

**INVESTIGATION ON THE COMMUNITY'S ROLE ON EPIDEMIOLOGY
OF CHOLERA IN BUGURUNI WARD: A CASE STUDY OF BUGURUNI
WARD IN ILALA MUNICIPALITY DAR ES SALAAM**

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**A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER OF
ENVIRONMENTAL STUDIES –HEALTH STREAM OF THE OPEN
UNIVERSITY OF TANZANIA**

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CERTIFICATION

The undersigned certify that he has read and hereby recommend for acceptance by the Open University a dissertation titled: ***“Investigation on Risk Factors Influencing Cholera Outbreaks: A Case of Buguruni Ward in Ilala Municipality Dar es Salaam,”*** in partial fulfillment of the requirements for the degree of Master of Environmental Studies –Health Stream of the Open University of Tanzania.

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Date

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DECLARATION

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.....

Signature

.....

Date

DEDICATION

To my husband Hebron Mandari
and
my children Carlin and Ian Mandari

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First and foremost, I would like to thank God who gave me good health, brain and knowledge throughout my life and master's study at Open University of Tanzania.

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ABSTRACT

The Buguruni ward, within Ilala Municipality has been experiencing highest rate and frequency of Cholera outbreaks than any other ward within the Ilala Municipality. The objective of this study was; to evaluate knowledge, attitude and practices associated with cholera outbreak in the ward. A case study approach was adopted, with purposive random sampling used to select 120 respondents from all administrative streets. Structured questionnaire was used to obtain community's opinion; this was also supplemented by focus group discussion and participants' observation. Statistical Package for Social Sciences soft ware version 16 was used to generate descriptive statistics which were further summarized into pie charts and tables. Results indicate that the study population (52%) had little awareness on means or causes of the disease and the way the disease can be communicated between individuals and across communities. It was also found out that community practiced several risk behaviors including; not preferring treated water (72%), consumption of locally made fruit juices (34.5%) sold by street vendors across the ward. Other risk behaviors were related to presence of rudimentary waste disposal system thus rendering most of the wastes on open spaces and at home. The study concludes that residents in Buguruni ward remain under high risk of Cholera outbreak, thus worth to recommend institutional and community hygiene measures to be taken sustainably so as to prevent re-occurrence of Cholera in the ward.

Keywords –Cholera Outbreaks Knowledge Attitude Practice Control Buguruni Ilala Municipality

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LIST OF ABBREVIATIONS AND ACRONYMS

CFR	Case Fatality Rate
CDC	Centre for Disease Control
CBOs	Community Base Organization
CHMT	Council Health Management Team
DAWASCO	Dar-es-Salaam Water Supply Company
IHMT	Ilala Heath Management Team
KAP	Knowledge Attitude Practice
SPSS	Statistical Package for Social Sciences
NGOs	Non Government Organization
FGD	Focus Group Discussion
MoHSW	Ministry of Health and Social Welfare
URT	United Republic of Tanzania
WHO	World Health Organization
UNICEF	United Nation Children's Fund

CHAPTER ONE

1.0 INTRODUCTION

1.1 Introduction

Cholera is an infection of the small intestines, caused by bacterium *Vibrio cholera*; it is transmitted through ingestion of contaminated food or water (Kadaleka, 2011; URT, 2004; and Spagnuolo *et al.*, 2011). Symptoms of cholera can vary from mild to severe (UNICEF, 2004). UNICEF, (2004) and Wahed *et al.*, (2013) asserts also that, the disease occurs in epidemics when conditions of poor sanitation, crowding and famine are present. It attacks both children and adults all over the world, but most common in typical areas such as per-urban and slums, where basic infrastructure is not available as well as camps for internally displaced people or refugees where minimum requirements of clean water and sanitation are not met.

According to Sundaram *et al.*, (2013) among infectious diseases, diarrhea diseases rank third in causing mortality and morbidity in low- and middle-income countries. Sundaram *et al.* (2013) also explained that, on estimate, diarrhea diseases accounts for 1.78 million deaths per year and 58.7 million disability-adjusted life years. Cholera is a rapidly dehydrating diarrhea disease, estimated to cause the death of 100 000–130 000 persons and accounts for 3–5 million cases per year (Mpazi and Mnyika, 2005).

Cholera disease was initially prevalent only in the Indian subcontinent, with the Ganges River possibly being the reservoir for the contamination (McGraw-Hill, 2003). It then travelled through trade routes to Russia, Western Europe and North

America. However; it is no longer regarded to be a danger in the continents of Europe and North America owing to the filtration and chlorination process to which the water is subjected to before being supplied.

According to Acosta *et al.*, (2001) since the seventh pandemic caused by *Vibrio cholerae* biotype El Tor began in Indonesia in 1961, most regions of the world continue to report cholera. The same author narrates that, 1997 was marked by a cholera epidemic affecting most countries in East Africa, with spread toward central and southern parts of the continent.

Since the beginning of this millennium, global cholera incidence has increased steadily with 24% more cases reported between 2004 and 2008 compared with 2000 and 2004, (Reyburn *et al.*, 2011). With continuous and increasing rates of morbidity associated with waterborne diseases, especially in Sub-Saharan Africa, this group of diseases is potentially of significant economic burden, leading to high direct costs to the health sector and to households, and indirectly to the economy and society at large because of time lost allocated to work, school and other productive activities Kadaleka, (2011) and Traerup *et al.*, (2011) also explained that, water-related diarrheal diseases, including cholera, are widespread in areas where water resources are scarce, the majority of such diseases being attributed to environmental factors such as unsafe drinking water, poor hygiene and lack of sanitation.

A report by WHO, (2013) indicates that, globally cholera incidence has increased steadily since 2005 with cholera outbreaks affecting several continents. The same report shows that, Cholera continues to pose a serious public health problem among

developing world populations which have no access to adequate water and sanitation resources.

According to Spagnuolo *et al.*, (2011) *Vibrio cholerae* is a strict human pathogen that causes the disease cholera. The same author explained that *V. cholerae* colonizes the upper, small intestine where it produces a toxin that leads to watery diarrhea, characterizing the disease. It is ingested through infected water or food products and once it establishes infection, it induces a severe watery diarrhea that persists for days to weeks, leading to dehydration and death if not treated.

In 1997, a total of 118,347 cholera cases and 5,853 deaths were reported from 27 African countries (WHO, 2001). Similar reports show that, among these countries, Tanzania had the highest number of cases with 40,249 cases followed by Guinea Bissau, Kenya, Chad and Mozambique with 20,555; 17,200; 8,801 and 8,739 cases respectively. Cholera is a common persistent infectious disease in Tanzania with a considerable socio economic cost to affected population. The disease may occur in epidemic forms and spreads faster from one community to another.

The first outbreak of cholera in Tanzania was reported in Kyela district, Mbeya region in 1974 (MoHSW, 1989). Mpazi and Mnyika (2005), while studying knowledge, attitudes and practices regarding Cholera outbreaks in Ilala Municipality, narrated that, in Tanzania Mainland, about 48% of all admissions in the country due to notifiable diseases among patients aged 5 years and above were due to cholera cases in the year 1997, they also explained that, about 57% of deaths due to notifiable diseases for the same category of patients were due to cholera. According

to URT (2006) and Mpazi and Mnyika (2005), Dar-es-Salaam region is one of the areas mostly hit by cholera outbreaks in the country. URT (2006) explained also that, in the year 2006, among the three Municipalities making up the Dar es Salaam Region, Ilala recorded the highest number of cases (3,367) as compared to Kinondoni and Temeke with 1,305 and 2,100 cases respectively. Records by URT (2010), shows that among 26 wards of Ilala Municipality, Buguruni ward had the highest cases constituting 60% of all cholera incidences in the District.

There are various reasons for the current trend of disease re emergence in a locality, some authors attribute this trend to climatic changes (Traerup *et al.*, 2011, Reyburn *et al.*, 2011 and Reiner *et al.*, 2012). Other researchers attribute this to poor surveillance system and inconsistency in case definition adopted in different Countries (Wahed *et al.*, 2013). This problem might also be excavated by the fact that few research work have been directed towards affected communities, an example of such studies include a research by Mpazi and Mnyika (2005), who conducted a research work on “Knowledge, Attitudes and Practices” Regarding Cholera Outbreaks in Ilala Municipality of Dar Es Salaam Region. The purpose of this research, therefore, was to assess the level of awareness of buguruni Ward residents on means of Cholera Transmission, prevention and control.

