

**STUDY TO DETERMINE FACTORS CONTRIBUTING
TO RECURRENCE OF CHOLERA IN KABWE URBAN**

By:

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ZRN: 1994

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**THE UNIVERSITY OF ZAMBIA
SCHOOL OF MEDICINE**

DEPARTMENT OF POST BASIC NURSING

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**A research study submitted to the Department of Post Basic Nursing,
School of Medicine, University of Zambia in partial fulfillment of the
requirements for the award of the Bachelor of Science Degree in
Nursing**

February, 2003

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Declaration

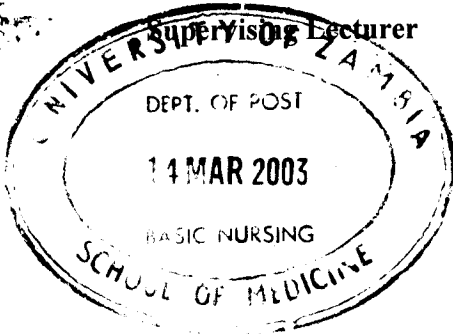
I declare that the work presented in this study for the degree of Bachelor of Science in Nursing has not been presented wholly or in part for any other degree and is not being currently submitted for any other degree.

Signed *Thobeka*
Candidate

Date 14. 03. 03

Approved *A. Chanda*

Date 14/03/03



Statement

I certify that this study is entirely the outcome of my own independent investigations.

The various sources of information to which I am indebted are clearly acknowledged in the text and references

Signed *[Signature]*

Date 14. 03. 03

Dedication

I dedicate this study to:

My wife Sammaria and my children who endured my long absence from them without their support and encouragement this work would not have been such a success

My brother and my niece for their support and encouragement

My sister Dorcas for her support and secretarial work services

Acknowledgements

My acknowledgement goes to dedicated supervising lecturer Mrs. D. Chanda who sacrificed much of her time trying to consolidate the views of the researcher. Without her dedication, hard work and commitment this report would not have been completed.

I would like to thank Ms P. Mweemba and Mrs Ngoma for introducing me to the concepts of research in nursing

I would like to further affirm my indebtedness to Kabwe DHMT for granting me permission to carry out the research in Makululu compound.

My sincere gratitude to Ministry of Health, my sponsors, for funding the research project, without their assistance the study would not have been a reality.

Finally I would like to pass my gratitude to all friends who contributed to the development of this research report in one way or the other.

List of Abbreviations

| | | |
|-----------------|---|---|
| BMH | - | Burundi Ministry of Health |
| CSO | - | Central Statistical Office |
| DHS | - | Demographic Health Survey |
| KDHMT | - | Kabwe District Health Management Team |
| NGO | - | Non-Governmental Organisation |
| MoH | - | Ministry of Health |
| SADC –EU | - | Southern African Development Commission /European Forum |
| SAP | - | Structural Adjustment Programme |
| ZARD | - | Zambia Association for Research and Development |
| ZCCM | - | Zambia Consolidated Copper Mines |
| ZMK | - | Zambian Kwacha |

Abstract

Kabwe district is the provincial headquarters for Central Province and records the highest number of cholera cases in every outbreak. From 1996 to 2002 Kabwe district has been experiencing outbreaks of cholera in every rain season and most of the cases come from Makululu compound.

It is for this reason that this study was conducted to determine factors contributing to cholera outbreaks in Kabwe urban district.

The researcher reviewed different literature on cholera as a way of understanding the problem in broad terms. Literature on cholera in Latin America, Asia and Africa was reviewed and demonstrated that, cholera is a real public health problem worldwide. A cross sectional descriptive study was used to determine relationships among demographic data, social environmental factors and knowledge. The study was conducted in Makululu compound in Kabwe urban district.

Makululu population was picked purposely because large number of cholera cases come from this compound in every outbreak. Stratified random sampling was used to stratify the compound into five zones and simple random sampling was used to select two zones where research was conducted. Systematic random sampling was used to pick the sample unit. The sample unit consisted of 50 households and heads of households or anyone aged 18 years and above as interviewed.

Data was collected using a structured interview schedule. Data was analysed using a data master sheet and calculator. The findings were presented in frequency tables and cross tabulation.

Some of the major results showed that despite most of respondents having high knowledge on cholera prevention did not put what they know into practice. The study also showed most of the respondents were females who had attained primary education, but had high knowledge on cholera. The study recommended that health workers should give targeted health education to their clients and should emphasise on doing what they have learnt to prevent cholera outbreaks.

CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND

Zambia is a landlocked country covering an area of 752,614 square kilometers and consisting about 2.5% of the total area of Africa. It shares borders with the Democratic Republic of Congo and Tanzania in the north; Malawi and Mozambique in the East; Zimbabwe and Botswana in the south; Namibia in the southwest and Angola in the west. Administratively the country is divided into nine provinces (DHS, 1992).

The population of Zambia is estimated at 10, 285,631 persons with a growth rate of 3.6% per annum. Of the 10,285,631 persons 5,070,891 are males and the rest are females. The population of Zambia has been increasing since 1969 as depicted in table 1 below.

Table 1

Increase in the population in the last ten years.

| Year | 1969 | 1980 | 1990 | 2000 |
|------------|----------|------------|-------------|------------|
| Population | 4million | 5,7million | 7.8 million | 10 million |

Source: (CSO, 2000)

The increase in the population has adversely affected the socio - economic status of the country. One of such effects is the rural-urban drift that has contributed to overcrowding especially along the line of rail. People have moved to urban areas in search of employment and this has led to mushrooming of shanty compounds.

Most of these shanty compounds are unplanned settlement schemes. They have poor water supply inadequate sanitation facilities and residents resort to the use of unprotected shallow wells and pit latrines.

There are nine provinces in Zambia and the population varies in all provinces as depicted in Table 2.

Table 2

Provincial Population

| Province | 2000 Population by sex | | |
|-----------------|-------------------------------|---------------|--------------|
| | Male | Female | Total |
| Central | 489,486 | 517,330 | 1,006,766 |
| C/ belt | 824,912 | 832,540 | 1,657,646 |
| Eastern | 642,433 | 658,540 | 1,300,973 |
| Luapula | 388,189 | 396,424 | 784,613 |
| Lusaka | 712,393 | 720,008 | 1,432,401 |
| Northern | 696,626 | 710,462 | 1,407,088 |
| N/western | 301,596 | 309,379 | 610,975 |
| Southern | 639,356 | 663,304 | 1,302,660 |
| Western | 375,950 | 406,559 | 782,509 |
| Zambia | 5,070,891 | 5,214,740 | 10,285,631 |

Source: (2000 Census of population and Housing)

Zambia, though situated within the tropics enjoys a modified temperate climate largely because of its elevation, and rainfall is the most important element in distinguishing the three seasons; the rainy season is a warm wet period from November to April; the cold season is a cold dry season from April to August; the hot season is a hot dry period from August to November. The natural vegetation of Zambia is mainly woodlands savanna and can be broadly categorized into forest, savanna woodlands, thickest and grassland. (SADC – EU – forum mines, 2000)

This abundant natural resource is supposed to support the socio – economic status of the country's population. However, the socio – economic system has been influenced by the global economy that has in turn affected the country's health care system.

In Zambia, the government through the Ministry of Health and Central Board of Health provides the main health care services. There are also private hospitals, clinics and surgeries that supplement government's efforts of delivering quality health care to the people. The government wishes to offer quality health care through its adoption of Health Reforms in a decentralised health care system. Each DHMT is responsible for providing health care services to its people. One of the DHMT is Kabwe DHMT.

Kabwe is situated in the central province. It has a health care delivery system that comprises the government and the private sector. The provincial health office provides technical support to all health institutions in the province. Kabwe district has two district hospitals namely; Kabwe General Hospital and Kabwe Mine Hospital. The mine hospital was handed over to the government following the closure of ZCCM in 1994. The two district hospitals serve as referral hospitals not only for the health centers in the district but also for other hospitals in the province. There are 17 health centers that are under Kabwe DHMT and all these refer patients to Kabwe General

Hospital. There are three health centers that are run by the private sector. Although there is no established referral system between Kabwe DHMT and traditional healers, the district has a number of traditional healers that provide health services.

Despite having this health care systems in place, health problems have continued to escalate largely because of poor funding that has made it difficult for it to provide quality health care to the people. Health services in Zambia are deteriorating. After independence the health sector was good and had enough stocks of medicines. In early 80s medicine levels started to diminish and by the late 80s the level of diminishing became critical (ZARD, 1995).

The Zambian government achieved tremendous success in terms of improving and increasing health facilities from independence up to the late 1970s. By 1995 there were 84 hospitals and 1082 clinic/health centres (CSO, 1999). However, this state of affair could not be sustained due to budgetary constraints experienced from the late 1970s and through out the 1980s. The situation increasingly became unbearable and it led to a crisis that resulted in the dilapidation of infrastructure, scarcity of drugs and increasingly health workers became demotivated. A level was reached where the government could no longer supply communities with adequate safe water supply and proper sanitary services. The inadequate collection and disposal of solid wastes create a serious health problem when left uncollected. These areas become breeding sites for flies and other vectors of diseases, which contribute to water, food and soil pollution leading to epidemics such as cholera. The government introduced Health reforms with a vision to provide Zambians with equity of access to cost effective, quality health care as close to the family as possible and this was to be achieved through primary health care (MoH, 1991).

In the Health reforms, primary health care, decentralization of financial and administrative powers at various levels in the health care system was greatly emphasized. In the same year, the government responded to the economic crisis by introducing Structural Adjustment Programme (SAP). SAP is an approach in which the government tries to make amends to what has gone wrong in the structure of the economy. This entails removal of subsidies on medical costs and this led to the introduction of medical user fees in the health care system. The fee – paying system increased consumer expectations who now demanded better quality health care for their money's worth in the face of a deteriorating health care system (Chanda, 2000).

The deteriorating health care system is most evident in the poor socio – economic status of the people and the poor environmental sanitation of communities. This is evidenced by the growing hazardous refuse disposal in almost all residential areas.

Agents of disease proliferate in specific kinds of environments. A warm humid environment with refuse all over favors the growth of *Vibrio Cholerae* that causes cholera.

The poverty stricken people form potential hosts of *Vibrio Cholerae*. *Vibrio Cholerae* can spread from one person to another without knowing.

Cholera is a serious acute intestinal infection caused by a germ called *vibrio cholerae* and man is the main reservoir of the infection. This organism is found in areas where there is poor disposal of refuse and faeces. Contamination of drinking water sources with underground water from pit latrine and using water from shallow wells infected by pit latrines situated on higher grounds predisposes inhabitants of over crowded shanty compounds to cholera epidemics.

Other sources of cholera include:

- **Fecal contamination of water**

This occurs when people who are infected with *vibrio cholera* pass faeces in water which may come into contact with humans in any way for example sewer effluent may contaminate drinking water in shallow wells there by causing cholera out break. Contamination of water can also occur during storage for example by contact with hands soiled by faeces or ice made from contaminated water.

- **Contamination of food**

This occurs when people infected with *vibrio cholerae* handle food with infected hands. Contaminated utensils and flies can also transmit the infection.

Cholera is a worldwide problem that occurs in epidemics. It was introduced in Africa and started with West Africa. West Africa was virtually free from cholera till 1970, when an epidemic wave spread all over from Guinea to kill an estimated 20,000 people. The disease spread very rapidly across the African continent. It affected mainly the coastal areas largely because of their conducive temperature, rainfall and population density that made it to survive (Goodgame and Greenough, 1975).

There are several factors that facilitate transmission of cholera, for example Social gatherings such as parties, funerals and washing of dead bodies suspected to have been caused by cholera. Mass movements of people and consumption of foods from street vendors also encourage transmission of cholera.

The Zambian government has put corrective environmental measures in place to prevent cholera out breaks in the country. Some of the measures that have been put in place to prevent or reduce cholera out breaks include: -

- **Refuse disposal.**

City Councils through out the country have the responsibility of collecting refuse for disposal from market places and residential areas. Marketeers are also encouraged to dispose of their rubbish in bins to avoid attracting flies that transmit *Vibrio Cholerae*.

- **Street vending**

The government through city councils discourage street vending and people are encouraged to sell their merchandise at designated market places. In places where street vending has been allowed marketeers are encouraged to cover their foodstuffs. The community is also encouraged to take a full responsibility of cleaning up market places and indiscriminate disposal of litter is discouraged.

