

**UTILIZATION FACTORS OF SURGICAL AND ANTIBIOTIC TREATMENTS FOR
POTENTIALLY BLINDING TRACHOMA IN LOODOKILANI WARD, KAJIADO
COUNTY, (HOUSEHOLD SURVEY)**

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**A THESIS SUBMITTED IN PARTIAL FULFILMENT FOR THE DEGREE OF
MASTER OF PUBLIC HEALTH (EPIDEMIOLOGY AND DISEASE CONTROL) OF
KENYA METHODIST UNIVERSITY**

OCTOBER, 2020

DECLARATION

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

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DEDICATION

This work is dedicated to my mother for her support during the thesis preparations and to my esteemed lecturers for making this thesis possible.

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ABSTRACT

A number of studies carried out in the county show that poor utilization of eye treatment services is seen as lack of confidence by the community for the eyecare professionals. Various reasons for not accessing eye checkups are multifaceted, although some can be easily addressed than others. This study focused on tertiary (surgical) and secondary (antibiotics) levels of prevention of trachoma. The scope of this study was consistent with the Andersons health utilization model. The study objectives included; To determine the proportion of persons of 18-60 years with potentially blinding trachoma; To determine the proportion of persons with potentially blinding trachoma utilizing surgical and antibiotic therapy; To determine the accessibility of surgical and antibiotic therapy services for persons with potentially blinding trachoma; To determine the social factors influencing utilization of surgical and antibiotic therapy among persons with potentially blinding trachoma. Multistage sampling technique used involved a two-stage sampling process where every location was used as one unit. The initial stage used the random sampling which was used for listing of households of persons with potentially blinding trachoma. The second stage involved going through the listed households to collect data to identify persons with potentially blinding trachoma. The population under study were 422 adults of age eighteen to age sixty years, both male and female. The independent variables included the utilization factors which included, prevalence factors, social factors and accessibility factors of surgical and antibiotic therapy of potentially blinding trachoma whereas the dependent variable was the utilization of surgical and antibiotic therapy. Descriptive statistics was used to find the proportions (i.e. %) for categorical variables while the analytical statistics was used to test the null hypothesis and the factors associated with the dependent variable. Data collection tools included household checklists and community household questionnaires. The proportion of those with disease were 188 (44.5% prevalence). Out of those with disease, only 12.2% were utilizing surgical treatment, 60.1% used antibiotics, and 27.7% went for regular eye checkups. All socio-demographic factors except for gender ($p>0.05$), influenced utilization. On access, the factors that influenced utilization ($p<0.05$) were, mode of transport, waiting time, operational hours, and referral systems while on social factors, only cultural beliefs influenced utilization with ($p<0.05$). All F&E indicators influenced utilization except for impermeable toilet floors and presence of eye seeking flies ($p<0.05$). The study noted lower utilization of surgical treatment as compared to antibiotic treatment for potentially blinding trachoma. The County Department of Health in Kajiado was recommended to ensure consistent implementations of SAFE (surgical, antibiotics, facial cleanliness and environmental hygiene) programs to reduce prevalence of disease to 5%, encourage the utilization of surgical and antibiotic treatments through improvement of health infrastructure for easier accessibility of eye care services, and ensure improvement on the social aspect of the community towards utilization of eye care services through positive cultural beliefs and education.

TABLE OF CONTENTS

DECLARATION.....	i
COPYRIGHT	ii
DEDICATION.....	iii
ACKNOWLEDGEMENT.....	iv
ABSTRACT.....	v
LIST OF TABLES.....	ix
LIST OF FIGURES	x
ACRONYMS AND ABBREVIATIONS.....	xi
CHAPTER ONE: INTRODUCTION	1
1.1 Background of the Study.....	1
1.2 Statement of the Problem	4
1.3 Scope of the study.....	5
1.4 Research Objectives.....	7
1.4.1 Broad objective:	7
1.4.2 Specific Objectives:	7
1.5 Research Questions	8
1.6 Hypotheses	8
1.6.1 Null Hypothesis (H_0).....	8
1.6.2 Alternate Hypothesis (H_1).....	8
1.7 Justification of The Study	9
1.8 Study Limitations.....	10
1.9 Delimitations of the study.....	10
1.10 Significance of the study	11
1.11 Assumptions of the study.....	12
1.12 Definition of Terms	12
CHAPTER TWO: LITERATURE REVIEW	14
2.1 Introduction.....	14
2.2 Potentially Blinding Trachoma.....	14
2.2.1 Transmission of Potentially Blinding Trachoma	16
2.2.2 Epidemiology of Potentially Blinding Trachoma.....	17
2.3 The SAFE Strategy	19
2.3.1 Environmental Hygiene (primary prevention).....	19
2.3.2 Face washing (primary prevention)	20

2.3.3 Antibiotics (secondary prevention).....	20
2.3.4 Surgery (tertiary prevention).....	21
2.4 Utilization.....	21
2.5 Factors Affecting Utilization of Surgical and Antibiotic Treatments	23
2.5.1 Socio- Demographic Factors	23
2.5.2 Accessibility Factors	25
2.5.3 Social Factors	27
2.6 Theoretical Review.....	30
2.6.1 Anderson`s Model	31
2.7 Conceptual Framework.....	34
CHAPTER THREE: METHODOLOGY	35
3.1 Introduction.....	35
3.2 Study setting	35
3.3 Target Population	36
3.4 Study Design.....	36
3.5 Sample Size Determination and Sampling Procedure.....	36
3.6 Sampling Methodology.....	39
3.7 Study Instruments.....	39
3.8 Validity and Reliability of Instruments	40
3.8.1 Validity.....	40
3.8.2 Reliability.....	40
3.9 Data Collection Methods	41
3.10 Inclusion and Exclusion Criteria.....	41
3.11 Statistical Analysis	42
3.12 Ethical Review	42
CHAPTER FOUR: RESULTS AND DISCUSSION.....	44
4.1 Introduction.....	44
4.2 Proportion of persons with Potentially Blinding Trachoma in Adults.	44
4.3 Level of Utilization of Surgical and Antibiotic Treatment.....	45
4.4 Socio Demographic factors.....	48
4.5 Access Factors	53
4.6 Social Factors	57
4.7 Facial and Environmental Hygiene indicators.....	60

