



**UNIVERSITY OF NAIROBI
COLLEGE OF HEALTH SCIENCES
SCHOOL OF NURSING SCIENCES**

TOPIC

**ESTABLISHING THE SOCIO ECONOMIC FACTORS THAT CONTRIBUTE TO
CHOLERA OUTBREAKS IN TURKANA SOUTH DISTRICT, KENYA.**

**A RESEARCH PROPOSAL SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE AWARD OF THE DEGREE OF BACHELOR OF SCIENCE IN
NURSING OF THE UNIVERSITY OF NAIROBI**

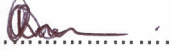
**BY
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JULY 2010

DECLARATION

I Rose Njeri Mwangi hereby declare that this is my original work and it has not been presented for examination purposes in any other university, college or institution to the best of my knowledge.

Signature


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Date

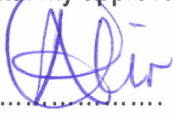
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CERTIFICATE OF APPROVAL

This research proposal has been submitted for examination for the award of degree of Bachelor of Science in Nursing with my approval as a University of Nairobi Internal Supervisor.

Signature.....

Date.....*20th July, 10.*

Mrs. Angeline C.Kirui,
Lecturer,
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DEDICATION

I wish to dedicate this work to my dear parents Mr. and Mrs. Joseph Mwangi, my very loving brothers and sisters as well as my nephews and nieces without whose support I would not have come this far.

ACKNOWLEDGEMENTS

I wish to thank my lecturer Ms. Kivuti-Bitok for equipping me with the necessary skills and knowledge to write this research proposal. I also thank Dan, my classmates especially, Pauline, Larry and Elvis for the support they have offered me in writing this document.

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LIST OF ABBREVIATIONS

TSD-----Turkana South District

WHO-----World Health Organization

SPSS-----Statistical Package For Social Sciences

UON-----University of Nairobi

FMoH-----Federal Ministry of Health

MoHCW-----Ministry of Health and Child Welfare

OPERATIONAL DEFINITIONS

Cholera- Acute diarrheal illness caused by infection of the intestine with the bacterium *Vibrio cholerae*.

Adults- These are human beings over a certain age e.g. 18years as specified by law.(Merriam-Webster's online dictionary)

Epidemic- It is spreading rapidly and extensively by an infection and affecting many individuals in an area or a population at the same time (according to WHO)

Outbreak- A disease occurrence affecting many individuals but restricted to a locale (WHO)

Diarrhoea- Excessive and frequent evacuation of watery feces, usually indicating gastrointestinal disorder. (Farlex free online dictionary)

Indigenous- Originally or occurring naturally in an area or an environment (Farlex free online dictionary)

Vibrio- Any of a group of comma-shaped bacteria in the family Vibrionaceae. Vibrios are aquatic microorganisms, some species of which cause serious diseases in humans and other animals (Encyclopædia Britannica)

Toxin- A poisonous substance especially one produced by bacteria in a living or dead plant or animal body and usually causing a particular disease (Longman dictionary of contemporary English)

Vaccine- A substance used for protecting people against diseases (Longman dictionary of contemporary English)

EXECUTIVE SUMMARY

Cholera is an acute diarrhoeal illness caused by infection of the intestine by the bacterium *Vibrio cholerae*. One gets it by drinking un-boiled water or eating food contaminated with cholera bacteria. It is treated by use of antibiotics and immediate replacement of fluids lost through diarrhoea.

The study is a Cross-Sectional descriptive study aimed at establishing the socio economic factors that contribute to cholera outbreaks in Turkana South District. The sample size is 384 subjects. Study participants are adults in various households and an identified key informant in the district.

Study tools to be used will include Questionnaires for quantitative data and these will comprise of open and closed ended questions. These questionnaires will be self administered for the literate people and the research assistants will assist those who can not read.

To collect qualitative data, an interview guide will be used for a key informant in the TSD hospital.

The Principal researcher will recruit 10 research assistants who will include residents of the TSD who have attained at least form four education. The reason for recruiting assistants from the area is to facilitate communication and translation of information. The data collection tools will be pre tested with 20 of the subjects in Lokichar location which is close to the D.O's office.

Statistical Package for Social Sciences (SPSS) shall be used for data analysis and tables, pie charts and graphs shall be used in data presentation. Dissemination of data shall be done by sending reports to the D.O., policy makers and the hospital superintendent. Abstracts will be given through conferences.

The study will take about nine months beginning January to September 2010 at an estimated cost of Kshs.240, 588.

CHAPTER 1; INTRODUCTION

1.1 BACKGROUND INFORMATION

Cholera is an acute diarrheal illness caused by infection of the intestine with the bacterium *Vibrio cholerae*. Infection is often mild but can be severe at times (New York department of health 2008).

The cholera bacterium produces a toxin which keeps the human body from absorbing liquids. It is one of the most rapidly fatal illnesses known. Untreated individuals may die from severe dehydration within two to three hours (Suttle, 1999).

