

**Factors associated with the utilization of health care services among patients with chronic lymphatic filariasis in Goshi location, Malindi Sub-County, Kenya**

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**A thesis submitted in partial fulfillment of the degree of Master of Science in Public Health in the Jomo Kenyatta University Agriculture and Technology.**

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**DECLARATION**

This thesis is my original work and has not been presented for a degree in any other university.

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## **DEDICATION**

This work is dedicated to my beloved wife Caroline Murithi, our son Vierra Mwenda, my mother Cecelia Kajuju for their moral, spiritual and material support throughout this study.

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I am grateful to God almighty who has given me the grace and strength through to the completion of this work.

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## TABLE OF CONTENTS

DECLARATION .....	ii
DEDICATION .....	iii
ACKNOWLEDGEMENT .....	iv
TABLE OF CONTENTS .....	v
LIST OF ABBREVIATIONS .....	x
TERMS USED IN THIS STUDY.....	xiv
ABSTRACT .....	xv
CHAPTER ONE .....	1
INTRODUCTION .....	1
1.1 Background Information .....	1
1.2 Problem Statement .....	2
1.3 Justification .....	3
1.4 Research Questions .....	4
1.5 Objective .....	4
1.5.1 General objective.....	4
1.5.2 Specific Objectives .....	4
1.6 Conceptual framework .....	5
CHAPTER TWO: .....	6
LITERATURE REVIEW .....	6
2.1 Lymphatic filariasis.....	6
2.2 Global burden of lymphatic filariasis.....	7
2.3 Lymphatic filariasis in Africa .....	9

2.4 Transmission of lymphatic filariasis .....	10
2.5 Clinical manifestation of Lymphatic filariasis .....	11
2.6 Diagnosis of lymphatic filariasis .....	15
2.7 Treatment and control of lymphatic filariasis .....	17
2.8 Lymphatic filariasis in Kenya .....	19
2.9 Social economic effect of Lymphatic filariasis .....	20
CHAPTER THREE:.....	22
MATERIALS AND METHODS .....	22
3.1 Study Design .....	22
3.2 Study Site .....	22
3.3 Study Population .....	24
3.3.1 Inclusion Criteria .....	24
3.3.2 Exclusion Criteria .....	24
3.3.3 Sampling Technique .....	24
3.3.4 Sample Size Determination .....	25
3.4 Data Collection methods .....	26
3.4.1 Administered Questionnaires .....	26
3.4.2 In-depth Interviews.....	26
3.4.3 Focus Group Discussions .....	26
3.4.4 Observation Checklist.....	26
3.5 Pretesting of Data Collection Tools .....	26
3.6 Data Management and Analysis.....	27
3.7 Ethical Considerations.....	28

CHAPTER FOUR:.....	29
RESULTS .....	29
4.1. Distribution of study participants.....	29
4.2. Socio-demographic characteristics of patients with chronic lymphatic filariasis .....	30
4.3 Utilization of health care services among patients with chronic lymphatic filariasis in Goshi Location .....	34
4.4 Socio-demographic Characteristics and their Association with Utilization of Health Care Services.....	36
4.4.1 Religion and its Association with Utilization of Health Care Services .....	36
4.4.2 Level of Education and its Association with Utilization of Health Care Services.....	36
4.4.3 Occupation and its Association with Utilization of Health Care Services.....	36
4.4.4 Level of Income and its Association with the Utilization of Health Care Services .....	37
4.5 Social Support and its Association with Utilization of Health Care Services .....	37
4.5.1 Patients perception of available assistance.....	37
4.5.2 Psychological help and its association with utilization of Health Care Services .....	38
4.5.3 Encouragement that the respondents received and its association with utilization of health care services. ....	38
4.3.4 Patient’s feeling due to diseases.....	39
4.3.5 Rejection and its Association with the Utilization of Health Care Services. ....	41
4.3.6 Spiritual intervention and its Association with the Utilization of Health Care Services. ....	42
4.3.7 Disease burden and its Association with the Utilization of Health Care Services.....	42
4.3.8 Fear of others noticing swollen limbs and its Association with the Utilization of Health Care Services .....	42
4.3.9 Support groups and its Association with the Utilization of Health Care Services.....	42

4.4 Physical disability factors and its Association with Utilization of Health Care Services .....	44
4.4.1 Physical disability factors.....	44
4.4.2 Occupation change and its Association with the Utilization of Health Care Services.....	44
4.4.3 Feeling of pain when walking to hospital and its Association with the Utilization of Health Care Services .....	45
4.4.4 Giving up working and its Association with the Utilization of Health Care Services.....	45
4.5 Operational factors and their Association with Utilization of Health Care Services .....	46
4.5.1 Operational factors .....	46
4.5.2 Means of transport and its Association with Utilization of Health Care Services .....	50
4.5.3 Cost of transport and its Association with Utilization of Health Care Services.....	50
4.5.4 Cost of acquiring health care services and its Association with Utilization of Health Care Services .....	50
4.5.5 Time spent during hospital visits and it Association with Utilization of Health Care Services .....	51
CHAPTER FIVE.....	52
DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS .....	52
5.1 Discussion .....	52
5.1.2 Influence of social support on the utilization of health care services.....	54
5.1.3 Influence of operational factors on health care utilization. ....	57
5.2 Conclusions .....	60
5.3 Recommendations. ....	61
5.4 Recommendation for further Research .....	62
REFERENCES.....	63



APPENDIX 1 ..... 80

Consent form..... 80

APPENDIX II A ..... 83

APPENDIX II B..... 94

APPENDIX II C..... 98

APPENDIX II D ..... 104

APPENDIX III ..... 108

APPENDIX IV ..... 109

APPENDIX V ..... 110

## **LIST OF ABBREVIATIONS**

<b>ADL</b>	Adenolymphangitis
<b>ADLA</b>	Acute dermatolymphangioadenitis
<b>DEC</b>	Diethyl Carbamazine Citrate
<b>DHO</b>	District Health Officers
<b>FGD</b>	Focus Group Discussion.
<b>GAELF</b>	Global Alliance to Eliminate Lymphatic Filariasis.
<b>GOK</b>	Government of Kenya.
<b>GPELF</b>	Global Programme to Eliminate Lymphatic Filariasis
<b>ITROMID</b>	Institute of Tropical Medicine and Infectious Diseases
<b>JKUT</b>	Jomo Kenyatta University of Agriculture and Technology
<b>KCSE</b>	Kenya Certificate of Secondary Education.
<b>KEMRI</b>	Kenya Medical Research Institute
<b>Kms</b>	Kilometers
<b>LF</b>	Lymphatic Filariasis
<b>LGA</b>	Local Government Areas
<b>MDA</b>	Mass Drug Administration
<b>MDGs</b>	Millennium Development Goals
<b>MOPHS</b>	Ministry of Public Health and Sanitation in Kenya
<b>MOH</b>	Ministry of Health

<b>NERC</b>	National Ethical Review Committee
<b>NGO</b>	Non-governmental organization
<b>NPELF</b>	National Programme to Eliminate Lymphatic Filariasis
<b>NTDs</b>	Neglected Tropical Diseases
<b>Sq</b>	Square
<b>SSC</b>	Scientific Steering Committee
<b>TPE</b>	Tropical Pulmonary Eosinophilia
<b>US\$</b>	United States of America dollar
<b>WHO</b>	World Health Organization
<b>TDR</b>	Transfer of Development Rights

## List of Tables

<b>Table 4.1</b> Distribution of study participants .....	29
<b>Table 4.2</b> Socio-demographic characteristics of respondents .....	30
Table 4.3 Level of Education of the Study Participants.....	31
Table 4.4 Occupation of the Study Participants.....	32
Table 4.5 Income of the Study Participants .....	32
Table 4.6 Rating quality of health care services offered in hospital .....	34
Table 4.7 Organizations that helps patients seek health care.....	37
Table 4.8 Reasons why the Patients Feared Seeking Medical Care.....	40
Table 4.9 Means of transport used by patients in seeking health care services .....	46
Table 4.10 Cost of transport to seek health care services .....	48
Table 4.11 Number of visits to hospital .....	48
Table 4.12 Duration of the study.....	49

## LIST OF FIGURES

<b>Figure 1</b> Factors associated with healthcare utilization in Goshi location, Malindi Sub-County, Kilifi County, Kenya. ....	5
Figure 2 The Life Cycle of Filarial Nematodes in the Human and Mosquito Hosts (adapted from <a href="http://www.dpd.cdc.gov/dpd">http://www.dpd.cdc.gov/dpd</a> ) .....	11
Figure 3.1 Map of Goshi Location, Malindi Sub-County, Kilifi County .....	23
Figure 4.1 Age distribution of participants .....	33

## TERMS USED IN THIS STUDY

**Chronic lymphatic disease:** disease characterized by hydrocoele, elephantiasis or both hydrocoele and elephantiasis.

**Elephantiasis:** A chronic disease characterized by marked enlargement of the legs and other parts due to obstruction of the lymphatic vessels caused by filarial worms.

**Hydrocoele:** Hydrocoele is a fluid-filled sac surrounding a testicle that results in swelling of the scrotum.

**Lymphoedema:** Involves blockage of the lymph vessels, with a resulting accumulation of lymphatic fluid in the interstitial tissues of the body.

**Microfilariasis:** The pre-larval stage of Filarioidea in the blood of humans and in the tissues of the vector.

**Neglected tropical diseases:** are a group of communicable diseases that are exclusively associated with poor communities, more so in the most remote areas of the Country.

**Lymphatic filariasis:** A parasitic disease of the lymphatic system caused by microscopic thread-like worms.

**Operational factors:** These are factors that interfere with the process or action of seeking medical care services.

**Physical Disability:** Impairment of physical faculties caused by Lymphoedema that may last for an indeterminable period, thus indefinitely preventing the affected person from functioning normally.

**Social-Demographic:** The attributes of people in a particular geographical area.

**Obvious clinical sign:** Participants with swollen scrotum (hydrocoele) and oedematous limbs (lymphoedema)

## ABSTRACT

Lymphatic Filariasis (LF) is caused by *Wuchereria bancrofti*. The clinical manifestations of LF are elephantiasis, hydrocoele and acute filarial fever. The disease causes considerable morbidity to the affected individuals with consequent loss of income and social and psychological stress. Elephantiasis has enormous impact on individuals, families and communities in terms of disease burden, loss of productivity, the aggravation of poverty and high cost of long term care. It causes disfigurement and disability leading to stigma and social discrimination. The main objective of this study was to determine factors associated with the utilization of health care services among patients with chronic lymphatic filariasis in Goshi location. A cross-sectional study using both quantitative and qualitative method of data collection was conducted. 220 patients with obvious chronic LF signs were purposively sampled from all 5 sub-locations in Goshi location for Qualitative data. 18 Opinion Leaders and 4 Focus Group Discussions were held with purposively selected Participants for qualitative data. Cross tabulations was used to test association between factors and utilization health care service among patients with chronic LF. Religious and level of education was found to be significantly associated with utilization of health care services ( $P < 0.01$ ). Respondents had psychological support from community, family and fellow patients which influenced utilization of health care services ( $P < 0.001$ ). Factors such as time spent to get health care services, giving up work, feeling of pain, cost of transport and health services negatively influenced health care utilization. ( $P < 0.05$ ). The result of this study will be used to compliment and add value to the ongoing effort to eliminate LF and control morbidity due to LF in Kenya.





## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background Information

Lymphatic filariasis has been identified as one of the six diseases (among over hundred considered), targeted for elimination based on considerations that human beings are only reservoir of infection (WHO, 1997). Three main options are available for control of LF: Vector control, morbidity control and mass chemotherapy (Ottesen *et al.*, 1997). The use of vector control techniques has enabled the elimination of LF in Japan, Taiwan, Solomon Islands, South Korea and some parts of China (WHO, 1996). Techniques for enhancing the effectiveness of vector control include; the use of insecticide-treated materials (ITMs), bed nets, curtains and indoor residual spraying.

Improved therapies and diagnostic methods have led to the realization that it is possible to interrupt transmission and eliminate LF by repeated, annual cycles of Mass Drug Administration (MDA) (Ottesen *et al.*, 2000). Ivermectin and diethylcarbamazine (DEC) have been the drugs of choice for the treatment of onchocerciasis and LF (Ottesen, 1984). Plaisier *et al.* (1999) have shown that a dosage level of 400 micrograms/kg of ivermectin as a single dose irreversibly reduces mf production by 65%. Beach *et al.*, (1999) in a study, which combined albendazole and ivermectin for the treatment of intestinal helminthes, and *Wuchereria bancrofti* in schoolchildren, reported that combination therapy reduced the prevalence of *Trichuris* and the prevalence of mf more than placebo or ivermectin alone.

Morbidity control aims at reducing the suffering of already diseased persons, making them as functional as possible and preventing the progression of their condition to worse status. The relieving and prevention of suffering and disability is therefore one of the targets of the GPELF (WHO, 1999).

The Tanzania LF Elimination Programme has a number of strategies. These include MDA, lymphoedema management, hydrocelectomy (surgery for scrotal swellings caused by *Wuchereria bancrofti*) and vector control with bednets and the reduction of mosquito breeding sites (Malecela *et al.*, 2009). In the Kenyan program, the same strategy is used which includes; MDA, morbidity control and vector control. Nevertheless an integrated morbidity control programme has not been fully implemented by the Government of Kenya

A study done in Kenya Coast region, shown that 36% of men with hydrocoele were laughed at, while 29% mostly patients with small hydrocoele reported no reaction from the community (Amuyunzu, 1997). From the same study, majority (90%) of persons with lymphoedema and/or hydrocoele believed their disease was incurable.

## **1.2 Problem Statement**

Lymphatic filariasis (LF) constitutes serious impediment to socio-economic development and quality of life. The disease has enormous impact on individuals, families and communities in terms of diseases burden, loss of productivity, the aggravation of poverty and high cost of long-term care. It causes disfigurement and disability leading to stigma and social discrimination (WHO, 2000).

According to National Multi-year Strategic Plan of Action for Control of Neglected Tropical Diseases (NTDs) 2011-2015 in Kenya, health outcomes for the poor in Kenya continue to lag behind than those of the rest of the population. For example villages of Malindi-Sub County where the inhabitants are mainly peasant farmers living in grass-thatched houses with mud walls have a microfilarial prevalence of at least 15 % (Njenga *et al.*, 2008). Swollen legs, disfigured body parts and pain impair mobility preventing individuals from travelling to health care services centres to seek health services and without much assistance from the community, Lymphatic filariasis patients may not be able to seek treatment.

Day-to-day domestic and economic activities are affected resulting in economic loss, which can limit amount of resources needed to seek health care services in hospitals. In villages without health facilities, people have to walk long distances to the health centers and or dispensaries (WHO, 2000) which could hinder utilization of health care. Gender, lymphoedema severity, and the presence of entry lesions are additional risk factors to LF patients and, thus access to health facilities is vital for this people. A study conducted in Malindi Sub-County showed that communities and families frequently shun and reject women and men disfigured by the disease, which impair holistic utilization of health care service (Amuyunzu, 1997). An integrated morbidity control programme to address the 2nd strategy has not been implemented by the Government of Kenya.

### **1.3 Justification**

Chronic LF causes physical disability which could impede individuals from utilizing health care services. Although lymphatic filariasis has devastating effects on the affected communities, it normally does not draw much attention and effort towards its prevention and control in many countries where it's endemic (Ministry of Public Health and Sanitation Kenya, 2011).

This study is in line with the Ministry of Public Health and Sanitation (MOPHS)'s vision to transform Kenya into a nation free from preventable diseases, the Millennium Development Goals (MDGs) and with National Multi-year Strategic Plan of Action for Control of Neglected Tropical Diseases (2011-2015) with the goal of making Kenya free from NTDs through implementation of WHO recommended Public health strategies for the prevention and control of Neglected Tropical Diseases.

An in-depth understanding of the factors associated with the health care services utilization among patients with chronic lymphatic filariasis in Malindi Sub County was important which has a prevalence of 15% to 35% for hydrocoele and 2% to 3% for the lymphoedema (Njenga et al., 2006) and microfilarial prevalence of at least 15 % (Njenga et al., 2008) . Results of the study may serve as a basis for implementation of a

morbidity control programme, which is the second objective of the Global Programme for LF Elimination (GPELF) and will help improve the quality of life of those already disfigured by the disease. The current study sought to determine the factors associated with utilization of health care services among patients with chronic lymphatic filariasis in selected villages of Goshi location, Malindi Sub-County, Kilifi County, Kenya.

#### **1.4 Research Questions**

- a) What is the association between socio- demographic characteristics of patients with chronic lymphatic filariasis in Goshi location Malindi Sub-County, Kilifi County and utilization of healthcare services?
- b) What is the influence of social support on the utilization of health care services among patients with chronic LF in Goshi location Malindi Sub-County, Kilifi County?
- c) What are the operational factors that influence utilization of health care services among patients with chronic lymphatic filariasis in Goshi location Malindi Sub-County, Kilifi County?

