

STUDY TO DETERMINE FACTORS CONTRIBUTING
TO RECURRENCE OF CHOLERA IN
LUSAKA URBAN

BY

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UNIVERSITY OF ZAMBIA
SCHOOL OF MEDICINE
DEPARTMENT OF POST BASIC NURSING

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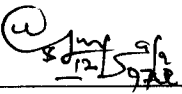
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LIST OF ABBREVIATIONS

C.D.D	-	Control of Diarrhoeal Diseases
PRITECH	-	Primary Health Care Technologies
W.H.O	-	World Health Organization
M.O.H	-	Ministry of Health
E.N.	-	Enrolled Nurse
R.N.	-	Registered Nurse
C.O.	-	Clinical Officer
H.A.	-	Health Assistance
H.I.	-	Health Inspector

DECLARATION

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

Signed 

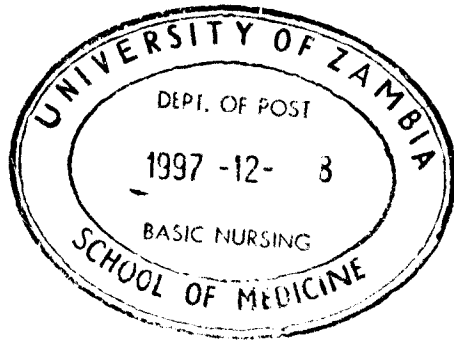
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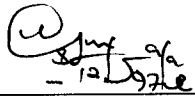
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STATEMENT

I hereby certify that this study is entirely the outcome of my own independent investigation. The various sources to which I am greatly indebted are gratefully and clearly acknowledged in the text and references.

Signed 

CANDIDATE

Date 8TH DEC, 1947

DEDICATION

This study is affectionately dedicated to my wife Grace and our daughter Winfredah who endured my long absence from them with inspirational understanding and without whose love, support and encouragement this work would never have been a reality.

ACKNOWLEDGEMENT

My study will be incomplete without expressing sincere gratitude to people and organizations who helped greatly in its successful completion. Special thanks go to my sponsors the Government of the Republic of Zambia, through the Directorate of Human Resource Development for the scholarship to undertake the Degree of Bachelor of Science in Nursing.

I would wish to acknowledge the contributions made by all members of the faculty towards my study especially so to Mrs. P. Ndele, the supervising lecturer in Nursing Research, whose encouragement and guidance made this study a success.

I wish to thank Mrs. R. N. Likwa and the Director of Monitoring and Evaluation of the Central Board of Health, Dr. Limbambala for recognising the importance of my study and subsequently writing a supporting letter to World Health Organization for funding.

My sincere gratitude to World Health Organization for funding my research project, without this assistance my study could not have been a reality.

I am deeply indebted to my respondents both the community and the health workers for the co-operation and support during data collection.

A special note of appreciation goes to Mr. James Nkata ~~for~~ his guidance in data analysis. I would also wish to acknowledge with gratitude the Secretarial services provided by Mr. Daught Muleya without whom this work would have remained a mere dream.

My heartfelt gratitude goes to my wife and our daughter who willingly and patiently spent a lonely life while I was at school. Lastly but not the least, my thanks go to my fellow students, especially Mr. Eustace Chandi, who encouraged me to persevere even at times when I was at the lowest ebb. To them all I say, may the Lord bless you

ABSTRACT

Lusaka District, the Capital City of Zambia records the biggest number of Cholera cases in every outbreak. From 1989 up to date Lusaka District has been experiencing outbreaks of cholera every rain season. In all outbreaks lives are lost and in addition to this, part of the limited available funds and medical resources in the country are transferred each time there is an outbreak to fight cholera.

It is in this light that the study to determine factors contributing to recurrence of cholera in Lusaka Urban was necessary. A sample size of 60 households and 40 health workers was selected for the study. Households were from four shanty compounds known to be vast and with more cases of cholera in each outbreak. These were George, Kanyama, Chawama and Chaisa compounds. The health staff were from George, Kanyama, Chawama and Civic Centre clinic. Therefore 15 households were picked from each of the compounds and 10 health staff from each of the health centres.

A descriptive cross sectional survey was carried out. The data was collected by use of a structured interview schedule for households while a self administered questionnaire was used for health staff. A multi stage

sampling method used in the study to pick the compounds, households and health staff.

The study findings revealed that most people in the communities are knowledgeable on many aspects of cholera but the knowledge has not been put into practice.

They have continued to draw water from unsafe sources which most drink without boiling. Their disposal of refuse and excreta is poor. It was also found that most people buy food stuff from street vendors. They attributed all these to insufficient financial resources.

Study reveals that inadequate manpower and transport has made it very difficult for health workers to participate in prevention and control of cholera.

Politicians have been found to play a role in indiscriminate street vending and increased illegal settlements.

The major recommendations in view of the results of the study focuses on:-

1. Intensifying Health education with emphasis on correction of the belief by communities that prevention and control of cholera is a responsibility of health workers and local authorities.

2. Full participation of local authorities in collection of garbage .
3. Emphasizing use of treated and boiled water for drinking by communities.
4. Supervising of construction of houses, latrines and refuse pits.
5. The need for team work among the communities, health workers, local authorities and politicians in the fight against cholera.

CHAPTER 1

1. INTRODUCTION

1.1. BACKGROUND INFORMATION

Cholera was introduced to Africa in 1970 and started with West Africa. It spread very fast across the African continent. This spread was worse off in coastal areas because of the conducive temperature, rainfall and population density which made it to survive. During the same period there were isolated cases seen in industrialised countries but their effective health services and surveillance could not allow its persistence¹.

Zambia experienced the first outbreak in 1978 then 1981-1983, covering Northern and Luapula provinces. The major outbreak in Zambia occurred in 1990-1993 and covered 7 provinces of the 9 Zambian provinces. Ever since then there has been repeated cholera outbreaks in Zambia, particularly in Lusaka.

The incidence of cholera is accelerated by poor sanitation, practice of unhygienic methods of living and contaminated water. All these situations are common in over crowded environments.

The practice of social gatherings such as funerals, parties, washing of dead bodies before burial, purchase and consumption of food stuffs bought from street vendors encourage transmission of cholera.

To prevent cholera or discourage its spread the following measures have to be put into practice:-

- Massive health education to the community, this helps in public awareness and cooperation.
- Provision of adequate, safe water supply to the compounds.
- Removal of all soiled wastes from the environment which includes refuse and human waste.
- Improvement on sewage disposal and treatment of sewage plants.
- Discouraging of social gatherings and washing of dead bodies especially if cholera is suspected to be the cause of death.

Where source of water supply is from shallow wells, these should be chlorinated and protected². Cholera cases wherever available should be treated by rehydration therapy to replace lost water and salts. Also antibiotics can reduce the volume and duration of diarrhoea and shorten the period during which cholera

vibrio are excreted. They can be given orally as soon as vomiting stops. Contact tracing is very important. This involves reaching for the people who are in contact with cholera cases, and disinfecting their premises. A dose of the available antibiotics in use are given to each of the contacts. This is to prevent these people from catching the disease³.

Reaching people with the above important information and the measures that can be applied to prevent recurrences of cholera is the responsibility of not only health workers but all those who would like to promote the quality of life of all the people around them and beyond.

1.2. **STATEMENT OF THE PROBLEM**

Lusaka, the capital city of Zambia is the fastest growing city in Zambia and is one of the highly urbanised in sub-saharan Africa. It has an annual growth rate of 6.19% which is double the nation's average of 3.3%. 75% of this Lusaka population are the urban poor living in peri urban shanty compounds, where it is densely populated, houses are poorly built and over crowded. The projected population based on the 1990 census is 1,072,044 in 1993 and 1,147,290 in 1996. The population density is 3.3 people per square kilometre. (CSO:1996)

The rapid urbanisation of Lusaka has led to difficulties in the provision of social services to the community, such as the provision of safe drinking water, sanitation, health and education. This unfortunate situation has been coupled with the decline in the economy of the country due to poor copper sales which Zambia depended on since independence for its foreign exchange earning. Today Zambia has a high debt burden, a high annual inflation rate and high unemployment. This has led to high mortality and morbidity rates from largely preventable and easily treatable diseases as reflected by annual outbreaks of diarrhoeal diseases such as cholera since 1989.

Unemployment is increasing with the coming of privatisation most people are going into informal employment leading to indiscriminate street vending especially in food stuff. These creates good media for transmission of cholera as hygienic measures are usually not followed when preparing and selling these food stuffs. (GRZ/World Bank Report 1993)

Deteriorating and inadequate health infrastructure and medical equipment for the expanding population has led to decline in quantity and quality of access to health services.

