

**TYPHOID AND CHOLERA AWARENESS AND PREVENTION AMONG SLUM
DWELLERS IN KENYA: A CASE STUDY OF KIBERA SLUM.**

BY

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DECLARATION

This project is my original work and has never been presented for a degree award in this or any other University.

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DEDICATION

I would like to dedicate this work firstly to my late father Nashon Ouma Odera who instilled in me the value of education from an early age. Secondly to my mother Dorcas Ouma who has always been a source of encouragement and inspiration. Lastly, I would like to dedicate this to my wife Sharon Odera.

ACKNOWLEDGEMENT

I wish to give thanks to the Almighty God for giving me the strength and courage that has enabled me to complete this work.

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TABLE OF CONTENTS

Title page.....	i
Declaration	ii
Dedication	iii
Acknowledgement	iv
Table of Content	v
List of Tables	viii
List of Figures	ix

CHAPTER ONE: INTRODUCTION

1.1 Background to the Study	1
1.2 Problem Statement	8
1.3 Research questions	10
1.4 Research objectives.....	10
1.5 Justification of the Study.....	11
1.6 Scope of the Study	12

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction	14
2.1 World water situation	14
2.2 Water/sanitation related deaths	16
2.3 The grim global water coverage	17
2.4 The Grim Situation in East Africa	18
2.5 Global Statistics on water related diseases	19
2.6 Classification of Water-Related Diseases	20

2.6.1	<i>Water-based diseases</i>	21
2.6.2	<i>Water-related vector diseases</i>	22
2.6.3	<i>Water-scarce diseases</i>	22
2.6.4	<i>Water-borne diseases</i>	23
2.7	Cholera and typhoid	25
2.8	Disease awareness	26
2.9	Approaches for prevention	27
2.10	Theoretical Framework.....	31

CHAPTER THREE: RESEARCH METHODOLOGY

3.0	Introduction	36
3.1	Research Design	36
3.2	Target Population	37
3.3	Sample and Sampling Procedures	37
3.4	Research Instruments	38
3.5	Data Collection Procedures	39
3.5.1	Quantitative data	39
3.5.2	Data Analysis Techniques	39

CHAPTER FOUR: DATA PRESENTATION

4.0	Introduction.....	40
4.1	Data presentation	40
4.1.1	Age distribution	40
4.1.2	Gender distribution	41
4.1.3	Education level.. ..	41

4.1.4	Marital status.....	43
4.1.5	Family size: Number of children.....	44
4.1.6	Area of residence	45
4.2	Typhoid and Cholera awareness and prevention	
4.2.1	Extent of Typhoid and cholera in Kibera Slums	46
4.2.2	Extent to which the slum dwellers are aware of the diseases	48
4.2.3	Methods used by slum dwellers in curbing the diseases	50
4.2.4	Government involvement in enhancing peoples awareness and Prevention of the diseases	56
 CHAPTER FIVE : SUMMARY, CONCLUSION AND RECOMMENDATIONS		
5.1	Summary	59
5.2	Conclusions	62
5.3	Recommendations	63
References		65
Appendices.....		68
Appendix A: Questionnaire for the Residents		68
Appendix B: Questionnaire for Health Workers		72

LIST OF TABLES

Table 1 Health workers duration of Working in Kibera	38
Table 2 Age distribution of the respondents	40
Table 3 : Distribution by level of education of respondents	41
Table 4 Distribution of respondents by marital status	43
Table 5 Percentage distribution of respondents by number of children	45
Table 6: Distribution of respondents by selected villages in Kibera	46
Table 7 Response to which of the two diseases is more common	47
Table 8 Frequency of occurrence of cholera and typhoid in Kibera slums	47
Table 9 Knowledge of cholera and typhoid	48
Table 10 Causes of the diseases in the slums	49
Table 11 a Local name for cholera	49
Table 11 b Local name for typhoid	50
Table 12 Health officers responses on methods used to curb the disease	51
Table 13 Extent of preparedness by the people to tackle the disease	52
Table 14 What the community is doing to prevent the disease	52
Table 15 Sources of water for use	53
Table 16 What residents did once attacked by the disease	54
Table 17 Prevention measures	54
Table 18 What people around do to protect themselves from the diseases	55
Table 19 What the government is doing to make sure people were not affected	57

LIST OF FIGURES

Figure 1 Level of education of the respondents	42
Figure 2 Academic qualification of the health workers	43
Figure 3 Marital status of area residents	44
Figure 4 Number of children by the residents	45

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Close to 1.1 billion people in the world do not have access to safe water, and 2.6 billion do not have access to adequate sanitation. It is estimated that 2.2 million people in developing countries, most of them children, die annually due to diarrhoea linked to lack of access to safe drinking water, inadequate sanitation and poor hygiene. Majority of these live in informal settlements commonly referred to as slums (WaterAid 2006)

Poor water quality continues to pose a major threat to human health. Diarrhoeal disease alone amounts to an estimated 4.1 % of the total global burden of disease and is responsible for the deaths of 1.8 million people every year. It was estimated that 88% of that burden is attributable to unsafe water supply, sanitation and hygiene and is mostly concentrated on children in developing countries, (WHO, 2004).

Water-borne diseases are "dirty-water" diseases—those caused by water that has been contaminated by human, animal, or chemical wastes. Worldwide, the lack of sanitary waste disposal and of clean water for drinking, cooking, and washing is to blame for over 12 million deaths a year.

Urban population is growing rapidly throughout the World. People are migrating to cities in search of work. The most unwanted consequence of urbanization is increase in slum population having large number settling down on relatively smaller land. Thus slums increase the burden of already scarce resources and on overall urban

infrastructure. Their in large population residing in a smaller area with no or very limited amenities is undesirable. Environmental pollution in the urban areas is on the rise, and all urbanites have no choice but to suffer from its consequences.

Incidences of infectious diseases such as typhoid, diarrhoea, malaria and respiratory infections remain high in poor dense urban settlements. At the same time the incidence of heart disease, cancers, neurological diseases and other conditions associated with chronic exposure to toxic pollutants is also increasing driven by growth in industry, small-scale enterprise and traffic. Slum living along with pollution ill effects make these people more vulnerable to health hazards (Bapat, 1982).

Millions of people have little access to sanitary waste disposal or to clean water for personal hygiene. An estimated 3 billion people lack a sanitary toilet, for example. Over 1.2 billion people are at risk because they lack access to safe water. Water-borne diseases include cholera, typhoid, shigella, polio, meningitis, and hepatitis A and E. Human beings and animals can act as hosts to the bacterial, viral, or protozoal organisms that cause these diseases.

The unsanitary situation, coupled with the lack of clean water has continued to put residents at a risk of water-borne diseases. The settlement becomes virtually impassable during the rainy season, when sewage also spills into shacks, posing a serious health threat. Mountains of garbage and scarce water provision add to the health hazards.

In Kenya, it is estimated that 38% of the population have no access to adequate and safe water supply and 52% lacks access to adequate and appropriate sanitation (UNICEF 2006). A rapid applied research pilot study to determine the level of hygiene awareness conducted in Korogocho slums of Nairobi in Kenya by NETWAS Kenya and Water Supply and Sanitation Collaborative Council in 2003 indicated that knowledge on the key hygiene behaviours and practices by the slum residents was very low and only 29% of the respondents had ever attended any form of hygiene training (NETWAS 2003).

In Uganda, developments in hygiene and sanitation have dragged behind in the water sub sector which has blunted the impact of water and sanitation projects. Consequently, 80% of incidences of diseases in Uganda are linked to poor sanitation, (WaterAid, 2006). Despite its importance in achieving better health, water and sanitation coverage has been low in East Africa especially in the rural areas. Major efforts to address this problem have been concentrated on urban slum dwellers and less to informal rural settlements (NETWAS 2003).

Continued neglect of ever-expanding urban slum populations in the world could inevitably lead to greater expenditure and diversion of health care resources to the management of end-stage complications of diseases that are preventable. Migrants from impoverished hinterlands, living without security, public health, and, often, clean water in slums have a high probability of diseases (Neuwirth, 2005).

In year 2000, the United Nations Millennium Declaration pledged to tackle the challenge of setting specific goals of achieving "significant improvement in the lives

of at least 100 million slum dwellers by the year 2020" (United Nations, 2000). This historic declaration formally recognized the existence and need to improve the lives of a large group of people living in places in what are likely to become central to this century's most expensive health crisis. Today, nearly 1 billion people, or 32% of the world's urban population are estimated to live in slums (United nations, 2003) In 30 years, this population is projected to increase to about 2 billion (United nations, 2003, Sclar , Garau Carolini, 2005). Thus, "achieving significant improvement in the lives of at least 100 million slum dwellers" in the next 13 years, if achieved, is not likely to make much of a dent in this global health challenge.

A recent report noted that 72% of the total global burden of disease in adults 30 years or older are due to chronic diseases (Strong, Mathers, Leeder, Beaglehole. 2005). In India and China for example, chronic diseases account for 53% and 80% of all nationally reported deaths, respectively (Reddy, Sha, Varghese, Ramadass, 2005 and Wang, Kang, Wu, Bai, Burton, 2005). These diseases receive the greatest amount of attention in developed countries or wealthy sectors of developing countries in terms of dollar amount spent for research, treatment, and prevention.

Chronic non-communicable and communicable diseases like hypertension, diabetes, intentional and unintentional injuries, tuberculosis, rheumatic heart disease, and HIV infection are recognized to exist in slums because of the late complications of these diseases that the formal health sector sees and deals with. However, in slums, little is known about the magnitude, distribution, and risk factors for these illnesses before they manifest as stroke, myocardial infarction, kidney failure, suicide, multidrug-resistant TB, heart valve disease, and AIDS In fact, it was not until the United

Nations Human Settlements Program (UN-Habitat) report of 2003 that a comprehensive global description of slum communities became known (United Nations, 2003).

The report describes in detail demographic, spatial, legal, economic, and social indicators of almost 1 billion people who satisfy the operational definition of slum dwellers. The report attempts to identify different approaches to address this problem to achieve the United Nations Millennium Declaration targets. It stresses participatory slum upgrading and poverty reduction programs. However, one major indicator not assessed in this global survey is health. Apart from the standard social indices, such as life expectancy at birth and under-five mortality rate, and access to improved water sources and sanitation, the report does not address disease spectrum or burden in these communities.

Because slum dwellers are intimately, if not formally linked economically, socially, and culturally to the rest of the urban population, the formal health sectors inevitably end up dealing with the consequences of the chronic diseases described above. They deal with them at a tremendous cost to the national health system because they see these people only after they develop severe, near end-stage complications of the chronic diseases they have. For example, Brazil is estimated to expend \$51,000,000 per year for surgical repair of heart valve diseases caused by the complications of a preventable disease—acute rheumatic fever—that occurs predominantly among slum children (Terrerri, Ferraz, Goldenberg, Len, Hilario, 2001). Those who receive an artificial valve then require life time care to prevent thromboembolism and infection, further contributing to health care cost. Many of these artificial valve recipients later

require a second replacement of the valve. Little is known about the reservoir from which these cases arise or factors in the slums that lead to rheumatic heart diseases. In fact, in many countries, most disease burden or mortality information on slum dwellers is largely based on clinic, hospital, or national mortality registry data. These end point data represent only the "tip of the iceberg". This type of information is not sufficient to plan health care expenditures, and grossly underestimates or misdirects the health care resource allocation needs.