Irrespective of the fact that Cholera has been a recognized disease for about 200 years, control of the deadly disease remains a challenge (WHO, 2008). According to WHO, (2008) and Kadaleka, (2011) several efforts are being employed to control cholera outbreaks, most of which are focused upon basic sanitary and hygiene measures such as treated water supplies, improving water delivery and sewage

control, hand washing facilities, latrines and adequate hygiene in food handling. In some countries, Oral Cholera vaccine has been provided and replaced injectable Cholera vaccine with side effects and questionable protective efficacy to aid in disease control (Seidlein *et al.*, 2014). As it has been described by other authors explaining about Cholera outbreak in other Countries (Seidlein *et al.*, 2014; Emch, *et al.*, 2002, and Reyburn *et al.*, 2011), aside from these large outbreaks, endemic cholera is widespread, with seasonal outbreaks documented in East, Central, South, and West Africa. Same authors explained that, Control activities based on the provision of safe drinking water and improved sanitation have failed to contain the spread of cholera, and outbreaks are now common in sub-Saharan Africa. It also asserted that, the risk factors for cholera outbreaks in Africa are incompletely understood, and it remains challenging to predict outbreaks reliably.

1.2 Statement of the Research Problem

Irrespective of the various efforts employed by different institutions to prevent the disease outbreak, Buguruni ward has been experiencing the highest rate of cholera outbreaks for the past five years as compared to other wards in Ilala Municipality (URT, 1998). Since Buguruni ward recorded the highest rate of morbidity due to cholera during the 2006 outbreak (WHO, 2006) the purpose of this study therefore, is to assess risk factors associated with the disease outbreak in the ward. This is in support with previous study by, WHO (2008) who reported that, acquiring knowledge of cholera is an important strategy in the control of cholera. However, implementing certain interventions in high-risk groups with poor knowledge of and attitudes toward cholera is not easy. Therefore, it is important to understand the

current levels of knowledge, attitudes, and practices (KAP) of a given community to implement campaign programs, vaccination programs, and other preventive measures.

1.3 Research Objectives

1.3.1 General Objective

The general objective of the study was is to assess community`s role on epidemiology of Cholera in Buguruni Ward.

1.3.2 Specific Objectives are

- (i) To determine knowledge, attitude and practices associated with cholera outbreak in Buguruni Ward.
- (ii) To asses community awareness on the mode of cholera transmission.
- (iii) To evaluate community awareness on cholera disease prevention.

1.4 Research Questions

- (i) What are community attitudes and practices responsible for cholera disease outbreak in Buguruni Ward?
- (ii) What is the community awareness on the mode of cholera disease transmission?
- (iii) What are the community measures on cholera prevention?

1.5 Significance of the Research

This study aims at filling up the existing knowledge gap on Cholera prevention and control. Findings from this study will be used by global and local partners involved

in Cholera prevention and control to plan and form up appropriate policies and strategies to combat the deadly disease. This being a case study, results from this research will also aid in forming up appropriate and specific measures to combat re occurrence of the disease in Buguruni Ward.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 History of Cholera

While it is likely to have been responsible for human infections and mortality throughout human history, cholera outbreaks have only been formally known to science since 1817 (Pollitzer, 1954). Sir John Snow was credited in 1849 as being the first person to connect contaminated water with cholera outbreaks and to use that information as an infection control strategy (Snow, 1855). In addition to being the genesis of modern epidemiology, his observation may also be the first study on the ecology of *Vibrio cholerae*. However, it took another 120 years for *V. cholerae* to be recognized as an autochthonous aquatic bacterium rather than a human pathogen that is a transient resident of the aquatic environment, (Colwell *et al.*, 1977). *Vibrio cholerae* has over 200 sero groups, with O1 and O139 being the causative agents of cholera, due to their carriage of the genes encoding cholera toxin (CT) and the toxin co-regulated pilus (Chatterjee *et al.*, 2007).

According to UNICEF (2004), Cholera occurs in epidemics when conditions of poor sanitation, crowding, war and famine are present. Naha *et al.*, (2013) stated that, cholera infection continues to be a substantial health burden in developing countries such as Tanzania due to lack of proper hygiene and sanitation infrastructures.

According to WHO (2002), Cholera outbreaks were recorded in all continents though in different periods, in Asia for instance, Cholera outbreaks can be traced as back as 1950 - 1969 periods. During this time, cholera outbreaks were recorded from

23 countries in Asia with 1,355,747 cases which caused 6,787 deaths. In the same period, America recorded a total of 391,220 cases with 4,002 deaths. Africa was reported to have 11,086 cases of cholera outbreaks with 747 deaths from 16 Countries.

The out breaks of cholera disrupt social structures, impede economic development and cause about 100,000 deaths a year (Longini *et al.*, 2007). According to Hartley *et al.*, (2006), epidemic cholera is characteristically explosive in nature, when introduced into populations lacking prior immunity to the organism and its spread through the population is fast and attacks people of all age groups. Spagnuolo *et al.*, (2011) explained that, upon ingestion, the majority of *Vibrio cholerae* bacteria are killed by the acidic pH in the stomach and those survive enter the lumen of the small intestine and begin colonization human inoculum size is likely large, since there is approximately a 4–6 log reduction of *V. cholerae* by due to the low pH in the stomach. People with lower immunity such as malnourished children or people living with HIV are at greater risk of death if infected (Phillips, 1964).

Clinical signs for *V. Cholera* infection often begins with stomach cramps and vomiting followed by diarrhea, which may progress to fluid losses of up to one liter per hour. These losses result in severe fluid volume depletion and metabolic acidosis, which may lead to circulatory collapse and death (Camilli, *et al.*, 2009). UNICEF, (2004) explained that symptoms of cholera can vary from mild to severe, the most common ones include sudden onset of watery diarrhea, dehydration, rapid heart rate, dry mouth, excessive thirst, low urine output, nausea and vomiting.

2.2 Cholera Outbreak in Tanzania

The first 10 cholera cases were reported in 1974 and since 1977 cholera cases were reported each year with a case fatality rate (CFR) averaging 10.5% between 1977 and 1992 (WHO, 2008).

Acosta *et al.* (2001) reported that the first major outbreak occurred in 1992 when 18,526 cases including 2,173 deaths were recorded. WHO (1998) narrated also that, Tanzania has consistently reported cholera cases; annual reports ranged from 1,671 cases in 1977 to 18,526 in 1992. Health statistics from the Ministry of Health indicated that, during the last 2 decades, three major cholera epidemics have occurred: 1977-78, 1992, and 1997. Similar records show that in 1997, Tanzania had one of the highest case-fatality rates in East Africa (5.6%) with 2,268 deaths in 40,226 cases (URT, 1997). In 1997 an epidemic which started at the end of January in Dar es Salaam accounted for 40,249 cases and 2,231 deaths with CFR reaching 5.54%, during this outbreak, seven regions was affected and *Vibrio cholerae* El Tor Ogawa was confirmed (WHO, 2008).

During the 1997 epidemic, the Tanzanian Government, together with WHO and UNICEF organized an emergency strategy to combat cholera. WHO provided funds to implement control activities health education, training and purchase supplies and equipments, additionally, WHO also sent consultants to provide technical support (WHO, 2008). Reports indicate that between 2002 and 2006, Tanzania regions reported more than 2,000 cholera cases, these were; Dar es Salaam, Dodoma, Kigoma, Lindi, Mbeya, Morogoro, Mtwara, Pwani, and Tanga region (WHO, 2008).

A region with the highest CFR was Mtwara (33.3%), Iringa (12.7%) and Dodoma (6.7%). It was reported that the main epidemic peak in 2006 occurred during the month of April with a total number of 3 169 cases and 254 related deaths. The most affected region was Dar es Salaam with 8,965 cases representing 62.7% of the total cases and 101 deaths, this, constituted 39.8% of total deaths (MoHSW, 2010).

2.3 Cholera Outbreak in Ilala Municipality

According to WHO (2001), 109 cases of cholera with 3 deaths were reported between 18 May and 20 July 2001 in Temeke and Ilala Districts in Dar es Salaam Region. Between September 2003 and March 2004, peri urban areas of Ilala municipality were severely hit by cholera, during this outbreak; Ilala Municipality was reported to have the highest number of cholera cases (2508) as compared to Kinondoni (983) and (415) Temeke, (Mpazi and Mnyika, 2005). In response to the series of outbreaks, Ministry of Health produced a field manual to guide health management during disease outbreak, (URT, 2004). Ilala Municipality experienced a series of Cholera outbreaks for four consecutive years from 2007 to 2010, in each year, reported cases were 340, 10,262, and 20 respectively. In all cases, Buguruni ward was the mostly hit as compared to other wards in the Municipality. During this period, other wards which were highly affected were Vingunguti and Tabata wards being hit at the rate of about 60% of the total cases (MoHSW, 2010).