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.....	61
5.1 Introduction.....	61
5.2 Summary of the Findings	61
5.3 Conclusion	70
5.4 Recommendations of research findings	74
5.5 Recommendations for Further Research.....	77
REFERENCES.....	78
APPENDICES	91
Appendix 1: Factors affecting Prevalence and Utilization of Treatment for Potentially Blinding Trachoma.....	91
Appendix 2: Informed Consent (English).....	94
Appendix 3: Informed Consent (Maasai)	96
Appendix 4: Community Household Questionnaire.....	97
Appendix 5: Community Household Checklist.....	108
Appendix 6: Maps	110
Appendix 7: Ethical Clearance	114
Appendix 8: Authorization Letter (KeMU).....	114
Appendix 9: Authorization Letter-County Government of Kajiado.....	117
Appendix 10: NACOSTI Permit.....	118
Appendix 11: Kajiado West Chv`s Case Identification Tool In House To House Visit.....	119
Appendix 12: The WHO Grading Card for Trachoma.....	120

LIST OF TABLES

Table 3.1: Population in Loodokilani Ward.....	38
Table 4.1: Level of Utilization of Surgical and Antibiotic Treatment	45

LIST OF FIGURES

Figure 2.1 The Simplified WHO Trachoma Grading Card.....	15
Figure 2.2: Andersen’s Health Utilization Model (Aday & Andersen, 2014).	33
Figure 2.3: Conceptual Framework (Ruth, 2018)	34
Figure 4.1: Proportion of persons with Potentially Blinding Trachoma in Adults.	44
Figure 4.2: Levels of utilization in Loodokilani Ward.....	46
Figure 4.3: Utilization of Surgical and Antibiotic Treatment in Loodokilani Ward.....	47
Figure 4.4: Utilization of Surgical and Antibiotic Treatment per location.	48
Figure 4.5: Utilization of Surgical and Antibiotic Treatment per age group.	49
Figure 4.6: Proportion of Patients Per Gender	50
Figure 4.7: Utilization Versus Gender of Patients	51
Figure 4.8: Utilization of Surgical and Antibiotic Treatment per gender of patients.	52
Figure 4.9: Utilization of Surgical and Antibiotic Treatment per Mode of Transport.....	53
Figure 4.10: Utilization Versus Waiting Time.....	54
Figure 4.11: Utilization Versus Operational Hours	55
Figure 4.12: Referral System Versus Utilization	56
Figure 4.13: Utilization Per Marital Status	57
Figure 4.14: Utilization Versus Education Level.....	58
Figure 4.15: Utilization Versus Cultural Beliefs.....	59
Figure 4.16: F&E Indicators and Utilization.....	60

ACRONYMS AND ABBREVIATIONS

ASAL – Arid and semi-arid lands

CO – Corneal opacity

EHHP- Environmental Health and Hygiene Policy

GOK- Government of Kenya

KAP- Knowledge, Attitude and Practice

KBS- Kenya Bureau of Statistics

KEMU- Kenya Methodist university

MOH- Ministry of Health

MDG - Millennium Development Goals

NEMA- National Environment Management Authority

PBT- Potentially Blinding Trachoma

PHD- Public Health Department

SAFE- Surgical, Antibiotics, Facial cleanliness and Environmental sanitation

TF- *Trachoma Folliculitis*

TT- *Trachomous Trichiasis*

TS - *Trachoma conjunctival scaring*

TI- *Trachomatous Inflammations*

UNICEF - United Nations Children Education Fund

WASH- Water Sanitation and Hygiene

WES- Water, Environment and Sanitation

WHO- World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

“Trachoma is known to be the world’s number one infectious reason for blindness (Burton & Mabey, 2009). There are about twenty-eight million people who are blind worldwide and over two-thirds of them reside in developing countries (Smith et al., 2013). In industrialized countries, blindness rates are lower as compared to similar cases in poor countries which are ten to twenty times those in industrialized nations, and in definite populations with specific disease issues like onchocerciasis or appalling trachoma as much as thirty to fifty percent of the population may be affected, predominantly among the vulnerable (Burton, 2007). This transpires not only because of limited access to health services, but also because of ambient or climatic pressures, poor personal hygiene, and other factors associated with a low standard of living (Wright et al., 2007). Approximately eighty percent of the people who are blind in the developing countries agonize from conditions which are preventable in the perception that their blindness could have been prevented or is surgically redeemable (Antonio et al., 2013).“Trachoma is endemial and uneven in the Middle east, Indian Sub-Continent and South Asia. Trachoma was widespread in Europe and North America in about hundred years ago, but eventually faded away during the 20th century as living conditions enhanced” (Fenwick, 2012). In poor rural communities, where water is scarce, low sanitation, and low socio-economic status, trachoma thrives more (Wright et al., 2007).

In Kenya, about sixty seven thousand people are affected with trachoma, with about 2.2 million at risk of contracting the disease (J. Karimurio et al., 2006).The Integrated Trachoma Control Project brings together the efforts of relevant Non- governmental organizations and the County

Governments using the World Health Organization's prescribed SAFE strategy of Kenya, so as to implement SAFE strategy in the counties.

Trachoma is more active in children with an infection of *Chlamydia trachomatis*; a contagious bacterium transmitted through personal contact with contaminated eyes and noses, and by flies in overcrowded areas with poor access to clean water and sanitation" (Tadesse et al., 2017). It is commonly found in the most remote and poor populations with indicators such as overcrowding and low level hygiene, inappropriate cultural health promotion, a weak trachoma human resource and lack of knowledge and support for overall trachoma elimination (Lange et al., 2017).