In most cities of the world, slums, by definition, are informal and illegal settlements. A large proportion of the residents are rural migrants, displaced persons, illegal and legal immigrants, unemployed, and refugees. They are not necessarily all poor. There are those who are legally employed in formal sector occupations, such as school teachers and even university instructors, as well as those who are self-employed and own businesses (Neuwirth, 2005) However most are employed in low-paying occupations, such as in domestic services, the garment industry, solid waste recycling, security service, and day labor; even crime constitutes a type of income-generating activity for some residents (Neuwirth 2005, UN, 2003). Nearly all of these people are excluded from the usual benefits provided to or required for the formal sector employees, including minimal wage compensation, pension, let alone health insurance.

The world's urban population is increasing by about 70 million people a year (United Nations 2003). These people require housing, employment, and services. The inability of governments in developing countries to meet their needs forces them to rely on or create their own informal infrastructure. Informal housing, informal

employment, and self-employment are some of the survival activities adapted by these urban dwellers that are somewhat within their own power to implement.

Slum dwellers comprise a distinct urban population, whose health assessment and needs require novel approaches and focused solutions that cannot await the elimination of poverty and inequality (Fiscella K Williams, 2004 and Vlahov, Gibble, Freudenberg, Galea 2004). While poverty reduction, self-empowerment, and elimination of disparity are important and worthy goals for improving health care in these communities, the speed of development and size of urban slums render achievement of these goals enormously challenging. Adequate and just characterization of the determinants of chronic and acute diseases in slums requires long-term prospective population-based surveillance. It also requires new science to understand social-cluster determinants of diseases. This is also challenging and expensive. But further neglect of this neglected population is likely to become even more costly.

In Africa's largest slum Kibera, uncollected waste has long posed an insurmountable health hazard but an ingenious new energy-generating incineration programme could help contain pollution. Unclean environment has led to the spreading of diseases" such as typhoid, cholera and various forms of diarrhea. The degradation of the environment of the Nairobi rivers is reaching a critical stage. With the increase of population now to more than three million people, the waste problems have actually overwhelmed the ecosystem. The city now generates 3,000 metric tons of waste a day. Invariably, people throw out all the rubbish they have into the river, it could be plastic, bottles, (car) batteries with all the heavy metals in them, everything really

goes into the river." (IRIN, 2007). The unsanitary situation, coupled with the lack of clean water has continued to put residents at a risk of water-borne diseases. The settlement becomes virtually impassable during the rainy season, when sewage also spills into shacks, posing a serious health threat. Mountains of garbage and scarce water provision add to the health hazards. "Water is an issue. Water pipes are passing through sewers and that is why most people (85 percent) suffer from typhoid, cholera and diarrhoea. Typhoid and Cholera are some of the most common diseases in Africa's largest slum, Kibera, in Nairobi." (IRIN 2007)

1.2 Problem Statement

Urban slums comprise a social cluster that engenders a distinct set of health problems. With 1 billion people currently estimated to live in such communities, this neglected population has become a major reservoir for a wide spectrum of health conditions that the formal health sector must deal with. However, of all the basic human services available to slum dwellers, one that is beyond the control of these residents is health service.

Health service, by definition, requires specialized, skilled, or trained personnel. It requires an infrastructure for delivery of care that involves provision of specialized information, physical examination, diagnostic services, hospitalization, medications, follow-up care, prevention, and surveillance. None of these services can be provided or created by the slum dwellers themselves. Furthermore, unlike electric or water companies, banks, or other private businesses, health service providers have little or no economic incentive to move into slums.

Apart from those provided by volunteer groups, nongovernmental organizations (NGOs), and fee-for-service private clinics and pharmacies (usually run by unlicensed or poorly trained professionals or even nonprofessionals), health services are virtually nonexistent within most of the world's slums. Hence, health service is a social service that can only exist in the formal sector upon which the slum dwellers are completely dependent when they develop an end-stage disease.

Unlike what occurs with refugee populations, the formal health sector becomes aware of the health problems of slum populations relatively late in the course of their illnesses. As such, the formal health sector inevitably deals with the severe and end-stage complications of these diseases at a substantially greater cost than what it costs to manage non-slum community populations. Because of the informal nature of slum settlements, and cultural, social, and behavioral factors unique to the slum populations, little is known about the spectrum, burden, and determinants of illnesses in these communities that give rise to these complications, especially of those diseases that are chronic but preventable. Little is known about the spectrum and burden of disease morbidity in urban slums of the world.

The lack of such data hampers adequate health care resource allocation and provision of appropriate disease prevention services. The formal health sectors encounter slum dwellers only when they have end-stage complications of their chronic illness. They encounter these complications at a tremendous cost to their health care resources. Concerted effort is urgently needed to assess health burden and determinants of disease morbidity among slum residents at the community level. Kibera is heavily polluted by soot, dust, and other wastes. Open sewage routes, in addition to the

common use of flying toilets, also contribute to contamination of the slum with human and animal faeces. The combination of poor nutrition and lack of sanitation accounts for many illnesses including typhoid and cholera . This study therefore aimed at establishing the Typhoid and Cholera awareness and prevention among slum dwellers in Kibera slums in Kenya.

1.3 Research questions

The study was guided by the following research questions:

- 1) What is the extent of Typhoid and cholera in Kibera Slums?
- 2) To what extent are the slum dwellers aware of these diseases in Kibera slums?
- 3) What methods do slum dwellers use in curbing cholera and typhoid in Kibera slums?
- 4) To what extent are the slum dwellers prepared to tackle cholera and typhoid in Kibera slums?
- 5) To what extent is the government involved in enhancing peoples awareness and prevention of cholera and typhoid in Kibera slums?

1.4 Research Objectives

1.4.1 Overall objective

The purpose of this study was to establish typhoid and cholera awareness and prevention among slum dwellers in Kenya: a case study of Kibera slum.

1.4.2 The Specific objectives

The study was guided by the following objectives

- 1) To establish the prevalence of Typhoid and cholera in Kibera Slums.
- 2) To determine extent to which the slum dwellers in Kibera are aware of the diseases.
- 3) To identify the methods used by slum dwellers in curbing the diseases in Kibera slums?
- 4) To determine the ability of slum dwellers in Kibera to combat the spread of Typhoid and Cholera.
- 5) To establish the extent to which the government is involved in enhancing people's awareness and prevention of typhoid and cholera in Kibera slums?

1.5 Justification of the Study

It is necessary to understand the impact of slum environment on the living conditions of the residents including their health. Slum population bears dual burden of diseases – diseases due to life style, urban living and diseases due to poor economic status and thus living conditions. Knowledge of the health problems in the slum areas is necessary when we need to understand more about this underprivileged population. Slum settlements generally look similar in terms of filth and squalor, poverty and malnourishment, disease and wretchedness. The usual sight is garbage dumps, choked gutters, malnourished children, queues on water taps, smoke filled atmosphere after cooking fires are lit. Such unhygienic atmosphere affects the health of the residents (Bapat, 1982). Slum population bears dual burden of diseases – diseases due to life style, urban living and diseases due to poor economic status and thus living

conditions. This issue of the health problems in the slum areas is important to consider when one needs to understand more about this underprivileged population

The United Nations Expert Group at a meeting held in Nairobi in 2002 operationally defined a slum as a human settlement that has the following characteristics: 1) inadequate access to safe water; 2) inadequate access to sanitation and other infrastructure; 3) poor structural quality of housing; 4) overcrowding; and 5) insecure residential status (United Nations, 2003). Currently, these characteristics describe communities that comprise 43% of the combined urban populations in all developing countries, and 78% of the urban population in least developed countries (United Nations, 2003). Thus, in many developing countries, life in slum settlements has already become the norm of urban human existence.

A new approach to health assessment and characterization of social-cluster determinants of health in urban slums is urgently needed. It is necessary to understand the impact of slum environment on the living of the residents as also on the health. One way of curbing diseases such as typhoid and cholera is the involvement of the people in the fight against the diseases. The study will seek for slum dwellers opinions on their awareness and prevention fo typhoid and cholera. Although it is difficult to measure the morbidity in population there is a need to have some information on morbidity at a community level.

The findings of the study will be essential to the government in addressing the problem and seeking for ways in which the slum dwellers themselves can be enhance in the fight against the diseases.

1.6 Scope of the Study

The scope of the study was Kibera slums in Kenya. Kibera is located southwest of Nairobi city centre and is approximately 2.5 square kilometres, 256 hectares, or 630 acres). Nairobi Dam is to the south. It is sited approximately 5 km south east of the city centre of Nairobi. It holds more than a quarter of Nairobi's population. The estimated population density is 300,000/km². There are a number of villages, including Kianda, Soweto, Gatwekera, Kisumu Ndogo, Lindi, Laini Saba, Siranga/Undugu, Makina and Mashimoni. Its population is put at anything between 600,000 and 1.2 million. Seventy percent of the city's population live in informal settlements - or slums - often located in the river valley and with no sanitation systems.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This section covers water situation in the world, water/sanitation related deaths, the grim of global water coverage, the grim situation in East Africa, global statistics on water related diseases, classification of water-related diseases, cholera and typhoid, disease awareness and approaches for prevention.

2.1 World water situation

Of the 6.5 billion people on earth today, about 1.1 billion people lack access to potable freshwater and 2.6 billion, almost half the global population, do not have access to adequate sanitation facilities. Despite considerable efforts to improve access to clean water and sanitation in the 1990s, when some 800 million people received improved supplies, this barely kept up with the increase in population. According to the United Nations (2000) Assessment, by the end of the 1990s there were as many people without access to these services as at the beginning, and coverage in urban areas had fallen. Only more recently has the number without access to clean drinking water been reduced from 1.2 to 1.1 billion, while the number without proper sanitation has remained little changed (United Nations, 2000). Kibera slums being one of the largest slum in Africa has many people without these basic amenities.

Population growth in poor countries accounts for high number of slums increase. On average, developing cities has had to cope with an influx of some 60 million new

arrivals every year from the countryside. Growth rates in some cities, such as Lagos, Bangkok, Manila, Dakar, and Dar es Salaam exceeded 5 per cent per year. Such rapid and unplanned growth pushed urban services and infrastructure including water to the breaking point. With massive in-migration over the decade of the 1990s, and since, the population in many developing country cities exploded leading to increase in informal settlements. Many migrants ended up in squatter settlements and slums, lacking electricity, water and sanitation services (GEO Year book 2004/5, compiled from WHO/UNICEF 2004).

Urban population is growing rapidly throughout the World. People are migrating to cities in search of work. The most unwanted consequence of urbanization is increase in slum population having large number settling down on relatively smaller land. Thus slums increase the burden of already scarce resources and on overall urban infrastructure. Their living – large population residing in a smaller area with none or very limited amenities is undesirable. According to Slum Areas Improvement and Clearance Act, 1956 slum is defined as ‘any predominantly residential area where the dwellings which by reasons of dilapidation, overcrowding, faulty arrangement of design, lack of ventilation, light or sanitary facilities or any combination of these factors detrimental to safety, health or morals’. Slum settlements generally look similar with same degree of filth and squalor, poverty and malnourishment, disease and wretchedness. The usual sight is garbage dumps, choked gutters, malnourished children, queues on water taps, smoke filled atmosphere after cooking fires are lit. Such unhygienic atmosphere affects the health of the residents (Bapat, 1982).