- **Provision of safe water supply.**

The government and NGOs like JICA have sunk boreholes in communities like George compound in Lusaka where shallow wells are in use .In areas where piped water supply is provided but has been vandalized.

- **Social marketing of chlorine**

Ministry of health has allowed the sale of chlorine in health institutions. The current short-term measure of mass chlorination of shallow wells has been found to be giving false sense of security due to the following factors:

- a). Continuous contamination of water from pit latrines and soak aways.
- b). Contamination by use of individual dirty containers and hands when drawing water.

- **Discouraging of social activities during cholera outbreaks.**

Social gatherings and washing of dead bodies particularly if the death is suspected to have been caused by cholera are discouraged.

It is important to emphasize that for these environmental control measures to be fully effective and efficient everyone in the community must act upon them.

A case of cholera should be suspected when:

- a). In an area where the disease is not known to be present and a patient aged 5 years and above develop severe dehydration or dies from acute rice water stool.
- b). In an area where an epidemic is occurring and a patient aged 5 years or older develops acute rice watery diarrhea.

A case of cholera is confirmed when:

- a). When *Vibrio cholerae* 01 is isolated from any patient with diarrhoea (WHO,1992).

1.2 STATEMENT OF THE PROBLEM

Despite all the environmental control measures to combat cholera in Zambia, cholera has continued to claim many lives particularly in Kabwe as illustrated in Table 3.

This is in spite of the environmental control measures put in place to combat the epidemic by the Ministry of Health, NGOs, Kabwe Provincial health office and the District health management team. As a result the government and NGOs conduct studies on epidemics with a view of reducing the high disease burden faced by community residents.

The population of Central Province is 1,006,766. The male population is 489, 436 while the population of females is 517, 330. Central province has six districts. Kabwe

is one of the six districts as well as provincial head headquarters. It comprises 17.7% of the province's population. Kabwe is the most urbanized district within the province and it forms a major stop point between Lusaka and Copper belt. Most inhabitants sell cooked food items to travelers between Lusaka and Copperbelt.

Unemployment is also increasing and majority of people opt to live in compounds where they can afford to pay rent. This has led to emergence of shanty compounds such as Makululu with poor provision of social services like piped safe drinking water supply. The inhabitants of shanty compounds in Kabwe are considered to be of low-income status. This has contributed to the use of untreated water drawn from shallow wells leading to out breaks of water borne diseases like cholera.

Magnitude of the Problem

The reoccurrence of cholera epidemics in Zambia can be categorized in three phases:

First Phase

Occurred in 1978 to 1980 and affected Northern province with 300 cases with 30 deaths.

Second phase

Occurred in 1981 to 1983 and affected Luapula, Northern Provinces and there were 995 cases with 95 deaths recorded.

Third phase

According to Ministry of Health (1992), it affected both rural and urban areas and was categorized as follows:

- December 1989 to June 1990 six provinces were affected namely Northern, Luapula, Central, Copperbelt, Southern and Lusaka provinces.

- October 1990 to July 1991 all provinces were affected except North – western and Western provinces. The numbers of cases reported were 11, 418.
- September 1991 to 1992 – six provinces were affected namely Northern, Lusaka, Copperbelt, Luapula and Central provinces.

(Chitanda R. (1996)

Despite all the efforts made by the health care system, cholera out breaks still remains a public health concern in Kabwe District. The outbreak occurs every rainy season between November and April. Table 3 below shows that there is a high mortality rate of 5% due to cholera outbreak from 1996 – 2001. Men, women and children both school going and non-school going children have been affected by the epidemic.

**Table 3: Morbidity and Mortality due to Cholera outbreak from
1996 – 2001**

| Year | Population | Morbidity | Mortality | Mortality percentage |
|------|------------|-----------|-----------|----------------------|
| 1996 | 231,412 | 263 | 7 | 3% |
| 1997 | 231,412 | 129 | 9 | 7% |
| 1998 | 220215 | 18 | 0 | 0 |
| 1999 | 221229 | 492 | 33 | 6.7% |
| 2000 | 178,341 | 27 | 2 | 7% |
| 2001 | 179,233 | 957 | 54 | 5.6% |

Source: (Kabwe District Health Office, 2000)

From the table, cholera outbreak in Kabwe has been a public health concern.

The Provincial Health Office provides the health care services in Kabwe, and it has been very active in providing technical support in the prevention of cholera epidemics. Kabwe District Health Management Team supervises 17 health centers within the District.

The District Health Management Team is trying to establish a referral system with the traditional healers who are part of the community-based agents.

Private surgeries and pharmacies scattered within the district also provide health services to the people of Kabwe.

All these health institutions if they work together in harmony should be able to prevent cholera out breaks in Kabwe.

Cholera can develop and kill within a day and attack a substantial proportion of a community. As depicted from the problem analysis diagram, factors contributing to its reoccurrence in Kabwe urban include:

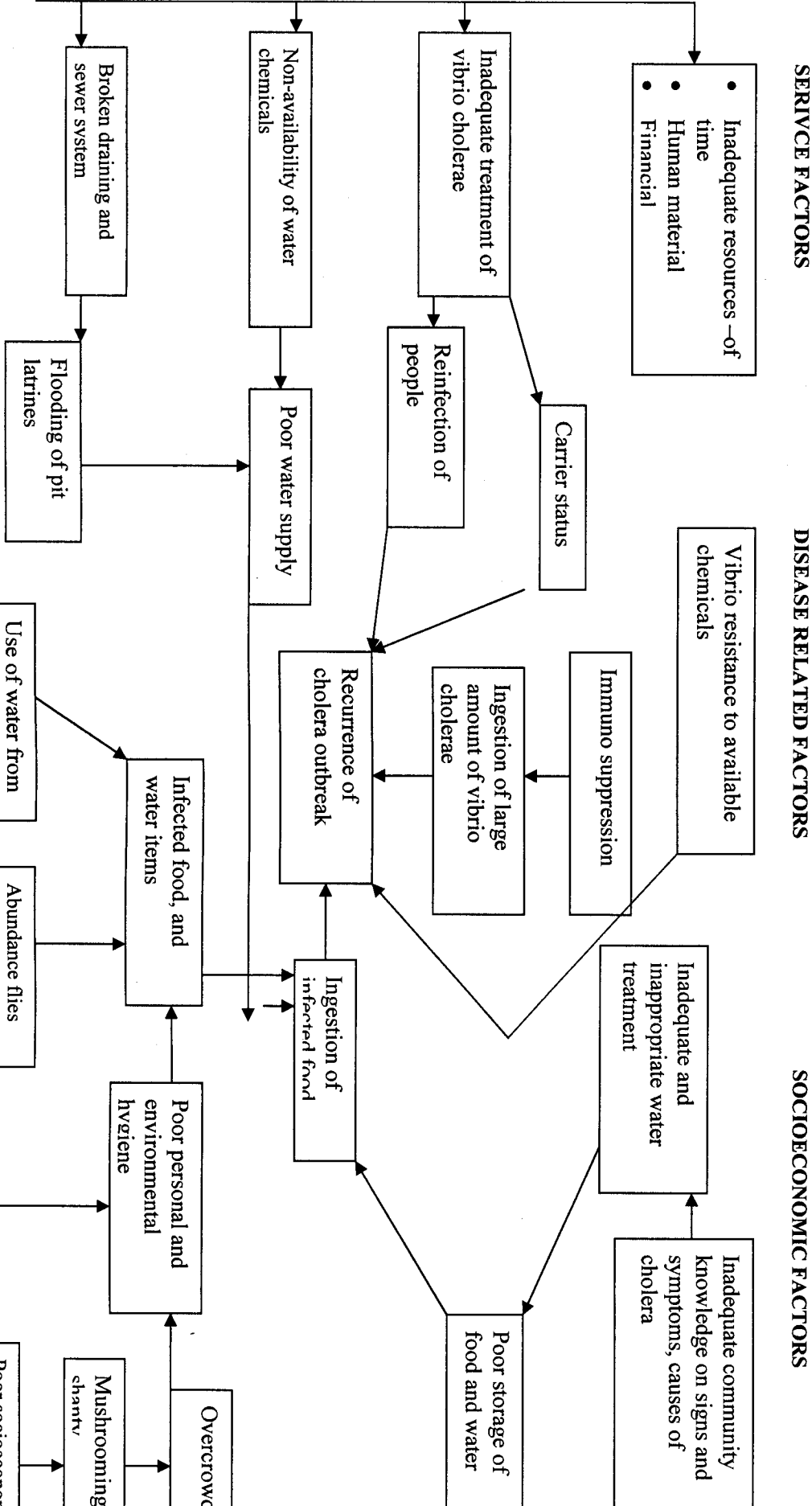
- **Service Factors**

Inadequate resources in terms of money to buy chemicals that can be used to adequately treat water before consumption has contributed to cholera outbreaks. In Kabwe, most of the residents are out of employment and cannot afford to rent better houses. They opt to live in unplanned compounds where there is poor water supply and inadequate sanitation facilities. Cholera is spread through contaminated water and food.

The insufficient Environmental Health Officers and other health workers contribute to inadequate health education on public health. This has led to the indiscriminate disposal of refuse. Uncollected refuse on the other hand predisposes people to cholera outbreaks.

PROBLEM ANALYSIS DIAGRAM

FACTORS CONTRIBUTING TO RECURRENCE OF CHOLERA IN KABWE URBAN



- **Disease Related Factors**

Cholera outbreak occurs when people ingest large numbers of *Vibrio cholerae*. It is caused by cholera toxin producing 01 strain antigenic sero group (Swerdlow DM 1992). Strain of *vibrio cholerae* that are resistant to the available water treatment chemicals and antibiotics contribute to cholera outbreak.

Social and Environmental Factors

Inadequate community knowledge may lead to poor personal and environmental hygiene practices thereby causing contamination of water and food. Water and food contaminated with *Vibrio cholerae* causes an outbreak of cholera. The high poverty levels among residents have contributed to street vending. The vendors sell food items, which is sometimes not covered, exposing it to flies. Flies are good vectors of *vibrio cholerae* that can contaminate food and water.

1.4 JUSTIFICATION

The frequency and magnitude of cholera outbreaks has plagued us from 1978 to date and it is likely to continue if more attention is paid on case management than on preventive measures. A study done by Lusaka City Council showed that people drink water from contaminated sources. This study was followed by intensive health education towards behavioural change. Still by 1994 Chime and Kapwepwe in their study confirmed that people are unable to practice what they know towards prevention of Cholera.

Despite the improvements made in water supply and health education, Cholera outbreaks have continued to occur in Kabwe district. It is for this reason that this study wishes to find out why Cholera persists in Kabwe. Is it due to extreme poverty levels?

or inadequate knowledge on cholera prevention in Kabwe. So a Cholera outbreak in Kabwe will be disastrous as it has the potential to spread to Lusaka , Copperbelt and the whole nation.

The results of this study will be useful to the community and other relevant authorities in formulating policies and guidelines on environmental health to prevent cholera outbreaks in Kabwe.

1.5 OBJECTIVES OF THE STUDY

1.5.1 General Objective

To determine factors contributing to the reoccurrence of cholera in Kabwe urban district with the aim of using the research results to formulate strategies that will reduce or eliminate cholera outbreaks

1.5.2 Specific objectives

- To identify causes of cholera reoccurrence in Kabwe
- To determine whether community's knowledge on Cholera contributes to its reoccurrence in Kabwe
- To assess whether or not poor sanitation is associated with reoccurrence of cholera in Kabwe
- To determine whether or not inadequate food safety contributes to cholera reoccurrence in Kabwe
- To verify whether or not poverty among community members can be associated with reoccurrence of cholera in Kabwe.
- To make recommendations to authorities that are concerned with cholera prevention

1.6 HYPOTHESIS

This study hypothesises that inadequate supply of safe drinking water, inappropriate observation of personal hygiene practices, lack of proper maintenance of environmental sanitation and high poverty levels contribute to the outbreak of cholera among the inhabitants living in Kabwe district.