The World Health Organization (WHO, 2020), produced a simplified trachoma grading classification system which clearly indicated that trachomatous folliculitis is the presence of five or more follicles in the upper tarsal conjunctiva of at least 0.5 mm, trachomatous inflammation is the intensive inflammation and thickening of the tarsal conjunctiva that indeterminates more than half of the normal deep tarsal vessels, trachoma scarring is the presence of scars in the tarsal conjunctiva, it is where at least one eyelash scratches on the eyeball or there is evidence of recent removal of in-turned eyelashes in the past. Scarring is more popular in adults including the teenagers in trachoma endemic areas (Hu et al., 2010). Active infections overtime lead to development of more scars, which slowly develop into a webbing. Gradually, this webbing of scars shrinks, thereby shortening the inner lining of the eye. This shortening process deforms the margin of the lid, hence wrenching the eyelashes closer to the eyeball. In due course, the lashes are trailed around so that they connect with the eye hence leading to trichiasis which is seen representatively in individuals over thirty-five years of age, although in some cases, the same may occur in individuals in their 20s or younger (Hu et al., 2010).

Utilization of health services can be influenced by various factors that include: availability, acceptability, and accessibility of services; the person's illness behavior; perception of threat to life and function; and the attractiveness of the value gained by using available health facilities (Edema

et al., 2011). Andersen's model of healthcare utilization classifies these variables into the following three categories: Predisposing factors, enabling factors, and need factors (Babitsch et al., 2012). These collaborate to bring effect to the probability that a person would utilize healthcare services. Predisposing factors exist prior to an illness and refer to a person's tendency to utilize healthcare services whether the services are required or not. Enabling factors are associated with the surrounding circumstances that affect an individual's ability to utilize healthcare services. While a need factor is either the presence of illness or the perception of need (Babitsch et al., 2012).

In many parts of the world, most cases of blindness are preventable or manageable by surgery and or refractive error corrections (Ntsoane et al., 2010), however, the available resources cannot cope with the level of demand for eye care. This is because in many countries, eye care services are not readily available due to inadequacy of trained personnel or due to the fact that eye care practitioners are usually concentrated in the urban areas (Oduntan, 2005). Factors such as cost, lack of awareness, cultural beliefs and personal factors were identified as barriers to eye care utilization (Ntsoane & Oduntan, 2010). The poor utilization was highlighted as a concern because the time interval between eye examinations was high enough for certain avoidable or curable ocular diseases to cause irreversible visual loss or blindness.

Prevalence of health services utilization is 77.8% in Kenya (Central Bureau of Statistics (CBS) [Kenya], 2004). There is also inadequate population-level information on utilization of health services. A recent healthcare benefit incidence study in Kenya showed inequitable distribution of services according to ability to pay rather than need for care (Kenya National Bureau of Statistics [KNBS], 2010).

Ng'etich et al. (2015) discovered that there was low consumption of both preventive and curative trachoma eye care services. Part of the preventive and curative services offered to the community in the study area include health education, eye examinations, antibiotic treatments and eye surgeries (Ngetich et al., 2015). Health care facilities with eye care services are centralized around

the urban set ups of Kajiado County and therefore those living in the rural areas of the county have to travel long distances to access eye care treatment (Ngetich et al., 2015). Various steps have been made towards improvement of trachoma eye care services and interventions including intensive awareness campaigns about the potentially blinding trachoma, personal hygiene programs, mass drug administration, surgical care and environmental hygiene have been positioned to curb potentially blinding trachoma in the county. Despite the efforts done, there is still insufficient knowledge about the level of utilization of these eye care services and factors that influence utilization of the available services in the County (Ngetich et al., 2015; Njomo et al., 2015).

The prevalence of prevalence in Loodokilani ward was unknown.

1.2 Statement of the Problem

It is a huge concern that blinding trachoma becomes a heavy task to accomplish since the blinding aspect is irreversible (Burton & Mabey, 2009). The WHO (2020) suggested that efforts towards prevention of trachoma disease should include easier access to clean water and presence of a hygienic environment as well as reduced number of the infected people through treatment with antibiotic and surgical therapies. The major public health problems in developing countries is inconsistent for eye care visits of any of the visual impairment and blindness (Hu et al., 2010). Even within a country, availability of services may vary one community to another. In Southern India, over 43% of the population had never had an eye examination (Saltman & Ferroussier-Davis, 2000). Obviously, this will result in low utilization rate and high prevalence of eye and vision disorders. Non-availability of low cost, good quality low vision services and lack of experts or training to support services have hindered provision of low vision care services in the developing countries (Shah et al., 2011). In Afghanistan, eye care services have been reported to be insufficient in quantity and quality (Gümbel & Schwacha, 2009). It was observed that the communities residing in the rural and remote areas of the world are usually of lower socio-economic level, and therefore

do not have adequate access to trachoma eye care services which include surgical and antibiotic treatments (Wright et al., 2007).

Personal hygiene and environmental hygiene normally improve the reduction of spread of infection (Ejere et al., 2015). Achievement of zero-blindness due to trachoma in the future depends on the uptake of preventive and curative services. According to Kovai et al. (2012), poor knowledge of available services may affect utilization of surgical and antibiotic therapy in Loodokilani Ward. “Financial issues may still lead to difficulty in purchasing for prescribed treatments even when affordability is a non-issue (Kolaczinski et al., 2011).

Studies state that hinderances towards utilization eye care include the following; the home environment, transport, long appointment, waiting times, and poor schedules (Olusanya et al., 2015). Other research studies show that the communities residing in the rural areas have lack of or minimized local access to health care and therefore they are forced to travel for long distances to receive medical attention (Olusanya et al., 2016) “Blind people can increase the economic burden which is not easy to calculate.

The prevalence of blinding trachoma in Loodokilani ward was unknown and this in turn affected utilization since provision of interventions could not match the prevalence and determinants of the disease.