Symptoms of cholera include profuse watery diarrhea, vomiting and leg cramps. Rapid loss of body fluids leads to shock and without treatment death is likely to occur within hours. (New York department of health 2008) One gets it by drinking un-treated water or eating food contaminated with cholera bacteria. In epidemics the source is feces of infected persons and it spreads rapidly in areas with inadequate treatment of sewage and drinking water. It is treated by immediate replacement of fluids lost through diarrhea. Antibiotics shorten recovery time. (New York department of health 2008)

Prevention of cholera: Two oral cholera vaccines are available: an attenuated live vaccine based on the genetically modified *V. cholerae* O1 strain (Orchol) given as a single dose, and a killed whole-cell *V. cholerae* O1 strain with purified cholera toxin (Dukoral) that provides strong protection with 2 doses given 1–6 weeks apart. (Shears, 2001)

In the recent past a number of outbreaks have occurred commonly in Turkana. A number of factors have been highlighted to be associated with it. These include the climate, culture and low literacy levels among the Turkana people (Cogan, 2006).

The district is hot and dry for most part of the year. Average rainfall in the plains is about 300-400 mm falling to less than 150mm in the arid central parts. Rainfall is erratic and unreliable and famine is a constant threat. The urban population has no real economic alternatives for survival. There is a lack of employment opportunities and unavailability of adequate development funds, thus most of the people in urban centers and settlements have to be provided with famine relief food. Due to low productivity of the rangelands and the high variation of rainfall, pastoralists are forced to move frequently to exploit the available resources between the seasons (Cogan, 2006).

Tukana South has an estimated population of more than 200,000 thousand people, 70% of this population is nomads and therefore the concentration of this district population is always determined by rainfall, water and grass (Cogan, 2006).

The population density varies between one and seven persons per square km with a sex ratio of male/female 92:100. This low population density is due to the harsh environment conditions. Many deaths can occur due to raids and drought (which leads to famine and lack of water and pasture for the livestock).(Cogan, 2006)

1.2 PROBLEM STATEMENT

Despite the government intervention by increasing drugs supply, cholera outbreaks keep recurring in Turkana South District. .Treatment alone is not adequate in prevention and control of Cholera. Lifestyle factors including social and economic factors could be the underlying problem responsible for this recurrence.

1.3 OBJECTIVES

1.3.1 Broad Objective

To establish socioeconomic factors that contributes to cholera outbreaks in Turkana South District in Kenya.

1.3.2 Specific Objectives

- i. To establish the social factors that put people at risk of getting infected with cholera in Turkana South District.
- ii. To establish the economic factors that increase chances of cholera outbreaks in Turkana South District.
- iii. To find out the levels of awareness about cholera among the people of Turkana South District

1.4 RESEARCH QUESTIONS

- I. Do Social factors influence the occurrence of outbreaks in Turkana South District?
- II. Do Economic factors influence the occurrence of outbreaks in Turkana South District?

III. What are the levels of awareness about Cholera among the people in Turkana South District?

1.5 STUDY JUSTIFICATION

No data is available so far about the established socio economic factors influencing Cholera outbreaks in Turkana South District.