The occurrence of cholera epidemics in Zambia can be categorised into three phases that is:-

1. 1978 to 1980 it affected Northern province with 300 cases, 30 deaths and 10% fatality rate.
2. Second phase occurred in 1981 to 1983 in Luapula and Northern provinces. There were 955 cases, 95 deaths and 10% fatality rate.
3. The third phase which affected both rural and urban areas has been categorised as follows:-
 - a). December 1989 to June 1990 - six provinces were affected namely Northern, Luapula, Central, Copperbelt, Southern and Lusaka. About 2,310 cases were reported with a case fatality rate of 6.2% . Lusaka had 1745 cases and 98 deaths.
 - b). October 1990 to July 1991 - all provinces were affected except North-Western and Western . The number of cases reported was 11,418 with a fatality rate of 7.9%.
 - c). September 1991 to December 1992 - six provinces were affected namely Northern, Lusaka, Copperbelt, Luapula, Central and Southern. The number of cases reported up to June 1992 was 6,255 with a fatality rate of 10.5% (Ministry of Health, 1992).

Therefore from 1989 up to date there has been outbreaks in every rainy season in Zambia, particularly in Lusaka which has been having the largest number of cases in most outbreaks (Ministry Of Health, 1992).

The trend indicates situation worsening in intensity and extent of spread. It also indicates that cholera is endemic in Luapula, Northern and Lusaka districts.

The 1996/1997 cholera outbreak in Lusaka was reported by the University Teaching Hospital (UTH) to the Ministry of Health Headquarters on 27th August 1996. The last case during the previous outbreak was discharged on the 14th June, 1996. During the period of August 1996 to 9th April 1997 accumulative totals were 4792 cases with 85 deaths. The cases in few other districts have remained sporadic. (National Cholera Surveillance Committee Report, 1997).

Cholera is an indicator of underlying deficiencies in basic human requirements. Where these are given the attention necessary, we would not expect cholera. In all these outbreaks several lives have been lost leaving behind many orphans, widows and widowers. On top of this the already compromised available funds and medical resources in the country are transferred to the fight against cholera. The tourism industry is also affected adversely⁴.

However, from the gloomy picture painted above about cholera situation in Lusaka urban and from the experiences and observations its apparent that there is recurrence of cholera out break in Lusaka. It is in this light that the study to determine factors contributing to recurrence of cholera outbreak in Lusaka urban is very necessary. The reason for this study cannot be over emphasized as the results will go a long way in bringing to an end this killer disease cholera.

The possible factors related or associated with the recurrence of cholera in Lusaka are many but the following could be the major ones:-

Poor economic status of the nation leading to inability of the responsible institutions to provide adequate and safe water supply and good sanitation in Lusaka urban.

Increased urbanisation, mushrooming of squatter compounds and over crowding in these areas. Poor personal and environmental hygiene in most people in Lusaka urban. Poor storage of food and drinking water leading to contamination.

Political interference by encouraging street vending and reluctance in stopping unplanned settlements, in order to win political support.

Many studies have been done both at District and National level before on cholera in line with knowledge, attitudes and practices of the community. Community response to cholera in Zambia (J. Chime and E. Kapwepwe, 1994) and many more especially on diarrhoeal diseases (Mutambo et al 1994). None of the studies have been done on factors contributing to recurrence in Lusaka.

The results emanating from this study will be useful to Nurses, Clinical Officers, Doctors and other Health Personnel. It will also be useful to non Governmental Organisations like World Health Organizations (WHO) who have been concerned about the recurrences of cholera especially so in Lusaka. The results will also be utilised by members of the Community and those in Authority at Central Board of Health for formulating policies and guidelines on how to avoid recurrence of cholera in Lusaka as per the findings of the study.

1.3. LITERATURE REVIEW

1.3.1. INTRODUCTION

Cholera is a highly fatal disease. Several people have died of cholera all over the world. An individual can die within a few hours after contracting the disease if medical attention is not sought in time. The devastating results of cholera can cause panic in a community and the country as a whole. Perfection in our health habits can reduce or completely stop the occurrence of cholera. Apart from the destruction of life that cholera causes, it does not occur well for the economy of the country affected. This is because part of the limited available funds and medical resources have to be transferred to the fight against cholera. The tourism industry is also affected as tourists will be hesitant to visit a cholera torn country. Measures to provide safe water supply and sanitation, practice of good personal and environmental hygiene could go along way in reducing the scourge of cholera.

1.3.2. HISTORY OF CHOLERA

Cholera has been documented on the Indian subcontinent ever since written history on the disease have been available. There are no records of

cholera epidemics involving other parts of the world prior to 1817. It is believed that cholera pandemic of nineteenth century originated from India and Pakistan (Pollitzer 1959). Between 1814 and 1923 there have been six pandemic involving all the continents. Its spread was mainly by traders and troops who were involved in wars⁵.

After the sixth pandemic, cholera returned to Asia its region of origin. The seventh and current pandemic began in 1961 in Indonesia and now affects about 98 countries throughout the world⁶.

1.3.3. **ABOUT THE CAUSATIVE ORGANISM**

Cholera vibrio were first seen under a microscope by Robert Koch in 1884. He described them as short, curved, comma shaped bacilli (vibrio is greek word for coma).

In 1921 in Japan a man called Nobechi isolated two strains of vibrio. The first was from a patient called Inaba and the other one named Ogawa. Up to date the cholera vibrio are discussed under these two forms⁷.

According to WHO (1993) there are more than 60 groups of vibrio cholera, but only serogroup 01 causes cholera. Vibrio cholera 01 occurs as two biotype classical and eltor. Classical is non haemolytic while eltor is haemolytic (Eltor named after a quarantine station in Egypt where this type of vibrio cholera were first isolated from dead bodies of Pilgrims in 1906). Each of these biotype also occur as two serotype, Ogawa and Inaba. The Eltor biotype has caused almost all of the recent cholera outbreaks. Cases caused by classical biotype can still be found on the Indian subcontinent. The Eltor biotype causes a higher proportion of asymptomatic infections than the classical type and survives longer in the environment. Vibrio cholera 01 can survive on a variety of food stuffs for up to 5 days at ambient temperatures and up to ten days at 5-10 degrees centigrade. The organism can also survive freezing. Cold temperatures, however, limits proliferation of the organism and thus may prevent the level of contamination from reaching an infective dose. Cholera vibrio is sensitive to acidity and drying. It can be affected by the level of acidity in the stomach. The vibrio is destroyed at a pH of 4.5 or lower.

Gama irradiation and temperature above 70 degrees centigrade also destroy the vibrio. The dose of vibrio to produce an illness depends on susceptibility of an individual and immunity produced prior infection⁸.

1.3.4. ABOUT THE DISEASE

i). PATHOGENESIS

The cholera victim ingest viable vibrio cholera. The organism multiply in the small bowels and produce an exotoxin, which acts upon the mucosal cells of the small bowel, causing them to secrete large quantities of isotonic fluid. The small bowel produce isotonic fluid faster than the colon can absorb it, and the result is a watery isotonic diarrhoea. The rapid gastro-intestinal loss of isotonic fluid is responsible for all the clinical manifestations of the disease⁹.

ii). CLINICAL PRESENTATION

The clinical characteristics of cholera are caused by massive fluid and electrolyte loss. The illness begins as painless diarrhoea

without abdominal cramps and fever. The stools quickly lose their faecal character and become watery and colourless with small white flecks of mucus classically described as "Rice water stool". The stool is practically odourless except for a mild fishy smell. Vomiting is common and may be severe. Patients may lose up to 1 litre of fluid per hour in the first 24 hours and may lose more than 10% of their body weight. These huge volume losses may lead to circulatory collapse and death in 2 hours. More commonly, diarrhoea leads to severe dehydration with shock. Dehydration may be manifested by hypotension with rapid, thready pulse, weakness, anuria, loss of skin turgor, sunken eyes, the skin will be cold, clammy and inelastic, the fingers wrinkled ("washer woman's fingers"), dry mucus membrane and thirst. The mental status of patients is often altered; they may appear drowsy or even unconscious but are usually arousable. Renal failure may follow hypovolemic shock, especially if volume replacement is not instituted quickly or adequately.

The watery stool have high concentrations of sodium, potassium and bicarbonate. Clinical manifestations other than those from volume depletion are the result of severe electrolyte imbalance. Bicarbonate losses lead to acidosis. Hypokalemia may cause cardiac arrhythmia and renal failure and severe leg cramps. unconsciousness and convulsions in children may indicate hypoglycaemia¹⁰.

1.3.5. CHOLERA IN EUROPE

During the present pandemic, cholera has been introduced to Europe, Japan and USA several times this has been by sea and air but it has failed to gain a foot hold owing to efficiency of the health services and their surveillance¹¹. Cases were reported for the first time in Romania in 1990. This was in Danube delta area. The origin was traced to consumption of water from delta river. In September 1990 cholera broke out in USSR among a family in Rostov town and at a camping site. People were infected after drinking water from a natural spring

contaminated by sewerage. Other European countries reported imported cases. All these were dealt with promptly with no loss of life in most cases due to availability of all necessary resources to combat the disease¹².

1.3.6. CHOLERA IN ASIA

Ever since written history about cholera, it has been around in Asia. Pandemic of the 19th century originated from Asia. A total of 30979 cases were reported by 12 countries in 1990 compared with 18007 cases reported by 13 countries of Asia in 1989. The increase was accounted for by large outbreak in the region of Kathmandu valley in Nepal attributed to contaminated water supply. This was noticed in China, Malaysia and Iran. The cases doubled between 1992 and 1993 with large outbreaks in war torn Afghanistan. The situation was complicated in Asia after the emergence in late 1992 of a new gastric organism, vibrio cholera 0139 in Bengal, India. This strain has spread very rapidly in Bangladesh, China, Malaysia, Nepal and Pakistan and caused high mortality¹³.