#### **1.5 Objective**

##### **1.5.1 General objective**

To determine factors associated with the utilization of health care services among patients with chronic lymphatic filariasis in Goshi location, Malindi Sub-County

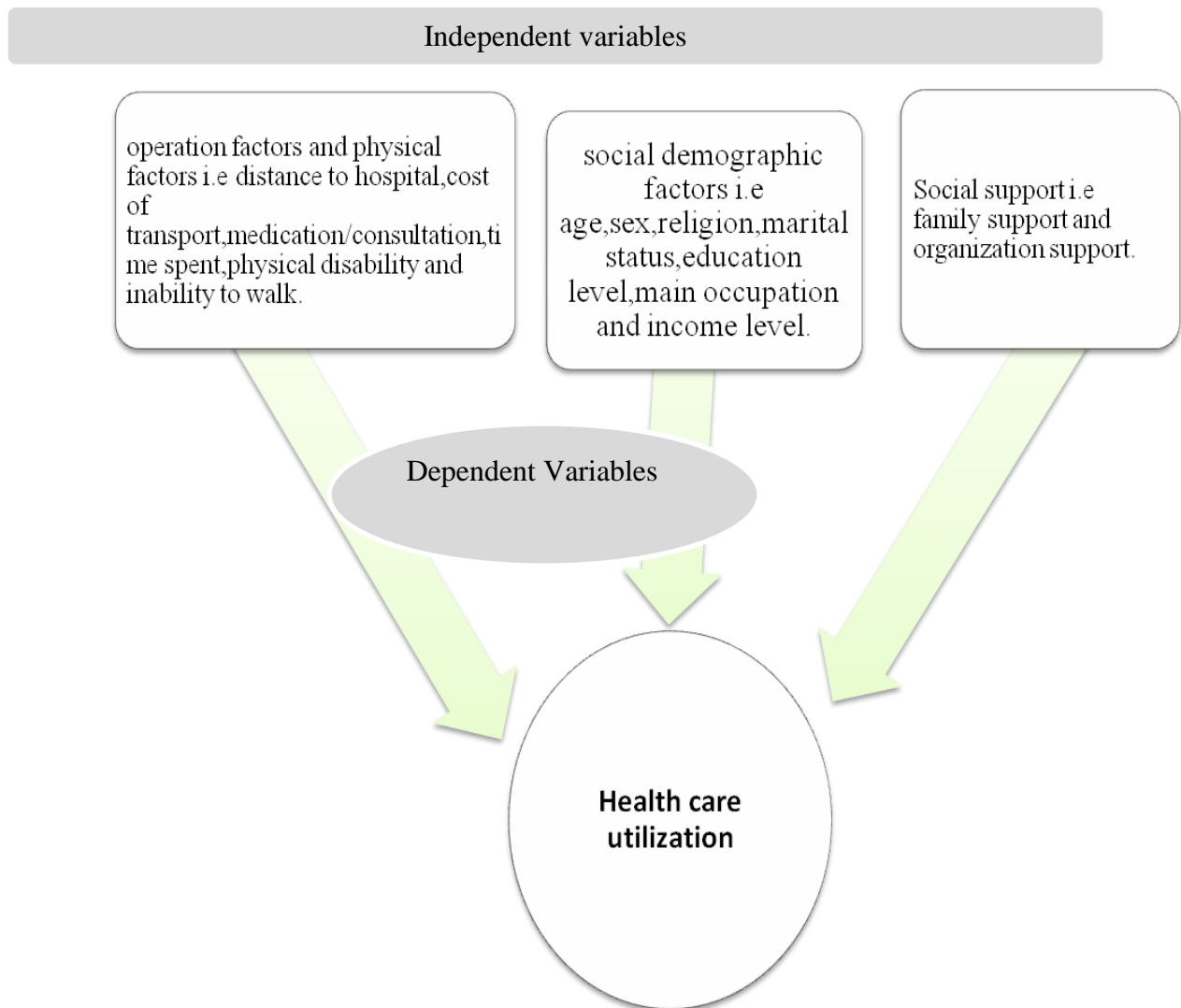
##### **1.5.2 Specific Objectives**

- a) To establish the association of socio-demographic characteristics of patients with chronic lymphatic filariasis in Goshi location, Malindi Sub-County, Kilifi County, with their utilization of healthcare services.
- b) To assess the influence of social support on utilization of health care services among patients with chronic lymphatic filariasis in Goshi location, Malindi Sub-County, Kilifi County.

- c) To identify operational factors that influence utilization of health care services among patients with chronic lymphatic filariasis in Goshi location, Malindi Sub-County, Kilifi County.

### 1.6 Conceptual framework

The conceptual framework of the study is as shown in Fig. 1.1



**Figure 1 Factors associated with healthcare utilization in Goshi location, Malindi Sub-County, Kilifi County, Kenya.**

Source: Murithi, 2012

## **CHAPTER TWO:**

### **LITERATURE REVIEW**

#### **2.1 Lymphatic filariasis**

Lymphatic filariasis, also known as elephantiasis is caused by threadlike parasitic worms of *Wuchereria bancrofti*, *Brugia malayi* or *Brugia timori* species. These worms lodge in the lymphatic system, which is a network of lymph node and vessels maintaining the fluid balance between the tissue and the blood, and an essential component of the body's immune defense system. The worms live for 4-6 years, producing millions of minute larvae (microfilariae) which circulate in the blood (WHO, 1995). According to WHO (1995), hydrocoele is defined as fluid in the scrotum surrounding the testis with an echo free region, varying in size and position. In rare instances, infected individuals may develop tropical pulmonary eosinophilia, which is characterized by nocturnal cough and wheezing, low-grade fever, adenopathy, and high-grade eosinophilia (Ottesen, 1980). Lymphatic filariasis, commonly known as elephantiasis, is a neglected tropical disease. Infection occurs when filarial parasites is transmitted to humans through mosquitoes (WHO, 2002). When a mosquito with infective stage larvae bites a person, the larvae are deposited on the person's skin from where they enter the body. The larvae then migrate to the lymphatic vessels where they develop into adult worms forming 'nests' in the human lymphatic system. The disease manifests as progressive lymphoedema leading to disfiguring elephantiasis in both genders, hydrocoele, predominant manifestation in males, and loss of respiratory function due to tropical pulmonary eosinophilia (TPE) (Pani *et al.*, 1997). Filariasis patients suffer from episodic of adenolymphangitis (ADL), which causes acute suffering and incapacitation (WHO, 1992). The other health problems due to filariasis include renal disease, arthritis, endomyocardial fibrosis (Pan *et al.*, 1997). Lymphatic Filariasis is the second most common cause of long-term disability after mental illness (Ottesen *et al.*, 1997). Acute manifestations directly caused by live adult worms are usually rare. Acute filarial lymphangitis (AFL) is caused by death of the adult worm (Dreyer *et al.*, 1999) and is characterized by lymphangitis that progresses distally or in a 'retrograde' fashion along the lymphatic vessel, producing a palpable

'cord'. Rarely, AFL is accompanied by mild fever, headache, and malaise. Distal lymphoedema may occur, but is usually mild and reversible, that is, self-limited (Dreyer et al., 1999). Acute dermatolymphangioadenitis (ADLA) is frequently associated with Group A Streptococcus bacterial infection. Little is known about the antimicrobial sensitivity of bacteria isolated from persons with ADLA in filariasis-endemic areas. Available experience suggests that the organisms most commonly involved are sensitive to penicillin; thus, penicillin is usually recommended for treatment (WHO, 2006). Patent asymptomatic infection (microfilaraemia) of lymphatic filariasis often leads to acute and then chronic disease and causes severe disability and incurs considerable treatment cost (Ramaiah et al., 1998).

## **2.2 Global burden of lymphatic filariasis.**

More than a billion people are at risk of lymphatic filariasis, which is not a killer disease. The infection is caused by threadlike worms (filarial) which lodge in the lymphatic system, producing millions of minute larvae (microfilaria) that circulate in the blood. Although infection often occurs in childhood, the symptoms are commonly delayed until adulthood (WHO, 2001). Over 120 million people are currently infected with the disease, including about 40 million who are incapacitated and disfigured by the disease. Of all the diseases, lymphatic filariasis is the second leading cause of permanent and long-term disability (WHO, 2001). Therefore, the data on social economic loss due to the disease is important and these data are essential to health managers and policy makers for prioritizing the control programmes and for undertaking advocacy measure (Babu *et al.*, 2002). Asia and the Western Pacific regions endure most of the burden since two out of three cases globally occur in these regions (Hunter *et al.*, 1992).

Lymphatic filariasis is one of the important public health problems in India (Babu et al., 2002). India is the most Lf endemic country in the world (WHO, 2001). Most of the families with LF are nuclear type and live in thatched house. Regarding the behavior pattern related to personal protection from mosquitoes, majority do not use either bed-nets or mosquito (Babu *et al.*, 2002). In same study by Babu *et al.*, (2002) each chronic

disease patient is losing 1.13 productive hours per day, when compared to normal individuals. It means the patient is losing a total of 68 days of work per year, which is equivalent to around 19% of the productivity workdays.

The hydrocoele patients in India know that corrective surgery is available for their sickness but they are not availing because of the cost, loss of work and income during recuperation (Babu *et al.*, 2002). The treatment expenditure is an important economic burden to the patients and their family (Babu *et al.*, 2002).

Lymphatic filariasis does not receive much attention since it is not a fatal disease. Consequently, the individuals with lymphatic filariasis who live in endemic areas suffer and accept the disease as part of life (Lalita, 1996). The urban residents are aware of the chronic forms of LF and know LF is a problem (Rath *et al.*, 2006).

Seven countries in America are considered Lf-endemic: Brazil, Costa Rica, Dominican Republic, Haiti, Guyana, Suriname, Trinidad and Tobago, with 76 million people at risk in the LF-endemic areas. In Haiti, the population at risk for the whole country was estimated at 6 million (WHO, 2001).

Indonesia is home to all three strains of filariasis *Wuchereria bancrofti*, *Brugia malayi* and *Brugia timori*. A rapid assessment survey of lymphedema and hydrocoele undertaken through questionnaires indicated an estimated 150 million people at risk in 20 out of 23 provinces (WHO, 2001).

In Bangladeshi, the population at risk is currently estimated at 34 million (WHO, 2001), and in Sri-Lanka out of a total population of 18.9 million, nine million are considered to be at risk for LF. Eight of the 25 district are endemic and nine are non-endemic (WHO, 2001). In Philippines majority of patients with hydrocoele fail to go for surgery because of the cost involved (Lu *et al.*, 1988).

Despite the greater public health burden of male urogenital disease in lymphatic filariasis, much more attention has been focused to date on management of



lymphoedema of the leg. This is beginning to change, as surgery a programme has been launched in several countries (Addiss *et al.*, 2007)

### **2.3 Lymphatic filariasis in Africa**

Of the 46 countries in the African Region, 39 are LF-endemic. In total, approximately 420 million people are considered to be at risk. Filariasis and onchocerciasis are co-endemic in 28 countries.

The population at risk in Benin is 4.2 million as per 2000 National wide survey. Based on the survey, the following departments were identified as endemic-momo, Oueme, Zou and Atacora (WHO, 2001). In Burkina Faso, initial assessment of the distribution of lymphatic filariasis was completed in 2000. According to the survey finding, which were later confirmed, all 53-health district (implementation units) in the country were endemic. The entire population of the country, estimated at 12 million was considered to be at risk for lymphatic filariasis (WHO, 2001). In Islamic Federal Republic of the Comoros, all the 600,000 inhabitants are considered to be at risk of LF.

In Ghana, mapping for LF was carried out in 2001. The population at risk was estimated to be approximately 6.57 million in 41 district (WHO, 2001). In same country, LF disability severely affects subsistence farming communities causing them to switch to less productive, but less labor-intensive crop and livestock activities (Gyapong *et al.*, 1996). In Togo, the population at risk is estimated to be 1.1 million, distributed in seven prefectures (WHO, 2001). Nigeria ranks third in the world, after India and Indonesia in terms of population at risk, which is estimated at about 80 million distributed in local Government Areas (LGA) (WHO, 2001). In Zanzibar, the entire population of 941,546 is considered to be at risk of LF (WHO, 2001). In Cameroon, 7-10 million of the total populations of 15.5 million are at risk of lymphatic filariasis.

In Malawi studies in adults by Ngwira *et al.*, (2002) revealed a prevalence of 11.7% of hydrocoele and 1.0-3.7% of lympoedema in areas of 28-58% antigen positivity. The figures for Tanzania mainland show that 34 million people are at risk of infection and it

is estimated that 6 million people have debilitating manifestations of the disease (Malecela *et al.*, 2009).

#### **2.4 Transmission of lymphatic filariasis**

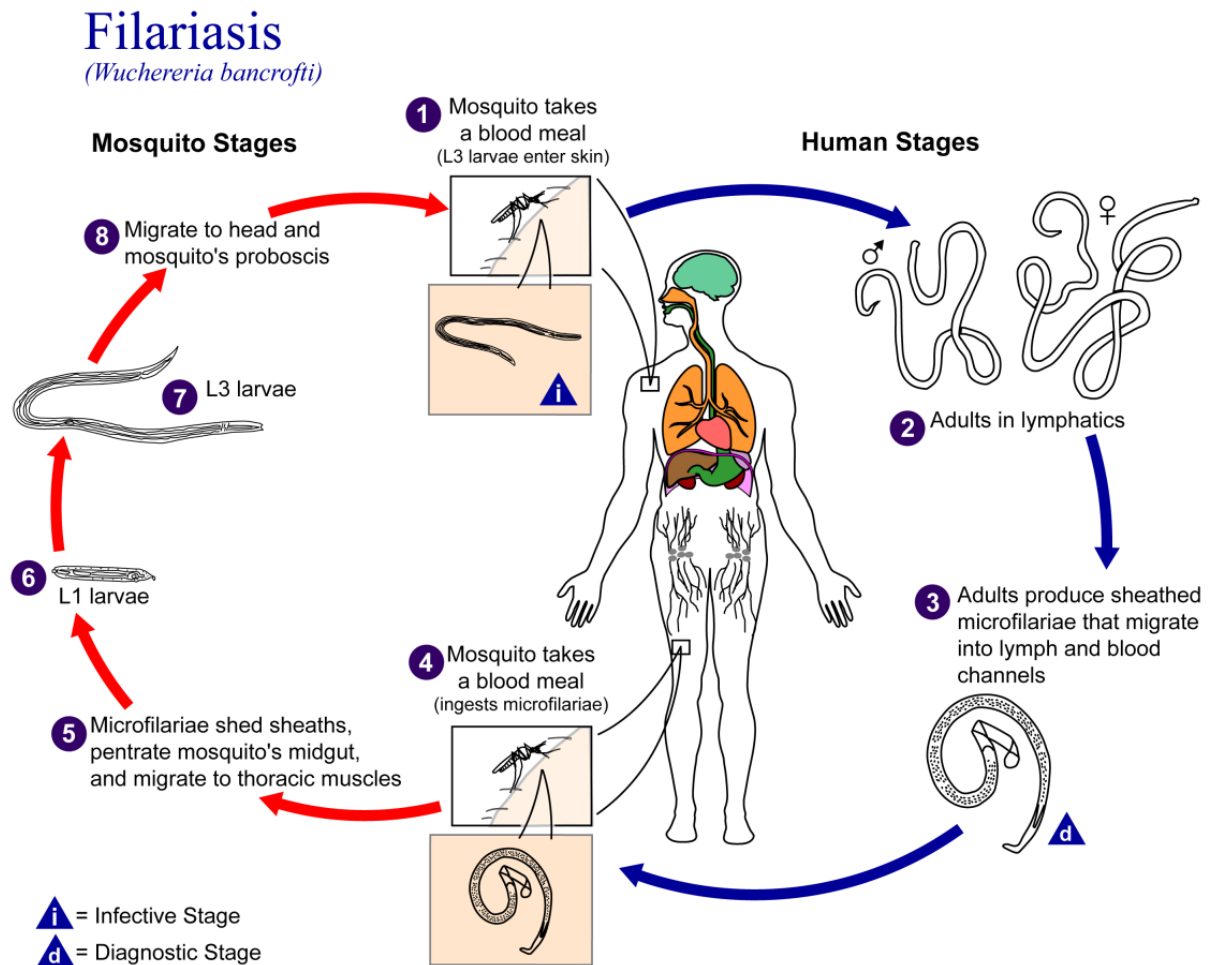
Mosquitoes transmit the disease, but reservoir of infection is 90% human. The mosquito bites an infected person and picks up the microfilariae which develop inside the mosquito into the infective larvae, in a process that usually takes 9-12 days. The larvae then migrate to the biting mouth parts of the mosquito, and enter the punctured skin of the person who is next bitten by the mosquito (WHO, 1995).

In most endemic countries, transmission of the parasite occurs at night by the female *Culex* and *Anopheline* mosquitoes through the process of taking a blood meal from individuals infected with paired adult worms which produce millions of microfilariae (mf) (Burton, 1963).

Nanduri and Kazura (1989) have shown that the infective larvae locate the mouthparts, and are deposited onto the skin adjacent the bite wound during consumption of a subsequent blood meal. Infective larvae migrate through the subcutaneous tissues of the lymphatic vessels. The worms develop into mature adults in about 1 year, and soon after copulation begin shedding microfilariae. The longevity of the adult worm measured by the continuous production of microfilariae is estimated at 5-8 years (Babu *et al.*, 2003).

what triggers the change from one to another is an ongoing debate in filarial research, but there is a lot of evidence to suggest that filarial driven immunological changes and lymphatic obstruction, although they undoubtedly play a part, are not as important in the evolution of chronic lymphoedema and elephantiasis as once thought (Melrose, 2002). During World War II, clinical and pathologic studies of soldiers with adenolymphangitis and other early clinical manifestations demonstrated the importance of *Wuchereria bancrofti* adult worms or 4th-stage larvae (Wartman *et al.*, 1944). Among persons born and raised in areas endemic for bancroftian filariasis, episodes of acute filarial

lymphangitis (AFL), due to death of the adult worm or 4th-stage larva, are less severe and have less systemic involvement than Acute dermatolymphangioadenitis (ADLA) (Addiss *et al.*,2007).