Environmental pollution in the urban areas is on the rise and all urbanites have no choice but to suffer from its consequences. Incidences of infectious diseases such as diarrhoea, malaria and respiratory infections remain high in poor dense urban settlements. At the same time the incidence of heart disease, cancers, neurological diseases and other conditions associated with chronic exposure to toxic pollutants is also increasing driven by growth in industry, small-scale enterprise and traffic. Slum living along with pollution ill effects make these people more vulnerable in terms of health. Dictionary meaning of the word slum is ‘an overcrowded and squalid back street, district etc. usually in a city and inhabited by very poor people’ (Tibajuka, 2007). All these adverse developments apply to Kibera slums as well. However no studies have been carried out on how they lead to spread of typhoid and cholera and the extent to which these diseases are managed in the slums.

A lack of sanitation, safe drinking water and health services will compound social insecurity and exacerbate the prevalence of maternal mortality (MDG 5) and the spread of illnesses like respiratory problems, diarrhoea, malaria and HIV/Aids (the latter two fall under MDG 6). High child mortality rates (MDG 4) will also remain a huge problem (Tibajuka, 2007)...

2.2 Water/sanitation related deaths

It is estimated that 1.1 billion people in the world still lack access to safe water supply, and 2.4 billion people lack basic sanitation. The vast majority of people who are seriously affected by or die from preventable water and sanitation related diseases are rural dwellers and the urban poor in the developing world. Current international

estimates of deaths due to water-related diseases range from 2.2 million to 5 million annually (AMREF, 2005).

According to WHO/UNICEF (2004) about 2.6 billion do not have access to adequate sanitation facilities. It is estimated that 2.2 million people in developing countries, most of them children, die annually due to diarrhoea linked to lack of access to safe drinking water, inadequate sanitation and poor hygiene (Water Aid, 2006). Poor water quality continues to pose a major threat to human health. Diarrhoeal disease alone amounts to an estimated 4.1 % of the total global burden of disease and is responsible for the deaths of 1.8 million people every year. It is estimated that 88% of that burden is attributable to unsafe water supply, sanitation and hygiene and is mostly concentrated on children in developing countries, (WHO, 2004). Lack of drinking water and sanitation kills about 4,500 children a day and sentences their siblings, parents and neighbours to sickness, squalor and enduring poverty. Improvements bring immediate and lasting benefits in health, dignity, education, productivity and income generation (WHO/UNICEF, 2004). This situation of lack of drinking water, is very much prevalent in Kibera slums. If not managed, the situation will continue to affect a large population residing in the slums.

2.3 The grim of global water coverage

It was estimated that by the year 2002, 1.1 billion people in the world would still be using water from unimproved sources. In sub-Saharan Africa, 42 per cent of the population is still unserved. Of the 1.1 billion people using water from unimproved sources, nearly two thirds live in Asia. The number of people without improved water

sources in China alone is equal to the number of people without water in the entire Africa. The lowest drinking water coverage levels are found in sub-Saharan Africa and in Oceania. In contrast, several regions, including Northern Africa, Latin America and the Caribbean, and Western Asia, have achieved coverage levels of close to 90 per cent or more (WHO/UNICEF, 2004).

Population growth is a significant factor in the ability of countries, particularly low-income countries, to increase the coverage of drinking water. For example, just to maintain its 1990 coverage level of 74 per cent, Peru would have had to ensure drinking water services to more than 350,000 people a year, on average, over the period 1990 to 2002. In fact, it provided water to more than 480,000 people a year, raising coverage from 74 per cent to 81 per cent. On a global level, the number of people using improved water sources has increased by more than 90 million people a year since 1990. But because of population growth, the absolute number of people without coverage has only decreased by about 10 million people a year (WHO/UNICEF 2004 report),

2.4 The Grim Situation in East Africa

In Uganda, developments in hygiene and sanitation have dragged behind in the water sub sector which has blunted the impact of water and sanitation projects. The traditional approach has focused mainly on improving water supplies. Consequently, 80% of incidences of diseases in Uganda are linked to poor sanitation, (WaterAid, 2006). Despite its importance in achieving better health, water and sanitation coverage has been low in East Africa especially in the rural areas. Major efforts to

address this problem have been concentrated on urban slum dwellers and less to informal rural settlements.

In Kenya, it is estimated that 38% of the population have no access to adequate and safe water supply and 52% lacks access to adequate and appropriate sanitation, (UNICEF 2006). A rapid applied research pilot study to determine the level of hygiene awareness conducted in Korogocho slums of Nairobi in Kenya by NETWAS Kenya and Water Supply and Sanitation Collaborative Council in 2003 indicated that knowledge on the key hygiene behaviours and practices by the slum residents was very low and only 29% of the respondents had ever attended any form of hygiene training (NETWAS 2003). The unsanitary situation, coupled with the lack of clean water has continued to put residents at a risk of water-borne diseases. The settlement becomes virtually impassable during the rainy season, when sewage also spills into shacks, posing a serious health threat. Mountains of garbage and scarce water provision add to the health hazards (WaterAid, 2006). The situation in Kibera other slums in Nairobi is not very different from the situation in Kibera. Kibera has actually adverse situation being the largest slum in Kenya. Despite being the most affected slums, no study has been conducted to establish the prevalence of typhoid and cholera and ways of prevention.

2.5 Global Statistics on water related diseases

It is estimated that diarrhea and cholera diseases have affected between 1 to 5 million which are strongly related to poor sanitation conditions, poor personal/domestic hygiene practices and unsafe drinking water. Intestinal worms have affected 1.5

billion people. Among the infected 100,000 are strongly related to poor sanitation conditions and poor personal/domestic hygiene practices. 200 million people have been affected by Schistosomiasis (bilharzia) where people infected (20 million suffer from severe consequences) of the diseases. Among these, 200,000 are strongly related to poor sanitation conditions and the absence of nearby sources of safe water. Trachoma or eye infections has affected 150 million people in the world where 6 million people have been blinded from the disease. These are strongly related to lack of face washing, often due to the absence of nearby sources of safe water. Trypanosomiasis or sleeping sickness has affected close to 275,000 people and are related to the absence of nearby sources of safe water. Dracunculiasis or guinea worm had by 1996 affected 150,000. These were strongly related to unsafe drinking water.

2.6 Classification of Water-Related Diseases

Millions of people have little access to sanitary waste disposal or to clean water for personal hygiene. An estimated 3 billion people lack a sanitary toilet, for example. Over 1.2 billion people are at risk because they lack access to safe freshwater. Water-related diseases are a growing human tragedy, killing more than 5 million people each year - 10 times the number killed in wars. About 2.3 billion people suffer from diseases linked to dirty water (UN World Water Development Report 2003). The World Health Organisation says, however, that "Every year more than 2.2 million people from developing countries die from diseases associated with the lack of access to safe drinking water and inadequate sanitation. (Global Water Supply and Sanitation Assessment 2000 Report, WHO). Some 60 per cent of all infant mortality worldwide is linked to infectious and parasitic diseases, most of them water-related. In

Bangladesh, for instance, an estimated three-quarters of all diseases are related to unsafe water and inadequate sanitation facilities. In Pakistan, one quarter of all people attending hospitals are ill from water-related diseases.

Adverse human health effects from water can be divided into four main categories; Water-borne diseases: those caused by water that has been contaminated by human, animal, or chemical wastes; Water-based diseases, those caused by aquatic organisms that spend part of their life cycle in the water and another part as parasites of animals; Water-related vector diseases, those transmitted by vectors, such as mosquitoes and tsetse flies, that breed or live in or near polluted and unpolluted water; and Water-scarce diseases, those diseases that thrive in conditions where freshwater is scarce and sanitation poor, such as trachoma and tuberculosis.

2.6.1 Water-based diseases

Water-based diseases include guinea worm, paragonimiasis, clonorchiasis and schistosomiasis. These diseases are caused by a variety of flukes, tapeworms, roundworms and tissue nematodes, often referred to as helminths, that infect humans. Although these diseases are not usually fatal they prevent people from living normal lives and impair their ability to work. The prevalence of water-based diseases often increases when dams are constructed, because stagnant water behind dams is ideal for snails, the intermediary host for many types of worms. For instance, the Akosombo Dam, on Volta Lake in Ghana and the Aswan High Dam on the Nile in Egypt have resulted in huge increases of schistosomiasis in these areas.

2.6.2 *Water-related vector diseases*

Millions of people suffer from infections transmitted by vectors, such as mosquitoes and flies. Such vectors infect humans with malaria, yellow fever, dengue fever, sleeping sickness and filariasis. Malaria, the most widespread, is endemic in 100 developing countries, putting some 2 billion people at risk. In sub-Saharan Africa alone, malaria costs an estimated \$1.7 billion a year in treatment and lost productivity. The incidence of these diseases appears to be increasing. There are many reasons: people are developing resistance to antimalarial drugs; mosquitoes are developing resistance to DDT, the major insecticide used; environmental changes are creating new breeding sites; and migration, climate change, and creation of new habitats mean that fewer people build up natural immunity to these diseases.

2.6.3 *Water-scarce diseases*

Water-washed diseases (water-scarce diseases) are diseases caused by poor personal hygiene, and skin or eye contact with contaminated water and/or insufficient quantities of clean water for personal hygiene and washing. Examples include scabies, trachoma (eye infections), and flea, lice and tick-borne diseases such as typhus. Water-based diseases caused by parasites are found in intermediate organisms living in contaminated water. These diseases are usually passed on to humans when they drink or wash with contaminated water. Examples are dracunculiasis (guinea worm), chistosomiasis (bilharzia), other helminths (worms). Water-related insect-vector diseases are diseases caused by insects, especially flies and mosquitoes, that breed in or feed near contaminated water sources. These diseases are not usually

associated with the lack of water supply and sanitation facilities, and are typically excluded from estimates in water-related deaths. Examples are malaria, dengue, onchocerciasis (river blindness); trypanosomiasis (sleeping sickness), yellow fever.

These diseases are transmitted when there is too little fresh water available for sanitation and washing hands. These diseases are becoming rampant throughout the world. They can be controlled easily through better hygiene, but adequate supplies of clean freshwater must be available. Human beings and animals can act as hosts to the bacterial, viral, or protozoal organisms that cause these diseases.

