AN ASSESSMENT OF COMMUNITY PERCEPTION ON CHOLERA PREVENTION IN NAKURU WEST SUB-COUNTY, NAKURU COUNTY, KENYA

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DECLARATION

This dissertation is a product of my own work and is not the result of anything done in collaboration. It has not been previously presented to any other institution. I agree that this dissertation may be available for reference and photocopying at the discretion of the university.

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I/We confirm that the work reported in this dissertation carried out by the student under my/ our supervision.

SIGNATURE OF SUPERVISOR 1; …….

Date …….

.

SIGNATURE OF SUPERVISOR 2 ……

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DEDICATION

I dedicate this dissertation to my dad Mohamed Abdullahi, my husband Osman Hassan and all my children for their prayers and support throughout my studies.

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ACKNOWLEDGMENT

I thank God for life, good health and opportunity to complete this work. The support and dedication from willing hearts of good friends has led to the success of this work. I express my deep gratitude to my supervisors Dr. Paul Gesimba and Dr.Virginia, and my lecturer Dr. Peter Koome for their commitment, guidance and accompanying this work from the very beginning to its completion. Their diverse knowledge and experience in scientific research has supported and enriched my work. Their readiness, availability, dedication, quick response, and support have made my work success.

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ABSTRACT

Cases of Cholera have been on the increase in Kenya especially in Rhoda Ward within Nakuru West Sub-County. The purpose of the study was to assess the community perception on cholera prevention among residents specifically in Rhonda, Nakuru West Sub-County. Specific objectives included assessing the knowledge of cholera among the people of Nakuru West Sub-County, Nakuru County, determining the effect of culture on cholera prevention in Nakuru West Sub-County, finding out attitudes of people towards those suffering from cholera in Nakuru West Sub-County, and establishing community practices that people associate with cholera spread in Nakuru West Sub-County. Health Belief Model was the main theoretical framework for this study. It adopted a crossectional descriptive survey research design which involved a combination of multistage, simple random and purposive sampling techniques. In total, a sample of 196 was drawn from Rhoda Ward. Questionnaire was the main research tool. Pilot study was carried out with a different set of population and in a different area which was not covered in the final research. Data analysis was conducted with the help of SPSS version 21. Findings of the study revealed that although a good number of respondents reported having heard about cholera, there was a sizable portion of the population who had never heard about this disease. The majority of respondent who had knowledge of disease believed that it is caused by eating contaminated foods or taking un-treated water. Findings also revealed that culture played a role in the spread of cholera and that community had negative attitude towards people suffering from cholera. The study also disclosed that most of the respondents were not using soap for washing hands. The study concludes there is limited knowledge bout cholera and practices that contribute to the spread of the disease within the study population. There is also a negative attitude towards persons who contract the disease. The study recommends sensitization campaigns and education of the populace on cholera prevention and early treatment.

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LIST OF ABBREVIATIONS

CHMT	County Health Management Team
HBM	Health Belief Model
ODF	Open Defecation Free
SPSS	Statistical Package for Social Sciences
UNICEF	United Nation Children's Fund
WHO	Word Health Organization

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DEFINITION OF KEY TERMS

Attitudes	This refers to one's general evaluative perception of a stimulus or set of stimuli. It is one perception towards something or somebody.
Capacity building	imparting quality knowledge to community on health care
Community	A group of people living together in the same geographical area sharing same resources, problems and needs that they also have a sense of belonging
Community Practice	This concerns the actions which are taken by community members or individuals which automatically makes an impact on their own health, that of their households and other people within the community.
Community unit	It's composed of a thousand households aligned to administrative unit in a sub-location served by 50 CHWs each serving twenty (20) households and two (2) CHEWS
Culture	This means the patterns of ideas, customs and behaviours which are common or shared by a given community, group of individuals, or society.
Infant mortality rate	Children who die during and immediately after birth per 1,000 live births
Poverty	Inadequate health care and limited access to opportunity living

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CHAPTER ONE
INTRODUCTION

1.1 Background to the Study

The importance of good health seeking behaviors cannot be overemphasized. Encouraging communities to pursue actions that promote health is essential to managing illnesses, preventing outbreak of diseases, and improving quality of life (Farmer et al., 2011). The task of promoting health and preventing the spread of diseases is normally accomplished by various actors and organizations (Sriram & Maheswari, 2013). Health professionals and laypersons play part in achieving prospective social and economic benefits for encouraging good health seeking behaviours.

A pertinent and persistent threat to the health and wellbeing of communities in Africa is cholera (Wamalwa, 2012). It is an epidemic-prone disease of global significance that has a prominent role in the history of public health. Cholera is bacterial infection which leads to dehydration and, usually fatal, diarrhea (Farmer et al., 2011). It is a common illness among the poor as low socioeconomic households often struggle with inadequate access to safe drinking water and poor sanitation. The infectious agent is generally passed from one person to another through food and water polluted with infected human waste. If left unchecked, cholera can be fatal with studies recording mortality of 25% to 50% of all the incidences (Tappero & Tauxe , 2011).

Cholera has been practically eradicated in developed countries due to advanced water and sanitation systems. However, cholera outbreaks still occur in almost every developing country including Kenya (Montgomery, Munguambe, & Pool, 2010). In 2009, diverse countries in Africa experienced immense cholera outbreaks. In particular, a total of 217,333 cholera cases were reported from Africa in 2009 alone (World Health Organization, 2010). With challenges in water shortages, there is growing concern that cholera could become increasingly difficult to control. Moreover, increased urbanization is likely to escalate the spread of cholera to areas where sanitation and adequate access to clean water is not guaranteed (Mpazi1 & Kagoma , 2005).

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Cholera is endemic in Kenya. This implies that the country has exhibited incidents of cholera in at least 3 of the past 5 years (World Health Organization, 2010). Large, widespread outbreaks occurred in Kenya in 1997-1999 and in 2007-2010 (Feikin, Tabu , & Gichuki , 2010). According to report by WHO (2014), cholera led to 7,735 deaths in Kenya in 2014 alone. The average annual incidence of reported cholera cases during the 10-year period 1994-2003 was 20 cases per 100,000 people in comparison to 6 cases per 100,000 people during the 10-year period 2004-2013 (Cowman, 2015). On a brighter side, cholera control is far cheaper and effective by means of a preventive strategy than a curative one.

Despite the fact that cholera is a preventable disease, people continue to suffer from this deadly illness. In Kenya, over eight million people do not have toilet facilities and mainly use bushes and vegetation as toilet while a paltry 5% of Kenyans wash their hands with soap (UNICEF, 2016). This begs the question, why is this so?

1.1.1 Historical Overview of Cholera

Although it is possible to conclude that cholera has been anticipated cause of human infections and mortality throughout the history of human beings, its outbreaks was formally recognized by scientists in 1817 (De Margh et al., 2008). Sir John Snow is known as the first person to link polluted water to the spread of cholera; hence, using that information as an infection mitigation strategy (De Margh et al., 2008). Beside taken as start of modern epidemiology, Snows surveillance is also the first survey on the ecology of *Vibrio cholera*, though it took another 120 years for *V. cholera* to be acknowledged as an autochthonous aquatic bacterium instead of a human pathogen which is a transient resident of the aquatic environment (Chatterjee, Dutta, & Chowdhury, 2007).

Cholera is known to cause profuse diarrhea which can be massive in more than a quarter an hour and can kill within a very short time. In particular, it can kill within hours or a day and can spread to a substantial proportion of the population within a community (WHO, 2008). The diarrhea is often of sudden characterized by ‘rice water' stools without fecal, odour, blood or pus, muscular cramps, effortless vomiting, and rapid dehydration accompanied by low urine output. The patients are usually identified by diminished skin

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turgor, weak pulse, and sunken eyes and cheeks. However, their temperature may be normal and the patients suffer from acidosis (WHO, 2008).

According to UNICEF (2010), cholera presents itself in the form of outbreaks especially in a state of inadequate sanitation, concentration people in one place, insecurity, and in situations where scarcity of food is experienced. According to Feikin et al. (2010), cholera infection continue to be a weighty health challenge in most developing nations including Kenya because of insufficient proper hygiene and sanitation systems.

A report by the WHO (2008) indicates that cholera epidemics have occurred in almost all continents at varying intervals. For instance, in Asia, cholera outbreaks can be traced as early as the 1950s when it was recorded in 23 countries within the continent. During this period, approximately 1,355,747 incidences were recorded resulting in the deaths of 6,787 people. It is also during this period that 391,220 cases with 4,002 deaths were reported in America. Africa experienced 11,086 cases of cholera outbreaks with 747 deaths from 16 nations (Chatterjee et al., 2007).

Cholera outbreak disrupts crucial amenities, hinders economic development, and leads to around 100,000 deaths every year (Okun, 2008). According to Hammer (2011), the cholera epidemic is an explosive phenomena particularly when it spreads to populations with inadequate or absence herd immunity to the infectious organism. Spagnuolo, Dirita and Kirchner (2011) clarified that upon consumption, most of the Vibrio *cholerae* bacteria are eliminated by the acidic pH in the stomach and those pull through infiltrates the lumen of the small intestine and start colonizing. People with compromised immunity are generally at substantial risk that can result to death if infected by cholera (Hammer, 2011).

Clinical signs for *V. Cholera* infection usually start with stomach cramps and vomiting accompanied by diarrhea that may lead to dehydration within a short time. These losses occur as a result of severe fluid volume depletion and metabolic acidosis, which may causes circulatory collapse and death (Chatterjee et al., 2007). Symptoms of cholera can vary from mild to severe with the most frequent ones being sudden onset of watery

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diarrhea, dry mouth, dehydration, high heart rate, excessive thirst, low urine output and nausea as well as vomiting (Farmer et al. , 2011).

1.1.2 Modes of Transmission and Infection

Cholera is a killer disease especially in the context of developing countries and low socio-economic setting. Studies reveal that the disease has a short incubation period and is caused by a bacterium known as Vibrio *cholera.* An infection is acquired through ingestion of water or food contaminated with infected faeces (Sridhar, 2009; Debes, 2015).

It is said that the organisms do not propagate beyond the gastrointestinal tract, where they increase in large numbers or levels in the small and large intestines. They do not perforate the epithelial layer but rest attached to the intestinal mucosa and causes diarrhea as a result of the secretion of an enterotoxin called choleragen (Debes, 2015). As a result, there can be increased production of intercellular cyclic adenosine mono-phosphate, which is associated with the *mucosal* cells to pump out large amounts of water and electrolytes (Zuckerman et al., 2007).

According to Sridhar (2009), cholera is frequently spread through fecal-oral route mainly by polluted water or food. Cholera transmission is many times connected to the consumption of contaminated food or drinking water especially those drawn from polluted and unprotected water sources such as shallow wells, rivers and streams. Food Contamination occurs when individuals infected with *vibrio cholerae* in the surrounding area comes into contact with food stuffs, water, and other materials leading to cross-contamination. Contaminated utensils and flies can also transmit *vibrio cholerae.* Poor waste management creates breeding sites for mechanical carriers of the infectious agent. Once the contaminated substances gets access to water sources, it be becomes source of cholera infection and can easily be spread from one point to another through different media (WHO, 2008).

Reaching people with the above important information and the measures that can be applied to prevent recurrences of cholera can help manage this pandemic. The

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responsibility on educating the public should not be left to health workers only, but should also be embraced by all those who would like to promote the quality of life of the people around them and beyond. Practices that typify social gatherings such as funerals, parties, washing of dead bodies before burial, and purchase and consumption of food stuffs bought from street vendors encourages are important contributors to the spread of cholera. In a study on transmission of cholera, Chanda (2004) cited how sharing food items at a Pediatric ward was responsible for the spread of cholera in the ward among mothers who were nursing their children.

1.1.3 Cholera in Kenya

The first case of cholera in Kenya occurred in 1971. Since then, there have been a number of cases (WHO, 2009). The country recorded an average case fatality rate of 3.57% between 1974 and 1989. One of the serious cases of Cholera epidemic was reported in 1997, which lasted for three years and affected more than 33,400 people (Onyango et al., 2013). The outbreak was first reported in Nyanza Province around the Tanzanian border, along Lake Victoria then extended to Kisumu and Siaya Districts. This outbreak represented about 10% of all cholera cases reported in the African continent alone for those 3 years (WHO, 2010). Cases of cholera ranged from 1,157 to 816 per annum between the years 2000 and 2006 except for 2002 where 291 cases were reported (WHO, 2010).

Major incidents of cholera were reported in the years 2007, 2008 and 2009. The World Health Organization (WHO) disclosed that there were about 625, 1243 and 11,769 cases in the 2007, 2008 and 2009 respectively (WHO, 2010). The incidents occurred in a total of 76 districts. Overall, there were a total of 373 deaths at an average case fatality ratio of 2.74% (Onyango, et al., 2013). The areas which were mostly affected in 2007 included the Coast, North Eastern, Rift Valley, and parts of Nyanza. By 15th May 2007, a cumulative total of 625 incidents had occurred including 35 deaths thus a case fatality rate of 5.6%. In the year 2008, incidents of cholera outbreaks were reported in several regions including Suba, Migori, Homabay, Rongo, Siaya, Kisumu, Bondo, Nyando, and Kisii South. Other areas included those in the North Eastern such as Mandera East, Mandera Central, Wajir, Bunyala in the Western part of Kenya, and Naivasha and

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Nakuru both from the Rift valley. It is documented that the Nyanza region was the most affected with a total of 771 incidents and 53 deaths being reported from 10 districts as of 31 March (Onyango, et al., 2013). The outbreak started in Suba district in November 2007 and further spread to cover almost all districts in the lake basin (WHO, 2010). From 27th November 2007 to 10 April 2008, the cumulative number of cases country wide stood at 1243 cases where a total of 67 people succumbed to the diseases (Onyango, et al., 2013).

In 2009, the Ministry of Health reported 11,769 cases including 274 deaths throughout 2009 (CFR 2.33%). The country had not experienced such a high number of cases in the previous one decade. The peaks occurred during March-April, June and October-November 2009(WHO, 2010).

1.2 Statement of the Problem

Cases of Cholera have been on the increase in Nakuru especially in Nakuru West Sub-County. Infections caused by poor sanitation account for 50% hospital bed in the county. Part of this problem has been associated with the fact that most of the residents defecate in open spaces. It is estimated that 13% of Nakuru county residents defecate in open spaces.

In an effort to prevent and control incidences of Cholera, the county government of Nakuru through department of health and its partners has come up with several measures but more so promoting the use of toilets. Nakuru county health department launched open defecation free (ODF) urban and rural area through utilization of level ones services approach. In 2016, more than 213 villages had be declared as ODF areas including Rongai sub county, Naivasha, Gilgil, and Bahati sub county. The target is to have the entire Nakuru county declared ODF by 2020 (Nakuru DHRS Report, 2016).

Despite the above measures by the County Government of Nakuru in partnership with other organizations, there are still many cases of Cholera. Rhoda Ward has experienced relatively many cases of cholera outbreak compared to other wards in the County. For instance, more recently, outbreaks of cholera claimed 17 lives in Rhoda. Regardless of

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immense body of knowledge on cholera, research distinct to cholera incident in Kenya, the link between prevention and control of this disease rest as a challenge. Therefore this study sought to assess the community perception on cholera among many residents in Kenya and more specifically Rhonda in Nakuru West Sub-County.

1.3 Purpose of the Study

The main purpose of the study was to assess the community perception on cholera prevention among residents specifically in Rhonda, Nakuru West Sub-County.

1.4 Specific Objectives

The specific objectives of this study were to:

i. Assess the Level of knowledge of cholera among the people of Nakuru West Sub-County
ii. Determine the effect of culture on cholera prevention in Nakuru West Sub-County
iii. Find out attitudes of people towards those suffering from cholera in Nakuru West Sub-County.
iv. Establish community practices that people associate with cholera spread in Nakuru West Sub-County.

1.5 Research Questions

i. What is the Level of knowledge of cholera among the people of Nakuru West Sub-County, Nakuru County?
ii. What effect does culture have on cholera prevention in Nakuru West Sub-County?
iii. What are the attitudes of people towards those suffering from cholera in Nakuru West Sub-County?
iv. What are the community practices that people associate with cholera spread in Nakuru West Sub-County?