1.3.7. CHOLERA IN LATIN AMERICA

As at the end of April of 1991 WHO had received reports of over 188,000 new cases of cholera in 12 countries of Latin America. Five of these Brazil, Chile, Columbia, Equador and Peru account for 78% of total number of cases and over 1300 deaths in 1991 alone. The number of new cases of cholera for the first 4 months of 1991 exceeds the world wide number of cases (17,811) during all of 1971 when the current cholera pandemic was at its peak in Asia and Africa¹⁴.

1.3.8. CHOLERA IN AFRICA

The first cases of cholera in Africa were identified in Guinea, West Africa in August 1970. The subsequent epidemic with more than 150,000 cases and 20,000 deaths spread rapidly among the West African coast and then moved inland following fishing and trading routes. Large gatherings, markets, fairs, funerals and refugee camps were identified as foci where people became infected. Within two years people in 29 countries were reportedly infected with vibrio cholera.

Vibrio cholera was probably introduced into Africa by a symptom-free infected traveller returning from a cholera endermic area in Asia. Although cholera disappeared from some countries it became a recurring problem in most countries. In 1990 cholera cases accounted for 90% of all cases reported to WHO in the world¹⁵.

In 1980, ten years after the start of epidemic, cholera was reported in 16 countries (18,742 cases). Ten years later in 1990, 11 countries were still reporting a total of 39,211 cases. Since 1972 only 8 of the 52 countries have never reported cases of cholera to WHO (Botswana, Central African Republic, Egypt, Lesotho, Madagascar, Mauritius, Namibia and Seychelles). Of the 44 with cholera 43 have reported cholera on several occasions¹⁶.

1.3.9. CHOLERA IN ZAMBIA

Cholera has become one of the most persistently occurring epidemics in Zambia and claims a lot of lives. The major outbreaks of cholera in the country have occurred in three phases, that is, 1978 in Northern province, 1981-1983 in Northern and Luapula provinces and 1990-1993 when all provinces were affected except Eastern and Western provinces.

In the study by Chime and Kapwepwe (1994) it was found that despite communities being knowledgeable on the different aspects of cholera the knowledge has not been put into practice fully¹⁷.

The above constraints have therefore led to poor community response to cholera outbreaks which has in turn contributed to high fatality rates especially during the initial stages of epidemics before cholera treatment centres are established.

In another study by Kaluba et al (1992) on Risk Factors of Primary Schools in Cholera affected areas showed that the practice of washing hands in a communal hand basin was one of the major public health risks to spread of cholera. In addition the study also showed that despite intensive health campaign to boil water, the method has not been adopted as people consider tap water to be safe. Equally significant finding in Kaluba's study has been the challenge posed to health workers by community with negative attitude to cholera preventive measures such as continuing drawing water

from unsafe source (e.g. wells or rivers) because they have used such water sources for a long time without associating to the spread of cholera¹⁸. This however, is now changing because of the repeated outbreaks Zambia has experienced related to use of water from contaminated wells.

CHAPTER 2

2.0. OBJECTIVES

2.1. GENERAL OBJECTIVE

To identify factors contributing to recurrence of cholera in Lusaka Urban with the aim of using the findings to design strategies that will reduce the cholera outbreaks.

2.2. SPECIFIC OBJECTIVES

- 2.2.1. To determine the cause of recurrence of cholera outbreak in Lusaka Urban.
- 2.2.2. To determine whether inadequate knowledge by the community on cholera contributes to its recurrence in Lusaka Urban.
- 2.2.3. To establish relationship between source of water supply and recurrence of cholera.
- 2.2.4. To verify whether poor sanitation is associated with recurrence of cholera in Lusaka Urban.
- 2.2.5. To determine whether inadequate food safety contributes to recurrence of cholera in Lusaka Urban.
- 2.2.6. To establish whether poverty among the communities is associated with recurrence of cholera.
- 2.2.7. To establish the role of health workers in prevention and control of cholera in Lusaka Urban.

- 2.2.8. To determine whether inadequate resources has an effect on recurrence of cholera in Lusaka Urban.
- 2.2.9. To establish whether the influence of politicians on street vending and allocation of plots for settlement is associated with recurrence of cholera.
- 2.2.10. To make recommendations to policy makers, donor agencies, health providers and the community on how effectively and appropriately we are going to reduce the recurrence of cholera in Lusaka Urban.

2.3. FRAMEWORK FOR DEFINING VARIABLES

Conceptual Definition of Variables	Operational Definition (Indicator	Scale of Measurement
Recurrence of cholera.	Outbreak of cholera every rainy season.	-Outbreak -No outbreak
Community knowledge on -Causes, -Identification -Prevention and Management of cholera.	- Able to mention correctly cause of cholera. - Able to identify cholera patient - Able to mention correctly preventive measures for cholera. - Able to give ORS and take to clinic.	ORDINAL HIGH 3-4 Points Average 2 Points Low 0-1 Point
Source of Water Supply.	Shallow Wells	Poor
	Protected well, Bore Hole or Piped	Good
Sanitation.	- Use own toilet with cover. - Washing hands after using toilet. - Has pi or bin for refuse disposal	Good
	- Use communal or neighbours toilet without a cover. - Dispose off refuse in an open area. - Not washing hands after using toilet.	Poor
Food Safety	Store food covered and reheat before eating	Good
	Buying from street vendors. Room used for storing foods, cooking and sleeping.	Poor
Poverty	Unemployed, Low Education (Primary), Low Income, Large Family Size (Unable to afford basic needs)	Poor
	Employed, Moderate Education (Secondary), High Income, Small Family Size (Able to afford the basic needs)	Moderate

Availability of Resources	Manpower, Maerial and Money for Prevention and Control of Cholera	- Available - Not Available
Political Involvement in Street Vending and Allocation of Plots for Settlements	Politicians Allowing Street Vending to Trade Against City Council Regulations. Political Chairmen and Counsellors giving Plots without Knowledge of the City Council.	- Involved - Not Involved
Educational Level	Type of Educational Institution Last Attended	ORDINAL None)LOW Primary) Secondary-Moderate College)HIGH University)
Monthly Income	Estimate of Kwacha per Month from all the family Members	ORDINAL K50,000=Low K51,000- K100,000 Medium >K100,000=High
Size of the House	Number of Rooms the House has including the Kitchen, Storeroom or Sitting Room.	ORDINAL 1-2=Small 3=Medium 4+=Big House
Family Size	Number of people living in the house	ORDINAL 1-3=Small Family 4-6=Medium Family 7+=Large Family

CHAPTER 3

3.0. METHODOLOGY

3.1. STUDY TYPE

The study design for this study was a descriptive cross sectional survey. In this study the data was systematically collected and presented in order to give a clear picture on the factors contributing to recurrence of cholera in Lusaka Urban. The study was quantitative in that it aimed at quantifying the distribution of variables in the study population. It was also qualitative in that it sought to explore the respondents opinion concerning cholera in open ended questions.

3.2.0. STUDY VARIABLES

A). DEPENDENT VARIABLE

- i). Recurrence of cholera.

B). INDEPENDENT VARIABLES

- i). Knowledge on causes, identification, management and prevention of cholera.
- ii). Water supply.
- iii). Sanitation.
- iv). Food safety.
- v). Poverty.
- vi). Availability of resources.
- vii). Political involvement in street vending and allocation of plots.

3.3. STUDY POPULATION

The study population included:

3.3.1. Households in cholera affected areas in Lusaka Urban.

These were in George, Kanyama, Chawama and Chaisa compounds of Lusaka. These are the major compounds always affected with outbreaks and the largest number of cases usually come from these compounds.

3.3.2. Health staff working in Lusaka Urban District i.e.,

i). Clinical staff such as Doctors, Clinical Officers and Nurses.

ii). Environmental Health Officers, such as Health Inspectors and Health Assistants.

3.4. SAMPLE SIZE

3.4.1. A total of sixty (60) households were interviewed and observed to obtain information on factors contributing to recurrence of cholera in Lusaka Urban. These were fifteen (15) households from each of the four compounds chosen.

3.4.2. In the second sample a total of forty (40) health staff in Lusaka Urban District was included and responded to a self administered questionnaire.

Ten (10) health staff were chosen from four health centres, three from the three of the picked compounds and one from Civic Centre Clinic.

The following reasons were considered to arrive at the sample size:

- i). The feasibility of the sample size with regard to resources available such as:-
 - Time will be limited since the study is an academic exercise.
 - Manpower
 - Transport and
 - Financial Resources
- ii). The quality of data considering the variables under study.
- iii). The representativeness of the sample

3.5.SAMPLING METHOD

3.5.1. A multistage sampling method was used. This was done in phases and involved more than one sampling method.

- i). The four compounds were picked by convenient sampling method because of their vast areas and having the majority of cholera cases in every outbreak.
- ii). In each compound sections were selected by simple random sampling.