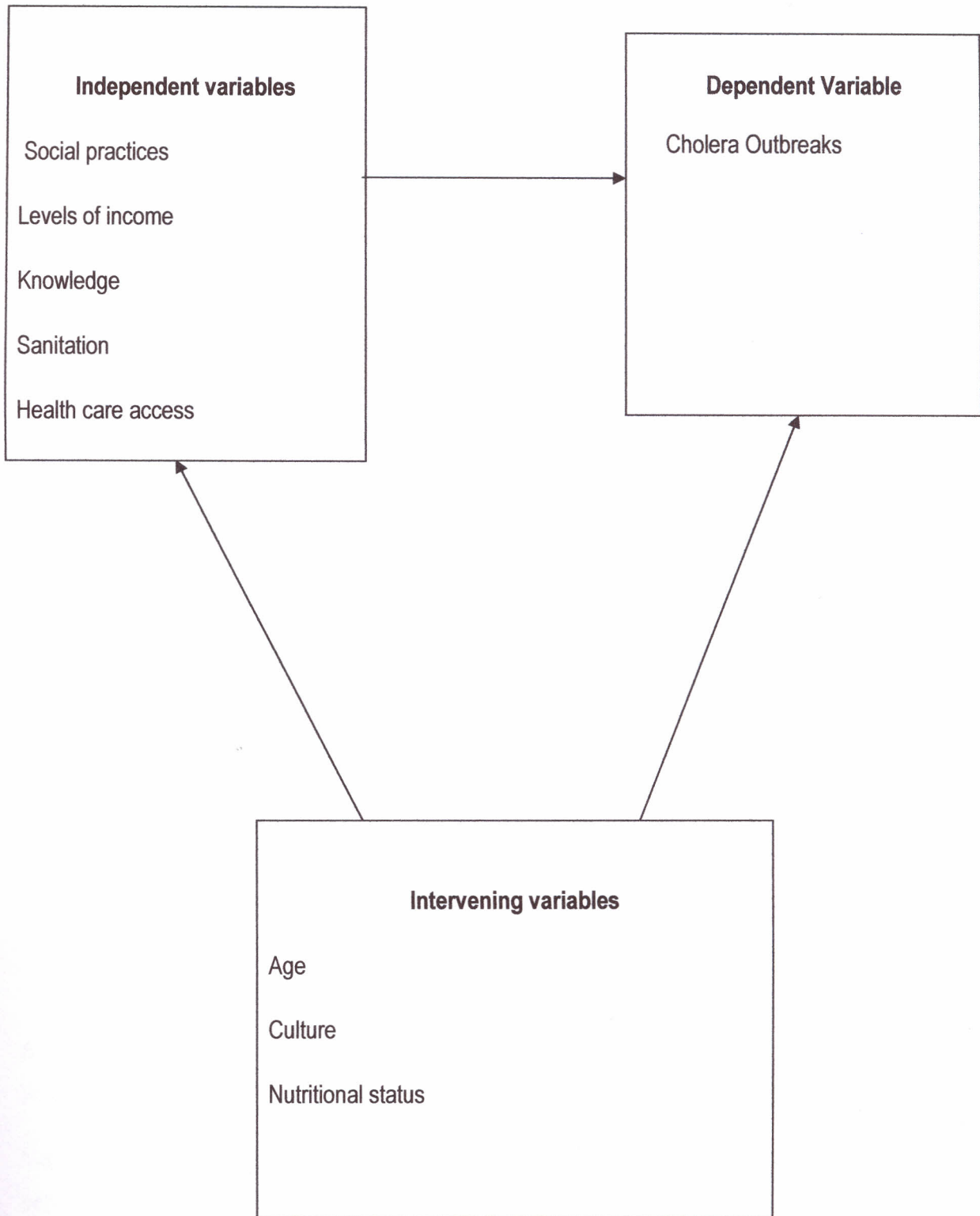
1.1 HYPOTHESIS

Socio-economic factors have no influence on the occurrence of cholera outbreaks in Turkana South District.

1.7 STUDY BENEFITS

The study results will be necessary to assist the health administrators and policy makers to design appropriate measures against Cholera outbreaks in Turkana South District.

1.8 CONCEPTUAL FRAMEWORK



CHAPTER TWO; LITERATURE REVIEW

Cholera is one of the most feared clinical entities on earth. Outbreaks in India have been well documented since the early 1800's, in which hundreds of thousands of people became ill. Many of those who got sick went on to die. The organism responsible for this serious diarrheal disease was most likely present in human populations on that subcontinent well before the British arrived there. One of the first documented epidemics of cholera occurred in 1817 along the coastal region near the mouth of the Ganges River. Cholera now has a world wide, with many people dying each year. Most deaths from cholera can be avoided if adequate medical care were made available. . (Suttle, 1999).

The bacterium is controlled by chlorination of water and by waste water management. Of course, the less developed nations with their less developed water and waste systems are more at risk of outbreaks than the more developed nations. Natural disasters can greatly heighten the cholera risk by damaging the water and waste water systems (Suttle, 1999).

The origin of Cholera was the Bengal area in India ,it then spread west across Asia.It has been a killer disease in Asia for over 1,000 years but the first of a series of seven pandemics arrived in Europe in 1817 (Gerry, 2009).

Since the first epidemic, cholera has been occurring in different parts of the world over and over again as is shown below.

The first confirmed case of cholera in Britain occurred in September 1831 when William Sproat of Sunderland contracted the disease .Over the next 30 years or so, Britain was invaded by four of the pandemics of cholera that had spread from Bengal since the early 19th century and suffered epidemics in 1831-1832, 1848 -1849, 1853 - 1854 and 1866 (Snow, 2002) .

The cholera disease struck England in October of 1831 and quickly spread across the kingdom. Over the next two years, thousands died from this disease (Sharon, 2004).

A second epidemic struck England in 1848 to 1849, killing between 50,000 and 70,000 in England and Wales. A third outbreak in 1854 left over 30,000 people dead in London alone (Sharon, 2004).

Major epidemics struck the United States in the years 1832, 1849, and 1866. There were smaller epidemics between the major ones.

1832: New York City: over 3,000 people killed.

New Orleans: 4,340 people killed.

1833: Columbus, Ohio.

1834: New York City.

1848: New York City: more than 5,000 killed.

1848-9: Major nationwide epidemic.

Memphis Tennessee

1849: New York

1851: Coles Co., Illinois, The Great Plains, and Missouri

1865-73: Major nationwide epidemics.

Baltimore, Memphis, Washington DC - Cholera.

Baltimore, Memphis, New York City, Philadelphia, and Washington DC: recurring epidemics of cholera, scarlet fever, smallpox, typhus, typhoid, and yellow fever.

(Smoot, 2002)

To evaluate recent trends in cholera in the United States, surveillance data from all cases of laboratory confirmed toxigenic *Vibrio cholerae* O1 and O139 infection reported to the Centers for Disease Control and Prevention between 1995 and 2000 were reviewed. Sixty one cases of cholera, all caused by *V. cholerae* O1, were reported. There was 1 death, and 35 (57%) of the patients were hospitalized (Steinberg, et al., 2001).

In 2007 there was an epidemic of cholera in Iraq with 4667 cases. The first case in Baghdad was diagnosed on 19 September 2007 and the last case on 13 December 2007. In all, 136 cases were reported (2.9% of the country total) in 6 of the 13 districts of Baghdad (Khwaif, 2010).

An outbreak of Cholera in South Africa in 2007 killed 44 people in two months. 29 of those deaths occurred in South African's eastern Mpumalanga province, 11 in Limpopo province, 3 in Guateng and 1 in southafrican Kwa zulu-Natel province. (Richardson, 2007).