1.6 Assumptions of the Study

The study was based on the assumption that all respondent would be available during the day of study and that they would cooperate with the researcher. The study also assumed

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that all respondents would give the researcher credible and valuable information that would aid the researcher to draw valid and meaningful conclusions.

1.7 Justification/ Significance of the Study

In every year, there have been cases of Cholera outbreaks in Kenya. However, not all areas are affected. Rhoda Ward in Nakuru West sub-County is one among the many hot spots for cholera outbreaks in the County. It was therefore important to find and explore underlying reasons. Much effort by the government and other health agencies partnership on the provision of health care services to Kenyan has been done but the burden of preventable and treatable disease is still high. Sound and proper intervention measures are needed to reverse the trend of diseases and ill health so as to achieve health and development.

Findings from this study would be used in filling up existing research and knowledge gap on Cholera prevention and control. The findings could be useful to global and local partners who are engaged in prevention and control of Cholera, to plan and come up with suitable policies and strategies for combating the deadly disease. This being a case study, the findings would also aid in coming up with appropriate measures for preventing the re-occurrence of the disease in Rhoda Ward.

The findings from this study would be useful in supporting efforts by the Government of Kenya in reducing the burden of cholera or any other infectious diseases. Study findings could also be used by the County health management team (CHMT) and other established community units to factor capacity building, resource mobilization, monitoring and evaluation of level one health care system. The study would serve as reference point for those wishing to carry out research in related field.

1.8 Limitation and De-limitation

The study limitations were time, resources, language barrier and reluctance of respondents to give accurate information. To contain this, the study was restricted to only 196 households. The aim of the study was clearly explained to the potential respondents. Some of the respondents could not communicate in official language. The researcher

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overcame Language barrier, through using some of the research team members to communicate with respondents in the native local language.

1.9 Scope of the Study

Nakuru County is the fourth largest after Nairobi, Mombasa and Kisumu of the 47 counties formed under the Constitution of Kenya 2010. It is located in the Great Rift Valley region. The county covers an area of 7,496.5 $Km^2$and borders Baringo County to the north, Laikipia County to the north east, Nyandarua County to the east, Kajiado County to the south, Narok County to the south west and Bomet County and Kericho County to the west. The county has a population of 1.6 million with equal proportion living in urban and rural areas.

The study was carried out in Rhonda Ward which is found in Nakuru west Sub County, Nakuru County. Nakuru west Sub County has seven wards .Kaptembwo, Mwariki, Rhonda, barut, kapkures, Shabab and London ward. The area is found on the low lying area covering 4.1 square kilometers. The area is characterized by predictable weather pattern with temperatures ranging between 10c during the cloud months (July august) and 20c during the hot months (January to march) the county receives between 700mm and 1200mm of rainfall annually with average annual rainfall being an approximated 800mm.nakuru has two rainy seasons.: April, May and August along rains) and October and December short rains.

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CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter consists of theories supporting the study, empirical studies related to this study and lastly the conceptual framework.

2.2 Theoretical Literature

This study was guided by the Health Belief Model (HBM) by Hochbaum (1958). According to Hochbaum (1958), the underlying concept of the original HBM is that health behavior is determined by personal beliefs or perceptions about a disease and the strategies available to decrease its occurrence This pespective attempts to explain the role of community and individuals in disease prevention and treatment. That behavior change is determined by how people value a particular outcome and the assumption that certain actions will facilitate that said outcome. People are most likely to make health behavior changes when they perceive that the disease is serious and are less likely to practice healthy behaviors if they believe that the disease is not severe (Maddux & Rogers, 1998).

The HBM suggests that people's belief about health problems, perceived benefits of action and barriers to action, and self-efficacy explains engagement or lack of engagement in health promoting behavior (Gristwood, 2011). A stimulus, or cue to action, must also be present to trigger the health promoting behavior. Demographic characteristics such as socio-economic status, knowledge level, gender, ethnicity, and age were known to be associated with preventive health-related behavior patterns (i.e. patterns of behavior predictive of differences in morbidity and mortality) as well as differential use of health services.

According to Becker et al. (1974), the underlying key tenets of HBM are assumptions that in order for a person to partake in any behavior change, (1) s/he has to perceive a threat of becoming sick (perceived susceptibility); s/he has to acknowledges that if they don't take action including treating the disease, it will have negative repercussions on their health (perceived severity); (3) s/he must be convinced that there are some positive

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benefits associate with changing their behaviors (perceived benefits); (4) that the actions required for changing their risky behaviors might be financially costly to them or physically harmful but of importance (perceived barriers); and that (5) s/he physically observes the symptoms of the disease on their bodies which in turn encourages them to engage in some health seeking actions (cues to action).

The theory explains that individuals participate in the prevention activities and seek preventive services when they feel susceptible to infectious agents and understand the effect of the diseases (Gristwood, 2011). The community or individuals will not comply with any preventive actions and treatment unless they perceive it serves their needs and convenience; that the preventive and curative services are effective and available at health facilities. In view of community strategy priorities are geared towards meeting immediate needs of an individual or community. The community or individuals need to have knowledge on the benefit and the cost of health care services. Lack of information reduces the chance of seeking preventives services as individual's choice to seek and utilize health services is dependent (Wolinsky, 1988).

HBM model is relevant to this study because it takes of attitudes and perceptions about the causes of diseases, possible benefits of taking a certain health seeking behaviour and risk involved if actions are not taken. All these entail issues to do with knowledge about the diseases, attitudes, cultural orientation and community practices about the diseases which the study seeks to test. The theory assumes that lack of information reduces the chance of seeking preventives services as one's choice to seek and utilize health services is dependent on it.

2.3 Empirical Literature

2.3.1 Kenya Based Studies

There have been a number of studies in Kenya. For instance, Wamalwa (2012) carried out a study aimed at determining the prevalence of Cholera among 6- 59 month old moderately to severely malnourished children and the factors associated with Cholera among these children. This was a three month hospital- based cross-sectional study that was carried out in a pediatric outpatient unit at Mbagathi District Hospital. The study

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covered mainly Dagorreti Division including Kibera slum with an under five- year- old population of 4960 and a total population of 39061. The author observed that cholera was approximately 5.3 times higher particularly among children from single mothers in comparison to children of married mothers. The odds ratio of Cholera decreased from 1.00 in the lowest income group earning below Kenya Shillings (Ksh) 5000 monthly to an odds ratio of 0.03 in families with incomes of Ksh 15000 and above, meaning that income levels had some levels of effect on the spread of cholera.

The study by Wamalwa (2012) also disclosed that guardians or parents who did not wash their hands with soap were 16 times more at risk of having children with cholera compared to those who washed their hands with soap. The author recommended for improved health awareness and education. He also called for the development of measures aimed at combating poverty, improving literacy levels, and encouraging functional families. The above study was informative and relevant to the current study because it highlighted factors that are associated with the spread of Cholera. The only shortcoming of the study is that if focused one 6- 59 month old children yet cholera also affects older people.

In their study, Karanja and Ng´ang´a (2008) reviewed pertinent literature relating to sanitation and hygiene of women in poor urban centers with the aim of exploring ways or interventions for empowering women on sanitation and hygiene. The main aim of the study was to describe the typical concerns of women in relation to sanitation and hygiene in Kibera, as well as, give practical suggestions on how to improve hygiene and sanitation in slums. The main approach of collecting data was through a comprehensive review pertinent literature which comprised research materials from poor urban centers in developing countries. Apart from this, documents and publications from international bodies such as United Nations publications and educational books for research were considered. The study revealed that lack of adequate toileting facilities, poor supply of clean water, poor drainage, and inadequate waste disposal systems were among the sanitation challenges experienced by women in slum areas. The authors recommended

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the education of women on how they can improve hygiene and sanitation at the individual and community levels.

The study was quite informative to the current study since it highlighted on the risk factors towards the spread of cholera. The study was also conducted in an informal settlement context. The current study was also conducted in an informal settlement context. The only weakness of the study is that if focused mainly on women yet men also suffer the consequences of cholera.

2.3.2 Studies done in Other Countries

Gautret and Steffen (2016) carried out a study with the aim of presenting proof on set connected to forms of causative agents or shortage as evaluated through complete observation at any social convention. The study relied on a systematic search for pertinent articles in the literature. A total of 68 studies were considered. The findings disclosed that outbreak were common in mass gathering especially at Christian, Muslim and Hindu religious events as well as global events. The authors observed highest degree of epidemics at the congress convoluted gastrointestinal infections, as a result of diversity in pathogens. It also famed that onsets transpiring at these events caused and enhanced the spread of communicable diseases including Cholera.

The above study was important because it highlighted the role of social gathering or religious events on the spread of diseases. The only weakness is that they may have been essential character in studies in connection to study populations, clinical criteria for abnormality scrutiny, and procedures applied.

Debes (2015) carried out a study to assess the cholera burden in the Far North of Cameroon. This study was intended to enhance enhancing the understanding of cholera disease burden and outbreak risk internationally through the use of simplified and sustainable approaches in low resource settings. The study relied on Data from 949 clinical diarrhea cases and 1,102 environmental specimens from 7 Health Facilities which was analyzed using simplified laboratory diagnostic approaches to assess the cholera

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burden in the Far North of Cameroon. The findings of the study revealed that the cholera was related to unhygienic conditions and poor sanitation

Gautam (2015) study assessed the effect of a food hygiene intervention in relation to mothers' food hygiene practices considered as the key or primary outcomes, and the effect of orchestrated attempt on the intensity of microbial contaminants in food as a secondary outcome. The study was also focused on exploring whether food hygiene measures can be joined up into nutrition, health and water, sanitation and hygiene (WASH) strategies and programmes in Nepal. The study relied on theoretical and practical approach of Behaviour Centre Design. Five key food hygiene risk behaviours were prioritized, and likely factors of behaviour change were identified through formative research. The study established that Forty five days after the 3 months intervention, key behaviors were familiar in the intervention group than in the control group (43%[SD14] vs. 2% [SD 2], p=0.02). The difference of differences was an increase in mean proportion of 42% (p=0.02).Commonly-used child foods from the intervention and control clusters were heavily contaminated with total coliforms and *E. coli* during child feeding at baseline and the behavioral change actions was effective in remarkably reducing the contamination in the intervention group during follow-up. The author concluded that the systematic approach employing emotional drivers and change in behavioural settings substantially altered multiple food hygiene behaviours and reduced microbial contamination in commonly-used child food in Nepal. Ingestion of microbes by children can only be eliminated if the food hygiene intervention deals with all key behaviours.

This study responds to an important evidence gap. Current evidence, to which this study has contributed , is sufficient to merit prioritization of food hygiene by those concerned with designing more effective , health and nutrition programmes. The work suggests that interventions on food hygiene should have a higher priority than those on water treatment, which is not currently the case in development projects.

In another study, GHS (2014) reported that cholera outbreak in the Greater Accra was enhanced by six risk factors which included unsafe drinking water, poor sanitation, increased transmission from one person to another, poor personal hygiene, poor hygiene,

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floods causing contamination of domestic water source. All of these were linked to the level of poverty in the study area.

Mghase (2014) did a study with the main aim of evaluating knowledge, attitude and practices connected with cholera epidemic in Buguruni Ward within Ilala municipality in Dare salaam . The study relied on case study techniques and using purposive random sampling, the researcher selected 120 respondents from all administrative streets. The study's main data instrument was structured questionnaire supplemented by focus group analyzing and members 'remarks. The findings revealed that most of the study population (52%) had limited understanding on ways or source of the disease and mode of disease transmission from one point to another. It presented risk and predisposing factors such as use of untreated water, consumption of locally made fruit juices sold by street vendors across the ward. Other risk behaviors were associated with existence of fundamental waste disposal structures thus contributing to crude dumping of wastes on un attended land and at home. The study recommended for institutional and community hygiene intervention to be instituted consistently in order to prevent re-emerging of Cholera in the ward.

Sundaram et al. (2013) carried out a study on socio-cultural factors expected adoption of an oral cholera vaccine in three selected countries in Africa. In particular, the study identified and compared sociocultural effects expected of OCV uptake across populations in three major countries, including Western Kenya, Southeastern Democratic and Zanzibar. The study adopted a cross-sectional design where similar but locally-adapted semi-structured interviews were used in a sample of 1095 respondents in the three African countries. Using a Meta-analytic techniques highlighted common and distinctive determinants in the three settings. The study established that there was high level of awareness in the three African settings. The awareness was measured in terms of safe food consumption and garbage disposal as well as issues related to ingestion to cholera causations. In addition, the study disclosed that older population, larger households and lack of education were negatively associated with anticipated OCV acceptance.

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Wahed, et al., (2013) assessed the knowledge of, attitudes toward, and preventive practices relating to cholera and oral cholera vaccine among an urban population residing in a high cholera-prone setting in Dhaka, Bangladesh. The study used cross-sectional design and was carried out in an area of high cholera prevalence in 15 randomly-selected clusters in Mirpur, Dhaka city. A study team collected data through a survey and in-depth interviews during December 2010–February 2011. From the results, it was observed that out of the 2,830 families included in the final analysis, 23% could recognize cholera as acute watery diarrhea and 16% had ever heard of oral cholera vaccine. About 54% of the respondents had poor knowledge about cholera related issues while 97% had a positive attitude toward cholera and oral cholera vaccine. One-third showed poor practice relating to the prevention of cholera. The findings showed a significant ($p < 0.05$) association between the respondents' knowledge and sex, education, occupation, monthly overall household expenditure, attitudes and practice. In the adjusted model, male sex, having a lower monthly overall household expenditure, and having a less positive attitude toward cholera were the significant predictors to having poor knowledge. The findings suggest the strengthening of health education activities to improve knowledge on cholera, its prevention and treatment and information on cholera vaccination among high-risk populations. The data also underscore the potential of mass cholera vaccination to prevent and control cholera.

Anbarci et al., (2012) in their study about cholera outbreaks to pandemics found that cholera and other diarrheal diseases account for 11.3% of all deaths among the poor globally marking such illnesses the second leading cause of death among the poor. The study was based on macro level and it tested the theoretical model of the need for a collective action in fighting against cholera which had an increasing function of both a country's level of income and the income inequality distribution within the country. The analysis was conducted using 1032 annual observations from 17 relatively poor countries between the years 1980 and 2002. The authors observed that collective action in providing clean portable water was an increasing function of income and inequality.

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In Ghana, Fobil et al. (2010) investigated the relationship between socioeconomic conditions and urban environmental quality in Accra drawing socioeconomic and environmental variables from the 2010 census data. The study established strong socioeconomic predictions of urban neighborhood environmental quality and suggested that widening socioeconomic inequalities (e.g., urban unemployment, income gaps, among others) at household level could worsen existing urban environmental health inequalities at the community level.

Kabita (2010) carried out a descriptive cross sectional study design and data gathered from the first week through to the fourth week of September, 2009 on 50 adult respondents from Kabuta and Kashikishi catchment areas. The data collected were analyzed manually. The findings of the study showed that 60% of the study respondents had poor knowledge, they did not know how far their toilets were from the source of water, and 82% of the respondents with primary education had low level of knowledge of cholera causes. 82.2% female respondents had low level of knowledge of cholera prevention. 70% of the respondents had good attitude towards prevention of cholera. The majority, 92.6% of the respondents had poor practice of hand washing after using the toilet. 77.8% of the study respondents who stayed in high density area had poor practice, they did not treat water for drinking and also 72.7% of people who were crowded in one house disposed off refuse carelessly which is a poor practice. The majority of respondents 56% drew water from contaminated lake and shallow wells a bad practice, many people do not access safe and clean piped water because they are not staying in authorized settlement.

Mpazi and Mnyika (2005) did a study to determine knowledge, attitudes and practices regarding cholera outbreaks and measure socio cultural practices that influence cholera outbreaks in Illala Municipality in Dar es Salaam city, Tanzania. It was a cross sectional study was conducted in Illala municipality in Dar es Salaam city. The study's population was obtained using multistage sampling technique. One ward was sampled and within the ward 10 hamlets (administrative cluster consisting of 10 households) were randomly selected. All households within the hamlets were included into the study sample. A

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structured questionnaire was used to collect data concerning knowledge, attitudes and practices about cholera and factors influencing cholera occurrence within household settings. Information collected included the number of families and number of people in one house, availability of toilet facilities and number of toilets in one house. The research project was cleared by the ethical clearance committee of the Muhimbili University College of Health Sciences, Dar es Salaam, Tanzania. Informed consent was obtained from each consenting participant. In the study, most of the respondents were females (59.9%) and 124 (40.1%) males aged between 18 and 84 years. The study established that the proportion of respondents with good knowledge of cholera in the study was 85%. The study revealed that the main practices associated with cholera occurrence among respondents with high level of knowledge in Illala by water source were: use of piped water, water from deep wells , and shallow wells . The distribution of respondents by low knowledge and water source were: piped water, shallow well, and deep well. The proportions of respondents by low knowledge and water quantity were: adequate water and inadequate water. A number of respondents with low level of knowledge of cholera drink water from wells without boiling while others took un-boiled piped water and wash their hands using a common container. The study recommended for a range of specific interventions which were likely to be necessary for the control of cholera in the population.