- iii). In each section households were selected by systematic sampling i.e, an interview schedule was administered at households on every tenth house. The first household to interview was chosen randomly.
- iv). In each section in each compound equal number of households were selected to come up with fifteen households in each compound.
- v). To choose the direction to follow for selecting households, the researcher spined a bottle on the ground and choose the direction of the bottle neck indicated. This was done every after systematically interviewing two households in a line. The researcher ignored the direction of the bottle neck in the line covered already and spined the bottle again.
- vi). At each household elected the head of the household was interviewed if present or any adult member of the household available. Few cadres of health staff were picked conveniently while the majority were chosen by simple random method.

3.6. DATA COLLECTION TECHNIQUES AND TOOLS

Data in the study was collected using a primary source and different techniques and tools were used to obtain complementary information on factors contributing to recurrence of cholera in Lusaka Urban.

3.6.1. **Interview Schedule.** A face to face interview with household heads or any member aged 15 years and above in absence of head of household was conducted. This was done by the use of a standardized structured questionnaire.

The researcher preferred a structured personal interview for the following reasons:-

- i). The study population consisted largely people who were not able to write or read.
- ii). An interview schedule was appropriate for probing respondent's sentiments about cholera and enabled the researcher to gather supplementally information relevant to the topic under study.
- iii). It makes easier for the researcher to make observations on the environment as well as pick up verbal and non verbal cues.

iv). It also enabled researcher to clarify questions not clear.

To control for constraints of the interview schedule, the researcher explained the significance of the study to help the respondent to feel free and appreciate the purpose of the interview. For the same reasons the researcher introduced himself.

To prevent miscoding of response, most of the questions were close ended with pre-determined responses to choose from, requiring very little writing for the interviewer.

3.6.2. Structured self administered questionnaire.

These were distributed to health centre staff in chosen centres. This data collection tool was used where respondents were able to read and write as they were required to fill in the questionnaire at their own time and on their own.

A structured self administered questionnaire was considered appropriate for the following reasons:-

i). All the respondents were health staff who were literate.

- ii). It avoids bias due to personal characteristics of interviewers.
- iii). Some type of questions, which might require consultation before answering, were more appropriately dealt with when the respondent had more time for an answer and no waiting interviewer to cause a hasty response.

3.7. PILOT STUDY AND PRE-TESTING

The researcher and the two researcher assistants carried out a pretest in John Laing compound. This served as a trial run that allowed the research team to identify potential problems in the study. Pretest ensured clarity of questions and consistency in method of questioning and data collection procedures. The process also helped to modify some unclear questions and construction of some extra ones as well as estimation of duration the data collection exercise took.

3.8. QUALITY CONTROL OF DATA

The research team ensured that data collected was of good quality, that is reliable and valid to avoid misleading conclusions. Therefore the researcher;

- Checked questionnaire for consistency and validation.

- Designed a manual guide for interviews including instruction sheet for sampling procedure with clear explanation which was used by research team.
- Selected two research assistants who were knowledgeable concerning topic and local conditions.
- Trained research assistants carefully in all topics covered in the field work manual as well as interview techniques.
- Pre-tested research instruments and research procedures together with research assistants.
- Checked each evening data collected for recording mistakes which were clarified.

3.9. DATA HANDLING

- All questionnaires were numbered at the start of field work each day.
- Questionnaires were in a folder and stored safely by the researcher.

3.10. ETHICAL CONSIDERATION

- A verbal consent was obtained from each interviewee before conducting interviews and participants were free to choose to participate or not.
- Information collected was treated highly confidential.

- No names of respondents were included on the questionnaires. Respondents were identified by questionnaire number and area.

Permission to conduct the study was sought from relevant authorities at all levels.

CHAPTER 4

4.0. DATA ANALYSIS AND PRESENTATION OF FINDINGS

Quantitative data was analyzed by first ordering the information according to the research questions. These were then categorised according to similar characteristics and finally summarized so that interpretation could be made. Data was presented in summary form in tables. Cross tabulations for most of the variables were done in frequencies and percentages. Data was processed manually using data master sheets and a scientific calculator.

TABLE 1: SOCIAL DEMOGRAPHIC DATA FREQUENCIES FOR HOUSEHOLDS, SEX, AGE, MARITAL STATUS, EDUCATIONAL LEVEL, MONTHLY INCOME, SIZE OF HOUSE, FAMILY SIZE

VARIABLE	FREQUENCIES	PERCENTAGE
SEX		
Male	18	30%
Female	42	70%
TOTALS	60	100%
AGE GROUP		
21 - 30	24	40%
31 - 40	23	38.3%
40 +	13	21.7%
TOTALS	60	100%
MARITAL STATUS		
Single	6	10%
Married	49	81.7%
Widow	5	8.3%
TOTALS	60	100%
EDUCATIONAL LEVEL		
Non	8	13.3%
Primary	40	66.7%
Secondary	5	20%
TOTALS	60	100%

MONTHLY INCOME		
<K51,000.00	16	26.7%
K51,000 - K100,000.00	34	56.6%
>K100,000.00	10	16.7%
<hr/> TOTALS	<hr/> 60	<hr/> 100%
SIZE OF HOUSE		
1 Roomed	8	13.3%
2 Roomed	33	55%
3 Roomed	11	18.4%
4 Roomed +	8	13.3%
<hr/> TOTALS	<hr/> 60	<hr/> 100%
FAMILY SIZE		
1 - 3 Members	24	40%
4 - 6 Members	19	31.7%
7 Members +	17	28.3%
<hr/> TOTALS	<hr/> 60	<hr/> 100%

TABLE 2: SOCIAL DEMOGRAPHIC DATA FREQUENCIES FOR HEALTH WORKERS.
SEX, AGE, PROFESSIONAL TITLE, LENGTH OF SERVICE

VARIABLE	FREQUENCIES	PERCENTAGE
SEX		
Male	13	32.5%
Female	27	67.5%
TOTALS	40	100%
AGE GROUP		
21 - 30	11	27.5%
31 - 40	20	50%
41 +	9	22.5%
TOTAL	40	100%
PROFESSIONAL TITLE		
EN	16	40%
RN	7	17.5%
CO	7	17.5%
H/I	5	12.5%
H/A	5	12.5%
TOTALS	40	100%
LENGTH OF SERVICE		
<5 Years	13	32.5%
6 - 10 Years	5	12.5%
>10 Years	22	55%
TOTALS	40	100%

TABLE 3: RESPONDENTS AGE GROUP IN RELATION TO SEX

AGE GROUP IN YEARS	SEX		TOTALS
	MALE	FEMALE	
21 - 30	9 (15%)	15 (25%)	24 (40%)
31 - 40	5 (8.3%)	18 (30%)	23 (38.3%)
41 +	4 (6.7%)	9 (15%)	13 (21.7%)
TOTALS	18 (30%)	42 (70%)	60 (100%)

The majority 42 (70%) of respondents were females and most of them were aged between 21 and 30 years

TABLE 4: AGE GROUP IN RELATION TO THE LEVEL OF KNOWLEDGE OF RESPONDENTS ABOUT CHOLERA.

AGE GROUP IN YEARS	LEVEL OF KNOWLEDGE			TOTAL
	HIGH	AVERAGE	LOW	
21 - 30	9 (15%)	10 (16.7%)	5 (8.3%)	24 (40%)
31 - 40	12 (20%)	7 (11.6%)	4 (6.7%)	23 (38.3%)
41 +	4 (6.7%)	3 (5%)	6 (10%)	13 (21.7%)
TOTAL	25 (41.7%)	20 (33.3%)	15 (25%)	60 (100%)

The Table shows the majority 25 (41.7%) of the respondents had high knowledge on cholera with most of them aging between 31 and 40 years.

TABLE 5: MARITAL STATUS IN RELATION TO THE LEVEL OF KNOWLEDGE ON CHOLERA

MARITAL STATUS	LEVEL OF KNOWLEDGE			TOTALS
	HIGH	AVERAGE	LOW	
Single	1 (1.7%)	4 (6.7%)	1 (1.6%)	6 (10%)
Married	23 (38.4%)	14 (23.3%)	12 (20%)	49 (81.7%)
Widowed	1 (1.6%)	2 (3.3%)	2 (3.4%)	5 (8.3%)
Total	25 (41.7%)	20 (33.3%)	15 (25%)	60 (100%)

The majority 23 (38.3%) of the respondents with high knowledge are married.

TABLE 6: EDUCATIONAL LEVEL IN RELATION TO THE LEVEL OF KNOWLEDGE OF RESPONDENTS ON CHOLERA.

EDUCATIONAL LEVEL	LEVEL OF KNOWLEDGE			TOTAL
	HIGH	AVERAGE	LOW	
Non	3 (5%)	3 (5%)	2 (3.3%)	8 (13.3%)
Primary	16 (26.7%)	11 (18.3%)	13 (21.7%)	40 (66.7%)
Secondary	6 (10%)	6 (10%)	-	12 (20%)
TOTAL	25 (41.7%)	20 (33.3%)	15 (25%)	60 (100%)

The table shows that all the respondents with secondary education 12 (20%) were knowledgeable about cholera.