**Figure 2 The Life Cycle of Filarial Nematodes in the Human and Mosquito Hosts (adapted from <http://www.dpd.cdc.gov/dpd>)**

### 2.5 Clinical manifestation of Lymphatic filariasis

Lymphatic filariasis can cause a broad range of clinical manifestations, varying from people with no obvious clinical disease to those with lymphedema and/or severe

disfigurement of the extremities and genitalia. The wide spectrum of clinical manifestations is because of the complicated immunopathology of the diseases (Das et al., 1996). There is a huge potential of overlap in these symptom complexes, although an individual may also experience each at different times during his or her lifetime. Dysfunction will occur due to; inflammation, excretion/secretion of parasite product and mechanical obstruction of the flow of lymph (Nutman, 2009). The clinical manifestations of lymphatic filariasis may be categorized as follows: asymptomatic microfilaraemia (microfilaraemia but no recognizable clinical manifestations) and acute manifestations (episodic attacks of adeno-inflammatory nodules in breast, scrotum or sub-cutaneous tissues) (Lalita, 1996).

Hydrocoele is the most common clinical manifestation of bancroftian filariasis in endemic regions (Noroës, 2010; Dreyer, 2006). It manifests clinically as swelling of the peritoneal lining that surrounds each of the testicles. Usually, clear straw-coloured hydrocoele fluid accumulates in this closed sac because of blockage in the lymphatic draining in the retroperitoneal and sub diaphragmatic areas (WHO, 1992). The fluid may have milky appearance caused by the presence of lymph, a condition known as chylocoele. The adult *Wuchereria* are often lodged in the lymphatic of the spermatic cord causing scrotal damage and swelling (Mussner *et al.*, 1997). In advanced cases, it can become very large (grape fruit or coconut size). Increase in size coincides with number of attacks of funiculitis (WHO, 1992). The main clinical characteristics of hydrocoele are; headache, fever, swelling of the scrotum, pain and tenderness of the scrotum. The scrotal area can become very hot and in some instances, there could be leakage of lymphatic fluid through the scrotal skin (Gyapong, 2000).

Elephantiasis begins as lymphoedema, which is the first permanent sign of chronic lymphatic filariasis. The legs, scrotum, arms, penis, vulva and breasts are affected usually in that order of decreasing frequency (WHO, 2000). In the initial stages, the swelling can best be observed around the ankles, which gradually spread to the back of

the foot, about three times the original size. The hallmark of elephantiasis is thickening of the skin and fibrosis of the underlying tissue (Connor *et al.*, 1986), which results from lymphatic obstruction. Affected tissues first become oedematous and then develop proliferative dermal changes with subsequent dermal and subcutaneous fibrosis (Pfarr *et al.*, 2009).

The level of lymphoedema is graded according to following standard criteria (WHO, 1992)

Grade 1 – Oedema spontaneously reversible on elevation

Grade II – Oedema not spontaneously reversible on elevation, skin not thickened.

Grade III – Oedema not spontaneously reversible on elevation, skin thickened.

Grade IV – Oedema not spontaneously reversible on elevation, skin thickened with warty/nodular, papillomatous growths.

Adenolymphangitis (ADL) is the most common acute presentation. It is characterized by; Fever and painful lymphadenopathy in the groin and axillae. Affected areas become; painful, tender, red and swollen usually because of superimposed bacterial infection. It occur several times in a year and more so in rainy seasons, when the moisture between toes increases, leading to fungal infections which damage the skin, allowing worms to invade. Each episode of ADL enhances the development of lymphoedema (WHO, 1998). Recurrent ADL episodes result in significant short-term disability, and are of much greater concern to patients than is lymphoedema (Dahl, 2001).

Bacteria most frequently associated with ADL are Group A *Streptococcus* (Olszewski *et al.*, 1994). Risk of ADL is increased by; age, alcoholics, malnutrition, hypertension, diabetes, chronic cardiac and pulmonary disease (Dreyer *et al.*, 2002). Involvement of the genital lymphatic appears exclusively with *W. bancrofti* infection. Asymptomatic persons may have an ADL episode that lasted 4 to 7 days, with approximately one to

three recurrences per year. However, in persons with pre-existing lymphatic disease of the affected extremities, episodes of ADL tend to be more severe and of longer duration. Filarial fever may occur as an episode of acute fever in the absence of inflammation of the lymphatic. In endemic areas, filarial fever may be confused with other febrile manifestations, especially malaria. Epidemiological context and laboratory findings often are supportive of the diagnosis (Dahl, 2001).

Acute filarial lymphangitis (AFL) is caused by death of the adult worm (Olszewski, 1996). AFL is characterized by lymphangitis that progresses distally or in a 'retrograde' fashion along the lymphatic vessel, producing a palpable 'cord'. Rarely, AFL is accompanied by; mild fever, headache, and malaise (Dreyer *et al.*, 1999). Acute filarial lymphangitis (AFL) appears to trigger the onset of lymphoedema less frequently than it does hydrocoele, and persistent lymphoedema following AFL is unusual in the absence of other co-factors (Dreyer *et al.*, 2000)

Tropical pulmonary eosinophilia (TPE) is a form of occult filariasis which present with the following symptoms; Paroxysmal dry cough, scattered wheezes, crackles in both lungs, dyspnoea, anorexia, malaise, weight loss, lymphadenopathy and hepatomegaly (Pfarr *et al.*, 2009). It is characterized by immunological hyper-responsiveness of the human host to the parasite especially microfilariae. Tropical pulmonary eosinophilia affects more males than females (4-to-1 ratio), and the majority of cases have been reported in Southeast Asia, Pakistan, India, Sri Lanka, Brazil and Guyana. Administration of diethylcarbamazine (DEC) leads to significant improvement in symptoms and an important decrease of eosinophilia as well as IgE. If not treated, TPE may progress to restrictive lung disease with interstitial fibrosis (Olszewski, 1996).

Chyluria symptom is as a result of obstruction or physiological impairment of the renal lymphatic, along with the passage of lymph into the genitourinary track. Patients may occasionally pass urine with a milky appearance. Chyluria may have serious nutritional

consequences because large quantities of fat and protein are lost in the urine (Dreyer *et al.*, 1999).

## **2.6 Diagnosis of lymphatic filariasis**

Diagnosis of LF is achieved through a combination of sound epidemiological history, clinical findings and laboratory tests. Clinical history of recurrent fever associated with adenolymphangitis is strong indicative of lymphatic filariasis and constitutes a syndrome that is usually well known to the inhabitants of endemic areas. The presences of scars at typical location (over the inguinal and epitrochlea lymph nodes) support the diagnosis of LF. Definitive diagnosis can be made by detection of circulating filarial antigen (for *Wuchereria bancrofti* infection only), demonstration of microfilariae or filarial DNA in the blood, or of adult worms in the lymphatic (Amaral *et al.*, 1994).

Microscopic detection of microfilariae (mf testing) is a diagnostic option that provides data on infection prevalence and parasite density (Desowitz *et al.*, 1974). This method requires proper sampling of populations, preparation of smears, staining and microscopy. However, mf testing is labour intensive and requires collection of blood at night in endemic areas (Xu *et al.*, 1997).

Ultrasonography can test live adult worm, this help to locate and visualize the movements of living adult filarial worms of *Wuchereria Bancrofti* in the scrotal lymphatic of asymptomatic males with microfilaraemia. The constant thrashing movement of the adult worms in their ‘nests’ in the scrotal lymphatic is described as the ‘filaria dance sign’ (Amaral *et al.*, 1994). The lymphatic vessels lodging the parasite are dilated and this dilation is not seen to revert to normal even after the worms are killed by diethylcarbamazine administration. Ultrasonography is not useful in patients with filarial lymphoedema because living adult worms are generally not present at this stage of the disease. Similarly, ultrasonography has not helped in locating the adult worms of *B. malayi* in the scrotal lymphatic since they do not involve the genitalia (Shenoy *et al.*, 2000).

Lymphoscintigraphy can assess the structure and function of the lymphatic of the involved limbs after injecting radio labeled albumin or dextran in the web space of the toes, the structural changes are imaged using a gamma camera. Lymphatic dilatation, dermal back flow and obstruction can be directly demonstrated in the oedematous limbs by this method. This method has shown that even in the early, clinically asymptomatic stage of the disease, lymphatic abnormalities in the affected limbs of people harboring microfilaria may occur (McCarthy *et al.*, 2006; Freedman *et al.*, 1994).

Immunochromatography test using binax now® filariasis test ICT card test has shown to be a useful and sensitive tool for the detection of *Wuchereria bancrofti* antigen and is being used widely by lymphatic filariasis elimination programs to collect 100µl blood by finger prick using a calibrated capillary tube or measure 100µl of blood from a micro centrifuge tube using a micropipettor. Blood sample is added slowly to the white portion of the sample pad and wait for 10 minutes then the results is read in 10 minutes otherwise false positive result may be obtained. The test is considered positive when both lines (test and control) are read through the visualization window. Any line (light or dark) appearing in the test position indicates that the result of the test is positive; it is negative when the control line can be seen (Abraham *et al.*, 2009).

Enzyme-linked immunosorbent assays (ELISA) in test soluble extracts of microfilaria and infective larva or adult worms is used for diagnosis. A positive reading is obtained in 93-100% of subjects living in endemic areas, those with microfilaraemia as well as those with clinical evidence of filariasis (Lim *et al.*, 1984). Antigen testing is now recognized as the method of choice for detection of *W. bancrofti* infections. Unlike tests that detect microfilariae, antigen tests can be performed with blood collected during the day or night. However, existing enzyme-linked immunosorbent assay (ELISA) tests for filarial antigenemia are difficult to perform in the field, and this has limited their use in endemic countries (Weil *et al.*, 1997).DNA probes using Polymerase Chain Reaction



(PCR) are high specificity and sensitivity, and are able to detect parasite DNA in humans as well as vectors in both bancroftian and brugian filariasis (Vasuki *et al.*, 2006 & Hoti *et al.*, 2002).

## **2.7 Treatment and control of lymphatic filariasis**

Diethylcarbamazine Citrate (DEC), the drug of choice is an effective microfilaricide (kills microfilaria) and has considerable macrofilaricidal (kills adult worms) (WHO, 1992). In 2000, the World Health Organization (WHO) established the Global Programme to Eliminate Lymphatic Filariasis (GPELF), which has the goal of eliminating lymphatic filariasis as a public health problem by year 2020. The strategy aiming to achieve this goal is twofold. First, interrupt transmission-using combinations of two medicines delivered to entire populations at risk, a strategy known as mass administration (MDA). Second, alleviate suffering and disability by introducing basic measures, such as improved hygiene and skin care, to people with lymphoedema and providing surgery for men with hydrocoele (WHO, 2006).

For patients who continue to experience frequent episodes of ADLA despite basic measures of hygiene and skin care, a prophylactic antibiotic is recommended (Dreyer *et al.*, 2002). The complete treatment recommendations for ADLA include; resting, cooling the affected area to relieve pain, limited thermal related damage to the skin, analgesic to relieve pain, antipyretic to relieve fever, systemic antibiotic and elevation of the affected limb (Shenoy, 2002).

An outpouring of interest and support led to the formation of the Global Alliance to Eliminate Lymphatic Filariasis (GAELF) in 2000, a public private partnership that assists GPELF with advocacy, coordinating partners and mobilizing the resources. Global Programme to Eliminate Lymphatic Filariasis is now part of a comprehensive programme of LF control effort, in which preventive chemotherapy, vector control and morbidity management are currently integrated and delivered as multi-intervention

packages at the global, national and local levels (WHO, 1992). A major goal of the Global Programme to Eliminate Lymphatic Filariasis (GPELF) is to provide basic care for persons who suffer from the major forms of filariasis related morbidity, both acute (inflammatory episodes) and chronic (lymphoedema and hydrocoele) (Addiss *et al.*, 2007). Recognizing the physical suffering, gross disfigurement and consequent socioeconomic impact due to lymphoedema (particularly limbs), and the fact that simple foot hygiene can result in prevention of repeated attacks of acute adenolymphangitis (ADL) and progression of lymphoedema, efforts are being taken to teach patients and their families skin care and simple measures of hygiene (WHO, 2006).

There is no doubt that the introduction of an appropriate hygiene and skin care regimen that patients can practice in their own environment will be most important in providing long term gains in the management of their morbidity (Das *et al.*, 2003). However, realization of this strategy in many communities (living in rural and urban settings) in different endemic countries with wide socio-economic diversity remains a major challenge (Das *et al.*, 2000). Simple intervention packages are in use that has resulted in dramatic reductions in ADLA rates, and improvement in quality of life (Addiss *et al.*, 2007).

Expertise is available for surgical therapy of genital manifestations of filariasis. The most common surgery for hydrocoele is complete excision of the sac. This is done in the belief that the tunica involved has undergone gross pathological changes and would constantly ooze if simply inverted, resulting in complications. For lymph scrotum and penis, reconstruction surgery is done, which gives good results (WHO, 1992).

Basic lymphoedema management involves the following intervention; physiotherapy, hygiene, skin care, exercise, education and manual lymphatic drainage. Physiotherapy uses compressive bandages, compressive garment and manual lymphatic drainage (Pani, 1997). Patient is wrapped with a series of short stretch bandages that can increase lymphatic flow and decrease lymph volume. The goal of the bandaging is to reshape the limb, support the skin, and to prevent re-accumulation (Das *et al.*, 2003).

Manual lymphatic drainage is a technique that consists of a gentle skin stretch to improve absorption and movement of lymphatic fluid (Shenoy, 2002). Patients are educated on self-treatment techniques and encouraged to perform them daily for lymphoedema management. Skin care is important in the prevention of infection and to provide adequate skin hydration (Addiss *et al.*, 2007). Compression pumps may be used in certain situations to facilitate swelling reduction and promote lymphoedema volume reduction for self-maintenance (Twycross *et al.*, 2000).

## **2.8 Lymphatic filariasis in Kenya**

Lymphatic filariasis prevalence in Kenya is approximately 15% to 35% for hydrocoele and 2% to 3% for the lymphoedema (Estimable *et al.*, 1994; Mwobobia *et al.*, 2000; Wamae *et al.*, 2001; Mukoko *et al.*, 2004; Njenga *et al.*, 2006). However, the prevalence and intensity of microfilaraemia varies distinctly between the geographical areas in Coast region (Mukoko *et al.*, 2004).

In the same study the prevalence of hydrocoele increased with age (23.8%) among individuals older than 49 years. Prevalence and intensity of microfilaraemia varied distinctly between the geographical locations in Coast region (Mukoko *et al.*, 2004). Nevertheless, amicrofilaraemic and asymptomatic infections are not included in this estimate and the true number of affected people may even be higher.

A study in Kenya conducted by Amuyunzu, (1997) found out that 36% of men with hydrocoele interviewed responded that they were laughed at, while 29%, mostly patients with small hydrocoele reported no reaction from the community. In non-endemic villages in Ghana, considerable stigma was associated with hydrocoele and lymphoedema, much more than in hyper-endemic villages (Hunter, 1992). In some countries, they believe that hydrocoele has supernatural causes which lead people to seek treatment from traditional healers or sorcerers instead of modern medical care (Gyapong *et al.*, 1996).

According to National Multi-year Strategic Plan of Action for Control of Neglected Tropical Diseases (NTDs) 2011, approximately 3.4 million people are at risk of infection with LF in all districts of Coast Province of Kenya. Before the beginning of the National Programme to Eliminate Lymphatic Filariasis (NPELF), up to 1 million people were estimated to be infected in this region; either having worms in the lymphatic with or without microfilaria in blood or suffering from chronic diseases commonly hydrocoele in males; and limb, scrotal and breast elephantiasis in a few other individuals.

## **2.9 Social economic effect of Lymphatic filariasis**

Lymphatic filariasis is a disfiguring and debilitating disease not well understood in many societies and often carries considerable stigma. Sometimes it's believed that this condition is the result of witchcraft, as a penalty for marital infidelity and others can victimize the effected individuals (Weil *et al.*, 1997). Most patients are often rejected from community activities resulting to psychological conditions. In Kenya, 36% of men with hydrocoele interviewed responded that they were laughed at, while 29%, mostly patients with small hydrocoele reported no reaction from the community (Amuyunzu, 1997). From the same study, majority (90%) of persons with lymphoedema and/or hydrocoele interviewed on the Kenyan Coast believed their disease was incurable.

The economic burden in terms of productivity loss is estimated at \$1.7 billion each year, 83% of which is due to disability in men with hydrocoele (World Health Organization, 2002). The associated condition of the disease makes it difficult for individuals to find and keep jobs because of the disfiguration, disability and social stigmatization. Secondary bacterial and fungal infections alone can cause patients to lose up to 30 working days each year (Gyapong *et al.*, 1996). It is a major cause of disability, social stigmatization, psychosocial and economic reductions in life opportunities, and a major burden on health and hospital resources, especially on account of the costs for surgical intervention (Manson *et al.*, 1987). This disease is a major contributor to poverty, and

programmes to eliminate it will reduce suffering and disability, improve their productive and sexual health (through reduced male genital morbidity (WHO, 1992). Besides the associated disability, it causes economic reductions in life opportunities, and is a major burden on direct health and hospital resources especially through the costs for surgical intervention (WHO, 2000). In Ghana, it is estimated that close to 25 % of surgical operations is for hydrocoele repair in endemic communities (Haddix, 2000).