2.4 Public Knowledge about Cholera and its associated Causes and Effects

Knowledge has been defined differently. According to Koontz and Weighrich (2005) knowledge can be best described as an accumulation of facts, principles and truths as well as information which can be accessed by the human mind. For, Lucas and Gilles (2009), knowledge represents a sum of all opinions, conceptions and propositions which have been established and verified.

It is important to note that knowledge is facts, information, skills and understanding that people have gained through learning and experience in the prevention and control of cholera. Despite numerous information written on cholera globally, regionally and nationally, cholera still persist in many parts of the world. Currently, it has affected more than 100 countries worldwide (AMREF, 2010). It is highly fatal and usually occurs in

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epidemic proportions in many countries. It is a serious acute intestinal infection that is caused by a germ called *Vibrio choleras* (WHO, 1998). An individual can die within a few hours after contracting the *Vibrio cholerae* if medical attention is not received on time (Koontz & Weighrich, 2005)

Southern African countries have been trying to impart knowledge in people all these years but cholera has remained a major threat to Africa. Literature has revealed that Cholera is one of the most public health problems of the warm climates and has widely spread since the 1800th (Adeoye, 2012). In 1832, Chadwick started sanitary condition during cholera outbreak. The report he prepared after his study showed the need for urgent improvement of Public Health in England. He recognized that filth was man's greatest enemy and with this, they began an "ANTI FILTHCAMPAIGHN/CRUSADE" to tackle the problem of filth. At this time Public Health Act17 of 1948 was set up and they accepted the principle that the state was responsible for the health of the people. When this principle was accepted people demanded clean water from the government. In another development Sir John Simon (1860-1906) was responsible for the sanitary disposal in England because of poor practices of people. He built a system of Public Health which was admired by the rest of the world in an effort to prevent cholera (Adeoye, 2012).

Today, cholera epidemic's main focus is found in Zimbabwe. Despite the fact that the number of cases has decreased, the mortality rate continues to be elevated in almost all of the provinces, and a real risk exists that the outbreak will be reactivated in some areas. Since the beginning of the outbreak in August of 2008 until March 17th of 2009, 91,164 cases were reported in this country alone, 4,037 of them were mortality cases. The following tables show an overview of cholera outbreaks and reported cases per country in which studies on knowledge about cholera were conducted (WHO, 2009).

Having access to accurate and reliable information of health of the communities is essential in order to be able to provide appropriate services. The collection of this

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information is important not only at health facility level but also at the community level given majority of deaths and illness never reach the health facilities (AMREF, 2010).

Knowledge about a given cholera situation or any other disease is essential for influencing people's behaviours which are likely to contaminate water and food leading to spread of cholera. The aim of assessing knowledge of cholera is to establish the existing level of effort (if any) which can influence vulnerable group of people and their behaviors necessary for their better protection and their households as well as the community against disease.

According to Masangwi et al., (2012), the general knowledge and level of understanding about cholera in rural communities of most developing countries appears to be limited. More worrying is the fact that some health education providers have limited education, occupational training, and knowledge of Cholera and its control measures (Morse, 2006). In some cases, there are misconceptions about the causes of cholera. A case in point is the popular Haitian proverb 'Mikob *pa touye ayisyen'* translated to imply that microbes do not kill Haitians (OCH A-Haiti, 2011). This may mean that they are so used to microbes, and have become so resistant, that no microbes can kill them. This implies that the people may not take appropriate actions or seek health behaviours in regard to cholera.

2.5 The Effect of Culture on Cholera Prevention

Culture can be defined as the patterns of ideas, customs and behaviours which are common or shared by some group of individuals, community or society. The patterns tend to identify members as unique and part of a group which distinguishes them from other groups (Kodjo, 2009). Hofstede points out that culture is not part of our genetic structure. However, it is a learnt behaviour. The author argued that most of intensive learning ours during one's early years of life; by the age of five one has virtually mastered the use of their language. One also acquires skills for interacting with household members, though the learnt behaviour can be changed according to one's cultural group (Mead & Andrews, 2010)

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Culture may include a number of things or a subset of characteristics such as ethnicity, beliefs, socio-economic class, language, age, lived experiences, sexual orientation among other things (Kodjo, 2009). There is today, a rich literature on the interplay between culture and disease. Many culture bound syndromes and conditions have been documented and it is now accepted that the management of these syndromes is more effectively tackled through an informed knowledge of their cultural contexts and the background of patients (Erinosho, 2006).

Lambo (1955) of Nigeria pioneered work on the people in non-industrial societies. According to them health and disease are to some extent shaped by culture. The concept of diseases is rooted in magic and religion because most people in nonwestern societies attributed the incidence of disease to witchcraft, sorcery and mystical forces because of wide-spread belief in all these forces. Second, what is regarded as disease in some societies may be seen as normal conditions in other societies due to cultural factors. In other words, Lambo found that no uniform notion exist for various disorders across all human societies

Erinosho (2006) is of the view that normality is determined to a large extent, by sociocultural factors in the sense that behaviour patterns, which are regarded as normal in one society, may be seen as abnormal in another. For example, suicide which for a long time, was tolerated and deemed 'normal' among Japanese but viewed with disdain and held to be symptomatic of illness or criminal behaviour in other part of the world. Another example is obesity, which Euro-American women regard as an abnormal condition and which is symptomatic of rejection because the sacred concept of beauty is to be 'twiggy' (Adeoye, 2012). It is therefore not unusual for seemingly obese Euro-American women to develop negative self-concepts, which in turn pushes them into the arms of psychiatric help-giving agent. This is in contrast to obese women who are highly regarded in some traditional African societies. Here, seemingly fat women are sexually attractive and sought after by men as is the case in Cross River and River States of Nigerian where women are deliberately kept in homes where they are 'fattened' prior to formal betrothal(Adeoye, 2012).

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Cultures also determine behaviour pattern in health and illness. The case of Fulani women who are about to deliver their babies provides support for this assertion. Fulani women in Nigeria are known for repressing their anguish during labour because of the *rite of passage*, which they are made to undergo. The rite develops their capacity to withstand pains and not to express their anguish in whatever situation they are placed. This behaviour pattern is in contrast with what has been observed among other sub-group in Nigeria (e.g. Yoruba women), who are very expressive and who easily betray their anguish during labour. Culture also determines food habit, which in turn has implication for health status (Adeoye, 2012).

These examples of the role of cultural background in health and sickness underscore the need for health care agents to be acquainted with the normative pattern, which are likely to shape the behaviour pattern of their client.

There is some existing link between culture of a people and their health. According to Kodjo (2009), health in itself is a cultural formation or concept. The author argues with culture, it is possible to frame and shape how people perceive the world they live in including their experiences. He also argues that culture helps in defining how those who are sick together with health practitioners view health and illness, what they believe about the causes of these disease and the forms of health promotion activities being practiced. This line of argument is supported by Kesola and Wahlberg (2015) who asset that one's values and behaviours are influenced cultural background.

Socio-cultural context is still playing a major role in community perception towards malaria and treatment seeking decisions in majority of community in developing countries. In a study in India it was found that socio-cultural factors were responsible for a number of human behaviour such as type of housing and sleeping habits which resulted into high malaria transmission and poor treatment seeking behaviour (Sharma et al, 2001).

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Cultural perception about febrile illness and its symptoms and existing gender system constraints has significant impact on health care seeking pattern and health outcome in childhood malaria. In Tanzania Kamat (2006) found that due to their cultural meaning towards malaria symptoms, mothers commonly believe that they are dealing with non serious febrile illness and hence preferring extended home based treatment instead of going to the health institution. Also this could be due to gender inequity in Tanzania's communities whereby mother as a caretaker has to seek permission from her husband before send the child to a health institution which often results in treatment delays. Similar result was also found by Oberlander and Elverdan (2000) whereby socio-cultural perception lead to seeking different treatment options due to presence false perception on the causes of malaria in Tanzania. Existing studies show that culture do play some role in the spread or prevention of diseases. According to Thomas (2012) people learn from their society and cultural context/knowledge about the disease preventive behaviour which in turn tends to influence their behaviour in case there is a disease outbreak.

2.6 The Attitudes of People towards those Suffering from Cholera

One of the aims of the WHO is eradication of Cholera entirely, but to do so, it will require the will power of each country or individuals affected and for this, an attitude change is of essence. According to Thomas (2012) an attitude change refers to one's general evaluative perception of a stimulus or set of stimuli. Therefore, for a change in the behavioral attitude of the communities affected by the disease there should be different programs that will target the different areas in the whole country. Prior to expecting a change in a communities behavior one might need to focus on changing the communities attitudes there is need to assess existing attitudes before attempting to change them (Smith & Mackie, 2015).

In study about community beliefs and fears durong cholera outbreak, Grimaud and Legagneur (2011) observed that people had negative attitudes towards people suffering from cholera. In particular, they observed that cholera victims and former patients were viewed as a source of threat for the rest of the community. In some cases, the victims were either rejected or isolated, and sometimes being molested and even killed. The

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author attributes the negative attitudes to the fact that cholera was the disease of the 'dirty-hands and therefore victims were regarded as careless people and who ate excrement. This negative attitude may lead to both stigmatization and shame. The proposed study seeks to find out the type of attitude which exists in Rhoda ward towards the victims of cholera. Attitude is feeling people have or develop towards cholera prevention and control. The feeling could be good or bad and negative or positive (Dempsey and Dempsey 2000). A study on attitude towards cholera was conducted on 27 carriers and 18 cases in 1980 during the epidemic in Europe. The study results linked the cases to dinner parties and wedding ceremonies which took place around that time of the epidemic. The infected individuals were found to have either attended the wedding function or had eaten food from a box of food distributed to family members, friends and neighbors and these were as a result of not following a warning not to gather during cholera epidemics which is a negative attitude towards cholera prevention (Tropical Disease Bulletin, Journal Volume, 78, No/8 1981).

In 1988, 20,872 cases were reported from eleven countries. China reported a large out break during the 1989 epidemic that affected Xinjiang Religion. A total of 12,785 were reported in Asia from 12 countries, the source of cholera in both years was as a result of infected fecal matter contaminated water supply. After the attack of cholera people developed positive and good attitudes towards cholera and they managed to control cholera (Adapted from weekly epidemiological record 1990; Enteric disease, CDC).

Goodgame and Greenough (1975) reported that West African countries were free from cholera during the years 1894 to 1970. A major epidemic started in 1970 in Guinea Bissau and there after spread to other West African countries causing an estimated 150,000 and more cases and 20,000 and more deaths during the initial attack of cholera, this was as a result of negative attitude for not learning from neighboring countries' cholera attacks.

During this epidemic of 1970, cholera transmission from one person to the other person during gathering such as at funerals, festivals and assemblies was identified as a result of

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not adhering to the warning to avoid gatherings. Kasoka, (2003) in his academic research wrote the following literature; in 1994 cholera epidemic in Guinea Bissau resulted in 15,878 reported cases and 306 deaths. Following this epidemic the Ministry of Health mandated that the bodies of persons dying of cholera be disinfected before burial because many people did not care when burying a cholera case and Cholera out breaks occurred in several villages following funerals of cholera patients in the region of Biombo due to negative attitudes towards cholera prevention from cholera corpses.

To determine the influence of attitude on disinfection and funeral activities on cholera transmission, MOH in Guinea Bissau analyzed surveillance data and conducted a case control study following a funeral. The study registered 1,188 cholera cases in Biombo. About 65% of the cholera cases were females. The results of this study showed that 86% of persons with cholera who were 15 years or older reported having contact in the one week before the onset of diarrhea with a corpse. About 62% of the cholera cases died. The study also showed that cholera attack rate was 4.8% in five villages where bodies were not disinfected before burial while the attack rate in 26 villages where bodies were disinfected before burial was 3.0% it was evident that many people had negative attitude towards cholera and did not care about the warnings of cholera transmission (Swerdlow.D.L.I994). Previous investigations on cholera in West Africa demonstrated the importance of contaminated food and water in the transmission of cholera (Isaacson, M.1994). Mpuzi, et al, (2005), in their research in Illala furthermore, revealed the proportion of Respondents with positive attitudes towards cholera prevention in the study was 97.4%.The hygienic practices concerning cholera prevention were lagging behind.

A range of specific interventions are likely to be necessary for the control of cholera in this population. Misconception about transmissibility of cholera that cholera cannot be transmitted through cow's dung, young children stool and chicken faeces need to be addressed. Kasoka, in 2003 conducted a research on Knowledge, attitude and Practice among Kuria West and Migori districts of western Kenya were struck by a cholera outbreak in August 2010. Onyango et al. investigated the outbreak and detected 114 cases including 10 deaths, 59 the first case occurred in Kuria West District and was linked to a

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traditional marriage ceremony. The outbreak spread to Migori District. The researchers interviewed members of the District Health Management Teams and found that Kuria West District was not prepared to handle a cholera outbreak. The surveillance system was weak; the district laboratory lacked the capacity to detect V. cholera.

2.7 Community Practices associated with Cholera Spread

Practice can be simply defined as actions, thinking and feeling as well as showing some behavioral tendencies directed towards something or somebody within one's environment. Practice, according to Hornby (2005) simply refers to the manner in which things are commonly done in a given community. Osinem (2008) defined practice as an established way of doing things particularly one which has been established through various experiences and knowledge. Generally community practice in the context of this study revolves around actions which are taken by community members or individuals which automatically makes an impact on their own health, that of their households and other people within the community.

Mass gathering can be major sources of cholera outbreak specially where personal hygiene, environmental hygiene are not observed adequately. Mass gatherings are characterized by the concentration of people at a specific location for a specific purpose over a set period of time and which have the potential to strain the planning and response resources of the country or community (WHO, 2015). These gatherings might be planned or unplanned and recurrent or sporadic. The number of attendees may vary from hundreds to millions. Large religious events like the Hajj Muslim pilgrimage gather two to three million people in Saudi Arabia annually, while the Kumbh Mela in India is attended by up to 40 million worshippers. Most mass gatherings are characterized not only by a large attendance, but also by crowding. There may be poor sanitary conditions at some mass gatherings, and at some events there may be promiscuity

At such mass gatherings, the concentration of people temporally and spatially may lead to the emergence of infectious diseases due to enhanced transmission between attendees. The annual Hajj and Umrah pilgrimages in Saudi Arabia are the mass gatherings at which communicable diseases have been most closely assessed. Meningitis outbreaks,

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respiratory tract infections, and the transmission of infectious diarrhea have been described extensively (Abubakar et al., 2012). However, many other mass gatherings take place in various parts of the world, some also religious, others athletic, socio-cultural, or commercial, and some are very spontaneous, such as funerals or political rallies.

An increased prevalence of infectious diseases has been described at Muslim pilgrimages other than Hajj and Umrah, such as the annual celebration of the day of Ashura in Karbala, Iraq, which is attended by three to four million Muslims from within and outside Iraq. In 2010, a febrile illness seen in the emergency ward of Karbala hospital was recorded seven times more often during the event as compared to before the event, in relation to an eight-fold increase in the population in the area during the event (Al-Lami et al., 2013). Also in 2010, at the annual celebration of the Urs of Baba Farid in Pakpattan, Pakistan, attended by an estimated 500 000 people, the prevalence of acute respiratory illness showed a 25-fold increase and the prevalence of diarrhea increased by a factor of 14, while the population increased by a factor of 3.6 During Moulay Abdellah Amghar Moussem in 2009 and 2010, an 8-day annual gathering attracting over 360 000 people in Morocco, gastrointestinal disorders recorded at the health care centre increased significantly from 11% to 14% of all hospital visits during the event (Youbi et al., 2013). Finally, during the 2010 Eid al-Adha in Jordan, gathering up to 70 000 people, there was a 33% increase in overall hospital admissions during the event, while the population increased by a factor of 2 during that period (WHO, 2015).

