EFFECTIVENESS OF PREVENTION AND CONTROL MEASURES EMPLOYED TO ADDRESS THE SPREAD OF COVID-19 IN ZAMBIA: A STUDY OF SELECTED TOWNSHIPS IN MUFULIRA DISTRICT

By

CYNTHIA BANDA

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Declaration

I, Cynthia Banda, declare that the dissertation hereby submitted is my own work and it has not previously been submitted for a degree, diploma or other qualification at the University of Zambia / University of Zimbabwe or any other University.

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Certificate of Approval

This dissertation by CYNTHIA BANDA is approved as a partial fulfillment of the requirements for the award of the Degree of Master of Science in Counseling degree of the University of Zambia in collaboration with the Zimbabwe Open University.

Name:…….Signed……. Date…….....

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DEDICATION

To my beloved family and friends, who have always been there for me.

Receive my gratitude with love.

Acknowledgement

To God be the Glory for His mercies that strengthened me and sustained me during the period of my study at University of Zambia. My appreciation goes to my Supervisor Dr. J. M. Mandyata for his patience and insightful support that helped me to make sense out of my dissertation. Sir, I salute you and God bless you abundantly. Similarly, I extend my gratitude to Dr. Ndhlovu for his continuance support and encouragement throughout the course of the program. My acknowledgement also goes to the lecturers for their constant encouragement during the Master of Science in Counselling program.

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ABSTRACT

The novel Coronavirus disease 2019 (COVID-19) which started in Wuhan, China in December 2019 has continued to spread in Zambia, causing death, in the worst cases as well as imposing psychological, social and economic problems. Despite, the stringent public health and social measures put in place to prevent and control disease, the virus continued to spread. Therefore, the study examined the effectiveness of the prevention and control measures implemented to address the spread of the Covid-19 in Mufulira, Zambia. The study used descriptive research design supplemented by quantitative and qualitative methodology with a sample size of 120. Purposively and simple random sampling was use and interviewed, questionnaires and onsite observations were conducted. Quantitative data was analysed using Microsoft Excel 2010 to generate frequencies, percentages, tables and graphs. While qualitative date used thematic analysis to obtain emerging themes which were presented descriptively. The study findings revealed that participants were aware of COVID-19 disease with the majority, 86 (72%) affirming of the realness and mode of transmission of the disease, while 19 (28%) indicated that the disease was not real but a make up of the health sector. The findings also showed that a minority of participants felt that the preventive measure were effective, while the majority believed that the measures were not effective. It was further noted that only 60 (50%) of the respondents in the study sites complied with the preventative measures. In addition, the findings indicated the lack of testing and delayed diagnosis including poor surveillance system contributed to the ineffectiveness. It was conclusively assumed that the preventive and control measure employed to address the spread of the COVID-19 disease in Mufulira were not effective in slowing down the spread of the disease. The recommendations of the study are the need to enhance community engagement, continue awareness in different local languages and establishment of local laboratories for testing of COVIDL-19 and actively involve counselling in the creation of awareness among the residents.

Key Words: *COVID-19, Effectiveness, Surveillance, Isolation, Quarantine, Prevention and Control*

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Acronyms and Abbreviations

CDC	Centre for Disease Control and Prevention
COVID-19	Corona Virus Disease 2019
DMMU	Disaster Management and Mitigation Unit
FDA	Food and Drug Administration
GRZ	Government of the Republic of Zambia
IPC	Infection, Prevention and Control
PCR	Polymerase Chain Reaction
PHSM	Public Health and Social measures
MOH	Ministry of Health
NHC	National Health Commission
NICD	National Institute of Communicable Diseases
SARS-Cov-2	Severe Acute Respiratory Syndrome Coronavirus 2
UN	United Nations
WASH	Water Sanitation and Hygiene
WHO	World Health Organization
ZNPHI	Zambia National Public Health Strategic Institute

Definitions of Key Terms of the Study

Covid-19: The extent to which a person's behaviour, in terms of taking medications, following diet or executing lifestyle changes that corresponds with agreed recommendations from healthcare providers.

Epidemic: Is when an infectious disease spreads quickly to more people than experts would expect. It usually affects a larger area than an outbreak

Isolation: Separating sick people with a contagious disease from people who are not sick

Infection, Prevention and Control: Scientific approach and practical solution designed to prevent harm caused by infection to patients and health workers.

Pandemic: is a disease outbreak that spreads across countries or continents. It affects more people and takes more lives than an epidemic.

Prevalence: Refers to how widespread a disease is specifically, the total number of cases in a population at a given time

Surveillance: The ongoing systematic collection, analysis, and interpretation of data, closely integrated with the timely dissemination of these data to those responsible for preventing and controlling disease.

Quarantine: Separates and restricts the movement of people who were exposed to a contagious disease to see if they become sick. These people may have been exposed to a disease and do not know it, or they may have the disease but do not show symptoms.

CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter presents the background that generated the need to conduct this research. The statement of the problem, purpose, objectives, research questions and the significance of the study are also brought out. Operational definitions of terms used in the study are also presented.

1.2 Background

In December 2019, the novel corona virus was identified in Wuhan, a city in the Hubei Province of China as a cause of upper and lower respiratory tract infections. Due to implications in the respiratory system, it was called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) (Bloukh et al, 2020). It rapidly spread epidemically throughout China and then gradually started to spreading to other parts of the world causing mortalities. In February 2020, the World Health Organization titled the disease COVID-19, which stands for Corona Virus disease 2019. The rapid spread to of the disease made the World Health organisation to declare the disease a Global Public Health Emergency (WHO, 2020). The infectious COVID-19 spreads through person to person contact with infected respiratory fluids and contaminated surfaces, causing respiratory distress and death, in the worst cases (Shabu et al., 2020).

In Zambia the first two cases were confirmed in March 2020. Most of the identified imported cases arrived from Europe and the United States rather than from China where the virus originated (Maclean, 2020). The Government of the Republic of Zambia (GRZ), Disaster Management and Mitigation Unit (DMMU) estimates that 7.6 million people in 43 districts are at risk of COVID-19 due to presence of main border crossing, location on major highways or transport corridors, population density, industrial activities and populations with pre-existing health conditions. Urgent response was needed to meet the needs and protect the most vulnerable people from direct public health and indirect impact of COVID-19 on the social and economic impact of the crisis (UN Zambia, 2020).

In Zambia, Stringent public health and social measures (PHSM) were been put in place to slow the spread of COVID-19. These include limitations on domestic and international travel; stay-at-home orders; closing of schools, shops, and religious centres. Among other measure to prevent the disease included hand washing, social or physical distancing of one meter, wearing of face mask in public places and encouraging cough etiquettes as well as avoiding handshakes (MOH and ZNPHI, 2020). Further, on 13th March 2020, the Minister of Health issued Public Health Statutory Instrument No. 22 of 2020, which provides public health regulations among them mandatory quarantine. These measures were reinforced by the President of Zambia Mr. Edgar Chagwa Lungu in his second COVID-19 address to the nation on 8th April 2020. He emphasised on the review of issuance of VISAS for people wanting to travel to Zambia and that all travellers would be allowed in the country and those with symptoms would be quarantined in a medical facility for treatment while those without symptoms would be quarantine for fourteen days at their own cost. The President, further suspended non-essential foreign travel, restricted gathering to not more than 50 people subject to complying with public health guideline, closed all bars, night clubs and gyms while restaurant were to operate on take-away basis and delivery basis.

According to the Ministry of Health in Zambia, WHO still implores countries to step up efforts for containing spread of the virus by implementing strong measures to support early disease detection, isolation and supportive treatment of cases, contact tracing and interruption of disease transmission. Therefore, Zambia enhanced the preparedness, readiness and response action and contact tracing for Covid-19, which pivoted on surveillance as a control guidelines. According to the ministry of Health Guideline and Standard Operating Procedure for Covid-19, Covid-19 surveillance involves early detection, confirmation and response to public health threats to prevent illness, death and disability.

The aim of surveillance for COVID-19 is to provide epidemiological information to conduct risk assessments at the national, provincial and district level and to guide preparedness and response efforts. Robust surveillance is a critical pillar for the control of Covid-19 (MOH, 2020). According to WHO (2011), a robust surveillance is an essential component of control or elimination programmes. Two forms of surveillance; passive and active case-detection or searches are mainly applied in disease control programmes. Passive case detection is detection triggered by patients seeking care for their illness from clinicians working in static health

facilities. Clinicians who manage a case should notify it to the appropriate epidemiological surveillance system. Active case detection or search means that health staff reach out to the community and systematically screen the population to find cases.

Despite all the stringent measures put in place, the virus continued to spread to all parts of the country affecting communities directly and indirectly. As at 31st August 2020, confirmed cases globally were 25, 325,617 including 847,847 deaths. Within Africa, over 1.2 million cases including 240,000 deaths had been reported (John Hopkins University, 2020), and in Zambia, 12,097 cumulative cases where confirmed including 288 death (MOH, 2020). According to MOH (2020) the first two cases in Zambia were reported mid-March 2020 and by end of March, there were 35 cases. In April, the number went up to 71 confirmed cases with 3 deaths, May 951 cases with 4 deaths, June 537 with 17 death, July 4,369 cases with 127 death and by August there were 6,134 cases with 137 death.

The increase of cases has also brought along with it a series of fallouts and negative impacts, leading to the need for newer initiatives such as creating awareness about the infection prevention and control of the disease and the practices required to observe at the same time. Some of the fallout or outcomes include closure of schools, restriction of social gathering to a maximum of 50 with observation of social distance, restriction on movements and work rotations in crowed work places. Dr. Coumba Mar Gadio, the United Nations Resident Coordinator in Zambia, stated that as COVID-19 pandemic comes at a time when Zambia is facing other challenges such as repeated climate shocks, which could threaten progress against the Sustainable Development Goals. It was therefore, extremely urgent that there was a collective and concerted effort to mitigate the additional impact of the COVID-19 crisis.

Furthermore, the disease burden imposes psychological, social and economic tremor for patients, families, community and the nation at large. This has brought a lot of stigmatization on the affected people and their families. Betsch et al (2019) stated that, like many health pandemics, it evolves rapidly with negative repercussions the world over. It is against this background, the study sought to investigate the impact of preventive and control measures put in place to address the spread of COVID-19 in selected compounds in Mufulira district in Zambia.

1.3 Statement of Problem

The challenges and uncertainty surrounding the evolution of COVID-19, as well as its spread, impact on livelihoods, cannot be underestimated (Karasneh et al., 2020). The rapidly spread of the Covid-19 remains a big threat to the health and socio-economic status of Zambia. The number of people contracting the disease including deaths are increasing causing uncertainties due to no cure or vaccine to protect the body from the disease. According to Radcliffe (2020), Scientists are pushing forward with efforts to develop vaccines and treatments to slow the pandemic and lessen the disease's damage.

Meanwhile, Gadio (2020) alluded that Covid-19 pandemic will have a multifaceted effect on the lives of the people of Zambia considering that movement restrictions put in place to contain the pandemic are impacting people's ability to access basic services to sustain their livelihoods. Thus, despite the stringent public health and social measures put in place to slow the spread of Covid-19, there are mammoth challenges in slowing or preventing the spread of the disease. The poor economic and social situation created by the pandemic disease has added more pressure to fulfilling their needs. In addition, Gadio (2020) further asserted that the fight against Covid-19 is clearly a mammoth task that can only be accomplished with the full involvement of all stakeholders. As experts have indicated, this is a new epidemic for which a lot is yet to be learnt and one that has overwhelmed the entire global village.

The health care worker are overwhelmed with the increasing numbers of Covid-19 cases in the hospitals with none availability of Personal Protective Equipment (PPE). Other resource such as human resource, limited laboratory testing facilities and few isolation facilities have compromised the management of the Covid-19 pandemic in relation to infection, prevention and control (IPC) of the disease. Covid-19 early detection, confirmation and response to public health threats is key to prevent illness, death and disability. It is clear that there are mammoth challenges with fighting the Covid-19 in Zambia, economically, socially, educationally and politically. This has caused pressure on the Government and cooperating partners. As Gadio (2020) stresses that, the UN recognises the fact that the COVID-19 pandemic requires a multisectoral response with all stakeholders at their various levels playing a key role. The UN System in Zambia, the Government of the Republic of Zambia, Cooperating Partners and other

key stakeholders have collectively put together measures and controls to minimise the spread of the disease in Zambia.

Even though preventive and control measures to reduce the spread of Covid-19 pandemic in Zambia has been put in place, the effectiveness of these measures and control provisions on the spread of the pandemic in Zambia, are not known. This study therefore sought to investigate the effectiveness of the measures and control measures the Zambian government had taken aimed at reducing the spread of covid-19 in selected compounds of Mufulira district in Zambia.

1.4 Purpose of Study

The purpose of the study is to evaluate the effectiveness of the prevention and control measures implemented to address the spread of the Covid-19 in Mufulira, Zambia.

1.5 Objectives

In order to achieve the intended purpose, the study was guided by the following objectives:

1.4.1. To establish awareness on the existence of COVID -19 in the study compound

1.4.2. To explore the preventative and control measures put in place to reduce the spread of covid-19 in the study compounds

1.4.3. To establish the effectiveness of prevention and control measures implemented to slow the spread of COVID-19.

1.4.4. To establish factors that might have enhanced or hindered the spread of Covid-19 in the study compounds

1.4.5. To establish efforts being made by the study compounds to slow down the spread of Covid-19.

1.6 Research Questions

1.5.1. To what extent are residents in the study sites aware of presence of COVID-19 disease?

1.5.2. What preventive and control measures are in place to reduce COVID-19?

1.5.3. How has the prevention and control measures effected on the spread of Covid-19?

1.5.4. What factors have led to the rapid spread of Covid-19?

1.5.5. What efforts are being made by the study district to slow down the spread of the disease?

1.7 Significance of the Study

The study has provided insight to the challenges and failures caused by the Covid-19 pandemic that has collapsed the socio-economic system and the health of the nation. It could be helpful to explore challenges and failures relating to the prevention and control of the disease considering that the spread has not slowed down.

The study was expected to help the following institutions; Ministry of Health, Ministry of Education, Ministry of Finance, ZNPHI and cooperating partners including the public. This would help them understand the failures of the implemented prevention and control measures. It was envisioned that the study would also help policy maker to plan favourably, thus, safeguarding the health of the people and engage stakeholders. According to Dr. Coumba Mar Gadio, the United Nations Resident Coordinator in Zambia, all actors must work together, to address the most urgent lifesaving needs to reduce the impact of Covid-19 across health, education, WASH, protection, nutrition, food security, law and order and social cohesion and economic stability.

In addition, the study would feed in to the existing knowledge on Covi-19 research in Africa. The knowledge identified may offer future new directions and enhance preparedness and response to emerging pandemic diseases.

1.8 Limitations

The study was limited by time as conducting face to face interviews was time consuming and required extensive groundwork and skill. Furthermore, the participants often wanted to please the

researcher by answering what they think the researcher wants to hear and thereby influencing the outcome of the research. Lastly, some information from government departments and private organisation was limited due to bureaucracy.

1.9 Scope of the Study

The scope of this study focused on Mufulira district because of its geographical location bordering with the Democratic Republic of Congo and it being a traffic corridor to Luapula province. This makes it vulnerable to the spread of the disease because of the truckers and human traffic at the border. The focus of the sample included personnel in the heath sector and various stakeholders in district and compounds involved in management of Covid-19 including preparedness. Those affected directly or indirectly by Covid-19 also formed part of the scope.