Table 4

1.7 DEFINITION OF TERMS

| Term | Definition |
|---|---|
| Reoccurrence of cholera | Outbreak of cholera in every rainy season |
| Sanitation | Safe disposal of refuse, human excreta, solid and liquid Wastes. |
| Source of water supply | Provision of safe and adequate water supply. |
| Food Hygiene practices | Provision of safe food_free from Vibrio Cholerae |
| Knowledge on cholera transmission | Information and skills that the respondent has acquired through health education. |
| Vibrio cholerae | Agent that causes cholera |
| Educational level | Type of educational level last attended |
| Political involvement in street vending and illegal allocation of plots | Political leaders allowing street vending and illegal allocation of plots. |
| Family size | Number of people living per household |

Table 5

1.8 FRAMEWORK FOR DEFINING VARIABLES

| Conceptual definition of variables | Operational Definition (Indicator) | Scale of measurement (cut offpoint) |
|------------------------------------|---|-------------------------------------|
| Cholera reoccurrence | Out break of cholera every season | -out break -no out break |
| Environmental Sanitation | Use of dust bins or pit for refuse disposal Absence of heaps of uncollected refuse Use of own toilet | Good |
| | Use of toilet with neighbors Disposal of refuse in an open area Presence of sewer effluent in the area | Poor |
| Source of water supply | Use of unprotected shallow wells Broken water taps | Unsafe |
| | Use of protected wells Use of boreholes Use of piped water | Safe |
| Food safety | Buying uncovered food items form street vendors Eating food without either washing hands or washing food items Leaving food items uncovered | Unsatisfactory |
| | Buying covered food items from street vendors. Stored food should be covered Warming food before eating Washing hands before eating | Satisfactory |
| Knowledge levels on cholera | Able to mention the cause of cholera correctly | High 11-15 |
| | Able to mention signs and symptoms of cholera | Medium 6-10 |
| | Able to mention factors that enhance | |

| | | |
|---|---|--|
| | transmission of Vibrio cholera Able to mention correctly the preventive measures for cholera | Low 0-5 |
| Vibrio Cholerae | Able to mention the germ causing cholera Unable to give a response | Excellent Unsatisfactory |
| Educational level | University /college Secondary Primary None | High Medium Low Poor |
| Family size | 7 and above people 4-6 members 1-3 members | Large family Medium family Small family |
| Political involvement in street vending and allocation of plots in unplanned settlement areas | Politicians allowing street vending against city council regulations Politicians and councilors giving plots without knowledge of the city council | Involved Not involved |

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 INTRODUCTION

Cholera is a highly fatal epidemic disease that has widely spread since 1961 and now affects at least 98 countries. Cholera is a serious acute intestinal infection caused by a germ called *vibrio cholerae* (WHO, 1992).

The disease is characterized by a sudden onset of vomiting, profuse rice water–stool and rapid dehydration. Rapid dehydration is due to loss of water in the body and death may occur within 24 hours. The devastating effects of cholera can cause a lot of panic in the community and the country as a whole. Cholera is not only a direct concern to the nation in which it occurs but also a health threat to neighbouring countries and the rest of the world. It is a real historical health problem that requires international co–operation and assistance if control measures are to succeed.

2.2 GLOBAL PERSPECTIVE

Cholera has spread through out the world in the seven pandemics since the 1800s. The seventh pandemic has affected more than 100 countries. The severely affected countries have reported national attacks of over 1% of their populations. In some areas with severe epidemics attack rates of 20% have been recorded while case fatality rates have been as high as 33%-50% in areas where medical treatment is not available (Werner, D.B, 1998).

The sixth pandemic of cholera spread through out the world before the 20th century including the three successive seventh pandemic of cholera that affected the United States of America in the 19th century. The current 7th pandemic of cholera began in

Asia in 1961 and spread to Africa, Europe and Oceania. From 1961 to 1990 41 sporadic cases of cholera were reported among USA travelers returning from countries with cholera (Centre for Disease Control; unpublished data: 1991).

Cholera in Latin America

Over 188,000 cases of cholera were reported in 12 countries of Latin America. Five of these included; Brazil, Chile, Columbia, Ecuador and Peru. These countries accounted for 78% of the total numbers of cases and over 13,000 deaths in 1991 alone were reported (WHO, 1991).

However, the reports that were published in the following year showed an increase in the number of cholera cases in Latin America. In Peruvian cities (south America) a total of 358,881 cholera cases and 3,871 deaths were reported from 14 countries in South America (Centre for Disease Control, unpublished data, 1992).

In Latin America a study was done to determine the risk factors associated with transmission of cholera. The reported vehicle of cholera transmission included: contaminated water, rice, raw oysters, improper preserved fish and under cooked shellfish (Blake, P.A, 1980).

In 1991 a study on 17 cases associated with the cholera epidemic in South America was conducted among the USA residents. The results of the study showed that six of the cases associated with cholera were travelers to South America and eleven were persons who ate crabs brought back from Ecuador by travelers. The study did not document any secondary spread of the disease (CDC, unpublished data, 1992).

From these studies, it suffices to say that cholera can be transmitted through contamination of water which occurs when infected people with *Vibrio cholerae* pass faeces in water used for drinking. Eating contaminated food can transmit cholera and infected persons who travel from epidemic to non-epidemic areas can spread the infection.

Cholera in Asia

The seventh pandemic began in Asia in 1961 and spread to Africa, Europe and Oceania. In Asia a total of 12,785 cases were reported by 12 countries compared to 20,872 cases in 11 countries in 1988. A large out break was reported by people's Republic of China during 1989 epidemic that affected Xinjiang Autonomous Region. Another epidemic had occurred in the same season in 1988 and the source in the both years was a contaminated water supply (Adapted from weekly epidemiological record 1990; Enteric disease, CDC).

In Japan *Vibrio cholerae* was isolated from the mouth of the Tsurumi River during 1978 cholera out break. The organisms were subsequently traced to a clinic whose septic tank discharged its contents into a tributary of the Tsurumi River (Fukumi, H.1979).

During the 1980 epidemic a study was conducted on 18 cases and 27 carriers of cholera. The study investigations linked all cases and infection to wedding ceremonies and dinner parties held at the center. The infected persons had either attended a function at the center or had eaten from a box of food distribution to family friends and neighbors. The food implicated by epidemiological evidence was imported rock lobsters (Tropical Disease Bulletin, Journal volume, 78, No/8 1981).

Asia continues to experience cholera out breaks even in recent years. The continent reported 90,862 cholera cases and 1,809 deaths representing a five and half fold increase in both the number of cases and deaths (WHO, 1994).

Cholera in Europe

Cholera has been introduced to Europe several times during the present pandemic. The introduction was by sea, air but it has failed to gain foot owing to efficiency in the health services and their surveillance (GRZ/World Bank Report, 1993).

In Europe 11 cases mostly imported were reported by 6 countries in 1989 unlike in 1988 when four countries reported 14 cases. Of these cases only two indigenous cases in Yugoslavia were associated with waterborne transmission (St Louis, et.al 1990).

Cholera cases were reported for the first time in Romania in 1990. It occurred in Danube delta area and primary source of infection was traced from Delta River. People got infected after drinking water from Delta River contaminated by sewer effluent (WHO, 1991).

2.3 REGIONAL PERSPECTIVE

West Africa

Cholera is attracting increased scientific interest. West Africa was virtually free of cholera between 1894 and 1970. In 1970 a major epidemic began in Guinea and subsequently spread through out West Africa causing an estimated 150,000 cases and 20,000 deaths in the first wave. It was in this epidemic that direct person-to-person

cholera transmission at festivals, assemblies and funerals was more evident (Goodgame and Greenough, 1975).

Cholera in Guinea Bissau

In 1994 cholera epidemic in Guinea Bissau resulted in 15,878 reported cases and 306 deaths. Following this epidemic the Ministry of Health mandated that the bodies of persons dying of cholera be disinfected before burial. Cholera out breaks occurred in several villages following funerals of cholera patients in the region of Biombo.

To determine the influence of disinfection and funeral activities on cholera transmission, MOH in Guinea Bissau analyzed surveillance data and conducted a case control study following a funeral. The study registered 1,188 cholera cases in Biombo. About 65% of the cholera cases were females. The results of this study showed that 86% of persons with cholera who were 15 years or older reported having contact in the one week before the onset of diarrhea with a corpse. About 62% of the cholera cases died. The study also showed that cholera attack rate was 4.8% in five villages where bodies were not disinfected before burial while the attack rate in 26 villages where bodies were disinfected before burial was 3.0% (Swerdlow, DL, 1994). Previous investigations on cholera in West Africa demonstrated the importance of contaminated food and water in the transmission of cholera (Isaacson, M.1994).

Cholera in Central Africa

In 1992 an epidemic of cholera caused by *Vibrio cholerae* 01 serotype affected 1,044 persons in western Burundi. Ministry of Health in Burundi conducted a case control study in Rumonga to identify factors associated with cholera out breaks. A case patient was defined as any person aged above 5 years admitted to Rumonga cholera

treatment center with diarrhoea. A total of 272 patients were admitted to the center and 6 of them died. The results of the study showed that case patients were significantly more likely than neighborhood controls to have drunk untreated water from or bathed in lake Tanganyika during the three days before the onset of illness (BMOH, 1994).

In 1990 an epidemic of cholera affected a Mozambican refugee camp in Malawi. They were 74,000 refugees living in the camp when the outbreak occurred. About 86% of the patients had arrived in Malawi less than three months before the onset of illness. To determine modes of transmission of *vibrio cholerae* during the outbreak a case control study was conducted. The results of the study revealed that there were 1,931 clinically recognized cases and 68 deaths among the Mozambican refugees living in Malawi. The case-fatality rate during this epidemic was 3.4%. The results of the study also reported that the outbreak mainly affected new arrivals that had unexpectedly come to the camp before sanitary facilities were put in place.

Factors that were associated with cholera out breaks in the refugee camp included:

- A large influx of refugees that increased from 57,000 to 74,000 persons
- Inadequate sanitary facilities and water supply to accommodate the 1000 new arrivals per day at the camp.
- People drank contaminated water from a river
- Inadequate firewood to warm their food and refugees were compelled to eat unwarned food.

(Hatch, D.L, et. al, 1994)

It can be observed from this study that, over crowding, eating unwarmed food poses a great deal of danger to the general public and these can be a medium for cholera transmission.

Cholera in Southern Africa

In 1993 Cholera out break occurred in Zimbabwe. To identify risk factors and potential control measures, trainees in the University of Zimbabwe master of Public Health and Field Epidemiology Training Programme in collaboration with members of the University's Department of Community Medicine National and Local Health officials conducted a case control study.

The investigations of the study reported no specific source of the outbreak though 18% of the 55 case patients reported consumption of mahewu and 27 (50%) of 54 controls reported consumption of mahewu. Mahewu is a traditional brew that is prepared in Harare households and allowed to ferment for 18 hours (Hatch, D.L, et.al 1994).

Cholera in South Africa

South Africa is another African country that has not been spared by cholera epidemics. During an epidemic that occurred in 1980-1987, 25,251 cases were bacteriologically proven. The case fatality rate was 1.4%. This outbreak occurred in the summer rainfall season. The vast majority of patients were black South Africans living in rural areas with an average rainfall in excess of 600mm (South African Journal, 1991).

A study was conducted to determine risk factors associated with cholera transmission among black people living in the village of Molethane .The results of the study revealed that the 1,977 patients diagnosed with cholera 1,968 were blacks, 6 Asians 2 coloured and 1 white. The report also showed that shared food brought into miners' quarters after a week of leave in cholera infected rural areas was accompanied by an increased risk of food borne-infection (Sinclair, GS et.al 1982).

These studies it is suffice to say cholera can be transmitted in various ways. Some of the ways include, faecal contamination of water that occurs when infected individuals with *vibrio cholerae* pass faeces in water that comes in contact with human beings in any way. Contamination of food and utensils can also transmit cholera.

2.4 LOCAL PERSPECTIVE

Cholera remains one of the most persistently occurring epidemics in Zambia. The country has experienced two major out breaks of cholera in recent years. The first outbreak was in 1980-81 covering Northern and Luapula provinces. The second outbreak occurred in 1990-91. In both out-breaks, several lives were lost, leaving behind many orphans, widows and widowers. Unfortunately, only few people realized that cholera incidence is accelerated by poor sanitation; practice of unhygienic methods of living and drinking contaminated water (Chitanda R, 1996).