Evidence of outbreaks is not limited to Muslim gatherings; they also occur at Christian mass gatherings. Respiratory tract infections due to influenza were recorded during World Youth Day 2008 in Australia, subsequently resulting in a number of publications (Sridhar, Gautret and Brouqui 2015). Another influenza outbreak was recorded during the Itzapalapa Passion Play celebration in Mexico in 2009 (Al-Lami et al., 2013). A measles outbreak occurred at a church gathering in the USA in 2005 among unvaccinated participants, and another was recorded during the 2010 Taize´ festival in France, affecting several dozen mainly unvaccinated subjects, including secondary and tertiary cases mainly in Germany (Singh & Mudera, 2014). An outbreak of mumps with 214

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identified patients occurred after an Easter festival in Austria in 2006 (CDC, 2014). Gastrointestinal infection associated with Salmonella enterica was reported from a Church festival in the USA in 2010, which was linked to the consumption of pulled pork. Furthermore, norovirus was reported in relation to the Lourdes pilgrimage in France in 2002 and 2008, with secondary cases in Swiss and Dutch nursing homes and cases in Ireland (Sridhar et al., 2015). Interestingly, most of these outbreaks involved not only international participants, but also numerous secondary cases through the participants spreading the illness upon return to their country of origin

Consumption of raw vegetables, salads prepared, stored and served under insanitary condition or state facilitates the spread and exposure to cholera outbreaks. *Vibrio cholerae* can survive on raw food stuffs for days ,thus exposure can be experienced if food stuffs are not well cleaned and dirty environment are used for preparation and serving of food (Dubois, 2006).

Community practices are associated with transmission and spread of cholera. Lamond and Kinyanjui (2012) explain that when community members come together for religious, marriages, funerals ceremonies and other public gatherings, there are higher chances for the spread or transmission of cholera. The argument here is that these gathering bring people together, coming into the infected areas from which they can carry the cholera organism elsewhere. Lamond and Kinyanjui (2012) further explain that duties which are generally performed at funerals including such as laying the dead body, especially when carried out by women, and who make the occasion one of eating and drinking, are usually followed by an attack of cholera; and persons who merely attend the funeral, and have no link with the body, more often than not contract the disease as a result. The authors give the example of funerals in West Papua where everyone is required to touch the dead bodies and feast afterwards.

Barua and Greenough (1992) give the example of community practices among the Muslims where friend and relatives must come together or gather during death of one of them. Like other African communities, the dead body of a Muslim is often cleaned before

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burial, including squeezing out all of the intestinal contents followed by rinsing of the intestines with water. The authors explain that people charged with the responsibility of cleaning the dead may help in transmitting cholera and other forms of infectious disease especially when they are involved in serving food. For the Muslims, the case may be worse due to the fact eating is usually done with fingers from communal plate. In this case, the actual transmission is obviously through food or drinks contaminated in the home.

Gunnlaugsson et al., (1998) in their study aimed at establishing the effect of disinfection and funeral activities on cholera transmission. After analyzing surveillance data and a case-control study, they observed that cholera outbreak was higher during weeks that followed funeral ceremonies. The authors indicated that there was a strong association of cholera outbreak with eating at a funeral.

Giving example of some Western African nations, but more specifically, Guinea-Bissau, Sack, and Siddique (1998) argue that cultural rituals related to the death of cholera victims help to perpetuate the disease. For example, the authors explain that people who are dying of or who have died from cholera may be washed by family members who then prepare funeral feasts for family and friends held very soon after the death. Outbreaks of cholera commonly follow these feasts. Cholera vibrios are spread through fecal-oral contamination. A large inoculum, however, is needed to produce disease. Outbreaks of cholera occur following such funeral feasts because the handlers of the corpse fail to properly clean their hands before preparing the meal. Cholera vibrios are therefore transferred from the corpse through the handler to the food and/or water used in and with the meal, in which they can replicate enough to cause disease. Such outbreaks could be prevented were handlers to properly wash their hands before preparing food, and drinking water and other water used in preparing food were decontaminated. Other prevention measures could be to discourage the holding of funeral feasts for people who have died of cholera and to have health workers disinfect corpses before they are handled by families.

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Gazin, Barrais and Uwineza (2017) explain that Cholera in Haiti since October 2010 persisted in early 2014 in several places, each with its own particular epidemiological characteristics. The scarcity of fresh water probably contributed to the spread of the disease in some rural areas. Population gatherings in places without an access to either safe water or sanitation infrastructure were another factor. Outreach activities of hygiene promotion and improving access to chlorinated water had positive results. The disappearance of cholera in areas where effective preventive actions were conducted supports the conclusion that its transmission is predominantly inter human, without the sustainable installation of the pathogenic Vibrio in the Haitian environment. These actions must be modulated according to the various areas.

Zohura, et al., (2016) in their study about Observed Hand washing with Soap Practices Among Cholera Patients and Accompanying Household Members in a Hospital Setting explain that household members of cholera patients are at a 100 times higher risk of cholera than the general population. The study relied on a 444 hours of structured observation conducted in a hospital in Dhaka, Bangladesh, among 148 cholera patients and their household members. Hands washing with soap practices were observed at the following key events: after toileting, after cleaning the anus of a child, after removing child feces, during food preparation, before eating, and before feeding. Spot-checks were also conducted to observe the presence of soap at bathroom areas. Overall, 4% (4/103) of key events involved hand washing with soap among cholera patients and household members during the structured observation period. This was 3% (1/37) among cholera patients and 5% (3/66) for household members. For toileting events, observed hand washing with soap was 7% (3/46) overall, 7% (1/14) for cholera patients, and 6% (2/32) for household members. For food-related events, overall observed hand washing with soap was 2% (2/93 overall), and 0% (0/34) and 3% (2/59) for cholera patients and household members, respectively. Soap was observed at only 7% (4/55) of hand washing stations used by patients and household members during spot-checks. Observed hand washing with soap at key times among patients and accompanying household members was very low. In general, the study highlighted the role of hand washing using soap and their effect on reduced cases of cholera.

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2.8 Conceptual Framework

A conceptual framework is a graphical presentation of the study variables and the relationship between them (Mugenda & Mugenda, 20118). The conceptual framework for this study is presented in Figure 2.1. As the Figure illustrates, cholera prevention is the dependent variable of the study. This variable is influenced by increased knowledge about cholera, adoption of appropriate culture, having positive attitude towards those suffering, and observing community practices that promote good hygiene. These factors are taken as the independent variables in this study.

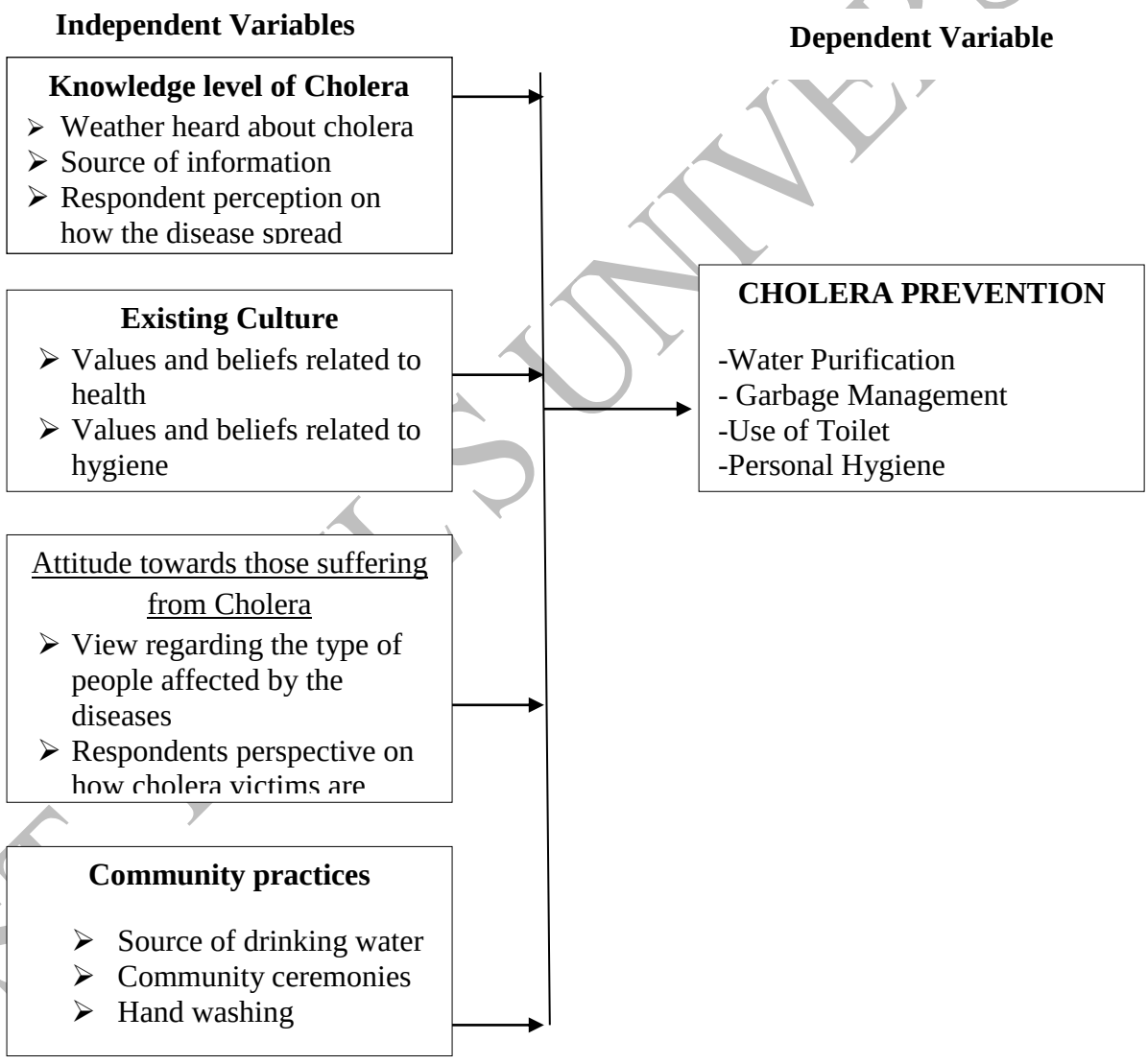


Figure 2.1 Application of health belief model in cholera prevention.

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2.9 Summary and Gaps

HBM can be used and has been proven to be of crucial importance in health prevention campaigns. The model evaluates the link between health beliefs and the performance of preventive health behaviors. It explains why, in the absence of noticeable indication of illness, people engage or disengage in preventive health behaviors. Preventive health behavior is defined as any activity undertaken by an individual for the purpose of preventing illness, detecting illness in an asymptomatic stage, or improving health (Feikin et al., 2010).

So far, studies focusing on the relevance of HBM in Cholera prevention within the African context and particularly in Kenya are scarce. Most of the studies on cholera are largely based on Asia (DeRoeck et al., 2005; Ali et al., 2010). A closely related study is that of Sundaram, et al., (2013) which looked at socio-cultural determinants of anticipated acceptance of an oral cholera vaccine in Western Kenya, though it ignored that aspect of HBM. The need for research on HBM and cholera is supported by Thumma, Aiello and Foxman (2009) who concluded that the research provides strong and substantial evidence for the application of HBM in the understanding and predicting people's health-related behaviours. It is against this backdrop that the study seeks to apply the HBM in cholera prevention using the case of Nakuru West Sub-County in Nakuru County

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CHAPTER THREE
RESEARCH METHODOLY

3.1 Introduction

This chapter describes the methodological approach which was adopted for the purpose of carrying out this study. It includes the research design, target population, sampling techniques and sample size, data collection tools, validity and reliability, data collection procedures, and lastly, ethical consideration.

3.2 Research Design

Cross sectional survey design was used in this study. It is deemed most suitable for this study since it is quite useful in summarizing and organizing data effectively (Mugenda & Mugenda, 2008).

3.3 Study Area

The study was carried out in Rhonda Ward which is found in Nakuru west Sub County, Nakuru County. Nakuru west Sub County has seven wards .Kaptembwo, mwariki, Rhonda, barut, kapkures, Shabaab and London ward. The area is found on the low lying area covering 4.1 square kilometers. The area is characterized by predictable weather pattern with temperatures ranging between 10c during the cloud months (July august) and 20c during the hot months (January to march) the county receives between 700mm and 1200mm of rainfall annually with average annual rainfall being an approximated 800mm.nakuru has two rainy seasons.: April, May and August along rains) and October and December short rains.

Rhonda ward has a population of 48,800 and 19013 households, fourteen villages namely,pembembili,mbuguambugua,nyumbanyeusi,stimaline,Game,kwazi,Jerusalem,jas ho,Gikomba,market,posta,kware,sewage,and pondamali villages. It verges the upper-middle-income level Shabaab Ward to the north, Langalanga Ward to the east, the agrarian Baruti East Ward along River Njoro to the south, and the low-income settlement of Kaptembwo Ward to the west.

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Development control in Rhonda Ward has unplanned development status with the population living in slums with no standard social amenities, clean environment is non-existent. Housing development is unsystematic and does not consider required standards, disregarding essential social, aesthetic, environmental long-term impacts on the inhabitants. The area is dominated by randomly developed temporary dwellings, often as many as 30 single rooms on a plot often without sufficient toilets, electricity or water. Poor access to water for domestic consumption is a problem affecting vast areas of the Households in Rhonda, though connected to the water distribution network, have dry taps most of the time and have to rely entirely on private water vendors.

Greater number of roads in Rhonda is earth or gravel and without storm water drains making them impassable during wet seasons. During heavy rains runoffs damage physical structures, especially toilets and weak buildings. Though Rhonda is home to the severely underutilized Njoro Sewerage Works, disposal of human waste in this ward is mainly through pit latrines. Waste is disposed into open drains leading to blockage and unhealthy living conditions. The ward is well served with electric power grids but the cost of installing electricity is still unaffordable for a majority of landlords in Rhonda. Many of them struggle to cope with water and sanitation infrastructure problems and perhaps are without an idea about how to deal with electricity bills in the mainly communal dwelling.

Residents carry out business activities mainly sale of grains, vegetables and cooked food by the roadside and along electric power way-leaves, which are subjected to the vagaries of weather insecurity and lack of sanitary facilities.

3.4 Target Population

According to the World Bank (2016), there were 19,013 households in Rhonda ward of Nakuru West Sub-County in 2015. These households formed the target population for the current study.

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3.5 Sampling techniques and Sample Size

3.5.1 Sampling Techniques

The study considered household members aged 18 years and above, both males and females, regardless of whether they are literate that, knows how to write and read. The study used a combination of multistage random sampling and simple Random sampling approaches as well as purposive sampling techniques. During multistage random sampling, a list of all wards in Nakuru West Sub-County was obtained in stage one. Rhonda ward was then selected purposively because information about cholera can easily be obtained. The second stage involved obtaining a list of all villages using simple random sampling. Eight villages out fourteen villages were selected. In the third stage, all the households in the selected villages with appropriate number of households were selected using simple random sampling. House to house an interview of household members aged 18 years and above was carried out until the required sample was attained. Information which was collected included socio-demographic data and information on level of knowledge, culture, attitudes and community practices regarding cholera.

3.5.2 Sample Size

There a total of 19013 households in Rhonda ward. Therefore, the formula recommended by Fisher et al. 1998 for calculating sample size of more than 10,000 was used. Below is the formula.

$$n=\frac{Z^2Pq}{d^2}$$

Where n = desired sample size in an infinite population

z = standard normal deviation set at 1.96 (95% confidence)

p = the estimated proportion of households suffering from cholera (Taken as 15%, because 15% to 30% is considered ideal estimated according to Mugenda and Mugenda (2003)

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q= (1 - p) =0.85

d = the degree of accuracy set at 0.05.

Therefore the minimum estimated sample size is

$$n=\frac{1.96^2 \times 0.15 \times 0.85}{0.5^2} = 196$$

Therefore, 196 households were selected in Rhonda ward for interview. Therefore, a total of 196 respondents were targeted in this study.