1.10 Theoretical Framework

The study was guided by the Health Belief Model (HBM), which was developed in the 1950's by social psychologists Hochbaum, Rosenstock and others. The HBM is a cognitive model, which also features the concept of self-efficacy by Bandura (1997). The model suggests that people's beliefs about health problems, perceived benefits of action and barriers to action, and self-efficacy explain engagement (or lack of engagement) in health-promoting behavior (Janz and Becker, 1984; Rosenstock, 1974). This explains why people do or do not take part in programs to detect or prevent disease in this case, the COVID-19. A stimulus or cue to action, must also be present in order to trigger the health-promoting behavior (Janz and Becker, 1984; Rosenstock, 1974).

The HBM is a value-expectancy theory, which suggests that behavior is dependent on the subjective value placed on the outcome and the expectation that an action will lead to that outcome (Lewin et al., 1944). In the context of COVID-19 the health related behaviors, the value is to avoid sickness (COVID-19). While, the expectation is that a certain health action (health guideline on prevent and control of COVID-19 could prevent the condition for which people consider they might be at risk.

The health related behaviors are dependent on perceptions of susceptibility, severity, benefits and barriers. Susceptibility and severity are considered as perceived threat, while perceived barriers and benefits are referred to as effectiveness of behavior (Glanz et al., 2008).

1.10.1 Perceived Susceptibility

According to Rosenstock (1974) perceived susceptibility refers to subjective assessment of risk of developing a health problem. The HBM predicts that individuals who perceive that they are susceptible to a particular health problem will engage in behaviors to reduce their risk of developing the health problem. Further, Rosenstock (1974) indicated that individuals with low perceived susceptibility may deny that they are at risk for contracting a particular illness, still others may acknowledge the possibility that they could develop the illness, but believe it is unlikely. In this context, individuals who believe they are at low risk of developing COVID-19 are more likely to engage in unhealthy, or risky behaviors such as not adhering to public health guidelines. On the other hand, individuals who perceive a high risk that they may be affected by COVID-19 are more likely to comply with preventative measures to avoid contracting the infection.

1.10.2 Perceived Severity

This refers to a person's feelings on the seriousness of contracting an illness or disease and its potential consequences (Glanz et al., 2008; Janz and Becker, 1984). The perceived seriousness encompasses beliefs about the disease whether it is life-threatening or may cause disability or pain or impact on the social or economic aspects (Rosenstock, 1974 and Glanz et al., 2008). In the case of COVID-19, the individual may perceive that it is medically serious if the consequences of the disease leads to a number of deaths or disability and affects them directly.

1.10.3 Perceived Benefits

According to Janz and Becker (1984), perceived benefits refer to an individual's assessment of the value or efficacy of engaging in a health-promoting behavior to decrease risk of disease. Further, Rosenstock (1974) affirmed that if an individual believes that a particular action will reduce susceptibility to a health problem or decrease its seriousness, then he or she is likely to

engage in that behavior regardless of objective facts regarding the effectiveness of the action. Hence, when an individual believes that wearing a facemask can prevent COVID-19, then the individual will comply and accept the recommended health guideline if it was perceived as beneficial.

1.10.4 Perceived Barriers

Perceived barriers refer to an individual's assessment of the obstacles to behavior change (Janz and Becker, 1984). These may be obstacles to performing a recommended health action. According to Glanz (2008), the perceived benefits must outweigh the perceived barriers in order for behavior change to occur. This means that even if a person perceives that COVID-19 is threatening, but it obstructs the person from gaining an income to survive, then the undertaking may overweigh the preventive measure for COVID-19. Therefore, the persons weighs the effectiveness of the action against its side effects.

1.10.5 Cue of Action

Cue of action is the stimulus needed to trigger the decision-making process to accept a recommended health action. The HBM posits that a cue, or trigger, is necessary for prompting engagement in health-promoting behaviors (Rosenstock, 1974 and Carpenter, 2010). These cues can be internal or external (carpenter, 2010). Physiological cues (e.g., pain, symptoms) are an example of internal cues to action (Janz and Becker, 1984; Glanz, 2008). External cues include events or information from close persons and health care providers (Janz and Becker, 1984), the media (Carpenter, 2010) encouraging health related behaviors. Relating to COVID-19, a person may decide to take action by following the health guidelines after suffering from the disease or after seeing someone suffer or die from the disease. According to Rosenstock (1974) the intensity of cues needed to prompt action varies between individuals by perceived susceptibility, seriousness, benefits, and barriers.

1.10.6 Self-Efficacy

Self-efficacy refers to the level or capacity of a person's confidence in his or her ability to perform a desire behavior (Glanz et al., 2008). The confidence in one's ability to effect change in outcomes (i.e., self-efficacy) was a key component of health behavior change (Rosenstock et al,

1988). Thus, COVID-19 has made the world to change the social aspects by maintaining social distances and public health restriction in order to stop the spread of the disease. Therefore, it is up to an individual to effect change according to the required behaviour of adhering to the health guidelines, currently referred as the "*New normal*". The ability to change and adopt to the new normal due to the outcome is in line with self-efficacy.

1.11 Chapter Summary

The chapter presented the introduction to the study by highlighting the background of the study and stating the problem to the study. Further, outlined was the purpose of the study, research questions and then the chapter discussed the significance of this study. Finally, discussed were the scope, theoretical framework and limitations of the study. Chapter two follows with the literature review to help evaluates the significance of this study in relation to the related literature from studies that were done responding to similar situations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview

This chapter focuses on the literature reviewed about the background of Covid-19 prevention and control in addressing the spread of the disease from a global and local perspective. This review provides a critical examination of the existing primary studies and a comprehensive overview of the existing literature. It also provides a holistic knowledge base for the study.

2.2 Global and Local Understanding of Covid-19

2.2.1 Global Perspective

The World Health Organization (WHO) announced a global emergency on January 31st 2020 due to increasing concern about its rapid expansion. The disease became listed as a pandemic by 11th March 2020 (Rismanbaf, 2020). The virus rapidly spread to nearly all parts of the world in the first quarter of 2020. By 2nd June 2020, more than 6.27 million cases were recorded in 188 countries, with 375,000 deaths and more than 2.69 million recoveries (Johns Hopkins University, 2020). By 4th September 2020, the total confirmed case stood at 26,472,012 including 873,229 deaths with USA topping the lead with 6,335,244 confirmed cases including 191,058 deaths (Statista, 2020).

Table 1: Global Covid-19 Cases as at 4th September 2020

Country (Top Ten)	Total Infection	Active Infection	Recoveries	Deaths
Total (worldwide)	**26,472,012**	**6,933,917**	**18,664,866**	**873,229**
USA	6,335,244	2,569,090	3,575,096	191,058
Brazil	4,046,150	673,811	3,247,610	124,729
India	3,936,747	831,027	3,037,151	68,569
Russia	1,009,995	165,532	826,935	17,528
Peru	670,145	150,854	489,886	29,405
Colombia	641,574	131,805	489,151	20,618

South Africa	633,015	63,565	554,887	14,563
Mexico	616,894	120,278	430,287	66,329
Spain	488,513	-	-	29,234
Argentina	451,198	119,376	322,461	9,361

Source: Statista, Worldometer

Most of these countries went in into lockdown partially or completely. There were differences in implementing lockdown from one country to another. China was the first country to go on total lockdown lasting two month in a city of 11 million and later to the entire province. Italy was the first country in Europe to go on lockdown, then followed by Denmark, Ireland, Norway, Spain, Poland, Switzerland, France, Belgium and most part of other European countries and later other continent followed. However, lockdown in Europe was less strict than China (Kamps and Hoffmann, 2020). The expected outcome of the lockdown was to break the chain of COVID-19 transmission thereby reducing the number of new infections, reduce on hospitalisation and the number of deaths. This was the only way to break the infection, which did not have a cure. This was asserted by WHO and CDC, that there are presently no drugs or vaccinations that are known to be successful for SARS-CoV-2 management or preventing the spread. (Tim et al, 2020).

2.2.2 African Perspective

Africa confirmed its first case of COVID-19 in Egypt on 14th of February, 2020, and from sub-Saharan Africa the first case was reported in Nigeria on 27th of February, 2020 (WHO, 2020). The most-affected countries so far were South Africa, Egypt, Morocco, Algeria, and Cameroon. However, due to inadequate testing capacity for COVID-19 in Africa, the true number of cases may remain undetected, which makes it challenging to predict or conclude the true epidemiology of COVID-19 in the continent (Africa CDC, 2020). John Hopkins University (2020) affirmed that the breakdown remains fluid as countries confirm cases as and when.

As of May 13, every African country had recorded an infection, the last being Lesotho. By 1st September 2020, there were more than over 1.2 million confirmed cases of coronavirus across the continent, with a number of African countries imposing a range of prevention and containment measures against the spread of the pandemic.

Table 2: Covid-19 Confirmed Cases in Africa as at September 2020

Country	Confirmed cases	Active confirmed cases	Recoveries	Deaths
Africa Total	1,289,466	232,958	1,025,613	30,895
South Africa	635,078	62,582	557,818	14,678
Egypt	99,582	17,782	76,305	5,495
Morocco	68,605	14,830	52,483	1,292
Ethiopia	56,516	35,024	20,612	880
Nigeria	54,743	10,876	42,816	1,051
Algeria	45,773	11,975	32,259	1,539
Ghana	44,713	856	43,577	280
Kenya	34,884	13,236	21,059	589
Cameroon	19,604	741	18,448	415
Ivory Coast	18,269	988	17,162	119

Source: Statista, Worldometer (2020)

The demography of the African continent seems to be at an advantage when compared to other COVID-19 affected regions. The median age in Africa is less than 20 that makes the continent the youngest in the world (Mo Ibrahim Foundation, 2020). Only 4% of Africa's population is older than 65, which are low as compared to 37% in Eastern and South-Eastern Asia and 29% in Europe and Northern America (WPA, 2019). The disease seemingly affects the elderly severely than the younger population.

2.2.3 Zambia Perspective

The COVID-19 situation continued to deteriorate at an alarming rate since the first reported case on the 18 March 2020. The outbreak reached all ten provinces with confirmed cases. Lusaka and Copperbelt were the epicenter for the outbreak with increased cases in border point towns including Chirundi, Solwezi and Nakonde. The Ministry of Health (MOH) announced to open dedicated health facilities to strengthen case management and respond to the increased cases in

Copperbelt and Solwezi districts (Zambia Situation Report, 2020). As at 31st August 2020, Zambia recorded 12,097 Coronavirus Cases, since the epidemic began and 288 deaths (WHO, 2020).

Table 3: COVID-19 Cases and Death in Zambia as at 31 August 2020

Month	Number Infected	Cumulative Infected	Deaths	Cumulative Deaths
March	35	35	0	0
April	71	106	3	3
May	951	1057	4	7
June	537	1594	17	24
July	4369	5963	127	151
August	6134	12,097	137	288

Source: https://epidemic-stats.com/coronavirus/zambia: 2020

Further, the Government of the Republic of Zambia (GRZ), Disaster Management and Mitigation Unit (DMMU) estimates that 7.6 million people in 43 districts are at risk of COVID-19 due to presence of main border crossing, location on major highways or transport corridors, population density, industrial activities and populations with pre-existing health conditions. Urgent response is needed to meet the needs and protect the most vulnerable people from direct public health and indirect impact of COVID-19 on the social and economic impact of the crisis (UN Zambia, 2020).

In preparation to the COVID-19 outbreak, the Minister of Health Dr. Chitalu Chilufya, announced the establishment of the Emergency Call Centre for the purpose of making COVID-19 related calls. The call centre number 909 is a toll free. This was to enhance communication for suspected COVID-19 cases and alerts. Further, the Ministry of Health and the Zambia National Public Health started implementing enhanced surveillance at airports, screening all passengers with a recent history of travel. A national, provincial and district emergency

preparedness and response teams were put in place to plan and prepare for the pandemic (MOH, 2020). According to ZNPHI (2020), the Government of the Republic of Zambia through the Ministry of Health has unveiled the Zambia COVID-19 Emergency Response and Health Systems Preparedness Project Stakeholder Engagement Plan and the Environmental and Social Commitment Plan (ESCP). The Government of Zambia through the Ministry of Health has applied for financial support from the International Development Association (IDA) towards Zambia COVID-19 Emergency Response and Health Systems Preparedness Project in order to prevent, detect and respond to the threat posed by COVID-19 in Zambia and strengthen national systems for public health preparedness.

Furthermore, Professor Mulenga from ZNPHI affirmed that the survey showed that most Zambians are susceptible to COVID-19 and that more infections are occurring in the community than being reported. However, the Zambia Situation Report, On the 27 August, the Ministry of Health launched the National Strategy for Reducing New Infections of COVID-19 to sensitize the community on the importance of compliance to public health measures. It centres revised Health Strategy on COVID-19. The strategy has five parts including 1) rules for individuals, 2) enforcement of public health measures, 3) screening and testing, 4) knowing your status and keeping safe and 5) intensified case management. The strategy builds on and compliments the MOH recent launch Ministry of Health Guidelines and Standard Operating Procedures for Coronavirus (COVID-19) and the MOH Revised standard operating procedures (SOPs) for Community Engagement (MOH, 2020).

2.3 Prevention and Control Measurements

2.3.1 Strategies of Prevention and Control Measures

Prevention and control strategies and methods were reported at three levels in China: national level, case-related population level, and general population level (Gomes et al, 2020). This indicates that prevention and control of COVID-19 is at three levels and involves the government, the COVID patient and the public. Prevention is a better strategy than cure.

At national level, Lin et al, (2020) postulated that COVID-19 outbreak can be controlled by tight measurements. These include government orchestrated, meticulously organized and strictly

followed control mechanisms supported and executed by the jurisdictional and executive organs. The success rate depends on political, social and economic structures of the countries, their infrastructure and level of health care system. National Health Commission (2020) of China published national guidelines for the prevention and control of COVID-19 for medical institutes to prevent the nosocomial infection. Later in the month, the NHC issued protocols for rapid prevention and control measures in order to effectively contain the spread of epidemic through a "big isolation and big disinfection" during the Chinese Spring Festival. Benn et al (2020) also affirmed that aauthorities are required to take harsh and strict preventive measures including lockdown of entire areas. Countries like Taiwan, China and South Korea adopted successful preventive measures that should be followed worldwide. These were prevention and control measures targeted at national level strategies.

Studies have also explored the prevention of nosocomial infection and psychological health issues associated with the COVID-19 (Gomes, 2020). A series of measures have been suggested to reduce nosocomial infection, including knowledge training for prevention and control, isolation, disinfection, classified protection at different degrees in infection areas, and protection of confirmed cases (Bin et al and Wei et al, 2020).

The case population level, some suggested psychological intervention for confirmed cases, suspected cases, and medical staffs (Wang et al and Wei et al, 2020). For the confirmed and suspected population, they are at risk of transmitting the infection and mostly they are kept in isolation and quarantine respectively. According to Bloukh et al (2020), individuals with respiratory symptoms are advised to use medical masks both at the health care settings and home care and properly following the infection prevention guidelines. Precautionary measures should be observed on this case population. Thus, the need for the psychological intervention to deal with issues of stigmatization. The medical staff equally need psychological care because of the stress, fear and trauma they go through while taking care of the COVID-19 patients.

Medical staff members need to be specifically trained in crisis-management and decontaminating surfaces after each high-risk patient contact (Benn et al, 2020). Health personnel and the general population require access to effective personal protective equipment. Measures to improve the health care system by developing the existing infrastructure was recommended (Bloukh et al,

2020) at this level. Further, the UN Zambia (2020) reported on their key focus for the health sector, to ensure that all cadres of health workers are fully trained in Infection Prevention Control (IPC) and Standard Operations Procedures for Managing COVID-19 in accordance with WHO Guidelines. At this point, it is clear that training and equipping the medical staff was cardinal to help prevent the spread of the disease. Moreover, they are the ones to look after the patients and thus provide health education to the patient. Limiting the transmission of infection is the relevant process in achieving the impact of the disease.