In West Africa in 2005, a wave of cholera outbreaks in countries like Burkina Faso, Guinea, Niger, Guinea Bissau and Senegal, affected more than 45 000 people and killed more than 700 prompted the World Health Organization to issue urgent advice to its member countries. Seasonal factors, such as the rainy

season along with the population movements in the area contributed to this unusually high incidence of Cholera (Zarocostas, 2005).

In Zimbabwe as of 30/05/09, 98 424 suspected cases including 4276 deaths (case fatality Rate Of 4.3%) had been reported by the Ministry of Health and Child Welfare MoHCW of Zimbabwe since August 2008.55 out of the 62 districts in all 10 provinces were affected.(MoHCW of Zimbabwe, 2004).

In Sudan between 21 April and 18th June 2006, the Federal FMoH had reported a total of 2007 cases including 77 deaths in 9 out of 15 states in Northern Sudan. The overall Case fatality Rate bin this period was 3.8%. A taskforce under the Ministry of Health of The Government of southern Sudan implemented measures to contain the outbreak by strengthening the surveillance and reporting system, standardizing case management and promoting health education and hygiene, with chlorination of public water supplies. (FMoH of Sudan, 2006).

In Kenya, An outbreak of watery diarrhea in April 2005 in Kakuma camp saw 422 people infected, 418 were treated and recovered while 4 died. *Vibrio cholerae* 01 was isolated in 33patients (Shultz, 2009).

In 2008 in Nyanza there were 750 infections and 45 deaths. In the same year there were 1200 cases reported in Rift Valley, Northeastern and Western provinces (Sharif, 2008).

In November 2009, 4700 cases were reported in Kamiti Prison; 20 of the inmates died and 50 were treated and recovered (Osugo, 2009).

In early October 2009, at least 29 people died of cholera and hundreds more were being treated for cholera-related symptoms such as acute watery diarrhea (AWD) in the larger Turkana District in the northwest and in the eastern regions of Garbatulla and Laisamis, say health officials. The regions are not only facing an acute water shortage, due to a prolonged drought, but also have poor latrine coverage (Lucheli, 2010).

On 15th march 2010, Six people were reported dead due to cholera in a period of 2weeks in Turkana District. The situation is said to have been compounded by Government move to withdraw medical personnel due to lack of allowances (Lucheli, 2010).

2.1 The Cholera Organism

First isolated, cultured, and characterized by Robert Koch in Germany in 1883, the organism is a comma-shaped, flagellated, gram-negative bacterium, *Vibrio cholerae*. In fact, it was Koch's work on cholera that led the way to firmly establishing the germ theory of disease, and helped convince the medical community as to the microbial nature of this devastating clinical condition (Medical ecology organization, 2004).

In the laboratory, it can be easily grown at 37°C on blood agar, as well as on selective media such as thio-citrate-bile salt-sucrose. There are many 16 strains of *V. cholerae*, and the 01 and 0139 strains are the most lethal. While *V. cholerae* is the best characterized of these agents, several other species of *vibrio* can also cause significant disease (Medical ecology organization, 2004).

Pathological strains produce clinical symptoms and signs, the most common one by far being a protracted, watery diarrhea. Yet, despite the fact that human populations are routinely infected with it, *V. cholerae*'s natural habitat is not our small intestine, since most infections last for only several days, and the carrier state in humans is extremely rare. It was well into the 21st century before its fundamental niche was revealed to be the estuary, a narrow ecological region known as an ectone (Reidl, 2002).

2.2 History

Cholera is one of the most feared clinical entities on earth. Outbreaks in India have been well documented since the early 1800's, in which hundreds of thousands of people became ill. Many of those who got sick went on to die. The organism responsible for this serious diarrheal disease was most likely present in human populations on that subcontinent well before the British arrived there. One of the first documented epidemics of cholera occurred in 1817 along the coastal region near the mouth of the Ganges River. Cholera now has a world wide, with many people dying each year. Most deaths from cholera can be avoided if adequate medical care were made available. . (Suttle, 1999).

Cholera spread rapidly throughout the world after the 1817 epidemic, largely due to the inadvertent transport of bilge water, mainly from British ships, but others too, acquired in the Bay of Bengal that contained the organisms. Dumping the contaminated water into their own port cities upon arrival home seeded the local waters with it and insured the eventuality of an outbreak. It then rapidly moved throughout Europe and into Russia. (Suttle, 1999).

The French were the ones who brought it to the New World, and in 1832, it spread south from Montreal and caused an enormous epidemic in New York City. In 1855, a wave of cholera ravaged the citizens of some parts of London. Thousands became ill and died before the medical detective work by John Snow identified the Broad Street water pump as the single point source of that outbreak. His classical maps showing where people who became sick lived convinced him that the only possible source of the infection was the water pump. This landmark study established the epidemiological review of cholera that has endured until quite recently. In London on the corner of Broadwick (formerly Broad) stands the John Snow pub, a fitting commemorative honoring the site on which these historic events unfolded. (Suttle, 1999).