3.6 Data Collection tools

A questionnaire with both closed and opened ended questions was used in data collection. The questionnaires were designed tested and adjusted before being administered o the respondents (Appendix III

3.7 Validity and Reliability

Validity and Reliability was considered in this study. Therefore to maintain validity and Reliability, the questionnaires were interrogated for content and comprehensiveness by experienced researchers. Next, two pilot test were carried out to check for consistency in responses. The results were then reviewed for any variations in the data captured, omissions and typographical errors.

3.8 Data Collection Procedures

The researcher first got an introductory letter from the University and a research permit from the National commission for science, technology and innovation. This was followed by the recruitment of research assistants especially those who reside within the sub-county for ease of accessibility and familiarity with the area. Both the primary and secondary data were collected. The primary data was gathered at a source while secondary data was collected from published reference materials such as thesis, past

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reports, reviewed journals, policy documents among others. The questionnaires were self- administered with the help of the research assistants.

3.9 Data Analysis and Presentation

Data analysis was done in line with the set research objectives. Descriptive statistics were applied in the analysis of quantitative data particularly the responses to closed ended questions. Descriptive analysis was deemed appropriate because they give clues concerning issues which need to be focused on leading to future research (Mugenda & Mugenda, 2008). The statistical package for social sciences (SPSS) version 21 was used to facilitate the analysis. All questionnaires received were referenced and the question items coded to facilitate data entry. Qualitative data was analyzed using the thematic technique.

3.10 Ethical Consideration

Permission was sought from respondents before administering interview schedule. Those who were not willing were not forced and the respondents were also assured that information given or collected would be treated as confidential and the result of the study would be beneficial to the community.

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CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND DISCUSSION

4.1 Introduction

This chapter presents the analysis and interpretation of the data collected based on the objectives of the study. The data was analyzed and the findings presented using frequencies, percentages, pie charts and graphs as well as tables. The purpose of the study was to assess community perception on cholera prevention in the case of Nakuru West Sub-County, Nakuru County. The results presented and discussed relate to the knowledge of cholera among the people of Nakuru West Sub-County, Nakuru County, the effect of culture on cholera prevention in Nakuru West Sub-County, attitudes of people towards those suffering from cholera in Nakuru West Sub-County, and community practices that people associate with cholera spread in the study area.

4.2 Response Rate

One hundred and forty five (145) questionnaires out of the 196 that were administered were retuned. This represented a response rate of 74%. According Mugenda and Mugenda (2012), a response rate of 50% is adequate, 60 percent good and 70 and more is very good. Therefore, the 74% response rate was considered credible enough to allow analysis of the data that was collected hence generalization of the findings to the target population. Table 4.1 summarizes the response rate

Table 4.1 Response Rate

Questionnaires	**Frequency**	**Percent (%)**
Returned	145	74.0
Not Returned	51	26.0
Total	**196**	**100.0**

Source: field Data, 2017

4.3 Demographic Profile of the Sample

A number of demographic variables were taken into consideration as was crucial in the interpretation of the responses given. In particular, gender, age of the respondents, marital status, education levels, occupation and size of households were considered in this study.

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4.3.1 Gender Distribution of Respondents

Gender in the context of this study was taken as the social roles and identities linked with what it means to be a female or male (FAO, 2011). It was therefore analyzed by checking the proportion of male and female respondents in the study as shown in Figure 4.2 below.

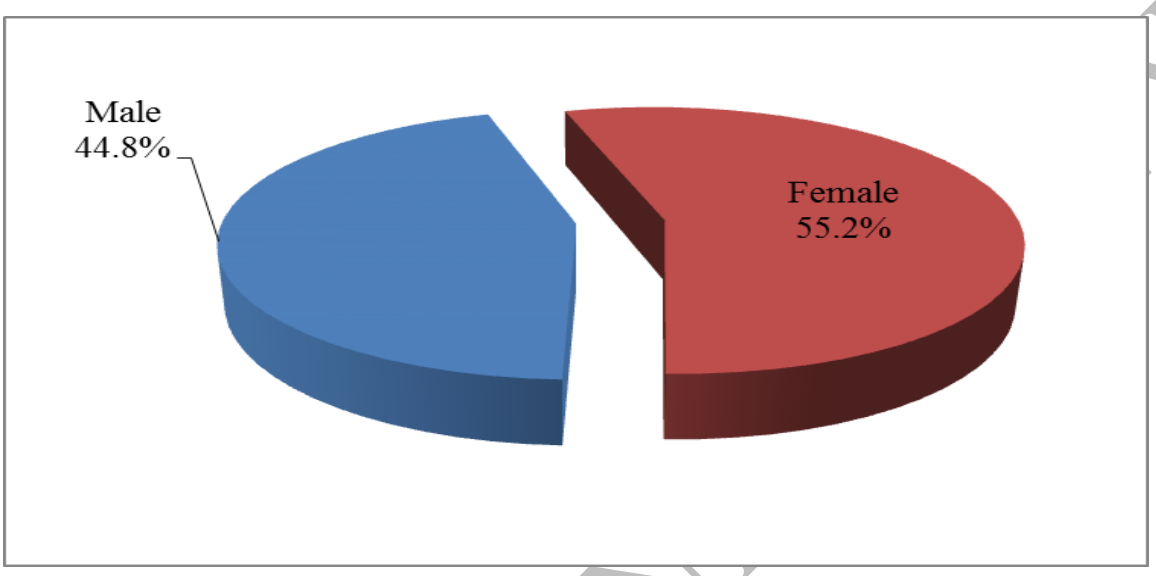


Figure 4.2 Distributions of Respondents by Gender
Source: field Data, 2017

The Figure shows that a greater proportion of the respondents were females representing approximately 55.2% as opposed 44.8% for males. This is a clear indication that the study was dominated by the female respondents. These research findings are consistent with those of Sundaram, et al.,(2013) conducted in Western Kenya. The study was also dominated by female respondents. The reason why majority of the respondents were females may be attributed to the fact that females tend to be more interested in sharing their stories or experiences specially in matters related to health. Another indication from the presence of many female respondents may be explained by the fact most of the males were not available at the time of study perhaps because they were out in search of food for the households.

The current study findings are however in contradiction to that of Kabita(2004) in which most of the respondents were males. Perhaps, this is because the study specifically

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targeted household heads. In this case, in most african settings, males are considered the heads of households.

4.3.2 Age of the Respondents

The respondents were classified in terms of their age groups as depicted in (Table 4.2).

Table 4.2 Distribution of Respondents According to their Age

Ages	Frequency	Percent (%)
18-25 years	21	14.5
26-35 years	40	27.6
36-45 years	39	26.9
46-59 years	34	23.4
60 and above	11	7.6
Total	**145**	**100.0**

Source: Field Data 2017

The findings as shown in Table 4.2 above show that 14.5% of the respondents were aged between 18-25 years, 27.6% aged between 26 and 35 years, another 26.9% aged between 36 and 45 years, 23.4% aged between 46-59 years while the remaining 7.6% were aged 60 and above years.. The results imply that majority of the respondents were aged between 36 and 45 years of age.

Demographic pattern displayed in this research follows the pattern which reported by previous studies. For instance, in one study conducted in Malawi, Masangwi et al., (2012) repoted that most of the respondents were youths falling in the age group between 30-45 years. In yet another study based in Western Kenya, Onyango, et al., (2013) realized that most more than a half (54.8%) were in the age group of between 36 and 45 years. In the current study, most of the respondents in the specified age group partly because they were more willing and share their stories and experiences. The age pattern differs with findings by Chingayipe (2008) in which most of the respondents who took part the research about factors affecting Cholera case detection by the communities in Chiradzulu District in Malawi fell within the age category between 15 and 24 years age group.

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4.3.3 Marital Status

Marital status was analyzed into four major categories, that is, single, married, divorced/separated, and widowed. The distribution of the respondents based on marital status is as shown in Figure 4.2 below.

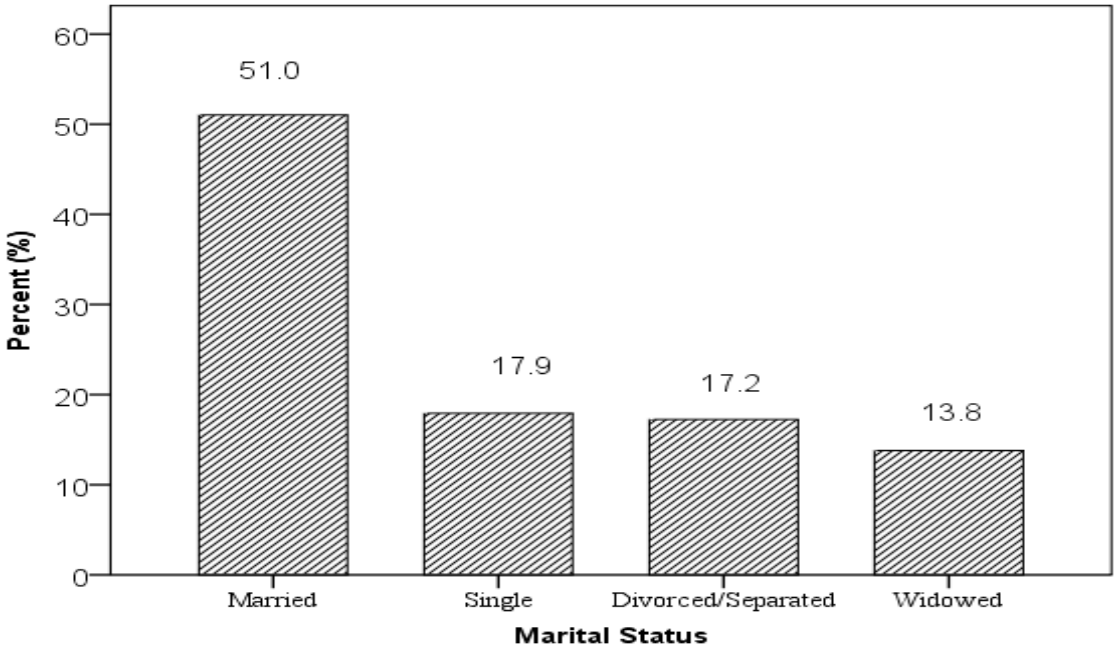


Figure 4.1 Marital Status

Source: field Data, 2017

The findings revealed that slightly more than a half (51%) of the respondents were married, 17.9% were singles, and 17.2% were either divorces or separated while only 13.8% were widowed.

From the study, it is clear that majority of the respondents were married. This may be explained by the fact that most people in African societies uphold the belief that marriage is a social and cultural bond and source of security and respect in the African society.

The current finding is consistent with previous studies as reviewed in the literature review. For instance, Karanja and Ng´ang´a (2008) also observed that most of their respondents were married. Similar observation was made Wahed *et al*., (2013), while

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analyzing "Knowledge of, attitudes toward, and preventive practices relating to cholera and oral cholera vaccine among urban high-risk groups" in Dhaka- Bangladesh. In general, marital status has an important implication in the fight against the spread of cholera. This means that policies aimed at control the diseases need to be established with people's marital status in mind.

4.3.4 Education Levels

Level of education is often assumed to be risk factor for the spread of Cholera where individuals having low level of education being at a relative higher risk of infection compared with those having high levels of education. Figure 4.3 below summarizes the findings.

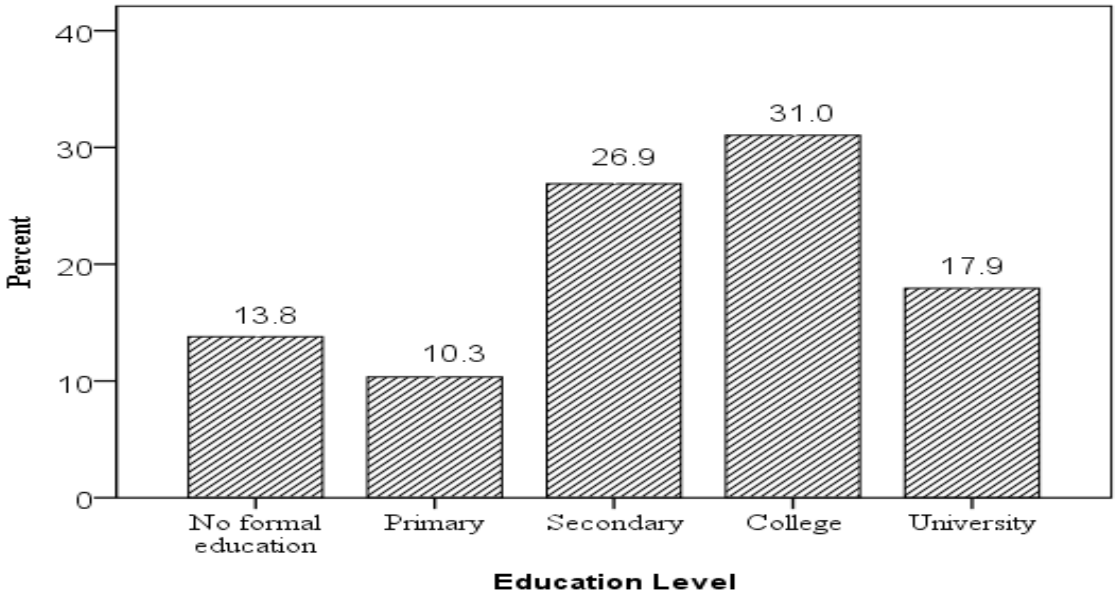


Figure 4.2 Education Levels

Source: field Data, 2017

According to the findings, 31% had achieved College level of education, 26.9% had attained secondary level of education, 17.9% university education. The Figure further reveals that about 17.9% had gone up to university level while only 10.3% attained primary level of education. However, about 13.8% of the respondents had not gone to school at all (Figure 4.3).

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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 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. 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.

4.3.5 Main Occupation

Occupation is considered important or crucial factors related to the level of income. The distribution of respondents according to their occupation revealed that 35.9% of respondents were involved in business. About 16.6% of the respondents disclosed that they were farmers, 20.7% were in formal employment while 26.9% of the respondents were involved in other occupation not included in the questionnaires such as casual labour, unemployed (student or looking for a job), conductor, driver, builder, watchman and mechanic. These findings are summarized in Table 4.3 below.

Table 4.3 Distribution of Respondents by Occupation

Occupation	Frequency	Percent (%)
Famers	24	16.6
Business	52	35.9
Formal Employment	30	20.7
Others	39	26.9
Total	**145**	**100.0**

Source: Field Data

It is clear that one's occupation is an important variable in relation to health and diseases. Most of the study participants were business men and women and this reflects the economic activity in the study area. This may also be attributed to the fact that the study was carried out in Rhoda estate which is dominated by business men and women due to the fact that it adjacent to urban centre, Nakuru Town. The current finding is in line with

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those of, Karanja and Ng´ang´a (2008) and Wahed *et al*., (2013) where most of the respondents depended on business as their main sources of livelihood.

4.3.6 Size of Family

The findings in Figure 4.4 above reveal that respondents who had up to 3 people are family members were 39.6%. This was followed by 32.8% having between 3-7 people in the family while 22.4% disclosed their households had between 8 and 12 members. The findings further reveal that only 5.2% of the respondents had more than 12 people as the size of their households.

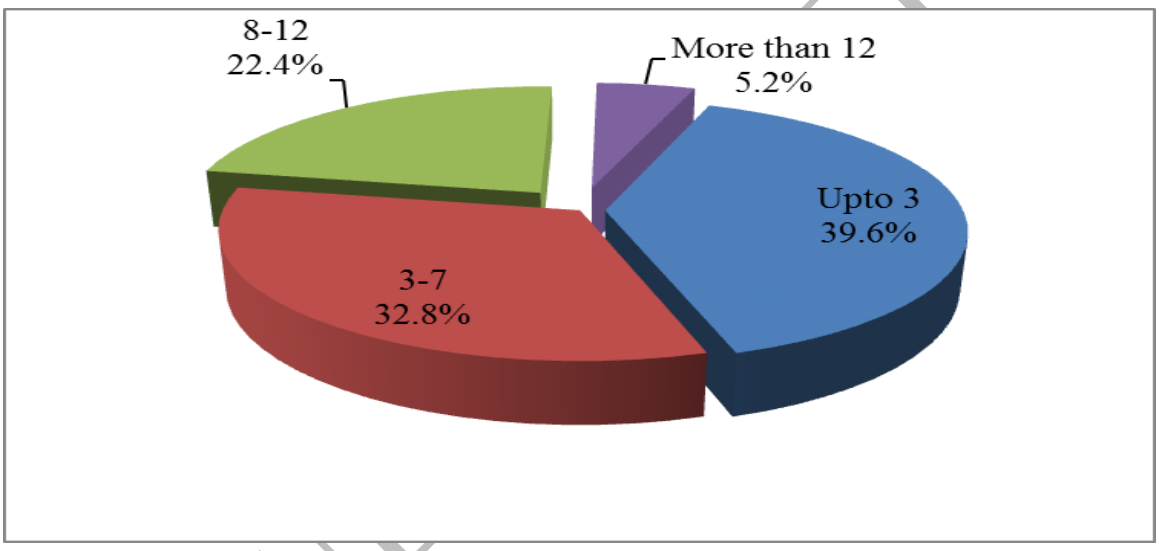


Figure 4.3 Household Size

Source: field Data, 2017

The current finding is partly consistent with that of Sundaram et al. (2013) except that the study was majorly dominated by larger households' sizes. Size of household may be a factor in the spread of cholera. This is partly because family with many members is more likely to exhibit economic constraints compared to smaller families or households. This implies that larger households have many mouths to feed and this leaves less money available in taking care of other important expenses, including health of household members (Shultz, et al., 2009).