The best prevention for the general population is not to come into contact with the virus. One would wonder if this is possible. At this level, according to Li et al (2020), preventive measures that may reduce the risk of exposure include the following: use of face masks, covering coughs and sneezes with tissues (or flexed elbow) that are then safely disposed of; regular hand washing with soap or disinfection with hand sanitizer containing at least 60% alcohol (if soap and water is not available); avoidance of contact with infected people and keeping the distance as much as possible (at least 1 meter); and the refrain from touching the eyes, nose, and mouth with unwashed hands.

2.3.2 Effectiveness of Public Health Surveillance and Containment Measures

Many countries across the globe responded with different control mechanisms putting into account the experiences made in China, Iran and South Korea (Bloukh et al, 2020). China, Taiwan, South Korea and Vietnam are among those countries able to control the COVID-19 outbreak by reducing infection numbers (Yan et al, 2020). In China, the disease confined to one region and did not spread to the rest of the country. South Korea and Taiwan managed to stop the spread of the infection throughout the country. Meanwhile, Iran failed to stop the spread because of the delay in implement the preventive and control measures. This was the same situation in Vietnam.

A study from Singapore investigated the impact of control measurements implemented to reduce the spread of COVID-19. Singapore had enhanced surveillance strategies such as tracing contacts of patients that had laboratory confirmed cases of COVID-19, closely observation of clinical suspected cases with infectious disease. The most effective method with a median average of 99.3% according to the studies was a combination of isolating infected cases, strict

quarantine, closure of schools and workplaces (Ng et al, 2020). The spread of the disease in Singapore was slowed down due to the restrictive measures that were put in place.

Studies in Switzerland by Salathe et al. (2020) and Anderson et al. (2020) suggested that a liberal approach to testing for SARS-Cov-2 virus needed to be a part of the package of control measures, along with contact tracing and quarantine, in order to help managing the crisis until vaccination or the treatment for COVID-19 is available. The disease in Switzerland was brought under control with a slow progression of the disease.

In China, Yen et al. (2020) advanced the importance of fomites due to population's focus to protect themselves from observable transmissions, such as droplets (cough and sneezing) then inanimate objects that can absorb and retain contaminants. The study from Yen *et al.* argued that one way to stop the transmission cycle of community-hospital-community is by enhancing traffic control bundling. According to Mariani et al. (2020), the Traffic Control Bundling (TCT) is a multi-modal care and consists of Hospital triage, strict separation among zones of risk, requirements and protocols for personal protective equipment, used along with hand disinfection. The enhanced TCT protocol stipulates the triage for patients infected with SARS-CoV-2 and sent them through a control route to a designated contamination zone, called "zones of risk". Health workers of the contaminated zone, before moving to a clear zone, must undertake decontamination in a transition zone, and hand disinfection at every checkpoint in the transition zones. Consequently, community infection declines as the hospital fomites, contact and droplet transmission were efficiently controlled (Yen et al., 2020).

The World Health Organization recommends a combination of measures that includes diagnosis and immediate isolation of cases, and rigorous tracking and self-quarantine of close contacts. In addition, Mariani et al. (2020) asserts that strategies to reduce transmission include isolation, supporting home treatment and contact tracing, with contact tracing being one of the most important in the early stages to contain spread. A study published on The Lancet (2020), indicated that the measures outline four phases which include *contain, delay, research and mitigate*. The study highlights that if they lighten the measures, a further peak could occur.

In Taiwan, proactive and comprehensive health checks on inbound passengers from Hubei province were established quickly. The production of masks, hand sanitizers and other medical items of significance were quickly controlled by the government providing a daily allotment to Taiwanese citizens (Yan et al, 2020). Meanwhile, Parmet et al (2020) asserts that one of the considerations is that travel bans and mandatory quarantines alone are not sufficient to end the outbreak. The study suggests reducing hurdles to testing cases, patients with mild symptoms should stay at home; provide regulations, and emergency guidance to reduce the impact of the disease. Further, they suggest creating and implementing public health laws that emphasize support rather than restriction. WHO (2020) also claim that the understanding and acceptance of these measures for the majority of the population is critical for countries with ongoing outbreaks. Furthermore, community involvement in the development of any public health or social measure needs to be a priority to ensure adherence and thus any prospective benefit (Africa CDC, 2020).

Liu and Zhang (2020) stressed the importance of infected patients on using masks to prevent virus spread. They reported a cluster outbreak caused by a public transportation exposure, during the COVID-19 outbreak. One patient with symptoms, but unaware that he might have been infected with COVID-19, failed to wear a mask on the first public transportation, which caused the contamination of 5 out of 39 passengers. The same patient took another public transportation, but that time used a facemask and prevented the contamination of all the 14 passengers that used the same transportation. The same recommendation was made by Centers for Disease and Control Prevention (CDC), advising the use of simple cloth face coverings in order to slow virus' spread.

Table 4: Countries Containment Measure and their Outcome

Country	**Preventive Measures**	**Reason Results**
Taiwan	Proactive and comprehensive health checks on inbound passengers. Establishment of an efficient and effective command structure. Information management by creating App. Production of masks, hand sanitizer and other items of medical significance were quickly controlled by the	Under Control

	government.	
South Korea	24/7 Emergency response system to screen all travellers. Unlicensed Covid-19 Test.	Under Control
UAE	Educational institutes closed quickly. Online teaching implemented, like in Ajman University, Ajman, UAE. Work from home. Sanitizing huge areas in cities during nights. Closure of malls except supermarkets and pharmacies. Availability of personal protection equipment and other items of medical significance ensured by government. Public transportation stopped. Lockdown on cities. Establishment of services to prevent spreading COVID-19 (like Dawak Li Darek in Ajman, UAE delivering chronic patients the needed drugs to their doorsteps.) Rising temperatures	Under Control
India	Work from home. All services except emergency services locked down. Janata curfew. Lockdown in metropolitan cities. Rising temperatures.	Under Control
Iran	Shortage of drug and equipment. Late lock down. Lack of harsh preventive measures. No fastly implemented mobility restrictions. Economic sanctions. No ban on massive religious gatherings	Hit hard.
Italy	Old age population. Late lock down. Lack of harsh preventive measures.	Hit hard.

	No fastly implemented mobility restrictions.	
Spain	Old age population. Delayed lock down. Lack of harsh preventive measures. No quick mobility restrictions	Hit hard
USA	Delayed lock down. Lack of harsh preventive measures. Lack of prevention strategy. No ban on mobility.	Hit hard

Source: Bloukh et al, (April 2020)

At the time Bloukh et al, submitted the report, India had not been adversely hit by the COVID-19. As of 30th August 2020, India had 3,612,503 including 64,368. The question to ask is "what went wrong."

In Iran, the domestic politics played a role where the regime covered up news of Coronavirus for three days to avoid affecting turnout at parliamentary elections (BMJ, 2020). This affected the fast spread of the infection because of unwillingness to put in place measure to slow the spread of the virus.

Italy was the first European country to be struck by the pandemic (Giovanetti, 2020) though the force of the outbreak suggest also that the virus had been circulating for weeks (Cereda, 2020). There was a delay in recognizing the disease. This was because Italy followed the epidemiological criteria of history of travel to China or contact with someone who had travelled to China before requesting for a PCR test. In addition, Italy had not updated or implemented the 2006 national pandemic preparedness plan. The lack of preparedness hindered the coordination of the national response between the regions and the central government (Kamps and Hoffmann, 2020). The outcome was drastic for Italy, as it was overwhelmed with the numbers of COVID-19 including associated deaths.

Spain was badly hit by the pandemic because of its partial preparedness. This made the disease to spread fast because of the delay in implementing the preventive and control measures (Kamps and Hoffmann, 2020).

USA was unwilling to prepare and ignore scientific advice by CDC and other national public institutional. The country leadership was unprecedented and refused. According to CNN (2020) the president of USA Mr. Donald Tranmp was reported stating that *the disease was just a Flu and it would disappear like magic*. No strict public health measures were implemented and this contributed to the wide spread of the disease affecting many people in the country (Kamps and Hoffmann, 2020).

On the other hand, in Africa, many AU Member States have been using a combination of containment and mitigation measures to delay a surge. Most countries had imposed travel bans and had instituted mandatory quarantine periods for most travelers. Countries closed their borders, allowing only cargo, freight and the expatriation of foreign nationals. Mitigation measures, including restrictions on movement, public gatherings and schools, were also implemented (Loembe et al, 2020).

The Africa Centre for Disease Control (Africa CDC) showed that the number of recorded cases had risen daily with (as of June 18, 2020) 52 African Union Member States reporting 267,519 cases, 7197 deaths, and 122,661 recoveries (Africa CDC). Together with Egypt and Algeria, South Africa were considered to be at the highest risk of the virus being imported and spreading with a moderate to high capacity to respond to an outbreak (Marius et al., 2020).

In South Africa, the South Africa's National Institute of Communicable Diseases (NICD) reported its first confirmed case on March 5, 2020. Since then, the number of recorded cases had steadily increased (NICD, 2020).

According to Staunton et al., (2020), President Ramaphosa and his Cabinet had the opportunity to learn from the experiences of Asia and Europe that focused on social distancing, self-isolation, quarantine, testing, and lockdown. The country had implemented a tough lockdown at the end of March, when South Africa had only 400 recorded cases. The army enforced strict measures, shutting shops, banning alcohol and requiring people to stay at home (guardian.com, 2020). However, while such strategies have been proven effective in limiting and at times containing the spread of the virus, the socio-economic realities in South Africa limited their effectiveness (Staunton et al., 2020). In addition, affirmed by the guardian.com report, a surge in poverty and unemployment in a country that already had high levels spurred the government to lift

restrictions well before the outbreak was fully under control. According to the Guardian.com Report (2020). There were more than 10,000 cases reported every day in South Africa and it was the worst affected country in Africa and among the top five in the world in terms of confirmed cases.

2.4 Factors Leading to Rapid Spread of COVID-19

2.4.1 Delay in Case Diagnosis

Diagnosis of COVID-19 is made by using Polymerase Chain Reaction (PCR) on samples from nasopharyngeal, oropharyngeal swabs, and lower respiratory tract samples whenever possible (Lu et al, 2020). Bedford et al (2020) stated that lower-income and middle-income countries require technical and financial support to successfully respond to COVID-19, and many African, Asian, and Latin American nations are rapidly developing the capacity for PCR testing for COVID-19. Many African countries including Zambia do not have the facilities and capacity to carry out PCR test used to confirm COVID-19 in the laboratory.

Furthermore, the delay in diagnosis coupled with non-specific clinical symptoms COVID-19 (Borges do Nascimento et al., 2020) remain a challenge in controlling the spread of the virus. Successful control of COVID-19 is only possible through implementing effective mechanisms of diagnosis, isolation and treatment. Any suspected case needs to go thorough diagnosis process, which includes virological assay and early imaging (Borges do Nascimento et al, 2020). Symptoms of COVID-19 are non-specific and it can range from no symptoms (asymptomatic) to severe pneumonia and death (Lui et al. 2020; Nyugen et al., 2020). Few patients experienced problems in the cardiovascular, nervous and digestive systems overshadowing the diagnosis of COVID-19 (Lui et al, 2020). That conclusion enlightens the need for effective diagnosis of the disease.

Thus, the World Health Organization Director-General on 16 March 2020 affirmed, "*You cannot fight a fire blindfolded. And we cannot stop this pandemic if we don't know who is infected."* This statement is a clear indication that fighting COVID-19 starts with identifying infected people.

2.4.2 Socio-Economic Status

An analysis conducted by the United Nations Economic Commission for Africa (2020) predicts a drop from 3.2% to 1.8% in economic growth due to the effects of the pandemic, which could ultimately push up to 27 million people into extreme poverty. According to Lin et al. (2020) availability of socioeconomic power with enough resources to cope with the pressure on the health care system strengthens the effectivity of implemented control measurements. Therefore, higher income, industrialized countries may have the better opportunities to respond to the challenge. Lin et al. assertion are in line the paper by UNDP (2020), *Mitigating the Socio-economic Impact of Covid-19 in Zambia: A Rapid Assessment,* stated that;

> *"The biggest dilemma that Covid-19 poses to decision makers in Zambia is the need to find a balance between addressing the imminent Covid-19 crisis and ensuring continuity of essential services in delivering its commitments under the Seventh National Development Plan. Like many developing countries, and due to the high poverty rates in Zambia, most of the population lives on a daily income, therefore, despite government efforts to ensure awareness on the importance of social distancing, these restrictions are perceived to jeopardise the livelihoods of the very population they aim to protect."*

Therefore, the lack of financial strength by the government and the high poverty rates have an impact in the implementation of containment measures of COVID-19. According to UNDP, that is the challenge that Zambia has in mitigating the COVID-19. Nguyen et al. (2020) further asserted that human race is facing a disease without having tools to combat.

According to Zambia Demographic and Health Survey (2018) more than 36 per cent of Zambia's population lacked access to safe water Lack of adequate health, water and sanitation services may pose serious challenges for effective Infection Prevention and Control (IPC) of COVID-19. There is equally inadequate supplies of Personal Protective Equipment (PPE), laboratory equipment and swabs for health workers to effectively, manage the response. Health facilities are also lacking in WASH and IPC (UN in Zambia, 2020).

According to Africa CDC, (2020), the constraints faced by most African countries due to fragile healthcare systems, a catastrophic shortage of healthcare professionals of 0.2 per 100 000 in sub-

Saharan Africa versus 1.5 per 100 000 worldwide. In addition, the World Bank (2020) projected a drastic reduction of 75% in medical commodities and supplies imports following border closures and restrictions on exports. Furthermore, the financial resource limitations, the health and economic devastation anticipated (Loembe et al, 2020) has an impact on the preventive and containment measures in Africa.

2.4.3 Lack of Coordination and Planning

Lack of preparedness to the sudden onset of COVID-19 by governments, health care systems and organizations (Nguyen et al, 2020) has an impact on the outcome of the measures put in place to mitigate the virus. According WHO (April 2020) strategy update on COVID19, the successful implementation of adaptive COVID-19 preparedness and response strategies will depend on all of society being engaged in the plan, and strong national and subnational coordination. This should include a multidisciplinary incident management structure with the engagement of relevant ministries such as health, foreign affairs, finance, education, transport, travel and tourism, public works, water and sanitation, environment, social protection and agriculture (WHO, 2020).

2.4.4 Failure to Follow Preventive Measure

Preventive measures, like social-distancing were not followed strictly by the population and not enforced harshly by the government. Delayed implementation of preventive measurements will be only be successful if social distancing is practiced within the household. Asymptomatic- or mild cases can transmit the disease fast within their household while the very family is asked to stay at home (Nguyen et al, 2020). It is difficult in certain instances to maintain distance especially in a home set up. Hence, Luo et al. (2020) concluded in their prospective cohort study on contact modes and the risk of transmitting COVID-19 was highest in household contacts. Stay at home campaigns needs awareness of every individual to avoid close contact, which can be dangerous for the whole community within the same household.

2.4.5 Community Health Literacy, Consciousness and Behaviour

Understanding knowledge, behaviours, perceptions, and identifying the right channels and community-based networks and influencers to promote scientific and public health messages will

be a key determinant of the effectiveness of the response (WHO, 2020). The likelihood of individuals practicing these preventive and care seeking measures depends on their COVID-19 related knowledge, perceived threat of them both acquiring the disease and suffering its full severity, motivation to protect others through these practices, social norms that support these practices, of course, access to suitable hygiene products and infrastructure (Africa CDC, 2020).

Meanwhile, Nguyen et al., (2020) affirms that increasing health literacy in the population can improve the management and control of COVID-19 and even further global pandemics. The community may not understand the impact of COVID-19 and the preventative measures. This may be attributed to the cultural and social aspects. On the other hand, behaviour of the society plays a role in adhering to containment measures. According to Anderson et al., (2020) individual behaviour will be crucial to control the spread of COVID-19. Personal, rather than government action. The containment measures really rely on the individual to change the lifestyle and adhere to the health guideline.

