijirmf), volume 5 issue 10 .

CHAPTER FOUR

RESEARCH FINDINGS, AND DISCUSSION

4.1 Introduction

This chapter consists of the coverage and response rate, research findings, interpretation and discussion of individual results based on objectives.

4.2 Coverage and Response Rate

The researcher distributed 326 questionnaires and a total of 257 participants completed the questionnaires, which was used in computing results. The response rate was 75.8 percent, which according to (Morton, 2012) is acceptable and can be to draw conclusions for the study.

Table 4.1: *Distribution and Coverage*

Stratum	**Parirenyatwa Hospital**	**Mpilo Hospital**	**Total**	**Sample per strata**	**Frequency**	**Response rate**
HOD specialty	11	9	20	6	3	50%
Specialist consultants	48	40	89	24	19	79%
Senior Registrar	48	30	78	21	16	76%
Medical officers	20	15	35	10	5	50%
Training officers	39	30	69	19	15	79%
Casualty hospital officers	15	10	25	7	3	43%
Senior resident medical officers	66	50	116	32	27	84%
Junior resident medical officers	80	38	118	32	29	91%
Nurses	400	250	650	175	140	80%
Total	**728**	**472**	**1200**	**326**	**257**	**79%**

Frequency counts were used on data collected for each objective in the questionnaire. The purpose of the frequency counts was to ascertain the frequency of occurrence for a particular response. The responses were quantified and presented in percentage form through SPSS. Focus groups discussions were conducted by the researcher, one group for each hospital under study. Purposive sampling was used to obtain at least seven participants in the focus group. Each group was comprised of three doctors and four nurses.

4.3 Socio-Demographic Characteristics of Respondents

The socio-demographic profile of the respondents in the study was based on the age, gender, level of education, working experience and occupation of the respondents and the results are indicated in Table 5. The majority, 153 (59.5%) of the respondents were females whilst 104 which translated to (40.5%) were males. These findings reflect that there are more women health practitioners than men within the hospitals under study.

The socio-demographic profile of the respondents is presented in Table 5. The majority, 75 (29.2 %) of the respondents fell in the age category of 31-40 years whilst, 63 (24.5%) of the respondents and 62 (24.1%) had their ages between 51-60 years and 41-40 years respectively. Those between the of 61 and 70 years, totaling 39 (15.2%) whilst those aged below 30 years had the lowest representation of 7.0% totaling 18. The findings reflect that the majority of the hospital staff is aged between 31 and 60 years however all age categories were represented.

A total of 109 (42.4%) held diploma level of education whilst the least had bachelor's and master's degrees were 24 and constituted (9.3%) and 11(4.3%) of the total respondents respectively. A significant proportion of 59 representing 23.0% indicated

that they had other educational qualifications. The results reveal that majority of the respondents are formally educated and have at least attained secondary education.

The respondents were also asked to indicate their years of working experience within the health sector. As indicated in Table 5, equal proportions of 71 (27.6%) have worked in hospitals for 6-10 years and 11-15 years respectively, whilst 47 (18.3%), 35 representing 13.6% and 33 (12.8%) had working experience of fewer than 5 years, more than 20 years and 16-20 years respectively. The findings reflect that more than 50% of the hospitals' staff had a substantial number of years of experience between 6 and 15 years.

As shown in Table 5, a significant proportion of 81 (31.5%) of the respondents was medical staff whilst nurses totaling 60 (23.3%). Health administrators who were 39 (15%) whilst 77 were those who had other occupations and accounted for 30% specifying that they were specialist consultants, senior registrars, medical officers, training officers, casualty hospital officers, senior resident medical officers and junior resident medical officers among others.

Table 4.2: *Social demographic information for respondents*

Demographic Factor		**(n)**	**(%)**
Gender	Male	104	40.5
	Female	153	59.5
Age	21-30 years	18	7.0
	31-40 years	75	29.2
	41-50 years	62	24.1
	51-60 years	63	24.5
	61-70 years	39	15.2
Highest level of education attained	Secondary education	54	21.0
	Diploma level	109	42.4
	Bachelor's degree	24	9.3
	Master's degree	11	4.3
	Other	59	23.0
Working Experience	1-5 years	47	18.3
	6-10 years	71	27.6
	11-15 years	71	27.6
	16-20 years	33	12.8
	More than 20 years	35	13.6
Occupation of respondents	Medical staff	81	31.5
	Nurses	60	23.3
	Health Administrators	39	15.2
	Other	77	30.0

Source: Research Findings

4.4 Perceived Readiness of Health Facilities on emerging and re-emerging infectious diseases

The study sought to establish the readiness of Mpilo and Parirenyatwa health facilities in responding to emerging and reemerging infectious diseases. Hence, this segment presents the results obtained from the survey, focus group discussions and interviews.

As shown in the frequency Table (Table 6), out of the 257 respondents, 79 (30.7%) representing the majority disagreed that the hospitals had efficient and active information communication systems whilst 74 (28.8%) neither agreed nor disagreed to the statement that the sampled hospitals had adequate resources for emerging infectious diseases. Ninety-seven respondents representing 37.7% of the sample disagreed that technologies were available for response to emerging and reemerging infectious diseases. However, 115 out of 257 respondents representing the majority (44.7%) strongly agreed that there were sufficient and ready facilities to cater for both emerging and re-emerging infectious diseases. Besides, 78 (30.4%) respondents disagreed that the hospitals had enough bedding to handle the influx of patients.

Table 4.3: *Frequency distribution for perceived readiness of health facilities on emerging and reemerging infectious diseases (N=257)*

Statement	**SD**	**D**	**N**	**A**	**SA**
Efficient and active information communication systems	50 (19.5%)	79 (30.7%)	43 (16.7%)	50 (19.5%)	35 (13.6%)
Adequate resources for emerging infectious diseases	55 (21.4%)	65 (25.3%)	74 (28.8%)	51 (19.8%)	12 (4.7%)
Technology availability	85 (33.1%)	97 (37.7%)	57 (22.2%)	14 (5.4%)	4 (1.6%)
Sufficient and ready facilities	11 (4.3%)	22 (8.6%)	29 (11.3%)	80 (31.1%)	115 (44.7%)
Enough bedding	70 (27.2%)	78 (30.4%)	70 (27.2%)	33 (12.8%)	6 (2.3%)

Source: Research Findings

**SD, D, N, A, SA, = strongly disagree, disagree, neutral, agree, strongly agree*

Firstly, the respondents were asked to indicate whether the hospitals were ready to respond to both emerging and re-emerging infectious diseases. The findings from the survey questionnaire are presented in Figure 1. As illustrated, 46.7% indicated that the hospitals were not ready to respond to both emerging and re-emerging infectious diseases whilst 33.5% indicated that the hospitals were ready. Twenty percent of the respondents reported that they were not sure whether the hospitals were ready or not.

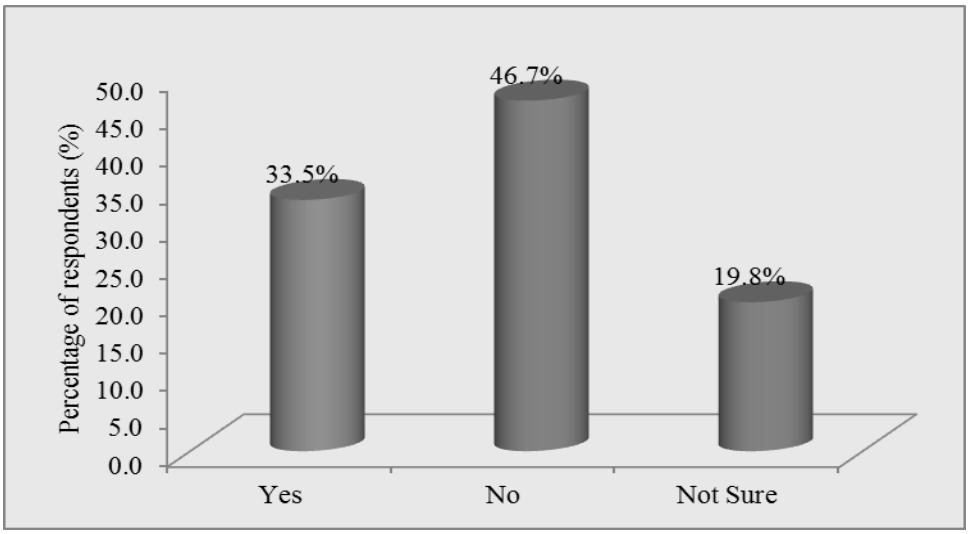

Figure 3.1: *Preparedness of Hospitals (N=257)*
Source: Research Findings

The findings of the study relating to the objective are presented in Table 7. Majority of the respondents (30.7%) disagreed that the hospitals had efficient and active information communication systems (p=0.000). The respondents also indicated that the hospitals do not have adequate resources such as wards, ambulances, human resources and funds for emerging infectious diseases (p=0.000). In the same vein, more than 70% of the respondents disagreed that technologies were available for response to emerging and reemerging infectious diseases (p=0.000). Surprisingly, majority of the respondents (44.7%) strongly agreed that the hospitals had sufficient and ready facilities that allow patient isolation and evacuation and transferring of other patients to other hospitals to

allow the hospital to take in patients with the emerging or re-emerging infectious diseases (p=0.000). The participants further revealed that the hospitals had insufficient beds to handle the influx of patients as indicated by a combined proportion of 57.6% who disagreed with the statement (p=0.000). All the responses to the statements relating to perceived readiness of health facilities to respond to infectious diseases attained a composite score of 2.76 very close to 3 implying that the hospitals' health facilities are not ready to respond to emerging and re-emerging infectious diseases. All the variables were found to be statistically significant at 5% level.