## CHAPTER THREE:

### MATERIALS AND METHODS

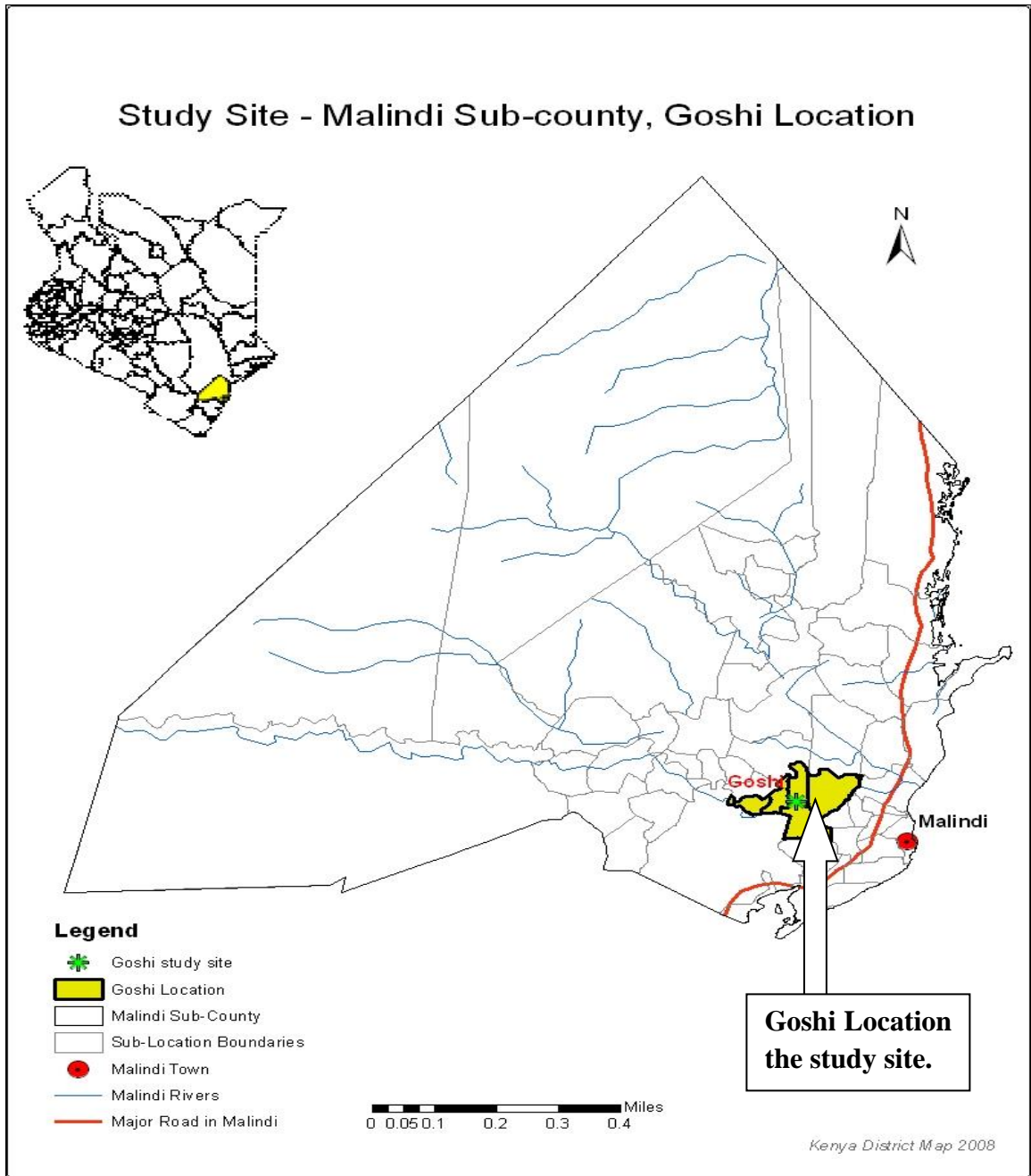
#### 3.1 Study Design

The study design was cross-sectional and utilized both qualitative and quantitative methods for data collection. The study was carried out in September 2013.

#### 3.2 Study Site

The study was carried out in Malindi Sub-County, Kilifi County, Kenya which is in the coastal region of Kenya and lies between 2° 20' and 40' South, and 39° 5' and 40° 14' East, covering an area of 15,500 km<sup>2</sup>. The county comprises the former Kilifi and Malindi-Sub County s. It borders Tana River County to the North, Taita Taveta County to the West, Kwale to the South West, Mombasa County to the South and the Indian Ocean to the East. The county had about 200 000 households (Kenya National Population Census, 2009). Malindi Sub-County was chosen because of high prevalence of Lymphatic filariasis in Kenya is approximately 15% to 35% for hydrocoele and 2% to 3% for the lymphoedema (Mukoko *et al.*, 2004 and Njenga *et al.*, 2006).

The County has a population of 1,134,856 according to the Kenya National Population Census of 2009 with 569,906 male, 611072 female and 191,318 under five years of age. Administratively, Kilifi County has six sub-counties namely; Malindi, Magarini, Ganze, Rabai, Kaloleni and Kilifi/Bahari. The four main livelihoods include; marginal mixed farming (MMF) which comprises 44 percent of the population, ranching (two percent); food cropping (11 %) and cash cropping/dairy (22 percent). Other livelihood zones are fishing and mangrove which comprises of three percent of the population; formal employment (14 %) and forest /tourism and casual labor each of which comprises 2% of the population.



**Figure 3.1 Map of Goshi Location, Malindi Sub-County, Kilifi County**

### **3.3 Study Population**

The study population comprised patients with obvious chronic signs of LF residing in Goshi Location, Malindi Sub-County, Kilifi County, Kenya. The inhabitants are the Giriama of the Miji-Kenda ethnic group and the main communities residing in Kilifi County include seven Mijikenda sub-groups (Giriama, Chonyi, Jibana, Kambe, Kauma, Rabai and Ribe), the Bajuni, Swahili, and people of Arab, Indian and European descent who have permanently settled in the county. (Kenya National Population Census, 2009). The villagers are mainly peasant farmers who grow cassava, maize, legumes and tubers. Coconut is the chief cash crop but it is only produced by a few households. Domestic animals include cows and goats. The area is composed of scattered, mainly grass-thatched houses with mud walls.

#### **3.3.1 Inclusion Criteria**

Patients with obvious chronic signs of LF in Malindi-Sub County and resident in the study area.

The patients who were 18 years and above.

The patients who gave informed consent to participate in the study were included in the study.

#### **3.3.2 Exclusion Criteria**

The study excluded community members below 18 years of age.

Those who did not have obvious signs of LF

Those who declined to give informed consent to participate in the research.

#### **3.3.3 Sampling Technique**

Purposive sampling was used to select 220 participants from all the sub-locations namely; Kakuyuni, Madunguni, Mongotini, Malimo and Paziani sub-locations with help of Chief of Goshi Location and the Assistant Chiefs of the sub-locations. The village elders helped to identify the homes of the study participants who took part in the qualitative arm of the study.



Four Focus Group Discussions (FGD) consisted of a minimum of eight and maximum of 12 participants who were selected purposively by the field workers, village elders and chief. Eighteen in- depth interviews was conducted among opinion leaders (chiefs, sub chiefs, teachers, church leaders and a few selected medical officers) who were purposively selected with the help of village leaders.

### 3.3.4 Sample Size Determination

Fisher *et al.* (1998) formula was used to determine the sample size.

$$n = \frac{z^2 \left(1 - \frac{\alpha}{2}\right) * p (1 - p)}{d^2}$$

**n** = Minimum sample size.

**α** =Level of significance (0.05).

**z**= Standard normal deviate at 95%, confidence interval (1.96).

**p** = prevalence of chronic lymphatic filariasis patients in Malindi-Sub County (20%) (Mukoko *et al.*, 2004)

**d** =Absolute precision (Error margin), (0.05).

Therefore by substitution

$$n = \frac{1.96^2 \left(1 - \frac{0.05}{2}\right) * 0.2 (1 - 0.2)}{0.05^2}$$

$$n = \frac{3.8416 * 0.975 * 0.16}{0.0025} = 214$$

**Hence; n =214** adult patients.

The minimum required sample size is **214**. However, allowing for **10%** non-response the sample size can be adjusted upwards to **235**

### **3.4 Data Collection methods**

#### **3.4.1 Administered Questionnaires**

The study utilized questionnaires, (Appendix II) with both open and closed-ended questions. The questionnaires sought information on the patients' health care services utilization, social demographic factors, physical disability factors and operational factors. Trained field assistants used local language during data collection. For respondents who were not present in the house at the time of the interview arrangements were made to interview them later.

#### **3.4.2 In-depth Interviews**

Eighteen Key informant guide (Appendix III) were used to collect data from eighteen opinion leaders who were; chiefs, sub chiefs, teachers, church leaders and a few selected medical officers in the hospital, all purposively selected.

#### **3.4.3 Focus Group Discussions**

Focus group discussion guides (Appendix IV) were used to collect data from groups consisting of men, women and youth who were relatives of the patients. Four Focus group discussions, each with a minimum of eight and maximum of 12 participants with homogeneous characteristics were conducted. The PI assisted by a trained moderator conducted the FGDs while a trained note taker took the notes. The discussions were recorded on tapes which were later transcribed and then translated from the local language to English.

#### **3.4.4 Observation Checklist**

Observational checklists (Appendix V) were used to capture Lymphoedema characteristics of the patients who took part in the study. This was conducted at the patients' private and convenient places.

### **3.5 Pretesting of Data Collection Tools**

Prior to data collection, desk research, focus group discussions, guide formulation, recruiting the study team and pre-testing of data collection tools was done. Pre-test was done in Matuga Sub-County to test validity and feasibility of the research tools and

capabilities of the research assistance to collect the data. Interviewers and translators with a minimum of academic qualification of secondary school education and conversant with the culture of the area were recruited and trained before actual data collection in order to enable them to get acquainted with the study objectives and data collection tools. Date and time were prearranged with communities to avoid disruption of their normal activities. Participants were informed of the purpose of the research and assured of the confidentiality of their individual responses.

### **3.6 Data Management and Analysis**

Qualitative data collected during the FGD interview was transcribed/ translated into English and typed into MS Word. The data was analyzed manually according to the themes of the study.

Key informant interview was analyzed manually using the content analysis which involved analyzing data to discover patterns, identifying themes, and developing meaningful conclusions. The contents in the data collected was coded and analyzed.

Quantitative data from questionnaires were checked daily for completeness after the interview. At the end of interviews, the responses from closed and open-ended questions were coded for appropriate computer entry. Once data entry was completed, data was cleaned and validated. The data was entered into Epi- info version 6 and analyzed in SPSS version 16. Equivalent responses were pooled to arrange the responses in different categories. Descriptive statistics such as means, frequency distributions, cross tabulations; standard deviations, tables, pie squares, and graphs were used in data presentation. Cross tabulations was used to test association between factors and health care service utilization among patients with chronic LF.

### **3.7 Ethical Considerations**

The study was approved by the KEMRI Scientific Steering Committee (SSC) and the Ethical Review Committee (ERC). Informed written consent was sought from the Sub-District medical officer of health and the local authorities by the principal researcher.

Approval to collect data was obtained from community representative and administration officers i.e. the county commissioner, the Sub-District Officer, the Chiefs, the Assistant Chiefs and village heads before commencement of the study. These leaders were given a detailed explanation about the purpose of the study through set meetings.

The study team sought informed consent from the participants who took part in the study by comprehensively explaining about this research and inviting the willing participants to voluntarily be part of the research.

The participants were explicitly informed that they were free to withdraw from the study at any level of the study, make decisions, ask questions for any clarification and consult any person before and after giving an informed consent (Appendix 1).

## **CHAPTER FOUR: RESULTS**

### **4.1. Distribution of study participants**

A total of 220 participants from five sub-locations namely Kakuyuni, Madunguni, Mongotini, Malimo and Paziani located in Goshi Location Malindi-Sub County were interviewed. Majority (27.7%) of participants were from Kakuyuni Sub-location (Table 4.1). Out of the total participants interviewed 34.1% had swollen lower limbs, 1.4% swollen upper limbs, 6.8%, swollen both limbs, 49.1%, swollen scrotum, 0.5% swollen limbs and other body parts.

**Table 4.1 Distribution of study participants**

Sub-location	Frequency	Percentage
Kakuyuni	61	27.7
Madunguni	47	21.4
Mongotini	46	20.9
Malimo	57	25.9
Paziani	9	4.1

A total of 18 in-depth interviews were conducted with opinion leaders from 5 sub-locations. Ten of the participants were male and eight female. The respondents mean age

was 39, the youngest was 24 years old and the oldest was 56 years old. Majority (6) of respondents were health care worker (nurses, doctors and counselors). While 5 were village elders and 4 social group leaders. All (18) of the respondent were Christians composed of 13 married and 5 single.

#### **4.2. Socio-demographic characteristics of patients with chronic lymphatic filariasis**

On socio demographic characteristics of respondents most (70%) of the respondents were male, 71% were in marital unions, 10% single and 13%, widowed. Regarding religion, over one-half (54.1%) respondents were non-practicing while 41.4% were Christians (Table 4. 2).

**Table 4.2 Socio-demographic characteristics of respondents**

<b>Characteristics</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Sex</b>		
Male	154	70
Female	66	30
<b>Religion</b>		
Christians	91	41.4
Muslims	10	4.5
Non Practicing	119	54.1
<b>Marital Status</b>		
Single	157	71
Married	5	2.3
Separated	7	3.2
Divorced	27	13.2
Widowed		
<b>Type of marriage</b>		
Traditional	180	93.8
Religious	12	6.3

Nearly one-half (47.5%) of the study participants had primary school education while 37.3 %, had not attended any formal school. Only (4.6%) had education level higher than primary (Table 4.3).

**Table 4.3 Level of Education of the Study Participants**

<b>Characteristic</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Level of education</b>		
Primary	104	47.5
Secondary	9	4.1
University	1	0.5
No formal education	82	37.4
Adult literacy	23	10.5

Most (56.4%) of the respondents were peasant farmers, 10.9% were casual laborers, 10.9% small business owners, 4.5% fishermen; the remaining 16.9 % were salaried, housewives, embroidery and wood carving (Table 4.4)

**Table 4.4 Occupation of the Study Participants**

<b>Occupation</b>	<b>Frequency</b>	<b>Percentage</b>
Peasant farmer	124	56.4
Small business	24	10.9
House wife	18	8.2
Casual laborer	24	10.9
Fishing	10	4.5
Salaried	8	3.6
Wood carving	2	0.6
Embroidery	8	3.6
Jobless	2	0.9

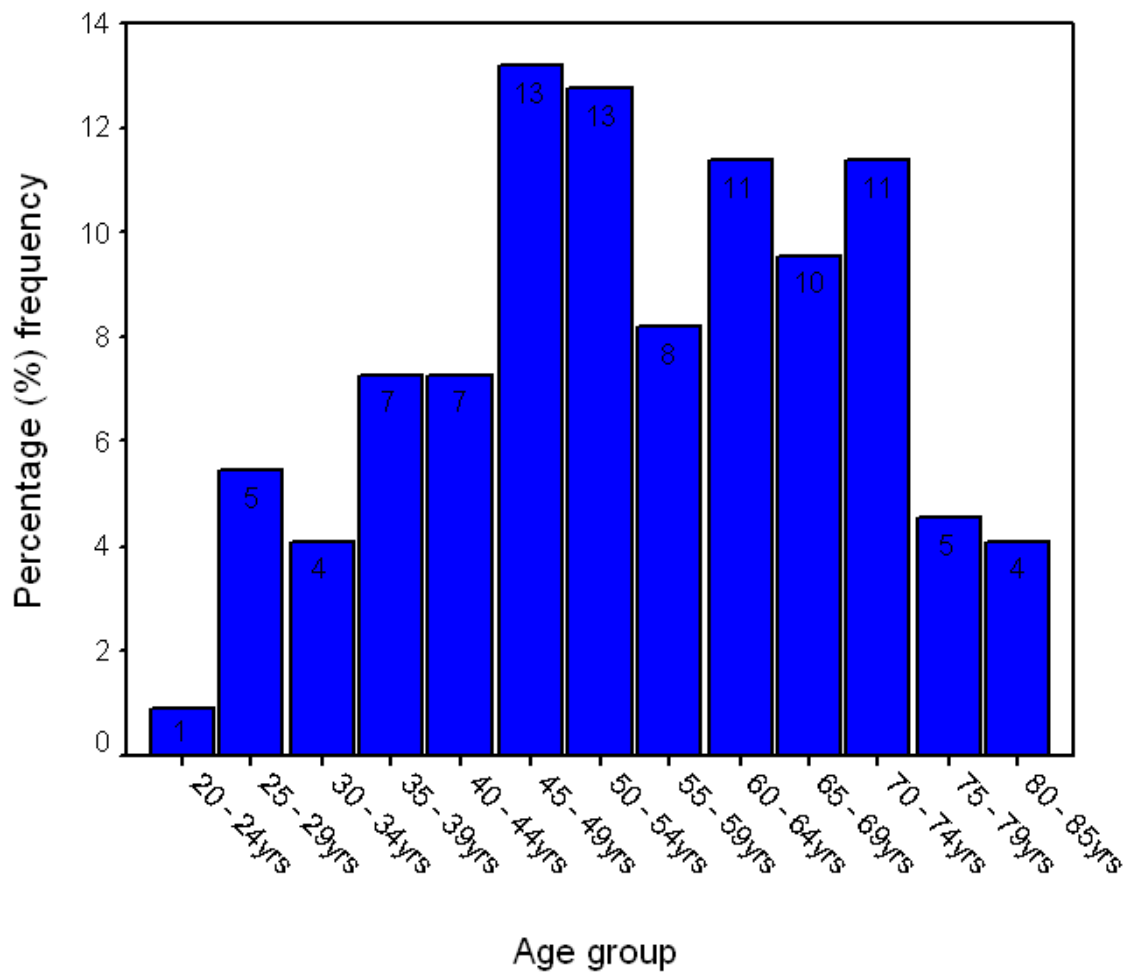
Almost three-fifths (59.5%) of patients earned less than 31.25 \$ per month with only (3.6%) having enough to eat (Table 4.5).