2.4.6 Weak Surveillance System

Relatively weak public health systems are likely to face the spread of the virus without significant testing or tracking of the disease, leading to accelerated transmission and underreporting (Africa CDC, 2020). Gomes et al (2020) in the study on prevalence of COVID-19 in a Brazilian town, results revealed a small prevalence of infection in the study area, despite the significant number of sick people overloading the health system. The figures indicate an important underreporting in the area and a frequency that still can grow, making necessary public health actions for the containment of the transmission. Stopping the spread of COVID-19 requires finding and testing all suspected cases so that confirmed cases are promptly and effectively isolated and receive appropriate care, and the close contacts of all confirmed cases are rapidly identified, so that they can be quarantined and medically monitored for 14 days (WHO, 2020).

2.4.7 Population Density in the Communities

African public health systems regularly face the challenge of curbing the spread of infectious disease at the community level. The capacity of a public health system to test for COVID-19,

especially in densely populated areas, is essential for identifying, isolating, and treating those infected thereby reducing the impact on society (Africa CDC, 2020). It is a known fact that high-density places are a source of rapid spread of COVID-19. Thus, Loembe et al. (2020) posit that countries with higher urban populations are faced with the logistical and communication challenge of informing, monitoring, and possibly isolating a larger pool of at-risk people.

Stay at home orders will be particularly difficult to maintain in African cities where many residents lack adequate shelter, sanitation, and the monetary means to stock up on supplies and to stop work. The UNDP (2020) identified this challenge in Zambia postulating to the low income and high poverty levels in the country. However, the effectiveness of preventive and control measures used in selected compounds of Mufulira, needed investigation hence, the present study.

2.5 Chapter Summary

The literature review provided for the holistic review of literature on the preventive and containment measures for COVID-19. The first section of this chapter looks at effectiveness of the prevention and control of COVID-19, reviewing the world perspective as well as the African perspective drawing attention to the Zambian scenario. This is followed by the narrative review of the factor that lead to the spread of the COVID-19 infection, detailing, blending and commenting on the included studies. Next chapter discusses methodology used to generate the required data to support the study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Overview

This chapter presents the description of the methodology that was applied in the study. It includes the research design, target population, sample size and sampling procedures. The chapter also discusses the instruments used, methods of data collection and techniques used in the analysis of data. Lastly, it looks at the limitations of the field work study, ethical considerations made and ends with a chapter summary.

3.2 Description of Study Area

Mufulira acclaims itself as the *'Place of Abundance'*, which is evidenced by the rich mineral deposits, numerous perennial and seasonal streams, forest reserves and fertile soils. Mufulira derives its name from the Lamba word *"ukufula"* meaning smelting. It is said when the white man arrived he found the Lamba`s smelting copper. Asked what they were doing they said "ukufula" hence the name given to Mufulira District. (SMART Zambia Institute, 2019)

Mufulira is a town on Copperbelt Province of Zambia with a population of over 125,336. The city is 16 km from the border of the Democratic Republic of the Congo and is the start of the Congo Pedicle road connecting the Copperbelt to the Luapula Province, making that province Mufulira. The geographical coordinates Mufulira are 12°32'08.0"S, 28°14'31.0"E with Latitude of 12.535556; Longitude of 28.241944. Its altitude is 1,288 meters and topography between elevations of 1,250 and 1,400 meters (Mopani Copper Mine, 2004). The researcher choice the District as a study area because of the proximity to the researcher and preparedness of the district in sensitization of residents on COVID-19 disease. It was seen to have had sufficient experience in dealing with COVID-19 situation to positively contribute to the present study. Additionally, the researcher understood the norms and culture of the people to easily interact with them over issues of the COVID-19 disease.

3.3 Research Design

In conducting this research, the researcher used the descriptive research design. This was supported by use of both quantitative and qualitative approaches in the collection of data. The data generated was based on the research question that seeks to answer the *"what"* of the situation or phenomenon. According to Gall, Gall, & Borg (2007), the goal of descriptive research design describes a phenomenon and its characteristics. This research design is more concerned with what rather than how or why something has happened. Therefore, observation and survey tools are often used to gather data.

According to Koh et al., (2000) a descriptive research generates data, both qualitative and quantitative, that define the state of nature at a point in time. Thus, use of a descriptive study offered the researcher to employ a variety of variables in relation to the COVID-19 situation in Mufulira as supported by qualitative and quantitative approach to data collection. Robson (2002) in Saunders et al, (2003) adds a component of use of multiple sources of evidence.

3.3 Target Population

The target population consist of health workers, traders, parents, church leaders and workers in organization such as schools, companies, shops. They were considered useful to the study because they are found in public places on a daily basis and have experience the phenomena.

3.4.1 Sample Size

The sample size of 120 residents of the selected Townships in Mufulira were selected for the study. 22 workers from various institutions including schools, 3 health workers, and 3 church leaders as well as 2 cross border traders and 3 people who actually experienced the phenomena. Then 90 were residents and distributed as 24 from low density, 43 from medium density and 53 from high-density locations.

3.4.2 Sampling Technique

In this study, purposive sampling was used to select Church leaders, Health Personnel, Teachers and Traders. This allowed the researcher get in depth data on the study due to their specific

situation or phenomena on the study. According to Leedy and Ormrod (2005), the use of purposive sampling technique facilitates the selection of participants that are typical of a group or those who represent diverse perspective about the research question.

Furthermore, simple random sampling technique was used to select residents of the selected Townships in Mufulira District. According to Christensen Johnson (2004), Simple random sampling is a basic sampling technique by which a sample is selected for study from a larger group where each individual is chosen entirely by chance and each member of the population has an equal chance of being included in the sample.

3.5 Research Instruments

The research employed three types of instruments namely questionnaire, interview and observation checklist. These instruments are suitable for a descriptive study as it helps to collect diverse data. According to Yin (2018), sources of evidence may include one or more of the following; documentation, archival records, interviews, direct observation, participant observation, physical artifacts. Stakes (1995) supports the guidance provided by the research question, noting, what one does in the field, from gaining access to triangulating data, needs to be guided by the research question.

3.6 Data Collection

In order to obtain the needed data, an introductory letter from the University of Zambia (UNZA) was presented to the District Administrative Office and then to the District Health Director to introduce myself. After presenting an introductory letter from UNZA and briefing on the purpose of the visit, the researcher was given permission by the District Health Director to carry out the research.

In order to obtain the needed data, multiple sources of inquiry including primary and secondary data sources were used. The most significant advantage presented through the use of multiple sources of inquiry was the development of converging lines of inquiry, which increases the validity, quality and reliability of the findings.

3.6.1 Primary Data

Primary data was collected using interviews, questionnaires and observations.

3.6.1.1 Interview Schedule

Interviews in this study were semi-structured using open-ended questions to help guide the conversation. Interviews were conducted on a face to face and this helped the researcher to pay attention to the discussion and impart confidence in the participants. The researcher then document all observable and nonverbal cues or body language during the face-to-face interview in relations to preventative and control measures put in place.

3.6.1.2 Questionnaires

The questionnaire used had closed and open-ended questions with clear instructions on how to complete them. The researcher helped all the respondents with difficulties in answering the questionnaire and offered clarifications were there was need. No names were required on the questionnaire. This is to maintain anonymity and confidentially and remove fear of victimization thereby promoting honest responses.

3.6.1.3 Observation checklist

The researcher physically went to the field to observe people's activities and practices in observing preventive and control measures against COVID-19. The observation checklist was used to help understand behaviour patterns of Mufulira residents in the fight against COVID-19. Further, this method of data collection is flexible; meaning that the researcher's focus was easily shifted, as new data became known.

3.6.2 Secondary Data

The study used publications and information available on the Internet and in different formal organizations in Zambia, including government departments. The idea was to collect information from as many different sources as possible and then be able to counter check the information to validate the findings.

3.7 Data Analysis

This study used thematic analysis to analyze qualitative data. Responses were grouped in themes according to the research questions of the study that brought meaningful themes. The emerging themes were categorized, interpreted and presented descriptively. Then, the segments were grouped into categories to reflect the various meaning of the situation being experienced.

The construction of familiar words, language, tone and associated gestures during the interview as presented by the participants helped to describe the common experiences. This was further, helped in coding and analyzing the patterns, which were categorized into emerging themes and sub-themes while focusing on the common themes. In case of closed responses or quantitative data, the study used Microsoft Excel 2010 application to generated descriptive statistics such as: frequencies; percentages from which tables; figures and graphs were produced and used to present the outcomes of the study.

3.8 Trustworthiness

Trustworthiness reflects the truth-value of a qualitative research and determines whether the researcher has established confidence in the truth of the findings with the participants (Klopper, 2008). Therefore, to ensure a quality trustworthiness research of this descriptive study, credibility, dependability, confirmability, and transferability criteria were followed.

3.9 Ethical Considerations

Since this study involves issues that are sensitive and personal in nature, thus, ethical approval, confidentiality, anonymity and consent was observed. Ethical approval and clearance to undertake the study in the selected institutions was obtained before commencement of the study. Individual consents was obtained prior to conducting interviews. Participation in this study was voluntary and participants were free to withdraw from the study or decline to answer any questions in this study. The participant were told of the essence of the study.

In terms of benefits, participants were informed that there was no benefit directly from the study, but their participation might help governing authorities and other stakeholder to understand better the impact of COVID-19 in Mufulira.

3.10 Chapter Summary

Chapter 3 highlighted the methodology that was used in the study. It described the research design and gave the details of research instruments in which interview guides, questionaires and observation checklist were used to collect data. It further, explained how the data was collected and analyzed. The next chapter presents the findings of the study.

CHAPTER FOUR

PRESENTATION OF FINDINGS

4.1 Overview

The chapter presents findings of the study. The findings were obtained using questionnaires, interview guides and observational checklist. In this chapter, themes presented were derived from the study objectives which were used in the present the findings. The findings have been arranged based on the respondents' background, awareness and adherence to preventive and control measures of COVID-19. The chapter also shared findings on efforts being made to slow done the COVID-19 in the study compounds

With regards to data generated to support the study, quantitative data was obtained using questionnaire. It is from this kind of instruments, that frequencies, percentages, tables and graphs were generated. Qualitative data obtained from interview guides and observational checklist were open ended which led to having them analysed through use of thematic analysis. This involved coding and categorizing of the emerging themes and themes, which were then presented descriptively.

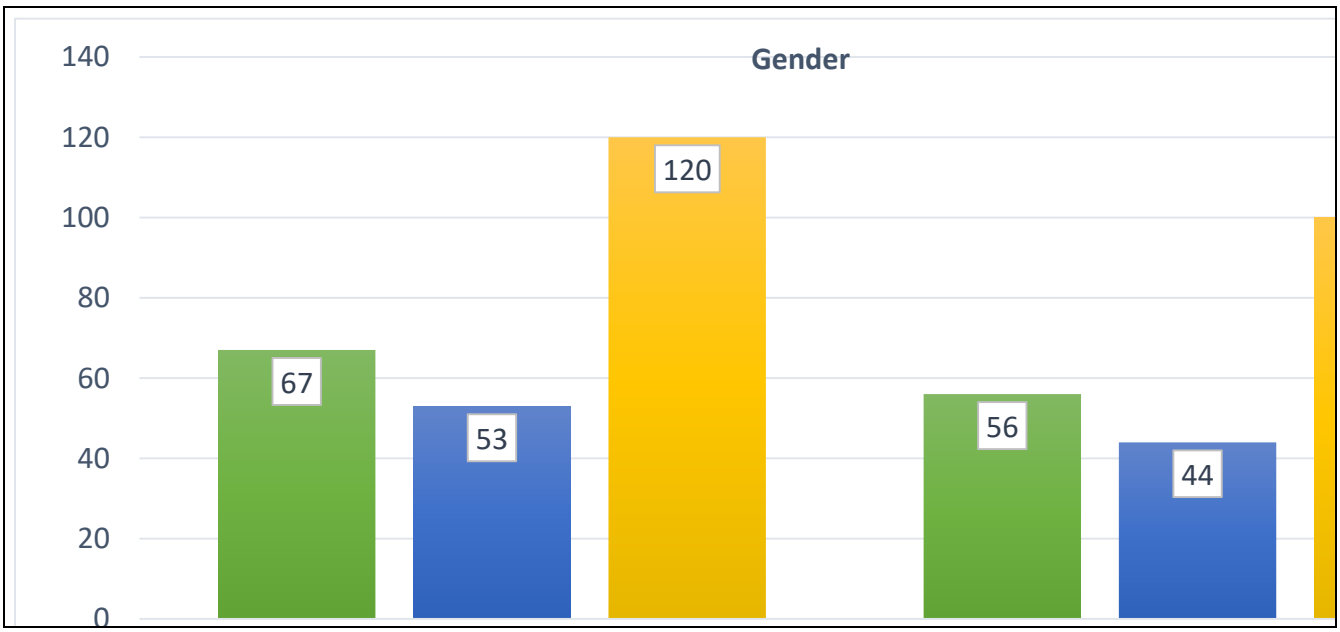
4.2 Characteristics of Respondents

In order to be more informant, on the respondent who provided the information to support the study, there following characteristics were captured:

4.2.1 Gender of Respondents

In this study, the gender of respondents was important for a study on COVID-19 preventive measures in Mufulira compounds. The information collected from the respondents, showed that there were 67 females representing 56% and 53 males representing 44% of the respondents. The study had more access to female respondents. Majority of the male worked in the mines hence of the time they were out of work while most women were at home taking care of children. Hence, much easier to access them than women. Figure 1 below on gender provides a much more detailed picture to support the statement above.

Figure 1: Gender of Respondents



Source: Field Data, 2020

4.2.2 Age of Respondents

There were 7 respondents from age group 20-25years representing 5.8% of the respondents. 17 of the respondents came from age group 26-30 indicating 12.5%, whereas, 19 were from age group 31 – 35 corresponding to 15.8%. Further, 21 respondents came from age group 36 - 40 and another 18 from 36-40 indicating 17.5% and age group 41-45 had 23 respondents at 19.2% while age group 45-50 had 22 respondent signifying 18.3%. Lastly, age group above 51 years had 13 representing 10.8%. The information on age was crucial in determining the adherence to preventive measures in relation to infection rate among age groups. The majority of respondents were aged between 41 and 45 years. Responses on age range of participants are indicated in the Table 4 below.