2.6.4 *Water-borne diseases*

Water-borne diseases are caused by the consumption of water contaminated by human or animal excreta (feces, urine) containing disease-causing organisms (pathogens) such as bacteria, viruses, worms and amoebas. Examples in this category are dysentery, cholera, typhoid, other diarrheal diseases, shigella, polio, meningitis, hepatitis A and E and diarrhoea, among others. These are dirty water diseases. Most of them can be prevented if water is treated before use. Dirty water diseases include Diarrhoeal disease. This is a major health problem throughout the world and is endemic in countries where sewage treatment is inadequate such as in slums. An estimated 4 billion cases of diarrhoeal disease occur every year, resulting in 3-4 million deaths, mostly among children. Raw sewage water used on vegetable fields cause outbreaks of cholera in Chile and Peru. In over 150 countries, nitrates from fertilizers have seeped into water wells, fouling drinking water. In Europe and Russia, the health of some 500 million people is at risk from water pollution. In northern

Russia, half a million people living on the Kola Peninsula drink water contaminated with heavy metals.

Although water-borne diseases are of immense public health importance in developing countries, there is however relatively little systematic data available on the overall incidence and prevalence of diarrhoeal disease in these areas, and on what proportion of this disease is water-borne. Todd [19] reported that very few countries in Africa or the Middle East have surveillance programmes which publish outbreak data on food and water-borne disease. In a review of the burden of ID in South Asia, Zaidi et al (2004) reported that, although interventions targeted at diarrhea and acute respiratory infection have resulted in a substantial decline in deaths in South Asian children, these diseases still account for almost half of all deaths. Salmonella is reported to be the most common bacterial pathogen identified from blood stream infections. Millions of cases of typhoid infections occur each year, but reliable data of the annual number of cases are not available because laboratory identification is not routinely undertaken. In India, massive programmes aimed at supplying potable water to urban as well as rural areas have been implemented by government in recent years.

Diarrheal disease, the major water-borne disease, is prevalent in many countries where sewage treatment is inadequate. Instead, human wastes are disposed of in open latrines, ditches, canals, and water courses, or they are spread on cropland. An estimated 4 billion cases of diarrheal disease occur every year, causing 3 million to 4 million deaths, mostly among children. Using contaminated sewage for fertilizer can result in epidemics of such diseases as cholera. These diseases can even become

chronic where clean water supplies are lacking. In the early 1990s, for example, raw sewage water that was used to fertilize vegetable fields caused outbreaks of cholera in Chile and Peru. In Buenos Aires, Argentina, a slum neighborhood faced continual outbreaks of cholera, hepatitis, and meningitis because only 4% of homes had either water mains or proper toilets, while poor diets and little access to medical services aggravated the health problems. Toxic substances that find their way into freshwater are another causes of water-borne diseases. Increasingly, agricultural chemicals, fertilizers, pesticides, and industrial wastes are being found in freshwater supplies. Chemicals, even in low concentrations, can build up over time and, eventually, can cause chronic diseases such as cancers among people who use the water.

2.7 Cholera and typhoid

Periodic malfunction of the sewer and water lines in the slums have led to epidemics of serious infectious diseases like cholera and typhoid. Water pipes are passing through sewers and that is why most people(85 percent)suffer from typhoid, cholera and diarrhea in the slums.

Cholera is a water-borne disease which continues to ravage developing countries. According to the most recent global data (2003), 45 countries (developed and developing countries) officially reported to WHO a total of 111,676 cases and 1,894 deaths. The overall number of cases and deaths has declined compared with previous years and the case fatality rate has dropped to 1.74% but had remained high among vulnerable groups, with rates up to 41% in some countries. Africa reported a total of 108,067 cases, accounting for 96% of the global total. The number of cases reported

from the Americas and Asia continued to decline (and Europe noticed only imported cases). Globally, however, the actual figures are estimated to be higher owing to under reporting. For typhoid fever, the global incidence in 2003 was estimated at 21,650,974 cases with 216,510 deaths (UNICEF, 2004).

Cholera is a highly contagious diarrheal disease caused by eating or drinking water contaminated with the feces or vomit of an infected person. It can also be spread by dirty hands or flies. Cholera outbreaks commonly occur in crowded slums, and in the aftermath of major disasters where water and sanitation facilities are non-existent or damaged/destroyed. In severe cases, rapid loss of body fluids leads to dehydration and shock. If untreated, death may occur within a few hours. Typhoid fever is a gut infection caused by food or water contaminated with bacteria found in human excreta, and often occurs in epidemics (many people sick at once). The disease causes victims to develop a high fever, sometimes accompanied by diarrhea or vomiting. Victims often become incoherent or delirious. Left untreated, the disease may result in death.

2.8 Disease awareness

Provision of safe water supply and sanitary conditions coupled with sustainable proper personal hygiene can drastically reduce this burden. Hygiene behaviour plays an important role in the prevention of diseases related to water and sanitation, such as cholera, typhoid, dysentery, diarrhoea and intestinal worms. Providing water and sanitation facilities does not necessarily lead to a decrease in these diseases. For real impacts to be felt, provision of these facilities has to go hand in hand with their proper use and maintenance. This is achieved by persuading people to change their

behaviour in order to reduce 'risk' practices that predispose them to hygiene and sanitation related diseases.

Campaigns to promote hand washing with soap, food protection, domestic hygiene and safe excreta disposal, in particular of infants' stools, have been shown to deliver big health gains. The simple habit of hand washing if widely adopted would save more than one million lives around the world annually, the majority of them children under the age of five in poorer countries. The simple act of washing hands with soap can reduce diarrhoea by over 40% (Water Aid 2006). Better hygiene through hand washing and safe food handling reduces child diarrhoea by 35%, improved water quality by 15-20% and safe disposal of children's faeces by nearly 40%. In view of the current HIV/AIDS prevalence rates improved hygiene practices and access to safe water and sanitation facilities also reduce the chance of infection with opportunistic diseases (diseases which attack the body due to weakened immunity) such as diarrhoea and tuberculosis.

In addition, greater access to improved water and sanitation services and improvement in personal hygiene behaviour may confer other benefits. These include averted health-related costs, avoidance of time lost from daily activities as a result of illness, and time saved by having water and sanitation closer to home. Time saved may translate into higher productivity and higher school attendance.

2.9 Approaches for prevention

Providing improved sanitation for an additional 1.8 billion from 2002 to 2015 would achieve the MDG target to halve the proportion unserved by 2015. But, because of

rising population, there will still be 1.8 billion people having to cope with unhygienic sanitation facilities at that time.

Sub-Saharan Africa will need almost to double the annual numbers of additional people served with drinking water and quadruplicate the additional numbers served with basic sanitation if the MDG target is to be reached. So, reaching the target means going faster and investing considerably more. That is being recognized by the world community in political proclamations and in increased commitments to the sector in some of the poorest countries. There is a strong case to do even more.

Improving public sanitation and providing a clean water supply are the two steps needed to prevent most water-borne diseases and deaths. In particular, constructing sanitary latrines and treating waste water to allow for biodegradation of human wastes will help curb diseases caused by pollution. At the least, solids should be settled out of waste water so that it is less contaminated. It is important that a clean water supply and the construction of proper sanitary facilities be provided together because they reinforce each other to limit the spread of infection .

Many studies link improvements in sanitation and provision of potable water with dramatic reductions in water-related morbidity and mortality. A review in 1991 of over 100 studies of the effects of clean water and sanitation on human health found that the median reduction in deaths from water-related diseases was 69% among people with access to potable water and proper sanitation.

Providing clean water and sanitation greatly reduces child mortality. According to a review of 144 studies from the 1980s, infant and child deaths fell by an average of

55% as a result of providing clean water and sanitation. In a study of countries where infant mortality rates dropped dramatically—as in Costa Rica, where the decline was from 68 deaths per 1,000 live births in the 1970s to just 20 per 1,000 in the 1980s—researchers attributed three-quarters of the mortality decline to water and sanitation projects provided as part of rural community health programs.

While the cost of building freshwater supply systems and sanitation facilities is high, the costs of *not* doing so can become staggering. In Karachi, Pakistan, for example, a study found that poor people living in areas without any sanitation or hygiene education spent six times more on medical care than people who lived in areas with access to sanitation and who had a basic knowledge of household hygiene (Rukunga, AMREF, 20005).

Provision of safe water supply and sanitary conditions coupled with sustainable proper personal hygiene can drastically reduce this burden. Hygiene behaviour plays an important role in the prevention of diseases related to water and sanitation, such as cholera, typhoid, dysentery, diarrhoea and intestinal worms. Providing water and sanitation facilities does not necessarily lead to a decrease in these diseases. For real impacts to be felt, provision of these facilities has to go hand in hand with their proper use and maintenance. This is achieved by persuading people to change their behaviour in order to reduce ‘risk’ practices that predispose them to hygiene and sanitation related diseases (Rukunga, AMREF, 20005).

In Kenya, Uganda and Tanzania, the Participatory Hygiene and Sanitation Transformation (PHAST) approach to water and sanitation projects has been adopted

to promote hygiene and sanitation improvements, and community management of water and sanitation facilities. PHAST was introduced in the understanding that hygiene behaviours are particularly difficult to change because they relate to daily activities, they are shared by the whole community and they form part of the culture and traditions of the community. This is addressed by involving community groups in discovering the routes of water-borne diseases, analyzing their own behaviours in light of this information and then planning how to block contamination routes. PHAST also facilitates communities in deciding what they want from hygiene and sanitation projects, how these should be set up and paid for and how to ensure sustainability.

Another approach adopted in East Africa (Kenya and Uganda) to promote safe hygiene practices is the Personal Hygiene and Sanitation Education (PHASE), which targets school children. It aims to reduce diarrhoeal diseases linked to poor hygiene and to improve children's overall health and wellbeing by providing guidance on the importance of hand washing and other hygiene practices (United Nations, 2003).

A multi-country study on sustainability of hygiene behaviour involving selected countries in Asia and Africa including Kenya, indicates that intensive hygiene promotion interventions, such as working with small groups and through personal contact, will have tangible and sustained impact on people's behaviour (Cairncross and Shordt 2004). The study further concludes that sustainability of the desired behaviour is possible when hygiene is highly prioritized and adequate resources are committed to hygiene promotion. A Water, Sanitation and Hygiene (WASH) campaign was launched in Kenya in 2002 aiming at, among other things, promoting

hygiene awareness. This targeted key behaviors such as hand washing after using toilets and before handling food as well as latrine use and maintenance at home and in schools (Cairncross and Shordt 2004)..

2.10 Theoretical Framework

The study will employ disaster management theories. It will concentrate on disaster risk management (DRM) and risk mitigation theories.

Disaster Risk Management (DRM)

In our civilized and industrialized society, the process of a natural hazard turning into a disaster and striking human activities has become increasingly complicated. The science of disaster risk management has constantly been pursuing to accumulate systematic knowledge and technology to understand hazard-disaster transformation processes and to find better strategies for reducing disaster risks involved at global, regional, and community level.

Under this globalizing society disaster issues are becoming more and more interrelated with environmental problems and social conflicts. Thus sustainable development and citizen participation tend to come under the extending scope of integrated disaster risk management. DRM takes challenges for this interdisciplinary science which requires an appropriate combination of various approaches such as systems engineering, micro economics, sociology and behavioral science, as well as providing a holistic framework for the promotion of the science. In its methodological development efforts, DRM gives greater importance to proactive countermeasures such as mitigation policies, disaster insurance or fund, risk communication and social

preparedness. Reactive strategies are, however, studied as important ways to recover from disaster damage.