A study was conducted in Lusaka during the 1990-91 and 1991-92 cholera outbreaks. After the study it was established that 90% of cases came from areas with inadequate water supply and sanitation .The study involved three compounds namely; Kanyama, George and Kabanana. The assessment of water supply and sanitation in the three

compounds revealed that a large percentage of water supply is from unprotected shallow wells, which were found to be contaminated as a result of their proximity to pit latrines, enhanced by high water tables. The fact that every household has its own shallow well and a pit latrine squeezed on a small plot compounded this problem (Lusaka City Council, 1992).

The assessment in the three compounds also identified three risk factors that enhanced transmission of cholera in Lusaka and these included:

- Continuous contamination of water from pit latrines and soak aways in the surroundings due to high water tables and porous soils.
- Surface contamination of water from dust.
- Contamination of water by use of individual dirty containers and hands.

These outlined problems relating to water supply and sanitation in the peri-urban areas of Lusaka have had a bearing on the high numbers of cholera cases in peri-urban areas that occurred in 1990, 1991 and 1992 cholera outbreaks. Kapwepwe and Chime (1994) conducted a study on community response to cholera in Lusaka. The results of the study indicated that although communities were knowledgeable on the different aspects of cholera the knowledge has not been put into practice fully and this has contributed to cholera outbreaks.

Kaluba and Mwale (1992) conducted a study of primary schools in cholera-affected areas to identify risk factors. The results of the study demonstrated that the practice of hand washing in a communal basin was one of the major public health risks in the transmission of cholera. The results also indicated that although there is intensive

health campaign to boil drinking water, the method has not been adopted as people consider tap water to be safe.

The study brought up very important issue of campaign. Campaign is very important to enlist public support when there is an outbreak of cholera so that people are informed of the outbreak and how best the problem can be controlled.

2.5 CONCLUSION

Literature on cholera in Latin America, Asia and Africa has been reviewed. It has demonstrated that cholera is a real health problem worldwide. It is a serious acute intestinal infection caused by a germ called *Vibrio cholerae*. *Vibrio cholerae* is transmitted in various ways and some of the common sources of infection include; drinking contaminated water that has been contaminated with *Vibrio cholerae*. Food contaminated during or after preparation can spread the infection. Literature review has also indicated that man is main reservoir of the infection. The oral- faecal route plays a major role in the transmission of cholera.

CHAPTER THREE

3.0 METHODOLOGY

3.1 RESEARCH DESIGN

Research design is a scheme of action (frame work) for answering a research question or questions (Treece and Treece, 1986). Research design includes, a research setting, operational definitions, relationship between variables, samples and sampling procedure, instruments, methods of data analysis and use of data.

A cross section descriptive study was used for this study. Descriptive survey was chosen for this study because it helped to determine relationships between variables in this study.

This approach was a non-experimental study that investigated the inhabitants of Makululu compound in Kabwe urban. It was hoped the approach would provide accurate qualitative description of cholera out break in Kabwe urban.

The approach involved systematic collection and presentation of data in order to give a clear picture on the factors contributing to the reoccurrence of cholera outbreaks in Kabwe urban. The study was a qualitative study and it aimed at quantifying the distribution of variables in the study population. It also aimed at generating knowledge on the factors contributing to the reoccurrence of cholera in Kabwe urban. The researcher was able to achieve this through open-ended questions that were posed to the respondents.

The advantages of using cross section descriptive study include:

- **Factual**-because descriptive surveys provide actual figures that can be used to suggest change and new goals.
- **Enlightening** –descriptive survey is a way of gaining insight into the present. It probes attitudes, reveals problems and uncovers strength in the sample.
- **Point of focus**-they reveal why there has been a gain or loss
- **Accurate**-its accurate because it produces results that are precise and correct misconceptions.
- **Practical**-because they have a definite purpose and a known goal.
- **Specific**- because they concentrate on a definite sample
- **Objective**-because observations made are based on quantified data that is specific.

Disadvantages

- Descriptive studies lack manipulation of independent variables
- Cannot progressively investigate one aspect after another of the independent variables to get closer to the cause.

3.2 RESEARCH SETTING

The study was conducted in Makululu compound in Kabwe district urban. It is the largest compound with a population of 28,865 (CSO, 2000). Large number of cholera cases come from this compound.

The worst cholera out break that occurred in Kabwe in 2001, Makululu compound recorded 312 cases out of the 957 cholera cases that were recorded in the entire district (KDHMT, 2001).

The compound is approximately 4km from the town center. It is an unplanned settlement area where most of former ZCCM employees have settled. The vast majority of the people are Lenjes, Lambas, who are the indigenous people of Kabwe district. There are also other tribes that have settled in Kabwe such as Bembas, Lalas, and the Nyanja speaking people due to the mining in the area.

A good number of people are in informal sector such as marketeering, street vending and peasant farming. In addition various trading companies such as Barnet, Supreme Furnishers, Zambia-China Textiles, Zambia Railways and many others provide employment opportunities for people of Kabwe. Kabwe district has 42 primary/basic schools, 11 high schools and 10 institutions of higher learning. The main sources of water supply include; boreholes, communal taps and shallow wells.

3.3 STUDY POPULATION

The study population comprised of all households in Kabwe urban and accessible population consisted of households in Makululu compound. The study unit consisted of all adults aged 18 years and above living in Makululu compound. The investigator selected this age group owing to the anticipation that this age group could comprehend the questions in the questionnaire on cholera reoccurrence in Kabwe urban.

In this age group, 18 years and above the majority are married (DHS, 1996). Most of the time they go to market places which have a lot of refuse and are more likely to buy food items that are infected with *vibrio cholerae*.

3.4 SAMPLE SELECTION

Makululu population was picked purposely because large numbers of cholera cases come from this compound in every outbreak. It was also selected because it was easily accessible to the investigator. Stratified random sampling was used to stratify the compound into five zones. Makululu compound has five zones namely: Moomba, Zambezi, Makululu, Mudenda and Chililalila. Simple random sampling was used to select two zones from the five zones and the researcher conducted the study in the selected zones. This method was selected to give every zone an equal and non-zero chance of being included in the study and in order to accord every household an equal chance of being included in the study, a systematic random sampling was used to choose 50 households. However, the first household was picked by simple random sampling (rotary) and every tenth house was interviewed.

3.5 SAMPLE SIZE

The sample size comprised 50 households picked in Makululu compound. This sample size was selected for the following reasons:

- Feasibility of sample size in terms of:
- Human resources
- Transport cost
- Financial resources
- Material resources
- Time will be limited as the study is an academic exercise
- The quality of research data will be good considering the variables under study.

3.6 DATA COLLECTION TOOL

There are several tools that can be used to collect data. A questionnaire is such a tool that can be used in data collection. This can be self administered or administered questionnaire. A structured questionnaire was used to interview heads of households. In cases where heads of households were absent, any adult aged 18 years and above were interviewed using a structured questionnaire.

Some of the advantages and disadvantages associated with a questionnaire include:

Advantages

- It's less expensive
- Saves time, human, and financial resources
- Its convenient for collecting data from large population when administered collectively to a study population
- It offers greater anonymity, as there is no face-to –face interaction between respondents and interviewer.
- Helps to increase the likelihood of obtaining accurate information

Disadvantages

- Low respondent rate especially with self-administered questionnaire
- Self-selecting bias for example not every one who receives the questionnaire returns it
- Lacks opportunity to clarify issues if for any reason, respondents do not understand some questions.
- The respondents who can read all questions before attempting to answer all questions may influence the response to some questions.
- Consultations are possible with others especially mailed questionnaires.

- A response cannot be supplemented with other information

An interview schedule was used to collect data. An interview schedule is a written list of questions, open, closed-ended prepared for use by an interviewer in person-to person interaction (this may be face-to –face, by telephone or any other electronic media). (Kumar, R. 1999).

The investigator, for the following reasons preferred to use the structured face-to – face interview:

- Its less expensive in terms of time
- It will be suitable because the study population selected will comprise largely people who are illiterate
- It will be appropriate for probing respondent's sentiments and concerns about cholera out breaks in Kabwe urban. This will enable the investigator to collect supplementary information relevant to the topic of study.
- It enables the investigator to clarify any unclear questions and statements.

However, this approach may have limitations such as presence of interviewer may lead to the interviewee not giving precise and accurate answers especially in close ended questions (Cormack D, 1984).

3.7 DATA COLLECTION TECHNIQUE

Owing to the many disadvantages that are associated with a questionnaire, an interview schedule with heads of households or any member aged 18 years and above in the absence of the head of household was conducted. This was done through a standardized administered questionnaire.

In order to address miscoding of responses, most of the questions in the questionnaire were closed ended. The responses were predetermined and the interviewee was required to select the best response. The researcher explained the significance of the study to every interviewee in order to make respondents feel part and parcel of the interview schedule.

3.8 PILOT STUDY

“ A pilot study is a small-scale version of the actual study conducted with the purpose of testing and potentially refining the research plan” (Dempsey and Dempsey, 2000).

A pilot study was conducted two weeks before the actual study in Kalingalinga compound in Lusaka. Five households were selected for the pilot study conveniently because of limited time to conduct a simple random sampling. Pre test ensured clarity of questions and consistency in methods of questioning.

3.9 VALIDITY AND RELIABILITY

The pilot study was to test the validity of the questionnaire. The researcher was able to ascertain the instrument measured accurately what it intended to measure. It also proved how reliable the questionnaire was by obtaining the same results each time it was administered. The pilot study also ascertain appropriateness and clarity of the research tool.

The following measures were observed by the researcher to ensure validity and reliability of data:

- Questionnaires were kept under lock by the researcher

- All questionnaires were numbered at the start of each field work
- A codebook was prepared and it was a replica of the data collection tool. It was used to scrutinize each variable.
- The investigator reviewed raw data for completeness, coding errors as this clarified any recording mistakes.

3.10 ETHICAL AND CULTURAL CONSIDERATION

“What is ethically and morally acceptable of human subject” (Reynolds, A 1983). The researcher got a letter from the research supervisor. The purpose of the letter was to seek for permission to conduct the study in Makululu compound from the relevant authorities at various levels. Verbal consent was obtained from each respondent before conducting the interview and respondents were assured of confidentiality by the interviewer.

CHAPTER FOUR

4.0 DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 INTRODUCTION

Data was collected and was first edited for completeness. It was analysed by ordering the information according to the research questions and was put on the data master sheet to avoid losses and mixing. Responses to open-ended questions were categorised, coded and entered on the data master sheet.

4.2 DATA ANALYSIS

A preliminary study was conducted and served as a pre-test of the actual study. It gave the researcher an insight of the procedure to be used for data processing and analysis. The pilot study aimed at showing any weakness of the questionnaire or its instructions. The researcher rectified any anomalies that were detected during the pilot study. Data was edited for completeness and was put on data master sheet to avoid mixing and losses. Responses to open-ended questions were categorized and coded. Data was analyzed and processed manually using a data master sheet and a scientific calculator. The analyzed data was presented in frequency, tables, cross tabulation and numerical description was given to each table.

4.3 PRESENTATION OF FINDINGS

Data was presented in summary form in tables. Cross tabulations for most of the variables were expressed in frequencies and percentages.