Table 4.4: *Readiness of health facilities to respond to infectious diseases (N=257)*

Statement	**Percentage of respondents (%)**					**Chi-square**	
	SD	**D**	**N**	**A**	**SA**	**df**	**p**
Efficient information communication systems	19.5	30.7	16.7	19.5	13.6	1	**.000**
Adequate resources	21.4	25.3	28.8	19.8	4.7	1	**.000**
Technology availability	33.1	37.7	22.2	5.4	1.6	1	**.000**
Sufficient and ready facilities	4.3	8.6	11.3	31.1	44.7	1	**.000**
Enough bedding	27.2	30.4	27.2	12.8	2.3	1	**.000**
Chi-square (14.16)						8	**.078**
Composite Score Index							**2.76**

**SD, D, N, A, SA, M= strongly disagree, disagree, neutral, agree, strongly agree, mean (std. dev.)*

Further, the study conducted a bivariate analysis to establish the significance of the variables included in the study relating to perceived readiness of the hospitals to respond to emerging and re-emerging communicable diseases. The results are therefore shown in Table 8. Surprisingly, except for the technology availability variable (r=0.725, p= 0.022) and enough bedding variable (r=0.655, p=0.028), all the variables; efficient information communication systems (r=-0.047, p= 0.455), adequate resources (r=0.017,

p=0.791) and sufficient and ready facilities (r=0.009, p=0.163) were found to be insignificant as the p-values were found to be greater than 0.05. The findings, therefore, imply that the health facilities of Parirenyatwa and Mpilo hospitals are ready to respond to infectious diseases in terms of technology availability and enough bedding to handle the influx of patients.

Table 4.5:*Bivariate Analysis: Perceived readiness of health facilities to respond to infectious diseases*

Variable	**Pearson Correlation**	**Sig. (2-tailed)**	**N**
Efficient information communication systems	-0.047	0.455	257
Adequate resources	0.017	0.791	257
Technology availability	0.725	0.022	257
Sufficient and ready facilities	0.009	0.163	257
Enough bedding	0.655	0.028	257

Source: Research Findings

The study sought to test the hypothesis that the health system of Zimbabwe is not prepared to respond to emerging and reemerging infectious diseases. Hence, chi-square tests were conducted to test this null hypothesis against the alternative hypothesis the health system of Zimbabwe is prepared to respond to emerging and reemerging infectious diseases. The results of the chi-square tests are therefore presented in Table 9. As shown, a Pearson chi-square value of 14.160 with a p-value of 0.078 was found. Since the p-value (p=0.078) is slightly above 0.05, the study may fail to reject the null hypothesis and conclude that the health system in Zimbabwe is not yet prepared to respond to emerging and reemerging infectious diseases.

Table 4.6: *Chi-square tests: Perceived readiness of health facilities to respond to infectious diseases.*

	Value	**Df**	**Asymp. Sig. (2-sided)**
Pearson Chi-Square	14.160[a]	8	.078
Likelihood Ratio	14.441	8	.071
Linear-by-Linear Association	.083	1	.773
N of Valid Cases	257		

a. 3 cells (20.0%) have expected count less than 5. the minimum expected count is 2.18.

Furthermore, interviews were conducted to establish the readiness of Mpilo and Parirenyatwa health facilities in responding to emerging and reemerging infectious diseases. The research questions made up the main themes for the analysis of qualitative data. The interviewees responded well and some of their responses are provided as follows:

> *'In my view, the hospital's facilities are not yet ready to cater to both emerging and reemerging infectious diseases and this is because of severe and delayed humanitarian emergencies resulting from delicate health systems'*
>
> *'The preparedness of the health facilities has been worsened due to fragile public health systems as well as fragmented surveillance and infection detection capacities"*
>
> *"Hospital preparedness and control efforts for emerging and reemerging infectious diseases has been compromised due to poor vector surveillance capacities."*
>
> *'There are weak surveillance systems for prompt detection and response and also limited laboratory diagnostic capacities at the hospital'*
>
> *"The health infrastructures in Zimbabwe do not support surveillance and implementation of infection prevention and control thus the health facilities are not ready for countering emerging and reemerging infections…"*
>
> *'Presently, the infrastructure in the hospitals is dilapidated and some is obsolete towards effective management and control of emerging infections"*

'Generally, the major hospitals in Zimbabwe do not have early warning systems to detect these infections so that they can be investigated and controlled before they become a crisis."

"The health systems are still inadequate to respond effectively wide-spreading health threats especially emerging infectious diseases".

'The public health infrastructure is poorly equipped for both emerging and reemerging infections. The existing systems that monitor communicable diseases are insufficient for emerging infections. This has seen many disease outbreaks being unrecognized or being detected late."

4.5 Perceived readiness of health personnel on emerging and re-emerging infectious diseases

The study also aimed to establish the readiness of health personnel at Mpilo and Parirenyatwa hospitals to respond to emerging and reemerging diseases. Hence, this section presents the findings obtained from the survey, focus group discussions and interviews. The results are presented in Tables 10, 11 and 12.

Table (Table 10) shows the frequency distribution of the responses relating to perceived readiness of health personnel on emerging and re-emerging infectious diseases. As depicted significant numbers of 83, 93 and 67 respondents representing 32.3%, 36.2% and 26.1% disagreed that hospital staff is aware of emerging and re-emerging infectious diseases, is aware of its roles in a tiered hospital framework and is well educated and experienced in dealing with emerging and re-emerging infectious diseases respectively. Nevertheless, a total of 145 respondents agreed that health practitioners frequently received training on infectious diseases. A total of 89 participants (34.6%) disagreed that the hospital has supplementary health personnel in case of infectious diseases.

Table 4.7: *Frequency distribution for perceived readiness of health personnel on emerging and reemerging infectious diseases (N=257)*

Statement	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
Hospital staff awareness	66 (25.7%)	83 (32.3%)	52 (20.2%)	51 (19.8%)	5(1.9%)
Awareness of roles	65 (25.3%)	93 (36.2%)	56 (21.8%)	30 (11.7%)	13 (5.1%)
Staff well educated and experienced	58 (22.6%)	67 (26.1%)	52 (20.2%)	35 (13.6%)	45 (17.5%)
Training of health practitioners	29 (11.3%)	38 (14.8%)	45 (17.5%)	70 (27.2%)	75 (29.2%)
Availability of supplementary health personnel	78 (30.4%)	89 (34.6%)	57 (22.2%)	22 (8.6%)	11 (4.3%)

Source: Research Findings

From the findings presented in Table 11, 32.3% disagreed with the statement that hospital staff is aware of emerging and reemerging infectious diseases (p=0.000). The respondents were also required to indicate their level of agreement on the statement that the health personnel is aware of its roles in a tiered hospital framework designed by the Centers for Disease Control and Prevention to guide them in receiving and treating emerging and re-emerging communicable diseases and a few of them agreed (p=0.000). A significant combined proportion of 48.8% contended that the staff was well educated and experienced in dealing with emerging and re-emerging infectious diseases (p=0.000). However, more than half of the respondents (56.4%) indicated that health practitioners frequently received training on infectious diseases (p=0.000). As shown in Table 9, 34.6% and 30.4% of the respondents disagreed and strongly disagreed that their respective hospitals had supplementary health personnel in case of infectious diseases (p=0.000). All the variables were found to be statistically significant at 5%

level. The variable for perceived readiness of health personnel to respond to infectious diseases attained a composite score of 2.65 very close to three implying that the hospitals' health personnel is not ready to respond to emerging and re-emerging infectious diseases.

Table 4.8: *Perceived readiness of health personnel to respond to emerging and remerging diseases*

Variable	**Percentage of respondents (%)**					**Chi-square**	
	SD	**D**	**N**	**A**	**SA**	**df**	**p**
Hospital staff awareness	25.7	32.3	20.2	19.8	1.9	8	**.000**
Awareness of roles	25.3	36.2	21.8	11.7	5.1	8	**.000**
Staff well educated and experienced	22.6	26.1	20.2	13.6	17.5	8	**.000**
Training of health practitioners	11.3	14.8	17.5	27.2	29.2	8	**.000**
Availability of supplementary health personnel	30.4	34.6	22.2	8.6	4.3	8	**.000**
Chi-square (19.01)						8	**.015**
Composite Score Index							**2.65**

**SD, D, N, A, A, SA, M= strongly disagree, disagree, neutral, agree, strongly agree, mean (std. dev.)*

The findings from the bivariate analysis are presented in Table 12. For all the variables, only the variables for hospital staff awareness (r=0.519, p=0.003) and for staff education and experience (r=0.826, p=0.014) were found statistically significant at 5% level of significance. The rest of the variables; awareness of roles (r=0.053, p=0.394), training of health practitioners (r=0.007, p=0.916) and availability of supplementary health personnel (r=0.088, p=0.259) were found to be statistically insignificant as the p-values were found to be greater than 0.05. The findings imply that readiness of health

personnel to respond to infectious diseases in Zimbabwe is measured by hospital staff awareness, education and experience.

Table 4.9: *Bivariate Analysis: Perceived readiness of health personnel to respond to infectious disease*

Variable	**Pearson Correlation**	**Sig. (2-tailed)**	**N**
Hospital staff awareness	0.519	0.040	257
Awareness of roles	0.053	0.394	257
Staff well educated and experienced	0.826	0.014	257
Training of health practitioners	0.007	0.916	257
Availability of supplementary health personnel	0.088	0.259	257

Source: Research Findings

The research also sought to establish the readiness of personnel of the two hospitals in responding to infectious diseases from both the interview and focus group discussions. The researcher asked the question: *What experiences have you had with infectious diseases?*

According to senior doctors and training officers, health personnel in both hospitals had a strong appreciation and knowledge of infectious diseases. Most of the personnel receive training and participate in campaigns of infectious diseases such as Tuberculosis, Rotavirus and Malaria.