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4.4 Knowledge of Cholera in the Study Area

4.4.1 Whether Heard About Cholera Before

The study sought to know the level of knowledge about cholera among the residents of Rhoda in Nakuru West Sub-location. All the respondents were required to state whether or not they had heard about cholera. The findings are as shown in Figure 4.5.

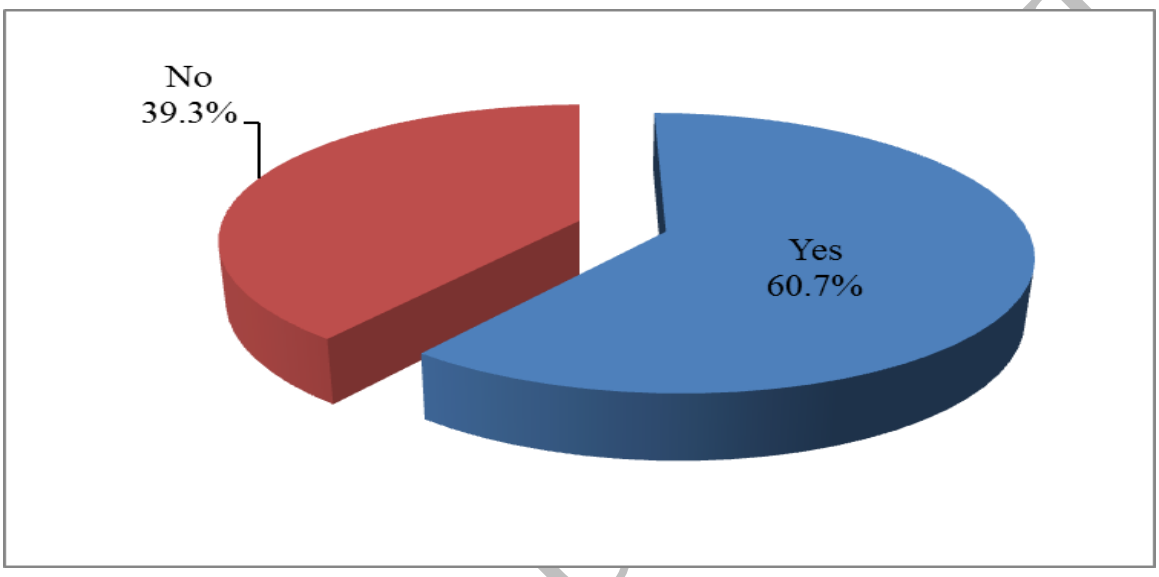


Figure 4.4 Ever Heard of Cholera
Source: field Data, 2017

According to the findings displayed above, 60.7% of the respondents disclosed having heard about Cholera. However, 39.3% of the respondents indicated that they had not heard about the Cholera. The number of respondents who had heard about cholera is not impressive enough pointing to the possibility that the existing communication channels may not be effective. Those who had not heard anything about Cholera may have been out of reach to possible communication channels such as the media. The other reason may be attributed to the fact that there have not been enough sensitization campains on cholera in the study area.

The above observation is a reflection of what Masangwi et al., (2012) found in their study about pattern of Maternal Knowledge and Its Implications for Diarrhea Control in Southern Malawi. In their study, the authors observed that there was limited knowledge

among the study population about cholera in general. Mghase (2014) while investigating the role of the community in relation to Epidemiology of Cholera in Buguruni Ward also observed a low level of awareness about the cholera among his respondents. The same observations were reported by Debes (2015) in the Far North of Cameroon. In the current study, most of the respondents had low level of knowledge about cholera including the various mechanisms in its spread. This may be attributed to inadequate or lack of health related education or sensitization activities in the study area.

The current findings is however not consistent with that of Sundaram et al. (2013) which focused on socio-cultural determinants of anticipated acceptance of an oral cholera vaccine in three selected countries in Africa. This is because in the study, most of the respondents exhibited high levels of awareness.

When asked to explain further the meaning of Cholera, most of the respondents conceived simply as a disease transmitted from one person to another. The following are some of the quotes from the respondents.

> One said "Cholera is a disease transmitted from one person to another through contaminated food, water and poor use of toilet"
>
> Another one said "Cholera is the transmission of disease from and one individual to another through contaminated food water and poor sanitation"
>
> Another one said 'It is a disease transmitted through eating food which has been contaminated and poor hygiene"
>
> While another respondent said "It's a disease that is transmitted from one person to another by eating contaminated food and water that is not treated"
>
> "It is a disease that is transmitted by drinking untreated water"

Other respondents conceived Cholera as diseases associated with diarrhea. For instance, one of the respondents indicated that

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'Cholera is a disease that cause someone to diarrhea severely"

The current findings are somehow consistent with those of Farmer et al. , (2011). The authors state that symptoms of cholera may range from mild to severe with the most frequent ones being sudden onset of watery diarrhea, dry mouth, dehydration, high heart rate, excessive thirst, low urine output and nausea as well as vomiting. In the current study, one of the respondents indicated that Cholera was associated with severe and continous diarrohoea. About I in 20(5%) of infected people will have severe diease characterised by lots of water diarrhoea vomiting and leg cramps.

According to literature in Chapter two, Cholera is associated with bacterium, known as Vibrio *cholera, and which has* a short incubation period. The infection is often acquired through ingestion of water or food contaminated with faeces (Sridhar, 2009; Debes, 2015).. it is not a surprise that most of the respondents in the current study indicated that cholera is caused by consuming contaminated food and drinking dirty or untreated water. It is hypothesized that cholera is a disease of poor sanitation. This means that areas which lack toilets, untidy environments, lack of water and inadequate drainage faciltieis enhances the risk of the trasnmission (Farmer et al. , 2011).

4.4.2 Main Sources of Information about Cholera

The respondents were further asked to state their main source of information about Cholera. Different sources of information on Cholera were reported among the respondents as shown in Table 4.3.

Table 4.4 Main Source of Information about Cholera

Sources	Frequency	Percent (%)
Media	79	54.5
School	30	20.7
Community Leaders	29	20.0
Others	7	4.8
Total	**145**	**100.0**

Source: field Data, 2017

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According to the data collected, more than a half (54.5%) of the respondents disclosed that the media was their main source of information. About 20.7% and 20% of the respondents said school and community leaders respectively while 4.8% disclosed other sources. The media is current the most common sources of information in Kenya and by extension in Africa. It is not surprise that most of the respondents indicated they relied on the media. The study is line with that of Masangwi et al., (2012) which also disclosed that the media was the main source of the information for the study participants. Sundaram et al. (2013) made similar observations.

4.4.3 Perceived Modes of Transmission

The study sought to know the perceived mode of transmission in the study area. The main modes of transmission within the study area are as stipulated in the following Table 4.5.

Table 4.5 Perceived Modes of Transmission

Modes of Transmission	Frequency	Percent (%)
Shaking hands	12	8.5
Eating contaminated food	62	42.9
Living in unplanned settlement	28	19.2
Not having toilet	39	27.1
Others	3	2.3
Total	**145**	**100.0**

Source: field Data, 2017

For most of the respondents (42.9%), cholera was transmitted through eating contaminated food. About 27.1% of the respondents believed not having toilet contributed to the spread of cholera while 19.2% attributed its transmission to living in unplanned settlement. Only 12 (8.5%) of the respondents believed that Cholera was transmitted through shaking hands. About 2.3% indicated other modes of transmission (Table 4.5).

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The results of this study suggest an association between contaminated foods/water and the spread of cholera. This is similar to a study by Masangwi et al., (2012) which found that there was some link between consuming contaminated foods and incidents of cholera. Sundaram et al. (2013) also found that consuming contaminated foods was a major factor to the spread of cholera among the study population. In another study, Gautam (2015) indicated that food hygiene practices were critical in the prevention of cholera and other communicable diseases.

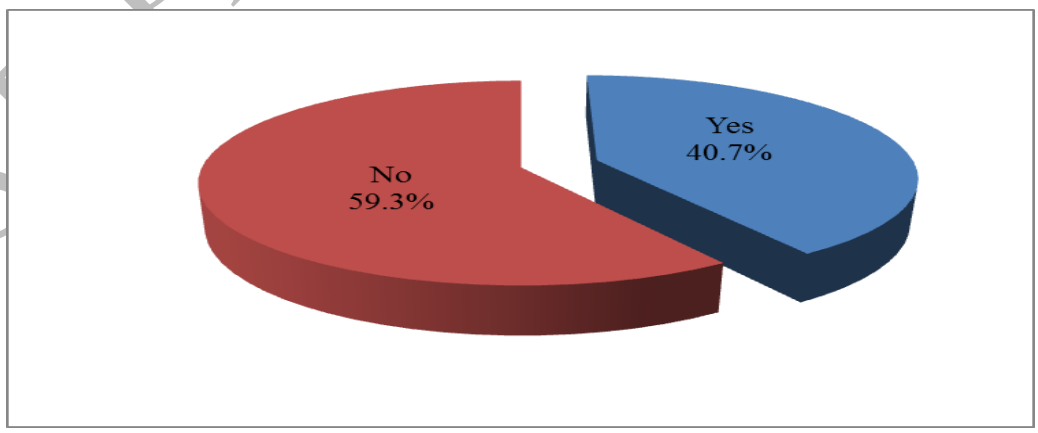
Food Contamination normally occurs when individuals infected with *vibrio cholerae* in the surrounding area comes into contact with food stuffs or materials and water contaminated with faecal matters. Contaminated utensils and flies can also transmit *vibrio cholerae.* Poor waste management can be breeding sites for mechanical carriers of the infectious agent. Once the contaminated substances gets access to water sources it be becomes source of cholera infection and can easily be spread from one point to another through different media (WHO, 2008).

4.5 The Effect of Culture on Cholera Prevention

The study sought to find out if culture had any effect on Cholera Prevention in Nakuru West Sub-location.

4.5.1 Whether Culture has any Role has any Effect on Cholera Prevention

To this end, the respondents were required to respond to the following question; do you think culture has any role in the spread of Cholera? Figure 4.6 summarizes the findings.



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Figure 4.5 Response on whether Culture plays any Role in the Spread of Cholera
Source: field Data, 2017

The Figure reveal that more than half (59.3%) of the respondents disclosed that culture was linked to the spread of Cholera. Only 40.7% of the respondents believed otherwise. The current finding is consistent with previous studies which have demonstrated that in deed, culture do play some role in the spread or prevention of diseases including Cholera. For instance, Thomas (2012) argued that people learn from their society and cultural context/knowledge about the disease preventive behavior which in turn tends to influence their behavior in case there is a disease outbreak.

4.5.2 Respondents' Explanation about the Link between Culture and the Spread of Cholera

When respondents were further asked to explain on the link between culture and the spread of cholera, the responses were as follows:

> "Most communities believed that using or sharing is a taboo and therefore people end up using bushes as toilets. "

> "There are some cultures such as Muslims who are fond of eating in one plate or they suppose one of them is infected, obviously he or she will infect others while the fluid from his/her body enters the meal."

> "Culture like Islam they use water in toilets they don't use tissues; like women when they are pregnant they don't use toilet properly they fear that her child in womb will come out."

> "Eating left over (food) sometimes not warmed well- throwing away food is taboo."

Lamond and Kinyanjui (2012) in their article about cholera outbreak guidelines argue that when community members come together for various ceremonies or community activities such as religious, marriages, funerals ceremonies and other public gatherings, there are higher chances for the spread or transmission of cholera. The authors explain

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that this community's gathering bring people together, coming into the infected areas from which they can carry the cholera organism elsewhere. In the current study, one of the respondents indicated that "some cultures such as Muslims are fond of eating in one plate or they suppose one of them is infected, obviously he or she will infect others while the fluid from his/her body enters the meal."

The current findings also support the assertion by Gautret and Steffen (2016) where disease outbreak was reported in mass gathering especially at Christian, Muslim and Hindu religious events as well as large-scale open air festivals.

4.6 The Attitudes of People towards those Suffering From Cholera

The study also sought to examine the attitude of people within the study area towards those suffering from cholera. To realize this goal, participants were asked several questions.

4.6.1 Incidents of Rejection or Isolation of People suffering from Cholera

First, participants were asked whether they were aware of incidents where people suffering from cholera were rejected or isolated in the community. Figure 4.7 shows the findings.

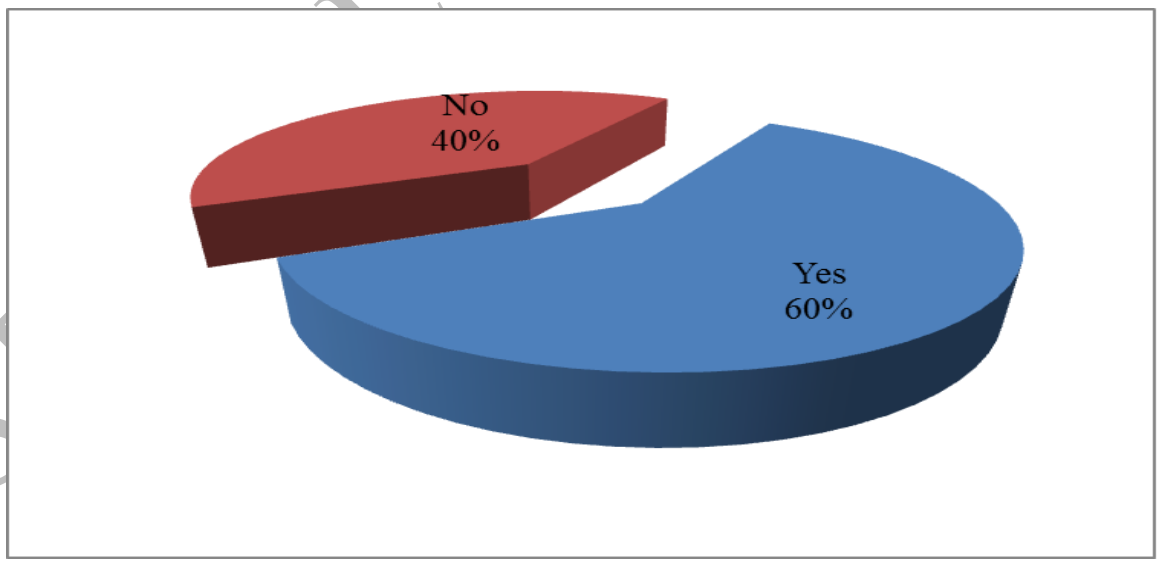


Figure 4.6 Whether witnessed any incidents of Rejecting Victims
Source: field Data, 2017

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From the findings, 60% of the respondents disclosed that they had witnessed incidents where victims of cholera were rejected or isolated by the community compared to 40% who said they had not witnessed such incident. The finding is enough evidence that there are incidents of rejection or isolation of people suffering from cholera in the community. This is also an indication that there is a negative attitude of the community towards people suffering from Cholera. This may be attributed to misconceptions and myths about Cholera and its spread. It may also be linked to the low level of education and low awareness about cholera among the residents of Rhoda in Nakuru West Sub-County.