Today, all patrons of the John Snow can enjoy a pint of local ale, and even more importantly, a refreshing glass of crystal clear, pathogen-free water. Since 1961, there have been seven major cholera pandemics (The global spread of cholera during the seventh pandemic, 1961-1971 [sources]), affecting millions of people living in South America, Africa, Europe, and Asia. To fully appreciate its biology, one must take into account data collected from many different scientific disciplines. Ecology, molecular biology, microbiology, epidemiology, pathology, and long range sensing all have supplied critical pieces of information, which, taken together and integrated, forms a comprehensive body of knowledge as to how cholera enters the human population and what factors regulate its occurrence within the estuary. Thus, cholera is a perfectly suited topic for illustrating the usefulness of the Medical Ecology paradigm. (Suttle, 1999).

Typically, the first clinical cases of any new outbreak occur in communities situated on or near an estuary. Although this fact was known for at least since the 1800s, it was not considered essential to the natural history of the disease. In fact, its ecological role, once revealed, surprised even those who resolutely suspected that it was essentially an organism that occupied a fundamental niche outside the human host, but could not prove it. (Reidl, 2002).

2.3 Culture of the Turkana Community

They are a hardy and determined people. They are a Nilotic people closely related to the Karamojong of Uganda and more distantly to the Maasai of Kenya and Tanzania. They have lived in harsh conditions that became worse in the extended droughts of the late 1970s.

Although it appears to outsiders that they resist change, it may well be because their traditional system of nomadic pastoralism takes fullest advantage of the limited environment in which they live. Neighbouring

peoples include both herders and agriculturalists: El Molo, Samburu, Pokot, Rendille, Borana, Endo-Marakwet. (Orville, 2006)

The Turkana language is close to the Toposa language, and somewhat more distantly related to the Karamojong and Maasai groups. Many speak Swahili, and children with access to schools are now learning English. The level of literacy is uncertain. Literacy programs have been underway in portions of the Turkana people but total numbers are uncertain. (Orville, 2006).

Livestock are central to the Turkana culture and all aspects of their social, political, and economic life revolve around the livestock. Cattle, camels, sheep, and goats are vital to the lives and are the primary source of food. Livestock also play an important role in payment for bride wealth, compensation for crimes, fines for fathering illegitimate children, and as gifts on social occasions. (Orville, 2006).

The majority of the Turkana still follow their traditional religion. Sources on the Turkana commonly report that the Turkana believe in a God known by the name Kuj or Akuj, who is associated with the sky and is the creator of all things. God is called upon in times of need but little concern is given to whether he answers or how (Orville, 2006).

The pragmatic Turkana are aware of the limitations and difficulties imposed by a harsh environment and they follow appropriate social and pastoral techniques to deal with them. They resort very little to the supernatural but depend primarily on known religion, including Christianity. (Orville, 2006).

2.4 SOCIO ECONOMIC FACTORS AND THEIR INFLUENCE ON CHOLERA

The association of cholera outbreaks with socio economic status in the various studies could be related to a high number of socio economically disadvantaged individuals living in the area or the effect of the characteristics of the area (Gavin, et al., 2005).

In addition, safe disposal of human excreta is still variable in Africa. Primary Health care education programme the installation of improved sanitation facilities and a successful water supply system are all important in the prevention of cholera and unfortunately this is not yet possible in many African countries (Nevondo, 2001).

According to a review of reported cholera outbreaks worldwide from 1995-2005, known risk factors for cholera outbreaks include poverty, lack of development, high population density, low education and lack of previous exposure. An additional risk for cholera is a sudden change in the balance between functional

hygiene/sanitation services (tap water, latrines etc) and the population density (David, et al., 2005). The sudden flux of displaced persons or refugees can overwhelm water and sanitation resources as occurred during the refugee crisis in Goma, the Democratic Republic of Congo in 1994 and numerous other sudden population displacements (David, 2005).

Life in Turkana is generally difficult. Illiteracy, ignorance, diseases, draught and famine, lack of employment opportunities and unavailability of adequate development funds, are some of the factors that compete to make Turkana a poor and dreaded place to live and work in. Besides being poor, Turkana people have limited access to basic human needs such as food, clean drinking water, health care services, housing, education and security. Many people depend on relief food supplied by the non-governmental organizations, churches and sometimes the government (Comboni Missionaries, 2008).

A clean water source, good personal hygiene, and safe waste disposal are essential to preventing epidemics. But these factors are a gigantic challenge for millions of people living in poverty around the world. Thousands of communities in the non-industrialized world simply do not have the resources or infrastructure to maintain these necessities of public health (Gerry, 2009).

A model developed in South Africa known as a spatial fuzzy logic model was used to identify favorable conditions for cholera outbreaks. This model was based on the assumption that the endemic reservoirs of cholera occur and that environmental conditions, especially alga blooms trigger *vibrio* growth in the natural environment. If the pre-conditions are met, the subsequent spread of cholera mainly depends on socio economic factors such as human behavior and access to safe water supply and sanitation (Gavin, 2005).

In lake Victoria basin, it was noted that the specific risk for cholera in the region include drinking water from lake Victoria or from a stream ,sharing food with a person with watery diarrhea and attending funeral feasts (Shipro, 1999). Persistent levels of poverty have made communities in the lake Victoria basin vulnerable to cholera (Olago, 2007).