TABLE 7: EDUCATIONAL LEVEL IN RELATION TO DIARRHOEAL MANAGEMENT IN HOUSEHOLDS.

EDUCATIONAL LEVEL	DIARRHOEAL MANAGEMENT		TOTAL
	POOR	GOOD	
None	-	8 (13.4%)	8 (13.4%)
Primary	2 (3.3%)	38 (63.3%)	40 (66.6%)
Secondary	1 (1.7%)	11 (18.3%)	12 (20%)
TOTAL	3 (5%)	57 (95%)	60 (100%)

The table shows that the majority 57 (95%) of the respondents managed diarrhoeal very well at home.

TABLE 8: SOURCE OF WATER SUPPLY IN RELATION TO WHETHER BOILED OR NOT.

BOILED OR NOT BOILED	SOURCE OF WATER		TOTAL
	SHALLOW WELL	PIPED WATER	
Boil	2 (3.3%)	7 (11.7%)	9 (15%)
Do not boil	15 (25%)	36 (60%)	51 (85%)
TOTAL	17 (28.3%)	43 (71.7%)	60 (100%)

Out of the total respondents 60 (100%) the majority 51 (85%) did not boil water. 36 (60%) of them used piped water while 15 (25%) used shallow wells as source of water.

TABLE 9: FAMILY SIZE IN RELATION TO THE QUALITY OF SANITATION AROUND THE HOUSE.

FAMILY SIZE	SANITATION		TOTAL
	GOOD	POOR	
1-3 Members	9 (15%)	15 (25%)	24 (40%)
4-6 Members	9 (15%)	10 (16.6%)	19 (31.6%)
7 + Members	8 (13.4%)	9 (15%)	17 (28.4%)
TOTAL	26 (43.4%)	34 (56.6%)	60 (100%)

The majority of the respondents 34 (56.7%) had poor sanitation and most of them 15 (25%) were from small sized families.

TABLE 10: EDUCATIONAL LEVEL IN RELATION TO THE QUALITY OF SANITATION AROUND THE HOUSE.

EDUCATIONAL LEVEL	SANITATION		TOTAL
	GOOD	POOR	
None	2 (3.3%)	6 (10%)	8 (13.3%)
Primary	16 (26.7%)	24 (40%)	40 (66.6%)
Secondary	8 (13.3%)	4 (6.7%)	12 (20%)
TOTAL	26 (43.3%)	34 (56.7%)	60 (100%)

Most of the respondents 24 (40%) with poor sanitation had primary education.

TABLE 11: LEVEL OF KNOWLEDGE ON CHOLERA IN RELATION TO BUYING COOKED FOOD FROM VENDORS.

LEVEL OF KNOWLEDGE	BUYING FROM VENDORS		TOTAL
	YES	NO	
High	17 (28.4%)	8 (13.3%)	25 (41.7%)
Average	10 (16.6%)	10 (16.7%)	20 (33.3%)
Low	11 (18.3%)	4 (6.7%)	15 (25%)
TOTAL	38 (63.3%)	22 (36.7%)	60 (100%)

Table shows the majority of the respondents 38 (63.3%) bought food from street vendors and most of these 17 (28.3%) had high knowledge on cholera.

TABLE 12: MONTHLY INCOME IN RELATION TO THE RESPONDENTS FAMILY SIZE.

MONTHLY INCOME	FAMILY SIZE			TOTAL
	1 - 3	4 - 6	7 +	
<K50,000	10 (16.6%)	2 (3.3%)	4 (6.7%)	16 (26.7%)
K51,000 - K100,000	13 (21.7%)	14 (23.3%)	7 (11.7%)	34 (56.7%)
>K100,000	1 (1.6%)	3 (5%)	6 (28.4%)	10 (16.6%)
TOTAL	24 (40%)	19 (31.6%)	17 (28.4%)	60 (100%)

The majority of the respondents 34 (56.7%) had medium monthly income. Out of these 14 (23.3%) of them were from medium sized families.

TABLE 13: RESPONDENTS SIZE OF THE HOUSE IN RELATION TO THE FAMILY SIZE.

NUMBER OF ROOMS	FAMILY SIZE			TOTAL
	1 - 3	4 - 6	7 +	
1	7 (11.7%)	1 (1.6%)	-	8 (13.3%)
2	16 (26.7%)	11 (18.3%)	6 (10%)	33 (55%)
3	-	4 (6.7%)	7 (11.7%)	11 (18.4%)
4 +	1 (1.6%)	3 (5%)	4 (6.7%)	8 (13.3%)
TOTAL	24 (40%)	19 (31.6%)	17 (28.4%)	60 (100%)

The table shows that the majority of respondents 33 (55%) lived in two roomed houses with most of them 16 (26.6%) coming from small sized families.

RESPONSES FROM HEALTH WORKERS ON THE FACTORS CONTRIBUTING TO
RECURRENCE OF CHOLERA IN LUSAKA URBAN

TABLE 14: AGE GROUP IN RELATION TO THE SEX OF RESPONDENTS

AGE GROUP IN YEARS	SEX		TOTAL
	MALE	FEMALE	
21 - 30	5 (12.5%)	6 (15%)	11 (27.5%)
31 - 40	4 (10%)	16 40%)	20 (50%)
41 +	4 10%)	5 (12.5%)	9 (22.5%)
TOTAL	13 (32.5%)	27 (67.5%)	40 (100%)

The majority respondents (27) were females and most of them 20 (50%) were n the age group 31 - 40.

TABLE 15: SEX IN RELATION TO THE PROFESSIONAL TITLE OF HEALTH WORKERS.

SEX	PROFESSION OF THE HEALTH WORKER					TOTAL
	EN	RN	CO	H/I	H/A	
Male	1 = 2.5%	-	7= 17.5%	2= 5%	3= 7.5%	13=32.5%
Female	15= 37.5%	7= 17.5%	-	3= 7.5%	2= 5%	27=67.5%
TOTAL	16= 40%	7= 17.5%	7= 17.5%	5= 12.5%	5 12.5%	40= 100%

The majority of the respondents 16 (40%) were Enroled Nurses followed by Registered Nurses and Clinical Officers with 7 (17.5%) respectively. 13 (32.5%) of the respondents were males while 27 (67.5%) were females.

TABLE 16: PROBLEMS FACED BY HEALTH WORKERS IN PREVENTION AND CONTROL OF CHOLERA IN RELATION TO PROFESSION.

MAJOR PROBLEM FACED	PROFESSION OF HEALTH WORKER					TOTAL
	EN	RN	CO	H/I	H/A	
Manpower	3= 7.5%	-	-	-	-	3=7.5%
Transport	1= 2.5%	1= 2.5%	1= 2.5%	1= 2.5%	-	4=10%
Manpower & Transport	10= 25%	5= 12.5%	6= 15%	4= 10%	5= 12.5%	30=75%
Non of the above	2= 5%	1= 2.5%	-	-	-	3=7.5%
TOTAL	16= 40%	7= 17.5%	7= 17.5%	5= 12.5%	5= 12.5%	40=100%

Tables shows that the majority 30 (75%) of the health workers faced problems in manpower and transport during prevention and control of cholera.

TABLE 17: ROLE PLAYED BY HEALTH WORKERS IN PREVENTION AND CONTROL OF CHOLERA IN RELATION TO THE PROFESSION.

ROLE PLAYED IN PREVENTION AND CONTROL	PROFESSION OF HEALTH WORKERS					TOTAL
	EN	RN	CO	H/I	H/A	
Supervising construction of Latrine and Refuse Pits including contact tracing and chlorination	2= 5%	1= 2.5%	-	3= 7.5%	3= 7.5%	9= 22.5%
Screening and giving medicine	8=20%	5= 12.5%	5= 12.5%	-	-	18= 45%
All the above	6=15%	1= 2.5%	2=5%	2=5%	2=5%	13= 32.5%
TOTAL	16=0%	7= 17.5%	7= 17.5%	5= 12.5%	5= 12.5%	40= 100%

Table shows that few 9 (22.5%) health workers took part in prevention of cholera, the majority 18 (45%) concentrated on curative.

TABLE 18: FREQUENCY OF ROLE PLAYED IN PREVENTION AND CONTROL OF CHOLERA IN RELATION TO THE PROFESSION.

FREQUENCY OF ROLE PLAYED	PROFESSION OF THE HEALTH WORKERS					TOTAL
	EN	RN	CO	H/I	H/A	
Only during cholera outbreaks	10= (25%)	3= 7.5%	2=5%	4=10%	5= 12.5%	24 (60%)
Daily	4= (10%)	3= 7.5%	5= 12.5%	1= 2.5%	-	13 (32.5%)
Weekly	1= 2.5%	-	-	-	-	1 (2.5%)
Monthly	1= 2.5%	1= 2.5%	-	-	-	2 (5%)
TOTAL	16= 40%	7= 17.5%	7= 17.5%	5= 12.5%	5= 12.5%	40 (100%)

The table shows the majority 24 (60%) of the health workers took part in prevention and control of cholera only when there is an outbreak.