Table 5: Age Groups of Respondents

Age Groups	Frequency	Percentage
20 – 25 years	7	5.8%
26 – 30 years	15	12.5%

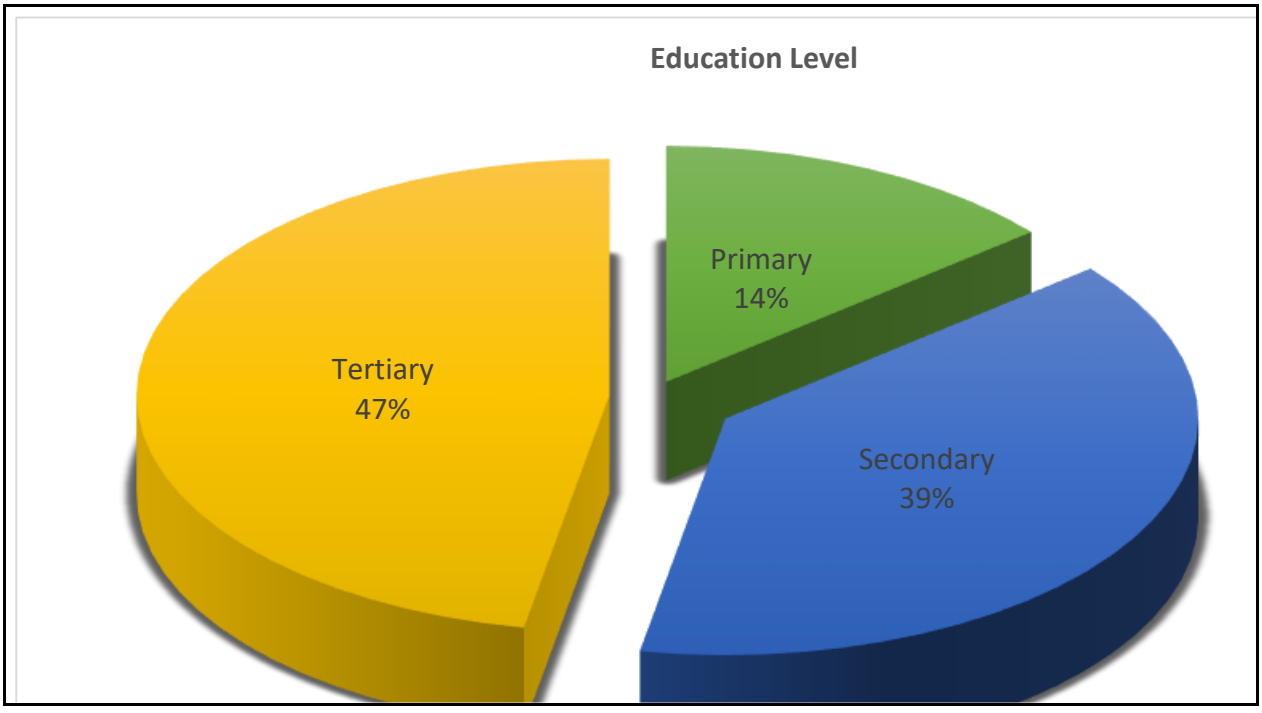
31 – 35 years	19	15.8%
36 – 40 years	21	17.5%
41 – 45 years	23	19.2%
46 – 50 years	22	18.3%
Above 51	13	10.8%
Total	**120**	**100%**

Source: Field Data, 2020

4.2.3 Educational Level of Respondents

Figure 2, below shows the educational level of the respondents. 17 respondents representing 14% attended school at primary level. While 47 representing 39% went up to secondary education. Further, 57 respondents representing 47% had tertiary education. Educational levels were important because they influenced the views of the respondents concerning the novel disease.

Figure 2: Educational Level of Respondents

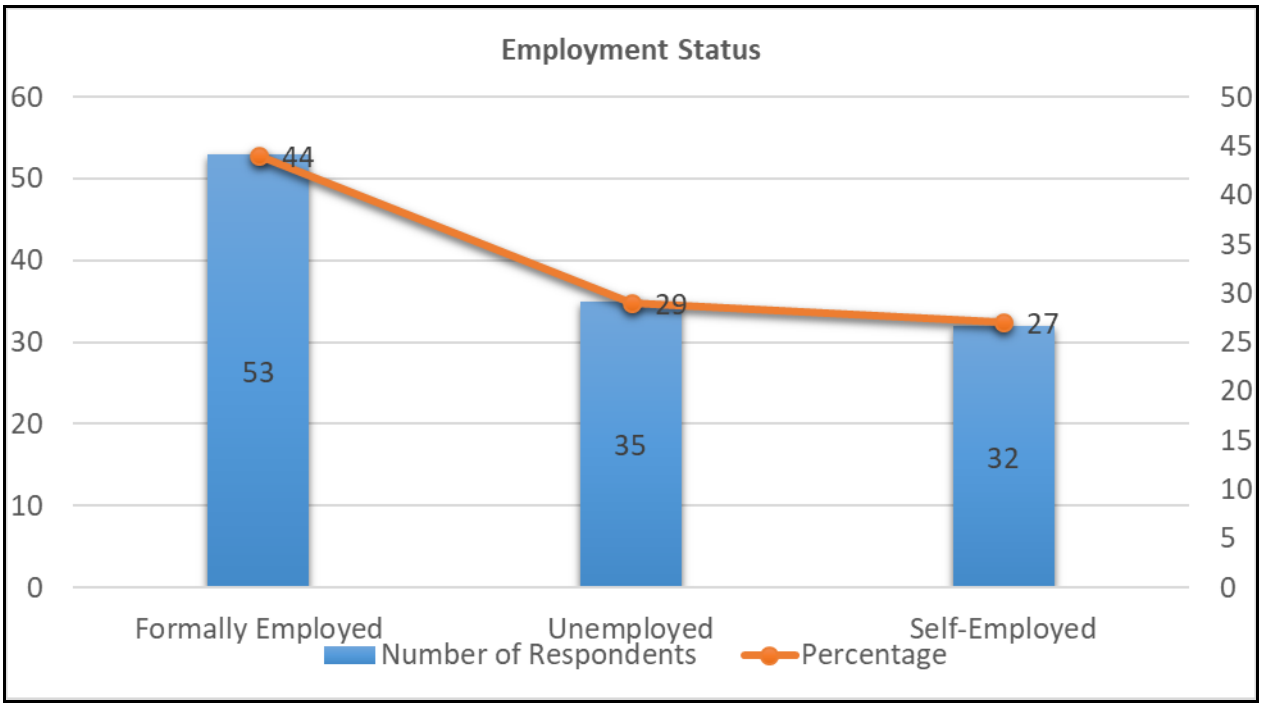


Source: Field Data, 2020

4.2.4 Employment Status of Respondents

The findings on the status of employment of respondents showed that 35 representing 29% of the respondents were unemployed, while 32 respondents representing 27% were employed and 53 respondents representing 44% were in formal employment. Primarily, small-scale business people selling mainly in small shops and market stalls. The formally employed comprised of teachers, bankers, miners, and medical personnel. The employment status of respondents were essential in establishing economic status of the residents, as it would have an influence on the content of the effect of the COVID-19. Figure 3 below shows the employment status of the respondents.

Figure 3: Employment Status of Respondents



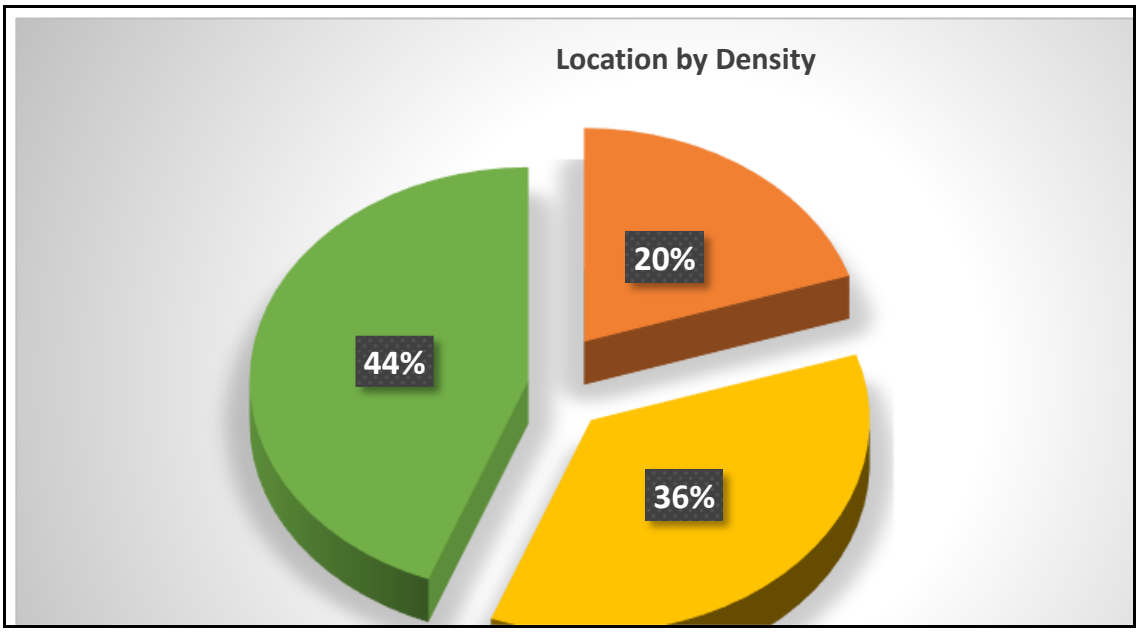
Source: Field Data, 2020

4.2.5 Location of Respondents

According to the findings, 53 representing 44% of the respondents lived in high-density area, 43 representing 36% of the respondents lived in medium density, while 24 representing 20% of respondents lived in low-density area of the study town. Location of residents was important as it

had the potential to determine the most affected part of the town and indeed the effects on livelihood and extent of the spread of the COVID -19 in the area of study.

Figure 4: Location of Respondents



Source: Field Data, 2020

4.2.6 Period of Stay in Study town

The information on the period of stay is summarised in Table 5 below. The respondents who stayed over 10 years in Mufulira were 51 indicating 42.5%. The period range 6 – 10 years had 25 indicating 20.8% of respondents, while 35 indicating 29.2% of respondents had lived in Mufulira between 1 – 5 years and only 9 representing 7.5% had lived for less than a year. Majority of respondents had been in the study town between 1 and 5 years hence, had sufficient information on COVID-19 to contribute to the study. The respondents' views in Mufulira Town were key in establishing the behaviour patterns and perception of to the residents.

Table 6: Period of Stay in Mufulira Town

Years	Frequency	Percentage
Less than 1 years	9	7.5%
1 – 5 years	35	29.2%

6 – 10 years	25	20.8%
More than 10 years	51	42.5%
Total	**120**	**100%**

4.3 Awareness of COVID -19 Among Residents of study

The first objective of the study was to establish the awareness of COVID-19 among the residents of selected compounds of Mufulira District. This objective was very important as it helped to determine the adherence to prescribed health measures to prevent the infection among residents of the study compounds.

4.3.1 Perceptions on COVID-19 Disease among Respondents

In relation to COVID-19 disease and the modes of transmission, the researcher wanted to know the level of knowledge from the respondents. It was evident that all the respondents had some information and knowledge on what COVID-19 was and its origin, specifying "*ubulwele ubwaisako ukufuma ku China,"* meaning "*the new disease that came from China*". Others indicated that it is the disease *that causes flu and cough;* a respiratory disease; an illness caused by Conora Virus. Still others when asked what COVID-19 was, only indicated that it was Corona Virus.

However, it was evident that the respondents had mixed perception on whether the disease was real or not. From the assessment, 86 representing 72% indicated that the disease was real. While 34 representing 28% respondents indicated that the disease was not real, citing that they have not seen anyone dying from the disease or having seen anyone suffering from the disease.

4.3.2 Mode of Transmission of COVID-19

In connection with the mode of transmission, 101 respondents indicating 84% where aware of the mode of transmission, while 19 respondents representing 16% where unaware of how the disease spreads.

Table 7: Awareness on Disease Transmission

Spread of the Disease	Frequency	Percentage
Aware	101	84%
Unaware	19	16%
Total	**120**	**100%**

4.3.3 Source of Information on COVID-19

The researcher wanted to establish where the residents got the news or knowledge on COVID-19. The result indicated that there were various sources of media where used to get knowledge of the disease. 27 representing 22.5% of the respondents mostly from the high density indicated to have received the information within the community and not anywhere else. 19 respondents representing 15.8% heard of COVID-19 from TV, only one (1) representing 0.8% indicated that the received information from Social Media, 2 respondents representing 1.6% heard from Work Place, 12 representing 10% heard from Friends, and another 2 representing 1.6% heard from Public Transport. Whereas, 42 and 19 respectively representing a total 50.8% had received information from various sources. The majority who had received information from diverse sources where from Low and Medium cost with educational level of up to secondary school level. Most respondents from the high density did not have televisions set and were not literate to use other sources of information. Furthermore, some responders included other sources namely, churches, newspapers and radio.

Table 8: Source of Information on COVID-19

Years	Frequency	Percentage
Television	15	12.5%
Social media	1	0.8%
Community	27	22.5%
Work Place	2	1.6%
Friends	12	10%
Public Transport	2	1.6%
Television, Social Media, Community,	42	35%

Work Place, Friends, Public Transport		
Community, Friend, Public Transport	19	15.8%
Total	**120**	**100%**

Source: Field Data, 2020

The interview conducted with the Public Health Surveillance Personal (PHSP) indicated that they conducted regular sensitisation programs in community, market places and public places including bus terminals using the PA system. PHSP1 indicated, "*we have regular (Monday to Friday) programs including phone in programs on COVID-19 on our local radio station. The other source of information dissemination was through community sensitation and the mobile service providers that sent messages on a regular basis supported by the Ministry of Health".* This shows that people were aware on the existence of COVID-19 in the study town.

The researcher was able to observe that some banks were running awareness messages on their television screens, while selected companies and schools had posters on COVID-19 pasted around their premises. This was not observed in public places such as markets, shops, bus station and the Central Business District (CBD) including Government Premises, with an exceptional of hospitals.

. Nonetheless, from the findings and observations, people were aware of COVID-19 form different sources but this did not change their way of life or behaviour due the sources of information. From interviews, none mentioned about posters as sources of information and as observed, posters where not significant to the public.

4.4 Implemented COVID-19 Preventative and Control Measures

In this section, the study reports on the second objective. The second objective was on how implementation of COVID- 19 measures and control were put into practice.

4.4.1 Planning and Coordinating

The researcher wanted to ascertain the preventive and control measures that the District had implemented to combat the spread of the COVID-19. According to PHSP2, *"some of the*

preventive measure in place included community sensitisation on COVID-19 and inspection of facilities on adherence to provision of hand hygiene facilities in all public and business premises". Other preventative measures included the promotion of social distancing in public and business places and adherence to SI 22 and 23 on quarantine and Isolation of suspected and confirmed cases and maintaining social groupings to a maximum of 50 people. Further, the surveillance team was screening people at border post including temperature screening. Further, PHSP3 indicated, "w*e go to markets for inspections and we advise the people to mask up. When they see us, that when the run around looking for their masks".* In their sensitisation, the PHSP were equally sensitising the people on the use of facemasks and washing on hand washing with soap and water or sanitising with an alcohol based hand sanitiser.

Table 9: Screening of people at the border and hand hygiene

 Mandatory temperature checks	 Mandatory hand washing

4.4.2 Public Health Surveillance

The findings showed that mass screening and testing was implemented though due to lack of resource the testing was later reserved for suspected cases in the hospitals. This also included

those who were in contact with a positive COVID-19 individual. Mandatory quarantine was advised for all suspected cases for a period of up to 14 days while Isolation was advised for all positive cases. PHSP2 stated, *"Infection, Prevention and Control (IPC) instruction is given to the individuals on quarantine and isolation"*. PHSP2 further indicated, *"there a robust team for contact tracing",* and according to them, this was the most critical and major control measure aimed at reducing the spread by identifying the contacts to the positive case.

4.4.3 Implemented Prevention and Control Measures

The interview with medical personal revealed that the hospitals and clinics had implemented the triaging of patients (separating patients with flu like symptoms and fever from the other patients), and thermal scanning of all people entering the hospital or clinic. Other measures included the use of facemasks for all entering the hospital gates and sanitising of hands, as well as the wearing of recommended PPE for the medical staff. Further, separating suspected COVID-19 cases from others in the wards and swabbing all suspected cases and those admitted.

The residents in the selected compounds were able to ascertain to the following personal prevention and control measures, which included hand hygiene, facemasks, social distance and avoiding social gathering such as pubs, churches and social events. R69 affirmed, *"Our Pastor is very particular with health guideline and he does emphasise on observing them".* Some respondent in employment did indicate work rotations, temperature screening and staying at home for those with flu like symptoms. None of the residents indicated on quarantine and isolation measures. R43 indicated, *"we have a rotational schedule in our office and we rotate every two days".*

The researcher was able to observe that organisations including government premises had implemented hand hygiene facilities including shops and business premises. Banks, major shops and some companies were observed checking for temperate and registration of all visitors in their premises and denying access to those without facemasks. At the markets and bus stop, there was provision of hand washing facilities but no soap was available at the time of data collection.