**Table 4.5 Income of the Study Participants**

<b>Participants</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Income level</b>		
<30\$	131	59.5
31\$-357\$	63	28.6
358\$-684\$	1	0.5
Enough to eat	8	3.6
Don't know	7	3.2
Provided by children	3	1.4
No income	7	3.2



The mean age of the participants was 55.15 years, (SD=16.7), median, 54 and mode 60. The youngest interviewed participant was 20 and the oldest 102 years. The mean number of years with which the patients had lived with the disease was 13 years, (SD=11.292), median and mode were 10 while the minimum number of years was 1 and maximum was 50 years (Figure 4.1).



**Figure 4.1** Age distribution of participants

### 4.3 Utilization of health care services among patients with chronic lymphatic filariasis in Goshi Location

Majority (88.6%) of the patients sought medical care services in hospital. The remaining (11.4%) sought treatment from local healers, herbalists, witch-craft and sorcerers by visiting them. Most (97.7%) of patients would be interested to seek health care services in future in order to get treatment.

Slightly less than half (48.2%) rated the quality of health care services offered in hospital as important; as illustrated further in (Table 4.6)

**Table 4.6 Rating quality of health care services offered in hospital**

Rating	Frequency	Percentage
Very important	43	19.5
Important	106	48.2
Moderately important	26	11.8
Little importance	8	3.6
Unimportant	37	16.8

Majority (92.2%) of patients were given drugs when they visited hospitals. They were in most cases given painkillers.

A larger majority from FGD participants knew they could seek medical services for LF from any hospital. “*LF can be prevented through doctors and researchers who are well educated about the diseases*”. Respondent 2 adult male participants FGD. However, none of the respondent in all the FGDs knew that hydrocoele can only be managed by

surgery. About one-fifth (21%) stated that they managed LF by applying cream from the bark of *Mthugu* tree as a form of skin care to prevent infections and keep skin from drying and cracking. *“We use cream from the barks of trees which is special (Mthugu tree)”* Respondent 1, youth male FGD participants.

A larger majority (four fifth) of in-depth interview respondents stated that yearly distribution of drugs e.g. albendazole and diethylcarbazine was the approach used in elimination of lymphatic filariasis in Malindi-Sub County. Other approaches used in elimination of LF that was stated by the minority (one fifth) were; praying to God, hygiene, hospitals, herbalists and witchcraft.

*“There is yearly distribution of drugs and the community at large is informed on how to deal with such kind of disease.”* 56 year old, village elder.

*“I usually see drugs being distributed as well as attending hospitals and going to witchcraft or herbalist.”* 44 year old, village elder.

All the in-depth interview respondents stated that the community was being involved in elimination of LF in Malindi-Sub County ; and a larger majority (nine tenth) stated that it was being done yearly while the minority (one tenth) stated that it was done after two years.

*“Yes, it is done each year to eliminate the disease”* 45 year old, Teacher.

Majority (four fifth) of the in-depth interview respondents suggested that health talks, creation of awareness, mobile hospitals and regular distribution of drugs were the possible means to improve health care utilization among patient with chronic LF in rural communities in Malindi. Minority (two fifth) suggested regular screening of LF patients, regular sensitization on prevention ,regular treatment of LF patients, surgery and more research on LF could be the possible means to improve health care service utilization among patients with chronic LF in rural communities in Malindi. *“Health facilities to be many and experts to come down to the sub-location where the patient can*

*walk short distance to see the doctors. There should be enough time to do research on patients with LF". 45 year old teacher.*

*"Regular screening of patients with LF and possible regular treatment. Holding regular sensitization meetings on the prevention and elimination methods of the disease in the community." 29 years old, Doctor*

#### **4.4 Socio-demographic Characteristics and their Association with Utilization of Health Care Services**

##### **4.4.1 Religion and its Association with Utilization of Health Care Services**

Religion was significantly associated with the rating of health care services ( $P < 0.01$ ). A large proportion (51.2%) of non-practicing and 34.9% of Christians compared to 14% of Muslims rated the quality of health care services as very important.

##### **4.4.2 Level of Education and its Association with Utilization of Health Care Services**

The level of education was significantly associated with rating of health care services ( $P < 0.01$ ). Close to three-fifths (58.2%) of the respondents with higher education (University, secondary and tertiary education) compared to 41.9% with low education level (primary education) rated the health care services highly. Similarly, the level of education was significantly associated with the frequency of utilizing health care services, ( $P < 0.01$ ). Slightly more than half (54.5%) of those respondents with higher levels of education compared to 45.5% with low levels of education visited health facilities more frequently.

##### **4.4.3 Occupation and its Association with Utilization of Health Care Services**

The main occupation of the respondents was significantly associated with the rating of health care services, ( $P < 0.01$ ). Majority (62.5%) and 58% of small business and embroidery respectively rated quality of health care service very important while 75% of those salaried rated the quality of services just as important.

#### **4.4.4 Level of Income and its Association with the Utilization of Health Care Services**

The level of income was significantly associated with the frequency of utilizing health care services, ( $P < 0.01$ ). Sixty seven percent of the respondents with higher incomes of 125\$ compared to 33% with low income of 31.25\$ sought health care services more frequency. Other socio-demographic characteristics, religious and marital status were not significantly associated with the frequency of utilizing health care services ( $P = 0.44$ ) and  $P = (0.422)$  respectively.

#### **4.5 Social Support and its Association with Utilization of Health Care Services**

##### **4.5.1 Patients perception of available assistance**

Majority (93.6%) of the respondents were residing with their family. A high proportion (68.2%) of patients indicated that people living with them encouraged them to seek health care services. Slightly more than two-fifths (41.4%) of the patients received support to seek health care services from a religious charity organization, Mission of Mercy, while 37.9% received support from a humanitarian relief organization such as Kenya Red Cross Society (Table 4.7).

**Table 4.7 Organizations that helps patients seek health care.**

<b>Organizations</b>	<b>Frequency</b>	<b>Percentage</b>
Kenya Red cross	11	37.9
Foreign Doctors	2	6.9
Government	2	6.9
KEMRI	2	6.9
Mission of Mercy	12	41.4

Majority (71.8%) of the patients encouraged fellow patients to seek medical care because of the following reasons; to get medicine (71.4%), to reduce difficulties brought about by diseases (12.2%), being aware of problem associated with condition (11.6%), and sympathizing with the patients 4.8%.

#### **4.5.2 Psychological help and its association with utilization of Health Care Services**

The psychological help based on encouragement that patients received from those around them was significantly associated with the rating of quality of health care services offered at hospital, ( $P<0.001$ ). Most (68.2%) of the patients who indicated that they were encouraged by those around them compared to 31.8% who did not receive any encouragement rated the quality of health care services highly.

#### **4.5.3 Encouragement that the respondents received and its association with utilization of health care services.**

The encouragement that the respondents received from fellow patients was significantly associated with the rating of health care services provided ( $P<0.05$ ). Seventy two percent 72% of the respondents who received encouragement from fellow patients compared to 28.2% who did not receive encouragement rated the health care services highly. Similarly, frequency of visits to hospitals was significantly associated with the respondent's encouraging others with similar chronic disease condition to look for medical care at hospitals ( $P<0.001$ ). Majority (81.8%) of the respondents who received encouragement from fellow patients compared to 18.2% who did not visited the hospital more frequently. However, support received from organizations was not significantly associated with the utilization of health care services ( $P=0.666$ )

The encouragement respondents received from fellow patients with chronic lymphatic filariasis was significantly associated with willingness of patients to continue seeking health care services in future ( $P<0.05$ ). Seventy one percent of patients who received encouragement from fellow patients compared to 28.2% who did not were willing to continue seeking health services.

All the in-depth interview respondents stated that there was improvement in community involvement in elimination of LF in Malindi-Sub County due to awareness activities that had been created. *“There is improvement in the uptake of drugs and for now after the patients were given the medicine and the pain reduced. People are usually resistant but after they were explained on the importance of the medicine they were ready to take the drugs.”* 34 year old, youth leader.

*“After seeing the bad pictures of Matende and Mshipa, people got into fear so they discovered that, if they don't take the drugs they could be the next victims”* 40 year old, Counselor

*“Yes there is improvement since we don't have new cases about the disease and patients do attend hospitals fearlessly”* 56 year old, village elder.

A larger majority of in-depth interview respondents highlighted the following challenges in service delivery; refusal to take drugs due to low understanding on its importance, beliefs that the drugs are for family planning, while the minority stated that transport problem, shyness, fear, poverty, ignorance, claims that the drugs are for the devil and those with disease lacking the drugs. *“The patients refuse to take the drugs due to the propaganda that the drugs that are distributed are for family planning and there are from the devil. Some do not understand the need to take preventive or curing drugs”* 29 years old, Doctor.

*“Some patients feel shy, others are not able to walk to the venues and others did not get the treatment due to large number of patients.”* 56 year old village elder.

#### **4.3.4 Patient's feeling due to diseases**

Majority (91.8%) of the respondents indicated that they did not fear seeking medical services in hospital with more than half (51.2%) indicating that they sought treatment from hospitals. However, 73.4% gave reasons as to why they feared seeking medical care (Table 4.8).

**Table 4.8 Reasons why the Patients Feared Seeking Medical Care**

<b>Reason for Fear</b>	<b>Percentage</b>
Death after injection	26.7
Lack of Funds	20
Fear of the Unknown	13.3
Leaving farm unattended	6.7
Stigmatization	6.7

Most (86.8 %) of those interviewed stated that spiritual intervention only cannot help in sickness without medicine due to the following reasons; Lymphatic filariasis patients can only get cured in hospital after doctors intervention 41.2%, some were not cured after opting to seek prayers intervention in place of worship 22.4% and lastly others never thought of seeking spiritual intervention to get healed (21.8%).

Majority (91.4%) of patients did not experience rejection in their family because of the following; family cooperated with patients nicely 64.1%, rejection was experienced because of bad smell coming from the respondents (33.3%). However those respondents experiencing rejection were given separate utensils (50%) and were laughed at (16.5%).

Almost half (40%) of patients experienced the feeling of being a burden to family members because of following reasons; difficulty in performing normal duties at home (73.8%), being just tolerated by family member (14.3%) incurring expenses in getting medication from health facilities (6%) and always complaining of feeling unwell as a result of disease (3.6%).

About (10%) of the patients experienced diminished marriage prospects due to the sickness because of lack of cooperation from prospective partners ( 36.8%) and bad smell from the body (5.3%). On the other hand majority (90%) experienced successful



marriage because both partners cooperated in their marriage. Minority (13.3%) of the patients experience rejection in social gatherings and events because of the following reasons; difficulty in ambulating to function (43.5%), bad smell from the body (26.1%), laughed at and ignored by people (21.76%) and severe pain (8.7 %.)

Majority (90.5%) of the respondents were not reluctant to attend hospital for fear of others noticing their swollen limbs. The remaining 9.5% were reluctant to seek medical attention because they felt embarrassed and some were laughed at by people because of swollen leg and hydrocoele.

Majority (80%) of the patients thought that forming support groups was necessary to improve health care services because of the following reasons: to get medicine (19.1%), to find solution to their conditions (15.5%), acquire support (6.4%), be encouraged (12.7%) and to improve standard of living (9.5%.

#### **4.3.5 Rejection and its Association with the Utilization of Health Care Services.**

The interest to seek health care services in future was significantly associated with experience of rejection by the family and friends because of the sickness; ( $P < 0.001$ ). Almost hundred percent (93 %) of those respondents who didn't experience rejection in their family compared to 7% who experienced rejection had the interest to seek health care services in future. In addition, the interest to seek health care services in future was significantly associated with rejection at events and gathering because the sickness; ( $P < 0.05$ ). Eighty eight percent of those respondents who didn't experience rejection at the gathering as compared to 11.7 % who experienced rejection had the interest to seek health care services in future.

However, fear of seeking medical care service in hospital; spiritual intervention for the sick; experience of diminished marriage prospect, reluctance to attend hospital for fear of others noticing swollen limbs and forming support groups necessary to improve health care services utilization were not significantly associated with the interest to seek health care services in future.

#### **4.3.6 Spiritual intervention and its Association with the Utilization of Health Care Services.**

The rating of quality of health care services offered in hospital was significantly associated with the thinking that only spiritual intervention without medical care was helpful in sickness; ( $P < 0.001$ ). Sixty seven percent of respondents who did not think only spiritual intervention helps compared to 32.6% who think that only spiritual intervention helps rated the quality of health care services highly.

#### **4.3.7 Disease burden and its Association with the Utilization of Health Care Services**

The frequency of visiting hospital per month was significantly associated with respondents' feeling of being a burden to the family because of the sickness; ( $P < 0.05$ ). Slightly more than half (57.1%) of those respondents who felt being a burden to the family compared to 42.9% of those who didn't feel being a burden to family visited health facilities more frequently. Similarly, the rating of quality of health care services offered in hospital was significantly associated with respondent's feeling of burden to family because of the sickness; ( $P < 0.001$ ). Seventy four percent of those respondents who felt they were a burden to family compared to 25.6% of those who didn't feel so rated quality of health care services highly

#### **4.3.8 Fear of others noticing swollen limbs and its Association with the Utilization of Health Care Services**

The frequency of visiting hospital per month was significantly associated with reluctance to go to hospital for fear of others noticing swollen limbs ;( $P < 0.05$ ). Eighty eight percent of respondents who didn't fear others noticing swollen limbs compared to (11.7%) who feared visited health facilities more frequently.

#### **4.3.9 Support groups and its Association with the Utilization of Health Care Services**

The frequency of visiting hospital per month was significantly associated with thinking that support groups are important to improve health care services utilization; ( $P < 0.001$ ).

Most (85.7%) of respondents who felt support group are importance compared to 14.3% who didn't think support groups are important visited health facilities more frequently.

Fear of seeking health care services in hospital, experience of diminished marriage prospects and getting rejected at gathering were not significantly associated with rating of health care services offered at hospital with; (P=0.683, P=0.620, P=0.143) respectively. Majority of FGD participants indicated the reasons for not seeking health service by the respondents were lack of money, family discrimination, fear and shyness while explaining the condition to physicians , myths that the disease is not for hospital, poor means of transport and being attended by untrained doctors. *“We believe that we cannot use medicine or cannot be injected.”* Respondent4, youth male FGD. *“The distance to the health facilities is long, so we cannot walk since health care facilities are very far and as a result, we remain at home.”* Respondent 5, adults' women FGD.

According to the FGDs participants' opinion; health care utilization can be improved by having more health centers, having special hospitals for LF, door to door distribution of medicine, provision of free operation in government hospitals, proper education on the importance of hospitals, and frequent visit to treat patient and educate people on LF and hydrocoele.

*“Kenya Medical Research Institute should continue to visit the patients and counsel them on the importance of taking medicine and going to hospital.”* Respondent 4, Youth female FGD,

*“We need to be supported by the government and to be taken to hospital for the free operation. We also need to be educated on the importance of medicine.”* Respondent 7, adults' women FGD

#### **4.4 Physical disability factors and its Association with Utilization of Health Care Services**

##### **4.4.1 Physical disability factors**

Nearly half (45.5%) of the patients experienced pain as a result of swollen scrotum, swollen legs and long distance walk which makes them unable to ambulate to hospital.

More than one-third (34.1%) of the patients had changed to less strenuous occupation mainly because of the following; pain (92.5%), recommendation from family members (4.5 %) and bad smell from the body (3%).

About half (48.6%) of the patients emphasized that changing to less strenuous occupation hinder someone from utilizing health services because of lack of money to seek health services and pain. Only ( 2.8%) of patients faced discrimination in hospitals when seeking health care services while most (97.2%) of those who were indiscriminate highlighted that they were accepted and served well.

Slightly more than one fifth (22.7%) of the patients experienced difficulties when performing basic self lymphoedema management tasks. In addition, about (32.7%) of patients experienced difficulties when performing daily duties at home for example fetching water, fetching firewood, cooking, washing cloth, ironing cloth because of pain.

##### **4.4.2 Occupation change and its Association with the Utilization of Health Care Services**

The rating of quality of health care services offered in hospital was significantly associated with changing to less strenuous occupation; ( $P < 0.001$ ). Sixty seven percent of the respondents who changed to less strenuous occupation due to illness compared to 32.6% those who didn't change to less strenuous occupation rated the quality of the health care services highly.