At Parirenyatwa Hospital, the staff had had experience with infectious diseases, notably, cholera and typhoid that had recently occurred in Harare. One participant in the focus discussion at Parirenyatwa stated

> *"Here in Harare, we seem to have outbreaks of infectious diseases more than any other place in the country, in fact, the recent outbreaks of cholera and Typhoid began here and most of us are involved either in treatment, health education or containment of the diseases"*

Health personnel at Mpilo hospital indicated their experiences were limited to diseases such as malaria, HIV and TB because others such as cholera, SARS and Typhoid never occurred in Bulawayo of the provinces surrounding them.

At Mpilo hospital, participants in the focus group discussion pointed out that they were aware of infectious diseases and treated reemerging diseases such as malaria, meningitis and HIV. However, diseases such as typhoid and cholera had not been reported in the province hence they had not experienced handling such diseases at the hospital and had sufficient knowledge on handling them if they were to occur. One participant a nurse stated;

> *"When outbreaks of diseases such as cholera and typhoid occur in places like Harare, we are always ready to respond to them, we handle all suspected cases with alertness until a confirmation is given. We have however not had cases of cholera or typhoid but malaria and meningitis are common"*

Concerning emerging diseases, health personnel at the hospital had received information about Ebola which is currently affecting the Democratic Republic of Congo (DRC). The Ministry of Health has also been testing and screening Ebola on travellers at the Plumtree border post which is the closest border to Bulawayo.

Some of the responses provided by the interviewees relating to the readiness of the health personnel to respond to emerging and reemerging infectious infections were captured and are given:

> *'The retention scheme which was partially introduced in 2009 has tried to resolve the human resources issue however there is still a shortage of highly technical health staff and the consequences of this has been reflected by the recurring outbreak of cholera and other communicable diseases…"*
>
> *"Presently, doctors, pharmacists, nurses and paramedics are inadequate and poorly motivated"*

"Although there have been efforts to strengthen the response capacity of the public health system including improving the training of health workers and deployment of experts to support health ministries and partners, health personnel are not yet ready to handle emerging and remerging infections in terms of skills and knowledge."

'The public health sector in the country has experienced severe human resources capacity constraints. Filling vacant posts and responding to the needs of the health personnel that has been difficult. This situation has reached breaking points where the health personnel take prolonged industrial action resulting in very few services being offered in the public health facilities...'

"... The public health system in the country suffers from a major shortage of qualified and trained health staff. In order to improve preparedness to emerging infections, an adequate number of qualified, competent and trained health professionals in various specialties are required."

'The quadruple burden of both communicable and, non-communicable diseases is unmatched by the health staff skills to sufficiently manage and control the diseases resulting in early and excess mortalities'

4.6 Perceived availability of medicines at health facilities to emerging and re-emerging infectious disease response

The study also aimed to ascertain the availability of medicines at Mpilo and Parirenyatwa hospitals for emerging and reemerging infectious disease response. Henceforth, this section presents the findings obtained from the survey, focus group discussions and interviews. The results are presented in Tables 13, 14 and 15.

The distribution of the responses relating to the perceived availability of medicines is presented in Table13. As shown in the table the majority of the participants to the study were in disagreement with most of the statements relating to perceived availability of medicines at Mpilo and Parirenyatwa hospitals for emerging and reemerging infectious disease response. Exceptionally, 78 (30.4%) respondents strongly agreed that the hospitals provided adequate personal protective equipment (PPE) and clothing to avoid the transmission of the diseases to the health practitioners.

Table 4.10: *Frequency distribution for perceived availability of medicines at health facilities to emerging and reemerging infectious diseases response (N=257)*

Statement	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
Sufficient medicines	87 (33.9%)	98 (38.1%)	65 (25.3%)	7 (2.7%)	-
Equipped laboratory	41 (16.0%)	64 (24.9%)	62 (24.1%)	69 (26.8%)	21 (8.2%)
Enough supplementary stock of medicines	42 (16.3%)	61 (237%)	57 (22.2%)	49 (19.1%)	48 (18.7%)
Adequate personal protective equipment (PPE) and clothing	38 (14.8%)	41 (16.0%)	41 (16.0%)	59 (23.0%)	78 (30.4%)

Source: Research Findings

As shown in Table14, significant proportions of 38.1% and 33.9% respectively disagreed and strongly disagreed that there are sufficient medicines in the hospitals for infectious diseases (p=0.000). Although 26.8% of the respondents strongly agreed that there are equipped laboratory for disease testing and verification of pathogens suspected to be infectious, 24.9% disagreed (p=0.000). The study also learnt that the hospitals do not always have enough supplementary stock of medicines in case of reemerging infectious diseases (p=0.000). Majority of the respondents (30.4%) strongly agreed that the hospitals provided adequate personal protective equipment (PPE) and clothing to avoid the transmission of the diseases to the health practitioners. Over 50% of the respondents agreed. The variables were found statistically significant at 5% level. All these responses relating to the perceived availability of medicines for emerging and reemerging infectious disease response attained a mean composite score of 2.80. This implies that medicines for emerging and reemerging infectious disease response are not always readily available.

Table 4.11: *Perceived availability of medicines for emerging and reemerging infectious disease response*

Statement	**Percentage of respondents (%)**					**Chi-square**	
	SD	**D**	**N**	**A**	**SA**	**df**	**p**
Sufficient medicines	33.9	38.1	25.3	2.7	-	8	**.000**
Equipped laboratory	16.0	24.9	24.1	26.8	8.2	8	**.000**
Enough supplementary stock of medicines	16.3	23.7	22.2	19.1	18.7	8	**.000**
Adequate personal protective equipment (PPE) and clothing	14.8	16.0	16.0	23.0	30.4	8	**.000**
Chi-square (10.65)						8	**.222**
Composite Score Index							**2.80**

SD, D, N, A, A, SA, M= strongly disagree, disagree, neutral, agree, strongly agree, mean (std. dev.)

In order to achieve the objective of ascertaining the availability of medicines at Mpilo and Parirenyatwa hospitals for emerging and reemerging infectious disease response, the study conducted further tests, bivariate analysis. The results from the bivariate analysis are therefore presented in Table15. The study adopted four variables and all these were found to be statistically insignificant to predict the availability of medicines for both emerging and reemerging infectious diseases. All the variables; sufficient medicines (r=0.002, p=0.971), equipped laboratory (r=-0.005, p=0.930), enough supplementary stock of medicines (r=0.117, p=0.061) and adequate personal protective equipment (PPE) and clothing (r=0.020, p=0.747) were found to be statistically insignificant as the p-values were greater than 0.05. The findings imply that the

hospitals under study have no readily available medicines for emerging and reemerging infectious disease response.

Table 4.12: *Bivariate Analysis: Perceived availability of medicines for emerging and reemerging infectious disease response*

Variable	**Pearson Correlation**	**Sig. (2-tailed)**	**N**
Sufficient medicines	0.002	0.971	257
Equipped laboratory	-0.005	0.930	257
Enough supplementary stock of medicines	0.117	0.061	257
Adequate personal protective equipment (PPE) and clothing	0.020	0.747	257

Source: Research Findings

The health personnel who were interviewed and participants in the focus group discussions pointed out to the fact that availability medicines were a major problem. One of the participants narrated:

> *"Lack of research and limited availability of diagnostic tests have been interfering with public health efforts in improving the preparedness of the health facilities to prevent and control outbreaks of both emerging and re-emerging communicable diseases such as Cholera"*
>
> *"Drugs and medical supplies were largely unavailable in most major hospitals in Zimbabwe and this is an indication that the health public sector is not yet prepared for emerging and reemerging infectious diseases…"*
>
> *"Even though efforts have been made to address drug shortages, the medicines for emerging and reemerging infections are still not easily accessible and affordable…"*
>
> *"Currently, medicines and medical supplies are in short supply and unaffordable due to foreign currency shortages hitting the economy."*

The crippling economic conditions and severe lack of foreign currency to import medicines are blamed for the unavailability of medicines. Another view was that budgetary allocation given to the health sector was not enough to support the Ministry of health in securing medicines or enough allocations of foreign currency to private companies and pharmacies to secure medicines. It was stated by one participant that;

> *"Since 2000 the country has had severe economic challenges due to poor political engagement internally and externally which has resulted in the economy failing to produce or procure essential medicines from outside .basically there no money or foreign currency to buy them"*

It was pointed out that some medicines for reemerging infectious diseases such as malaria and HIV were available due to prioritization by the government and international donor agencies. International donors were said to be on the forefront of providing medicines during outbreaks as in the case of cholera and typhoid that recently occurred, however without such assistance medicines to respond to any infectious diseases occurrence will nearly be nonexistent.

Another view that was put across was that the current political situation which has led to segregation and sanctions against the country has resulted in the country failing to access funds and medicines from foreign countries and companies primarily the United States of America and Britain who are major donors in global health initiatives.

4.7 Perceived relevance of protocols for re-emerging and emerging infectious diseases

This study also sought to determine the relevance or adequacy of protocols for reemerging and emerging infectious diseases at Mpilo and Parirenyatwa hospitals. In doing so, this section presents the findings obtained from the survey, focus group

discussions and interviews. The results are presented in Table 16, Table 17 and Table 18.