Disaster risk management (DRM) is a structured approach to managing uncertainty related to a threat. The objective of risk management is to reduce different risks related to a pre-selected domain to the level accepted by society. It may refer to numerous types of threats caused by environment, technology, human, organizations or politics. On the other hand it involves all means available to humans, or in particular, to a risk management entity (person, staff or organization).

In ideal risk management, a prioritization process is followed whereby the risks with the greatest loss and the greatest probability of occurring are handled first, and risks with lower probability of occurrence and lower loss are handled in descending order. In practice the process can be very difficult, and balancing between risks with a high probability of occurrence but lower loss versus a risk with high loss but lower probability of occurrence can often be mishandled.

Intangible risk management identifies a new type of risk - a risk that has a 100% probability of occurring but is ignored by the organization due to a lack of identification ability. For example, when deficient knowledge is applied to a situation, a knowledge risk materializes. Relationship risk appears when ineffective collaboration occurs. Process-engagement risk may be an issue when ineffective operational procedures are applied. These risks directly reduce the productivity of knowledge workers, decrease cost effectiveness, profitability, service, quality, reputation, brand value, and earnings. Intangible risk management allows risk

management to create immediate value from the identification and reduction of risks that reduce productivity.

Steps in the risk management process

The first step in establishing the context involves identification of disaster in a selected domain of interest, planning the remainder of the process, mapping out the social scope of risk management, the identity and objectives of stakeholders and the basis upon which risks will be evaluated, It also involves defining a framework for the activity and an agenda for identification, developing an analysis of risks involved in the process, mitigation of risks using available technology, human and organizational resources.

After establishing the context, the next step in the process of managing risk is to identify potential risks. Risks are about events that, when triggered, cause problems. Hence, risk identification can start with the source of problems, or with the problem itself in this case the problem of cholera and typhoid. This is followed by source analysis where risk sources may be internal or external to the system that is the target of risk management. Examples of risk sources in our case can be slum residents themselves or the government. Then follows that problem analysis where risks identified are related to identified threats. Once risks have been identified and assessed, their management may be made using either avoidance or elimination, reduction or mitigation, transference or outsource, insure or retention.

Disaster mitigation

Reduction of the potential for damage is the key objective of mitigation. Mitigation is those actions taken singly or in combination, which attempt to rectify impacts, associated with a particular activity for example in disease management. The goal 'should be to substantially increase public awareness of natural hazard risk so that the public demands safer communities in which to live and work' (Jamieson and Drury).

Mitigation efforts attempt to prevent hazards from developing into disasters altogether, or to reduce the effects of disasters when they occur. The mitigation phase differs from the other phases because it focuses on long-term measures for reducing or eliminating risk. The implementation of mitigation strategies can be considered a part of the recovery process if applied after a disaster occurs. However, even if applied as part of recovery efforts, actions that reduce or eliminate risk over time are still considered mitigation efforts.

Long-term behavioral characteristics to disasters such as cholera and typhoid may be identified/responded to via a strategic management approach, as policy making has an inexact and non- scientific nature that is characterized by considerable uncertainty and ambiguity. This is evidenced by the 'surprise factor' that occurs in virtually all such disasters, epitomized by the, '*it will not happen to me*' attitude, or the cognitive dissonance factor of people blocking out unwelcome reality and believing only what they want to believe. Therefore, management mitigation decisions should be based on *models that have evidence obtained from environmental monitoring, a set of clear objectives and evaluation of strategic options.*

The cholera and typhoid mitigation strategy can, for example, be to keep people away from areas prone to the diseases. Some paradigms that should save people from the diseases could be; developing hazard maps to identify areas liable to the diseases, implementing or maintaining a community wide awareness or educational programme on cholera and typhoid dangers to provide community understanding and commitment. Education, is frequently commented upon as a panacea for virtually all matters, but it is crucial in hazard mitigation strategies and stakeholder participation is a mandatory aim. It would include teaching of hygiene, disposal methods and general education on hygiene practice. This should be carried out in the communities that are prone to the diseases such as Kibera slums the area of the study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

In this section, the researcher looked at various methodologies of research. This section covered the research design, description of the locale, the target population, sample and the sampling procedures, research instruments, validity and reliability of instruments, data collection and data analysis procedures.

3.1 Research Design

Research design is the process of creating an empirical test to support or refute a knowledge claim. Borg and Gall, (1989) defines research design as a plan showing how the problems under investigation will be solved. The study employed a descriptive survey; Gay (1981: 155) defines a survey as: "An attempt to collect data from members of a population in order to determine the current status of that population with respect to one or more variables." Gay (1981) continues to say that, descriptive study determines and reports the way things are and commonly involves assessing attitudes, opinions towards individuals, organizations, and procedures. Borg and Gall (1989) note that descriptive survey research is intended to produce statistical information about aspects of education that interest policy makers and educators. The choice of the descriptive survey research design is made based on the fact that in this study, the researcher was interested on the state of affairs already existing in the field. The source of information for the study was the residents and community health workers in Kibera slum.

3.2 Target Population

There are several villages in Kibera slums. The target population for this study was all the slums dwellers and all health workers in Kibera. In actual sense the study should be undertaken on all the population. However, due to the limitation of time and finances, a sample of four villages were selected. Slain (1984) observes that due to limitation of time and resources one may carefully select a sample to represent the entire population.

3.3 Sample and Sampling Procedures

A sample is a small portion of a target population. The study used a non-proportional quota sampling, which is a non-probability purposive sampling to sample respondents for the study. According to Mugenda and Mugenda (1999), this technique's objective is to include various groups or quotas of the population in the study based on some criteria. In this case, the researcher purposively selected subjects to fit the villages identified. Trochim (2001) says that in non-probability sampling one specifies the minimum number of sampled units that one want in each category. Here, one is not concerned with having the number that match the proportions in the population, instead, one simply wants to have enough that will be able to work with. The research took 132 respondents. This implies that 33 respondents were taken from the sampled 4 villages village. At least one health worker from the five health centres was picked. The sample was therefore had 132 residents and 5 health workers. Data on the duration in which the health workers had been in Kibera is presented below.

Table 1 Health workers duration of Working in Kibera

Duration	F	%
1 year	1	20.0
2 year	1	20.0
1 and half year	1	20.0
4 years	1	20.0
5 years	1	20.0
Total	5	100.0

Their responses showed that they had been working at different period from 1 year to 5 years. This shows that they can give valid information on the subject under study. Data on the distribution of the residents shows that 32 (24.6%) were from Silanga, 34 (26.2%) were from Laini Saba, 34 (26.2%) were from Lindi and 30 (23.1%) were drawn from Katwikira. This shows that the study had a well distributed sample from the four villages.

3.4 Research Instruments

Questionnaires were used to gather data for the study. As Kiess and Bloomquist (1985) observed, a questionnaire offers considerable advantages in its administration: It can be used for large numbers of population simultaneously and also provide the investigation with an easy accumulation of data. Gay (1976) maintains that questionnaires give respondents freedom to express their views or opinion and also to make suggestions. It is also anonymous. Anonymity helps to produce more candid answers than is possible in an interview. All the questionnaires were expected to elicit information on the extent of cholera and typhoid in Kibera slums. The questionnaires had two sections. Section A was on demographic information and section B was on

information concerning the awareness and prevention of cholera and typhoid among slum dwellers in Kibera slums.

3.5 Data Collection Procedures

3.5.1 Quantitative data

The selected individuals in the slums were visited and the questionnaires administered to them. The respondents who are illiterate were guided in answering the items on the questionnaire. The respondents were assured that strict confidentiality would be maintained in dealing with their responses.

3.5.3 Data Analysis Techniques

Data gathered was coded for analysis. This was done after editing and checking out whether all questionnaires are filled in correctly. Coding is assigning a code number to each answer to a survey question. Editing entails checking the questionnaire to identify and eliminate errors made by respondents. This was entered in the SPSS software for windows from which descriptions such as percentages (%) and frequencies (f) were used to answer the research questions. Tables, pie charts and bargraphs were used to present data.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.0 Introduction

This section covers the analysis of data collected using the questionnaires regarding the Typhoid and cholera awareness and prevention among slum dwellers in Kibera slums of Nairobi. The data was presented in form of tables, pie charts, bar graphs and histograms.

4.1 Data presentation

4.1.1 Age distribution

The age distribution of residents is presented in table 2

Table 2 Age distribution of the respondents

Age bracket	F	%
15 - 19 years	1	.8
20 - 24 years	25	19.2
25 - 29 years	24	18.5
30 - 34 years	18	13.8
35 - 39 years	22	16.9
40 -44 years	17	13.1
45 - 49 years	9	6.9
50 - 54 years	4	3.1
55 - 59 years	1	.8
60 - 64 years	5	3.8
65 - 69 years	4	3.1
Total	130	100.0

Data on the age of residents revealed that most of the residents 49 (37.7%) were aged between 20 and 29 years, 40 (30.7%) were aged between 30 and 39 while 17 (13.1%) were aged between 40 and 44 years.

4.1.2 Gender distribution of the health workers

Data on the gender of the health workers showed that 1 was male while 4 were female. This is because most of the attendant to the people were the nurses.

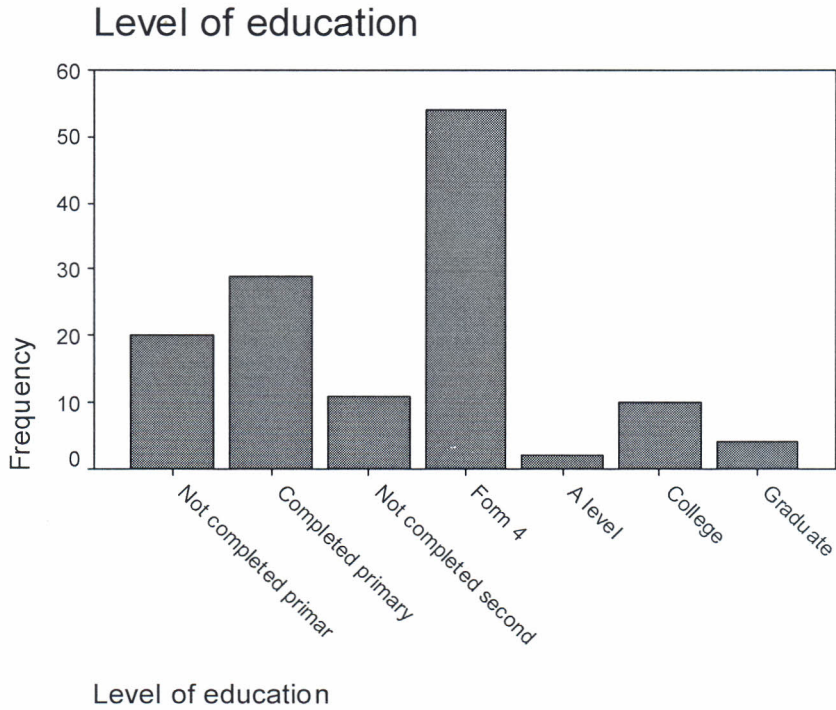
4.1.3 Educational level of respondents

The study also aimed at establishing the level of education of the residents. Their responses are presented in Table 3 and Figure 1.