CHAPTER 3: STUDY METHODOLOGY

3.1 STUDY DESIGN

This is a Cross-Sectional descriptive study aimed at establishing the socio economic factors that contribute to Cholera outbreaks in Turkana South District.

3.2 STUDY AREA

The study shall be carried out in different locations in Turkana South District. This District is located in Rift Valley Province. It is one of the five districts created from the initial Turkana district which was a vast area.

This is a District which is largely occupied by Turkanas who are Nilotes and are mainly nomadic pastoralists. The region has got semi-arid climate, receiving very low amounts of rainfall *per annum*.

Turkana South is made up of four divisions which are Lokichar, Katilu, Kainuk and Loreng'elup.

3.3 STUDY POPULATION

Turkana South District has an estimated population of more than 200,000 thousand people, mainly of the Turkana tribe and a few Pokots living on the western border. (Cogan, 2006).

The population density varies between one and seven persons per square km with a sex ratio of male/female 92:100. This low population density is due to the harsh environment conditions. Many deaths (clarify) occur due to raids and drought which leads to famine and lack of water and pasture for the livestock (Cogan, 2006).

The study population shall include all adults who reside in Turkana South who meet the eligibility criteria for selection.

3.4 SAMPLE SIZE DETERMINATION

The following formula shall be used to calculate the sample to be included in the study;

$$n = \frac{Z^2 Pq}{d^2} \quad (\text{Fischer, 1995}).$$

where n = required sample size if population is more than 10 000

Z= standard normal deviate at required confidence level

P=the proportion of the target population estimated to have characteristics being measured

Q= 1-P

d= level of significance set

If no estimate is available in proportion of target population assumed to have characteristics of interest,50% should be used. This is as recommended by fisher et al

Therefore:

$$\begin{aligned}n &= \frac{1.96^2(0.5*0.5)}{0.05^2} \\ &= \frac{19.208}{0.0025} \\ &= 384.16\end{aligned}$$

A total of 385 residents

3.5 SAMPLING METHOD

Multi-stage sampling method shall be used, whereby different sampling methods shall be used as appropriate.

1st stage- Purposive sampling shall be used to pick two divisions whereby each division gives 192 subjects. The most affected divisions are the ones to be picked. From each division, four locations shall be picked by use of convenience sampling as well.

2nd stage- Simple Random sampling shall be used to pick 2 villages from each location whereby each village will have 24 subjects.

3rd stage- Systematic sampling shall be used per village to determine the households to get specific number of subjects. One person per household; preferably the head of the household;Who meets the eligibility criteria will be selected and shall be issued with a questionnaire

3.6 ELIGIBILITY

3.6.1 INCLUSION CRITERIA

- a) Adults in the region who are aged 20-50 years old.
- b) All adults in the region who consent to be freely interviewed.
- c) They must be of sound mind

3.6.2 EXCLUSION CRITERIA

- a) All those who are outside the set age bracket of 20-50 years old.
- b) People diagnosed to have mental disorders.
- c) Those who do not consent to take part in the study.

3.7 DATA COLLECTION INSTRUMENTS

Questionnaires and interview guides shall be used to collect data. Questionnaires shall involve both open ended and close ended questions about the research subject. Focus will be on the social economic issues that contribute to outbreaks of cholera in this region as well as the level of awareness about cholera.

Qualitative data shall be collected using interview guides for key informants who will be health workers in Turkana district hospital with focus on TSD hospital superintendent, Chief Nursing Officer of TSD Hospital and Public Health Officer of the district. This shall be used to complement information from the other study subjects.

The questionnaires shall be numbered to make it easier for clarification during analysis but will not have provision for the respondents' names to ensure confidentiality.

3.8 RESEARCH ASSISTANTS SELECTION AND TRAINING

Research assistants will include 10 residents of the TSD who have attained at least form four education.

The ten will have a four day orientation on the study and utilization of the study tools and about ways of asking questions in interviews to enhance consistency and reliability of data collected.

3.9 PRETESTING OF THE STUDY TOOLS

The study tools will be pre tested in Lokichar location, which is the one nearest to the D.C's office. This will be done by both the principal investigator and research assistants. The pretest will enable necessary corrections in the study tools to be pointed out and before the actual implementation. The research assistants in the process will acquire the necessary skills as well as learn methods and techniques of handling study participants.

3.10 ASSUMPTIONS OF THE STUDY

- (a) That the respondents shall be cooperative
- (b) That the respondents shall give accurate information
- (c) That permission to carry out the research shall be granted by all the necessary authorities.

3.11 DATA MANAGEMENT AND ANALYSIS.

For the quantitative data collected by use of questionnaires, SPSS shall be used to analyze.

The qualitative data i.e. key informant interview, the responses shall be critically evaluated.

3.12 QUALITY CONTROL CHECKS

Collected data will be assessed for completeness and consistency to ensure its reliability. If there are any questionnaires whose data is incomplete, inconsistent or unclear as well as unclear information from the key informant interview, it will be discarded or that part of information will be left out during analysis.

3.13 PRESENTATION AND DISSEMINATION OF RESULTS

Table, graphs, and pie charts will be used to display results. A written report will be disseminated to the area administration, policy makers (Ministry of Health) as well as the hospital superintendent.

Findings in abstracts shall be communicated during conferences.