Table 16 presents the frequency distribution of the responses pertaining to perceived relevance/adequacy of protocols for re-emerging and emerging infectious diseases. The findings depict that majority of the respondents either strongly disagreed or disagreed that the hospitals had infectious disease protocols or procedures 87(33.9%), were few mortalities and morbidity cases due to infectious diseases 75(29.2%), the hospitals adhere to the legal framework for health-sector emergency management 60(23.3%), the hospitals frequently revise their emergency plan to improve EID preparedness 88(34.2%). However, 79 respondents representing 30.7% were not sure whether the hospitals have well-drafted Emergency Response Plans.

Table 4.13: *Frequency distribution for perceived relevance of protocols for reemerging and emerging infectious diseases (N=257)*

Statement	**S D**	**D**	**N**	**A**	**S A**
Availability of infectious disease protocols or procedures	87 (33.9%)	83 (32.3%)	71 (27.6%)	11 (4.3%)	5 (1.9%)
Well drafted Emergency Response Plan	65 (25.3%)	71 (27.6%)	79 (30.7%)	35 (13.6%)	7 (2.7%)
Mortalities and morbidity cases due to infectious diseases	59 (23.0%)	75 (29.2%)	55 (24.1%)	48 (18.7%)	20 (7.8%)
Adherence to the legal framework for emergency management	60 (23.3%)	58 (22.6%)	53 (20.6%)	45 (17.5%)	41 (16.0%)
Frequently revise the emergency plan to improve EID preparedness	81 (31.5%)	88 (34.2%)	66 (25.7%)	16 (6.2%)	6 (2.3%)

Source: Research Findings.

SD, D, N, A, A, SA, = strongly disagree, disagree, neutral, agree, strongly agree)

From the results presented in Table 17, 33.9% and 32.3% of the respondents respectively disagreed and strongly disagreed with the statement that hospitals had infectious disease protocols or procedures (p=0.000). Further, the respondents were also requested to indicate their level of agreement on the statement that the hospitals had well-drafted Emergency Response Plans and the majority of them disagreed (p=0.000). The respondents were also asked whether the hospitals adhered to the legal framework for health-sector emergency management and 23.3%, 22.6% and 20.6% strongly disagreed, disagreed and moderately agreed (p=0.000). In addition, only a total of 8.5% of the respondents at least agreed that the hospitals frequently revised their emergency plans to improve preparedness for emerging and reemerging infectious diseases (p=0.000). All these responses to the statements relating to perceived relevance or adequacy of protocols for reemerging and emerging infectious diseases attracted a composite score of 2.40. The composite index score is close to 2 indicating that

protocols for reemerging and emerging infectious diseases for both Mpilo and Parirenyatwa are not relevant or adequate. All the variables except for the reduction of mortalities and morbidity cases were found statistically significant at 5% level

Table 4.14: *Perceived relevance of protocols for reemerging and emerging infectious diseases*

Variable.	**Percentage of respondents (%)**					**Chi-square**	
	SD	**D**	**N**	**A**	**SA**	**D f**	**p**
Availability of infectious disease protocols or procedures.	33.9	32.3	27.6	4.3	1.9	8	**.000**
Well drafted Emergency Response Plan	25.3	27.6	30.7	13.6	2.6	8	**.000**
Reduction of mortalities and morbidity cases due to infectious diseases	23.0	29.2	21.4	18.7	7.8	8	**.341**
Adherence to the legal framework for emergency management	23.3	22.6	20.6	17.5	16.0	8	**.000**
Frequently revise the emergency plan to improve EID preparedness	31.5	34.2	25.7	6.2	2.3	8	**.000**
Chi-square (7.48)						8	**.486**
Composite Score Index							**2.40**

**SD, D, N, A, A, SA, M= strongly disagree, disagree, neutral, agree, strongly agree, mean (std. dev.).*

The findings from the bivariate analysis for the responses relating to relevance of protocols for reemerging and emerging infectious diseases are presented in Table 18. A very strong significant linear correlation (r=; 0.824, p= 0.014) was found between adherence to the legal framework for emergency management and perceived relevance or adequacy of protocols for reemerging and emerging infectious diseases. However, availability of infectious disease protocols or procedures (r=-0.003, p=0.957), well-drafted Emergency Response Plan (r=-0.088, p=0.159) and frequency of emergency plan revision (r=0.000, p=0.997) were found to be statistically insignificant at 5% level

of significance as the p-values were found to be greater than 0.05. These findings imply that there are inadequate or irrelevant protocols for both emerging and reemerging infectious diseases.

Table 4.15: *Bivariate Analysis: Perceived relevance of protocols for reemerging and emerging infectious diseases*

Variable	**Pearson Correlation**	**Sig. (2-tailed)**	**N**
Availability of infectious disease protocols or procedures	-0.003	0.957	257
Well drafted Emergency Response Plan	-0.088	0.159	257
Adherence to the legal framework for emergency management	0.824	0.014	257
Frequently revise the emergency plan to improve EID preparedness	0.000	0.997	257

Source: Research Findings

As highlighted by personnel at Parirenyatwa, the hospital has a basic protocol for infectious diseases which includes quarantine, isolation and triage; however after the determination and stabilizing of patients they are transferred to either Wilkins Hospital or Beatrice infectious disease hospital.

Personnel is also required to notify the Clinical Director of any infectious disease that is communicable, and notifiable under the Public Health Act 2018 .At Mpilo infectious diseases cases are treated there and not transferred to other hospitals, however, the quarantine, isolation and triage and notification protocols are the same as at Parirenyatwa hospital.

It was noted also that for other infectious diseases such as malaria and HIV which do not require quarantine or isolation both hospitals administer treatment using protocols

for other non-communicable diseases. Some of the responses from the key informants are given as follows:

> *"There is an inadequate investment in infection investigation and response activities and non-existing comprehensive preparedness and response plans".*
>
> *"Here in Zimbabwe, there is no strategic framework preparedness and response that has been developed to guide hospitals in developing specific preparedness and response plans."*
>
> *"Despite the continued efforts, support for applied research and control efforts has declined for most emerging and reemerging infectious diseases."*

4.8 Discussion of results

This section presents a discussion of the results:

4.8.1 Perceived readiness of Mpilo and Parirenyatwa health facilities to respond to emerging and reemerging infectious diseases.

The first research objective sought to understand the readiness of Mpilo and Parirenyatwa hospitals to respond to RIDs and EIDs. The focus group discussion and interview revealed that the hospitals were prepared to respond to EIDs and RIDs diseases mostly because of the sizes of the hospitals. As highlighted by (Drayi, 2019), hospital bed shortages can cause glitches and also have tremendous impacts on health. However the number of beds available at Parirenyatwa which are approximately 5000 beds allows the hospital to accommodate large numbers of patients infected with an infectious disease such as cholera or typhoid at any given time. Mpilo hospital has approximately 2000 beds which also make the hospital capable of handling large numbers of infected patients.

In terms of medicines, equipment and technologies, Parirenyatwa hospital and Mpilo hospital are more resourced than any other hospitals in the country. This was evident

during interviews and focus group discussions that the Ministry of Health and Child Welfare had a major influence in the operations of the hospitals. Furthermore, donor agencies partner the hospitals in many areas including during outbreaks of infectious diseases as in the case of the Red Cross and USAID and health promotion activities.

The hospitals both had isolation rooms to quarantine contagious patients such as those with TB or SARS. This provision is important in the response to emerging or reemerging diseases because diseases such as Ebola, cholera and SARS could spread exponentially if there are no isolation rooms at the hospitals.

The questionnaire revealed that 57.6% of the health personnel who responded failed to believe that the hospitals were either equipped enough, had enough beds or big enough in terms of size to respond to infectious diseases in the country. These respondents included doctors, specialist and nurses who work at these hospitals daily an indication that if the response to infectious diseases was measured according to the hospital preparedness then the health system would be prepared to respond.

It should, however, be noted that, in as much as the hospitals were regarded prepared, there were weaknesses of in the assertion. There are other elements of the hospital that were of concern. For example, availability of clean water to the hospitals; Parirenyatwa hospital being of note because of the erratic distribution of water by the Harare City Council. Another issue was the consistency of the electricity supply. The hospitals are equipped with generators and uninterrupted power supply systems; however, availability of fuel to run the generators is in question. Furthermore, some of the available equipment at the hospitals are old but still in use, thereby putting the hospital preparedness in question

4.8.2 Perceived readiness of health personnel at Mpilo and Parirenyatwa hospitals to respond to Emerging and Reemerging diseases.

The health system assessment approach, according to (project, 2017), is "a rapid assessment tool covering key health systems functions, service delivery, human resources for health , medical products, vaccines and technologies, health information system, health financing and governance. In that regard the research sort to establish readiness of the human resources for health indicator which were the health personnel at the 2 hospitals. The health system has qualified and experienced health personally. Health staff was aware of infectious diseases through training during their tertiary period of time spent at the hospital on internship. Apart from this training, the medical staff had experience with infectious disease outbreaks such as cholera and typhoid. Because the country is ever having outbreaks of reemerging diseases, the health personnel are kept informed on such diseases. The ministry of health also has been at the forefront of providing medical staff and nurses' necessary information on reemerging infectious diseases and even emerging diseases such as SARS and Ebola.

As indicated by the data from the questionnaire health personnel at both Mpilo and Parirenyatwa believed they were prepared to respond to infectious diseases. However, it must be noted that most of the personnel available at these hospitals are general medical practitioners, doctors in training and general nurses. Specialist infectious diseases personnel are minimal at both hospitals. Lack of these specialists does not equate to unpreparedness on the part of health personnel but diminishes the ability of effectiveness of the response to such diseases.