1.3 Scope of the study

This particular study focused on the current state of utilization of antibiotic therapy and surgery for treatment of potentially blinding trachoma disease in Loodokilani ward, Kajiado west sub county. This study was carried out at Loodokilani ward only. Utilization of surgical and antibiotic therapy was focused on a proportionate sample of households per locations within the ward.

Interviews were done on adults both male and female, above 18 years to 60 years of age in households in the study area. If the gaps in intervention of the surgical and antibiotic services were identified and reviewed, a spill-over effect of interventions was beneficial for other communities residing in arid and semiarid areas in Kenya. This study only utilized the Anderson`s health utilization model and not any other health utilization model.

1.4 Research Objectives

1.4.1 Broad objective:

To determine how factors, influence level of utilization of surgical and antibiotic treatment of potentially blinding trachoma disease in Loodokilani ward.

1.4.2 Specific Objectives:

1. To determine the proportion of persons of 18- 60 years with potentially blinding trachoma.
2. To determine the level of utilization for both surgical and antibiotic treatments for potentially blinding trachoma.
3. To determine how socio-demographic factors, influence utilization of surgical and antibiotic treatment among persons with potentially blinding trachoma.
4. To determine how accessibility factors, influence utilization of surgical and antibiotic treatment among persons with potentially blinding trachoma.
5. To determine how social factors, influence utilization of surgical and antibiotic treatment among persons with potentially blinding trachoma.

1.5 Research Questions

1. What is the proportion of persons (18- 60 years) with potentially blinding trachoma?
2. What is the level of utilization for both surgical and antibiotic treatments for potentially blinding trachoma?
3. How do socio-demographic factors, influence utilization of surgical and antibiotic treatment among persons with potentially blinding trachoma?
4. How do accessibility factors, influence utilization of surgical and antibiotic treatment among persons with potentially blinding trachoma?
5. How do social factors, influence utilization of surgical and antibiotic treatment among persons with potentially blinding trachoma?

1.6 Hypotheses

1.6.1 Null Hypothesis (H_0)

There was no relationship between accessibility factors and their influence on utilization of surgical and antibiotic therapy by persons with potentially blinding trachoma.

1.6.2 Alternate Hypothesis (H_1)

The level of utilization for antibiotic treatment was higher compared to that of surgical treatment.

1.7 Justification of The Study

In India, despite the relatively recent sustained eye care services that has seen a doubling of cataract output to 3.5 million in 2000; still more than 40% of those with bilateral blindness had never visited an eye doctor (Smith, 2007). According to Kovai et al. (2012) one of the reasons for poor utilization of government facilities for eye care in India was the distance of the hospitals from rural villages. Similarly, the barrier to utilization of eye care services among cataract patients in India included distance from the hospital, or from the main road and lack of transport (Melese et al., 2004). Many people, especially in the developing regions are still becoming blind due to barriers such as cultural belief and attitudes (B. Olusanya et al., 2016). Cultural beliefs of the predominantly rural population are still major barriers to utilization of eye care services in Nigeria (B. Olusanya et al., 2016). In Canada, over one-third of the population still faces a situation of inequality and cultural differences between health providers and users. This has been identified as a major contributor to the underutilization of health services in the Canadian rural communities (Gebre, 2014).

Kenya has about 7.5 million people who are in need of interventions to prevent loss of vision, restore vision or need rehabilitation to improve performance (KNBS, 2015). Out of the 7.5 million who need eye health services, only 21.3% (1.6 million) are able to access eye health from both public and private facilities, (Ng'etich et al., 2015). Over 75% of visual impairment result from preventable causes and many of the cases like cataract are treatable and possible to restore sight, (KNBS, 2015). Although over 65% of visually impaired people are over 50 years, interventions targeting child eye health associated with schooling and development cannot be underestimated, (KNBS, 2015).

Kajiado west sub county is the most affected with issues relating to open defecation and poor facial and environmental hygiene. Loodokilani ward is one of the biggest wards in Kajiado west sub county with the vastest environments, whose prevalence of blinding trachoma is unknown. A major barrier to eye care services in the rural areas of the world is poor conditions of the

roads and this results in poor accessibility (Tanser et al., 2006). The communities residing in this ward are scarcely populated and most of them are pastoral communities.

1.8 Study Limitations

The limitations of this study included vast distances that the researcher covered from one household to another. Kajiado West sub-county is generally vast and the terrain is not favorable for most vehicles. Challenge experienced was that of access to sampled households using a limited budget. However, the researcher preferred convenience sampling during data collection where she visited nearest households first. Moreover, the cultural challenge came in when the researcher was female addressing older males in households, it required an extra male research assistant to administer questionnaires to elders. Male CHVs came in handy since the researcher equipped them especially on the community household questionnaire, and this eased answering of questionnaires by male respondents.

1.9 Delimitations of the study

This study was limited to the age group to be interviewed that was 18-60 years. The study also focused on the utilization of surgical and antibiotic treatments and not the factors causing prevalence of the disease. This was well illustrated by the study objectives and research questions. There other related factors of utilization that the researcher could have chosen but opted not to. Research methodology and choice of variables set boundaries on the findings of the study. Results of the research were generalizable to the county department of health and relevant NGOs working in Kajiado west sub county.

1.10 Significance of the study

The County Government of Kajiado, Department of Health and supporting Non-governmental organizations were able to propose better health infrastructure that includes access and social factors that improved on the level of utilization of surgical and antibiotic treatment in Loodokilani ward. Moreover, better equipping of satellite health facilities was addressed as one of the factors that encourage health utilization by the local communities. This study also benefitted community health workers in terms of recognition of their work and rewarding their voluntary work through provision of better means of transport, improved health infrastructure that includes roads, mobile networks, regular capacity building on trachoma among others. The data collected in this study informed the interested health organizations of the community's cultural beliefs towards the surgical and antibiotic treatments hence assisting in planning of interventions.