DEMOGRAPHIC DATA

TABLE 6

| VARIABLE | FREQUENCY | RELATIVE FREQUENCY (%) |
|----------------------------------|-----------|---------------------------|
| <u>SEX:</u> | | |
| Male | 20 | 40 |
| Female | 30 | 60 |
| Total | 50 | 100 |
| <u>AGE:</u> | | |
| 18 – 24 years | 16 | 32 |
| 25 – 34 “ | 20 | 40 |
| 35 – 44 “ | 7 | 14 |
| Above 45 years | 7 | 14 |
| Total | 50 | 100 |
| <u>MARITAL STATUS:</u> | | |
| Married | 35 | 70 |
| Single | 14 | 28 |
| Widow | 0 | 0 |
| Widower | 0 | 0 |
| Divorced | 2 | 2 |
| Total | 50 | 100 |
| <u>EDUCATIONAL LEVEL:</u> | | |
| Never attended school | 3 | 6 |
| Primary | 32 | 64 |
| Secondary | 14 | 28 |
| College | 1 | 2 |
| University | 0 | 0 |
| Total | 50 | 100 |

DEMOGRAPHIC DATA (continued)

| VARIABLE | FREQUENCY | RELATIVE FREQUENCY (%) |
|---|------------------|-----------------------------------|
| <u>EMPLOYMENT:</u> | | |
| Unemployed | 26 | 52 |
| Self employed | 18 | 36 |
| Formal employment | 0 | 0 |
| Others specify | 6 | 12 |
| Total | 50 | 100 |
| <u>NUMBER OF ROOMS IN THE HOUSE:</u> | | |
| One | 2 | 4 |
| Two | 18 | 36 |
| Three | 9 | 18 |
| Four and above | 21 | 42 |
| Total | 50 | 100 |
| <u>RELIGION:</u> | | |
| Catholic | 16 | 32 |
| Protestant | 33 | 66 |
| Moslem | 0 | 0 |
| Others specify | 1 | 2 |
| Total | 50 | 100 |
| <u>FAMILY SIZE:</u> | | |
| 1 – 3 | 12 | 24 |
| 4 – 6 | 22 | 44 |
| 7 and above | 16 | 32 |
| Total | 50 | 100 |

SOCIAL AND ENVIRONMENTAL FACTORS

Table 7: Pit Latrine status of respondents

| VARIABLE | FREQUENCY | RELATIVE FREQUENCE (%) |
|----------------------------|-----------|------------------------|
| <u>PIT LATRINE:</u> | | |
| Use own pit latrine | 27 | 54 |
| Share pit latrine | 23 | 46 |
| Neighbours | 0 | 0 |
| Use open space /Bush | 50 | 100 |

The table shows that the majority of respondents 27(54%) have pit latrines while 23(46%) of respondents share pit latrines with their neighbours. No respondent use open space or bush.

TABLE 8: People washing hands after using the toilet

| DO PEOPLE WASH THEIR HANDS AFTER USING THE TOILET | FREQUENCY | RELATIVE FREQUENCY (%) |
|---|-----------|------------------------|
| Yes | 30 | 60 |
| No | 10 | 20 |
| Some times | 10 | 20 |
| Total | 50 | 100 |

The table shows that the majority of the respondents 30 (60%) are aware that people wash hands after using the toilet.

TABLE 9: Source of Water Supply

| SOURCE OF WATER SUPPLY | FREQUENCY | RELATIVE FREQUENCY (%) |
|-------------------------|-----------|------------------------|
| Shallow wells | 4 | 8 |
| Communal taps | 45 | 90 |
| Protected well/Borehole | 1 | 2 |
| Others specify | - | 0 |
| Total | 50 | 100 |

The table shows that the majority of respondents 45(90%) use communal taps while 4(8%) use shallow wells and 1(2%) use protected well as a source of water supply

TABLE 10: Methods of ensuring water for drinking is safe

| HOW DO YOU ENSURE WATER FOR DRINKING IS SAFE | FREQUENCY | RELATIVE FREQUENCY (%) |
|--|-----------|------------------------|
| Boiling | 5 | 10 |
| Chlorination | 14 | 28 |
| Nothing | 31 | 62 |
| Total | 50 | 50 |

The table show that the majority of the respondents 31(62%) do nothing to their drinking water where as 5(10%) boil their water and 14(28%) chlorinate their drinking water.

TABLE 11: Distance from the Pit Latrine to the source of water supply

| HOW FAR IS YOUR PIT LATRINE FROM YOUR SOURCE OF WATER SUPPLY | FREQUENCY | RELATIVE FREQUENCY (%) |
|--|-----------|------------------------|
| Far (more 10 metres) | 48 | 96 |
| Near (less than 10m) | 2 | 4 |
| Total | 50 | 100 |

The table shows that the majority of respondents 48(96%) had pit latrines far from the source of water supply while 2(4%) of the respondents had their pit latrines situated near their source of water supply.

TABLE 12: Places where respondents disposed their refuse

| REFUSE DISPOSAL | FREQUENCY | RELATIVE FREQUENCY (%) |
|-----------------|-----------|------------------------|
| Rubbish pit | 27 | 54 |
| Dust bin/sack | 3 | 6 |
| Open space | 20 | 40 |
| Others specify | 0 | 0 |
| Total | 50 | 100 |

The table shows that the majority of the respondents 27(54%) disposed their refuse in the rubbish pits while20(40%) used open space and 3(6%) uses either dust bins or sacks.

TABLE 13: Garbage collection from the compound

| IS YOUR GARBAGE COLLECTED FROM THE COMPOUND | FREQUENCY | RELATIVE FREQUENCY (%) |
|---|-----------|------------------------|
| Yes | 0 | - |
| No | 50 | 100 |
| Total | 50 | 100 |

The table shows that all the respondents to 50(100%) said that garbage in not collected from the compound.

TABLE 14: Levels of knowledge of respondents

| LEVEL OF KNOWLEDGE | FREQUENCY | RELATIVE REQUENCY (%) |
|--------------------|-----------|-----------------------|
| High | 23 | 46 |
| Medium | 24 | 48 |
| Low | 3 | 6 |
| Total | 50 | 100 |

The table shows that 24(48%) of respondents had adequate knowledge on cholera and its prevention while 23(46%) had high knowledge and 3(6%) of the respondents had low knowledge.

Table 15: Knowledge of respondents on Cholera and its prevention

| VARIABLE | FREQUENCY | RELATIVE FREQUENCY (%) |
|------------------|-----------|------------------------|
| Cause of cholera | 25 | 50 |
| Germs don't now | 4 | 8 |
| Witch craft | 0 | 0 |
| Flies | 3 | 6 |
| Dirty | 14 | 28 |
| Air | 4 | 8 |
| | | |

| | | |
|---|----|-----|
| <u>SIGN AND SYMPTOMS OF CHOLERA:</u> | | |
| Coughs out blood | 0 | 0 |
| Losses weight | 2 | 4 |
| Severe diarrhea and vomiting | 44 | 58 |
| Other specify | 4 | 8 |
| Total | 50 | 100 |
| <u>CARE OF A FAMILY MEMBER WITH CHOLERA</u> | | |
| Give traditional medicine and keep in the house. | 3 | 6 |
| Give ORS | 0 | 0 |
| Take the patient to the clinic | 47 | 94 |
| Total | 50 | 100 |
| <u>CAN CHOLERA BE PREVENTED?</u> | | |
| Yes | 36 | 72 |
| No | 13 | 26 |
| Not too sure | 1 | 2 |
| Total | 50 | 100 |
| <u>EXPLANATION ON HOW CHOLERA CAN BE PREVENTED</u> | | |
| Keeping the surrounding clean | 22 | 44 |
| Washing hands after using the toilet and before handling food | 23 | 46 |
| Boiling drinking water | 15 | 30 |
| Digging pit latrine | 9 | 18 |
| <u>CAUSE OF RAMPANT STREET VENDING IN KABWE URBAN</u> | | |
| Encouragement from the politician | 4 | 8 |
| Poverty | 45 | 90 |
| All the above | 1 | 2 |
| Total | 50 | 100 |

| <u>DO YOU BUY FOOD FROM STREET VENDORS</u> | FREQUENT | RELATIVE FREQUENCY (%) |
|---|------------------|-------------------------------|
| Yes | 38 | 76 |
| No | 12 | 24 |
| Total | 50 | 100 |
| <u>SUGGESTIONS ON HOW CHOLERA CAN BE PREVENTED</u> | FREQUENCY | RELATIVE FREQUENCY (%) |
| Avoid street vending | 22 | 44 |
| Cleaning the environment | 23 | 46 |
| Washing hands after using the toilet and before handling food | 19 | 38 |
| I don't know | 6 | 12 |
| Boiling/chlorinating drinking water | 16 | 32 |
| Digging rubbish and pit latrines | 12 | 24 |
| Covering left over food | 5 | 10 |
| Total | 103 | 206 |
| <u>CAN CHOLERA BE PREVENTD?</u> | | |
| Yes | 41 | 82 |
| No | 9 | 18 |
| Total | 80 | 100 |
| <u>EXPLANATION ON HOW CHOLERA CAN BE TREATED</u> | | |
| Boiling drinking water | 3 | 6 |
| Taking the patient early to the clinic | 22 | 44 |
| Giving IV fluids to the patient | 13 | 26 |
| Giving ORS to the patient | 8 | 16 |
| Giving drugs to the patient | 3 | 6 |
| Giving traditional medicine | 2 | 4 |
| Total | 51 | 102 |

| | | |
|--|----|-----|
| <u>DO YOU EAT LEFT OVER FOOD?</u> | | |
| Yes | 34 | 68 |
| No | 16 | 32 |
| Total | 50 | 100 |
| <u>HOW DO YOU STORE AND USE THE LEFT OVER FOOD?</u> | | |
| Cover it and reheat before eating | 32 | 64 |
| Cover and eaten cold in the next meal | 2 | 4 |
| Not covered and eaten cold in the next meal | | |
| Put in the fridge | 34 | 68 |
| Total | 66 | 132 |
| | 50 | 100 |
| <u>Total</u> | | |
| <u>WHEN DO YOU WASH HANDS?</u> | | |
| Before serving food | 28 | 56 |
| After serving food | 1 | 2 |
| Before eating food | 21 | 4 |
| Total | 50 | 100 |

TABLE 16: Sex of respondents in relation to the level of knowledge on Cholera and its prevention

| SEX | LEVEL OF KNOWLEDGE ON CHOLERA AND ITS PREVENTION | | | TOTAL |
|--------|--|---------|--------|----------|
| | HIGH | MEDIUM | LOW | |
| Male | 10(38%) | 8(38%) | 1(33%) | 19(38%) |
| Female | 16(62%) | 13(62%) | 2(67%) | 31(62%) |
| Total | 26(52%) | 21(42%) | 3(6%) | 50(100%) |

The table illustrates that the majority of respondents 31(62%) were female and most of them 16(62%) had high knowledge while males were 19(38%) and most of them 10(38%) had high knowledge on cholera and its prevention.

TABLE 17: Age of respondents in relation to the level of knowledge on Cholera and its prevention

| AGE GROUP | LEVEL OF KNOWLEDGE ON CHOLERA AND ITS PREVENTION | | | TOTAL |
|-----------|--|---------|----------|----------|
| | HIGH | MEDIUM | LOW | |
| 18 – 24 | 7(27%) | 7(33%) | 1(33%) | 15(30%) |
| 25 – 34 | 14(54%) | 6(29%) | 0 | 20(40%) |
| 35 – 44 | 4(15%) | 2(9%) | 1(33.3%) | 7(14%) |
| Above 45 | 1(4%) | 6(29%) | 1(33.3%) | 8(16%) |
| Total | 26(52%) | 21(42%) | 3(6%) | 50(100%) |

The table shows that the majority 26(52%) of the respondents had high knowledge on cholera and its prevention with most of them aging between 25 and 34 years.

TABLE 18: Marital status in relation to the level of knowledge on Cholera and its prevention

| MARITAL STATUS | LEVEL OF KNOWLEDGE IN RELATION TO THE LEVEL OF KNOWLEDGE ON CHOLERA AND ITS PREVENTION | | | TOTAL |
|----------------|--|---------|--------|----------|
| | HIGH | MEDIUM | LOW | |
| Married | 19(73%) | 14(66%) | 2(67%) | 35(70%) |
| Single | 7(27%) | 6(29%) | 1(33%) | 14(28%) |
| Widow | 0 | 0 | 0 | 0 |
| Widower | 0 | 0 | 0 | 0 |
| Divorced | 0 | 1(5%) | 0 | 1(2%) |
| Total | 26(52%) | 21(42%) | 3(6%) | 50(100%) |

The tables illustrates that the majority 19 (73%) of the respondents with high knowledge were married.

TABLE 19: Educational level of respondents in relation to the knowledge level on Cholera and its prevention

| EDUCATIONAL LEVEL | LEVEL OF KNOWLEDGE ON CHOLERA AND ITS PREVENTION | | | TOTAL |
|-----------------------|--|---------|--------|---------|
| | HIGH | MEDIUM | LOW | |
| Never attended school | 2(8%) | 0 | 1(33%) | 3(6%) |
| Primary | 15(58%) | 15(71%) | 2(66%) | 32(64%) |
| Secondary | 9(34%) | 5(24%) | 0 | 14(28%) |
| College | 0 | 1(5%) | 0 | 1(2%) |
| University | 0 | 0 | 0 | 0 |
| Total | 26(52%) | 21(42%) | 3(6%) | 50 |

The table shows that the majority 26(52%) of respondents had high knowledge and most of them 15(58%) had gone up to primary school level.