Feeling of pain when ambulating, difficulties in performing basic lymphoedema management tasks and difficulties in performing daily duties was not significantly

associated with rating of quality of health care services offered in hospital; (  $p=0.821$ ;  $p=0.278$ ;  $p=0.262$ ) respectively.

#### **4.4.3 Feeling of pain when walking to hospital and its Association with the Utilization of Health Care Services**

Nearly half (45.5%) of the patients experienced pain as a result of swollen scrotum, swollen legs and long distance walk which makes them unable to ambulate to hospital. The frequency of visiting hospital was significantly associated with the patient feeling of pain when walking to hospital ( $P < 0.05$ ). More than half (57.1%) of those respondents who had no pain when walking to hospital compared to 42.9% with pain visited health facilities more frequently.

Feeling of pain when ambulating, changing to less strenuous occupation, giving up working due to sickness, difficulties in performing basic lymphoedema management and difficulties in performing daily duties were not significantly associated with willingness to seek health care services in future; (  $p =0.797$ ;  $p=0.766$ ;  $p=0.308$ ;  $p=0.879$ ;  $p=0.535$ ) respectively.

#### **4.4.4 Giving up working and its Association with the Utilization of Health Care Services.**

The rating of quality of health care services offered in hospital was significantly associated with giving up working due to sickness ( $P < 0.01$ ). Seventy percent of the respondents who did not give up working due to sickness compared to 30.2 % of those who gave up working rated the quality of the health care services highly.

The frequency of visiting the hospital was not significantly associated with changing to less strenuous occupation, giving up working, difficulties in performing basic lymphoedema management and difficulties in performing daily duties (  $P=0.163$ ;  $P=0.062$ ;  $P=0.438$ ;  $P=0.650$ ) respectively.

## 4.5 Operational factors and their Association with Utilization of Health Care Services

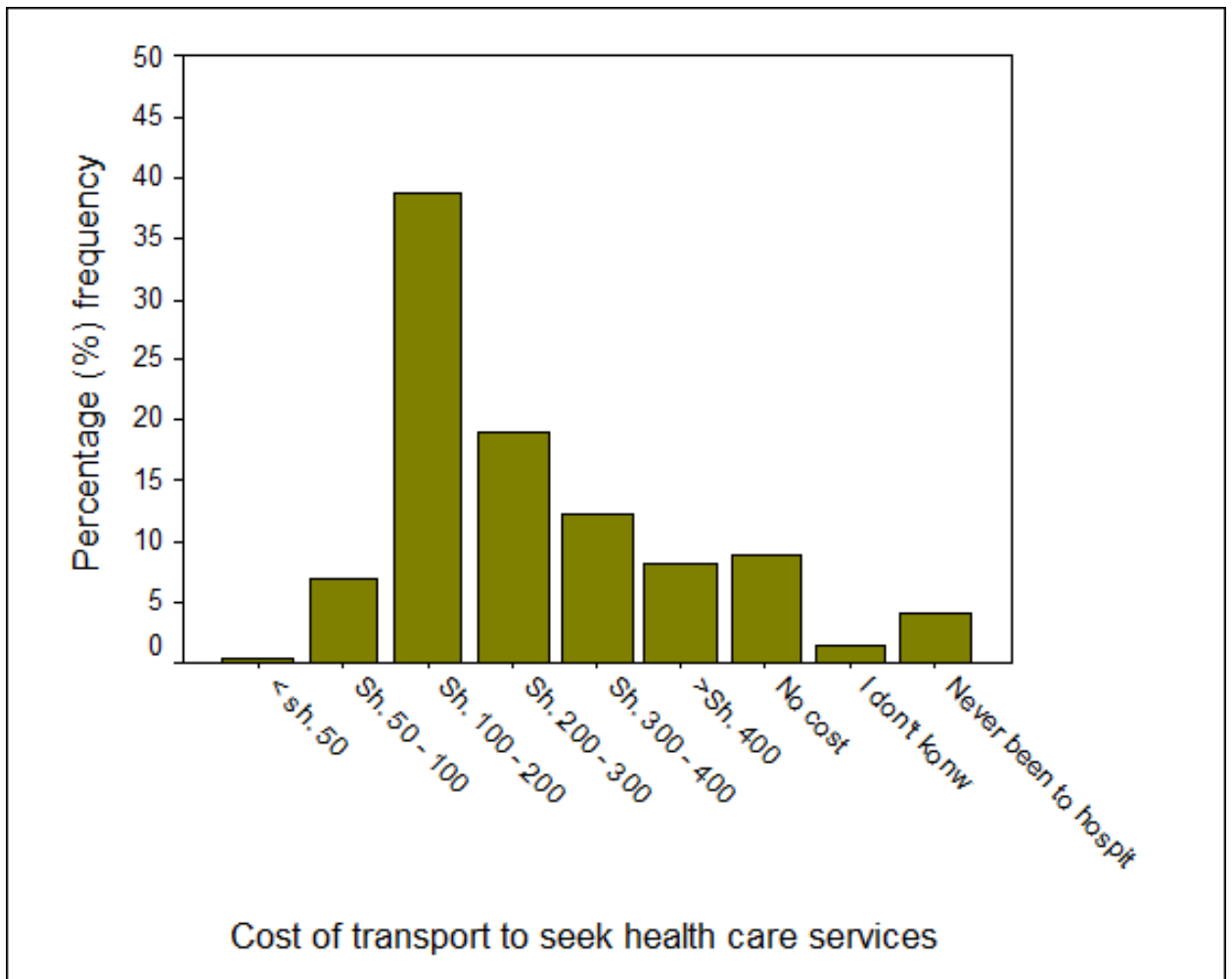
### 4.5.1 Operational factors

Majority (99.5%) of respondents covered a distance of more than 5 km to get to the hospital. Most (60%) used *matatu* as means of transport to the nearest hospital while the remaining 40% used *tuk tuk*, *bodaboda*, and motorcycle (Table 4.9).

**Table 4.9 Means of transport used by patients in seeking health care services**

Means of transport	Frequency	Percentage
<i>Bodaboda</i>	40	18.2
<i>Tuk Tuk</i>	9	4.1
<i>Matatu</i>	132	60
Walking	19	8.6
Motorcycle	13	5.9

Most (51.8%) of the patients encountered difficult terrains when ambulating to seek medical services. Most (38.6%) of the patients utilized 1.25\$-200\$ in transportation to seek health care per day as illustrated further in (Figure 4.2).



**Figure 4.2 Cost of transport to seek health care services**

More than one quarter (28.6%) of patients spent 3.75\$-5\$ in acquiring health care services in hospital per visit with the remaining 21.4% spending less than 5\$,11.4% spending 2.5\$-3.75\$ 10.9% spending 1.25\$-2.5\$,1.4% spending 1\$-1.25\$, 8.2% getting the service for free and 3.6% having not visited hospital(Table 4.10 )

**Table 4.10 Cost of transport to seek health care services**

<b>Cost (Ksh)</b>	<b>Frequency</b>	<b>Percentage</b>
0.6\$-1.25\$	3	1.4
1.25\$-2.5\$	24	10.9
2.5\$-3.75\$	25	11.4
3.75-5\$	63	28.6
>5	47	21.4
Free	18	8.2

Majority (35%) of patients visited the hospital once per month while slightly more than one-fifth (21.4%) visited the hospital only when they were in pain (Table 4.11).

**Table 4.11 Number of visits to hospital**

<b>Visits</b>	<b>Frequency</b>	<b>Percentage</b>
Once a month	77	35
Twice a month	33	15
Three times a month	11	5
I don't know	17	7.7
Never gone to hospital	15	6.8



More than 3 times	12	5.2
When pain is severe	47	21.4

Nearly one-half (40.9%) of patients spent 2-8 hours in the health facility to get health care services as shown in (Table 4.12)

**Table 4.12 Duration of the study**

<b>Period</b>	<b>Frequency</b>	<b>Percentage</b>
<2 hrs	20	9.1
2-5 hrs	64	29.1
2-8 hrs	90	40.9
8-11 hrs	21	9.5
Not investigated time	11	5.0
I don't know	7	3.2
Never visited hospital	7	3.2

Majority (89%) of the patients had a family member to leave at home when they visited health facility. Three-quarter(75.5%) of the patients wore shoes when visiting health facilities with majority (89.1%)having less than 3 pairs of shoes and few (8.3%) with 3-6 pairs of shoes.

Nearly one quarter (24.5%) of respondents did not put on shoes as a result of swollen leg. Slightly more than half (55.5%) of patients lacked enough materials to be used in basic lymphoedema management such as soap, water, antiseptics, antifungal and antibacterial agents

#### **4.5.2 Means of transport and its Association with Utilization of Health Care Services**

Close to one-half (48.9%) of the respondents rated the quality of health care services offered in hospital as important. Rating of quality of health care services offered at hospital was significantly associated with means of transport; ( $P < 0.001$ ). Almost hundred percent (97.7%) of those respondents using *tuktuk*, *matatu* and motorcycle as a means of transport compared to 2.3% those using *bodaboda* rated the quality of health care services offered highly. Similarly, the frequency of visiting hospital per month was significantly associated with means of transport used to travel to hospital; ( $P < 0.001$ ). Ninety one percent of those respondents' using *tuktuk*, *matatu* and *bodaboda* as a means of transport compared to 9.2 % those walking, visited hospital more frequency.

#### **4.5.3 Cost of transport and its Association with Utilization of Health Care Services**

Approximately half (48.9%) rated the quality of health care services offered in hospital as important. Cost of transport to seek health care services was significantly associated with the rating of quality of health services offered at hospital ( $P = 0.001$ ). Eighty four percent of those respondents who spent average of 4.75\$ on transport to hospital compared to 7.2% who spent average of 1\$ rated the quality of health care services offered highly. Similarly, the cost of transport to seek health care services was significantly associated with the frequency of visits to hospital per month ( $P < 0.001$ ). Majority (91%) of those respondents who spent average of 2.5\$ on transport to hospital compared to 9% who spent an average of 3.75\$ visited hospital more frequently.

#### **4.5.4 Cost of acquiring health care services and its Association with Utilization of Health Care Services**

Almost (48.9%) rated the quality of health care services offered in hospital as important. Rating of health care services offered at hospital was significantly associated with cost per visit in acquiring health care services at hospital ( $P = 0.001$ ). Seventy percent of those respondents who spent an average of 10\$ to get health care services compared to 30.2 % who spent an average of 6\$ rated the quality of health care services offered highly. Similarly, the frequency of visiting hospital per month was also significantly associated

with cost per visit in acquiring health care services in hospital; ( $P < 0.001$ ). Almost three quarter (72.8%) of those respondents who spent an average of 3.75\$ to acquire health care service compared to 27.2% who spent an average of 1\$ visited hospital more frequent. However the willingness to seek health care services in future was not significantly associated with means of transport used to visit hospital and cost of acquiring all health care services in hospital ( $P = 0.788$ .)

#### **4.5.5 Time spent during hospital visits and its Association with Utilization of Health Care Services**

The time spent during hospital visits to get health care services was also significantly associated with the rating of quality of health care services offered at hospital ( $P < 0.001$ ). Majority (88.4%) of respondents who spent an average of 4 hours compared to 11.6% whom spent an average of 10 hours rated the quality of health care services offered highly.

A larger majority of the FGD participants stated that lack of funds, means of transport, illiteracy, doctors' discrimination and lack of awareness were some of the difficulties that they faced in utilizing health care services.”*Doctors are not attending to patients, they discriminate us so we lack proper treatment” respondent 7, youth male FGD. “We Lack money to buy drugs, poor means of transport- the road is very bad and we lack vehicles to travel to see doctors in hospitals” Respondent 7, youth women FGD respondent.*

## CHAPTER FIVE

### DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Discussion

The study result indicated that several demographic factors including region, education, occupation and level of income influenced health care utilization.

Religion was found to be significantly associated with utilization of health care services ( $P < 0.01$ ). Christians and non-practicing utilized health care service more as compared to Muslims counterpart. This could be due to the engagement of Christian's leaders more in the community to eliminate lymphatic filariasis. Religious and spiritual beliefs are an important part of how many people deal with illness. These findings agree with Koenig, (2001), who observed that it is because of the extensive involvement of persons in religious groups that beliefs and activities relating directly to health, health practices or health care are promoted, and the overall impact of religion on health can have enough public health significance.

Level of education was significantly associated with utilization of health care services ( $P < 0.01$ ). Patients with higher education level (University, Secondary and Tertiary education) utilized health care services more than those with low education level (Primary education). This could be due to illiteracy which significantly limits a person's ability to access, understand and apply health related information and messages. As a determinant of health care seeking behavior, literacy is intimately tied to gender, education level, and regular income. This result is consistent with study by Clarer, (2010) in Tanzania where low level of education resulted to poor personal health, hygiene and nutrition.

Wamae *et al.*, (2006) found out that patients who had no knowledge about this cause of LF attributed the disease to heredity, fate/destiny and evil spirits.

According to Soucat *et al.*, (1997) education, socio-economic status directly affect women's access to healthcare, specifically in developing countries and that education and economic status of the household are positively related with choosing to act and seek health care. Tomlinson, (2003) observed that education are likely to succumb to misconceptions, misinformation and misinterpretation particularly when it involves cultural, religious beliefs, societal norms, peer institutional pressures, and general lack of access to information. Thus, higher education strongly and positively influenced health care behavior.

Level of income was significantly associated with utilization of health care services ( $P < 0.01$ ). Those patients with higher incomes sought health care services more frequency as compared to low income earners. This could be due to the limited resources needed to utilize health care services. Level of income is one of the factors used as a measure of socio-economic status and it is socio-economic status that is often used as an indicator of health. Low income earning can contribute to shortage of materials for example soap, water, antiseptics, antifungal and antibacterial agents used in basic lymphedema management. This finding agrees with Taffa, (2005) study in Kenya where lack of finances seriously affected health care seeking behavior although the willingness to pay for services was there.

According to Gotsadze *et al.*, (2005) observation in Tbilisi, Georgia low income has been found to be a barrier to health seeking behavior and can create an overwhelming financial burden to patient. A study conducted in Zambia revealed that the motivation to take action for many comes down to a trade off between illness severity and service cost among other reasons (Hjortsberg, 2003; Nyamwaya *et al.*, 1998). Therefore, in this study low income earners were often unable to access adequate health care services which influenced negatively utilization of health care services.

### **5.1.2 Influence of social support on the utilization of health care services**

The psychological help based on the encouragement that patients received from those around them (families and communities) was significantly associated with utilization of health care services ( $P < 0.001$ ). Patients who indicated that they were encouraged by those around them (Family and community) utilized well health care services. Patients lived within the family setting. Family member provided care, assisted in daily domestic activities and socially encouraged respondents to seek health care services in hospital. The current findings correspond to those of Amuyunzu, (1997) who observed that people who had patients in their households expressed sympathy and understanding, whereas those who had no relationship with victims joked and laughed about it.

Family members in African set up are normally more united during time of sickness by providing tangible support such as care for individuals who are ill. When serious illness or disability strikes a person, the family as a whole is affected by the disease process and by the entire health care experience. Emotional support from family members is a protective factor for psychological distress (Kron *et al.*, 2000). Therefore, family relationships are a critical component of daily life. Family member are the people who know the patient best and those who, simply by their presence, can help to reassure patients in times of uncertainty, anxiety or vulnerability. Thus, psychological help from the family members strongly and positively influenced health care behavior.

Experience of rejection by community as a result of diseases was significantly associated with utilization of health care services ( $P < 0.001$ ). Community accepted patients in social gathering and events. This removed the element of stigmatization as patients participated in community social activities. Although they were accepted, some patients still shied away depending on the severity of the diseases. They either perceived themselves to be smelling or to be laughed at as a result of oozing pus. These current findings correspond with study conducted in Philippine which found out that filariasis sufferers were not excluded from social activities by the community (Lu *et al.*, 1988).

A study conducted in Tanzania, had different finding where the disease was considered to be socially unacceptable and shameful in the community. People with hydrocoele were embarrassed and led a restricted life making them unable to visit hospital (Muhondwa, 1983). In addition, Kumari *et al.*, (2005) in Indian observed that social participation in community was affected by large hydrocoele. Therefore, social interpretation of particular disease may be important especially with disfiguring disease where people are reluctant to expose their body part. Objectively patients' acceptance by the community members influenced positively utilization of health care services.

Formation of support groups was significantly associated with utilization of health care services ( $P < 0.001$ ). Those patients who felt formation of support group is important visited health facilities more frequently. This could be because support groups can play an important role in coping with and overcoming problems. In this community, most of the patients preferred forming social support groups to encourage, share experiences, advice and support each other. Members of a support group typically share their personal experiences and offer one another emotional comfort and moral support.

This finding relates to that of Coreil *et al.*, (2002) where participation in patient support groups was shown to decrease the number of ADLA episodes and improve quality of life among lymphoedema patients in Haiti. Zuberbühler *et al.*, (2000) in Brazil mentioned that the formation of "elephantiasis clubs" where members share experiences and help one another with washing of elephantoid limbs has been found successful in reducing suffering and psychosocial problems associated with the disease.

A study done in Philippine by Gyapong *et al.*, (1996) found out that the degree of stigma appeared to be associated with the severity and visibility of the disease and that filariasis sufferers were not excluded from social activities. However, these findings differ with that of Remme *et al.*, (1995) and WHO, (1994) observation where advanced chronic manifestations such as elephantiasis of the extremities, genitalia, and breast can have important psychological implications and can inflict grave social wounds which hinder formation of support groups.