The current finding concurs with that of Grimaud and Legagneur (2011) who in their study about community beliefs and fears durong cholera outbreak, observed that people had negative attitudes towards people suffering from cholera. In particular, they observed that cholera victims and former patients were viewed as a source of threat for the rest of the community. In some cases, the victims were either rejected or isolated, and sometimes being molested and even killed.

4.6.2 Frequency of Rejection/Isolation Incidents

To test how serious incidents of rejection and isolation of people suffering from cholera were, the respondents were requested to indicate the frequency of such incidents and the results summarized in Table 4.5 below.

Table 4.6 Frequency of the Incidents

Frequency	Frequency	Percent	Valid Percent
Very Frequent	22	15.2	25.3
Frequent	40	27.6	46.0
Once in a while	25	17.2	28.7
Total	87	60.0	100.0
Missing System	58	40.0	
Total	**145**	**100.0**	

Source: Field Data 2017

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From the findings, most of the respondents (46%) indicated that there the incidents of rejection or isolation were frequent, 28.7% of the respondents revealed it happened once in a while but 25.3% disclosed the incidents were very frequent.

The current finding implied that an incident of cholera is high in the study area. The current finding is a reflection of the previous report by WHO (2010) that Nakuru county especially in low income areas like Rhoda in Nakuru West Sub-County as one of the areas prone to the outbreak of cholera.

4.6.3 General Attitudes of People towards Cholera

Attitude towards Cholera was further assessed using 3 statements. The scale rating used for the respondents were: "Agree", "Undecided", and "Disagree". Table 4.6 summarizes the findings.

Table 4.7 Respondents Attitudes towards Cholera

Statements	Agree(A)	Disagree(D)	Undecided(U)	Total
Anybody can contract cholera infection from an untreated patients	99(68.3%)	30(20.7%)	16(11%)	145(100%)
Cholera victims/ Patients are usually isolated by from family and friends as well as the society	64 (44.1%)	43(29.7%)	38(26.2%)	145(100%)
Rich people can't get cholera since it's only a disease of poor people	18(12.4%)	103(71%)	24(16.6%)	145(100%)

Source: Field Data

From the study, there was a general agreement among the respondents that anybody can contract cholera infection from untreated patients (68.3%) except for 20.7% who disagreed with the statement. Out of the total respondents who took part in the study, 11% were undecided about the statement. A good number of the respondents, 64(44.1%) disclosed that cholera victims/ patients are usually isolated by from family and friends as well as the society. Only 29.7% and 26.2% were in disagreement and undecided

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respectively. With the regards to the last statement, that Rich people can't get cholera since it's only a disease of poor people, the response were as follows: Agree, 18(12.4%), Disagree, 103(71%) and Undecided 24 (16.6%).

4.7 The Community Practices that People Associate With Cholera Spread

The study also sought to investigate community practices that people within the study area associate with the spread of cholera. According to the HBM, people perceptions regarding the risks associated with a given problem are a significant determinant of the actions that such people are willing to take to prevent the problem (Gristwood, 2011). To realize this objective, participants were presented with several practices and asked to rate the extent to which they contribute to the spread of cholera in their community. Results are presented in Table 4.8:

Table 4.8: Participants View on Practices Contribute to Cholera Spread

Practices	Little Extent	Moderate Extent	Great Extent
Drinking unsafe water	23 (15.8%)	43 (29.7%)	79 (54.5%)
Eating unsafe food	24 (16.6%)	57 (39.3%)	64 (44.1%)
Poor personal hygiene	59 (40.7%)	51 (35.2%)	35 (24.1%)
Open defecation	76 (52.4%)	41 (28.3%)	28 (19.3%)

Source: Field Data (2017)

As Illustrated in Table 4.8, the majority of participants (54.5%) were of the view that drinking of unsafe water contributed to the spread of Cholera within the community to a great extent. This finding is consistent with Kabita (2010), who found that most communities in Kenya especially those living in informal urban settlement have inadequate access to clean drinking water. Consequently, the consumption of unclean water is a major contributor to the spread of Cholera. About 44% of respondents held the view that eating unsafe food contributes to the spread of cholera in the community to a great extent while 39.3% felts that it contributed to a moderate extent.

A majority of respondents (40.7), however, reported that poor personal hygiene had little contribution to the spread of cholera within their community. This is a point of concern as

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studies such as Feikin et al. (2010) have shown that poor personal hygiene such as failing to wash hands with soap before meal is a major contributor to the spread of cholear in Kenya. Failing to acknolwedge the significance of personal hygiene may prevent community members from taking deliberate actions to change their personal hygiene practices. Similarly, about 52.4% of the respondents were of the view that open defecation has little contribution to the spread of cholera within the community.

4.8 Cholera Prevention

The dependent variable in this study was Cholera Prevention. The study sought to examine whether residents in the study area adhere to best practices for cholera preventions.

4.8.1 Water Purification

Drinking of contaminated water is one of the mechanisms through which Cholera is spread. Consequently, one of the best practices recommended for cholera prevention entails treating the water before using it for drinking. The study sought to establish the proportion of people within the study area who treat their drinking water. Results are presented in Figure 4.7:

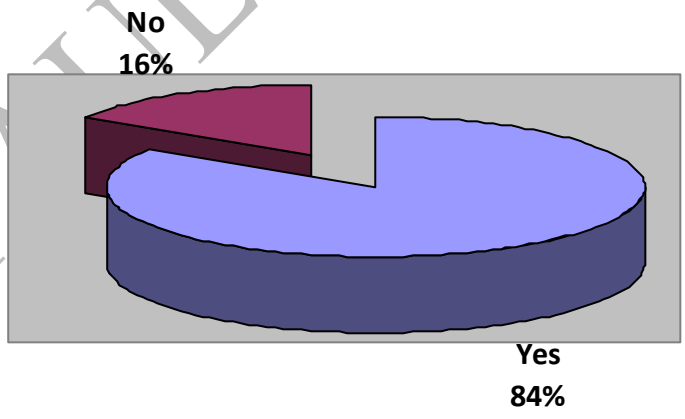


Figure 4.7: Whether Respondent Treat Water for Drinking

Source: Field Data (2017)

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As Figure 4.7 shows, about 84% of the respondents reported that they usually treat the water before using it for drinking. This is an encouraging trend as having a significant section of the population treating their water before drinking can significantly reduce the spread of Cholera. Effort should, however, be made to ensure that all people within the community start to value the need to purify water before drinking.

4.8.2 Water Treatment Method

The study also sought to find out the methods that residents in the study areas were using to treat drinking water. Slightly more than a half (53.1%) of the respondents preferred using boiled water. About 45(31%) of the respondents reported always taking chlorinated water. The findings also show that 20 (13.8%) of the respondents believe there is no need of treated water while 2.1% indicated other issues like lack of time as displayed in Table 4.7.

Table 4.8 Perception of Using Treated Water

Perception	Frequency	Percent (%)
Prefer using boiled water	77	53.1
Prefer chlorinated water	45	31.0
There is no need of treated water	20	13.8
Others	3	2.1
Total	**145**	**100.0**

Source: Field Data 2017

The current finding implies that most of the respondents reported using boiled water. This may be attributed to sensitization programs in the area. It may also be attributed to the respondents' level of education so that those with education are more likely to use boiled water. The finding marries those of previous studies are indicated in the literature review. For instance, Wamalwa (2012) observed that boiling water was a good measure towards prevention and control of Cholera outbreak.

4.8.3 Hand Washing Practices using Soap

Another best practice for preventing cholera entails washing of hands with soap after using the toilet, before meals, after changing the babies, before feeding the babies, and

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before handling food. The study sought to examine the proportion of residents who adhere to this best practice. The findings are displayed in Figure 4.8 below

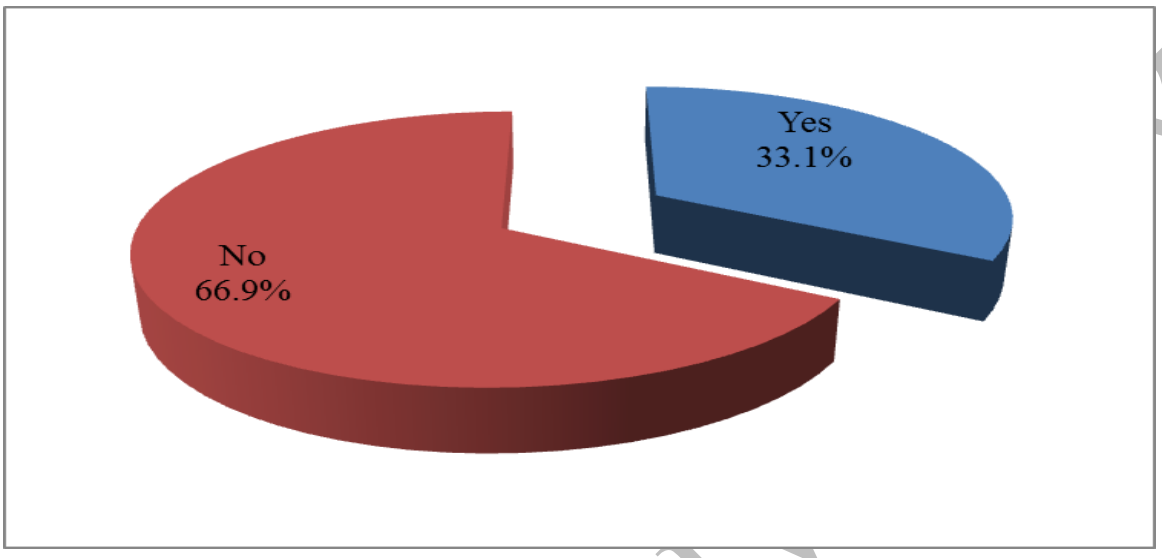


Figure 4.8: Whether Community use Soap for Washing Hands

Source: field Data, 2017

According to the findings, 66.9% of the respondents disclosed that people in the community did not use soap for washing hands. Only 33.1% of the respondents said that the community members use soap for washing their hands. This clearly shows that proper hygiene in is not observed in this community since most of the residents don't use soap for washing their hands. The findings are consistent with those of Karanja and Ng´ang´a (2008) which was conducted in Kibera. The two authors observed that many people living in Kibera did not practice washing of their hands with soap and water before handling food, and most of them were fond of consuming leftover foods.

According to a number of studies, hand washing with soap has a significant effect on health and reduced cholera. A Cochrane Review carried out by Ejemot and colleagues, which pooled data from five RCTs of community based interventions in low or middle-income countries found a reduction of 32% in diarrhea episodes among children (Ejemot et al., 2008). A number of other systematic reviews, many of which take into account trials beyond RCTs, have found a higher reduction in diarrhea, of up to 48% (Cairncross et al., 2010). One study in India by Cairncross and colleagues also shows that persistent

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change in behavior may be possible following an effective intervention. In this study several methods were used to study the sustainability of changed hygiene behavior at various periods up to nine years after the conclusion of a multi-pronged hygiene promotion intervention in Kerala, India. Good hand washing practice was reported by over half of the adults in intervention areas, versus less than 10% of adults in a control area (Cairncross et al., 2005).

Empirical study by Wamalwa (2012) which was carried out a study in order to determine the prevalence of Cholera among 6- 59 month old moderately to severely malnourished children and the factors associated with Cholera among the children. Wamalwa observed that the spread of cholera with poor hand washing practices. In particular, the study established that members of households which didn't clean their hands properly using soap especially visiting toilets had higher risk of Cholera due to the general poor hygienic practices (Wamalwa, 2012). The study is also in line with that of Mpuzi et al, (2005) in their study about practice in relation to cholera outbreaks in Illala. Mpuzi et al., (2005) observed that most people had poor hand washing practices which was linked to outbreaks in the study area.

Washing of hands using soap has been shown to reduce incidents or occurrences of cholera and other communicable disease (Fewtrell et al., 2005). In this study, household members especially mother or women, due to a lot of burden put on them including domestic chores and associated tiredness may be the reason why they may not pay attention to hand-washing. In addition, low educational level as well poor knowledge of cholera may also be the reason why most people do not use soap in washing their hands.

4.8.4 Reasons for Not Washing Hands Using Soap

When further probing was made by the researcher to find out the reason why community members in the study area were not using soap for washing their hand. Figure 4.9 displays the findings.

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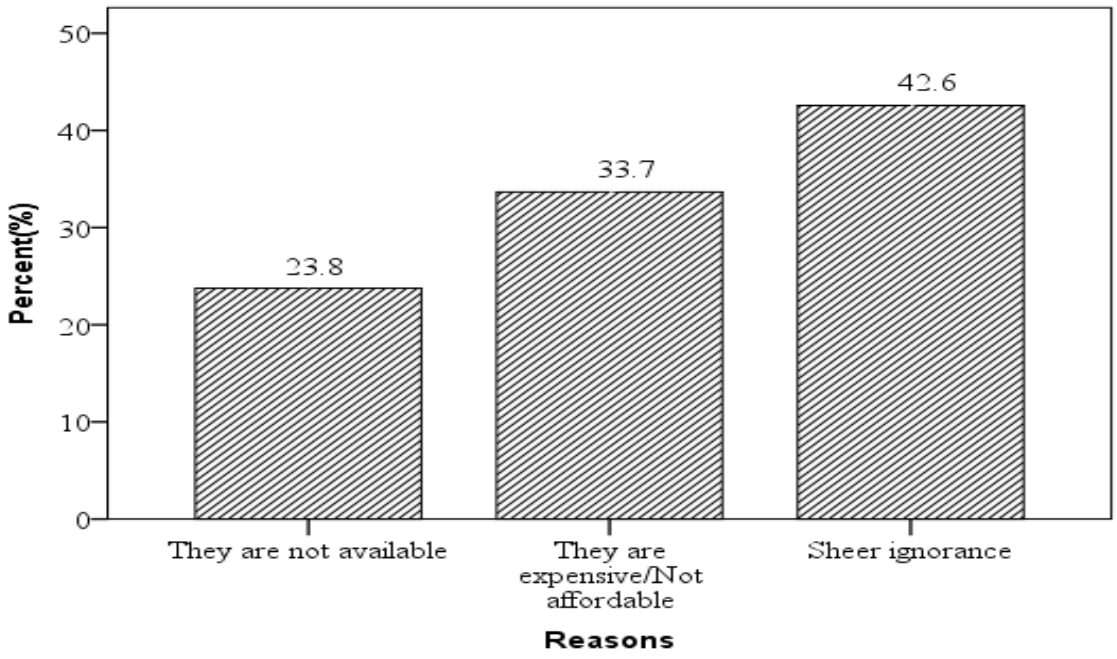


Figure 4.9 Reasons for not using Soap in Hand washing

Source: field Data, 2017

As it can be observed in Figure 4.9 above, most of the respondents (42.6%) indicated it was out of sheer ignorance, 33.7% said it was because of the fact that is was expensive or not affordable while 23.8% of the respondents disclosed that soap was not available. The finding implies that hand washing is a product of one's socioeconomic status which includes income and education. It is not a surprise that a number of respondents indicated that they did not wash their hand using soap because they were expensive. This may be attributed to the fact that most of the respondents were of low income status. The other reason may be attributed to the current economic situation where prices of items are becoming more expensive and unaffordable for the majority of Kenyans. The studies by Ejemot et al., (2008) and Cairncross et al., (2010) reported similar observations.

4.8.5 Garbage Disposal

Another best practice recommended for preventing cholera entails developing appropriate mechanism for disposing waste. Respondents were asked to give their views on whether their area has an effective mechanism for disposing waste. Results are presented in Figure 4.10:

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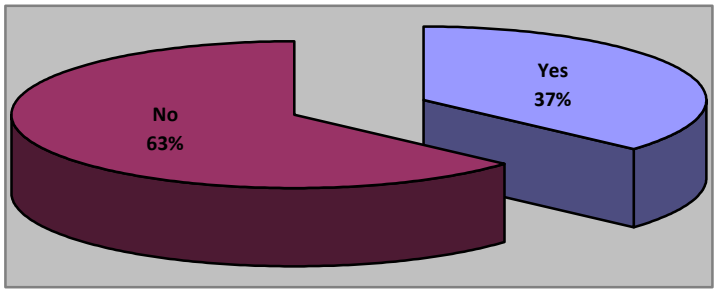


Figure 4.10: Whether Community has Effective Garbage Disposal Mechanism

As Figure 4.10 illustrate, the majority of the respondent (63%) felt that their community does not have an effective mechanism for disposing waste. This finding is consistent with Ziraba, Haregu, and Mberu (2016) who found that most urban areas in the developing countries have poor systems for managing both solid and liquid waste. Poor waste disposal is a major contributor to the spread of cholera; hence, the need to address this problem.