TABLE 20: Employment status of respondents in relation to the knowledge level on Cholera and its prevention

| EMPLOYMENT STATUS | LEVEL OF KNOWLEDGE ON CHOLERA AND ITS PREVENTION | | | TOTAL |
|-------------------|--|----------|----------|----------|
| | HIGH | MEDIUM | LOW | |
| Unemployed | 15(57%) | 9(42.8%) | 2(66.6%) | 26(52%) |
| Self employed | 9(34.6%) | 8(38%) | 1(33.3%) | 18(36%) |
| Formal employed | 0 | 0 | 0 | 0 |
| Other specify | 2(7.6%) | 4(19%) | 0 | 6(12%) |
| Total | 26(52%) | 21(42%) | 3(6%) | 50(100%) |

The table illustrates that the majority 15(58%) of respondents with high knowledge were not employed.

TABLE 21: Religion of respondents in relation to knowledge level on Cholera and its prevention

| RELIGION | LEVEL OF KNOWLEDGE ON CHOLERA AND ITS PREVENTION | | | TOTAL |
|----------------|--|---------|--------|----------|
| | HIGH | MEDIUM | LOW | |
| Catholic | 7(28%) | 8(38%) | 1(25%) | 16(32%) |
| Protestant | 18(72%) | 12(57%) | 3(75%) | 33(66%) |
| Moslem | 0 | 0 | 0 | 0 |
| Others specify | 0 | 1(4.7%) | 0 | 1(2%) |
| Total | 25(50%) | 21(42%) | 4(8%) | 50(100%) |

The table shows that the majority 25(50%) of respondents had high knowledge and most of them 18(72%) were Protestants.

TABLE 22: Toilet facility in relation to knowledge level

| TOILET FACILITY | LEVEL OF KNOWLEDGE ON CHOLERA | | | TOTAL |
|----------------------|-------------------------------|-----------|--------|----------|
| | HIGH | MEDIUM | LOW | |
| Use own toilet | 16(64%) | 10(45%) | 1(33%) | 27(54%) |
| Share with neighbour | 9(36%) | 12(54.5%) | 2(67%) | 23(46%) |
| Open space | 0 | 0 | 0 | 0 |
| Bush | 0 | 0 | 0 | 0 |
| Total | 25(50%) | 22(44%) | 3(6%) | 50(100%) |

The majority 16(64%) of respondents with high knowledge had their own pit latrine and 12(54%) of respondents with medium knowledge shared pit latrine with neighbours.

TABLE 23: Hand washing in relation to knowledge level on Cholera

| HAND WASHING AFTER USING THE TOILET | LEVEL OF KNOWLEDGE ON CHOLERA | | | TOTAL |
|--|--------------------------------------|---------------|------------|--------------|
| | HIGH | MEDIUM | LOW | |
| Yes | 13(50%) | 17(81%) | 2 | 32 |
| No | 5(19%) | 4(19%) | 1 | 10 |
| Sometimes | 8(31%) | 0 | 0 | 8 |
| Total | 26(52%) | 21(42%) | 3(6%) | 50 |

The majority 13(50%) of the respondents wash their hands each time they use the pit latrine while 17(81%) of respondents with medium knowledge washed hands after using the toilet.

**TABLE 24: Refuse disposal in relation to knowledge level on
Cholera and its prevention**

| REFUSE DISPOSAL | KNOWLEDGE LEVEL ON CHOLERA AND ITS PREVENTION | | | TOTAL |
|----------------------------|--|---------------|------------|--------------|
| | HIGH | MEDIUM | LOW | |
| Rubbish pit | 11(44%) | 14(63%) | 1(33%) | 26 |
| Dust Bin/sack | 0 | 1(5%) | 2(67%) | 3 |
| Open space | 14(56%) | 7(32%) | 0 | 21 |
| Others specify | 0 | 0 | 0 | 0 |
| Total | 25(50%) | 22(44%) | 3(6%) | 50 |

The table illustrates that the majority 14(56%) of the respondents with high knowledge use open space for refuse disposal while 14(63%) of respondents with medium knowledge had rubbish pits.

TABLE 25: Buying from street vendors in relation to knowledge level on Cholera and its prevention

| BUYING FROM STREET VENDORS | KNOWLEDGE ON CHOLERA AND ITS PREVENTION | | | TOTAL |
|----------------------------|---|---------|---------|----------|
| | HIGH | MEDIUM | LOW | |
| Yes | 20(77%) | 15(71%) | 3(100%) | 35(76%) |
| No | 6(23%) | 6(29%) | 0 | 12(24%) |
| Total | 26(52%) | 21(42%) | 3(6%) | 50(100%) |

The majority 20(77%) of the respondents with high knowledge buy food from street vendors.

TABLE 26: Treatment of water in relation to knowledge level on Cholera and its prevention

| TREATMENT OF WATER | KNOWLEDGE LEVEL ON CHOLERA AND ITS PREVENTION | | | TOTAL |
|--------------------|---|---------|---------|----------|
| | HIGH | MEDIUM | LOW | |
| Boiling | 2(7%) | 3(15%) | 0 | 5(10%) |
| Chlorination | 6(22%) | 8(40%) | 0 | 14(28%) |
| Nothing | 19(70%) | 9(45%) | 3(100%) | 31(62%) |
| Total | 27(54%) | 20(40%) | 3(6%) | 50(100%) |

The table shows that the majority 19(70%) of respondents with high knowledge never treated their drinking water.

TABLE 27: Treatment of water in relation to source of water supply

| TREATMENT OF WATER | SOURCE OF WATER SUPPLY | | | | TOTAL |
|---------------------------|-------------------------------|---------------------|--------------------------------|-----------------------|--------------|
| | SHALLOW WELL | COMMUNAL TAP | PROTECTED WELL/BOREHOLE | OTHERS SPECIFY | |
| Boiling | 2(50%) | 3(7%) | 0 | 0 | 5(10%) |
| Chlorination | 1(25%) | 12(26%) | 1(100) | 0 | 14(28%) |
| Nothing | 1(25%) | 30(67%) | 0 | 0 | 31(62%) |
| Total | 4(8%) | 45(90%) | 1(2%) | 0 | 50(100%) |

The majority 30(67%) of respondents draw water from communal taps and do not treat their drinking water while 2(50%) of the respondents use shallow wells as their source of water supply and treat it by boiling method.

TABLE 28: Educational level in relation to water treatment

| EDUCATIONAL LEVEL | TREATMENT OF WATER | | | TOTAL |
|--------------------------|---------------------------|---------------------|----------------|--------------|
| | BOILING | CHLORINATION | NOTHING | |
| Never attended school | 0 | 0 | 3(10%) | 3(6%) |
| Primary | 4(80%) | 4(29%) | 24(77%) | 32(64%) |
| Secondary | 1(20%) | 9(64%) | 4(13%) | 14(28%) |
| College | 0 | 1(7%) | 0 | 1(2%) |
| University | 0 | 0 | 0 | 0 |
| Total | 5(10%) | 14(28%) | 31(62%) | 50(100%) |

The majority 24 (77%) respondents do not treat their drinking water and have gone as far as primary level in their education.

TABLE 29: Employment status in relation to treatment of water

| EMPLOYMENT STATUS | TREATMENT OF WTER | | | TOTAL |
|------------------------------|--------------------------|---------------------|----------------|--------------|
| | BOILING | CHLORINATION | NOTHING | |
| Unemployed | 2(40%) | 5(33%) | 19(63%) | 26(52%) |
| Self employed | 3(60%) | 4(27%) | 11(37%) | 18(36%) |
| Formal employment | 0 | 0 | 0 | 0 |
| Other specify | 0 | 6(40%) | 0 | 6(12%) |
| Total | 5(10%) | 15(30%) | 30(60%) | 50(100%) |

The table show that the majority 19(63%) of respondents who did treat their drinking water were unemployed.

CHAPTER FIVE

5.0 DISCUSSION OF FINDINGS

5.1 INTRODUCTION

The study was aimed at determining the factors that contribute to cholera outbreaks in Makululu compound in Kabwe urban. The findings and their implications on the health care system will be discussed under this chapter. The sample size consisted of fifty (50) heads of households drawn from two zones in Makululu compound.

5.2 Characteristics of the Sample

The sample size consisted of 20 (40%) males and 30 (60%) females. This could be attributed to the fact that females stay at home most of the time to take care of the family. The majority of the respondents 20 (40%) were in the age group of 25–34 years. This suggests that Zambia has a youthful population. The majority of the respondents 35 (70%) were married. This could be due to the fact that most of the respondents were within the active reproductive age 15– 45 years. The educational level revealed that the majority 32 (64%) had primary education with a small population 14 (28%) attained secondary education and a few 3 (6 %) never attended school at all.

The unemployed respondents were 26 (52%) while 18 (36%) were self- employed. This suggests that their low level of education could have made it difficult for them to find employment. As a result they get involved in small scale businesses such as street vending. The majority of the respondents 21(42%) live in houses that have four or more rooms while 18 (36%) live in houses with two rooms. The majority of

respondents 49 (98%) were Christians while 1 (2%) did not belong to any religion. Roman Catholics were 16 (32%) while 33 (66%) were Protestants. This could be due to the fact that Christianity was the first religion to be introduced by the missionaries in Zambia. This scenario led to the declaration of Zambia as a Christian nation in 1997 by then the Republican President FTJ Chiluba. The majority of the respondents 22 (44%) had 4 / 6 family members living in the household while 16 (32%) had 7 or more living in one household. This could be alluded to the fact that people live as extended families as part of an African tradition.

5.3 SOCIAL AND ENVIRONMENTAL FACTORS

5.3.1 Pit Latrine

The study revealed that 27 (54%) of the respondents had their own pit latrines while 23 (46%) shared with neighbours. It was observed that most of the pit latrines were poorly constructed. The findings were in agreement with the World Health Organization (WHO). WHO (1997) conducted similar studies in Zambia which showed that of those respondents who have access to safe toilet facilities 31% of them share with other households. The poor state of pit latrines can be attributed to lack of space since their houses are built close to each other. Poorly constructed pit latrines can facilitate faecal contamination of water sources that are unprotected. Therefore, it can be observed from the study that poor state of pit latrines can contribute to Cholera out breaks in Kabwe.

5.3.2 Hand Washing

Most of the respondents 30 (60%) agreed that they wash hands after using the toilet. However, there was neither soap nor a basin of water near the toilet as a sign of this practice. The researcher observed that respondents seemed only to be aware of the

role of hand washing in the prevention of Cholera out break but did not put what they know into practice.10 (20%) of the respondents did not wash hands after using the toilet and attributed this to lack of basic resources like soap.

Swerdlow and Isaacson (1994) conducted a study to determine risk factors to cholera transmission among the refugees in Malawi. They suggested that placing hands in water in the storage container and not washing hands after using the toilet was significantly associated with the illness. The study further revealed that of the 37 respondents who placed hands and did not wash hands after using the toilet 19 (51%) were infected with cholera. Therefore, hand washing plays an important role in the control of cholera out breaks

5.3.3 Refuse Disposal

The study showed that most of the respondents 27 (54%) had rubbish pits, 20 (40%) dump their rubbish in open spaces while only 3 (6%) had sacks that are used as dust bins. The refuse disposed in open spaces was dumped either along the road sides or within the yards. In most cases the few rubbish pits that were found were full and uncovered. The huge heaps of uncollected refuse along the streets and those within the surrounding of the houses attract flies and become breeding sites. Flies can facilitate the transmission of *Vibrio Cholerae*, an organism that causes cholera.

Lusaka City Council (1992) conducted a study in Kanyama, George and Kabanana compounds and it revealed that the indiscriminate disposal of refuse in the three compounds was associated with cholera out breaks. During that year (90%) of cholera cases came from the three compounds.

Therefore, basing on the research findings , it can be suggested that refuse disposal if not properly done can contribute to cholera out break in Kabwe urban.

5.3.3 Sources of Supply

The source of water supply is of great concern in this study “Good drinking water is clear sparkling colourless, tasteless, odourless and free from harmful matter such as micro organisms”(Priest M.A,1977).