TABLE 19: PROFESSION OF HEALTH WORKERS IN RELATION TO WHO IS BELIEVED TO ENCOURAGE FOOD VENDING.

PROFESSION OF THE HEALTH WORKER	CAUSE OF FOOD VENDING		TOTAL
	POLITICIAN	VENDOR	
EN	9 (22.5%)	7 (17.5%)	16 (40%)
RN	5 (12.5%)	2 (5%)	7 (17.5%)
CO	5 (12.5%)	2 (5%)	7 (17.5%)
H/I	4 (10%)	1 (2.5%)	5 (12.5%)
H/A	3 (7.5%)	2 (5%)	5 (12.5%)
TOTAL	26 (65%)	14 (35%)	40 (100%)

The majority 26 (65%) of the health workers believe politicians contributes to indiscriminate street vending.

TABLE 20: PROFESSION OF HEALTH WORKER IN RELATION TO WHO IS BELIEVED TO CAUSE ILLEGAL SETTLEMENTS.

PROFESSION OF THE HEALTH WORKER	CAUSE OF ILLEGAL SETTLEMENTS				TOTAL
	POLITICIAN	SETTLERS	COUNCIL	ALL ABOVE	
EN	5 (12.5%)	4 (10%)	4 (10%)	3 (7.5%)	16= 40%
RN	-	1 (2.5%)	-	6 (15%)	7= 17.5%
CO	2 (5%)	-	1 (2.5%)	4 (10%)	7= 17.5%
H/I	3 (7.3%)	-	-	2 (5%)	5= 12.5%
H/A	3 (7.5%)	1 (2.5%)	-	1 (2.5%)	5= 12.5%
TOTAL	13 (32.5%)	6 (15%)	5 (12.5%)	16 (40%)	40 (100%)

The table shows that the majority 16 (40%) of the health workers believe that the Politicians, the settlers themselves and the council are to blame for illegal settlements. and politicians alone take the major blame 13 (32.5%).

CHAPTER 5

5.0. DISCUSSION OF FINDINGS

5.1. HOUSEHOLD RESPONSES (TABLE 1 AND 3)

A total of 60 responses were obtained using a structured interview schedule. The respondents included fifteen (15) from each of the four cholera affected compounds. These are Chawama, Kanyama, George and Chaisa compounds.

5.1.1. CHARACTERISTICS OF HOUSEHOLD RESPONDENTS

The sample constituted of 30% males and 70% females. Majority of the respondents (40%) were in the age group 21-30 and the age range was 21 - 41 and above. The majority of the respondents (81.7%) were married, 10% single and 8.3% widowed. The educational levels of respondents showed that the majority (66.7%) had primary education, with a small proportion (20%) having attended secondary education and a few (13.3%) with no formal education at all.

The majority of the respondents (56.6%) had medium monthly incomes (K51,000-K100,000), 26.7% had low income (<K50,000) and a few (16.7%) had high income (>K100,000). The occupation of respondents ranged from being informally employed (73.38%), unemployed (16.7%), to being formally employed (10%).

The Majority of respondents (55%) lived in 2 roomed houses, the other proportion (18,4%) in 3 roomed houses while 13.3% of the families lived in 1 roomed and 4 plus rooms respectively. The majority (40%) were small sized families, (31.7%) medium sized and (28.3%) large sized families.

All the four compounds under study were shanty compounds.

5.1.2. **KNOWLEDGE**

Knowledge is the condition of knowing something through experience or association. Acquisition of knowledge by any means should precede change in behaviour. Communities should be kept actively informed about cholera of its causes, identification, management and prevention. Table 4, in this study shows that 41.7% of the respondents had high level of knowledge on cholera while 33.3% had average level of knowledge. Therefore it means that 75% of the respondents were knowledgeable. Previous studies on cholera came up with similar findings for example in a study on Community Response to Cholera in Zambia,

Chime and Kapwepwe (1994). However, 15% of the respondents had low level of knowledge. Age group in relation to level of knowledge shows that 20% of those aged between 31 and 40 had high level knowledge. This could be attributed to the fact that this is an active group who, apart from getting cholera information from the mass media can also learn from friends at work. According to the findings there is need to put more emphasis on educating those who are aging. This is because the majority 10% out of 25% of those with low level of knowledge were in the age group 41 years and above. These in fact can help more effectively in prevention of cholera as they are likely to be found at home most of the time to look after the sanitation, water supply and the general cleanness. Table 5 shows that the majority (61.7%) of respondents with high knowledge were married, this could be due to the team work and the close interaction when discussing cholera issue in the home as compared to the single and widowed respondents who may have no close person to interact with.

The findings on education level in relation to level of knowledge Table 6 reveals that the more years one spent in school, the more the knowledge one had on cholera. Study shows that all those who reached secondary school were knowledgeable about cholera, that is, out of the total number 20% who reached secondary school 10% had high level of knowledge and the other 10% had average level of knowledge while no one had low level of knowledge. This could be attributed to the fact that these were able to read posters and other literature about cholera on top of getting information through the mass media. This is unlikely to happen in those with low level of education. Table 7 indicates that 95% of the respondents managed diarrhoeal at home very well including all those who had no formal education. This means that the level of education has no bearing on diarrhoeal management, probably due to the fact that those who are not educated had time to listen to health workers during health education while those with more education thinks they know it all.

The repeated outbreaks of cholera in Lusaka, therefore means that the knowledge people have on cholera is not being put into practice. The finding shows that the communities are not actively participating in prevention and control of cholera, they feel this is primarily a responsibility of the health workers and the local authorities. This is a big constraint to communities ability to change their unhealthy behaviour.

5.1.3. WATER SUPPLY

According to Priest (1977) "good drinking water is a clear sparkling colourless, taste liquid without smell and free from harmful matter such as chemicals, organic substances or microorganisms".

Water is an important vehicle for cholera transmission. In this study 28.3% of the respondents used shallow wells for their water supply, while 71.7% used communal water pipes installed. Out of the total number of respondents 85% did not boil water for drinking. means 25% out of 28.3%, who used water from shallow wells and 60% out of 71.7% who used piped water did not boil water for drinking (Table 8).

Most of those who used shallow wells for water supply said that they cannot afford to pay the amount of money, they were being asked every month for maintenance of water pipes. They also claimed that water from wells tasted better than chlorinated water from taps. Reason for not boiling according to them was lack of fuel (charcoal or firewood).

Similar study by Kaluba et al (1992) on Risk Factors of Primary Schools in Cholera Affected Areas showed that despite intensive health education to boil water, the method has not been adopted as people consider tap water to be safe. Kaluba's study also showed that they continued drawing water from unsafe sources (e.g. wells or rivers) because according to them they had used such water sources for a long time without associating it to the spread of cholera.

5.1.4. **SANITATION**

This is the act or process of securing a sanitary or healthful condition. In this study it was considered in line with disposal of excreta and refuse.

Priest said where human beings congregate, they are faced with the problem of the disposal of waste.

History suggests that in classical Greek and Roman times, methods of sewage disposal were quite efficient, but for various reasons sanitation during the middle ages was almost non-existent. During medieval times and right up to the middle of the nineteenth century when cholera was rampant, local authorities spent little on this service. The disposal of waste was the responsibility of the householder. This might have been relatively easy for rural areas, but was very difficult for town and city dwellers. The Public Health Acts of 1875 and 1936 gave each authority the power, and the obligation, to make satisfactory arrangements for its area.

The study in Table 9 shows that 56.6% of the respondents had poor sanitation and 25% belonged to small families. This could be attributed to the fact that small families easily use the neighbours toilets or even at garbage heaps at night without being noticed. Probably this can make them reluctant to pursue the issue of having their own toilet. Meanwhile medium and large families can cause concern to the neighbourhood if they did not have their own

toilet as such they are likely to have toilets. As regards to refuse disposal in medium and large families members are likely to work together as a team in cleaning the surrounding and properly dispose rubbish including sharing of knowledge, while small families may not see throwing refuse in the open as a bother to anyone and in most cases members of the household may be at work leaving no one to do the cleaning. Therefore, there is need to emphasise the importance of good sanitation to these families.

Table 10 shows that the majority (43%) of the respondents with poor sanitation had primary level of education. This means that whether you have primary level of education or no formal education it does not matter, but the application of knowledge acquired.

5.1.4.1. DISPOSAL OF EXCRETA

Most of the pit latrines in communities were poorly constructed. Most had no roofs and doors. 51.7% of the households visited had no facilities used to cover the toilets. In a number of cases toilets were full but still in use. Due to the poor state of

toilets some people used open areas in the night as a result faeces were found all over especially where garbage was heaped. For some reason this study found that most households 5.5% of the respondents used neighbours toilets. Similar studies by WHO (1997) in Zambia show that of those that have access to safe sanitary facilities, 31% share them with other households. On average therefore, only 64% of households in Zambia have both clean water and safe sanitation (MOH, HIU 1995). This poor state of pit latrines with no roofs makes it possible during rain season to wash out faeces and contaminate water sources that are unprotected and located within a short distance from toilets.