Table 3: Distribution by level of education of respondents

Level of Education	F	%
Not completed primary school	20	15.4
Completed primary	29	22.3
Not completed secondary	11	8.5
Form 4	54	41.5
A level	2	1.5
College	10	7.7
Graduate	4	3.1
Total	130	100.0

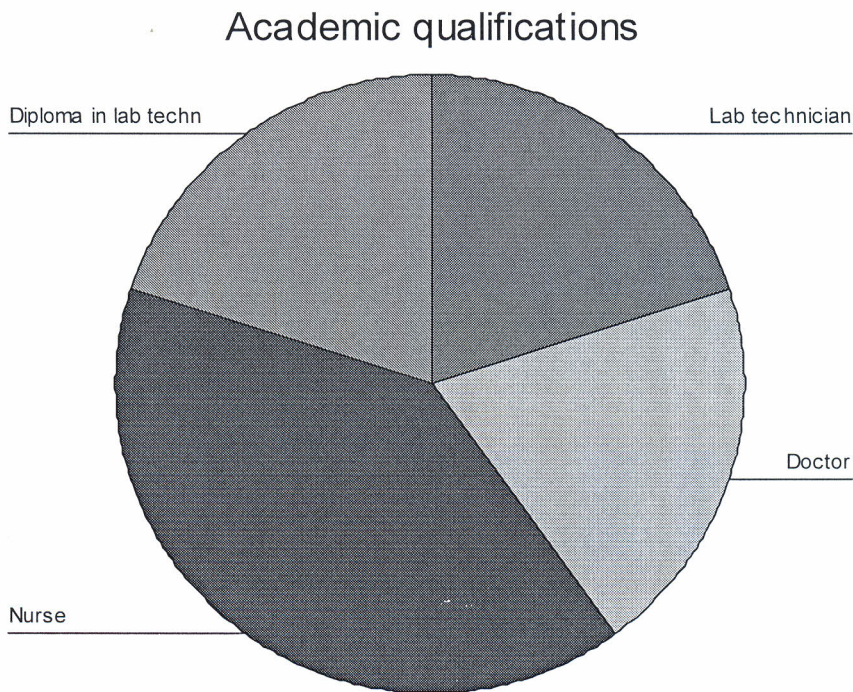
Figure 1 Level of education of the respondents



Data showed that 20 (15.4%) had not completed primary education, 29 (22.3%) had completed primary school, 11 (8.5%) had not completed secondary school, 54 (41.5%) had form four certificate, 2 (1.5%) had reached A level, 10 (7.7%) had gone to college and 4 (3.1%) were university graduates. This shows that a good number of respondents had minimum education qualification of education.

The academic qualification of the health workers was sought. The findings are presented in figure 2.

Figure 2 Academic qualification of the health workers



Findings from the responses of the health workers showed that 1 had a diploma in laboratory technology, 1 was a lab technician, 1 was a doctor and 2 were nurses. This shows that all the health workers were qualified in their field of health practice.

4.1.4 Marital status

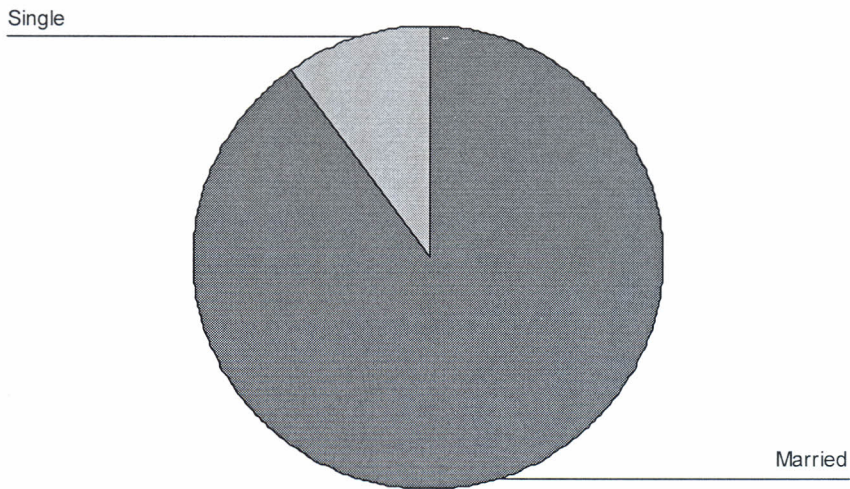
The area residents were asked to indicate their marital status. Their responses are presented in Table 4 and Figure 3.

Table 4 Distribution of respondents by marital status

Marital status	F	%
Married	117	90.0
Single	13	10.0
Total	130	100.0

Figure 3 Marital status of area residents

Marital status



Data revealed that most of the residents 117 (90%0 involved in the study were married against 13 (10%) who were single.

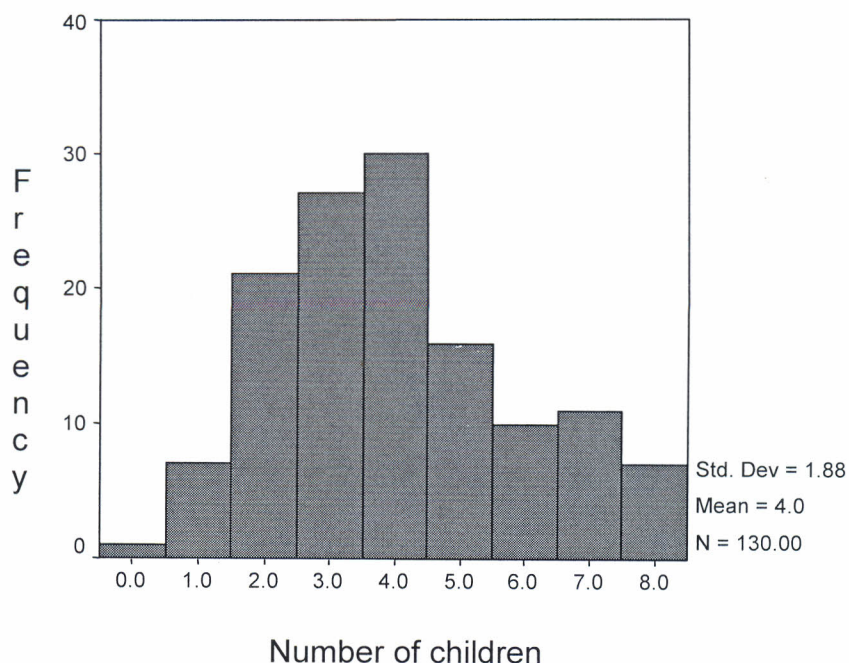
4.1.5 Family size: number of children

Table 3 and Figure 3 shows the distribution of respondents according to the number of children in they had.. Table 5 shows that most of the respondents (43.9%) had 2-3 – 4 children. Those with more than 4 children constituted 34.9 % and only 22.4% had less than 3 children. As shown in Figure 4, the mean number of children was 4.

Table 5 Percentage distribution of respondents by number of children

Number of children	F	%
None	1	0.8
1 – 2	28	21.6
3-4	57	43.9
5-6	26	20
7+	18	14.9
Total	130	100.0

Figure 4 Number of children by the residents



4.1.6 Area of residence

The study targeted a sample of 130 area residents drawn from four purposively selected villages in Kibera namely, Laini Saba, Katwekera were two categories of respondents namely health workers and area residents. These were survey

respondents to whom the questionnaires were administered Table 6 presented the distribution of the respondents in relation to the their villages in Kibera.

Table 6: Distribution of respondents by selected villages in Kibera

Village	Frequency	%
Silanga	32	24.6
Laini Saba	34	26.2
Lindi	34	26.2
Katwikira	30	23.1
Total	130	100.0

4.2 Data analysis and Discussion

4.2.1 Prevalence of Typhoid and cholera in Kibera Slums

The respondents were asked to indicate whether there were cases of typhoid and cholera in the area. Their responses indicated that 93.1% were aware of typhoid and cholera and only 6.9% said there were not. This observation concurred with the views of the health workers all of whom agreed that the spread of typhoid and cholera in the area was either serious or very serious. On being asked how often they received cases of cholera and typhoid in the their dispensaries the health workers responded that they received such cases weekly. In deed the number of typhoid and cholera patients who visited the dispensaries ranged from 8 to 12 cases each week

They were also asked to indicate which of the two diseases was more common. The responses are presented in Table 7.

Table 7 Response to which of the two diseases is more common

Common Disease	F	%
Cholera	44	33.8
Typhoid	77	59.2
Both	9	6.9
Total	130	100.0

Table 8 shows that 33.8% said that cholera was more common, while 59.2% said typhoid was more common. Only 6.9% said both diseases were common. Asked to indicate the occurrence of both diseases in the area, they responded as indicated in table 8.

Table 8 Frequency of occurrence of cholera and typhoid in Kibera slums

Frequency of occurrence	Cholera		Typhoid	
	F	%	f	%
Once a week	14	10.8	43	33.1
Once in a month	28	21.5	32	24.6
Once in 3 months	48	36.9	24	18.5
Once in a year	31	23.8	15	11.5
Rarely	9	6.9	16	12.3
Total	130	100.0	130	100.0

Findings presented in table 8 on the occurrence of cholera revealed that 14 (10.8%) said that it occurred once in a week, 28 (21.5%) said it occurred once in a month, 48 (36.9%) said it occurred once in 3 months, 31 (23.8%) said it occurred once in a year and 9 (6.9%) said it rarely occurred.. It is also shown that 43 (33.1%) said typhoid occurred once in a week, 32 (24.6%) said it occurred once in a month, 24 (18.5%) said it occurred once in 3 months, 15 (11.5%) said it occurred once in a year and 16

(12.3%) said it rarely occurred. These findings show that cholera occurred frequently in Kibera slums.

4.2.2 Awareness of typhoid and cholera

The study also aimed at finding out the extent to which slum dwellers are aware of the diseases. The slum dwellers were therefore asked to indicate whether they knew what the cholera and typhoid were. Findings are presented in tables 9.

Table 9 Knowledge of cholera and typhoid

Knowledge of cholera			Knowledge of typhoid	
	F	%	F	%
Yes	113	86.9	32	24.6
No	17	13.1	98	75.4
Total	130	100.0	130	100.0

Findings show that 86.9% said they were aware of cholera while 13.1% said they did not know cholera as a disease. On the knowledge of typhoid, 24.6% said they knew the disease, while 75.4% said they did not know typhoid as a disease. This shows that a good number of the residents were not aware of the diseases.

Knowledge of a disease helps in the prevention measures. The residents were therefore asked to indicate the cause of the diseases in the slums. Their responses are presented on Table 10.

Table 10 Causes of the diseases in the slums

Causes of cholera and typhoid	f	%t	Valid %	Cumulative %
Dirty water	19	14.6	14.6	14.6
Poor hygiene	20	15.4	15.4	30.0
Unclean water and food	43	33.1	33.1	63.1
Poor sanitation	16	12.3	12.3	75.4
Congestion	5	3.8	3.8	79.2
Taking unwashed fruits and vegetables	4	3.1	3.1	82.3
Insufficient water	13	10.0	10.0	92.3
Poor drainage system	8	6.2	6.2	98.5
Inadequate toilets	2	1.5	1.5	100.0
Total	130	100.0	100.0	

To further find out the residents' knowledge of the disease they were asked to indicate the local names of the diseases. They responded as presented in table 11 and b.