2.4 Risk Factors Associated with Cholera Outbreak and Spread

The risk factors for cholera outbreaks in Africa are incompletely understood, and the traditional emphasis on providing safe drinking water and improving sanitation and hygiene has proven remarkably insufficient to contain outbreaks (Seidlein *et al.*,

2014). Frequent seasonality of cholera incidence appears driven by the rainfall-induced contamination of unprotected water sources through latrine overflow and sewage, as well as by the periodicity of human activities like fishing or traveling (Rebaudet *et al.*, 2013).

As *V. cholerae* has been associated with numerous environmental components of the marine food chain (De magn *et al.*, 2008; Sendorovich *et al.*, 2010; Vezuli *et al.*, 2010), a study on “Risk factors and pattern of transmission” of Cholera disease which was conducted by Acosta *et al.*, (2001) in Southern Tanzania found out that, eating uncooked dried fish contributed greatly to counteracting the Cholera disease. Other risk factors associated to Cholera diseases which were concluded from Acosta *et al.*, (2001) research findings are presented in Table 2.1.

Other Authors listed other factors such as improper waste disposal, food handling, processing, and preservation, poor housing, improper and inadequate sewerage systems as factors which place people at a greater risk of being infected with cholera and other diarrhoeal diseases (Makuza, 2002).

On the other side, Geographical, socio-economic and socio cultural backgrounds of people in the affected area which influence practices may also contribute to spread of cholera. These include low educational level, unhygienic food handling practices and proximity to surface water (Ali *et al.*, 2002 and Meftahuddin, 2002). This is because the bacteria *Vibrio cholerae* that cause cholera are known to be normal inhabitants of surface water (Ali *et al.*, 2002).

Table 2.1: Univariate Analysis Results of Potential Risk Factors During the 5 Days before Onset of Illness in Cases and Matched Controls in Ifakara

CONTROLS						
S/N	Risk Factors	Cases, % (n=180)	Exposed % (n=360)	Matched Odds ratio	95%CI	p-value
A	Social activities					
	Attended funeral recently	6.2	2.2	2.7	1.1-6.8	0.03
	Attended party recently	2.8	4.7	0.6	0.2-1.7	0.33
	Travel in the past 2 weeks	19.0	13.6	1.5	0.9-2.5	0.10
B	Standard of living					
	Mud housing ^a	48.0	36.0	1.7	1.2-2.5	0.01
	Non-iron sheet roof	55.6	39.2	2.0	1.4-2.8	0.00
	No latrine at home	56.6	9.8	11.4	6.3-20.5	0.00
	Simple pit latrine ^b	91.4	81.2	2.7	1.4-5.1	0.001
C	Water Exposure					
	>10 minutes to water source	26.1	11.4	2.8	1.7-4.6	0.00
	Unboiled drinking water	86.7	79.2	1.9	1.1-3.2	0.02
	Unfiltered drinking water	89.4	84.2	1.7	0.9-3.0	0.07
	River bathing	56.6	9.8	11.4	6.3-20.5	0.00
	Inside tap water ^c	18.9	9.4	3.0	1.7-5.1	0.00
	Other source water ^c	18.3	7.5	3.7	2.0-6.7	0.00
D	Food Exposure					
	Dried fish	52.5	7.2	13.0	7.3-23.3	0.00
	Prawns	13.9	5.0	3.1	1.6-5.9	0.00
	Uncooked vegetables	25.1	20.1	1.3	0.9-2.0	0.20
	Fruits	32.4	30.4	1.1	0.7-1.6	0.60
	Religion ^d	41.2	23.1	2.3	1.1-3.4	0.00

Source: Acosta *et al.* (2001)

Key: a Compared with brick houses.

b Compared with ventilated improved pit latrines.

c Compared with hand-pumped drinking water.

d Muslims (compared with other religions, including Catholics, Protestants and others).

2.5 Control Methods and Treatment of Cholera

Deaths from cholera can be prevented through simple treatment oral rehydration, and severen Cases through intravenous rehydration, (Gaffga *et al.*, 2007). Njoh (2010), while studying the Cholera epidemic and barriers to health, hygiene and sanitation in Cameroon, explained that, the mortality rate of cholera can be reduced to less than 1% by the adequate replacement of fluids and electrolytes. He also suggested that, the inclusion of glucose in the salt solution which allows oral replacement of electrolytes has made treatment of the disease (particularly in rural areas) much more effective. Also, the use of any metabolizable carbohydrate together with NaCl appears to be effective for electrolyte replacement. Thus, a well-cooked and salted rice soup is recommended for diarrhoeal patients who are unable to obtain a glucose-salt solution. The efficacy of the oral replacement therapy can be seen by comparing the mortality of an epidemic before and after such a therapy is used.

According to WHO (2001) and Battersby (2011), measures for the prevention of cholera mostly consist of providing clean water and proper sanitation to populations who do not yet have access to basic services. Same authors recommended provision of Health education and good food hygiene to be equally important.

On the other hand CDC, (2008) and WHO, (2008) recommended raising community awareness on basic hygienic behaviors, including the necessity of systematic hand-washing with soap after defecation and before handling food or eating, as well as safe preparation and conservation of food. They also recommended Chlorination and boiling of drinking water as they are often the least expensive and most effective means of halting Cholera transmission.

According to URT (2004), a Field Manual which was produced to aid Council Health Management teams listed a number of actions to be taken following a suspected cholera case, these included:

- (i) Assessment of water supply.
- (ii) To ensure safe water supply through boiling or chlorination.
- (iii) Establishment of special treatment camps where necessary.
- (iv) Improvement of environmental sanitation.
- (v) To ensure proper excreta disposal.
- (vi) To ensure food safety.
- (vii) To educate communities and relatives caring for patients about the importance of seeking appropriate treatment without delay and the importance of safe drinking water (chlorinate or boil), properly cooked food and regular personal hygiene.
- (viii) Intensification of surveillance and case detection.
- (ix) To work with other sectors to ensure safe drinking water and food safety.

Towner *et al.* (1980) recommended use of Antibiotics for moderately and severely ill patients as an effective tool to reduce resource requirements. Towner *et al.*, (1980) explained also that, by decreasing duration of diarrhea and stool volume, antibiotics result in more rapid recovery and shorter lengths of inpatient stay, both of which contribute to optimizing resource utilization in an outbreak setting. The same author recommended that use of Tetracycline has been shown to be effective treatment for cholera and is superior to furazolidone, cholamphenicol and sulfa guanidine in reducing cholera morbidity.

CHAPTER THREE

3.0 METHODS AND MATERIALS

3.1 The Study Area

This study was conducted in Buguruni ward within Ilala Municipality in Dar es Salaam region. Buguruni ward was selected based on the fact that the ward has been experiencing highest rate of cholera cases as compared to other wards. The study covered all four administrative streets which are Mnyamani, Madenge, Malapa and Kisiwani. The ward borders Ilala ward in the east, Vingunguti in the west, Kigogo (Kinondoni) in the north, and Chang'ombe (Temeke) in the south.

The ward is longitudinally transacted by “Nelson Mandela” highway which is the largest highway in the Country carrying both local and international traffic, a factor that makes the ward a hot business centre. Businesses carried out in the ward ranges from large wholesale outlets for a variety of consumer goods to small cooked food displayed on a single plate along the road.

According to 2012 population and housing census, the Ward had a total of 70,585 people housed in 20,829 households. Numbers of households in each administrative street varies greatly, Madenge 3420 households, Malapa 3466 households, Kisiwani 7943 households and Mnyamani 6000 households. This number of households and its corresponding population places the ward in the list of highly populated wards within the Municipality.