It must also be noted, however, that the researchers discovered that even if the health staff were prepared to respond to infectious diseases, they were unwilling to render their

services at the hospitals. The junior doctors, senior medical doctors, Registers and nurses have in the past two years been engaging in industrial actions that lasted for weeks or a month. The latest industrial action began on the 3rd of December 2018 and has lasted more than a month into July 2019.

One of the areas in contention between the doctors and the Government is the lack of consistency of provision of theatre equipment, diagnostic equipment and personal protective equipment. Lack of such equipment undermines the personnel's ability to respond to any kind of infectious disease. Furthermore, the antagonism between these parties has led to patients being sent back home and to the public undiagnosed and untreated. A situation that has put the health system in question.

4.8.3 Perceived availability of medicines at Mpilo and Parirenyatwa hospitals for emerging and reemerging infectious disease response

There was a consensus from personnel at both hospitals that medicines were critically scarce in the country. Because of the dire economic situation in Zimbabwe, the country has been failing to secure and stock essential medicines due to lack of foreign currency. Independent drug and medicine suppliers such as pharmacies have also been affected by a lack of foreign currency. As reported by (NewsDay, 2017), Lack of financing due to a non-performing economy and negative international community political atmosphere has seen Zimbabwe lacking essential medicines which in some cases led to the stoppage of surgeries due to lack of basic drugs as anesthetics and insulin. The Reserve bank of Zimbabwe which allocates foreign currency is overwhelmed by other essential services such as fuel and importation of grain, leaving the health sector deprived of essential medicines. Furthermore, those independent drug suppliers who are able to source the

medicines on their own without assistance from the reserve bank charge exorbitant prices which are too high for the general public.

Another important aspect of the shortage of medicines is the insufficient allocation of funds for the ministry of health in the National budget. Zimbabwe is a signatory to the Abuja declaration were states are to allocate 15% of their total budget to Health as highlighted by (Organisation, World Health Organisation, 2019) .Over the years, Zimbabwe has been allocating less than 15 % to Health. In 2018 only 8% was allocated to Health, which has, in turn, led to a number of issues including an acute shortage of medicines in the country. As pointed out by the (NewsDay, 2017), Lack of financing due to a non-performing economy and negative international community political atmosphere has seen Zimbabwe lacking essential medicines which in some cases led to the stoppage of surgeries due to lack of basic drugs as anaesthetic and insulin. This situation is, unfortunately, true for all medicines needed at the hospitals and makes them highly incapable of responding to infectious diseases when they occur.

4.8.4 Perceived relevance of protocols for reemerging and emerging infectious diseases at Mpilo and Parirenyatwa hospitals.

As highlighted by (Future & National Academy of Medicine, 2016) , “Outbreaks cannot be effectively contained if they are not detected promptly; national public health systems must have the capacity to identify an outbreak and establish an alert system to trigger response and, if needed, seek support from regional and global levels.”. This was found particularly not true for Zimbabwe’s health system which showed deficiencies in the protocols and procedures in responding to EIDs and RIDs.

It is important to note that, for these, procedures to be effective they need resources. For instance, medical personnel are required to wear protective equipment when handling

EIDs or RIDs, However, the ministry has been inconsistent in providing such. In the case of Parirenyatwa, specialized transportation is required to transfer infected patients to other hospitals, this is not provided for.

The procedures of RIDs at the hospitals are relevant in theory, however, implementation is impractical because of lack of resources and the inability of the Ministry of health to consistently provide resources.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This final chapter presents the summary of the findings, conclusions are drawn and recommendations for policy implication and for further research are made.

5.1 Summary of the Findings

The study aimed to establish the preparedness of the public health system of Zimbabwe to emerging and re-emerging infectious diseases. Specifically, the study sought to determine the readiness of health facilities, the readiness of health personnel, and availability of medicines at health facilities and to relevance/adequacy of protocols for re-emerging and emerging infectious diseases using a case of Parirenyatwa and Mpilo hospitals.

Firstly, the study sought to determine the perceived readiness of health facilities on emerging and re-emerging infectious diseases. From the of the findings the respondents indicated that public health facilities in Zimbabwe were not yet ready to respond to both emerging and re-emerging infectious diseases. It was also found that hospitals have inefficient and inactive information communication systems leading to delayed humanitarian assistance, insufficient resources such as wards, and ambulances and financial resources. It was also found that there are no modern technologies such as early warning and detection systems, fragmented surveillance and infection detection systems. There are limited laboratory diagnostic capacities and dilapidated and obsolete infrastructures. However, the study also found that the hospitals under study had sufficient and ready facilities that allow patient isolation, evacuation and transferring of other patients to other hospitals to allow the hospital to take in victims of emerging or

reemerging infectious diseases. Technology availability and availability of enough bedding were found as only significant determinants of preparedness of the health facilities to emerging and reemerging infectious diseases.

Secondly, the study aimed to establish the perceived readiness of health personnel on emerging and re-emerging infectious diseases in Zimbabwe. The respondents reported lack of awareness among health personnel including awareness to their roles within the tiered hospital framework designed by the Centers for Disease Control and Prevention to guide them in receiving and treating emerging and re-emerging communicable diseases. The study also found that the health practitioners are not well educated and experienced in catering for infectious diseases and thus they frequently received training on infectious diseases. Shortage of highly technical health staff and lack of sufficient human resources were also reported such that there is no supplementary health personnel in case of infectious diseases. The study also found that the health personnel were inadequately and poorly motivated which resulted in massive industrial actions. Staff awareness, education and experience were found to be significant predictors of preparedness and response to emerging and re-emerging infectious diseases.

Further, the study aimed to ascertain the availability of medicines for emerging and re-emerging infectious disease response. The study revealed that there were insufficient medicines in the hospitals for infectious diseases such that there is no enough supplementary stock of medicines in case of re-emerging infectious diseases. However, it was found that hospitals provided adequate personal protective clothing and equipment to avoid the transmission of the diseases to the health practitioners. Sufficient medicines, equipped laboratory, enough supplementary stock of medicines

and adequate personal protective equipment and clothing were found to be statistically insignificant at 5% level indicating that they are not predictors of preparedness of health facilities to emerging and re-emerging infectious diseases in Zimbabwe. The respondents to the study also reported a lack of research and limited availability of diagnostic tests, short supply of drugs, inaccessible and unaffordable medicines.

Also, the study aimed to determine the relevance or adequacy of protocols for reemerging and emerging infectious diseases. In doing so the findings of the study revealed that hospitals do not have infectious disease protocols or procedures, a well-drafted Emergency Response Plan. Also the hospitals did not adhere to the legal framework for health-sector emergency management. A significant relationship was found between adherence to the legal framework for emergency management and perceived relevance or adequacy of protocols for reemerging and emerging infectious diseases whilst the availability of infectious disease protocols or procedures, well-drafted Emergency Response Plan and frequency of emergency plan revision was found to be statistically insignificant at 5% level of significance. Furthermore, the respondents reported inadequate investment in infection investigation and response activities, non-existing comprehensive preparedness and response plans, lack of well developed strategic frameworks for preparedness and response, low support for applied research as well as failure to compel and adhere to the International health regulations.

5.2 Conclusions

Several conclusions were drawn from the findings and they are presented according to objectives:

5.2.1 OBJECTIVE 1: Readiness of Mpilo and Parirenyatwa health facilities to respond to emerging and reemerging infectious diseases

The study found a lower composite index for preparedness of the health facilities to emerging and reemerging infectious diseases leading to the conclusion that the public health facilities in Zimbabwe are not yet ready to respond to emerging and re-emerging infectious diseases. Technology and sufficient bedding availability were found statistically significant and the study reached a conclusion that public health facilities are ever ready to respond to infectious diseases in terms of technology availability and enough bedding to handle the influx of patients. However, based on the Pearson Chi-square test results, the study resolved that generally, the health system of Zimbabwe is not prepared to respond to emerging and re-emerging infectious diseases.

5.2.2 OBJECTIVE 2: Readiness of health personnel at Mpilo and Parirenyatwa hospitals to respond to Emerging and Reemerging diseases

In terms of readiness of health personnel, the study revealed a lack of adequate human resources, shortage of qualified and trained health staff, inexperienced and poorly motivated health personnel. Thus, the study concluded that the health personnel in Zimbabwe is not alert and is not yet ready to cater to emerging and re-emerging infectious diseases.

5.2.3 OBJECTIVE 3: Availability of medicines at Mpilo and Parirenyatwa hospitals for emerging and reemerging infectious disease response

Furthermore, the study found that medicines for emerging and re-emerging infectious diseases are not always readily available, accessible and affordable in Zimbabwe leading to the conclusion that the prevailing political and economic situation in the

country mostly exacerbated by a shortage of foreign currency and decline in donor funding for medical supplies.

5.2.4 OBJECTIVE 4: Relevance of protocols for reemerging and emerging infectious diseases at Mpilo and Parirenyatwa hospitals.

In addition, a low composite index score for perceived relevance of protocols for reemerging and emerging infectious diseases was calculated and thus the study concluded that those protocols for reemerging and emerging infectious diseases for the public health system are irrelevant and inadequate. In general, the study concluded that the public health system of Zimbabwe is not prepared for emerging and re-emerging infectious diseases.