The churches that were observed had hand hygiene facilities in place with registers and chairs where spaced at one meter apart and were meeting for just an hour. Some churches had split the service to more than one service to accommodate other members.

Figure 5: Compliance to Social Distancing in Church

The picture showing member of the church maintaining social distance and wearing facemasks

Figure 6: Spacing of Chair by one Meter

Chair spaced up at one meter distance to comply to social distancing

4.5 Effectiveness of COVID-19 Prevention and Control Measures

The next objective was on the effect the disease had on the livelihood of people in the study compounds. The study provided the background structure of the effects of the preventive and control measures employed to address the spread of the disease in Mufulira.

4.5.1 Effectiveness of the Awareness Programs

The results indicated 38 representing 32% of the respondent agreed that the awareness program had a positive impact on the spread of COVID-19. R22 indicated, *"we were told to observe the preventive measures to protect ourselves from COVID-19.* While, 62 signifying 68% disagreed indicating that the awareness programs had no effect on the COVID-19 spread. R20 affirmed, *"We are forced to wear face mask and sanitize in certain places like shoprite and banks. otherwise we don't know how effective the measures are".*

4.5.2 Observing Preventive and Control Measures

Table 10: Observing Preventive and Control Measures

Observing Preventive and Control Measures	Frequency	Percentage
Yes	50	50%
No	50	50%
Total	**120**	**100%**

Source: Field Data, 2020

Table 9 above, shows the responses of compliance or use to preventive and control measures (social distance, hand hygiene and the use of facemask). The findings on the use of these measure indicated the 60 (50%) used the health preventive and control measure while the other 60 (50%) did not use the measures. Workplace and the churches used the measures as advised by the health authorities while in their premises but most of the people did indicate that these were not adhered to outside the organisation premises.

Table 11: Compliance to Public Health Measures

Location	Low Density	Medium Density	High Density
Churches	Good	Good	Average
Banks	Good	No Bank	No Bank
Schools	Good	Good	Good
Major Companies	Good	No Company	No Company
Hospital and Clinics	Good	Good	Good
Chain Stores	Good	Good	No Shop
Markets	Poor	Poor	Poor
Bus Stations	Poor	Poor	Poor
Buses and Taxis	Poor	Poor	Poor

Source: Field Data, 2020

As indicated in Table 10, the observation from the different places, only the churches, banks, selected companies, hospitals including clinic, shops adhered to wear of masks, hand hygiene

and social distancing. In public place such as markets, shops, CBD, bus station, on buses and taxis the use of facemasks was almost zero. Most of the people were not wearing mask and if they had the mask, they were putting on their chins. This was the similar situation in the selected compound (Low, Medium and High density). Regardless of the location, the compliance to preventative measure (masking, hand hygiene) in buses, bus station and markets was poor. People were not observing the guidelines. R12 responded, *"We cannot leave a customer behind because they have no mask, they will bound another vehicle. Business in hard".*

From the markets visited and at the time of data collection, the researcher did not observe anyone washing their hands using the provided hand washing facilities and no social distance was observed. R11 affirmed, *"we only wear face mask when the Council inspectors or the C5 Police come to the market and tell us to mask up".* A few visitors are the ones who had facemask and they seemed odd including the researcher.

Figure 7: Photo from a Market in the High Density

There is a drum of water donated to the market for hand washing. From the observation, the ground is very dry indicating that marketers are not making use of the water provided for hand hygiene and there was no soap. It was observed that none was wearing a facemask. A baby is playing near the washing facility.

Further, the researcher observed at one funeral in a high-density location that people were not observing social distancing or wearing facemasks, though they had put in place a bucket of water and soap for hand washing at the entrance of the yard, none of the people going through washed their hands.

4.5.3 Effectiveness of Preventive and Control Measures

The researched wanted to ascertain if the resident were confident with the preventive measure, they were observing to be effective. The results indicated 52 respondents representing 43% were agreeable to the measure being effective to controlling the spread of the disease while 68 respondents signifying 57% indicated that they were not effective.

Table 12: Effectiveness of Prevention and Control Measures

Effectiveness of Measures	Frequency	Percentage
Yes	52	43%
No	68	57%
Total	**120**	**100%**

Source: Field Data, 2020

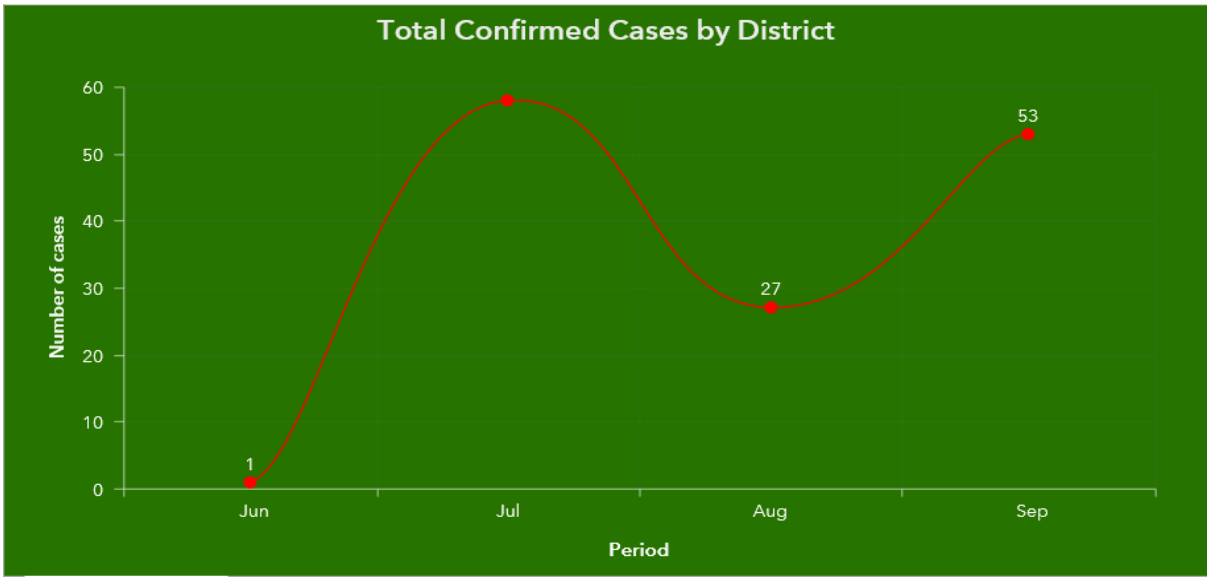
4.5.4 COVID-19 Situation

Responses on the COVID-19 situation in Mufulira indicated 61 (51%) to agree that the infection was spreading while 59 (49%) indicated that the disease was not spreading. The respondent who acknowledges that the disease was spreading based their response from the Ministerial COVID-19 press briefing. R22 stated, "*We hear from the ministerial daily updates that the cases are increasing especially in Lusaka and spreading to other towns".*

The PHSP3 indicated that the disease was spreading though the number of reported cases were minimum. According to the responses, the numbers being tested was in relation to the contacts of the positive cases. Further, some may not have presented to the hospital because they were asymptomatic or had mild symptoms, which did not need hospital attention. P3 asserted, *"It is impossible to trace those who were sick at home without knowing their COVID status".*

The MT1 indicated that *the situation was stable and manageable though with challenges of receiving test results.* According to the findings, the disease was spreading though not many people where coming to the hospital with only a few tests were conduct.

Figure 8: Mufulira Covid-19 Cases from June to August 2020



Source: Zambia COVID-19 Dashboard, Ministry of Health, 2020

The graph show the number of COVID-19 cases from the time one person was confirmed positive in June 2020 and a sharp increase was noted in July with 58 cases. Beginning of August, 27 cases were confirm and by 1st September 2020, 53 cases were confirmed with a cumulative total of 139 cases in less than 3 months.

4.5.5 Lived Experiences of Respondents

In this section, the researcher describes some of the participants' experiences concerning COVID-19, how it affected them as a person, their family and community. Further, the researched wanted to know how they felt about the COVID-19 situation in their Town.

The respondents were asked if anyone in their community had suffered from COVID-19. The results showed 16 respondents representing 13% indicating that, they had some community members who suffered from COVID-19 and 83 (69%) declined and 21 (18%) of the respondents indicated of not being sure of any COVID-19 cases in the community.

> *CBT1 indicated, "My business is not doing well from the time COVID started in China. I used to buy my products from China and Dubai, which I was reselling here. The Dollar (US$) is not favourable and having an impact on the business".*

Table 13 : Known Cases of COVID-19 in the Community

Known COVID-19 Cases in Community	Frequency	Percentage
Yes	16	13%
No	83	69%
Not Sure	21	18%
Total	**120**	**100%**

Source: Field Data, 2002

The research further, asked if the respondents had interacted with a COVID-19 suspect or confirmed case. 21 respondents indicating 17.5% accepted to have interacted with suspected or COVID-19 individual, who had recovered. While 78 representing 65% of the respondents declined an interaction and a further, 21 signifying 17.5% respondents indicated of not being sure if they had interacted with a known COVID-19 individual.

> "*R14 respondent stated, "when my husband tested positive to COVID-19, I was filled with fear and the whole family was placed in quarantine for 14 days*".

Table 14: Interacted with Known COVID-19 Case or Suspect

Interacted with COVID-19 suspects or confirmed Cases	**Frequency**	**Percentage**
Yes	21	17.5%
No	78	65%
Not Sure	21	17.5%
Total	**120**	**100%**

Source: Field Data, 2020

The researcher further, enquired about their experience in relation to COVID-19. The following are the descriptions of some of the participants' experiences.

The first Respondent, (R1): R1 is a female, in age group 40 – 45 years from a low density location, who suffered from COVID-19. She explained how the disease affected her and how it disrupted her life.

> R1: "*My illness start with a head and body pains and had malaria symptoms. I had no fever, cough or flu. I went to the hospital and was checked for Malaria, which was negative. I was given some medication and advise bedrest.* After 3 days, the condition was worse with severe headache [*eeh…Holding her head] and a fever. I went back to the hospital and the tested me for COVID-19. I was advised to stay home and when the results were ready, the hospital could call me. After a number of days, I was informed of testing positive to COVID-19.*

The researcher asked how R1 felt after she was informed that of the positive result.

> *"I was devastated and feared for my family although none had symptom by then. I thank God by time the result came, I had recovered with no symptoms. Even though, I had recovered with no symptoms, I shared my status with friends at church and work. I was discharged from Isolation and reported back for work, unfortunately, when I arrived everyone ran away from me and mu supervisor equally avoided me.* [She held her head] and states *"she would not wish for anyone to suffer from this disease and advise people to follow the preventive guideline".*

The second Respondent, (R2), is a male of age group about 51 years from a low-density location who tested positive to COVID-19. He explained his experience.

> R2: "*I had a flu and general body pains. I went to the hospital to seek medical treatment. I was given medication and was swabbed for COVID-19 test. Days later, I was informed that I had tested positive to COVID-19 but by then all symptoms had subsided. I was*

*disturbed when I was told of the results, though I had anticipated the outcome, accepting the results was too hard for me. What immediately came to me mind was death, though I did not present any symptom at that time. The medical staff who attended to me reassured me that I had passed the danger zone and was recovering. This gave me hope".*He went on to explain where he may have picked up the infection. "*I believe I got this infection from my 21 year old son. He does not stay at home most of the time, always moving up and down, everywhere with his friends. I tried to talk to him to stay at home during this pandemic but these adolescents do not listen. He had flu, though he did not seek medical treatment. A week later, I had a flu and then I tested positive. The medical team came through for contact tracing and I availed all the details I was requested to give."*

The third respondent (R3) was a male adult of age range 35 – 40 years old from a Medium density location, who suffered from COVID-19. He went on to explain the experience.

R3: "*This thing is real. I got sick with a flu and went to the local clinic were I was given some medication and advised to go home. Two days later, I developed difficulties in breathing. I rushed to the hospital and were it was discovered that my oxygen saturation was low [going down] and immediately they commenced me on oxygen therapy and isolated. I felt my breathe going and saw myself slowly dying. A swab for COVID test was taken. I would not breathe properly without oxygen and I remained on oxygen for another 5 days. Thereafter, I improved and was later discharged after symptoms disappeared. Contact tracing was done to all my contacts at home and work. Am lucky to be alive, it is by the Grace of God"*

Thirdly, the researcher interviewed two market traders, one from a market in the medium density area and another from a market in a high-density area. The following are descriptions of some of the participants' experiences. Due to ethical issue, we shall name then as M1 and M2.

CBT2's experience: "*I travelled to Nakonde a week ago and the bus we went with was not full as it usually was before this COVID. While on the bus none of us was wearing the mask. We arrived in Nakonde enroute to Tanzania to buy some goods for resell here in Mufulira. We disembarked on the bus and everyone started to wear his or her mask. I*

equally put on my mask. When we were about to cross the border on the Tanzania side, we were decline citing that we could only cross to their side if we removed the facemask because there was no COVID in Tanzania and their leader had instructed them not to wear masks. I was surprised but what could we do, we had to remove the mask and then were allowed." Asked if she was not worried of contracting COVID-19, she indicated, "*I had to sacrifice so that I can earn a living for the betterment of my family."*

Fourthly, CBT3 travelled to Mpulungu to buy fish for resell here in Mufulira. The researcher wanted to find out if she was not worried about contracting COVID-19 due to her travels. She started by doubting if the disease was real since she has not seen anyone dying from it.

"Is the disease real? If it is real then I cannot suffer from it because I am a child of God and God cannot allow His children to contract such a disease. Moreover, we hear that this disease is not meant for us in Africa." She went on to state "my children have to eat. You know, am the breadwinner. My husband does not work and business is slow nowadays."

Lastly, PST1 stated,

"*The disease is real but the public health guideline have made the church member to stop coming to church. What is surprising is that the same members do not even observe the same lead down guidelines in public places such as the market. The health guidelines are just an excuse to miss church meetings. So far, none of my church member has had COVID-19"*

4.6 Factors that Enhances or Hinder the Spread of Covid-19

Interestingly, the researcher asked the respondents if they would suggest factors that would enhance or hinder the spread of the disease in Mufulira.

4.6.1 Factors Enhancing Spread of COVID-19

The respondents suggested that relaxation and complacent to following preventive measures contribute to the spread of the disease. According to R6, "*people have relaxed and complacent to*

wearing of face mask in public place or following health guidelines". This was evident form the observation made by the researcher during data collection. The wearing of face masks in public places such as markets was not observed.

The findings also indicated that the system of treating symptoms, delay in diagnosis, selected testing caused delay in contact tracing enhanced the disease spread. According to PHSP2, "*The luck of testing and using symptomatic treatment without confirmed lab test was making the surveillance system to be ineffective. Results were taking too long to come through".* The luck of testing and diagnosis including poor surveillance system was supported by Bedford et al (2020) stating that lower-income and middle-income countries require technical and financial support to successfully respond to COVID-19, developing the capacity for PCR testing for COVID-19. Further, the delay in diagnosis coupled with non-specific clinical symptoms COVID-19 (Borges do Nascimento et al., 2020) remain a challenge in controlling the spread of the virus. PHSP1 affirmed, *"Contact tracing was not capturing everyone because some patient do not come to the hospital when sick unless with severe symptoms".* These are cases that are not reported and spread the disease unknowingly.

Furthermore, other important findings were on myths and disbelief about the disease. Residents had mixed feeling about the disease. R16 stated "*this disease is for the whites and the rich people. It was not meant for the blacks".* Some of the resident believe that the disease is for the rich thus, contribute to noncompliance of preventive measures thereby risking the spread of the infection.