Majority of the F&E factors related to the prevalence of blinding trachoma disease in the ward, were highlighted by the study, for instance the unavailability of clean and safe water for domestic use and poor hygiene and sanitation among others; this proved beneficial to the residents of Loodokilani ward. This study highlighted endemic zones affected by potentially blinding trachoma in the ward and the existing gaps before and after utilization of already implemented surgical and antibiotic treatments. The findings informed policy decisions towards putting necessary measures for improvement of service delivery for utilization of surgical and antibiotic therapy in the ward by the County Government of Kajiado, Department of Health, and donor funded organizations within the county.

1.11 Assumptions of the study

The researcher assumed that there were current health interventions of surgical and antibiotic therapy in Loodokilani ward. There were far-off distances from the households to nearest health facilities for communities to reach and do follow ups for their treatments. Another assumption was the nomadic life of pastoralists migrating from one place to another on a regular basis and therefore affecting accessibility of patients to the health facilities. The current service delivery methods in the ward were assumed to be constant.

1.12 Definition of Terms

Adult

One who is fully developed and matured and who has attained the intellectual capacity and emotional and psychological stability that are characteristic of maturity. This study stated an adult as a person who is 18years and above.

Antibiotic therapy

This is a strategy that uses antibiotics produced by or derived from certain microorganisms including fungi and bacteria, that can destroy or inhibit the growth of other microorganisms, especially bacteria.

Household

Individuals who comprise of a family unit and who live together under one roof, all those who are under the control of one domestic head (Kenya Bureau of Statistics [KNBS], 2015).

According to this study, a household was referred to as a *boma* where one family lives in one compound, but indifferent houses (*manyattas*), as per the *Maa* culture.

Potentially Blinding Trachoma

Capable of being blind due to trachoma disease progression past the active stage but before total blindness. It includes TS and TT stages; it is also known as latent or undeveloped blindness.

Utilization

This is the measure of the population`s use of the health care services available to them. Health care utilization and health status are used to examine how effectively a health care system produces health in a population

Resident

A person who lives somewhere permanently or on a long-term basis. In this study, a resident was someone who was born and raised in that location or has lived there for more than three years.

Surgery

This is a form of treatment of blinding trachoma disease. In the SAFE strategy. It is the final treatment option to prevent blindness caused by chlamydia Trachomatis

Trachoma

Also called granular conjunctivitis or Egyptian ophthalmia, is a contagious, chronic inflammation of the mucous membranes of the eyes, caused by Chlamydia trachomatous. It is characterized by swelling of the eyelids, sensitivity to light, and eventual scarring of conjunctivae and corneas of the eyes.

TF

Trachomatous folliculitis

TI

Trachomatous inflammation

TS

Trachomatous Scarring

TT

Trachomatous Trichiasis

CO

Corneal opacity

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter explains the disease and its epidemiology, SAFE strategy and utilization levels, factors affecting utilization, the theoretical framework, and the conceptual framework.

2.2 Potentially Blinding Trachoma

Trachoma is a neglected tropical disease, that is most prevalent in the nomadic communities greatly associated with poverty (Gebre, 2014). Infection usually first begins in childhood presenting as active trachoma with the infections progressing to potentially blinding trachoma disease in adulthood because of repeated infections causing scarring on the inside of the eyelid. The infections lead to blindness as eyelashes gradually turn inwards and rub on the cornea (Mpyet et al., 2010). Potentially blinding trachoma is commonly found in arid and semi-arid environments that present with hot, dry and dusty climates and unlike Loodokilani ward, most of the researches done have been done in known trachoma endemic areas (Ng'etich, et al., 2015).

The WHO Grading Report of 2018 provides a simplified trachoma grading that categorizes clinical findings in a uniformized way as follows: TF = Trachomatous follicular inflammation, TI = Intense trachomatous inflammation, TS =trachomatous conjunctival scarring, TT = trachomatous trichiasis and CO = corneal opacity due to trachoma. The active part of trachoma disease (TF and TI) is an infectious chronic conjunctivitis which occurs mainly in children of between 1 to 9 years (WHO, 2018).

Figure 2.1

The Simplified WHO Trachoma Grading Card

Trachomatous Inflammation– Follicular (TF) - The presence of five or more follicles in the upper tarsal conjunctiva.



Trachomatous Inflammation – Intense (TI) - Pronounced inflammatory thickening of the tarsal conjunctiva that obscures more than half of the normal deep tarsal vessels.



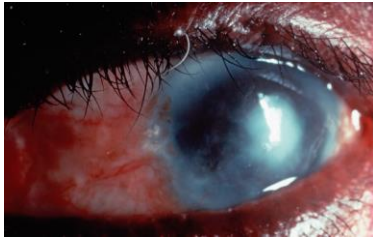
Trachomatous Scarring (TS) - grossly visible scars on the tarsal conjunctiva.



Trachomatous Trichiasis (TT) - At least one eyelash rubbing on the eyeball or evidence of recent removal of in-turned eyelashes (epilation).



Corneal Opacity (CO) - Easily visible corneal opacity blurring part of the pupil margin.



Source(WHO, 2018)

Previous studies have indicated that TF is more particular to active trachoma than TI because it is used as the indication for active trachoma disease in children (Schwab et al., 1995). TT and CO is the blinding sequelae that occur mainly in adults (Cook, 2008). However, in this study, the researcher focused on potentially blinding trachoma as the combination of TS, TT and CO.

2.2.1 Transmission of Potentially Blinding Trachoma

Most infections are transmissible from eye to eye, through fingers, indirect transmission through sharing of towels and pillows, through coughing and sneezing, through eye seeking flies, and through discharge contamination from the eye and nose (Gambhir et al., 2007). A main cause of infection is through contact persons for instance in the case of mother to child or one child to another. *Musca sorbents* eye seeking flies or other household fomites also lead to spread of bacterial infection from the environment to hosts. The active trachoma infectious stages, that is, trachomatous inflammation, trachomatous folliculitis and trachomatous intense are usually found in children. However, there are no animal reservoirs for trachoma transmission (Gambhir et al., 2007).