Vibrio Cholerae is one of the microorganism that can contaminate water. The location of the source of drinking water determines whether the water acts as a vehicle for the transmission of *Vibrio Cholerae*. Table 21 illustrates that 45 (90%) of respondents use communal taps, 4 (8%) use shallow wells and 1 (2%) use protected wells as their source of water supply. In this study the majority cited communal taps as their source of water supply even though the researcher observed that many households had dug shallow wells within their yards. These communal taps are centrally located from the point of view of Kabwe Municipal Council who constructed the taps. But the researcher observed that some of the houses are situated far from the communal taps. As a result people only fetch their drinking water from these communal taps while drawing water from shallow wells for their domestic chores like washing plates, pots and pans. Almost all respondents had dug shallow wells. The researcher noted that these shallow wells are situated on lower grounds than pit latrines. This makes it easy for contamination of shallow wells with faecal matter from the pit latrines. This problem is compounded by sewer effluent from the near by Kasanda mine township which flows in Makululu compound to contaminate water in the shallow wells. According to Kabwe DHO (2000) 957Cholera cases were recorded and out of these 312 cases came from Makululu compound.

The finding of the study was supported by Public Health Department of Lusaka City Council who conducted a study during 1990 cholera out break in Lusaka. It was established that 90% of cholera cases came from areas where shallow wells were in use by inhabitants. Basing on the research findings supported by findings by the Lusaka City Council, source of water supply is an important factor in the prevention of cholera in Kabwe district.

5.3.3 Method of Treating Drinking Water

The study showed that the majority of respondents 31 (62%) neither boiled nor chlorinated their drinking water as illustrated in table 5. The respondents did not store their water in containers covered with lids. Chlorine can be used to treat water and 14 (28%) of respondents chlorinated their drinking water while 5 (10%) boiled their water. Respondents who neither boiled nor chlorinated their drinking water argued that it was a waste of time to treat water which is already treated at the source. They also claimed it was too expensive to buy charcoal and chlorine. Hence residents of Makululu compound only treat their water during rainy season and when there is an out break of cholera. The researcher observed that this is the negative attitude that supported high cholera morbidity levels among Makululu inhabitants in Kabwe during 2001 cholera out break. This finding was supported by Kaluba et.al, (1992). In their study it was revealed that despite intensive health education to boil water for drinking the method has not been adopted as people consider tap water to be clean and safe to drink. Therefore, water treatment is an essential element in the prevention of cholera out break.

5.4 Knowledge on Cholera and its Prevention

Knowledge is a condition of knowing something through experience or association. The acquisition of knowledge should reflect a permanent change in behavior (Priest M.A,1977)

The findings revealed that 26 (52%) of respondents (table 11) had high knowledge. The majority 16 (62%) of those with high knowledge were females. Despite females dropping out of school early ,they were more knowledgeable than males. This could be attributed to the fact that females stay at home most of the time and attend under five clinics where they are taught personal hygiene practices, environmental sanitation and care of the food in the homes. Basing on the findings it can be proven that women are more knowledgeable than males on the prevention of cholera.

5.4.1 Age in Relation to Knowledge level on Cholera and its Prevention

The study showed that 26 (52%) of respondents had high knowledge and the majority 14 (54%) were in the age group 25–34 years as illustrated in Table 12. This could be attributed to the fact that this is an active age group who apart from acquiring information through mass media they can also learn from friends. Peer education and mass media are important sources of information. Age therefore, is an important factor in the acquisition of knowledge. However, despite the youth having high knowledge on cholera prevention, culture hinder them from imparting knowledge to the older people. Culture does not support open communication between the young and the old.

5.4.2 Marital Status in Relation to Knowledge level on Cholera and its

Prevention

The findings showed that married respondents were more knowledge able than single respondents. Table 13 illustrates that 19 (73%) of those who had high knowledge were married while 7 (27%) were single respondents. This suggests that couples and families tend to share information on cholera and its prevention since mothers attend under 5 clinics where they are taught on cholera prevention.

5.4.3 Educational level in relation to the knowledge level on cholera and its

Prevention

The results on the education level in relation to knowledge level (table 14) revealed that most of the respondents who had primary education 15 (58%) had high knowledge on Cholera as compared to those who never attended school 2 (8%). All the respondents with secondary education had either high knowledge 9 (34%) or medium knowledge 5 (24%). This could be attributed to the fact that these were able to read posters and other literature materials on Cholera and its prevention. On the other hand, despite the 2 (8%) of respondents not going to school, they still had high knowledge on Cholera. These findings were different from Sabaghi (1983) who conducted a study on 1,729 Mexican women. He found out that women who had never attended school had poor knowledge in the prevention of diseases. However it is important to note that education level does not have a bearing on knowledge acquisition in relation to cholera prevention. This is because people who are not formally educated but attend clinics have their knowledge levels updated on cholera prevention even though they may not practice it.

This study shows that inhabitants of Makululu compound despite the high knowledge were not practicing what they know about Cholera prevention. As the saying goes practice makes perfect. However, since the inhabitants of Makululu compound were not putting into practice what they know, it explains the reoccurrence of Cholera outbreaks.

5.4.4 Employment status in relation to the knowledge level on Cholera and its Prevention

The findings of the study indicated that employment status was not a factor in the acquisition of knowledge. Tables 20 illustrates that both the unemployed 15 (57%) and self employed 9 (34%) had high knowledge on cholera and its prevention.

5.4.5 Religion in relation to the knowledge level on cholera and its prevention

The study revealed that all the respondents were Christians and the majority 33 (66%) belonged to Protestant churches while 16 (32%) were Catholics. Table 21 indicates that 25 (50%) of respondents had high knowledge and the majority 18 (72%) of these were protestants. This suggests that people who go to churches interact and share information with others. As a result they are more enlightened on cholera and its prevention. Musiyani T. (1993) had similar observations in his study and suggested that the church can be an alternative education channel. Therefore, it is important to note that religion is a very vital element in the acquisition of knowledge in relation to prevention of cholera outbreak.

5.4.6 Toilet facility in relation to knowledge level on cholera and its Prevention

The study showed that both respondents who shared and who owned toilets had high knowledge on cholera prevention. Table 17 indicates that 25 (50%) had high knowledge and of these 16 (64%) had their own pit latrines while 9 (36%) despite them having high knowledge on cholera and its prevention, they still share pit latrines with neighbors. The increased number of people using the pit latrines and lack of proper maintenance of the pit latrines increases the chances of cholera out breaks. Hence it is not surprising that the majority of Makululu residents suffered from cholera during 2001 cholera out break. Ngangulu D,(1990) expressed the same concern when 1000 new Mozambican refugees in Malawi who were arriving on a daily basis had to share very few available pit latrines at the refugee camp. The study showed that nine (9) cholera outbreaks occurred in the refugee camps as a result of overcrowding. Therefore, it is not surprising that Makululu residents are predisposed to cholera as a result of poor sanitation conditions.

5.4.7 Hand Washing in Relation to Knowledge level on Cholera and its Prevention

The findings showed that 26 (52%) of the respondents had high knowledge and (Table 18) indicates that 13 (50%) of those with high knowledge washed their hands after using the toilet. Despite acknowledging ,there was no sign of this practice. This finding approves the hypothesis which states that inappropriate observation of personal hygiene practices contribute to the out break of cholera among the inhabitants of Kabwe district.

Hatch DL, (1994) conducted an epidemiological study among refugees and lack of hand washing after using the toilet and before eating or preparing food was associated with increased risk of cholera in one out break. The refugee camps in Malawi experienced 9 cholera out breaks. It can be noted that good personal hygiene practices play an active role in the prevention of cholera

5.4.8 Buying from Street Vendors in Relation to Knowledge level on Cholera and its Prevention

The study majority of respondents 26 (52%) of respondents had high knowledge, 21 (42%) had medium knowledge and 3 (6%) had low knowledge .Table 20 shows that 20 (77%) of those with high knowledge buy food from street vendors. This could be attributed to their attitude and claimed they could not contract cholera by buying food from street vendors. These findings were supported by Homerg et.al (1990) who conducted a study and established that consumption of unwarned food which was held for several hours on the streets of Zimbabwe contributed to the incidence of cholera in Zimbabwe. However it is important to note that knowledge level on cholera prevention has no influence on people buying food form street vendors. The study has shown that respondents in Makululu compound do not practice what they know in terms of cholera prevention ,hence the cholera out breaks.

5.4.9 Treatment of Water in Relation to Knowledge level on Cholera and its Prevention

The study showed that the majority 27 (54%) had high knowledge ,20 (40%) had medium knowledge on cholera. Table 21 indicates that 19 (70%) of those with high knowledge did not treat their drinking water. The study also revealed that 45 (90%)

respondents use communal taps and only 15 (33%) treated their water. Despite respondents having high knowledge on cholera and its prevention people still drink untreated water. This finding supports the hypothesis which states that inadequate supply of safe drinking water contributes to the outbreak of cholera among the inhabitants living in Kabwe district. Malanga et.al, (1991) supports this study. He conducted a study on risk factors to cholera transmission and he suggested that water borne transmission of cholera in Africa has been associated with drinking untreated water from shallow wells and rivers.

5.4.10 Employment Status in Relation to Water Treatment

The findings revealed that 30 (60%) of respondents never treated their water while 20 (40%) treated the water. The majority 19 (63%) of those who did not treat water were unemployed 11 (37%) were self employed. The respondents argued that it is very expensive to buy charcoal or chlorine to treat their drinking water. The findings indicate that employment status has an influence on the treatment of water. This is significant with people living in Makululu compound , most of them claimed they are out of employment as a result of Structural Adjustment Programme and cannot buy chlorine to treat their water.

A study by Central Statistical Office (CSO) in 1991 revealed that 69% of Zambians are living in households with expenditures per adult beyond a level sufficient to provide basic needs .World Bank Report (1996) also indicated that in every 100 Zambians 78 experiences poverty. These figures have since escalated to a level where people are failing to provide basic needs such as food, shelter, safe water supply to their families. The finding on employment in relation to water treatment proves the

hypothesis which states that high poverty levels contribute to the out break of cholera among the inhabitants living in Kabwe district.

5.11 Implications to Health Care System

The study demonstrated that respondents are knowledgeable on the causes, signs and symptoms, management and prevention of cholera. However people have not put what they know into practice and this, is evidenced by recurrence of cholera out breaks in every rainy season. The failure by communities to understand their role in the maintenance of good environmental conditions has contributed to diseases like cholera out breaks. The implication of this to the health care system is that health authorities must involve local communities in decision making because they know and understand their health needs and problems. This will assist health workers to identify alternative solutions to the health problems affecting a community like Makululu. It also implies that health workers should revise the Information Education and Communication (IEC) strategies in order to impart correct information that will make communities understand and participate actively in the delivery of health services. Most people are out of employment 30(60%) and have no source of steady income. This has a negative impact on the families as breadwinners have been failing to provide basic needs like shelter, food and safe water supply. This has resulted into high prevalence of malnutrition and diarrhoeal diseases like cholera. In order to earn a living some family members have opted to engage in street vending which have led to high incidences of diarrhoea and Sexually Transmitted Infections. The implication to the health care system is that there will be increased demand for better health services and government expenditure will be diverted to health care system at the expense of other sectors like education and social services. On the other hand the

increased burden on the health care system implies that Ministry of Health should collaborate with other government ministries and Non Governmental Organization in the delivery of quality health services to the people. It also means that the Government through the Ministry of Health should place more emphasis on promotive and preventive health care rather than curative health services which are more expensive. It therefore follows that local communities must be involved in the planning ,organizing and implementation of health services. The study also revealed that though respondents knew signs and symptoms of cholera, there are some who still did not know cholera was caused by germs .They believed cholera was caused by bad air. This implies that health workers should take a leading role in educating the families so that correct information is given to the members of the community. The study also showed that 31 (62%) of respondents did not treat their drinking water because people consider tap water to be clean and safe to drink. This implies that communities should be taught the role of treating water in cholera prevention. Health workers must coordinate their health care activities with Neighborhood Health Committees so that health education is not only intensified during cholera outbreaks but should be a continuous process. This will make people be alert at all times.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 CONCLUSION

The study was conducted in Makululu compound in Kabwe district. The main objective was to sought factors contributing to cholera out break in Kabwe district.