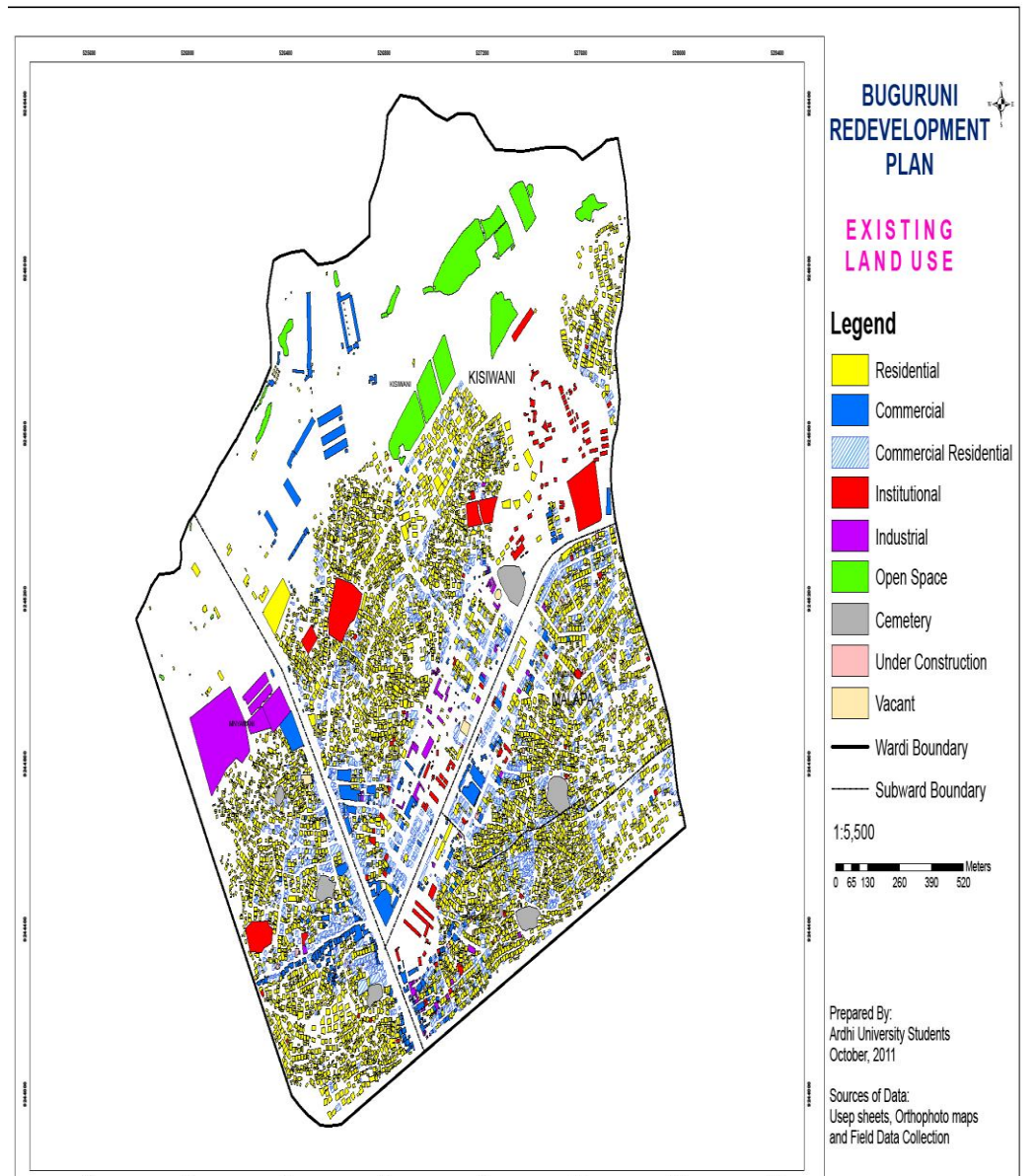


Figure 3.1: Map of Buguruni Ward Showing Study Location

Source Field Data (2013)

3.2 Sampling Procedure

For the purpose of this study, which requires high level of knowledge, experience and involvement in cholera disease, both purposive and stratified sampling method were used to obtain 30 respondents from each of the four administrative streets in Buguruni ward.

Thirty households were randomly selected from each administrative street in the ward making a total of 120 respondents out of 20,829 households available in the ward. From each street, respondents were randomly sampled based on their social and economic activities. In this regard, the study population included food vendors, individuals involved in disease control, companies involved in street sanitation and cleansing, political and religious leaders as well as traders.

3.3 Data and Data Collection

Both primary and secondary data were used in this study

Data collection

According to Saunder (2006) Data collection means the approach of collection of information in particular academic research. This approach is judgmental by the researcher. There are several ways of collecting the appropriate data which differ considerably in context of costs, time and other resources at disposal of the researcher.

3.4 Types of Data

There are two types of data that is Primary Data and Secondary Data collection in research writing. According to Kothari (2004) Primary data are those which are collected afresh, and thus happen to be original in character. There are several techniques of primary data. In this study collection methods that observation, questionnaires and interviews were used as tools for primary data collection. Secondary data on the other hand, are those which have already been collected by someone else and which have already been passed through the statistical process. In this study documentation were used as secondary data technique.

3.5 Data Collection Tool

Structured questionnaire with both closed and open ended questions were designed, tested and adjusted before being administered to respondents (Appendix 2). Focus group Discussions (FGD) was employed to special community representatives to obtain necessary information related to this study. A checklist of questions were used to lead FGD with CBOs, NGOs and other community leaders (Representative) to capture their experience and knowledge related to Cholera outbreak and control in the study area. Target population was above 18 years in the households.

3.6 Data Analysis

For the purpose of drawing conclusions, the collected quantitative data were coded and analyzed by using Statistical Package for Social Sciences (SPSS) computer software version 16.0. According to Sasaki et.,(2008) Descriptive statistics covering frequencies, percentages and means were used to summarize the results of analysis on factors contributing to continued cholera outbreaks. Results of analysis were presented in pie chart and tables. Content analysis was utilized to extract important information from qualitative responses given by respondents, this information was used to compare and validate information obtained from qualitative data analysis.

CHAPTER FOUR

4.0 RESULTS

4.1 Introduction

This chapter presents the research findings. These are based on primary data which were collected in Buguruni ward. To be able to elucidate these results clearly, results are presented and discussed in three sub sections; the first part presents respondents' general information. The second and third parts present and discuss findings on what could be reasons responsible for continued Cholera outbreak in Buguruni Ward.

4.2 Respondent's General Information

4.2.1 Respondents' Age, Gender and Type of Household

This part presents respondents' demographic characteristics; these include age and gender of the respondent as well as the type of household from which the respondent lives.

Age of respondents has been presented in Figure.4:1, results shows that most of respondents were found within 31-50 years old. This constituted 46.67% of the study population. The second largest group ranged between 18-30 years, this made up 36.67% of all respondents. The least group of respondents represented those respondents with more than 50 years of age, this group constituted 16.67% of all respondents.

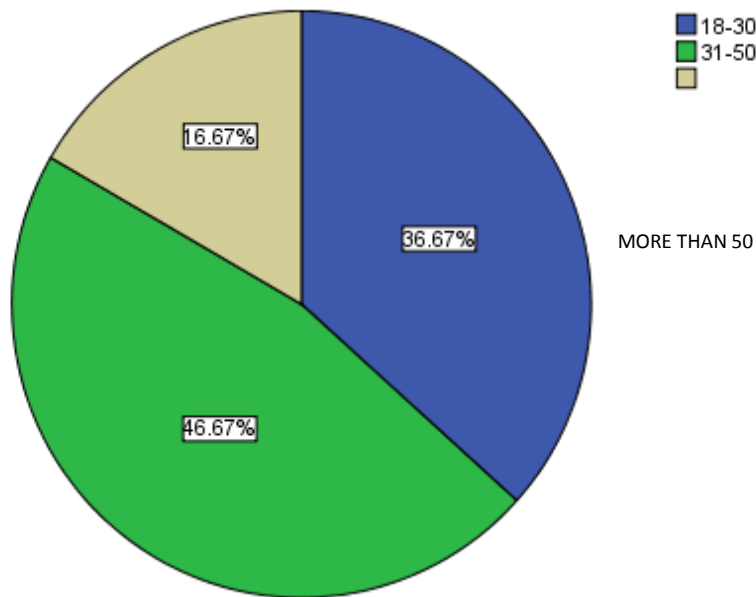


Figure 4.1: Average Age of Respondents

Source: Research data (Mghase, 2014)

Most of the respondents who were interviewed were male, and this category made up 63.33% of the population. Only 36.7 % of the study population was females.