2.2.2 Epidemiology of Potentially Blinding Trachoma.

Worldwide, refractive errors that are not corrected are the major reason for visual impairment (WHO, 2018). Eighty percent of all visual impairments can be avoided or cured, but in the middle- and low-income countries, cataracts lead in being the major cause for visual impairments (Sommer et al., 2014) “It is estimated that two hundred and eighty-five million people are visually impaired around the world, thirty-nine million are blind while two hundred and forty-six have vision that is low (Burton & Mabey, 2009). Potentially blinding trachoma is more popular in the remote areas of fifty one countries located in Asia, Central and South America, Africa, Australia and the Middle East (Adera et al., 2016). Worldwide, an estimated 2.2 million people are visually impaired and 1.2 million others are blind as a result of trachoma infections. About 232 million people are at risk of blinding trachoma, 21 million of them have active trachoma and about 7.3 million require surgical services (WHO, 2018).

Africa leads in being the continent that is worst affected. It has eighteen million cases (85 %) of active trachoma and 3.2 million cases of trichiasis (44%) cases globally (Smith et al., 2013). Ethiopia and South Sudan record the highest prevalence of active trachoma (Cumberland et al., 2005). Developing countries record the highest number of people who are visually impaired in the world (Naidoo, 2007). Evidence has shown that women account for approximately 64% of global blindness; an age-adjusted prevalence 39% higher than in men (Khanduja et al., 2012). In Rwanda, there was an improvement on accessibility of drinking water from seventy seven percent in 2005 to eighty seven percent in 2011 where Rwanda was the only country that did not have cases of trachoma infections (Ruberanziza et al., 2009).

Trachoma disease leads to stigma, disability and distress which leads to the economic burden that costs between 2.9 to 5 million dollars yearly (Frick et al., 2003). Major public health problems in

the world especially in the developing countries are visual impairment and blindness (Osae et al., 2017) .

In Kenya, potentially blinding trachoma disease is endemic in several counties exposing about 7.3 million people at risk of trachoma disease and blindness (Schwab et al., 1995). There are twelve known endemic counties are clustered in two distinct geographic areas; the North-west lowlands and the South-central plains (Schwab et al., 2013) .All are characterized by challenges of perennial water shortages, inadequate sanitation, poor hygiene and poverty (Schwab et al., 1995). Through the collaborative effort of eye care stakeholders, the twelve counties were surveyed; these counties included; Kajiado, Narok, Baringo, West Pokot, Meru North, Samburu, Turkana North, South, Central and West, Kitui, Laikipia, Marsabit, Isiolo and Trans-Mara (Schwab et al., 1995) .The Ministry of Health and The Queen Elizabeth Diamond Jubilee Trust launched the Kenya Trachoma Elimination Program (KTEP) in 2014 which was geared towards elimination of trachoma by 2019. The World Health Organization describes trachoma as a broad public health problem when active trachoma and prevalence of trachoma trichiasis are above 10% and 1%, respectively (Hu et al., 2010).

Kajiado county was one the most endemic counties putting thousands of people in its endemic areas at risk of infection and even blindness (Ng'etich et al., 2016). A study in Shompole location, Magadi division in Kajiado West sub-county revealed that prevalence of active trachoma among children aged 1-9 years was 16.0% in 2006 and that of potentially blinding trachoma (TT) was at 1.7% in the same period. The same study also identified women as more affected with TT than men and higher prevalence of active trachoma (TF) in boys than girls, $p=0.044$. It was also noted that the community held strong negative believes about construction and utilization of pit latrines (Karimurio et al., 2007). According to Karimurio et al. (2007), the pervasiveness of infective trachoma was 28.1% for young children between the ages of one to nine years, and blinding

trachoma was at 3.3% for persons of 15 years and above. In 2011 at Kajiado county, the SAFE approach was administered so that the effect of trachoma infections would reduce in the local populaces (Ng'etich et al., 2015). According to the mid-term evaluation done by AMREF Kenya in 2010, the pervasiveness of trachoma infections among children of one to nine years of age was reduced from twenty-three percent to ten percent by the year of 2010. A research study performed in Kajiado County by AMREF Health Africa in 2013 mentioned that the pervasiveness of trachoma infections was about seventeen percent (Ng'etich et al., 2015).

2.3 The SAFE Strategy

The SAFE masterplan is the most commonly used towards preventive and curative eye care services and is in line with the World Health Organization. The SAFE master plan brings together the surgical and antibiotic therapies together with the preventive aspect of facial hygiene and environmental sanitation. This broad approach works towards elimination of blinding trachoma. For a successful intervention, there has to be inclusion of all the four constituents. Therefore, all the four merged constituents must run together for the achievement of the SAFE master plan (Mathew et al., 2009).

2.3.1 Environmental Hygiene (primary prevention)

Advancements in household and population hygiene such as availability of improved toilets with a fly control mechanism, improved water supply and increased good sanitary practices is key to achievement to maintainable eradication of the disease (Montgomery et al., 2010). The safe distance between homesteads and cattle sheds as well as food and water safety and hygiene, are also crucial environmental strategies that affect populations enclosed a trachoma control program (Baneke, 2012). Trachoma prevalence varies between and within communities which are strongly clustered by households. Trachoma disease is more prevalent in arid and semi-arid areas. It is

connected with congestion, low attainability of safe water, poor disposal of waste and high fly population (Tadesse et al., 2017).

2.3.2 Face washing (primary prevention)

Usually, traditional Maasai manyattas are awfully aerated. Often, the dust full areas lead to too much dust affecting the children's faces thereby negatively affecting the facial hygiene. Several studies have shown that facial hygiene and use of tetracycline ointment is much more effective than lack of facial hygiene and use of tetracycline (Ejere et al., 2015).

2.3.3 Antibiotics (secondary prevention)

WHO recommendation for antibiotic therapies involves the use of tetracycline ointment twice daily for six weeks or the use of oral azithromycin (Evans & Solomon, 2011). It was more preferred to use a stat dose of oral Azithromycin as it was more effective for active trachoma than tetracycline creams. This could be because of its pharmacokinetic features that make it suitable for the treatment of trachoma disease (Evans & Solomon, 2011).