The study has shown that people have knowledge on cholera and its prevention but they have not applied it to practice. In spite of the high knowledge the inhabitants of Makululu have on cholera and its prevention , they still have false beliefs about tap water .They believe tap water is clean and safe to drink. This is a false belief that requires to be corrected if cholera out breaks are to eradicated in Kabwe. It is important that individuals and families are taught the various methods of treating water. Communities must be encouraged to adopt methods that are convenient and cheap. The current existing relationship between knowledge levels and practice needs to be improved in order to narrow the gap. The study has shown that people have the knowledge on cholera and its prevention but they do not practice what they know. The study has also revealed that street vending, poor environmental sanitation and poor hygienic practices are risk factors associated with cholera out breaks in Kabwe district. The study has shown that people of Makululu compound are still drawing water from shallow wells despite the intensive health education given to them. This negative attitude has contributed to cholera out breaks in Kabwe district. It was in this view that the researcher feels determination of the routes of cholera transmission is important in developing alternative and effective prevention measures that will stand a test of time.

6.2 RECOMMENDATIONS

In view of the findings the researcher would like to make the following recommendations:

1. Families should be taught the importance of washing hands with soap after using the toilet and before eating and preparing food.
2. All health workers should take any encounter with the client as an opportunity to discuss cholera and its prevention using locally available resources.
3. Health workers at various levels should work with Community Based Organisations to educate communities on cholera and its prevention
4. Kabwe DHMT should work in collaboration with other local authorities in formulating strategies that will improve environmental conditions in the district
5. Kabwe Municipal Council must be funded adequately by the Central government. This will enable the local authority to purchase utility vehicles that will collect garbage on regular basis from the compounds.
6. Kabwe Municipal Council should provide communities with safe, treated water supplies and should embark on rehabilitation work on water plants and pipe lines that have since broken.
7. Kabwe DHMT and Municipal Council should conduct regular surveillance investigations in order to identify unsuspected sources of the infection and prevent a possible cholera out break.

8. Health care providers should give 'targeted' health education to their clients and they should emphasise on doing what they have learnt.
9. The government should provide safe water through protected wells.

6.3 DISSEMINATION OF FINDINGS

After analysing the data the researcher wrote a report. A copy was given to Post Basic Nursing department, University of Zambia Medical Library, Ministry of health who was the sponsor for the research project and Executive summaries will be sent to Kabwe DHMT for the implementation of cholera control measures.

6.4 LIMITATIONS

1. The study was conducted within the busy school calendar of the researcher and it was difficult to concentrate on the study at the expense of other courses.
2. The sample size was limited to fifty (50) because the study was an academic exercise and needed to be completed within a specified period of time.
3. The researcher was not adequately funded by the sponsor as a result the researcher had a limited sample and findings could not be generalized to all cholera affected compounds.

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APPENDIX ONE

Budget

| Budget Category | Unit Cost. ZM. K | Quantity | Total |
|--------------------------------|------------------|----------|------------------|
| 1.Stationary | | | |
| Typing bond paper | 25,000 x1 | 3 | 75,000 |
| Pens | 500 x1 | 5 | 2,500 |
| Pencils | 200x1 | 2 | 400 |
| Rubber | 1,500x1 | 1 | 1,500 |
| Note book | 5,000 x1 | 1 | 5,000 |
| Markers | 2,000 x1 | 3 | 2,000 |
| Staples | 12,000 x1 | 1 | 12,000 |
| Stapler | 15,000x1 | 1 | 15,000 |
| Spiral | 2,000 x 1 | 1 box | 2,000 |
| Tipex | 10,000x1 | 1 | 10,000 |
| Bag | 55,000x1 | 1 | 55,000 |
| Subtotal | | | 1,219,000 |
| 2. Personnel | | | |
| Lunch allowance | 35,000x2 | 1x14days | 980,000 |
| Transport allowance | 12,000x2 | 1x14days | 980,000 |
| Subtotal | | | 1,960000 |
| Typing Services | | | |
| Research proposal. | 2,000 per page | 40 pages | 80,000 |
| Questionnaire. | 2,000 per page | 10 pages | 20,000 |
| Photo-copying {questionnaire}. | 200 per copy | 10 pages | 2,000 |
| Typing draft report | 2,000 per page | 60 pages | 120,000 |
| Typing final report | 2,000 per page | 60 pages | 120,000 |
| Photocopying Report | 200 per page | 60 pages | 12,000 |
| Binding the report | 30,000 | 4 copies | 120,000 |
| Total | | | 470,000 |
| Total | | | 3,649,000 |
| 10% Contingency | | | 364,900 |
| Grand Total | | | 4,013,900 |

Budget Justification

Stationary

I will need stationary to carry out the research. I need paper for typing, pens, and pencils, for writing. Tipex will be required for erasing out any errors. Stapler and staples are needed for arranging and keeping papers in order. The researcher will also need a calculator for making calculations. A bag is needed for carrying questionnaires and other materials necessary for fieldwork.

Typing Services

The researcher will require money to pay for typing services.

Personnel

The researcher will need the services of a research assistant to help in conducting interviews and will need transport allowance to move to and from home. The researcher will need money to train the assistant before starting the actual process of collecting data.

Contingency

Ten percent (10%) has been added to the budget to cover for any unseen expenses that may arise during the research process.

APPENDIX TWO

Research Ghant Chart

| Task to be Performed | Responsible Person | Time Frame | | | | |
|----------------------------|--------------------|------------|-----|-----|-----|-----|
| | | Aug | Sep | Oct | Nov | Dec |
| Finalise Research Proposal | Researcher | ↔ | | | | |
| Clearance | Researcher | ↔ | | | | |
| Pilot Study | Researcher | | ↔ | | | |
| Data collection | Researcher | | ↔ | | | |
| Data analysis | Researcher | | | ↔ | | |
| Report writing | Researcher | | | ↔ | | |
| Draft Report to PBN | Researcher | | | | ↔ | |
| Finalising Report | Researcher | | | | | ↔ |
| Monitoring And Evaluation | Researcher | ←————→ | | | | |

APPENDIX THREE

Research Work Schedule

| Task to be Performed | Date | Personnel Assignment | Days Required |
|---|--|-----------------------|---------------|
| Literature Review | Continuos | Researcher/Supervisor | Continuos |
| Data Collection Tool | 19 th –26 th Aug | Researcher | 5days |
| Clearance from National and funding authority | 26 th –28 th Aug | Researcher | 3days |
| Pilot Study | 2 nd –6 th Sept | Researcher | 5days |
| Data Collection Amendments | 9 th –13 th Sept | Researcher | 5days |
| Data collection | 16 th 27 th Sept | Researcher | 2weeks |
| Data analysis | 30 th Sept-18 th Oct | Researcher | 3weeks |
| Report writing | 21 st –1 st Nov | Researcher | 2weeks |
| Finalising Report | 4 th –22 nd Nov | Researcher | 3weeks |
| Monitoring the Project | Continuous | Researcher | Continuos |



THE UNIVERSITY OF ZAMBIA
SCHOOL OF MEDICINE
DEPARTMENT OF POST BASIC NURSING

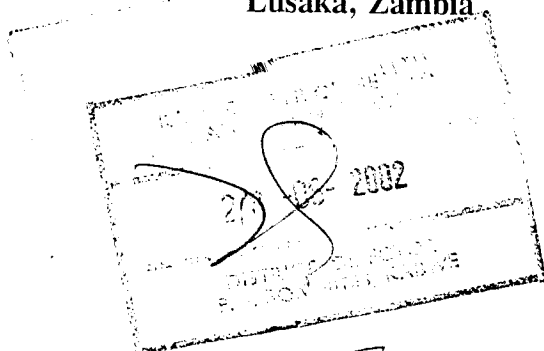
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P.O. Box 50110
Lusaka, Zambia

The Director

D.A.M.T

KABWE



Mr. B. J. J. J.

Dear Sir/Madam,

Re: PERMISSION TO COLLECT RESEARCH DATA

The bearer JONATHAN KASOKA is a forth year student at the Department of Post Basic Nursing, School of Medicine, University of Zambia. She/he is pursuing a Bachelor of Science in Nursing Degree. She/he is expected to carry out a research study in partial fulfilment of the requirements of the programme. Her/his research topic is to determine factors contributing to recurrence of cholera outbreaks.

I am requesting your good office to avail her with the information she needs for her/his project. For any further clarifications you could contact the undersigned. Your continued support is highly appreciated.

Thank you,

Prudencia

Mweemba Prudencia (Ms).

COURSE CO-ORDINATOR.

**UNIVERSITY OF ZAMBIA
SCHOOL OF MEDICINE
DEPARTMENT OF POST BASIC NURSING**

Structured Interview Schedule for the Community

Subject: FACTORS CONTRIBUTING TO REOCCERENCE OF CHOLERA IN KABWE URBAN.

Questionnaire number-----

Date of Interview-----

Name of Compound-----

Instructions to the Interviewer:

- 1 Introduce your self to the respondent.
- 2 Explain the purpose of the study.
3. Assure the respondents of confidentiality so that respondents are free to give accurate information to the best of their knowledge.
4. Please tick the appropriate response in the space provided.
5. Interview adults aged 18 years and above.

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Section A

Demographic data

1 Sex of the respondent

- a. Male
- b. Female

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2 How old are you?

- a. 18---24 years
- b. 25---34 years
- c. 35 ---44 years
- d. Above 45 years

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3 What is your marital status?

- a. Married
- b. Single
- c. Widow
- d. Widower
- e. Divorced

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4 What is the highest level of education that you attained?

- a. Never attended school
- b. Primary
- c. Secondary
- d. College
- e. University

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5 What is your current employment status?

- a. Unemployed
- b. Self employed
- c. Formal employment
- d. Other specify-----

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6 How rooms are in your house?

- a. One
- b. Two
- c. Three
- d. Four and above

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7. How many people live in your house?

- a. 1—3
- b. 4—6
- c. 7 and above

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8 What is your religion?

- a. Catholic
- b. Protestant
- c. Moslem
- d. Others specify _____

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SECTION B

Social, Cultural and Environmental Factors

9 Do you have a pit latrine?

- a. Yes
- b. No

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10 If yes to question 9 do you share your pit latrine with neighbors?

- a. Yes
- b. No

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11 If your answer is NO to question 9 what do you use?

- a. Open space
- b. Bush
- c. Other specify _____

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12 Do you wash hands after using the toilet?

- a. Yes
- b. No
- c. Sometimes

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13 What is your source of water supply?

- a. Shallow wells
- b. Communal tap
- c. Protected well/borehole
- d. Other specify _____

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14 How do you ensure that water for drinking is safe?

- a. Boiling
- b. Chlorination
- c. Nothing

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15 How far is your pit latrine from your source of water supply?

- a. Far (10 meters or more)
- b. Near (less than 10 meters)

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16 Where do you dispose your refuse?

- a. Rubbish pit
- b. Dust bin/sack
- c. Open space
- d. Other specify _____

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17 Is your garbage collected away from the compound?

- a. Yes
- b. No

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18 If the answer is yes who does the collection?

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SECTION C

Knowledge on Cholera and its Prevention

Now I would like to ask you a few questions about your views regarding cholera and its prevention.

19. What causes cholera?
- a. Germs
 - b. I don't know
 - c. Witchcraft
 - d. Other specify _____

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- 20 How do you know that a person has cholera?
- a. Coughs out blood
 - b. Losses weight
 - c. Has severe diarrhea and vomiting
 - d. Other specify _____

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- 21 What do you do when a family member of your household develops severe diarrhoea and vomiting
- a. Give traditional medicine and keep in the house.
 - b. Give ORS
 - c. Take the patient to the clinic

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22. Can cholera be prevented?
- a. Yes
 - b. No
 - c. Not too sure

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23. If yes, to question 22 explain how it can be prevented.

- 24 Can cholera be treated?
- a. Yes
 - b. No

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25. If yes, explain

26. Do you eat left over food?

- a. Yes
- b. No

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27. If yes, how do you store and use the left over food?

- a. Cover it and reheat before eating.
- B Cover and eaten cold in the next meal
- C Not covered and eaten cold in the next meal
- D Put in the fridge

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28 When do people wash hands?

- a. Before serving food
- b. After serving food
- c. Before eating food

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29 What do you think is the cause of rampant street vending in Kabwe urban?

- a. Encouragement from the politicians
- b. Poverty
- c. All the above

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30 Do you buy food from street vendors?

- a. Yes
- b. No

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31 Do you have any more suggestions on how cholera can be prevented?

Thank you very much once again for according me this opportunity to go through an interview with you!



2/2