The poor state of the toilets is attributed to lack of space as houses are built close to each other and also to the fact that most of the households 43.3% are just being rented and therefore, it is the responsibility of the landlords to build new toilets once the old ones are full. However, in most cases the landlords are never available to attend to these issues promptly.

5.1.4.2. **REFUSE DISPOSAL**

There is need for communities to appreciate the fact that dirty environment promote breeding of flies which may contribute to cholera spread. Most of the respondents in this study 58.3% just dumped the rubbish in the open areas. This was either at huge refuse piles within the surroundings of the house or along the streets. Communities should be encouraged to dig rubbish pits within their surroundings to avoid throwing rubbish in the streets. Local authorities should also be encouraged to collect rubbish frequently especially at market places and along the streets. This will avoid flies and make environment clean to reduce the recurrence of cholera.

5.1.4.3. **HAND WASHING**

Most respondents 91.7% said they wash hands after using the toilet, but there was no sign of this practice. There was no soap or basin for water near the toilets. Respondents seemed only to be aware of the role of hand washing in prevention of cholera but did not practice.

The few 8.3% who said they did not wash hands after using the toilet frankly attributed it to lack of basic resources such as soap, water and basins for hand washing.

5.1.5. **FOOD SAFETY**

Since food may be an important vehicle of infection, possible sources of food contamination must be investigated and corrective measures taken.

On storage and safety of left over foods, all the 60 (100%) respondents said they covered and reheat the food before eating.

A study by St. Louis et al (1989) in Guinea, associated eating a rice meal served over several hours without reheating to the outbreak of cholera in a rural funeral.

Table 11 shows that 63.3% of the respondents admitted buying food from street vendors and the majority (28.4%) are those with high knowledge on cholera.

This was due to their attitude that they would not contract cholera by so doing since they have often bought food from vendors without contracting cholera. They also claim street vendors are easily accessible and cheap. Therefore, the level of knowledge has no bearing on buying of food from street vendors.

5.1.6. **POVERTY**

Poverty is a state of being extremely poor and lacking the financial resources to provide for basic needs which includes food, decent shelter and clothing. A study by Central Statistics Office in 1991 showed that 69% of Zambians are living in households with expenditures per adult beyond a level sufficient to provide basic needs. World Bank report (1993) shows that in any 100 Zambians 78 experiences poverty. According to Central Statistics Office (1996), seventy five percent of Lusaka population are the urban poor living in shanty compounds where its densely populated, houses poorly built and over crowded.

The findings of this study shows that 73.3% of the respondents work in informal sectors concentrating on petty trading like vending. Table 12 in this study shows that most (56.7%) respondents had a monthly income of between K50,000.00 and K100,000 and the majority (40%) of the respondents had small families. However, most of the respondents cannot still afford the basic needs with these salaries despite having small families due to high cost of living. According to table 13 the majority (55%) of the respondents lived in two roomed houses. This means that one of the rooms is likely to be used for storing food, cooking and sleeping at night depending on the size of the family. This is likely to lead to contamination of food and water.

5.2. HEALTH WORKERS RESPONSES (TABLES 2, 14, 15)

A total of 40 responses were obtained from Health workers using a structured self administered questionnaire. The respondents included ten (10) Health Workers from each of the chosen health centres. These included Chawama Health Centre, Kanyama, George and Civic Centre.

5.2.1. **CHARACTERISTICS OF HEALTH WORKERS**

The sample constituted 32.5% males and 67.5% females. The age range was between 21 to 41 and above. The majority (50%) were in the age group 31-40. The respondents composed of 40% Enroled Nurses, 17.5% Registered Nurses, 17.5% Clinical Officers, 12.5% Health Inspectors and 12.5% Health Assistants. Their length of service ranged from less than 5 years 32.5%, between 6 and 10 years, 12.5% and over 10 years 55% of the total respondents.

5.2.2. **AVAILABILITY OF RESOURCES**

The Health Workers in the study areas were being faced with problems to effectively support communities in their fight against cholera outbreaks. 75% of them (Table 16) cited inadequate manpower and transport to help in prevention and control of cholera. For the same reasons only 22.5% (Table 17) took part in activities such as supervising of construction of pit latrines and refuse pits including contact tracing and chlorination of shallow wells. These activities are very important in

avoidance of cholera. The majority of the respondents (45%) concentrated on curative rather than prevention such as screening and giving medication to clients (Table 17). This study shows that 60% of the respondents only took part in prevention and control of cholera during cholera outbreaks (Table 18). This is so because adequate resources are mobilised during these times. This does not augur well for the country since life is usually lost, it is expensive as the already compromised available funds and medical resources are transferred to the fight against cholera. On top of this the tourism industry is usually affected since most tourists will be afraid to visit for fear of contracting cholera. In the same line the Zambia Daily Mail of 10th June 1997 reported an outbreak of cholera in Zanzibar. Here there were 31 lives lost and 260 people were in danger. The authority ordered the restaurants closed as spread was suspected to be through contaminated food and water. The tourism industry was hit seriously and charter flights bringing about 200 Italian tourists per week were suspended.

5.2.3. POLITICAL INVOLVEMENT IN STREET VENDING AND ALLOCATION OF PLOTS

Table 19 shows that 65% of the health workers blame the politicians for indiscriminate street vending. On the same problem, Environmental Health Officers from local authorities and parastatals in a meeting to work out effective ways in which food and hygiene can be attained among street vendors, cited political interference as a serious impediment to enforcement of public health regulations (Zambia Daily Mail, 1st November 1997). They noted that food vending in unhygienic conditions was a source of great worry. Table 20 shows that most (40%) health workers believe that politicians, the settlers and the local authorities are to blame for increased illegal settlements in Lusaka. The politicians alone take the major share of the blame with most (32.5%) respondents saying so. This is done in most cases with the aim of winning political support during elections.

5.3. HEALTH SYSTEM IMPLICATION

The study demonstrated that the communities are knowledgeable on the causes, identification of cases,

management and prevention of cholera. This is attributed to the massive health education campaigns which have been done through the mass media, e.g. radio, television, posters, use of public address system, health staff and schools. Despite communities being knowledgeable on the different aspects of cholera, this knowledge has not been put into practice fully. This is evidenced by recurrences in cholera outbreaks every rainy season.

Factors which could have led to communities inability to utilise knowledge they have acquired on cholera include the following:-

- i). Communities inability to recognise the significance of their active participation at various levels in the cholera prevention and control as a result of their attitude, that, this is primarily a responsibility of health workers and the council. This implies that there is need to assist communities correct this attitude and see themselves as partners in health care.

They need to be imparted with the correct information and made to understand that health professionals and the council can only assist to provide health education, drugs, treatment, advice and access to safe water. The communities themselves should also play an active role in preventing and controlling cholera.

ii). Resource constraints which could have impinged on communities ability to adhere to cholera prevention measures such as, acquisition of necessary implements for basic personal hygiene practices, like soap and basin for washing hands after visiting the toilet.

- Lack of adequate tools for digging latrine and refuse pits.
- Inability of the landlords in most cases to maintain the houses and toilets.
- lack of money to pay towards maintenance of installed water pipes as a result they resort to use of shallow wells.
- Lack of charcoal or fire wood to boil water for drinking.

All these are due to low monthly income from whatever kind of employment one is involved in and the high cost of living. This implies that there is need to revise health education methods in order to emphasise the importance of the above discussed issues. There is also need for the Ministry of Social Welfare to come in and subsidise further, water fees after identifying those who cannot genuinely afford. Poor state of latrines with no roof and facilities for covering makes it possible during the rain season to fill with rain water and wash out faeces to contaminate water sources that are unprotected and located within a short distance from the latrine.

This calls for Environmental Health Officers to educate the communities on the proper construction of pit latrines and water wells.

CHAPTER 6

6.1. CONCLUSION

The study sought to determine factors contributing to the recurrence of cholera in Lusaka Urban.

The study has revealed that the communities are knowledgeable on many aspects of cholera, but this knowledge has not been put into practice. It has shown that continued drawing of water from unsafe sources and the inability to boil drinking water has led to repeated outbreaks of cholera in Lusaka. This has been compounded by poor sanitation and buying of food from street vendors. All these are due to poverty with insufficient financial resources making it impossible for them to afford basic facilities. These are things like soap and basins for washing hands after using the toilet, decent latrines, fuel for boiling drinking water and paying for treated piped water. The study reveals that politicians have a role to play in repeated cholera outbreaks in Lusaka Urban. This is because they have been involved in encouraging street vending and unplanned settlements to the extent that the local authorities cannot stop them. The findings of the study show that health workers did very little

in prevention and control of cholera. This could be partly due to inadequate manpower and transport to carry out their duties. Despite inadequate resources, health workers need to take more initiative in preventing outbreaks of cholera instead of being seen to treat it when it occurs. prevention is always better than cure.