When prevalence of trachoma infections for children below nine years of age, is greater than ten percent, then it is recommended by the World health organization that the population should receive community based, mass drug administration. There should be yearly administration of antibiotics which should be closely followed up by health providers until the prevalence is lower than five percent (WHO, 2018).

Mass drug administration of antibiotics should be distributed to family units when the prevalence of disease is moderate. The proper dosage for oral stat of 20 mg/kg or tetracycline ointment of one percent should be prescribed for two weeks with a dosage of two times a day. Azithromycin is usually proposed and seconded due to its use as stat dose. Even though it is of high cost, it is

utilized for donations through the Pfizer program (Ngondi et al., 2008) .Azithromycin is safe for use during pregnancy and by infants aged six months and above. Studies reveal that oral azithromycin is better than tetracycline ointment when distributed in the communities, although there was no attestation towards effectiveness of oral or topical antibiotics (Evans & Solomon, 2011). Antibiotic therapy eliminates the probability of active trachoma disease brought about by chlamydia trachomatis in patients (Mathew et al., 2009).

2.3.4 Surgery (tertiary prevention)

A surgical procedure is performed on patients who are partially blinded by the infections where eyelashes are redirected away from the cornea (Solomon et al., 2004). It is very important to utilize lid clamps and sutures that easily absorbs that the lid contour abnormalities can be reversed together with granuloma formulation and eventually the limited progression of corneal scarring and in some instances it can lead slight improvement in visual sharpness maybe because of reconstruction of the optical exterior and reductions in visual discharge and eye dystonia (Mathew et al., 2009). Surgery of the cornea reduces scarring of the cornea and is commonly utilized as a barrier to prevention of entropion. Advanced interposition is mostly preferred as the frequency of outburst is high as disease progresses (Gichangi et al., 2015).

2.4 Utilization

Utilization is the measurement of the community`s use of the available health care services (M. D. Ntsoane & Oduntan, 2010). Examination of the relationship between utilization of healthcare and the status of health primarily assist in ensuring effectiveness of health care system in a community. “It is very important to ensure that effective inclusion of services and evaluation of service offered are appraised and measured (Kovai et al., 2012).

Research studies state that health seeking behaviors are affected by evaluation of service utilization and observation of the health trends of the beneficiaries of healthcare delivery (Ntsoane & Oduntan, 2010). Various factors address the social, accessibility, knowledge and perceptions by persons with potentially blinding trachoma even when affordable care is available. However, people living in the remote areas of most countries are usually of lower socio-economic status, and thus do not easily access eye health services (B. Olusanya et al., 2015). When access is inadequate then quality of life drops and then there is an elevation in diseases which may not be preventable, diagnosable, treatable or manageable (WHO, 2018). In other instances, there may be several barriers such as lack of knowledge of availability, affordability, cultural beliefs among others towards surgical and antibiotic treatments.

Globally, the utilization of available eye care services is critical for lowering of the burden of visual impairment. In sub-Saharan Africa, communities continue to face limited access to skilled health-care services (Essendi et al., 2011). Rural environments in developing countries record poor accessibility to eye care services; they include; Jamaica, Latin America and the Caribbean, South Africa, Nigeria and India (Alemayehu et al., 2015). Moreover, lack of affordability was noted as the main contributor to poor utilization of eye care in many rural communities in Jamaica, South Africa, Nigeria, India and amongst the Timor-Leste (Bramley & Watkins, 2009).

In Kenya, it was noted that efforts to utilize health-care services by communities were constrained by various factors including ineffective health decision making at the family level, inadequate transport facilities to health-care facilities, insecurity at night, high cost of health services, inhospitable health workers and poorly equipped health facilities (Essendi et al., 2011).

Ng'etich et al., (2015) discovered low utilization of both preventive and curative trachoma eye care services by the nomadic communities in Kajiado county. In Kajiado county, community health volunteers' frequent households to educate the community on facial hygiene and environmental sanitation which includes proper disposal of domestic and human waste hence

leading to the reduction of eye seeking flies. They also assist in the distribution of antibiotics and referral of patients to satellite health facilities for surgical therapies (Ng'etich et al., 2015).

There are four community health units in Loodokilani ward namely; Kilonito, Mile46, KMQ and Torosei. A community unit is usually comprised of 12-14 community health workers/volunteers. One community health volunteer follows up between 15-25 households, making it an average of 20 households per CHV. Due to vastness of the area, some of the CHVs cover 15 households, while those whose households are close together, may cover up to 25 households. Only 10 out of approximately 52 CHVs are trained on trachoma screening and are also known as TT identifiers or case finders. There is only one trachoma monitor who supervises all the case finders at Loodokilani ward. CHVs have a direct link to hospitals and especially to the five satellite dispensaries namely (Torosei, KMQ, Kilonito and Singiraine) and one health center (Mile 46), where they refer patients with potentially blinding trachoma.

2.5 Factors Affecting Utilization of Surgical and Antibiotic Treatments

Poor utilization of eye care can be seen as lack of confidence by the populace for the eye care professionals, some causes for inaccessibility of eye protection utilities are multifarious, and a few may be better super scribed than others. Many people are being blinded for the reason that they cannot easily reach eye care amenities even though health care requirements multiply as age progresses (Ng'etich et al., 2015).

2.5.1 Socio- Demographic Factors

Age

In South India, Kovai et al. (2012) found a significant association between age and noticeable decrease in vision and suggested that this might be due to the health seeking priorities in relation to age in rural areas, as age influences the decision to seek health. In a study among persons with

glaucoma in rural South India, found that the use of eye care increased significantly with age and this was attributed to the fact that most eye diseases manifest themselves during old age (Taylor et al., 2012). Moreover, the same study indicated that the likelihood of using eye care services increased with advancing age due to the higher prevalence of disease such as diabetes, hypertension, cataract, and related maculopathy. It was also noted that older American women were particularly likely to have more frequent eye examinations than younger ones (Taylor et al., 2012). Other authors found an association between older age and utilization of eye care services and attributed this to old age health problems (Cook, 2008; Taylor et al., 2012).