3.14 ETHICAL CONSIDERATIONS

Permission to conduct the study shall be sought from relevant authorities that is, university of Nairobi and K.N.H Joint Ethics and Research Committee and the District Commissioner of TSD, before embarking on the study.

Informed consent from the research subjects shall be sought. Therefore the subjects will be given a full explanation on what the research is about.

Subjects shall be assured of anonymity and confidentiality. No names therefore shall appear on the questionnaires.

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APPENDIX1:GHANT CHART

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT
Proposal writing	■								
Pre visit						■			
Proposal Approval						■	■		
Study assistants selection & training							■		
Tools pretest							■		
Data collection								■	■
Data analysis & report writing									■
Presentation and feedback									■

NB; Each small square represents a week.

APPENDIX 2: BUDGET

ITEM	UNIT	QUANTITY	UNIT COST (Kshs)	TOTAL COST (Kshs)
A: Stationery				
Foolscaps	Reams	1	350	350
Duplicating papers	Reams	1	400	400
pens	Pieces	10	20	200
pencils	Pieces	10	15	150
rubbers	Pieces	10	15	150
folders	Pieces	10	50	500
SUB TOTAL				1,750
B: Services				
proposal typing	pages	43	5	175
proposal printing	pages	43	3	105
photocopying	copies	5x400	2000@sh 2	4000
binding(spiral)	booklets	5	100	500
report typing	pages	3	80	240
report printing	pages	10	5	50
report binding	booklets	10	3	30
questionnaire	pages	3	80	240
accommodation	days	40	250	10000
vehicle(hire)	days	2	5000	10000
SUB TOTAL				25,340

C:Personnel				
Research trainers	Days	2	1200x2	4800
Research assistants	Days	42	280x10	117600
Training venue(hire)	Days	2	1000	2 000
Consultant	Days	2	3000	6000
Principal investigator	Days	40	1000	40000
Driver	Days		3000	3000
SUB TOTAL				173,400
TOTAL				200,490
Contingencies(20% of the total)				40,098
GRAND TOTAL				240,588

APPENDIX 3: PARTICIPANTS CONSENT FORM

My name is Rose Njeri, a fourth year student in the school of Nursing Sciences at the University Of Nairobi .I am conducting a research on the socio economic factors that contribute to cholera outbreaks in Turkana South Kenya.

The purpose of this study is to provide information on how socio economic factors contribute to cholera outbreaks hence recommend actions that can be taken to curb this problem. This study depends on your honest responses so that it can be successful.

Participation in this study is voluntary and the purpose of the form is to obtain your consent. You are not obliged to answer any questions you do not feel comfortable to do so. Your name shall not appear anywhere and you are asked not to put it down. Your responses shall be held with utmost confidentiality and shall only be used for the purposes of the study.

If you wish to participate in this study, please circle yes or put a thumb print against the option of choice:

(a) YES (b) NO

Thanks in advance.

Respondent's signature.....Date.....

Yours faithfully,

Mwangi R. Njeri

Mobile 0720 695 432

Email: njerinyachomba@hotmail.com

APPENDIX 4: QUESTIONNAIRE

**STUDY ON THE SOCIO ECONOMIC FACTORS CONTRIBUTING TO CHOLERA OUTBREAKS IN
TURKANA SOUTH DISTRICT, KENYA.**

INSTRUCTIONS

- i. The questionnaire consists of 4 sections.
- ii. Answer only the questions that are applicable to the respondent.
- iii. Circle only the most correct response(s) or write down the answers in the space provided.

1. DEMOGRAPHIC INFORMATION

1.1 Sex of the respondent

- i. Male
- ii. Female

1.2 How old are you?

- i. 18-24 yrs
- ii. 25-30 yrs
- iii. 31-36 yrs
- iv. 36-42 yrs
- v. 43-48 yrs
- vi. Over 49 yrs

1.3 Residence – Village

Location

Division

1.4 What's your marital status?

- i. Never married
- ii. Divorced
- iii. Separated
- iv. Widowed
- v. Others specify.....

1.5 How many children do you have?

- i. None
- ii. 1-2
- iii. 3-4
- iv. 5-6
- v. Others specify.....

1.6 What's your nationality?

- i. Kenyan
- ii. Other specify.....

1.7 What's your household composition?

HOUSEHOLD MEMBER	AGE IN YEARS	GENDER	
		MALE	FEMALE

2. SOCIAL FACTORS AND LEVEL OF AWARENESS

2.3 What was your highest level of education ?

- i. None
- ii. Primary
- iii. Secondary
- iv. College
- v. University
- vi. Others specify.....

2.9 Who is the head of your household?

- i. Myself
- ii. My children
- iii. My parents
- iv. My children
- v. My siblings

2.10 Who decides when you have to go to the hospital?

- i. Myself
- ii. My parents
- iii. My children
- iv. My siblings
- v. A relative
- vii. Friends
- viii. Others specify.....

2.4 Who takes care of you when you are sick?

- i. Parent
- ii My sibling(s)
- iii. Spouse
- iv My child(ren)
- v. Relatives
- vi. Friends
- Vii. Others specify.....

2.5 What is cholera?

.....

.....

.....

.....