4.6.2 Factors that Hinder or Slow the Spread of the Disease

The respondents suggested that mass screening and testing of people would help to identify case of COVID-19 in the communities thereby isolating them and contact trace the contacts to the sick. This could help to hinder the spread of the disease because of the robust surveillance system if well implemented. According to PHSP3, *"temperature screen is not effective, what is needed is to trace where the disease is coming from".*

One of the finding to hinder the spread of the disease was the provision of testing facilities within the disease as this could enhance the efficiency in diagnosis of the disease thereby treating

the right disease. One of the respondents (MT2) indicated*, "The Ministry of Health should decentralize the testing facilities to the local hospital in the district".*

Moreover, other respondents suggested the involvement of the community to help run the COVID-91 program in the community. R25 indicated, *"they should involves us like in HIV /AIDS programs since this is also a viral disease".*

4.7 Efforts to Slow Down the Spread of Covid-19

The respondents suggested the following efforts that can help to slow down the spread of the disease.

One of the responders (R77) indicated that '*We need to continue abiding by what the Ministry of Health tell us to do. We need to follow the health guidelines'.* This showed that there was need to continue observing the health guidelines that were put in place by the ministry of Health.

Furthermore, MT3 asserted that "*we have continued with radio programs on COVID-19 as aware is critical to help people understand this pandemic is here to for some time. The best way to stop the infection is to avoid it and contact tracing has to continue".* The highlighted issue was continuation of awareness and contact tracing.

In addition, R15, affirmed that "*The district needs to ensure that the community understands the dangers of COVID-19 to help fight the disease".* What is of importance is community engagement and understanding of the dangers of the disease and the efforts that the government is putting in place in trying to combat the disease.

4.8 Chapter Summary

This chapter presented findings from all the participants of the research, which were obtained from either the questionnaires or the interview. The findings The study findings revealed that participants were aware of COVID-19 disease with the majority, 86 (72%) affirming of the realness and mode of transmission of the disease, while 19 (28%) indicated that the disease was not real but a make up of the health sector. The findings also showed that a minority of participants felt that the preventive measure were effective, while the majority believed that the

measures were not effective. It was further noted that only 60 (50%) of the respondents in the study sites complied with the preventative measures. In addition, the findings indicated the lack of testing and delayed diagnosis including poor surveillance system contributed to the ineffectiveness of the preventive and control measures. The next chapter shall discuss the findings of this chapter.

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.1 Overview

This chapter presents the discussion on the research findings that were presented in the previous chapter. The discussion of these findings will contribute to the understanding of the situation concerning the impacts of prevention and control measures employed to address the spread of COVID-19. This discussion is based on the research objectives, which attempts to answer the main research questions. It will also seek to establish commonalities between views of different respondents, which in turn will serve as a means of validating the findings of the study. Ultimately, the discussion will culminate as proposed.

5.2 Awareness on COVID-19

The first objective of the study was to establish the awareness of COVID-19 among the residents of selected compounds of Mufulira District. This objective is very important as it helps to determine the adherence to prescribed health measures to prevent the infection.

5.2.1 Perception of COVID-19 Disease

In relation to COVID-19 disease and the modes of transmission, the respondents were aware of the disease that originated from China. The knowledge from the respondents was evident information about COVID-19 had reach most of the individuals regardless of their level of education or indeed the location. This is in line with the assertion made by the health personal who acknowledged that they did carry out aware programs on COVID-19.

Further, information is widely received and transmitted from person to person through different channels. What is cardinal is what the type of information not having any distortion. From the findings, the residents knew the basic information on the disease, though Kaulu et al., (2020) asserted that there was no statistical significant relationship between risk perception of COVID-19 and information sources. This helps to understand that information may be received from different sources but risk of the disease may not be well understood.

However, the mixed perceptions whether the disease is real or not is a matter of choice depending on the level of perception of the disease. It is difficult to convince a person where they are not directly affected. Similarly, the level of education contributed to the level of understanding of the subject matter. This was equally supported by Africa CDC (2020) postulating that the likelihood of individuals practicing these preventive and care seeking measures depends on their COVID-19 related knowledge, perceived threat of them both acquiring the disease and suffering its full severity. Education is about acquiring knowledge and learning takes place on a daily basis, thus awareness is about facilitating knowledge to those who require it receive it.

5.2.2 Mode of Transmission of COVID-19

It was evident that the majority 101 (84%) respondents were aware of how the disease was transmitted. Nguyen et al.,(2020) affirms that increasing health literacy in the population can improve the management and control of COVID-19 and even further global pandemics. Thus, health education was cardinal in enhancing understanding how the disease is transmission facilitates the knowledge on how to prevent themselves from the disease thereby adhering to preventive measure. Where the community does not understand fully the transmission of the disease causes failure to comply with preventive. Realistically, knowing and understanding are too different thing. One may know of something and acknowledge it, but where there is understanding of something, people tend to appreciate the situation and act accordingly. Again, education is key to making people understand the subject matter.

5.2.3 Source of Information on COVID-19

The researcher wanted to establish where the residents got the news or knowledge on COVID-19. The result indicated that various sources of media where used to get information of the disease. The majority who had received information from diverse sources where from Low and Medium cost with educational level of up to secondary school level.

Firstly, from the findings, it is evident that dissemination of information is critical to enhance communication. Communication is about finding the correct media to send the message to the recipient. In this case, the community in high density have low education background and thus

the information is only received through their neighbours and friend. However, the PHSP claimed that they carry out awareness programs in the community using PA system. However, members in the community did not acknowledge that source of information. Thus, no feedback to complete the communication cycle. Loembe et al. (2020) posit that countries with higher urban populations are faced with the logistical and communication challenge of informing the public. On the other hand, the other sources of information require one to be literate for them to appreciate the information. Therefore, information dissemination seemed to be biased toward awareness and was lacking in education to addressing the needs of those who were illiterate.

Secondly, the interview conducted with the PHSP indicated that they conducted regular sensitisation programs in community, market places and public places including bus terminals using the PA system. The PHSP further indicated that they had daily (Monday to Friday) programs including phone in programs on COVID-19 presented by the Local Radio Station. The other source of information was through the mobile service providers that sent messages on a regular basis supported by the Ministry of Health. None of the respondents indicated the above sources of information. It seem that the PHSP has no system to monitor the feedback of information transmitted by the different media.

In view of the above, it is important to promote inclusive communication models that have a monitoring system in place. Thus, for any program to be effective, a monitoring and evaluation program should be put in place. This will allow members of the community to understand and participate fully. Low literacy rate, lack of relevant literature/material in vernacular and lack of interest and enthusiasm on the part of program personnel to share information with people are some of the obstacles to making the people aware and thereby enlist their participation (WHO, 2011). Communication is not limited to a single medium of information transmission, thus, different languages, posters, flier, mass communication media e.t.c. should be employed to the right recipient. However, Kaulu et al., (2020), indicated that the relationship between risk perception of COVID-19 and behavioural responses to COVID-19 and that between risk perception of the big five health risks and behavioral response to COVID-19 were both not statistically significant. Thus, the source of information did not have any significance to the behavior of the people.

5.3 COVID-19 Preventative and Control measures, Implemented

This section discussion answers objective two: To explore the preventative and control measures put in place to reduce the spread of covid-19 in the study compounds.

5.3.1 Planning and Coordinating

The findings showed that incorporated major stakeholder within the district including private companies, Government departments and NGOs for a program to be effective, the community need to be involved. It was not clear whether the community was represented in the Task team for COVID-19 prevention. According WHO (April 2020) strategy update on COVID19 to Successful implementation of adaptive COVID-19 preparedness and response strategies will depend on all of society being engaged in the plan, and strong national and subnational coordination. This was supported by Nguyen et al (2020) postulating that, lack of preparedness to the sudden onset of COVID-19 by governments, health care systems and organizations has an impact on the outcome of the measures put in place to mitigate the virus.

Therefore, to effective manage the COVID-19 pandemic in the community, involvement of the community is important. This was equally not mentioned by the respondents as being involved in decision making. Where people are not part of the decision made, which concern them, chances of them adhering to the decisions made are slim. According to Rifkin and Pridmore (2001). Information sharing is equated with professionals giving information to lay people. Empowerment means providing opportunities and experience, to allow community people to be actively involved in the decision making about the program.

The PHSP stated that some of the preventive measure in place included community sensitisation on COVID-19 and inspection of facilities on adherence to provision of hand hygiene facilities in all public and business premises. Other preventative measures included the promotion of social distancing in public and business places and adherence to SI 22 and 23 on quarantine and Isolation of suspected and confirmed cases and maintaining social groupings to a maximum of 50 people. The above measure are administrative measure and not necessarily empower a person

to comply with the necessary health guidelines as it does not deal with the behaviour is the individual.

The respondents did not indicate issues to do with isolation and quarantine. What came out mostly were the personal preventive measure to do with hand hygiene, masking up and social distance. Emphasise has not been made of isolation and quarantine for those who are sick or suspected to have been in contact with the sick. Quarantine and isolation of the individual is critical in addressing the spread of the disease.

5.3.2 Public Health Surveillance

Mass screening and testing was implemented though due to lack of resource the testing was later reserved for suspected cases and hospital admissions including those who were in contact with positive COVID-19 individuals. Mandatory quarantine was advised for all suspected cases for a period of up to 14 days while Isolation was advised for all positive cases. The individuals on quarantine and isolation were further sensitised on public health measures to follow while in quarantine such as wearing of facemasks, physical distancing and hand hygiene.

The PHSP also indicated that, there a robust team for contact tracing and according to them, this was the most critical and major control measure to aimed at reducing the spread by identifying the contacts to the positive case. Stopping the spread of COVID-19 requires finding and testing all suspected cases so that confirmed cases are promptly and effectively isolated and receive appropriate care, and the close contacts of all confirmed cases are rapidly identified, so that they can be quarantined and medically monitored for 14 days (WHO, 2020).

Contact tracing is key but according to the responded, there where cases in the community that did not go to hospital for screening. This created a gap in the surveillance of COVID-19. According to WHO (2020), stopping the spread of COVID-19 requires finding and testing all suspected cases so that confirmed cases are promptly and effectively isolated and receive appropriate care, and the close contacts of all confirmed cases are rapidly identified, so that they can be quarantined and medically monitored for 14 days. Similarly, not all patients who came through to the hospital were tested for COVID-19 due to limited resource.

5.3.3 Implemented Preventive and Control Measure

Separating patients with flu like symptoms and fever from the other patients and thermal scanning of all people entering the hospital or clinic was practiced in hospital and clinic. Other measures included the use of facemasks for all entering the hospital gates and sanitising of hands, as well as the wearing of recommended PPE for the medical staff. Further, separating suspected COVID-19 cases from others in the wards and swabbing all suspected cases and those in medical wards. Hospital and Clinics were following the preventive measure considering that they were in contact with COVID-19 cases. On the other hand, they were faced with challenges of testing and delay in receiving results for them to facilitate surveillance on positive cases. This was evident from the interviewed patients who were only informed of their results days late. This was asserted by WHO (2020) that a combination of measures that includes diagnosis and immediate isolation of cases, and rigorous tracking and self-quarantine of close contacts. It was further supported by Mariani et al. (2020) that strategies to reduce transmission include isolation, supporting home treatment and contact tracing, with contact tracing being one of the most important in the early stages to contain spread

Meanwhile, the residents in the selected compounds were able to ascertain to the following personal prevention and control measures, which included hand hygiene, facemasks, social distance and avoiding social gathering such as pubs, churches and social events. Unfortunately they were unable to comply to the measures. The community may not understand the effect of COVID-19 and the preventative measures. This may be attributed to the cultural and social aspects including behaviour of the society plays a role in adhering to containment measures. This was reinforced by Anderson et al. (2020) individual behaviour will be crucial to control the spread of COVID-19. Thus, the containment measures really rely on the individual to change the lifestyle and adhere to the health guideline.

5.4 Effect of COVID-19 Prevention and Control Measures

This section discussion answers objective three: To establish the effect of prevention and control measures implemented to slow the spread of COVID-19.

5.4.1 Effectiveness of the Awareness Programs

The results indicated that 38 (32%) of the respondent agreed that the awareness program had a positive impact on the spread of COVID-19 while 62 (68%) disagreed indicating that the awareness programs had not effect on the COVID-19 spread. As discussed in item 5.3.3 under sources of information, awareness is cardinal and information should suit the intended. The lack of correlation between information sources and risk perception could be because the nature of the information also plays a critical role in information seeking (Han et al., 2007). Awareness programs will be effective if community involvement for the message to clearly understood by the masses

5.4.2 Observing Preventive and Control Measures

The preventive and control measures include social distance, hand hygiene and the use of facemasks. The findings on the use of these measure indicated the 50% used the health preventive and control measure while the other 50% did not use the measures. This means that people do not observe the preventive measure in place. For those who observe, it is because they were in restricted places and observing the measures was necessary. This is true as supported by the finding from workplace and churches, were the preventive measures were adhered to, as advised by the health authorities while in their premises. Most of them did indicate that these measures had no significance outside their organisations because there were no restrictions.

5.4.3 Effectiveness of Preventive and Control Measures

The results indicated 43% were agreeable to the measure being effective to controlling the spread of the disease while 57% indicated that they were not effective. The effectiveness of the prevention and control measures in society can only be determine if people are following the lead down rule. Moreover, adherence to preventive measure is dependent on the actions of an individual but more so, on the guidance of the leaders in society. Leaders should lead by example. In view of the same, it is therefore correct to mention that the preventative measures are not followed enhance not effective to halt the spread of the disease.

5.4.4 COVID-19 Situation

Responses on the COVID-19 situation in Mufulira indicated 61 (51%) to agree that the infection was spreading while 39 (49%) indicated that the disease was not spreading. Worldwide the numbers of COVID-19 are increasing and Zambia is no exceptional. For instance, South Africa has more cases in the southern region than any other country and yet Zambia has the same conditions as South Africa. The question is '*what is South Africa doing that Zambia is not doing?*' Firstly, South Africa has an economical advantage. Secondly, South Africa is carry out more tests than Zambia. Thirdly, South Africa is densely populated than Zambia, hence the spread of the disease.

The number of COVID cases (139 as at 1st September 2020) seem low in Mufulira, there may still be a number of cases that have not been captured. The mild or asymptomatic cases that do not require hospital attendance usual go unnoticed. Seemingly, the study that carried out by Gomes et al (2020) on prevalence of COVID-19 in a Brazilian town, results revealed a small prevalence of infection in the study area, despite the significant number of sick people overloading the health system. The figures indicate an important underreporting in the area and non-testing facilities for the sick attending the hospital. Similarly, the situation is no different in Mufulira concerning the results of the study by Gome et al. This is a growing frequency making necessary public health actions to fail with the containment of the transmission.

5.4.5 Lived Experiences of Respondents

From an aerial view, it is impossible to determine the COVID-19 situation in Mufulira. Hence, the lived experience elaborate what is happening on the ground. The results showed 13% indicating that, they had some community members who suffered from COVID-19 and 69% declined, while, 18% of the respondents indicated of not being sure of any COVID-19 cases in the community. The community may not be aware of the COVID-19 cases in the community unless they were the primary or secondary contact to the positive case. Besides, people do not want to be associated with COVID-19 because of the stigma attached to it as well as issue of quarantine and isolation. People want to continue leading a normal life regardless of the preventive measure that restrict them.

The descriptions of some of the participants' experiences brought to light follow issues as discussed. R1 is a female, who suffered from COVID-19, highlighted the issue of stigma. People avoided her because she had suffered from the disease regardless of her recovery. Likewise, COVID-19 should be given as much attention like HIV/AIDS as there is no need to reinvent the wheel. This novel disease will not disappear soon and as such issues of stigmatization should be addressed. Further, psychological therapy is necessary to deal with the consequences of the disease including stigmatization and fear. This may be the reason why many do not want to attend healthcare facilities, fearing to be diagnosed with COVID-19.