5.3 Recommendations

From the findings, the study suggests recommendations for both practice and further research:

5.3.1 Recommendations for practice

Based on the findings, the following recommendations were made as discussed below:

The authorities for implementation

i) The Government in collaboration with the Ministry of Health should continue making tireless efforts to build and retain resilient health systems for detection and response to both emerging and re-emerging infectious diseases. There is need to roll out strategic frameworks for prevention and control of emerging and re-emerging diseases as well as developing frameworks for integrating early warning and detection systems for disease outbreaks.

ii) In addition, the Government needs to take action to ensure the public health facilities and capacities to meet the requirements under the International Health Regulations. The health system should also be strengthened in accordance with the WHO's building blocks and the Sustainable Development Goals so as to respond to emerging and re-emerging infectious diseases.

iii) The Ministry of Health should source funds for training of staff on emergency preparedness and response. In-house staff meetings should also be conducted to train the staff on emergency preparedness. The health staff should also train village health workers and the whole community to create awareness on emerging and re-emerging infectious diseases.

iv) The Ministry of Health should source funds for training of staff on emergency preparedness and response. In-house staff meetings should also be conducted to train the staff on emergency preparedness. The health staff should also train village health workers and the whole community to create awareness on emerging and re-emerging infectious diseases.

Service users/ beneficiaries

i) The general public should also advocate for an effective draft national plan for enhancing preparedness and response to emerging and re-emerging communicable diseases.

ii) The public should also campaign, through community and political leaders, prioritizing of purchase of medicines and equipment at all major hospitals

iii) Service users can also lobby the government through the ministry of health to provide EIDs and RIDs information through health promotions and campaigns.

Other stakeholders

i) Due to the fragility of the public health system, the government and the health system management should ensure that a plan of action is formulated and implemented towards preparedness and operational response for emerging and re-emerging infectious diseases.

ii) The World Health Organization should also continue to support the nation in the areas of surveillance, early detection and response to emerging and re-emerging infectious diseases.

iii) International donor agencies and non-governmental organizations can balance focus prevention and preparedness on both HIV and EIDs and RIDs.

iv) Companies can, through workplace health promotion, provide information about EIDs and RIDs to employees.

5.3.2 Recommendations for further research

i) The present study was not extensive due to a number of factors including budget and time constraints, hence further researches are necessary:

ii) The study only focused on Public Hospitals which cannot truly represent the health system at the national level. Hence, further researches should include other hospitals both private and public in Zimbabwe to ascertain the preparedness of the health system to emerging and re-emerging infectious diseases.

iii) Further studies should be conducted to identify the factors influencing preparedness and readiness of the health facilities towards emerging as well as re-emerging infectious diseases.

iv) The current study established the preparedness of the health system to respond to emerging and re-emerging infectious diseases in general. Future researchers

should aim to establish the preparedness of the health system to respond to specific emerging and re-emerging infectious diseases such as Cholera, TB or Typhoid.

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APPENDICES

Appendix 1: Informed Consent Form for Respondents

Project Title:

Preparedness of Zimbabwe's health system to respond to emerging and reemerging infectious diseases with a focus on Parirenyatwa and Mpilo hospitals.

General Introduction

Good morning/afternoon. My name is Finess Manzira, a Master in Public Health student at Mount Kenya University conducting research on emerging and reemerging diseases as highlighted in the topic above. I am kindly inviting you to participate in this research by sharing your views and insights about the mentioned topic. The aim of the topic is to establish if Zimbabwe's health system is prepared to respond to emerging diseases such as the Zika virus disease and reemerging diseases such as malaria and Ebola. This consent form may include words that you do not understand. Please inquire from me to forestall as we go through the information and I will take time to explain.

Investigators

The Principal investigator of the study will be Finess Manzira and will be aided by Thando L Sibanda.

Study Location

The study is being conducted at Parirenyatwa Hospital in Harare and Mpilo Hospital in Bulawayo.

Purpose of the Research

The purpose of the study is to generate information and evidence to use to strengthen the health system and guide policies and programs for Zimbabwe's health system preparedness and response to emerging and reemerging infectious diseases. Emerging and reemerging diseases are a common occurrence in Zimbabwe and this research seeks to find strengths and weaknesses in the system and use the information gathered to aid relevant stakeholders in identifying focus areas with the health system.

Risks

A problem may be the time and effort you take to participate in the study. A risk can be a breach of confidentiality (something you say is accidentally provided to others) but we are able to take precautions to look that this does not happen. You are at liberty to request me to stop or refuse to answer any questions that you are uncomfortable with.

Benefits

There will be no direct benefit to you as the respondents, but your participation assists stakeholders including the Government to strength, maintain or focus resources in the health system in responses to emerging and reemerging diseases.

Privacy, Anonymity and Confidentiality

Your ideas, perspectives and insights that will be depicted in the questionnaires will be used for the sole purpose of this research only, your name and address will not be necessary in order to safeguard your privacy, anonymity and confidentiality.

Voluntariness

Your involvement in this research is completely voluntary. It is your choice whether to participate or not. If you choose not to participate I will cease to gather information from you without any regrets or compel you to participate against your will. You will not receive any compensation for participating in the study.

Right to Withdraw

You have the right to withdraw from participating in the research at any time you wish to do so. Choosing to play a part will not affect your job or job-related assessments in any way.

Review

The Ministry of Health and the Mount Kenya University Ethical Review Committee has reviewed this study.

Contacts:

If you have a concern about any aspect of the study, you should ask to speak to the researchers who will do their best to answer your questions. If you have any questions or queries as far as ethical issues are concerned you may contact The Chairman, Ethics Review Committee, Mount Kenya University, P.O Box 342-01000, Thika, Kenya.

Do you have any questions? Yes ____ No ____

If yes, note the questions below:

Would you be willing to participate in the study?

Yes ____ No ____

Respondent's statement: I have read or have been read to the above considerations regarding my participation in the study. I have been given a chance to ask any questions and my questions have been answered to my satisfaction. I understand that the information I give will be kept private. I understand that I may withdraw from this study at any time. I agree to participate in this study as a volunteer.

_____ _____

Signature of respondent Date

Interviewer's declaration: I, _____, have explained to the respondent in a language she or he understands the procedures to be followed in this study, and the risks and benefits involved.

_____ _____

Signature of interviewer Date

_____ _____

Signature of witness (if any) Date

Appendix 2: Questionnaire

Questionnaire for health workers –Medical staff, Nurses and Health Administrators

INTRODUCTION

The purpose of this questionnaire is to gather primary data on Zimbabwe's health system's preparedness and response to both reemerging and emerging infectious diseases. You are kindly requested to fill in answers in the spaces provided below. Note that the information you provide is strictly for academic research purposes and will be treated with confidentiality .your name positions are not required in this questionnaire. It is important that you answer truthfully and note that there is no right or wrong answer. The questionnaire is based on the Likert scale with the following key:

1=Strongly Disagree, 2= Disagree, 3= Neither, 4=Agree, 5=Strongly Agree

(Tick or fill in were appropriate)

QUESTION	STRONGLY DISAGREE	DISAGREE	NEITHER	AGREE	STRONGLY AGREE
The hospital is ready to respond to both emerging and reemerging infectious diseases					
Hospital Staff is aware of emerging and reemerging infectious diseases					
The hospital has enough beds to handle the influx of patients					
There are sufficient medicines in the					

hospital for infectious diseases					
There is an equipped laboratory for disease testing and verification of pathogens suspected to be infectious					
The hospital has infectious disease protocols or procedures					
Technologies are available for response to emerging and reemerging infectious diseases					
There are few mortalities and morbidity cases due to infectious diseases					

THANK YOU FOR THE PARTICIPATION

Appendix 3: Key Informant Interview Questions

Interview questions for Heads of Departments, Specialists and Senior Medical Doctors

INTRODUCTION

The purpose of this to gather in-depth knowledge about Zimbabwe's health system and understand personal perceptions about it from health workers who handle infectious diseases cases regularly. The goal is to ascertain the preparedness to the health system to respond to emerging and reemerging infectious diseases. Note that the information you provide is strictly for academic research purposes and will be treated with confidentiality. It is important that you answer truthfully and note that there is no right or wrong answer.

Question 1

What is your view on the health system of Zimbabwe in relation to infectious diseases?

Question 2

Briefly, what experiences have you had with infectious diseases?

Question 3

Would you say hospitals such as this one has enough personnel to respond to an infectious disease outbreak?

Question 4

In your opinion what contributes to mortality or morbidity from infectious diseases in Zimbabwe?

Question 5

(a) What stands out to be the most important aspect of the health system according to you?

(b) Which element do you think is strong or weak in responding to infectious diseases in Zimbabwe?

Question 6

Is there an area you view as robust in Zimbabwe's health system?

Question 7

What technologies and equipment are available in the hospital for infectious diseases?

Appendix 4: Focus Group Discussion

INTRODUCTION: Greetings and welcome to this focus group discussion. My name is Finess Manzira and I will be facilitating our discussion

INTRODUCTIONS

Purpose: Let me begin by explaining the purpose of this discussion .the aim intended is to gather information from your perceptions and views on the health system's preparedness to respond to infectious diseases, both emerging and reemerging.

The main idea is to gather information from your experiences with infectious diseases, areas were you think the system must be commended or were you think it is lacking in respect of infectious disease. Views on how to improve the preparedness are much welcome.

The group has a combination of nurses and doctors because they are at the forefront of handling every patient that comes into the hospital.

GROUND RULES:

- Let's respect others opinion and give them room to express themselves in the shortest time possible
- Answers must be pertinent to the questions under discussion and not political
- Answers given are strictly confidential and will not be shared with anyone and we should refrain using names or directly identifying.
- All answers given are neither correct or wrong so everyone is free to air out their opinions

ANY QUESTIONS SO FAR?

This is a voluntary exercise and with your consent we can move forward.

Question 1

(a) What are the common infectious diseases that you come across while working in this hospital?

(b) Among these diseases which ones would you say are emerging and reemerging?

Question 2

(a) What is your opinion on the hospital's infectious disease protocol?

(b) Would say they are relevant and adequate to respond to emerging and reemerging infectious diseases?

Question 3

(a) How are patients suspected to be infected with an infectious agent handled when they reach the hospital?