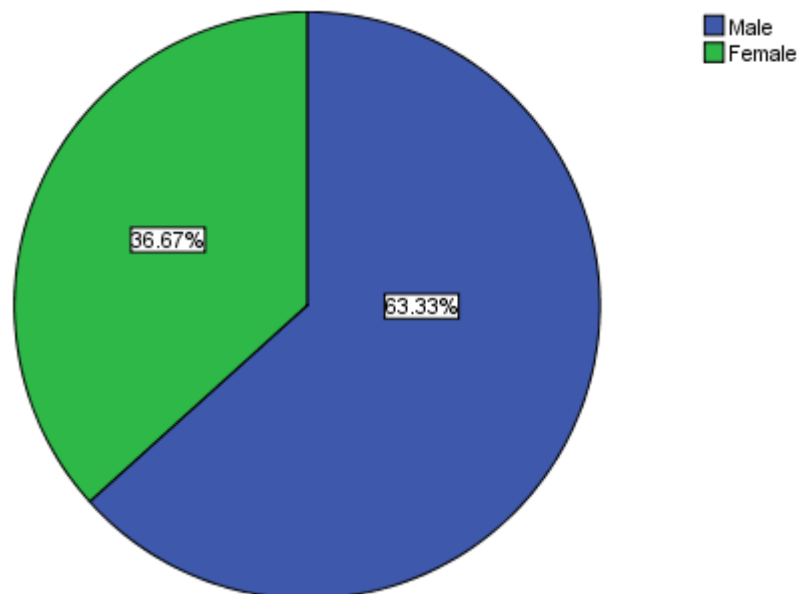


Figure 4.2: Sex Head Respondents

Source: Research data (Mghase, 2014)

4.2.2 Type of Occupancy and Duration in the Study Area

To investigate on type occupancy in which the interviewee belonged, responses were categorized into three groups, these were: those who live and work in the ward, those who work but do not live in the ward and those who live in the ward but work in a different location. This study found out that, of all respondents who were interviewed, 60% were living and earning their livelihood from within the ward. Same results indicated that 32% lived away from the ward with their main economic activities located in the ward. In this category, 8% represented those who live in the ward but work in different wards. On the other hand, the study found out that 63% of the interviewed population had lived in the area for more than 10 years. In the same category, 10% of all respondents had lived in the ward between 6 to 10 years, while the remaining 27% had been in the area within 5 years.

Table 4.1: Type of Occupancy and Duration in the Ward

No	Category	Frequency	Percentage
A: Type of occupancy			
1	Live and work in the ward	72	60
2	Work in the ward but live outside	38	32
3	Live in the ward but work outside	10	8
	Total	120	100
A: Duration in the ward			
1	More than 10 years.	76	63
2	6 to 10 years	12	10
3	Within 5 years	32	27
	Total	120	100

Source: Research data (Mghase, 2014)

4.2.3 Family Size, Level of Education and Households' Income

To know the family size, responses fell into three categories, these were; those with two members, three members and those with more than five members. This study found out that, respondents with more than five members made up the majority of the study population, this constituted 57% of all respondents. This study also found out that 20% of the population had three members, with only 23% having two members.

The level of education of respondents was also investigated, education level was classified into four groups, and these were; those who had completed primary education, those who attained secondary education, those with technical/professional level and those who had completed University level. This study found out that, interviewee who had attained secondary education made up the majority of the study group, this represented 49% of all respondents. Residents who had primary education made up the second largest proportion, this represented 32%. In this ward, 19% had attained post secondary professional courses. Only 2% of the respondents had attended University level.

Income level of the study population varied greatly. This study grouped income classes into three sub categories, these were; those with their monthly income not exceeding Tsh. 100,000, those with their income ranging between Tsh. 100,000 – 300,000, those who earns between Tsh 300,000 to 500,000 and those with their monthly income not exceeding Tsh 500,000. This study found out that 52% of the study population earned between Tsh 100,000 to 300,000. It can also be seen that, 30% represented those whose monthly income do not exceed Tsh. 100,000. It was

also found out that 13% of the responses represented those who earn between Tsh. 300,000 to 500,000. Only 5% of the interviewed population was earning more than Tsh. 500,000.

Table 4.2: Family size, Level of Education and Household Income

No	Category	Frequency	Percentage
A. Family size			
1	Two family members	28	23
2	Three family members	24	20
3	More than five members	68	57
	Total	120	100
B. Level of education			
1	Primary education	38	32
2	Secondary education	58	49
3	Post secondary education	22	19
4	Completed University level	2	2
	Total	120	100
C. Household income (tsh)			
1	Less than 100,000	36	30
2	100,000 – 300,000	62	52
3	300,000 – 500,000	16	13
4	More than 500,000	6	5
	Total	120	100

Source: Research data (Mghase, 2014)

4.3 Knowledge, Attitude and Practices Associated with Cholera Outbreak in Buguruni Ward

4.3.1 Community Awareness on Means of Cholera Transmission

To estimate the level of community awareness on the way cholera disease can be transmitted from one individual to another or across communities, three different

questions were used. In the first case, 86.7% of the population was seen to be aware of ways in which the disease can be transmitted from one individual to another. In this case only 13.3% of the study population was not certain whether the disease can be communicated among human beings. On the other hand, when interviewees were asked to list ways in which Cholera disease can be transmitted, 52% cited living in an unplanned settlement as the major cause, other responses were 42%, 4%, and 2% for having no toilet, shaking hands, and eating contaminated food respectively.

To estimate community reaction when a family member falls sick of any ailment, respondents were asked on what steps are taken when a person falls sick. 43% indicated that, they normally attend a nearest health facility like Medical store, Dispensary or Hospital, 33% of the community would treat a family member with any available medication at home including traditional concoctions, while, the remaining 24% would first seek advice from religious and traditional healers before going out for medical help.

4.3.2 Cholera Prevention and Control

Three different questions were used to assess community understanding on means of Cholera prevention and Control. In the first case, respondents were asked whether Cholera was a preventable disease, in this case 77% acknowledged the fact that this disease can be prevented and controlled, the corresponding 23% thought that the disease could neither be prevented nor controlled. When asked to identify ways in which the disease can be prevented from occurrence or spreading as summarized in Table 4.3, respondents had varied opinions. 59% indicated that the first and foremost means of preventing occurrence and spreading of the disease was living in a planned

settlement. Other responses were; 18%, 12%, 8%, and 3% for having means of proper waste disposal, preparing food in hygienic environment, washing hands after visiting the toilet and boiling water for all uses respectively.

Table 4.3: Cholera Prevention and Control

No.	Means of Prevention	Frequency	Percent
1.	Living in planned settlement	52	43.3
2.	Preparation of food in hygienic condition	44	36.7
3.	Washing hands after visiting the toilet and before eating	16	13.3
4.	Boiling water for all uses	8	6.7
	Total	120	100.0

Source: Research data (Mghase,2014)

4.3.3 Risk Behaviors Associated with Eating Unhygienic Food

Behaviors associated with eating unhygienic food are presented in Tables 4.4 and 4.5. Table 4.5 shows responses related to consumption of locally made fruit juices from street food vendors. It can be seen from Table. 4.4: that, 48.5% of the study population were less frequently taking locally made fruit juices from street food vendors, followed by 34.5% who frequently took fruit juices, with only 17.2 % who could not consume locally made fruit juices from street vendors.

Regarding preheating of food leftovers before being consumed (Table 4.5); 70% of the population would heat food leftovers before eating, while the remaining 30% of the population did not.

Table 4.4: Preference of Consuming Locally Made Fruit Juices from Food Vendors in the Study Area

No.	Criteria	Frequent	Less Frequent	Not At All	Total
1.	Consumption of locally made fruit juices from street food vendors	41	58	21	120
	Total	34.5	48.5	17.2	100.0

Source: Research data (Mghase,2014)

Table 4.5: Management of Food Leftovers Before Being Eaten

No.	Criteria	Responses	Number of Respondents	% Responses
1.	Normally reheat food left over's before eating	No	84	70
		Yes	36	30
	Total		120	100

Source: Research data (Mghase,2014)

4.3.4 Household's Water Treatment Methods and Community's Preference on Consumption of Treated Water

Household's means of water treatment and treated drinking water preference are presented in Tables 4.6 and 4.7. It can be observed from Table 4.6 that, 66.4% of the population does not treat water designated for any domestic use. The same Table indicates that only 28.4% of the population adopted boiling as the main means of domestic water treatment. It can also be seen that about 5.2% of all respondents chlorinate water for home consumption and other domestic uses.

On the other hand, preference of treated drinking water displays a more or less trend from what can be observed from water treatment methods. Results in Table 4.7, shows that, 72% of the population drinks untreated water. Only 15% of the

population was boiling water for drinking, while, the remaining 13% would use chlorinated water. FGD revealed however, that, most people in the study area perceive non-turbid water as clean and safe.

Table 4.6: Household's Means of Water Treatment

No	Criteria	Prefer Boiling	Prefer chlorination	No treatment at all	Total
1	Responses	34	6	80	120
2	% Responses	28.4	5.2	66.4	100

Source: Research data (Mghase, 2014)

Table 4.7: Community Perception on use of Treated Water

No	Preference of treated water for consumption	Prefer boiled water	Prefer chlorinated water	Prefer untreated water	Total
1	Responses	18	16	86	120
2	% Responses	15	13	72	100

Source: Research data (Mghase,2014)

4.3.5 Respondent's Source of Water

Table.4.8 summarizes different water sources from which Buguruni residents obtain water for their domestic uses. As it can be seen from table 4.8, Sources of water for household use were grouped into six categories, amongst these categories; 43.3% of interviewed households do use water from unprotected shallow well. The second highest category were buying water from small distributors who use pull carts, this

made up 20% of all respondents. Those who use water directly supplied to their homestead by water supply authority as well as from protected shallow well all together, represented 13.3% of the population. Other categories were; those who get water from deep borehole and those using water supplied by water distributing trucks. Their corresponding proportions were; 6.7% and 3.3%, respectively.