2.6 How can cholera be prevented?

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

2.7 Are dispensaries/hospitals available near you?

- i. Yes
- ii. No

2.8 How far is the closest Dispensary/Hospital to your home?

- i. 0-1 km
- ii. 2-5 km
- iii. 6-10 km
- iv. More than 10 km

2.11 Are there alternatives of places where you can seek medical attention?

- i. Yes
- ii. No

2.12 If yes which ones are they?

- i. Private clinics
- ii. Traditional medicine
- iii. Herbal drugs
- iv. Other public facilities
- v. Others specify.....

2.13 Do you seek treatment in these institutions?

- i. Yes
- ii. No

2.14 If no, why?

- i. Low quality services
- ii. Too costly
- iii My religious beliefs
- v. Others, specify.....

2.15 What is the available source of drinking water?

- i. Tap
- ii. Well
- iii. Dam
- iv. River
- v. Others specify.....

2.16 How far is this source of water to your home?

- i. 0-5 km
- ii. 6-10 km
- iii. More than 10 km

2.17 Is this available water source shared with the animals?

- i. Yes
- ii. No

2.18 Do you boil water before drinking?

- i. Yes
- ii. No

2.19 If no, why?

- i. There is no need to
- ii. Fuel is unavailable for that
- iii. It takes too much time

2.20 Do you cook meat before consumption?

- i. Yes
- ii. No

2.21 If no, why?

- i. My beliefs don't allow that
- ii. There is no need to
- iii. Fuel is not available
- v. It takes too much time?

3. ECONOMIC FACTORS

3.1 What is your major economic activity?-----

3.2 How much is your monthly income?

- i. Less than 5000
- ii. 5001-10000
- iii. 10001-20000
- iv. More than 20000

3.3 Is this the usual income of the household for the last six months?

- i. Yes
- ii. No

3.4 If no what other income is available?

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

3.5 How much money in Kenya shillings is used by the household on an average month?

(including, food, shelter, clothing)

- i. Less than 1000
- ii. 1000-3000
- iii. 3001-6000
- iv. 60001-9000
- v. Over 10000

3.6 What is the average cost of one hospital visit?

(Including bus-fare from hospital and hospital charges)

- i. Less than 500
- ii. 501-1000
- iii. 1001-1500
- iv. 1501-2000
- v. 2001-2500
- vi. Over 2500

3.7 Are you a pastoralist?

- i. Yes
- ii. No

3.8 If yes, how many cows do you have?

- i. 1-20
- ii. 21-40
- iii. 41-60
- iv. 61-80
- v. more than 80

3.9 How many camels, sheep and goats do you have?

- i. 0-10
- ii. 11-20
- iii. 21-40
- iv. More than 80

APPENDIX 5: INTERVIEW GUIDE

1. Is there a rise in cholera incidences in the area in the past few years?
2. What could be the contributing factors for the above?
3. What is the socio-economic status of the people in Turkana district?
4. Does socio-economic status impact on the incidences of cholera in the district?
5. What are the factors that lead to the rise of cholera incidences and outbreaks in the area?
6. How does social economic status impact on cholera prevention, diagnosis, surveillance, and management of both individual incidences and outbreaks?

APPENDIX 6: LETTER TO THE U.O.N. AND K.N.H RESEARCH ETHICS COMMITTEE

MWANGI ROSE NJERI,
H32/7194/05,
SCHOOL OF NURSING SCIENCES,
UNIVERSITY OF NAIROBI,
P.O. BOX 30197,
NAIROBI.

TO THE CHAIRMAN,
U.O.N AND K.N.H RESEARCH AND ETHICS COMMITTEE,
P.O. BOX 20723,
NAIROBI.

Dear Sir/Madam,

RE: REQUEST FOR REVIEW OF MY RESEARCH PROPOSAL

I am a fourth year student in the school of Nursing Sciences, University of Nairobi wishing to conduct a study on the socio-economic factors that contribute to cholera outbreaks in Turkana South District.

In reference to the above I am requesting you to kindly review my proposal. Any suggestions, recommendations and corrections will be welcomed.

Thanks in advance.

Yours faithfully,
Mwangi R. Njeri.

APPENDIX 7: LETTER TO THE DISTRICT OFFICER TURKANA SOUTH DISTRICT

MWANGI ROSE NJERI,
H32/7194/05,
SCHOOL OF NURSING SCIENCES,
UNIVERSITY OF NAIROBI,
P. O. BOX 302197,
NAIROBI.

THE DISTRICT OFFICER,
TURKANA SOUTH DISTRICT,
P.O.BOX 01
TURKANA.

Dear Sir/Madam,

RE: PERMISSION TO CONDUCT RESEARCH IN YOUR DISTRICT

I am fourth year student pursuing a Bachelors Degree in Nursing University of Nairobi wishing to conduct a study on establishing the socio economic factors that contribute to cholera outbreaks in Turkana South Kenya.

The study subjects are residents of different locations in your district. The research findings shall be used to give recommendations on what can be done to curb the socio economic factors to reduce cholera outbreaks in Turkana and the country at large.

I therefore kindly request you to grant me permission to proceed with the study in your district.

Attached are copies of the U.O.N and K.N.H Research Ethics Committee approval letter and a copy of the proposal.

Thanks in advance.

Yours faithfully
Mwangi R. Njeri