6.2. **RECOMMENDATIONS**

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

1. Intensifying Health Education with involvement of the members of the neighbourhood Health Committee. There should be emphasis on correction of the belief that prevention and control of cholera is the responsibility of the health workers and the council. This will ensure that community members themselves become partners in health care.
2. Health workers should demonstrate the importance of drinking treated water as compared to natural untreated water from the wells. Those who cannot genuinely afford monthly contributions towards maintenance of installed water pipes should be subsidised through the Ministry of Social Welfare.

3. Local authorities should be encouraged to work extra hard in sourcing for funds. This will ensure that they are adequately staffed and are able to purchase utility vehicles for collection of garbage on regular basis in the communities.
4. Authorities responsible for environmental health workers should see to it that their Officers are always available in the communities. These will advise or supervise in proper construction of houses, latrines and refuse pits including chlorination of wells.
5. The communities, health workers, local authorities and the politicians should work hand in hand to ensure vendors sell food stuffs in authorized places with appropriate sanitary facilities. They should also work together to ensure that plots are given in good faith and in planned settlements to avoid mushrooming of illegal settlements.

6.3. LIMITATIONS OF THE STUDY

1. The study was carried out within the busy school calender of the researcher. This made it very difficult to concentrate on the study at the expense of the other courses.

2. The study was an academic exercise and needed to be completed within a specified period of time.

Therefore the sample size was limited. As such the findings could not be generalized to all the cholera affected compounds in the country.

FOOTNOTES

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ANNEX 1

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

SELF ADMINISTERED QUESTIONNAIRE FOR THE HEALTH
WORKERS ON THE FACTORS CONTRIBUTING TO RECURRENCE
OF CHOLERA IN LUSAKA URBAN

QUESTIONNAIRE NO _____

DATE OF INTERVIEW _____

NAME OF HEALTH CENTRE _____

NAME OF COMPOUND _____

DISTRICT _____

INSTRUCTIONS

1. Please do not indicate your name or address on the questionnaire.
2. Tick the appropriate response in the box provided.
3. For questions that require written responses write in the space provided.
4. Answer all the Questions
5. Information given will be treated strictly confidential.

DEMOGRAPHIC DATA

FOR OFFICIAL USE
ONLY

1. Sex of the respondent

a). Male

b). Female

--

2. How old are you?

a). 20 - 30

b). 31 - 40

c). 41 and above

--

3. What is your marital status.

a). Single

b). Married

c). Divorce

d). Widow

--

4. What is your professional title?

a). Enroled Nurse

b). Registered Nurse

c). Clinical Officer

d). Health Inspector

e). Health Assistant

--

5. How long have you been working?

a). Less than 5 years

b). 5 - 10 years

c). 10 years and above

--

6. Do you have any problems in prevention and control of cholera?

a). Yes

b). No

--

7. What major problems are you facing?

a). Lack of manpower

b). Lack of transport

c). All above

d). None of the above

--

8. What role have you been playing in preventing and controlling cholera?

a). Supervising construction of latrines and refuse pits including contact tracing and chlorination

b). Screening and Giving medicine

c). All the above

--

9. How often do you carry out your role in Question 8?

- a). Only when there is cholera outbreak
- b). Everyday
- c). Weekly
- d). Monthly

--

10. In your own opinion what do you think is the main cause of cholera recurrence in Lusaka?

--

11. What do you think can be done to prevent cholera recurrence?

--

12. Food vending contributes to recurrence of cholera in Lusaka. If you agree with this statement who is to blame for indiscriminate food vending in Lusaka?

- a). Politician
- b). Vendors themselves

--

13. Explain your answer in Question 12.

☐

14. Who is to blame for illegal settlements in Lusaka Urban?

- a). Politician
- b). Settlers themselves
- c). Local authorities
- d). All the above

☐

THANK YOU FOR COMPLETING THE QUESTIONNAIRE

ANNEX 2

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

INTERVIEW SCHEDULE FOR DATA COLLECTION ON FACTORS
CONTRIBUTING TO RECURRENCE OF CHOLERA IN LUSAKA
URBAN

QUESTIONNAIRE NO _____

DATE OF INTERVIEW _____

NAME OF COMPOUND _____

INSTRUCTIONS

1. Self introduction.
2. Explain purpose of the study.
3. Explain assurance of confidentiality so that
respondents are free to give accurate information
to the best of their knowledge.
5. Please tick appropriate response.

DEMOGRAPHIC DATA

FOR OFFICIAL USE
ONLY

1. Sex of the respondent

- a) . Male
- b) . Female

--

2. How old are you?

- a) . 20 - 30
- b) . 31 - 40
- c) . 41 and above

--

3. What is your marital status?

- a) . Single
- b) . Married
- c) . Divorced
- d) . Widowed

--

4. What is your educational level?

- a) . None
- b) . Primary
- c) . Secondary
- d) . College/University

--

5. What is your religion?

- a). Catholic
- b). Protestant
- c). Other
- d). None

--

6. Occupation of Head of household?

- a). Unemployed
- b). Informal employment
- c). Formal employment

--

7. What is your monthly family income?

- a). Less than K50,000.00
- b). K50,000.00 - K100,000.00
- c). More than K100,000.00

--

8. How Many rooms are in your house?

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

--

9. How many are you in the house?

a). 1 - 3

b). 4 - 6

c). 7 and above

--

10. What is your source of your water supply?

a). Shallow well

b). Piped (protected well or bore hole)

--

11. How do you ensure that water for drinking is safe?

a). Boiling

b). Nothing

--

12. Who owns the latrine you are currently using?

a). Ours

b). Neighbours/Communal

--

13. Has your pit latrine got a facility for covering after use?

a). Yes

b). No

--

14. How far is your pit latrine from the source of water supply?

- a). Far (15 metres or more
b). Near (less than 15 metres away)

--

15. How do you dispose off refuse?

- a). In a pit or bin
b). Anywhere in the open

--

16. Who owns the house you are staying in?

- a). Ours
b). Rented

--

SOCIAL, CULTURAL AND ECONOMICAL FACTORS

17. What causes cholera?

- a). Taking contaminated water
b). I don't know

--

18. How can you tell that a person has cholera?

- a). Seeing "rice water" stool
b). I wouldn't know

--

19. What do you do when a member of your household develops severe diarrhoea?

a). Give traditional medicine and keep in the house

b). Give ORS and take to health centre

--

20. How can cholera be prevented?

a). Good sanitation, use of safe water

b). I don't know

--

21. How do you store and use left over food

a). Covered and reheat before eating

b). Covered and eaten cold in the next meal

c). Not covered and eaten cold in the next meal

--

22. What are you supposed to do after using the toilet?

a). Nothing

b). Wash hands with soap and water

--

23. What do you think is the main cause of rampant street vending in Lusaka?

- a). Encouragement from politicians
- b). Vendors themselves
- c). All the above

--

24. Do you buy food from street vendors?

- a). Yes
- b). No

--

THANK RESPONDENT FOR PARTICIPATING IN THE INTERVIEW



THE UNIVERSITY OF ZAMBIA

SCHOOL OF MEDICINE

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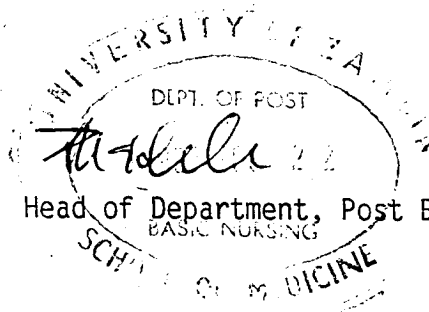
DEPARTMENT OF POST BASIC NURSING

P.O. Box 50110
Lusaka, Zambia

Your
Office

22nd August, 1997

The Town Clerk
Lusaka City Council
Box 51612
LUSAKA



u.f.s. Head of Department, Post Basic Nursing

Dear Sir/Madam,

re: RESEARCH STUDY

I am a final year student at the School of Medicine, University of Zambia Department of Post Basic Nursing. I am required to submit a research study as part of the course requirements. My research topic is on "Determining Factors Contributing to Recurrence of Cholera in Lusaka Urban."

I would be very grateful if you would kindly grant me permission to conduct interviews in Chawama, Kanyama, George, Chaisa and Garden Compounds. This will enable me to collect information required for the study. Collection of data will be between 25th August and 25th September, 1997.

Your favourable response to my request will be greatly appreciated.

Yours faithfully,

Winstone Musonda Chibale



Lusaka City Council

Director of Public Health

Telegrams: "CITY"

Telephone: 250877

Ext.

Verbal Enquiries to:

Mr.

Reference:

Your Ref:

WBN/bmk

PHD/10/2

25th August, 1997

PUBLIC HEALTH SERVICES DE

CIVIC CENT

P.O. Box 30

LUSA

Republic of Zan

TO WHOM IT MAY CONCERN:

Mr. Winstone Musonda Chibale is a student at the University of Zambia School of Medicine. He is doing a research on "Determining Factors Contributing to Recurrence of Cholera in Lusaka Urban".

Permission is therefore granted to him to conduct interviews in Chawama, Kanyama, George, Chaisa and Garden Compounds.

Yours faithfully,

A handwritten signature in black ink, appearing to be 'J. V. Chiyesu'.

J. V. CHIYESU

ACTING DIRECTOR OF PUBLIC HEALTH