Table 4.8: Source of Water in the Study Area

No.	Type of water source	Unprotected shallow well	Protected shallow well	Piped water	Distributi on tracks	Bore Hole	Pull cats	Total
1.	Responses	52	16	16	4	8	24	120
	% Responses	43.3	13.3	13.3	3.3	6.7	20.0	100.00

Source: Research data (Mghase, 2014)

4.3.6 Toilet Type and Common ways of Waste Disposal in Buguruni Ward

Table 4.9: Shows toilet type, and common means of waste disposal in the study area.

It can be seen that, toilets used varied from pit latrine to no toilets with open defecation or attending neighboring facility. This study revealed that 56.7% had pit latrines; similarly, 33.3% were using water closets with flushing cisterns. Other responses were; 6.7% and 3.3% for those having their toilets connected to public sewer system and open defecation respectively.

On the other hand, different methods were used to empty cesspits in the ward, 63.3% of the study population were using cesspit emptying trucks. The study also revealed that 23.3% were connected to the public sewage system. In this area, only 13.3% applied onsite excreta disposal. Other solid wastes were being disposed in a number of ways; 46.7% were digging open pit holes closer to their homes to be used to dispose solid waste generated by the household, while, 40% were disposing solid waste in a special sanitary landfill. Other means of waste disposal included collecting

household waste and send them to a designated collection point, this accounted for 10% of all respondents. Only 3.3% of the study population collected and disposed all solid wastes at home.

Table 4.9: Toilet Type and Common ways of Waste Disposal in Buguruni Ward

A	Toilet type	Frequency	Percent
1	Pit latrine	68	56.7
2	flush cisterns	40	33.3
3	Open defecation	4	3.3
4	Toilet connected to public sewer system	8	6.7
	Total	120	100.0
B	Means of Waste disposal	Frequency	Percent
1	Thrown on open space /roads side	48	40.0
2	Pit holes	29	24
3	Collect at and send to collection point	39	32.7
4	Dispose at home	4	3.3
	Total	120	100.0
C	Ways of cesspit emptying	Frequency	Percent
1	Use of cesspit emptying trucks	16	13.3
2	Connected to public sewer	28	23.3
3	On site excreta disposal	76	63.3
4	Total	120	100.0

Source: Research data (Mghase,2014)

4.3.7 Opinions on Government and Community Reaction During and Post

Cholera Outbreak

Respondents were asked to give their views on what were the Government and Community reaction during and after the occurrence of Cholera in Buguruni ward, respondents narrated that, a number of interventions were instituted by both the

Government and the community. It was explained that, during the last outbreak, the Government provided free chlorine based water disinfectants which were directly applied into all water wells. In the same way, waste water disinfectants were regularly being supplied to be applied in all pit latrines and septic tanks. It was also revealed that, the Government, in collaboration with NGOs and CBOs operating in the area launched community health education campaign which was aimed at increase community awareness on Cholera prevention and control.

CHAPTER FIVE

5.0 DISCUSSION OF THE FINDINGS

5.1 Introduction

This chapter provides a discussion of research findings presented in chapter four in respect to the objectives of the study and related literature.

5.2 Respondents' Age, Gender and Type of Household

Demographic pattern displayed in this research follows the gender pattern which was reported by REPOA (URT, 2010). The "Gender indicators Booklet" which was prepared by REPOA for the Ministry of Finance and Economic empowerment indicated that 31-50 age groups was the most active age group in the community. The pattern differs with findings by Chingayipe (2008), who shown that majority of respondents who participated in a research on "Factors affecting Cholera case detection by the communities in Chiradzulu District" in Malawi fell within the "15 to 24" years age group. Same results show that most of them were women.

5.3 Family Size, Level of Education and Households' income

Education level of respondents in this research differed greatly with what was explained by Chingayipe (2008), in her findings, majority of respondents had attained primary education. The difference could be due to the fact that her research was conducted in rural areas as opposed to this research which was carried out in

urban areas. The average family size was also found to be small as compared to average family size narrated in “The Tanzania gender indicators booklet”(URT, 2010).

5.4 Knowledge, Attitude and Practices Associated with Cholera Outbreak in Buguruni Ward

5.4.1 Community Awareness on Means of Cholera transmission

Majority of the study population do not know the cause and ways in which cholera can be communicated among populations this greatly differs with what Chingayipe (2008), reported that majority of respondents cholera outbreaks are behind the contaminated water. Findings of this study, however, corresponds to the findings by Bourque (2010), whose study found out that the majority of respondents, were not aware on causes of Cholera outbreak in the community.

5.4.2 Cholera Prevention and Control

Research findings by Mpanzi and Mnyika (2005), who explained that, analysis of knowledge levels on cholera prevention and control was lagging behind in the study population. Consequently, WHO (2008) reported that acquiring knowledge of cholera is an important strategy in the control of cholera. However, implementing certain interventions in high-risk groups with poor knowledge of and attitudes toward cholera is not easy.

5.4.3 Access to Safe Water

The present study indicated that many of Buguruni residents had no access to safe and hygienic water. These findings conform to explanation by REPOA (URT 2010) who stated that, in rural areas, 60% of households still rely on unprotected, unsafe

sources of water. Some reports indicates however that, in urban areas, data shows a declining trend in coverage from 2001 to 2005, particularly in piped water supply. This finding is also similar to observations which were reported by Mpanzi and Mnyika (2005); their findings indicated presence of high level of inadequacy of water supply in most cholera endemic areas coupled with low level of knowledge whereby respondents drink water from wells without boiling.

5.4.4 Risk Behaviors Associated with Eating Unhygienic Food

The study found that a greater proportion of the study population risk eating unhygienic food, similar findings were reported by Wahed *et al.*, (2013), in his study, while analyzing “Knowledge of, attitudes toward, and preventive practices relating to cholera and oral cholera vaccine among urban high-risk groups” in Dhaka-Bangladesh, reported consumption of rotten food as one of the risk factors culminating to cholera outbreak.

This is also supported by WHO, (2003) who observed that greatest transmission occurs in contaminated water or food. WHO (2005) reported also that, several devastating outbreaks of food borne diseases such as cholera, salmonellosis, entero haemorrhagic *Escherichia coli* (EHEC), hepatitis A and acute aflatoxicosis occurred in a number of African countries in 2005, with 34 000 cases of cholera being due to contaminated water and food.

5.4.5 Toilet Type and Common ways of Waste Disposal in Buguruni Ward

Persistence of poor waste management in this area is supported by findings which were put forward by Hammer (2011), who explained that in developing countries, many people still do not have access to any form of improved sanitation and continue

to practice open defecation. A similar remark by Kiunsi and Mchome (2008) shows that the fact that Buguruni residents have poor municipal services has led the highest levels of cholera outbreaks in the Ward.

CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter provides a summary of the main issues that are drawn from the study and puts forward possible implications that may be deduced from within and finally specifies areas that need further research and attention.

6.2 Conclusion

The cholera outbreak in Buguruni ward was found in the study is associated with knowledge attitude and practices of Bugurni residents. The study found the 50% of respondents do not treat drinking water. During the focus group discussion about 75%, of respondents were also of the opinion that most of people in the award do not treat water due to lack of knowledge and desire to consume untreated water. Even the juices sold by street vendors were prepared by using untreated water. The infrastructure of water and sewage systems is in a very poor situation neither does systematic waste disposal systems exist. There are frequent complaints of ill health in the ward, possibly attributed to local drinking water and sewage disposal systems are poor. Water was the major factor of cholera outbreak in ward.

The study also found that the majority of the respondents were not aware on the causes of cholera outbreak and how to prevent them. The researcher observed most

of solid wastes were left in the ward without being collected by Municipal authority. The respondents during group discussion observed that prevention measures were inadequate. The governments have not done adequate prevention measures such as sensitization and awareness campaigns against cholera such as health education and the government has done enough in improving infrastructures, planned settlement and improving the social well being of buguruni residents.

6.3 Recommendations

Basing from the research findings, The cholera outbreak were mostly caused by lack of knowledge, poor infrastructures, poor families, poor sanitation, lack of safe water and unplanned settlement, the following are therefore recommendations of the study:

6.3.1 The Public Promotion and Education (CHMT)

It is recommended that hygiene education programmers in the ward must be intensified and make use of posters and flip charts as well as a wide range of audio-visuals, printed illustrations and photographs, fliers, newspaper articles, radio health programmers, health posters, health school programmers, drama, songs and comedy. Health educators must incorporate both micro and macro media successfully only after a careful assessment to make health education effective.