Table 11 a Local name for cholera

Local name	Frequency	Percent	Valid %	Cumulative %
Kwituuu	15	11.5	11.5	11.5
Not known	53	40.8	40.8	52.3
Kipindupindu	26	20.0	20.0	72.3
Kuhwarwo gatema	12	9.2	9.2	81.5
Kuhara	10	7.7	7.7	89.2
Kifaduro	4	3.1	3.1	92.3
Kuendesha	10	7.7	7.7	100.0
Total	130	100.0	100.0	

Table 11 b Local name for typhoid

Local name	F	%	Valid %	Cumulative %
Ndetema	18	13.8	13.8	13.8
Not known just called typhoid	76	58.5	58.5	72.3
Homa ya matumbo	13	10.0	10.0	82.3
Kuhara damu	12	9.2	9.2	91.5
Mafua	11	8.5	8.5	100.0
Total	130	100.0	100.0	

Data presented on the knowledge of cholera showed that the local people had different local names for cholera however there were others who did not know the diseases in local names but they were aware of the diseases all the same.

The health officers were asked to indicate whether the local people were aware of the diseases. Respondents showed that people were not aware of the diseases. Asked to explain their answers, 3 (60%) said that most are not very educated especially on health issues and also that they lacked information related to hygiene. The health officers said that residents also confused the diseases with other water related diseases.

4.2.3 Prevention of typhoid and cholera

The study also aimed at identifying the methods that the slum dwellers used to curb the disease. The health officers were therefore asked to state the methods the slum dwellers used in order to curb the disease. The responses are presented in Table 12.

Table 12 Health officers responses on methods used to curb the disease

Methods	f	%	Valid %	Cumulative %
They do not do much at home	2	40.0	40.0	40.0
Some boil water and maintain cleanliness	1	20.0	20.0	60.0
Just visit the health centres	1	20.0	20.0	80.0
Some use herbal medicine	1	20.0	20.0	100.0
Total	5	100.0	100.0	

Findings revealed that 2 said the people did not do much at home, 1 said that some people boiled water and tried to maintain cleanliness, 1 said that people visited health centres and some even used herbal medicine. The health officers were also asked to indicate whether the people in the slums maintained the required cleanliness to avoid the disease. Findings revealed that 1 said they did while 4 said they did not. Asked to explain their responses, 3 said that the people could not maintain the required cleanliness since their conditions did not allow them to do so. proper. They also responded that the people lived in conditions beyond their control and so it was difficult to maintain cleanliness. They also responded that there was so much congestion in the slums which made it difficult to maintain cleanliness hence prevent the diseases.

The health workers were further asked to indicate whether the people in the slums were prepared to tackle the disease to which 3 said they were not very well prepared and 2 said they were not prepared at all. This is presented in Table 13.

Table 13 Extent of preparedness by the people to tackle the disease

Extent of preparedness	F		Valid %	Cumulative %
Not very prepared	3		60.0	60.0
Not prepared at all	2		40.0	100.0
Total	5		100.0	

The health workers were asked to explain why the people were not prepared to tackle the diseases. Findings showed that there were no mechanisms put in place to enable people tackle the diseases while at the same time some people lacked capacity for preparation in tackling the diseases. The health workers were asked to indicate what the community was doing to prevent the diseases. They responded as presented in Table 14.

Table 14 What the community is doing to prevent the disease

Prevention of diseases	f	%	Valid f	Cumulative %
The community has owned water points	3	60.0	60.0	60.0
Some people try to educate others on the need for proper hygiene	1	20.0	20.0	80.0
They have social groups that are involved in cleaning the drainage	1	20.0	20.0	100.0
Total	5	100.0	100.0	

The health officers responded that in order to prevent the diseases, 3 said the community had owned water points, 1 said that some people tried to educate others on the need for proper hygiene and 1 said that the community had social groups that were involved in cleaning the drainages in the slums.

The residents were further asked whether they had toilets of their own. In this item, 10 (7.7%) said they had while a majority of 120 (92.3%) said they did not have.

They were also asked to indicate whether the type of house they lived in was adequate for their family. In this item, 8 (6.2%) said it was adequate while 122 (93.8%) said they were not adequate. Asked from where they got the water for use, they responded as presented in table 15.

Table 15 Sources of water for use

Source of water	F	%	Valid %	Cumulative %
Tap water	17	13.1	13.1	13.1
Buying	55	42.3	42.3	55.4
Rain water	22	16.9	16.9	72.3
Community water	36	27.7	27.7	100.0
Total	130	100.0	100.0	

Data on the source of water indicated that 17 (13.1%) got tap water, 55 (42.3%) bought water, 22 (16.9%) got rain water and 36 (27.7%) said that they got water from community water source. They were also asked to indicate whether the water they got was clean. In this item, 39 (30%) said it was clean while 72 (55.4%) said it was not clean. Nineteen of them said they did not know whether the water was clean or not. The researcher wanted to find out whether they boiled the water before using it. While 45 (36.6%) said they did so, 85 (65.4%) said they did not boil. In a further search on the methods that the residents used to curb the diseases. The residents were therefore asked to indicate what they did when attacked by the disease. Their responses are presented in table 16.

Table 16 What residents did once attacked by the disease

Ways of curbing the diseases	f	%	Valid %	Cumulative %
Seek medical attention	64	49.2	49.2	49.2
Use herbal medicine	15	11.5	11.5	60.8
Buy medicine	31	23.8	23.8	84.6
Buy medicine then go to hospital if serious	20	15.4	15.4	100.0
Total	130	100.0	100.0	

Findings on what the residents did when attacked by the disease indicated that 64 (49.2%) said they sought medical attention, 15 (11.5%) said they used herbal medicine, 31 (23.8%) said they bought medicine and 20 (15.4%) said they bought medicine and then went to hospital if they did not get better.

They were also asked to state the preventive measures they had put in place to ensure that they protected themselves and others they lived with from the disease. The responses are presented in table 17.

Table 17 Prevention measures

Preventing measures	f	%	Valid %	Cumulative %
Ensure general cleanliness	25	19.2	19.2	19.2
Avoid eating contaminated food	19	14.6	14.6	33.8
Ensuring proper disposal of waste	21	16.2	16.2	50.0
Washing hands after toilets	24	18.5	18.5	68.5
Mobilize my neighbors to be clean	13	10.0	10.0	78.5
There is nothing we can do in slum situation	21	16.2	16.2	94.6
Boiling drinking water	7	5.4	5.4	100.0
Total	130	100.0	100.0	

Data showed that 25 (19.2%) said that they ensured they maintained general cleanliness, 19 (14.6%) said that they avoided eating contaminated food, 21 (16.2%) *said that they ensured proper disposal of waste*, 24 (18.5%) *said that they washed hands after visiting the toilets*, 13 (10%) said they mobilized their neighbors to be clean, 7 (5.4%) said they boiled water before they used while 21 (16.2%) said there was nothing they could do in a slum situation. The respondents were also asked to indicate what the people around did to ensure that they protected themselves from the diseases. Their responses are presented in Table 18.

Table 18 What people around do to protect themselves from the diseases

Ways of prevention	F	%	Valid %	Cumulative %
Maintain general cleanliness	31	23.8	23.8	23.8
They do nothing because of their condition	31	23.8	23.8	47.7
Eating clean food and water	23	17.7	17.7	65.4
Cleaning the drainage system	18	13.8	13.8	79.2
Empowering each other on prevention measures	13	10.0	10.0	89.2
Isolating the sick	14	10.8	10.8	100.0
Total	130	100.0	100.0	

Findings revealed that 31 (23.8%) said they maintained general cleanliness, the same number said they did nothing because of their condition, 23 (17.7%) said they ate clean food and water, 18 (14.8%) said they cleaned the drainage system, 13 (10%) said they empowered each other on preventive measures and 14 (10.8%) said they isolated the sick.

4.2.4 Government is involvement in enhancing peoples awareness and prevention of the diseases

To investigate the extent to which the government was involved in enhancing people's awareness and prevention of the disease, the health workers were asked to indicate whether the government was involved in enhancing people in the awareness and prevention of the diseases. Findings revealed that 4 (80%) said that the government was not very involved and 1 (20%) said that the government was not involved at all. Those who said that it was involved, indicated that it educating people on how to protect themselves from the diseases. The respondents were also asked whether there were government projects aimed at enhancing peoples' awareness of the diseases. One of the respondents said there were while the rest said there were no project aimed at that. The one who said that there were project said there was community mobilization and education of the people on the awareness of the diseases and how they could protect themselves.

The study also aimed at establishing whether they were able to access health facilities. In this item, 104 (80%) said they were able while 26 (20%) said they were not able to access health facilities. The health workers were also asked whether the hospitals had the required drugs for the patients. One (20%) said yes while 4 (80%) said no. When resident respondents were asked to indicate whether they got treated once they visited the hospital, 104 (80%) said they were treated, 17 (13.1%) said they were not and 9 (6.9%) said they were treated sometimes. The residents were also asked to indicate what the government was doing to ensure that people in the area were not affected by the disease. They responded as indicated in table 19.

Table 19 What the government is doing to make sure people were not affected

Government role	f	%	Valid %	Cumulative %
Empowering people by teaching them about cleanliness	20	15.4	15.4	15.4
Provision of clean water	21	16.2	16.2	31.5
Provision of toilets and latrines	9	6.9	6.9	38.5
Cleaning drainage systems	9	6.9	6.9	45.4
It is not doing anything	60	46.2	46.2	91.5
Assist people to come into groups to fight the diseases	11	8.5	8.5	100.0
Total	130	100.0	100.0	

Data presented in Table 20 show that 20 (15.4%) said the government empowered people by teaching them of cleanliness, 21 (16.2%) said they provided clean water, 9 (6.9%) said it provided toilets and latrines, the same number of respondents said the government cleaned the drainage, and 11 (8.5%) said that the government assisted people to come into groups to fight the diseases.

A majority of the respondents, 60 (46.2%) said the government was not doing anything to make people aware of the disease. When asked whether the government was doing enough, 23 (17.7%) said yes while 107 (82.3%) said that it was not doing enough. Those who said that the government was doing enough indicated that it was providing health facilities, free water, toilet facilities, educating people and construction of high rises.

The study wanted to find out whether there were any organisations in the area that provided people with clean water. In this item 25 (19.2%) said there were and 105 (80.8%) said there were none. They responded that the organisations worked with

Nairobi water company to provide clean water, encouraged women groups, provided water tanks for storage, provided water treatment chemicals and were also involved in garbage collection.

CHAPTER FIVE

SUMMARY, CONCLUSION, RECOMMENDATIONS

5.1 Summary

The study has revealed that the extent of the diseases in the slums is serious. The health workers and the residents confirmed the findings. The health workers had cases of the diseases weekly with a good number of between 7 to 15 people visiting the health centres daily. This affirms that there were cases of cholera and typhoid in the area. These findings show that the diseases especially cholera occurred frequently in Kibera slums. The above findings show that there is an alarming phenomena of cholera and typhoid in Kibera slums. The diseases affected the families with some families being affected even once a week.