(b) Are of the opinion that this system is effective in responding to such diseases

Question 4

In terms of a health system, which areas do you think the country is strong and which ones do think it's lacking?

Question 5

(a) What is your perception of infectious diseases awareness?

(b) Are you involved or aware of any national public health education campaigns for infectious diseases?

Question 6

What is your opinion on infectious diseases and how they are handled in the country?

Appendix 5: Ethical Clearance Certificate

Mount Kenya University

JUNE 19, 2018

Ref. No. MKU/ERC/0873

CERTIFICATE OF ETHICAL CLEARANCE

This is to certify that the proposal titled **"PREPAREDNESS OF ZIMBABWE'S HEALTH SYSTEM TO RESPOND TO EMERGING AND REEMERGING INFECTIOUS DISEASES WITH A FOCUS ON PARIREYATWA AND MPILO HOSPITALS"**, Whose Principal Investigator is Mr Finess Manzira (MPH/50120/2016) has been reviewed by Mount Kenya University Ethics Review Committee (ERC), and found to adequately address all ethical concerns.

Mr Francis W. Makokha
Secretary, Mount Kenya University ERC

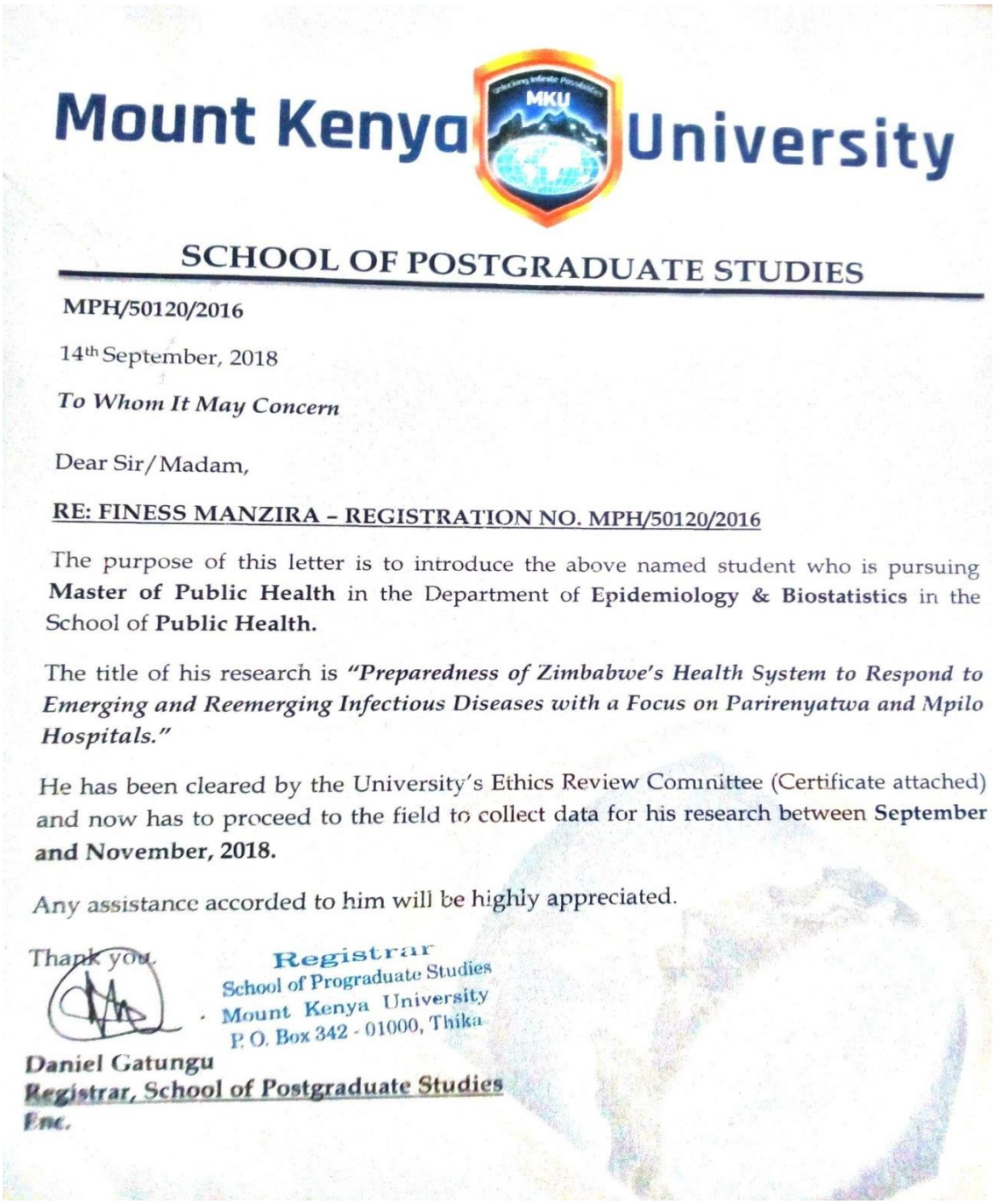
Sign: _____ **Date:** 19.06.2018

Prof. Francis W. Muregi
Chairman, Mount Kenya University ERC

Sign: _____ **Date:** 21/6/2018

Chairman
Mount Kenya University
Ethics Review Committee
P. O Box 342 - 0100, Thika

Appendix 6: Postgraduate Clearance



Mount Kenya University

SCHOOL OF POSTGRADUATE STUDIES

MPH/50120/2016

14th September, 2018

To Whom It May Concern

Dear Sir/Madam,

RE: FINESS MANZIRA – REGISTRATION NO. MPH/50120/2016

The purpose of this letter is to introduce the above named student who is pursuing **Master of Public Health** in the Department of **Epidemiology & Biostatistics** in the School of **Public Health.**

The title of his research is ***"Preparedness of Zimbabwe's Health System to Respond to Emerging and Reemerging Infectious Diseases with a Focus on Parirenyatwa and Mpilo Hospitals."***

He has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data for his research between **September and November, 2018.**

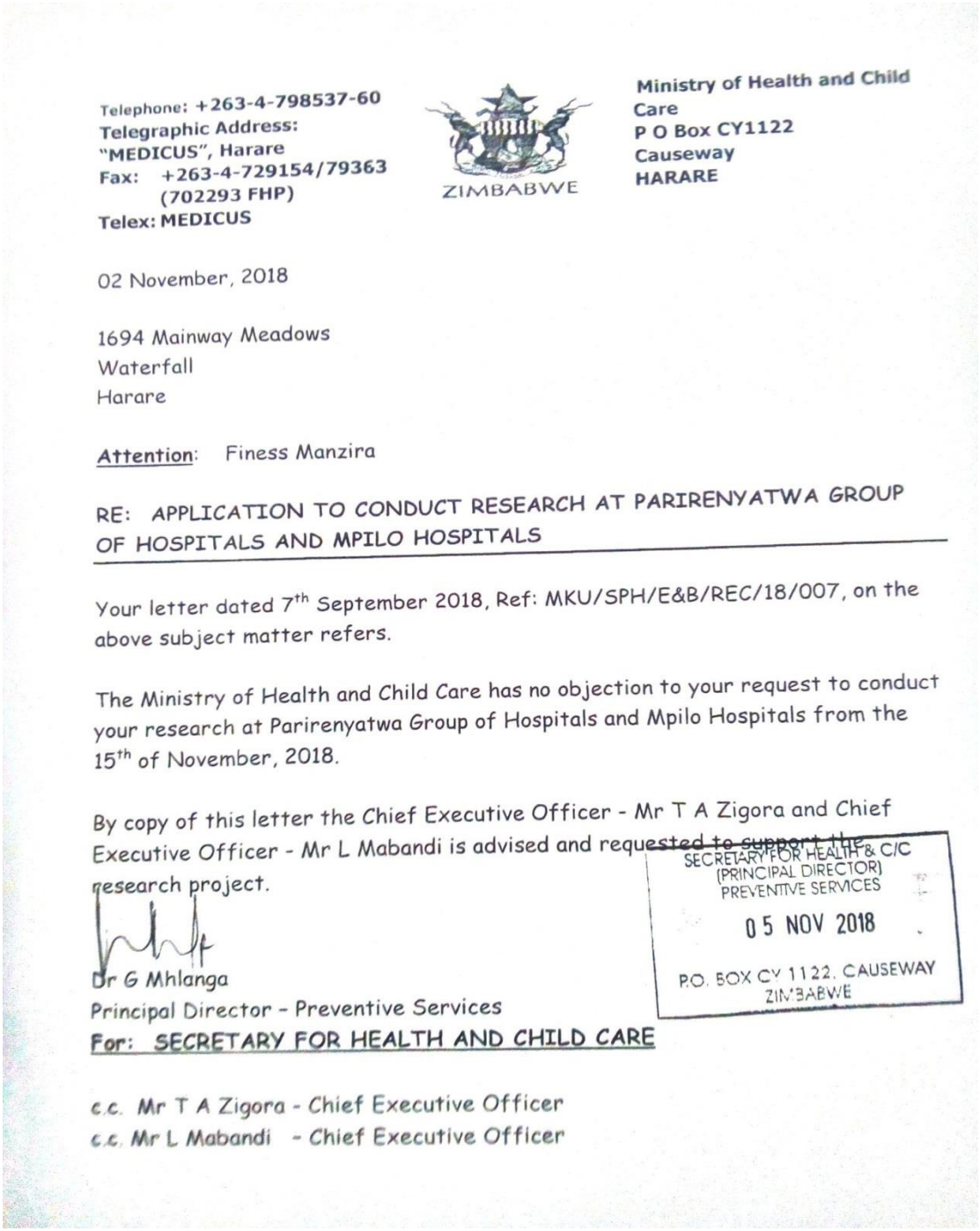
Any assistance accorded to him will be highly appreciated.