Social mobilization uses all available and potential communication approaches, resources, techniques, channels, methods, and tools. Ilala Health Management Team (IHMT) must not mere embark on information campaign or communication project

as a stop-gap approach, but establish a long-term programme to built into communities programmers that will ensure acceptance and use of health information.

The IHMT must place premium on the following activities:

6.3.1.1 Training and Re-Training of Programme Implementers

Training enables personnel to acquire the necessary skills for the delivery of services. The implementers must assist to improve people's knowledge, appreciation, and mobilisation, of community resources to achieve the desired outcome, usually for local and individual empowerment.

6.3.1.2 Community Organisation

Community organisation is to empower parents, families, groups, and the whole community, is used to build their capacity for problem solving, decision making, and collective action, thus developing and strengthening their networks in the area of nutrition and hygiene. Community organization and participation allow community members to recognize their problems and needs, decide on what they can do and how they can act collectively, that is, pool ideas as well as human and physical resources, and together benefit from all available resources and services.

School health programs should be improved to offer a good entry point for improved water supply, provision of sanitation facilities and for community hygiene promotion. It is a realistic goal in most countries to ensure that all schools have good sources and storage of food, clean water supply and good sanitation. This enables

schools to reinforce health and hygiene messages, ensure they translate into action, and set an example to others including their parents in the community.

6.3.1.3 Monitoring and Evaluation

The IHMT should establish health education unit and strengthened monitoring and evaluation activities to determine the efficiency of implementation of health programmers'. The health education unit shall make concerted efforts to assess sanitation and hygiene beliefs and practices. The unit must involve community members/beneficiaries in planning and implementing health education interventions. It should continuously identify practices to be changed, targeting the four most critical: hand washing with soap (or ash or other aid) before food preparation and after dealing with faeces; latrine use and safe disposal of children's faeces; safe weaning food preparation; and safe water handling and storage. Additionally, the IHMT must focus on the following:

- (i) Work with other agencies (governmental and private) to plan, develop and manage water resources and basic water and sanitation services, to advocate and promote these investments, and ensure that activities to promote hand washing, safe disposal of faeces and continuous use and cleanliness of sanitation facilities are included;
- (ii) Work with the DAWASCO AND DAWAS responsible for monitoring water quality and sanitation to help ensure that this monitoring is carried out;

- (iii) Provide other sectors with reliable data on water-associated diseases and effectiveness of interventions to facilitate better decisions with respect to water and sanitation projects;
- (iv) Provide leadership for action in hygiene education, safe nutrition including building coalitions with private sector agencies to achieve better results;
- (v) Advocate for adequate food and water supply, sanitation and hygiene interventions in poverty reduction strategies and plans;
- (vi) Health personnel must also ensure traditional way of treatment and storage of drinking water; for point-of-use water treatment interventions have beneficial health effects.

6.3.2 The Ward Health Promotion Unit

The study recommends that Health promotion units must be established or strengthened at ward level to intensify health promotion which remains as a viable approach and a tool for comprehensive and equitable health development. The shift of focus from health education to health promotion was catalyzed by the Ottawa Conference in 1996 and sustained by the outcomes of the subsequent international conferences on health promotion.

Health promotion strategies have been integrated into many health and development programmes. The Ward Health Administration must intensify its focus on the “healthy settings approach” that could pave the way for partnerships with government sectors including NGOs and the private sector. However, gaps exist in

Health Promotion knowledge, skills and concept application even among health personnel and decision makers in most countries. There is need for concerted efforts to integrate health promotion activities across sectors in order to close the gap in the area of domestic hygiene.

Furthermore, the study recommends that the need to develop policies and strategies that advocate for health promotion to be a part of the public health development agenda. There is need to establish functional partnerships. Strong networks and alliances for promoting health that include private and public sectors, and civil society groups other than those traditionally engaged in health in order to build a critical mass for health promotion in various settings.

6.3.3 Ministry of Health/Tanzania Health Service

The Ministry of Health and Tanzania Health Service can do several things, in collaboration with other sectors, to help ensure that investments in water supply and sanitation result in greater health impact. The study recommends that there must be serious partnership between government and private health sector on allocating adequate resources to fight against cholera outbreak.

6.3.4 Ilala Municipal Council

The environmental health division must be restored to the Ministry of Health so that there will be closer relationship among the public health division and the environmental health division. This will enable a common strategy to be developed and implemented effectively to reduce the upsurge of diarrhoea and other communicable diseases. The Ilala Municipal council must also encourage persons to

research or carry out pilot projects to test new technologies or mechanisms such as cost-recovery to ensure maintenance and sustainability of health and other social projects.

6.3.5 Development Partners

The study recommends that communities, District Assemblies and the Central Government must make concerted efforts to forge partnership with UNICEF, WHO and other partners, both international and local non-governmental organizations to: Rapidly disseminate health information especially about breast feeding, supply of wholesome water to households and good hygiene practices such as regular hand washing at homes and working places.

Supply and educate mothers of children less than five years on the use of ORS and zinc supplements to countries that cannot manufacture them to meet quality standards Help with communication efforts aimed at enhancing prevention and management of diarrhoea at health facilities.

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APPENDECIES

Appendix 1: Questionnaires for Household

A. HOUSEHOLD CHARACTERISTICS

Questionnaire number.....

Street name.....

Age of respondent

Sex of head of respondent 1 Male () 2 Female ()

Type of occupancy

Live and work in the ward ()

Work in the ward but live away ()

Live in the ward but work in a different ward. ()

Type of the respondent interviewed?

Female headed house hold ()

Male headed house hold ()

Child headed house hold ()

Size of House hold/ family members in the household

One ()

Two ()

Three ()

Four ()

Five ()

Above five ()

Level of Education of respondent

No formal education ()

Did not complete primary level of education ()

Completed ()

Secondary education ()

University level of education ()

How long have you lived in this ward

< 5yrs ()

6yrs-10 yrs. ()

10 yrs. ()

B. HOUSEHOLD INCOME LEVEL

What is the level of family income in Tshs per month?

< 100,000 ()

100,000-300,000 ()

200,000-300,000 ()

301,000-500,000 ()

500,000 ()

C. FAMILY TREATMENT ON DISEASE CONTROL SPECIFIC TO CHOLERA.

What do you do when a family falls sick? Tick appropriate answers

Treat at home with available medications ().

Seek advice from religious leaders and traditional healers before going to the Hospital ().

Provide herbs and traditional medicine ().

Attend the nearest health facility ().

Purchase drugs from nearest medical store ().

Other (specify).....

D. CHOLERA TRANSMISSION

Do you know ways or methods on how cholera disease can be transmitted from one individual to another? 1) Yes () (2) No ()

What do you think are modes of transmission from one individual to another in the community?

Shaking hands ()

Eating contaminated food ()

Living in unplanned settlement ()

Not having toilet ()

Others

Specify.....

E. CHOLERA PREVENTION AND CONTROL

What steps have been taken by the government and community to control it in the area?

Government.....

Community.....

Do you know how cholera disease can be prevented and controlled from spreading from one individual to another in the community?

Yes ()

No ()

If yes, how cholera disease can be prevented from spreading?

Living in planned ()

Prepare food in hygienic condition ()

Washing hands after visiting the toilet and before eating ()

Boiling water for all uses ()

Proper waste disposal ()

What type of water source do you use to get water for domestic use at your household? (Tick where it is appropriate).

Unprotected shallow wells ()

Protected shallow well ()

Piped water from water supply authority ()

Buying from water distribution trucks ()

Bore holes ()

Buying water from small distributors using pull cats ()

Method do you use for treating drinking water

No treatment at all ()

By boiling water ()

Treat with chlorine based disinfectant ()

Other specify.....

What is your perception on using treated water for drinking and other home use?

(Tick where it is appropriate).

Prefer using boiled water ()

Prefer chlorinated water ()

There is no need of treated water ()

Chemicals used to treat water cause hazardous health effect to consumers ()

How frequent do you consume locally made fruit juices from street vendors (Tick where it is appropriate)

Frequent ()

Less frequent ()

Not at all ()

Do you normally eat food left over's before eating?

Yes ()

No ()

Type of toilet used by the household on disposing excreta? (Tick where it is appropriate)

Pit latrine ()

Poor flush cisterns ()

Open defecation ()

Toilet connected to public sewer system ()

No Toilets, attends neighbors facility and nearby bar ()

Ways of cesspit emptying (Tick where is appropriate)

Use of cesspit emptying trucks ()

Connected to public sewer ()

On site excreta disposal ()

Out flooding during raining ()

Means of solid waste disposal by household

Sanitary landfills ()

Pit holes ()

Collect at and send to collection point ()

Collected at home ()

Thrown on open spaces ()

How are infants' feces and sanitary pads disposed?