According to Dreyer *et al.*, (1997) there are serious psychosocial consequences, sexual/social dysfunction of men with hydrocoele, genital abnormalities and lymphedema of the breasts or genitals. This could be because when elephantiasis or hydrocoele becomes very big, people suffering from the disease may not feel comfortable when they move around. Therefore, according to these findings, the formation of support groups strongly and positively influenced health care utilization behavior.

Disease burden to the families was significantly associated with utilization of health care services ( $P < 0.05$ ). Those patients who felt they were a burden to family visited health facilities more frequently. This burden could be emotional, physical, social, and financial aspects. The family members fully supported the patients although the patients felt they were burden to them. Patients with illnesses face grief and fear not only for their own future but also for their families' future.

These concerns over how their illness will affect their loved ones may eventually influence how they seek care and the decisions they make about their care. This finding agrees with study conducted in Kenya by Njomo *et al* (2012) where patients who had high compliance with mass drug administration for lymphatic filariasis elimination had a higher mean number of years with chronic disease, than among those with a lower disease burden. Study conducted in Indian found patients' usual activities and social participation was affected by hydrocoele, those with larger hydrocoele felt themselves being a burden to family (Kumari *et al.*, 2005).

The thinking that only spiritual intervention without medical care was helpful in sickness was significantly associated with utilization of health care services; ( $P < 0.001$ ). The respondents who did not think that only the spiritual intervention helps utilized health care services more. Spiritual believes influence patient roles, expectations on health and how much information about illness and treatment is desired.



This finding agrees with Suma *et al* (2003) observation in India where with networks of public healthcare facilities, most of lymphoedema patients utilized medical care from modern medical practitioners, although a minority use home remedies first. In contrast, in Ghana modern medical care often is avoided due to lack of interest from health care workers and a belief by patients that lymphoedema treatment requires spiritual interventions (Gyapong *et al.*, 1996).

### **5.1.3 Influence of operational factors on health care utilization.**

Feelings of pain when ambulating to hospital was significantly associated with utilization of health care services ( $P < 0.05$ ). Respondents who had no pain when walking to hospital visited health facilities more frequently. This could be due to pain incurred by patients during ADL episodes.

Mobility is paramount if elder patients are to maintain any independent living. Restricted movement as a result of pain affects the performance of person health activity. This finding concurs with study conducted in Kenya among the Duruma community in Lutsangani village in Kwale District where episodic pains caused patients to become bedridden and dependent on their household members for cure and care (Amuyunzu, 1997). Acute adeno-lymphangitis (ADL) episodes significantly affect patients' abilities to carry out both economic (farming, market activities, building) and domestic (household chores, cooking, taking care of children) activities.

Majority of patients covered a distance of more than 5 km to seek health care services in a dispensary which was within Sub-location and more than 15 km to access health care services in a health centre or district hospital. Covering that distance was very difficult situation for ADLA patients because of pain. Lack of transport in remote areas, coupled with poor road conditions, made it difficult for ageing patients to reach relatively nearby health facilities. These finding agrees with study done in Haiti by Coreil *et al.*, (1998) where lymphoedema patients reported decreased ability to walk to hospital, difficulty in

finding appropriate footwear, and sometimes inability to sell at the market or do household chores because of pain.

Also, according to Gyapong *et al.*, (1996) distance and the pain experienced during ADL episodes, made it difficult for patient to seek the health facilities. The distance patients must travel in order to obtain treatment has long been recognized as a primary determinant of the utilization of health care facilities (Stock, 1983). The same was reported by Dreyer *et al.*, (2000) where barriers to health care utilization included distance to a health facility, lack of awareness, lack of time, severity of pain, and dissatisfaction with previous treatment. According to the current study results, presence of pain, steep terrain and long distance to the health facility influenced negatively the utilization of health care services.

Giving up working due to diseases was significantly associated with utilization of health care services ( $P < 0.01$ ). Respondents who gave up working due to disease utilized health care services less. This is due to loss of income making them unable to afford resources required to enable them access health care services. An overt chronic sign of LF leads to physical disability in patients making them switch to less strenuous physical activities. These findings is in tandem with the study conducted by Ramu *et al.*, (1996) who found out that the productivity of male weavers with chronic LF had reduced by as much as 27.4% in the cloth weaving industry and thus reduced wage earnings.

Patients who suffer this condition in Goshi Location were left at home to perform daily activities which are less strenuous. The disease can cause serious social and economic consequences because it affects economically active people in the community who are providing daily bread for the family. Advanced chronic filarial disease hinders manual work, and this constitutes a worry to affected people in the community. Studies in Ghana indicate that ADLA episodes reduced potential community labor supply by 0.79 % (Gyapong *et al.*, 1997).

Finding from FGD reveal that patients who have filariasis are at a great disadvantage because they tire easily, especially those who have elephantiasis of the leg. In rural India, 10% of men with hydrocoele reported a negative impact on domestic work, 55% reported a negative impact on economic activities, and 35 % reported decreased mobility (Ramaiah *et al.*, 1997).

In the Philippines the study conducted suggested that males with hydrocoele could go to hospital, school, and work, marry and live with their families. Generally, a mildly to moderately enlarged scrotum was not viewed as a disadvantage but rather as characterizing people who were hard working and devoted to family (Lu *et al.*,1989). Cost of acquiring health care services was significant associated with health care utilization ( $P < 0.001$ ). This could be due to limited resources required to acquiring health care services. The amount of money utilized in hospital in getting health care services was more than amount of money earned per day. The community spent an average of 4\$ per visit in acquiring health care services per day. Income is one of the factors used as a measure of socio-economic status and which is often used as an indicator of health. In the outpatient clinic, patients were required to pay a fee for registration and buying medicine in hospitals.

This finding corresponds with a study conducted in India which reported an average of US\$ 4.56 per visit, more than half a day's wage (Nanda *et al.*, 2003). A study conducted in India reported that costs for treatment of chronic disease (both lymphoedema and hydrocoele) were US\$ 0.87 per visit, equivalent to almost one day's wage (Babu *et al.*, 2002). In Sri Lanka, Chandrasena, (2004) reported costs of US\$ 7.38 per episode for care from private practitioners; although most patients received free treatment at government clinics. Most of the times decision to seek health care by this community was based on the cost as compared to the perceived benefit. Poverty adversely affects health status; conversely, poor health contributes poverty. In this study, lack of finances seriously affected and influenced negatively health seeking behavior although the willingness to pay for services was there.

Cost of transport to seek health care services was significantly associated with the utilization of health care services offered at hospital ( $P=0.001$ ). Respondents who spent more money on transport utilized health care services more. It could be because patients could afford the cost of transportation thus utilizing health care services more. Accessibility issues to hospital include; Cost and mode of transport, closest facility, communications and time to travel to nearest facility. According to Gyapong *et al.*, (1996) operation factors like cost of transport, distance to hospital and steep terrain influence health care services utilization. According to Atkinson *et al.*, (1999) study, the major reason given for self-treatment in Zambia was that people did not have enough money to seek health care and this included not only the cost of the treatment from hospital outpatient departments, but the fact that people had to travel there one time to make the appointment and return for the actual appointment at another time hence incurring the costs of transport and loss of income.

The time spent during hospital visits to get health care services was significantly associated with health care services utilization ( $P<0.001$ ). The patients who spent less time during hospital visits utilized health care services more. Time taken to travel and access health care services affects health care service use. This finding agrees with Eisa, (1993) study who found out that the dissatisfied patients complained about the length of waiting time in the public hospital facilities. Saeed, (1998) indicated in his study that government facilities are associated with long waiting times. The study carried out by Al-Doghaither *et al* (2003) reported that the time factor (e.g. waiting times) was important in influencing patients' choice of type of health facility.

## **5.2 Conclusions**

Religious and level of education was found to be significantly associated with utilization of health care services. Religious and spiritual beliefs were important part of how patients deal with illness which was seen to influence negatively utilization of health care services. Those with high education level utilized health care services more.

Illiteracy significantly limited a person's ability to access, understand and apply health related information and messages.

The finding revealed that respondents had psychological support from community, family and fellow patients which positively influenced utilization of health care services. There was patient's acceptance in the family although smaller number of patients feared visiting the hospital when they are sick. Emotional support from family members and community was a protective factor for psychological distress. In addition formation of support group was found to be an important contributor to increased health care utilization in hospital. Patients were encouraged by fellow patients and those around them which positively influenced utilization of health care services

The disease had economic impact because of pain experienced during acute inflammatory episodes. The disease significantly affects patients' abilities to carry out both economic (farming, market activities, building) and domestic (household chores, cooking, taking care of children) activities which affect patient's productivity making him/her become a burden to family. LF resulted to physical disability in patients making them switch to less strenuous physical activities. Factors such as time spent to get health care services, giving up work, feeling of pain, cost of transport and health services negatively influenced health care utilization.

### **5.3 Recommendations.**

Based on the finding, analysis, discussion and conclusion of the study the following recommendation are made;

Formations of support groups consisting of lymphoedema patients are necessary to achieve substantive successes in disease prevention and control. Support groups will bring together people facing similar problems which will enhance effective implementations of morbidity control program. Members of a support groups will share their personal experiences and offer one another emotional comfort and moral support which will influence utilization of health care services positively.

Health workers/NGO and County Government need to involve the families/guardians in the care of lymphatic filariasis patients. Family member can become more involved with a patient's care by bringing them to appointments/assisting in domestic activities and developing health care plans. Families are an extremely important component of the diseased patient. The health workers should help family members learn skills and care techniques that will make them more effective at helping their patients.

County government/NGO should consider providing outreach health care services in the community. This will serve those patients who cannot walk to hospital because of following; difficult terrain to access medical services, high cost of transport and cost of getting health care services. This institutions should encourage and support patients to sustain daily self-care of lymphoedema (this support may include improved access to supplies such as clean water, soap, antiseptics, topical antibacterial, antifungal agents, and oral antibiotics).

#### **5.4 Recommendation for further Research**

Coping strategies for the patients suffering from chronic lymphatic filariasis

Treatment seeking behavior among patients suffering from chronic lymphatic filariasis.

Retrospective study on the collateral benefits between LF and Malaria control using LLITNs.

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## **APPENDIX 1**

### **Consent form**

This Informed Consent Form is for residents of Goshi location Malindi-Sub County, with chronic lymphatic filariasis who are invited to participate in this research on chronic lymphatic filariasis.

**Name of Principal Investigator:** David Murithi.

**Name of Organization;** Jomo Kenyatta University of Agriculture and Technology, Institute of Tropical Medicine and Infectious Diseases.

**Title of Proposal:** Factors associated with the utilization of health care services utilization among patients with chronic lymphatic filariasis in Goshi location Malindi-Sub County, Kenya.

### **Introduction**

My name is David Murithi. I am a post graduate student undertaking a Master's of Science in Public Health degree at the Institute of Tropical Medicine and Infectious diseases (ITROMID) of Jomo Kenyatta University of Agriculture and Technology (JKUT).

As a requirement by the university, for completion and award of my degree, I am conducting a study on the Factors associated with the health care services utilization among patients with chronic lymphatic filariasis in rural communities in Goshi location Malindi-Sub County, Kenya.

I am going to extensively explain about this research and invite you voluntarily to be part of this research. I am going to give you time to decide on whether you will



participate in the research. You are free to consult any person before making any decision.

You are free to ask any question or clarification about the research during data collection. Even after data collection you can ask questions by directing them to the address I will provide at the end of this document. I am going to leave my 24 hour mobile phone number so that you can call later in case of any doubt.

### **Purpose of the research**

I intend to determine the factors that are associated with utilization of health care services among patients with chronic lymphatic filariasis. I will be able to identify effective methods of preventing the disease from occurring through utilization of health care services. The data collection process for individual participants will only take duration of two hours. Lastly it will help me to write my thesis leading to award of MSc degree in public health.

### **Procedures**

The research study is welcoming patients with chronic lymphatic filariasis who will be selected through purposive method and residing in the selected households. Willing participants will willingly answer questions on a questionnaire after giving informed consent. Those who freely chose to participate in FDGs will be guided by a moderator to discuss matters concerning LF for a duration of thirty minutes.

### **Benefits**

By participating in this research study you will not benefit directly but your involvement is expected to help us find the responses to the research questions stated in the research proposal. I will hold meetings with your community members to disseminate the results in order to enhance health care services utilization. I will publish the findings,

conclusion and recommendations realized from this research study for the future generations to benefit.

### **Risks**

Your participation in this research study will not put you at any potential risk.

### **Confidentiality**

It is likely that if others in the community are mindful of your participation in the study, they may ask you queries related to what we will be doing. I assure you that we will not share the identity of those taking part in the research with any individual, institution or authority.

An informed consent will be obtained from you in order to participate in the study. To ensure confidentiality, the data collection tools will not bear your name or ethnicity and will be identified by the study code numbers. All the data and the information obtained during the study will be used for the sole purpose of meeting the objectives of the study. You do not have to take part in this study if you are not comfortable doing so. You may also withdraw from taking part in the study at any stage you decide on. It is your constitutional right to freely decide and all of your rights will still be observed in the course of the research study. Your involvement in this research is completely voluntary. It is your choice whether to take part or not. Your choice will not affect you in any way. You may change your mind later and discontinue from taking part even if you had agreed earlier. We will choose a convenient venue according to your choice to enhance privacy and confidentiality.

### **Contact of principal investigator**

If you have any queries you are welcome to ask them at the moment or later, even when the study is in progress. If you wish to ask questions later, you may communicate to me using of the following contacts.

David Murithi

P.O.BOX 931 Meru

Kenya.

Mobile Number **0724927347**

Email address [davidmurithi@yahoo.com](mailto:davidmurithi@yahoo.com)

If you have questions or concerns about your rights as a participant and would like to obtain information on your rights as a participant, please contact:

The Secretary,

KEMRI Ethics Review Committee,

P. O. Box 54840-00200, Nairobi;

Telephone numbers: 020-2722541,

Email address: [erc@kemri.org](mailto:erc@kemri.org)

**Subject permission:**

I, the undersigned have understood the above information which has been fully explained to me by the investigator. I have agreed to voluntarily consent to participate. I was given the chance to ask questions and I received satisfactory responses.

Name \_\_\_\_\_ of \_\_\_\_\_ Participant \_\_\_\_\_ or  
respondent.....

Signature.....Date.....

Signature of the person obtaining consent \_\_\_\_\_ Date \_\_\_\_\_

Those who cannot write will use ink pads for thumbprints.

*(Must be signed by the investigator or individual who has been designated to obtain consent)*

**APPENDIX II A**

**QUESTIONNAIRES FOR PATIENTS WITH OBVIOUS CHRONIC SIGNS AND FACTORS ASSOCIATED WITH UTILIZATION OF HEALTH CARE SERVICES AMONG THOSE WITH CHRONIC LYMPHATIC FILARIASIS IN GOSHI LOCATION, MALINDI-SUB COUNTY, KENYA.**

**SECTION A: SOCIO-DEMOGRAPHIC RESPOND**

**Questionnaire ID**\_\_\_\_\_

**Location**\_\_\_\_\_

**Sub-location**\_\_\_\_\_

**Village**\_\_\_\_\_

1. Sex? (tick one)

a. Male

b. Female

2. Age in years\_\_\_\_\_

3. What is your relationship with the members of this household?

i. Mother

ii. Father

iii. Guardian

iv. Others, please explain\_\_\_\_\_?

4. Marital status?

i. Single

ii. Married

iii. Separated

iv. Divorced

v. Widowed/widower

vi. Others please  
explain\_\_\_\_\_?

5. If married, what is your type of marriage?

i. Traditional

ii. Religious

iii. Civic

iv. Others please  
explain\_\_\_\_\_?

6. If married, what is the type of your marital union?

i. Monogamous

ii. Polygamous

iii. Cohabiting

iv. Others, please  
explain\_\_\_\_\_?

7. Do you live with members of your family?

i. Yes

ii. No

iii. Others please explain\_\_\_\_\_?

8. What levels of education have you attained?

i. Primary

ii. Secondary

- iii. Post secondary
- iv. Tertiary/University
- v. None
- vi. Others please explain \_\_\_\_\_?

9. What is your main occupation? (Tick one)  
 \_\_\_\_\_?

- i. Peasant farmers.
- ii. Small business (kioski, Kibanda).
- iii. Big business (shop, wholesalers).
- iv. Housewife.
- v. Casual laborer.
- vi. Fishing.
- vii. Salaried worker e.g. teacher, policeman.
- viii. Boat making.
- ix. Wood carving.
- x. Embroidery.

Others please explain \_\_\_\_\_?

10. On average, how much money do you earn in a month?

- xi. Less than Ksh. 2,400
- xii. Ksh. 2,400-10,000

- xiii. Ksh. 10,000-20,000
- xiv. Ksh. 20,000-40,000
- xv. More than Ksh. 40,000
- xvi. Others specify \_\_\_\_\_?

11. What is your religion?

- i. Christian
- ii. Muslim
- iii. Non-Practicing
- iv. Others  
specify \_\_\_\_\_?

12. Do those around you encourage you and your family to seek health care services in the nearest hospital when you are sick?

- i. Yes
- ii. No
- iii. If yes, explain please \_\_\_\_\_?
- iv. Others specify \_\_\_\_\_?