4.8.6 Use of Toilets

The final best practice that was invested in this study in relation to cholera prevention entails the use of toilets. Respondents were asked to give their views on whether the majority of area residents make use of toilets. Results are presented in Figure 4.11:

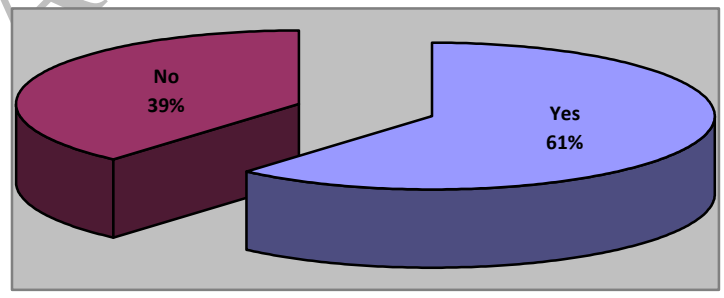


Figure 4.11: Whether Majority of Community Members make use of Toilets

Source: Filed Data (2017)

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As illustrated in Figure 4.11, about 61% of the respondent reported that the majority of community members make use of toilets. This is a positive finding as the use of toilets tends to prevent the spread of cholera by minimizing cross-contamination of water sources and food. However, there was still a significant portion of respondents who felt that the level of latrine use within the study area was not adequate. This implies that there are still improvements needs in this area. Stakeholders in the public health field needs to implement additional initiatives aimed at making the area an open defecation-free zone.

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CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONSs

5.1 Introduction

The study aimed to understand community perception towards cholera prevention in Nakuru West Sub-County, Nakuru County. In this chapter, the key findings from the research are summarized. This chapter also outlines conclusions derived from the main research findings and recommendations as well as giving directions for further research.

5.1 Summary of the Main Findings

5.2.1 The Kknowledge of Cholera

The first objective of the study was to assess the knowledge of cholera among the people of Nakuru West Sub-County, Nakuru County. Thus, the following question was raised; what is the knowledge of cholera among the people of Nakuru West Sub-County, Nakuru County? The findings of the study is that although a good number of respondents reported having heard about cholera (60.7%), there still proportion of the respondents (39.3%0 who heard not about cholera before(Figure 4.5). Most of the respondents believed cholera was a disease transmitted from one person to another through contaminated food, water and poor use of toilet. Others felt it was a killer disease while other associated it with severely and continuous diarrhea. It was established that the media was the common sources of information among most of the respondents (Table 4.4). The most common mode of transmission of cholera among the respondents was eating contaminated food (Table 4.4).

5.2.2 The Effect of culture on Cholera Prevention

Objective two was aimed at determining the effect of culture on cholera prevention in Nakuru West Sub-County. In this regard, the following question was raised; what effect does culture have on cholera prevention in Nakuru West Sub-County? The results were that there was a general consensus among the respondents that culture played a role in the spread of cholera. This is because more than half (59.3%) of the respondents said it played a role while only 40.7% of the respondents believed otherwise (Figure 4.6). Some of the examples of how culture played some role in the spread of cholera was where

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community members avoided using toilet in areas where it was a taboo to share toilets with in-laws.

5.2.3 The Attitudes of People towards those Suffering from Cholera

The third Objective was to find out attitudes of people towards those suffering from cholera in Nakuru West Sub-County. To achieve this, the following question was raised; what are the attitudes of people towards those suffering from cholera in Nakuru West Sub-County? The study established incidents of rejection or isolation of people suffering from Cholera was common as disclosed by 60% of the respondents (Figure 4.7) as demonstrated by frequent incidents of rejection and Isolation (Table 4.5).

The study found that there was a general agreement among the respondents that anybody can contract cholera infection from untreated patients (68.3%), a good number of the respondents, 64(44.1%) disclosed that cholera victims/ patients are usually isolated by from family and friends as well as the society. However, most of the respondents (71%) were in disagreement that rich people can't get cholera since it's only a disease of poor people (Table 4.6).

5.2.4 Community Practices that People associate with Cholera Spread

The fourth objective of the study intended to establish community practices that people associate with cholera spread in Nakuru West Sub-County. In this respect, the research question raised was; what are the community practices that people associate with cholera spread in Nakuru West Sub-County? The findings were that slightly more than a half (53.1%) of the respondents associated the spread of cholera to the consumption of unsafe water. About 44.1% also linked the spread of cholera to the consumption of unsafe food. However, a majority of the respondent did see a major link between their personal hygiene and open defecation, and the spread of cholera in their areas.

5.2.5 Cholera Prevention

The dependent variable in this study was cholera prevention. The study sought to understand how community perception towards cholera influenced their prevention behavior. Findings revealed that the majority of residents in the study area (84%) treat their drinking water. It was also found that the majority of community members make use

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of toilets rather than defecating in the open. These are positive trends that contributed towards preventing the spread of cholera. However, the majority of respondents (66.9%) reported that community members do not wash their hands with soap. About 63% also reported that their area does not have an effective waste disposal mechanism. These are major weaknesses that must be addressed in order to eradicate the cholera pandemic from this community.

5.3 Conclusion of the study

In conclusion, this study may be viewed as a success due to the fact that it has been to answer the research questions and address the research assumptions as well as objectives.

Based on the first objective, it can be concluded that the level of knowledge among residents of Nakuru West is still low and this may be a factor and one of the leading cause of the spread of cholera in the area. There is still uncertainty about the real cause of cholera among most residents.

The second objective was to find the effect of culture on cholera prevention in Nakuru West Sub-County. Based on the findings, the study concludes that culture has a role to play in cholera prevention in the area.

Based on the third objective, the study concludes that there existing negative attitudes of the community towards people suffering from cholera as manifested by incidences of rejection and isolation. This was compounded by misconception that rich people could not contract Cholera.

Based on the fourth objective, the study concludes that while community members appreciate the need to take care of their foods and drinking water, they are oblivious of the danger posed by poor personal hygiene and open defecation. More awareness campaigns are needed to educate residents on these issues.

With regard to cholera prevention practices in the study area, the community has made progress in terms of ensuring the safety of their drinking water. However, there is a need

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to improve the waste disposal system, as well as, personal hygiene practices such as hand washing.

5.4 Recommendations of the Study

The challenge of cholera in the study area is too diverse to be tackled by simplistic approaches. It calls for holistic strategy. Based on the findings and conclusions, the recommendations would help to ease or decrease the burden of Cholera.

The study has established that the level of knowledge among residents of Nakuru West is still low and that there is still uncertainty about the real cause of cholera among most residents. Based on this, there is need for necessary measures which need to be taken into consideration before cholera outbreak. To this end, there is need for decision makers including the government to mobilize the community with the aim of improving the general health status or situations of the area. This could be realized if regular inspection of food substances by health departments to ensure that infected food items are not sold to the public.

There is also an urgent need for have in place programs aimed at raising awareness or sensitizing the residents on how to control and prevent Cholera effectively in the area. All stakeholders need to be involved in the health campaigns or sensitization programs especially in educating people about the importance of control and prevention of Cholera and the need to seek early treatment from clinics and other health facilities. Word-of-mouth (person-to-person conversation) could be explored as a way of indirect means to propagate or pass information not only on cholera prevention but also control of the same.

Based on the second objective, it was established that culture affected control and spread of cholera. Therefore, there is need to shun out negative culture and embrace those which are helpful to the community. This could be enhanced through sensitization programs. he study established that there existing negative attitudes of the community towards people suffering from cholera as manifested by incidences of rejection and isolation. To help the community out of this, there is need for sensitization campaigns against discrimination

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victims suffering from cholera. Moral education and religious virtues including love for one another.

Based on the study, it is clear that there is need for good community practices such as boiling of water and washing of hand which need to be promoted. This could be achieved through encouraging behavioral changes especially in relation to hand washing sing soap. As it has been revealed in the study, most people in the study do not use soap. There is also need to provide adequate and safe water to the residents of Nakuru North Sub-County which could go a long way in controlling the spread of Cholera.

5.5 Suggestion for Further Studies

The researcher suggests that there should be a more study done in the clarity of the community perceptions. A comparative study can be done to justify the importance of cholera prevention in the peri- urban sector.

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APPENDICES

Appendix I: Questionnaire

Serial No ..... Name of the village .....

Name of the interviewer..... Date of interview .....

Section A: Background Information.

Q1. Sex of the Respondents

[ ]i. Male
[ ]ii. Female

Q2. Age of the respondent

[ ]i. 18-25yrs
[ ]ii. 26-35yrs
[ ]iii. 36-45yrs
[ ]iv. 46-59yrs
[ ]v. 60 and above

Q3. Marital Status

[ ]i. Married
[ ]ii. Single
[ ]iii. Divorced/Separated
[ ]iv. Widowed

Q4. Education level

[ ]i. No formal education
[ ]ii. Primary
[ ]iii. Secondary
[ ]iv. College
[ ]v. University

Q5. What is your main Occupation?

[ ]i. Famers
[ ]ii. Business
[ ]iii. Formal Employment

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[ ]iv. Others
(specify)……

Q6. Size of the family

[ ]i. Up to 3
[ ]ii. 3-7
[ ]iii. 8-12
[ ]iv. More than 12

Section B: Knowledge of Cholera among the People of Nakuru West Sub-County

Q7. Have you ever heard of Cholera?

[ ]i. Yes
[ ]ii. No

Q8. If yes, what is it?

……
……
……
……

Q9. What is the main source of your information about cholera?

[ ]i. Media
[ ]ii. School
[ ]iii. Community leaders
[ ]iv. Others(specify)

Q10. What do you think are modes of transmission from one individual to another in the community?

[ ]i. Shaking hands
[ ]ii. Eating contaminated food
[ ]iii. Living in unplanned settlement
[ ]iv. Not having toilet
[ ]v. Others
(Specify)…….

Q11. Have you personally suffered from cholera?

[ ]i. Yes

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[ ]ii. No

Q12. Have any of your close relatives suffered from cholera?

[ ]i. Yes
[ ]ii. No

a) If yes, who?(tick all that apply)

[ ]i. Child
[ ]ii. Spouse
[ ]iii. Parent
[ ]iv. Sibling
[ ]v. Others
(Specify)……

Section C: Effect of Culture on Cholera Prevention

Q13. Do you think culture has any role in the spread of cholera?

[ ]i. Yes
[ ]ii. No

Q14. If yes, explain

……
……

Q15 Do you think social gathering can contribute to the spread of cholera?

[ ] i Yes

[ ] ii No

If yes please specify ……

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Section D: Attitudes of People towards those Suffering From Cholera

Q16 Have you witnessed any incidents where people suffering from cholera?

[ ] Yes [ ] No

Q17. In the statements below, kindly tick (√) in the appropriate box to make the correct response

Q18. Have you heard of anyone suffering from cholera rejected or Isolated in this community? Yes ( ) No ( )

Statements	Agree(A)	Disagree(D)	Undecided(U)
Anybody can contract cholera infection from an untreated patient			
Cholera victims/ Patients are usually isolated by from family and friends as well as the society			
Rich people can't get Cholera since it's only a disease of poor people			

If yes, how frequent is this?

[ ]i. Very frequent
[ ]ii. Frequent
[ ]iii. Once in a while

Section E: Community Practices that People Associate with Cholera Spread

Q19. To what extent do you think the following practices have contributed to the spread of Cholera in your area? (Tick in the appropriate column)

Practices	**Little Extent**	**Moderate Extent**	**Great Extent**
Drinking unsafe water			
Eating unsafe food			
Poor personal hygiene			
Open defecation			

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Q20. What are other practices do you think contribute to the spread of Cholera in this area? ……

Section F; Cholera Prevention

Q21. Do you treat water before using it for drinking? Yes ( ) No ( )

Q22. Which method of water purification do you normally use? (Tick where it is appropriate).

[ ]i. Prefer using boiled water
[ ]ii. Prefer chlorinated water
[ ]iii. There is no need of treated water
[ ]iv. Others
(Specify)…….

Q23. In your opinion, do people in this community use soap for washing hands?

[ ]i. Yes
[ ]ii. No

b) If no, why?

[ ]i. They are not available
[ ]ii. They are expensive /not affordable
[ ]iii. Sheer ignorance

Q24. Does your neighborhood have an effective garbage collection system?
Yes ( ) No ( )

Q25. Do majority of the residents in your area use toilets? Yes ( ) No ( )

Thanks for your Time

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Appendix II: St. Paul's University Letter of Authorization

ST. PAUL'S UNIVERSITY

Private Bag 00217 LIMURU, KENYA
Email: bps@spu.ac.ke
Website: www.spu.ac.ke

Tel Office: +254(0) 20-2020505/10
Mobile: +254(0) 728- 669000
(0) 728- 062420
(0) 736- 424440

BOARD OF POSTGRADUATE STUDIES

22nd February 2017

National Commission for Science and Technology,
P.O. BOX 30623-00100,
Nairobi.

Dear Sir/Madam,

Re: Recommendation for Abdullahi, Halima Gababa to conduct a Masters of Development Studies (MDS) research.

This letter confirms the above named person is a second (final) year student of the MDS Programme at St. Paul's University.

The final year consists of a major research work leading to a dissertation comprising 20,000 words. The student's selected topic is *'Application of Health Belief Model in Cholera prevention: case of Nakuru west sub- County'*

The research will take place in Nakuru County from February 2017 to May 2017.

Kindly grant the student the required permit.

Yours Faithfully,

Dr. Sammy Githuku
Director, Postgraduate Studies

Appendix III: County Commissioner Authorization Letter

THE PRESIDENCY
Ministry of Interior and Coordination of National Government

Telegram: "DISTRICTER" Nakuru
Telephone: Nakuru 051-2212515
When replying please quote

DEPUTY COUNTYCOMMISSIONER
NAKURU WEST SUBCOUNTY
P.O. BOX 81
NAKURU

REF: DCC/WEST/ADM15/18VOL.I/89

15th May 2017

TO WHOM IT MAY CONCERN

RE: RESEARCH AUTHORIZATION
HALIMA GABABA ABDULAHI ID/NO. 12756666

This is to inform you that the above named student has been authorized to undertake her research in Nakuru West Sub-County. The topic for research is "Application of Health Belief Model (hbm) in Cholera Prevention". : Case of Nakuru West Sub-County, Nakuru County.

Please accord her the necessary support.

MARY W. MWANGI
FOR: DEPUTY COUNTY COMMISSIONER
NAKURU WEST SUB-COUNTY

Appendix IV: Research Permit from NACOSTI

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone:+254-20-2213471,
2241349,3310571,2219420
Fax:+254-20-318245,318249
Email:dg@nacosti.go.ke
Website: www.nacosti.go.ke
when replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref. No. **NACOSTI/P/17/67235/15965**

Date: **3rd March, 2017**

Halima Gababa Abdullahi
St. Paul's University
Private Bag
Limuru.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Application of health belief model (hbm) in Cholera prevention: Case of Nakuru West Sub-County, Nakuru County,"*** I am pleased to inform you that you have been authorized to undertake research in **Nakuru County** for the period ending **3rd March, 2018.**

You are advised to report to **the County Commissioner, the County Director of Health and the County Director of Education, Nakuru County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

DR. M. K. RUGUTT, PhD, HSC, OGW
DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Nakuru County.

The County Director of Health
Nairobi County.

National Commission for Science, Technology and Innovation is ISO 9001:2008 Certified

Appendix V: Research Permit

THIS IS TO CERTIFY THAT:
MS. HALIMA GABABA ABDULLAHI
of ST. PAULS UNIVERSITY, 2060-20100
nAKURU,has been permitted to conduct
research in *Nakuru County*

on the topic: *APPLICATION OF HEALTH BELIEF MODEL (HBM) IN CHOLERA PREVENTION: CASE OF NAKURU WEST SUB-COUNTY, NAKURU COUNTY*

for the period ending:
3rd March,2018

Permit No : NACOSTI/P/17/67235/15965
Date Of Issue : 3rd March,2017
Fee Recieved :Ksh 1000



.....
Applicant's Signature

.....
Director General
National Commission for Science, Technology & Innovation

ST. PAUL'S