Collected together with other solid wastes for further handling ()

Direct disposal into other solid waste disposal pits ()

Treated different immediately disposed into pit latrines or buried into pit holes()

Other specify.....

F. CHECKLIST FOR FOCUS GROUP DISCUSSION

What are the common modes of cholera transmission?

What are the reasons for recurring of cholera outbreaks?

Suggestions on how recurrence of cholera outbreaks can be controlled

What are the measures that are taken during cholera outbreaks.i.by family

what measures that are taken by Health professionals during cholera outbreaks

Measures that are taken by health professional s are they helpful or not helpful and why

G. OBSERVATION CHECKLIST FOR HOUSEHOLD

Type of settlement

High density ()

Low densities ()

Sewage disposal infrastructures

Present ()

Not present ()

Is permanent latrine available?

Yes ()

No ()

Is the latrine hole has cover

Yes ()

No ()

Is the hand washing facilities available at the latrine?

Yes ()

No ()

Is soap available in the latrine?

Yes ()

No ()

Is the latrine clean?

Yes ()

No ()

Is access to the cesspit emptier possible

Yes ()

No ()

Is the source of water available at the area?

Yes ()

No ()

Distance from latrine/septic tank to water source

Waste water overflows from house

Yes ()

No ()

Refuse containers available

Yes ()

No ()

Are the surrounding of the house clean?

Yes ()

No ()

Appendix 2: Dodoso la Kaya

Dodoso namba

Jina la mtaa.....

Umri wa muhusika

18-30

31-50

Zaidi ya 50

Jinsia ya muhusika.....

Aina ya makazi

Anaishi na kufanya kazi ndani ya kata ()

Anafanya kazi ndani ya kata na anaishi kata nyingine ()

Anaishi ndani ya kata na kufanya kazi katika kata nyingine ()

Aina ya kaya iliyododoswa

Mkuu wa kaya ni mwanamke ()

Mkuu wa kaya ni mwanaume ()

Mkuu wa kaya ni mtoto ()

Kaya ina jumla ya watu wangapi

Mmoja ()

Wawili ()

Zaidi ya wawili ()

Muhusika ana elimu gani?

Hana elimu()

Hakumaliza elimu ya msingi ()

Amemaliza shule ya msingi ()

Ana elimu ya sekondari ()

Ana elimu ya chuo kikuu.()

Umeishi kwenye kata hii kwa muda gani

Chini ya miaka 5()

Miaka 6 mpaka 10.()

Zaidi ya miaka 10 ()

Kipato cha kaya kwa mwezi

Chini ya 100,000/- ()

100,000-300,000/- ()

301,000-500,000/- ()

Zaidi ya 500,000/- ()

Ni hatua gani huchukua mara mwanafamilia anapopata ugonjwa wa kipindupindu

Anatibiwa nyumbani na dawa zilizopo ()

Anapata ushauri wa viongozi wa dini na waganga kienyeji kabla ya kwenda hospitali()

Anapewa dawa za mitishamba na kienyeji ()

Anaenda kwenye kituo cha afya cha karibu ()

Ananunua dawa kutoka duka la dawa ()

Nyinginezo eleza.....

KUENEA KWA KIPINDUPINDU

Unajua njia na jinsi ugonjwa wa kipindupindu unavyoenea kutoka kwa mtu mmoja kwenda kwa mwingine

Ndiyo ()

Hapana ()

Unafikiri ni njia gani zinazosababisha kuenea kwa kipindupindu kutoka kwa mtu kwenda mtu mwingine

Kupeana mikono ()

Kula chakula kilichochafuliwa na uchafu()

Kuishi mazingira ambayo hajapimwa ()

Kutokuwa na choo ()

Nyinginezo eleza.....

KUZUIA UGONJWA WA KIPINDUPINDU

Je unajua kuwa ugonjwa wa kipindupindu unazuilika

Ndiyo ()

Hapana ()

Taja njia zinazotumika kuzuia kusambaa kwa ugonjwa wa kipindupindu

Kuishi maeneo yaliyopimwa ()

Kuandaa na kuhifadhi chakula katika mazingira ya usafi ()

Kunawa mikono na sabuni baada ya kutoka chooni na kabla ya kula ()

Kuchemsha maji ya kunywa ()

Kutumia njia zinazofaa katika kuhifadhi na kutupa taka ()

Njia zipi serikali na jamii imezifanya ili kuzuia kipindupindu kwenye eneo

.....

.....

.....

TABIA ZA USAFI KATIKA ENEO LA UTAFITI

vyanzo vya maji navyopata maji ya matumizi ya nyumbani

Visima vifupi ()

Kisima kirefu ()

Maji ya bomba ()

Maji ya yanayouzwa na magari/mikokoteni ()

Njia gani za kutibu maji ya kunywa unazotumia

Hakuna njia yeyote ()

Kwa kuchemsha maji()

Kwa kutumia dawa (chlorine)()

Eleza njia nyinginezo.....

Una maoni gani juu ya matumizi ya maji yaliyotiwa dawa

Tunapendelea maji yaliyochemshwa ()

Tunapendelea maji yaliyowekewa dawa ()

Hatutumii maji yaliyowekea dawa ()

Madawa yanayotumika katibu maji yanasumu na hatari kwa afya.()

Mengineyo eliza.....

Je, hupendelea kutumia juisi za matunda zilizotengenezwa kienyeji

Mara kwa mara ()

Mara chache ()

Situmii kabisa ()

unachemsha chakula kilicholala kabla ya kula

Ndiyo ()

Hapana ()

Aina choo kinachotumika kwenye kaya

Ni cha shimo ()

Choo cha maji ()

Eneo la wazi ()

Wameunganishwa kwenye mfumo maji taka ()

wanatumia choo cha jirani na bar ya jirani()

Jinsi gani choo cha watoto na pempars zinavyotupwa

Zinakusanywa pamoja na taka nyingine kwa ajili uteketezaji()

Zinatupwa moja kwa moja kwenye shimo la taka ()

Zinatengwa na kutupwa kwenye vyoo vya shimo au kuchomwa kwenye shimo ()

Zinatupwa kwenye mazingira na kuzagaa ovyo ()

Maelezo mengine.....

Ni njia gani za uzibuaji zinazotumika

Magari ya kunyonya()

Imeungwa kwenye mfumo wa maji taka ()

Ni mfumo wa ndani (septic na sokage pit) ()

Yanazibuliwa kipindi cha mvua ()

njia gani zinazotumika katika utupaji wa taka

Kuzifukia ()

Kukusanyia nyumbani na kupeleka kwenye pointi ()

Kutupa kwenye shimo nyumbani ()

Kutupa kwenye eneo la wazi ()

Kutumia kwa matumizi mengine (re use) ()

DODOSO LA KUNDI MAALUM

Ni jinsi gani kipindupindu kinavyoenea

Sababu gani zinafanya ugonjwa wa kipindupindu unajirudia

Mapendekezo jinsi ya kuzuia kipindupindu kisijurudie tena katika maeneo yetu

Njia gani za kuzuia zilizotumika kipindi cha mlipuko wa kipindupindu

Kwa familia walifanya nini

.....
.....
.....

Serikali imefanya nini

.....
.....
.....

Njia walizotumia wataalam wa afya katika kudhibiti ugonjwa wa kipindupindu zilisadia.....

.....

Kama hazikusaidia nini kifanyike

.....
.....

DODOSO LA UCHUNGUZI

Mazingira yanayozunguka nyumba ni masafi

Ndiyo ()

Hapana ()

Miundo mbinu ya maji taka ipo

Ndiyo ()

Hapana ()

Kuna uwezekano wa kunyonya maji taka ?

Ndiyo ()

Hapana ()

Kuna mafuriko ya maji taka kutoka kwenye nyumba au nje ya nyumba?

Ndiyo ()

hapana ()

Aina ya choo kilichopo

Cha muda ()

Kudumu ()

Hakuna ()

Choo kilichopo ni cha aina gani

Cha maji ()

Cha shimo ()

Hakuna ()

Kama choo ni cha shimo kina mfuniko

Ndiyo ()

Hapana ()

Chooni kuna sehemu ya kunawia mikono

Ndiyo ()

Hapana ()

Sabuni ya kunawia mikono ipo chooni

Ndiyo ()

Hapana ()

Uhifadhi wa taka ukoje

Kuna vyombo vya kuhifadhia ()

Hakuna vyombo vya kuhifadhia taka ()

Taka zimezagaa kila mahali ()