Thank you.

Registrar
School of Prograduate Studies
Mount Kenya University
P. O. Box 342 - 01000, Thika

Daniel Gatungu
Registrar, School of Postgraduate Studies
Enc.

Appendix 7: Ministry Of Health and Child Care Clearance



Telephone: +263-4-798537-60
Telegraphic Address:
"MEDICUS", Harare
Fax: +263-4-729154/79363
(702293 FHP)
Telex: MEDICUS

ZIMBABWE

Ministry of Health and Child Care
P O Box CY1122
Causeway
HARARE

02 November, 2018

1694 Mainway Meadows
Waterfall
Harare

Attention: Finess Manzira

RE: APPLICATION TO CONDUCT RESEARCH AT PARIRENYATWA GROUP OF HOSPITALS AND MPILO HOSPITALS

Your letter dated 7th September 2018, Ref: MKU/SPH/E&B/REC/18/007, on the above subject matter refers.

The Ministry of Health and Child Care has no objection to your request to conduct your research at Parirenyatwa Group of Hospitals and Mpilo Hospitals from the 15th of November, 2018.

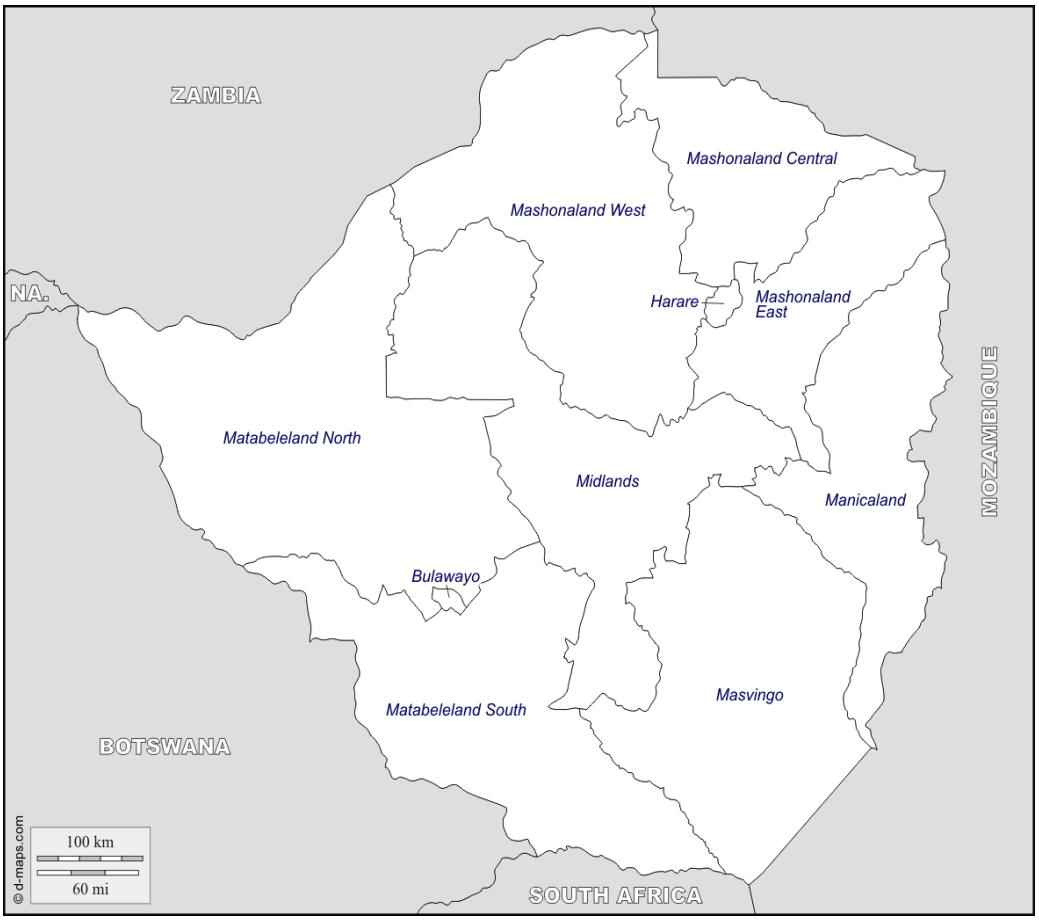
By copy of this letter the Chief Executive Officer - Mr T A Zigora and Chief Executive Officer - Mr L Mabandi is advised and requested to support the research project.

SECRETARY FOR HEALTH & C/C
(PRINCIPAL DIRECTOR)
PREVENTIVE SERVICES
05 NOV 2018
P.O. BOX CY 1122, CAUSEWAY
ZIMBABWE

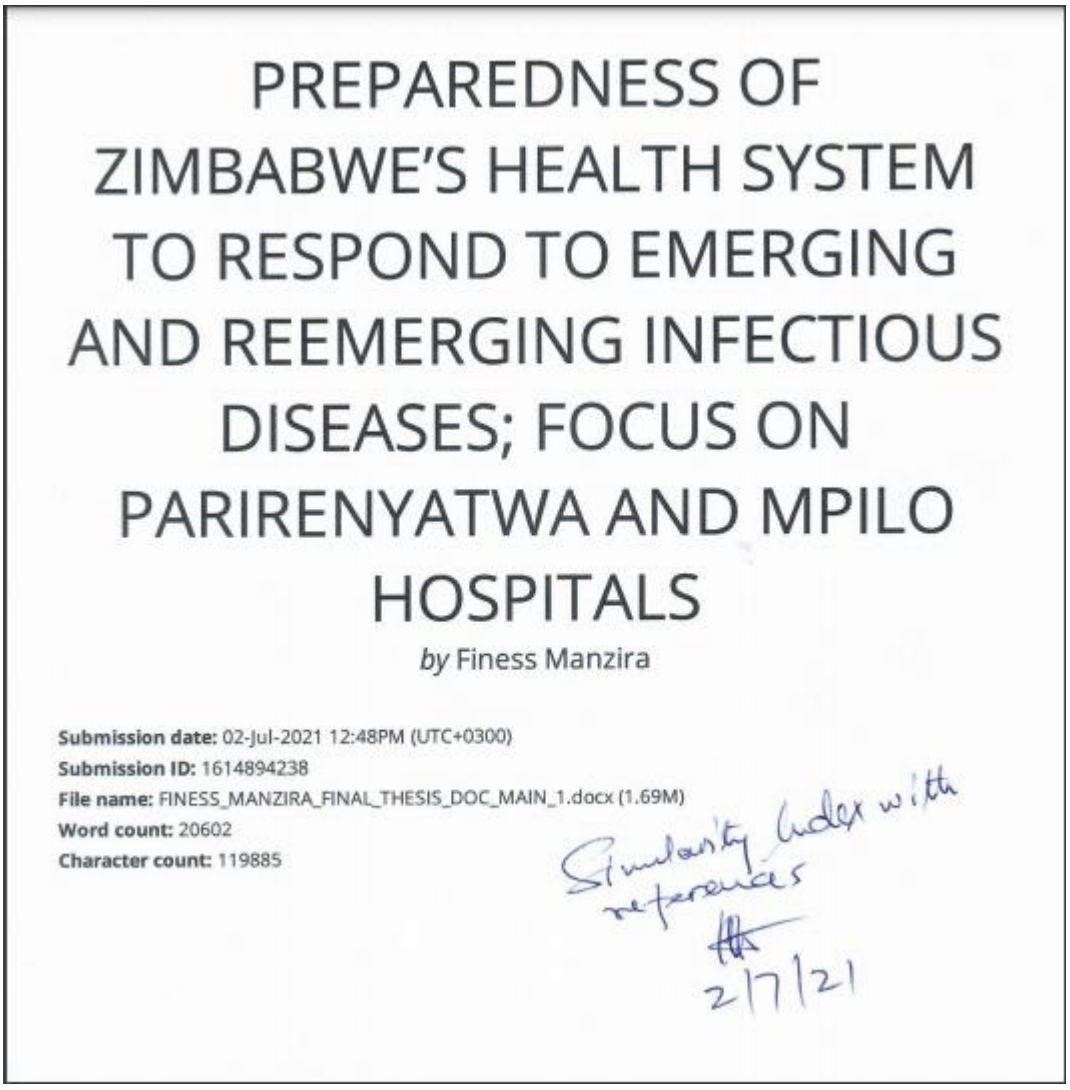
Dr G Mhlanga
Principal Director – Preventive Services
For: SECRETARY FOR HEALTH AND CHILD CARE

c.c. Mr T A Zigora - Chief Executive Officer
c.c. Mr L Mabandi - Chief Executive Officer

Appendix 8: Map of Zimbabwe



Appendix 9: Similarity Index Report



PREPAREDNESS OF ZIMBABWE'S HEALTH SYSTEM TO RESPOND TO EMERGING AND REEMERGING INFECTIOUS DISEASES; FOCUS ON PARIRENYATWA AND MPILO HOSPITALS

by Finess Manzira

Submission date: 02-Jul-2021 12:48PM (UTC+0300)
Submission ID: 1614894238
File name: FINESS_MANZIRA_FINAL_THESIS_DOC_MAIN_1.docx (1.69M)
Word count: 20602
Character count: 119885

Similarity index with references
2/7/21

PREPAREDNESS OF ZIMBABWE'S HEALTH SYSTEM TO RESPOND TO EMERGING AND REEMERGING INFECTIOUS DISEASES; FOCUS ON PARIRENYATWA AND MPILO HOSPITALS

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