Findings on the awareness of the diseases shows that majority of the area residents were not aware of the diseases. This was confirmed by the responses where most of the residents were not aware of the local names for the diseases. This implies that the people living in the slums could not be able take necessary measures as they were not even aware of the diseases. Since knowledge of a disease helps in the prevention measures, lack of knowledge of the diseases already puts the residents at high risk of contracting the disease since they may not be aware of the prevention measures. However most of the area residents were aware of the causes of the diseases. The fact that most of the residents were not aware of the disease was due to the fact that most are not very educated especially on health issues and also that they lacked information related to hygiene. The health officers also said that residents confused the diseases with other water related diseases.

The findings showed that most of the residents did not have any methods of curbing and tackling the diseases. For example health workers reported that the people did not do much at home to curb and tackle the diseases, though a small majority just did the minimum of boiling water before using. People in the slums also visited health centres. Very few residents maintained the required cleanliness. Most could not maintain cleanliness the required cleanliness because they lived in slum areas where there was congestion, and other conditions that they had no control over. People in the slums were not prepared to tackle the diseases because there were no enabling mechanisms and capacity to do so.

Findings also showed that most of the residents did not have toilets. Only 10 (7.7%) residents said they had toilets while a majority 120 (92.3%) said they did not have. This put the community in the slums to be very prone to the diseases because of sharing toilets. Further findings showed that the type of housing they lived in was not adequate. This puts the area residents in more risk in that when one member of the family is affected, it would easily be transmitted to other family members. Congestion in the slums will also lead to more people being affected.

It was also found out that most of the residents bought water which they did not boil before use. This could be attribute to the fact that, most of the slum dwellers are poor and would therefore not afford fuel for boiling water. Lack of clean water has been found to be one of the major causes of the diseases. This therefore shows that proper mechanisms have not been put in place by the residents to curb and protect themselves from the diseases. They have practices such as use of unclean water and not boiling it which makes them more vulnerable to disease.

Findings presented in table 17 on what the residents did once attacked by the diseases shows that that 64 (49.2%) said they sought medical attention once attacked by the diseases, 15 (11.5%) said they used herbal medicine, 31 (23.8%) said they bought medicine and 20 (15.4%) said they bought medicine and then went to hospital if they did not get better. This shows that a significant number of respondents were using improper measures to tackle the diseases for example the use of herbal medicine which may not be effective in treating the disease

A few respondents put in place some measures to protect themselves from the disease. For example they maintained general cleanliness, avoided eating contaminated food, ensured proper disposal of waste, washed their hands after visiting the toilets, mobilized their neighbors to be clean and boiled water before use. Some 21 (16.2%) said there was nothing they could do in a slum situation.

Findings of the extent to which the government was involved in enhancing people's awareness and prevention of the disease showed that the government was not involved in enhancing peoples awareness and prevention of the diseases. Findings also revealed that there were no government projects aimed at enhancing peoples' awareness of the disease. Findings also revealed that 104 (80%) residents said that they were able to access medical facilities while 26 (20%) said they were not able to access health facilities. The resident respondents reported that they got treated once they visited the hospital.

Findings of the involvement of the government in enhancing peoples awareness on the diseases show that the government did not do enough. For example, 20 (15.4%) said the government empowered people by teaching them of cleanliness, 21 (16.2%)

said they provided clean water, 9 (6.9%) said it provided toilets and latrines, the same number of respondents said the government cleaned the drainage, and 11 (8.5%) said that the government assisted people to come into groups to fight the diseases. A majority of the respondents, 60 (46.2%) said the government was not doing anything to make people aware of the disease. When asked whether the government was doing enough, 23 (17.7%) said yes while 107 (82.3%) said that it was not doing enough. Those who said that the government was doing enough indicated that it was providing health facilities, free water, toilet facilities, educated people and constructed high rises. It was found out that organisations worked with Nairobi water company to provide clean water, encouraged women groups, provided water tanks for storage, provided water treatment chemicals and were also involved in garbage collection.

5.2 Conclusions

The study revealed that there were cases of cholera and typhoid in Kibera. These findings also showed that the diseases especially cholera occurred frequently in the slums. There was an alarming phenomena of cholera and typhoid in Kibera slums. The diseases affected the families with some families being affected even once a week.

Findings on the awareness of the diseases shows that majority of the area residents were not aware of the diseases. The fact that most of the residents were not aware of the disease was due to the fact that most are not very educated especially on health issues and also that they lacked information related to hygiene. The health officers also said that residents also confused the diseases with other water related diseases.

The findings showed that most of the residents did not have any methods of curbing and tackling the diseases. People in the slums were not prepared to tackle the diseases because there were no enabling mechanisms and capacity. It was also revealed that a significant number of respondents were using improper measures to tackle the disease such as the use of herbal medicine which may not be effective in controlling the diseases.

Findings also showed that the government was not doing much in enhancing peoples' awareness of the diseases and if there was any, it was very minimal. Findings of the involvement of the government in enhancing peoples awareness on the diseases show that the government did not do enough. A few organisations were working with the people in for example, providing water tanks and water treatment chemicals.

5.3 Recommendations

Based on the findings of the study, it was recommended that there is need to educate people on typhoid and cholera so that they are able to identify the diseases and hence seek for medical attention in good time. It was also recommended that there is need to educate people in the areas of the diseases so that they can put in place preventive measures necessary to control and tackle the disease once it attacks them.

The study also recommended that there is need to empower the people and lift their standards of living such as the ongoing high rise project so that they are able to put in place measures to curb the diseases.

The government should also be involved in the enhancing peoples awareness on the disaster management. This could be putting up projects which could assist the local

community to tackle the diseases. For example the government can work on the provision of clean water the slum dwellers, put up mechanisms on cleanliness of for example garbage collection, sewage disposal. It was also recommended that there is need to have other organization on board to assist the slum dwellers in up lifting their standard of living.

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APPENDICES

APPENDIX 1: QUESTIONNAIRE FOR THE RESIDENTS

This questionnaire is designed to investigate the typhoid and cholera awareness and prevention among slum dwellers in Kenya: a case study of Kibera slum. You are kindly asked to participate in this study by answering this questionnaire. The responses given are for the purpose of this study and not for any other purpose. All your responses will therefore be treated with highest confidentiality.

Section A: Demographic data

1. Indicate your area _____
2. Indicate your age _____
3. Indicate your education level _____
4. What is your marital status
Married () Single ()
5. How many children do you have _____

Section B: Extent of awareness and prevention of cholera and typhoid

1. Do you know what cholera and typhoid are as diseases?
Cholera Yes () No ()
Typhoid Yes () No ()
2. What is the local name of the diseases?
Cholera _____
Typhoid _____
3. Do you have cases of typhoid and cholera in your area?
Yes () No ()
4. Has any member of your family suffered from the diseases?
Yes () No ()
5. Which is more common disease cholera or typhoid?
Cholera ()
Typhoid ()
6. What are the cause of the diseases in the slums?

7. How do you rate the occurrence of the two diseases in you area?

	Cholera	Typhoid
Once a week	()	()
Once a month	()	()
Once in three months	()	()
Once a year	()	()

Any other specify _____

8. Do you have a toilet of your own?

Yes () No ()

9. Is the type of housing you live in adequate for your family?

Adequate ()

Not adequate ()

10. a. From where do you get your water from? _____

b. Is the water clean for human consumption

Yes () No ()

11. Do you always boil your water before using?

Yes () No ()

12. How do you know that you have the diseases?

Knowledge of cholera:

Knowledge of typhoid:

13. There is a difference between cholera and typhoid?

True () False ()

14. The two diseases are caused by the same factors

True () False ()

15. These diseases can be avoided by using clean water

True () False ()

16. What do you do when you are attacked by the diseases?

17. What prevention measures do you put in place to ensure that you prevent yourself or the people you live with from the diseases?

18. What role does the people around you do to prevent themselves from the diseases?

19. What have you done to yourself or your people to ensure that you are ready to prevent attack from the diseases?

20. What do you do to ensure that the disease does not spread?

a. _____

b. _____

21. What measures do you take once you get the disease?

22. Are you able to access health facilities in your area ?

Yes () No ()

23. Do you get treated once you go to the health workers ?

Yes () No ()

24. What is the government doing to ensure that people in this slum are not affected by the diseases/

25. Do you feel the government is doing enough to help people against the diseases?

Yes () No ()

27.b If yes above, please explain

26. Are there organisations in your area that help in providing people with clean water ?

Yes () No ()

If yes above what do they do ?

**APPENDIX B:
QUESTIONNAIRE FOR HEALTH WORKERS**

Dear respondent,

This questionnaire is designed to investigate the typhoid and cholera awareness and prevention among slum dwellers in Kenya: a case study of Kibera slum. You are kindly asked to participate in this study by answering this questionnaire. The responses given are for the purpose of this study and not for any other purpose. All your responses will therefore be treated with highest confidentiality.

Section A: Demographic data

1. Indicate your gender

Male ()

Female ()

2. What is your academic qualification _____

3. For how long have you been working in this area? _____

Section B: Extent of cholera and typhoid in the slums

1. How serious is the problem of cholera and typhoid in Kibera slums

Very serious ()

Serious ()

Not very serious ()

Not serious at all ()

2. How often do you receive cases of cholera and typhoid in this area?

Once a week ()

Once a month ()

Once in 3 months ()

Once in an a year ()

3. Are people aware of these diseases (cholera and typhoid) ?

Yes () No ()

4. About how many people come to hospital? (Tick one only)

a. Per day

b Per week

c. Per month

d. Per 3 months

e. Per year

5. Do you think the prevalence of these diseases is high?

Yes () No ()

6. What do you think contributes to the diseases?

7. Who are the most affected lot, adults or children?

Adults ()

Children ()

Both ()

Others (specify) _____

Please explain your answer above

Section C : Extent of awareness of the diseases in the slums

1. At what stage of the disease do the infected people come for medical attention?

Very early stage ()

Early stage ()

Late stage ()

Very late stage ()

2. Do you feel the people confuse the disease with other water related diseases?

Yes () No ()

3. Do you think the people in the slums are aware of the diseases?

Very aware ()

Not very aware ()

Not aware ()

Please explain your answer

4. What methods do slum dwellers use in curbing the diseases?

5. Do the people in the slums maintain the required cleanliness to avoid these diseases?

Yes () No ()

If no, explain

6. To what extent are the slum dwellers prepared to tackle the diseases?

Very prepared ()

Prepared ()

Not very prepared ()

Not prepared at all ()

7. If prepared above, in what ways are the people in the slums prepared to tackle the disease?

8. To what extent is the government involved in enhancing peoples awareness and prevention of the diseases?

Very involved ()

Involved ()

Not very involved ()

Not involved at all ()

If involved what is the government doing?

9. Are there government project that aim at enhancing peoples awareness of the disease?

Yes () No ()

If yes what projects?

10. What do you think the community is doing to prevent the disease in the slums?

11. Do you always have the required drugs for patients?

Yes () No ()

12. Do you have same people coming back for treatment?

Yes () No ()

If yes, what do you think are the reasons?