Furthermore, there was an issue of delay in making a diagnose. This could be attributed to the variance in the presentation of symptom. Mostly people will look at the common symptoms of fever, flu, cough and pneumonia. Borges do Nascimento et al., (2020) asserted that, the delay in diagnosis coupled with non-specific clinical symptoms COVID-19 remain a challenge in controlling the spread of the virus. Successful control of COVID-19 is only possible through implementing effective mechanisms of diagnosis. Further, to the assertion, Lui et al., (2020) and Nyugen et al., (2020) seem to agree that symptoms of COVID-19 are non-specific and it can range from no symptoms (asymptomatic) to severe pneumonia and death.

R2 a male of age group about 51 years from a low-density location who tested positive to COVID-19. He explained his experience and highlighted that psychological effect when results are given. Further, the issue of none attendance of hospital for mild cases which go unnoticed unless otherwise. This is common with asymptomatic cases and the youthful group like in his case where the 21 year old brought the infection in their home. This group is active and suppress the infection and pose a higher risk of transmitting the infection to their parents, grandparent and the rest of the family.

Taking into account the three cases, it is notable that initially they were treated as suspects and results came later after all symptoms had rescinded. There is a delay on the turnaround of results. As buttressed by Bedford et al (2020) that many African countries do not have the facilities and capacity to carry out PCR test used to confirm COVID-19 in the laboratory and Nguyen et al. (2020) added that human race is facing a disease without having tools to combat. How can contact tracing be effective?

UNDP (2020) asserted that, like many developing countries, and due to the high poverty rates in Zambia, most of the population lives on a daily income, therefore, despite government efforts to ensure awareness on the importance of social distancing, these restrictions are perceived to jeopardise the livelihoods. The two cross border traders who despite the COVID situation still travelled to maintain their livelihood, thus, confirming this assertion. It is difficult to balance the daily livelihood demands and maintaining the health guidelines. Therefore, preventive measures are secondary to having a daily income thereby sustaining the livelihood of the common family in the community. Lewin et al., (1944) the health belief model suggests that behavior is dependent on the subjective value placed on the outcome and the expectation that an action will lead to that outcome. Therefore, people unconsciously perform a risk benefit analysis.

The other issue raise by MT2, was on religious beliefs that the disease cannot affect her because she is a child of God. Every community has a set of values and beliefs that are rooted in its religion, culture, tradition, and history. The attitude and behavior borders on the belief and value imparted in them. Unless the mindset is changed and people disassociate their belief from the facts of life. This is achievable through continuous awareness and education, yet again, as Africa CDC (2020) affirmed that the likelihood of individuals practicing these preventive and care seeking measures depends on their COVID-19 related knowledge, perceived threat of them both acquiring the disease and suffering its full severity.

The assertion from the local Pastor that people do not observe the lead down guidelines in public places such as the market is true. People only follow the preventive measure only because of the benefit from it. In work place, the employee follow the measures because they have no option. Thus, Africa CDC (2020) suggests of community involvement in the development of any public health or social measure to be a priority to ensure adherence and thus any prospective benefit (Africa CDC, 2020). In a situation where individuals have no benefit to the cause, the chances of adhering are not possible, but where there is a benefit, the chances increase.

5.5 Factors that Enhances or Hinder the Spread of Covid-19

This section answers objective four: To establish factors that might have enhanced or hindered the spread of Covid-19 in the study compounds

5.5.1 Factors Enhancing Spread of COVID-19

Apparently, the responses from the responders suggested some factors that enhance the spread of the disease as relaxation and complacent to following preventive measures; symptomatic treatment and Protocol of testing; contact tracing not capturing everyone; myths about the disease.

It is evident that people have relaxed with following the preventive this, as ascertained by a study published on The Lancet (2020), indicated that the measures if we lighten the measures, a further peak could occur. The issue of symptomatic treatment does not help the situation until tests are done then the affected are isolated. It is not possible to treat something that you do not know. Until, you know, you are able to give the correct advice. A combination of measures that includes diagnosis and immediate isolation of cases, and rigorous tracking and self-quarantine of close contacts (WHO, 2020), help to reduce the infection.

The disease has come with many myths in Africa including traditional and religious beliefs. These myths and belief cause people not to believe the fact about the disease, hence failing to follow the health guideline, which leads to risks of spreading the disease.

5.5.2 Factors that Hinder or Slow the Spread of the Disease

The respondents suggested the following factors that can hinder the spread of the disease include mass testing of people and not temperature screening alone. Temperature screening has taken a major role than testing. The public think that once temperature is taken and no fever, then that individual is free from COVID-19. A research needs to be conducted on the number of people with raised temperature following the thermal screening actually test positive to COVID-19. Emphasis should be on testing, as this will identify sick individuals.

Local Hospital to start testing for COVID-19 will help to identify case in real time thereby isolating confirmed cases and trace contacts on time. Finances are a barrier to addressing the local hospital in having test laboratories for COVID-19. The health of a nation is dependent on its wealth. Where poverty is rampart, the health is affected. Setting up task force to monitor compliance to Public health measures in the community may not help much unless the

community is involved in the program. Without community involvement, it will be difficult to implement any program.

At individual level, what is important is the wearing of facemasks in public place as a preventive measure. The compliance of wearing facemasks is possible, if the behavior of the community is changed. This will require dealing with myths and beliefs, through community participation.

5.6 Efforts to Slow Down the Spread of Covid-19

Finally, this section answer objective five: To establish efforts made by the study compounds to slow down the spread of Covid-19. The respondents suggested the following efforts that can help to slow down the spread of the disease. Continue testing and contact tracing, availability of resources including human resource to manage the disease, training of health care workers, continue mass awareness programs are parameter that can enhance the disease spread but require financial support to achieve the intend objective. Zambia is a third World country with a leaping economy, which has worsened after the outbreak of COVID-19. It needs support from donor to help the pandemic effective.

Training of health worker is critical and should be an ongoing proceed. However, stakeholder engagement is equally important especially the participation of the community. They too need education and awareness to help change behaviour. Free mask issuing to people will not solve the problem not until the people understand the reason for wearing the mask.

5.7 Chapter Summary

This chapter discussed the findings of the research. The findings indicated that most people were aware of disease (COVID-19) and the probable transmission mode though they did not comply fully with the health guideline to prevent and control the disease. The residents only complied with the preventive measures such as hand washing, masking up and social distancing when they visitor a facility that enforced such. Testing for COVID-91 was conduct those presenting with symptoms who came to the hospital and for those found during contact tracing. Further, the findings indicated that complacency enhanced the spread of the disease because people were not

following the guideline. The next chapter is going to deal with the conclusion of the study, recommendations on the study and further research recommendation.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Overview

This chapter concludes the study with the general impression generated by the data obtained in relation to the objective and present some recommendations.

6.2 Conclusion

Firstly, this study has brought out the awareness on the existence of COVID -19 in the study compounds in Mufulira on the Copperbelt Province in Zambia. The study established that awareness on COVID-19 was made known to the residents of Mufulira through various sources of media and the residents were aware of what COVID-19 disease was including the prevent and control measures put in place as per health guidelines. However, it was noted that the respondents were unable to comply or complied partially with the personal preventive measure prescribed for them. Conclusively, it can be implied that information on COVID-19 did not have any effect on the change of behaviour concerning the risk of contracting COVID-19 hence, the spread of the disease.

Secondly, it was revealed that the preventative and control measures put in place to reduce the spread of covid-19 in the study compounds where implemented by the study District. These included surveillance program including contact tracing, isolation and quarantine of positive COVID-19 cases, monitoring of the compliance of the Statutory Instrument 21 and 22, triaging of patients in the hospitals and random monitoring of social events. Further, it was learnt that screening at the border was in place with provision of thermos scanners and hand washing facilities while observing social distancing. Nonetheless, this came with its own challenges considering the limited resources. Hence, it can be concluded that the implemented preventive and control measures where subjective.

Thirdly, the weak surveillance system due to the limited capacity to test COVID-19, delay in diagnose due to delayed turnaround time for COVID-19 results, were not effective in prompting contact tracing, treatment, isolation and quarantine of cases. Furthermore, the non-observation of preventive measures contributed to the planned flow of the system to combat the disease. The findings signified that people only adhere to observing the preventive measure in certain facilities because they are obligated to do so. However, the numbers of cases of COVID-19 were relatively low, but this did not signify that the numbers unreported were low. This, assuming that a number of mild symptoms were low considering that asymptomatic cases were unnoticed because they did not come through to the hospitals or clinics. It is justifiably to suggest and conclude that the findings of the prevention and control measures implemented to slow the spread of COVID-19 had no effect.

Fourthly, the study established factors that might have enhanced or hindered the spread of Covid-19 in the study compounds seemingly suggested that complacent to health guideline was an aspect as well as myths of Coronavirus can enhance the spread of the disease. People believe that the disease was not for the black race and the poor. Further, the protocol of testing, delayed diagnosis and contact tracing not capturing everyone can contribute to the spread of the disease. It can conclusively, be asserted that established factors can definitely enhance the spread of the disease in the district.

Lastly, the findings seem to suggest that continuous training of health care workers and engagement with the community are significant efforts that can be made by the study district. Nevertheless, training of health care workers is on-going and there in need to strengthen community engagement. This can enhance knowledge thereby helping to change the behaviour of the residents. The conclusion is that, there are no new activities in the study area to help slow the spread of the disease apart from the already programed activities as per national level guideline. In short, the findings seem to suggest that there is no effect on the preventative and control measures employed to address the spread of COVID-19 in the study area because of non-compliancy to health guideline on preventive measure and weak systems of control measures.

6.3 Recommendations

In order to effectively sustain the adherence to the preventive and control measures, the following approaches and recommendation may be consideration:

1. There seems to be a weak community engagement, thus, the need for the government of Zambia to ensure that the community is engaged in COVID-19 activities and empowering the community through trainings and awareness programs. This will help the community to have a sense of ownership and help to address issues of myths, misconception and disbelief.

2. The study findings suggest that awareness in different languages was lacking though various sources of information was used. Therefore, the Government Ministries and their cooperating partners should emphasis on the use of different languages and role play to help people understand and make informed decision with regards to COVID-19.

3. There was delay in making diagnosis thereby delaying contact tracing, hence for quick diagnosis and contact tracing, the Ministry of Health should increase the testing capacities in the by making each district to start conducting tests for COVID-19.

6.4 Suggested Further Research

1. Evaluation why in African countries COVID-19 infection and mortality rate is low compared to Europe, China and America.

2. Investigate the cultural and political influence on behaviour concerning compliance to prevention of COVID-19.

3. Establish number of people with raised temperature testing positive to COVID-19.

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APPENDICES

Appendix 1: Consent

Dear Repondent,

You have been selected to participate in the research study *"Effectiveness of Prevention and Control Measures Employed to Address the Spread of Covid-19 in Zambia".* The study is for academic purposes.

Your participation in this study is voluntary and you may withdraw from the study at any time. All information collected shall be treated as private and confidential and no names will be disclosed in the final report.

Your responses will be helpful to determine the effectiveness of preventive and control measures of Covid-19.

Your kindly cooperation will be highly appreciated.

Thank you

Appendix 2: Unstructured Interview Guides for District Public Health Team Members

Section A: Personal Information (Tick the answer)

1. Gender: Male [ ] Female [ ]
2. Location (a) Low density compound (b) Medium density compound (c) High ensity
3. Age: 20-25 [ ] 26-30 [ ] 31-35 [ ] 36-40 [ ]
   41-45 [ ] 46-50 [ ] Above 51 [ ]
4. Period of stay in the study area:
   Less than 1 year [ ] 1-5 years [ ] 6-10 years [ ] Above 11years [ ]
5. Education Level attained: Diploma [ ] First Degree [ ] Masters [ ]
6. What is your occupation?.....

Section B:

1. How are you managing the COVID-19 situation in Mufulira?
2. What measures have you put in place to contain and mitigate the spread of the Virus?
3. Do you have a committee that is involved in planning, coordinating and managing the COVID-19 situation in Mufulira?
4. If yes, how often do you there meet? And who is part of the committee?
5. Are you conducting Tests for suspected COVID-19? How are these test being conducted?
6. How do you manage people suspected and or confirmed with COVOID-19?
7. Is contact tracing effective in the Mufulira? Why do you think so?
8. What challenges do you face as a District in dealing with covid-19 issues?
9. How do you manage the challenges? What do you think should be done to address these challenges?
10. Do you think your efforts in mitigating the spread of COVID-19 are having effect on the reducing the spread of the disease? Why do you think so?
11. Do you think you have more cases of COVID-19 in the community than the confirmed case? Why do you think so?
12. What is necessitating the spread of COVUD-19 regardless of the efforts put in place?

13. What efforts are being made to improve the situation in the fight against COVID-19 in your place?
14. What changes would you like to see if you had the means to change how things on the approach of fighting COVID-19?

END OF INTERVIEW: THANK YOU

Appendix 3: Questionnaire for Work places / Churches / Business Premises / School

Instructions: Please, answer by ticking and filling in the spaces provided

Section A: Personal Information

1. Gender: Male [ ] Female [ ]
2. Age: 20-25 [ ] 26-30 [ ] 31-35 [ ] 36-40 [ ] 41-45 [ ] 46-50 [ ] Above 51 [ ]
3. Period of years in the study area: Less than 1 [ ] 1-5 [ ] 6-10 [ ] More than 10 [ ]
4. Education Level attained: Primary [ ] Secondary [ ] Tertiary [ ]
5. What is the organisation type?……..
6. What is your Position at the organisation?.....

Section B: Information on COVID-19 in the Work Place?

1. What is COVID-19? ……
2. How does it spread? …….
3. Where did you hear of COVID-19?
   Television [ ] Social Media [ ] Community [ ] Work Place [ ] Bus [ ] Friends [ ]
   Other (mention):……..
4. Do you think COVID-19 is real? Yes [ ] No [ ]
5. What preventative measures has organisation put in place to prevent COVID-19 spread?
   Temperature Screening [ ] Social Distancing [ ] Hand Washing [ ]
   Masking up [ ] Stay home when sick with flu like symptoms [ ] Work rotations [ ]
6. Are the workers or people observing all the preventative measures put in place by the organisation? Yes [ ] No [ ]

   If No, why are they not complying? ……
7. Do you think the preventive measures are effective in reducing chances of covid-19 in your place? Yes [ ] No [ ]
   Why do you think so? Give reasons?.....
   ……

8. Is COVID-19 spreading? Yes [ ] No [ ]

   If yes, why?.....…….

   If No, why?.....……..

9. Does your organization offer Awareness programmes on COVID-19? Yes [ ] No [ ]

   If yes, what is covered?……..……

   If no why?.....

10. Do you think people are following the preventive and control measures in your place?

    Yes [ ] No [ ]

    Why do you feel so?.....

11. Has anyone in your organisation suffered from COVID-19? Yes [ ] No [ ] Not Sure [ ]
12. Have you interacted with a COVID-19 suspect or confirmed case? Yes [ ] No [ ]

    What were some of your experiences?.....

13. How would you want your organisation to do to help fight COVID-19?

    .....

    ……..

END OF INTERVIEW: THANK YOU

Appendix 4: Observation of Compliance to Health Guidelines

Location by Density: Low [ ] Medium [ ] High [ ]

1. Residents' compliance to:

1. Hand Hygiene: Good [ ] Average [ ] Poor [ ]
2. Social or Physical Distancing: Good [ ] Average [ ] Poor [ ]
3. Masking up: Good [ ] Average [ ] Poor [ ]
4. Gestures during interviews on covid-19 issues: Good [ ] Average [ ] Poor [ ]
5. Other

2. Physical environment

1. Markets places: Good [ ] Average [ ] Poor [ ]
2. Bus Stops: Good [ ] Average [ ] Poor [ ]
3. Workplaces: Good [ ] Average [ ] Poor [ ]
4. Churches: Good [ ] Average [ ] Poor [ ]
5. Schools: Good [ ] Average [ ] Poor [ ]

Thank you for your responses