13. Do you get any support from any Organizations/Support group that enables you seeks health care services service?

- i. Yes

- ii. No
- iii. If yes, which organization\_\_\_\_\_?
- iv. If No, please explain\_\_\_\_\_?
- v. Others specify\_\_\_\_\_?

14. Do you encourage other chronic lymphatic patients to seek medical care when they are sick?

- i. No.
- ii. Yes.
- iii. If yes, please explain\_\_\_\_\_?
- iv. If no, please explain\_\_\_\_\_?
- v. Others specify\_\_\_\_\_?

15. Do you have support group that encourages you to seek medical care when you are sick?

- i. Yes
- ii. No
- iii. If yes, please explain\_\_\_\_\_?
- iv. If no, please explain\_\_\_\_\_?
- v. Others specify\_\_\_\_\_?



16. Do you fear seeking the medical care services in the hospital?

- i. Yes
- ii. No
- iii. If yes, please explain\_\_\_\_\_?
- iv. If no, please explain\_\_\_\_\_?
- v. Others specify\_\_\_\_\_?

17. Do you think when you attend hospital you will be amputated the affected part?

- i. Yes
- ii. No
- iii. If yes, please explain\_\_\_\_\_?
- iv. If no, please explain\_\_\_\_\_?
- v. Others specify\_\_\_\_\_?

18. In your own opinion, have you ever faced discrimination in the hospital when seeking medical care services?

- i. Yes
- ii. No
- iii. If yes, please explain\_\_\_\_\_?

- iv. If no, please explain\_\_\_\_\_?
- v. Others  
specify\_\_\_\_\_?

19. Do you think it is only spiritual intervention (prayers) that will help your sickness without seeking medical care?

- i. Yes
- ii. No
- iii. If \_\_\_\_\_ yes, \_\_\_\_\_ please  
explain\_\_\_\_\_?
- iv. If \_\_\_\_\_ no, \_\_\_\_\_ please  
explain\_\_\_\_\_?
- v. Others  
specify\_\_\_\_\_?  
?

20. Do you experience any rejection from the family members and your friends because of your sickness?

- i. Yes
- ii. No
- iii. If yes, please explain\_\_\_\_\_?
- iv. If no, please explain\_\_\_\_\_?
- v. Others specify\_\_\_\_\_?

21. Do you experience feeling of being a burden to the family because of your sickness?

- i. Yes
- ii. No
- iii. If yes, please explain\_\_\_\_\_?
- iv. If no, please explain\_\_\_\_\_?
- v. Others specify\_\_\_\_\_

22. Rank in order of severity using numerical number from (1 to 10) in ascending order the important local health problems which requires medical agency?

- i. Malaria
- ii. HIV
- iii. Pneumonia
- iv. Cancer
- v. Lymphatic filariasis
- vi. Typhoid
- vii. Cholera
- viii. Tuberculosis
- ix. Hypertensive disease
- x. Diabetes mellitus
- xi. Others specify\_\_\_\_\_?

23. Have you experienced diminished marriage prospects because of your sickness?

- i. Yes
-

- ii. No
- iii. If \_\_\_\_\_ yes, \_\_\_\_\_ please  
explain\_\_\_\_\_?
- iv. If \_\_\_\_\_ no, \_\_\_\_\_ please  
explain\_\_\_\_\_?

24. Do you experience diminished sexual satisfaction in your marriage because of your sickness?

- i. Yes
- ii. No
- iii. If \_\_\_\_\_ yes, \_\_\_\_\_ please  
explain\_\_\_\_\_?

25. Do you avoid/ or get rejected in social events/gathering because of the sickness you are suffering of?

- a. Yes
- b. No
- c. If \_\_\_\_\_ yes, \_\_\_\_\_ please  
explain\_\_\_\_\_?

26. Are you roughed by people because of the sickness you are suffering from?

- i. Yes
- ii. No
- iii. If \_\_\_\_\_ yes, \_\_\_\_\_ please  
explain\_\_\_\_\_?

iv. If \_\_\_\_\_ no, \_\_\_\_\_ please  
explain\_\_\_\_\_?

27. Are you reluctant to go to hospital for fear of others noticing your swollen limb/limbs?

i. Yes

ii. No

iii. If \_\_\_\_\_ yes, \_\_\_\_\_ please  
explain\_\_\_\_\_?

iv. If \_\_\_\_\_ no, \_\_\_\_\_ please  
explain\_\_\_\_\_?

28. Do you have problems when interacting with members of the family because of your sickness?

i. Yes

ii. No

iii. If \_\_\_\_\_ yes, \_\_\_\_\_ please  
explain\_\_\_\_\_?

iv. If \_\_\_\_\_ No, \_\_\_\_\_ please  
explain\_\_\_\_\_?

29. Do you experience rejection of any kind in your society because of your sickness?

i. Yes

ii. No

iii. If \_\_\_\_\_ yes, \_\_\_\_\_ please  
explain\_\_\_\_\_?

iv. If \_\_\_\_\_ no, \_\_\_\_\_ please  
explain\_\_\_\_\_?

30. Do you think forming support groups is necessary in order to improve health care services utilization?

i. Yes

ii. No

iii. If \_\_\_\_\_ yes, \_\_\_\_\_ please  
explain\_\_\_\_\_?

iv. If no, please explain\_\_\_\_\_

## **APPENDIX II B**

### **Section D**

#### **Physical disability factors**

1. Do you experience pain which makes you unable to walk to hospital?

i. Yes

ii. No

iii. If yes please explain \_\_\_\_\_?

2. a. Have you changed to less strenuous occupations due to sickness?

i. Yes

ii. No

iii. If \_\_\_\_\_ yes, \_\_\_\_\_ please \_\_\_\_\_ explain \_\_\_\_\_?

b. If yes, does this hinder you from utilizing health care services?

i. Yes

ii. No

iii. If \_\_\_\_\_ yes, \_\_\_\_\_ please \_\_\_\_\_ explain \_\_\_\_\_?

3. a. Have you given up working due to lymphoedema?

i. Yes

ii. No

iii. If \_\_\_\_\_ yes, \_\_\_\_\_ please \_\_\_\_\_ explain \_\_\_\_\_?

b. If yes, does this hinder you from utilizing health care services?

i. Yes

ii. No

iii. If \_\_\_\_\_ yes, \_\_\_\_\_ please  
explain\_\_\_\_\_?

4. Do you experience Negative feelings of embarrassment because of your sickness when visiting hospital?

i. Yes

ii. No

iii. If \_\_\_\_\_ yes, \_\_\_\_\_ please  
explain\_\_\_\_\_?

5. Do you face isolation when visiting hospital for treatment because of your disability?

i. Yes

ii. No

iii. If \_\_\_\_\_ yes, \_\_\_\_\_ please  
explain\_\_\_\_\_?

6. Do you have difficulty for e.g. fatigue and dizziness when performing basic lymphedema management for yourself?

i. Yes

ii. No

iii. If \_\_\_\_\_ yes, \_\_\_\_\_ please  
explain\_\_\_\_\_?

7. Do you have any difficulties for example fatigue and dizziness when performing basic lymphoedema management for yourself?



i. Yes

ii. No

iii. If \_\_\_\_\_ yes, \_\_\_\_\_ please  
explain \_\_\_\_\_?

8. Do you experience any difficulties in performing daily duties at home for example fetching water and firewood, cooking, washing cloth, ironing cloth etc.?

i. Yes

ii. No

iii. If \_\_\_\_\_ yes, \_\_\_\_\_ please  
explain \_\_\_\_\_?

9. Do you wear long garments to hide the swollen lower limbs?

i. Yes

ii. No

iii. If \_\_\_\_\_ yes, \_\_\_\_\_ please  
explain \_\_\_\_\_?

**APPENDIX II C**

**Section E**

**Operational factors**

**Sehemu E Sababuzinazohusuutendakazi**

1. What is distance from your home to the nearest hospital?

- i. Less than one Km
- ii. One to two Km away
- iii. Two to three Km away
- iv. More than 5km away

2. How far is the district public officer to the place of your resident?

- i. Less than one Km
- ii. One to two Km away
- iii. Two to three Km away
- iv. More than 5km away

3. What transportation means do you use when travelling to hospital to seek medical care?

- i. Bodaboda
- ii. Tukutuku
- iii. Matatu
- iv. Walking

v. Personal cars

vi. Others  please  
specify\_\_\_\_\_?

4. Do you encounter difficult terrain when ambulating to seek health services in the nearest hospital?

i. Yes

ii. No

iii. If \_\_\_\_\_ yes, \_\_\_\_\_ please  
specify\_\_\_\_\_?

iv. If No, please specify\_\_\_\_\_

5. Do you have enough walking aids like crutches which you can use to travel to hospital?

i. Yes

ii. No

iii. If \_\_\_\_\_ yes, \_\_\_\_\_ please  
explain\_\_\_\_\_?

iv. If \_\_\_\_\_ no, \_\_\_\_\_ please  
explain\_\_\_\_\_?

6. How much does it cost you per visit in transportation to seek health services to hospital?

i. Less than 20ksh

- ii. 20ksh to 50 ksh
- iii. 50ksh to 100ksh
- iv. 100 to 200ksh
- v. 200ksh to 300ksh
- vi. 300ksh to 400ksh
- vii. More than 400ksh
- viii. It's free
- ix. Others please specify \_\_\_\_\_?

7. How much does it cost you per visit in acquiring drug?

- i. Less than 50ksh
- ii. 50ksh to 100ksh
- iii. 100ksh to 200ksh
- iv. 200ksh to 300ksh
- v. 300ksh to 400ksh
- vi. More than 4000
- vii. It's free
- viii. Others please  
specify \_\_\_\_\_?

8. How much does it cost you per visit in the consultation fee in hospital?

- i. Less than 50ksh

- ii. 50ksh to 100ksh
- iii. 100ksh to 200ksh
- iv. 200ksh to 300ksh
- v. 300ksh to 400ksh
- vi. More than 4000
- vii. It's free
- viii. Others please specify\_\_\_\_\_?

9. How much time per visit to hospital do you use to get health care services?

- i. Less than one 2hours
- ii. 2hours to 5hours
- iii. 5hours to 8hours
- iv. 8hours to 11hours
- v. More than 11hours
- vi. Others specify\_\_\_\_\_?

10. In your own opinion, were you satisfied from the health care services you received last visit?

- i. Yes
- ii. No
- iii. If \_\_\_\_\_ yes, \_\_\_\_\_ please explain\_\_\_\_\_?

iv. If \_\_\_\_\_ no, \_\_\_\_\_ please  
explain\_\_\_\_\_?

11. (a).Do you have somebody to leave at home when you visit hospital?

i. Yes

ii. No

iii. If \_\_\_\_\_ yes, \_\_\_\_\_ please  
explain\_\_\_\_\_?

(b). If no, Does this hinder you from seeking health care services service?

i. Yes

ii. No

iii. If yes, please explain\_\_\_\_\_?

12 (a) Do you wear shoes all the time especially when you are travelling to hospital?

i. Yes

ii. No

iii. If \_\_\_\_\_ no, \_\_\_\_\_ please  
explain\_\_\_\_\_?

(b)How many pairs of shoes do you have?

i. Less than 3 pairs

ii. 3 to 6 pairs

iii. More than 6pairs

13. Do you have enough soap, water, antiseptics, antifungal and antibacterial agents used in the basic management of lymphoedema?

i. Yes

ii. No

iii. If \_\_\_\_\_ no, \_\_\_\_\_ please explain \_\_\_\_\_?

14. Do you experience difficulty in performing the following?

i. Climbing stairs

ii. Walking uphill

iii. Drawing water from well,

iv. Getting into a bus

v. Holding railing in a bus,

vi. Sitting

vii. Lifting heavy objects

viii. Standing

ix. using the toilet

x. doing housework

xi. Walking to hospital?

xii. Others please explain

15. Are you unable to wear normal foot wear which might make it difficult to walk to seek medical care?

- i. Yes
- ii. No
- iii. If \_\_\_\_\_ no, \_\_\_\_\_ please explain\_\_\_\_\_?

**APPENDIX II D**

**Health care utilization**

**Matumizi ya huduma za afya**

1. Do you seek health services because of your sickness?

- i. Yes
- ii. No
- iii. If yes how many times did you seek health service for the last 5month\_\_\_\_\_?
- iv. If yes where did you seek those health services\_\_\_\_\_?



v. If yes, what kind of services did you receive\_\_\_\_\_?

2. Where do you seek treatment from when you get sick?

- i. Pharmacist
- ii. Local healers?
- iii. Pharmacist?
- iv. Witchcraft?
- v. Pastors?
- vi. Self-treating?
- vii. Herbalist?
- viii. Sorcerers,
- ix. Others specify\_\_\_\_\_?

3. In your own opinion, where the clinicians friendly?

- i. Yes
- ii. No
- iii. If \_\_\_\_\_ yes, please explain\_\_\_\_\_?
- iv. If \_\_\_\_\_ No, please explain\_\_\_\_\_?
- v. Others specify\_\_\_\_\_?

4. Would you be interested to seek health services in future when you are sick?

i. Yes

ii. No

iii. If \_\_\_\_\_ yes, \_\_\_\_\_ please  
explain\_\_\_\_\_?

iv. If \_\_\_\_\_ No, \_\_\_\_\_ please  
explain\_\_\_\_\_?

v. Others  
specify\_\_\_\_\_?

5. Rate the quality of health services offered in the hospital when you visited them because of your sickness?

i. Very Important

ii. Important

iv. Moderately Important

v. Of Little Importance

vi. Unimportant

6. (a) What health information do you get about your sickness when you visit the hospital?

i. Improved hygiene?

ii. Skin care?

- iii. Elevation of swollen body part?
- iv. Taking of medication?
- v. Use of mosquito net?
- vi. Use of footwear?
- vii. All of the above?
- viii. Others, specify?

(b) How many times do you receive this information in one year?

- i. Less than 10 times?
- ii. 10 to 20 times?
- iii. 20 to 40 times?
- iv. 40 to 50 times?
- v. More than 50times?
- vi. Others  
specify\_\_\_\_\_?  
?
- vii. What is your opinion of this source of information  
obtained\_\_\_\_\_?

7. Are you given any drug when you attended the hospital?

- i. Yes
- ii. No
- iii. If yes, please explain\_\_\_\_\_?

iv. If no, please explain\_\_\_\_\_?

v. Others specify\_\_\_\_\_?

### **APPENDIX III**

#### **KEY INFORMANT GUIDE I**

**KEY INFORMANT : DISTRICT PUBLIC HEALTH OFFICER, DISTRICT HEALTH OFFICERS, ASSISTANCE DISTRICT HEALTH OFFICER,**

**FACTORS ASSOCIATED WITH UTILIZATION OF HEALTH CARE SERVICES AMONG PATIENTS WITH CHRONIC LYMPHATIC FILARIASIS IN GOSHI LOCATION MALINDI-SUB COUNTY, KENYA.**

#### **1. Service organization**

- a.** Describe of the roles and responsibilities of your office in relation to the elimination of lymphatic filariasis in Malindi?
- b.** Is there any relationship of your office with the National Multi-year Strategic Plan of Action for Control of Neglected Tropical Diseases?
- c.** Describe any approach used in elimination of lymphatic filariasis in Malindi-Sub County ?

#### **2. Capacity to deliver the services**

- a.** What is number of staff involved in elimination of lymphatic filariasis in Malindi-Sub County ?

- b. What is average number of lymphatic filariasis patients visiting your office/clinic every day?
  - c. Are there adequate drugs available?
  - d. How is accessibility to the public? Especially outreach services?
- 3. Involvement of community in elimination of lymphatic filariasis in Malindi-Sub County**
- a. Is it done?
  - b. How often?
  - c. Any improvements as a result of the advocacy activities?
- 4. What are Challenges faced in service delivery?**
- 5. What is your opinion on health care services utilization among patients with chronic lymphatic filariasis in rural communities in Malindi?**
- 6. State Suggestions for possible means to improve health care services utilization among patients with chronic lymphatic filariasis in rural communities in Malindi?**

#### **APPENDIX IV**

#### **FOCUSED GROUP DISCUSSION GUIDE**

**FACTORS ASSOCIATED WITH UTILIZATION OF HEALTH CARE SERVICES AMONG PATIENTS WITH CHRONIC LYMPHATIC FILARIASIS IN GOSHI LOCATION MALINDI-SUB COUNTY, KENYA.**

#### **SECTION I: DISCUSSION GUIDE FOR MEN/WOMEN**

1. Knowledge on causes of lymphatic filariasis?
2. Knowledge on prevention of lymphatic filariasis?
3. Knowledge on where to seek medical services?
4. Knowledge on basis management of edema?
5. Existence of barriers towards with health care services utilization?
6. Difficulties faced in seeking health care services services?
7. Reasons as to why people do not seek health services?
8. Opinions on how to improved utilization of health care services services

**APPENDIX V**

**OBSERVATIONAL CHART**

**FACTORS ASSOCIATED WITH UTILIZATION OF HEALTH CARE SERVICES AMONG PATIENTS WITH CHRONIC LYMPHATIC FILARIASIS IN GOSHI LOCATION MALINDI-SUB COUNTY, KENYA.**

**SECTION 1**

**This will be ticked after observation**

1. Number of patients who had hydrocele?.....
2. Number of patients who had elephantiasis?.....
3. Number of patient who had hydrocele and elephantiasis?.....
4. Number of patient who had lymphedema of right lower limbs?.....
5. Number of patient who had lymphedema in left lower limbs?.....
6. Number of patient who had lymphedema of both limbs?.....