Gender

Women in Iran were more likely to seek eye care services than men (Adera et al., 2016). Another study reported that women in Timor-Leste with either low vision or blindness were more likely to seek treatment than men (Ramke et al., 2007). It was also noted that women tended to have eye examinations more frequently than men (Koopmans & Lamers, 2007). These reports suggest that women are more careful about their eye health than men, hence gender has influence on eye care utilization.

Location

Eye care services are not available in many parts of the Africa, and presumably in the rural areas of the developing countries. As at 2003, there were about five ophthalmologists in the Limpopo Province of South Africa, suggesting an estimated ophthalmology/ population ratio of 1:82 000, (Kumaresan & Mecaskey, 2003). This means that blinding eye diseases such as cataract, glaucoma, and diabetic retinopathy cannot be managed on time, which may lead to low vision or even blindness. Poor people often rely on government hospitals for their eye care services including refractive corrections (Wright et al., 2007). However, in many countries, public hospitals do not have optometric services; therefore, refractive conditions. The locations where people reside could

positively or negatively affect several health care amenities, that include ingress to televisive, detection, and medication.

2.5.2 Accessibility Factors

Mode of transport

Access to eye care service can be measured by the travel time required by public transportation to reach the nearest eye care provider, people in the rural areas with avoidable and treatable eye conditions are largely unattended while city facilities remain underutilized (B. Olusanya et al., 2016). This has resulted in many rural communities still relying on alternative sources of care including traditional healers and patent medicine sellers, who serve as frontline health workers (Thompson et al., 2015). A major barrier to eye care services in the rural areas of the world is poor conditions of the roads and this results in poor accessibility (Tanser et al., 2006). Patients living near the district hospital have been found to be most likely to present to the ophthalmic assistance for eye care services (Schémann et al., 2002). One of the reasons for poor utilization of government facilities for eye care in India was the distance of the hospitals from rural villages. It was reported that the barrier to utilization of eye care services among cataract patients in India included distance from the hospital, or from the main road and lack of transport (Gnyawali et al., 2012). The old age community are most likely prefer to use eye care system, as they are more likely to get eye conditions and the eye presentations of different congenital infections However, they may be negatively affected by the transport or mobility to the nearest health facilities for follow up of treatment (Sabanayagam & Cheng, 2017).

Waiting Time

Many Western countries that monitor and record waiting times (e.g. Australia, Canada, Denmark, Finland, Ireland, Italy, Netherlands, New Zealand, Norway, Spain, Sweden, United Kingdom) have reported that timely access to treatment has become “a significant health policy concern” (Viberg et al., 2013). The rationale for policies to reduce waiting times seems to be similar in systems with relatively long waiting times; delayed access to medical care may threaten equal access to treatment and impose a variety of costs such as welfare losses during the period, more severe treatment due to delayed waiting, work absenteeism, income losses, increased medication and service utilization (Anderson et al., 2007). In prospective studies, it is, however, difficult to collect WT data through the chain of decisions and actions from first contact with primary care practitioner to treatment. Evaluating the whole path of the care process seems to be methodologically difficult for the reason that at the first contact, there is no confidence regarding the clinical need for surgical treatment (Xie et al., 2017).

Operational hours

Out-of-pocket payments and per-visit charges are reported for outpatient consultations and inpatient stays for different providers. Transportation costs and the factor of the distance and travel cost in choosing facilities, is dependent on the operational hours of a health facility (WHO, 2008). Countries with high utilization of public facilities for outpatient services show similar patterns for inpatient services. However, in exceptions like Bangladesh, private facilities account for a significant share of outpatient visits, but not inpatient stays (Koppka et al., 2018).

Referral systems

Referral in health care delivery is a process by which a health worker at one level of health care facility sends a patient to another health worker/facility who have appropriate resources in

managing the condition. Referral system is referred to as a system because it comprises several parts, among such are the following: health system issues, initiating facility, referral practicalities, receiving facility, supervision and capacity building and continuous quality improvement. Alemayehu et al. (2015) discussed the huge difference in utilization of eye care amenities comparison of urban and rural populace although the general epidemiology of eye infections is similar. Presence of eye care amenities could also be affected by patterns of utilization of services. The lines of communication between the primary health care and the other levels of care is worrisome (Fritz et al., 2012). Studies have shown that referral forms are not readily available in the PHC facilities while many do not have telephone directories. Furthermore, the referral system does not provide opportunity for feedback about the patients referred. Studies have alluded to the poor utilization of the referral system in Nigeria (Akande, 2004). A number of factors have been implicated which include: inadequate knowledge of referral process among health care workers, poor road network, poor awareness of available health facilities (Medhanyie et al., 2012). Similarly, poor public awareness, patient's non-compliance, patient preference, poverty and poor support have impacted the system in no small measure (White et al., 2015).

2.5.3 Social Factors

Social factors are those factors that affect utilization of surgical and antibiotic therapy services for trachoma patients living together in organized communities. There is insufficient literature on whether the available surgical and antibiotic therapy utilities are being used tolerably, chiefly by the depreciated populations or the vulnerable who also receive such treatments (Ntsoane & Oduntan, 2010).

Level of Education

The level of education in India, the Tehran community in Iran, the Americans and Chinese in Taiwan all who are of old age, were seen to affect eye care service utilization, as the more of the literate people were apparent to utilize eye care amenities (Shrestha et al., 2014). This illiteracy clashes the comprehension of the urgency for treatment and the most preferred method to dispense it. The education level can also involve entry to sight, eye and health provision for the reason that it may influence the capability to acquire, comprehend and utilize data to affect views on health issues (Shaikh & Hatcher, 2005). An illiterate individual may show indecision about treatment utilization, have reading awkwardness for material that is printed, or have trouble understanding health care messages (Shrestha et al., 2014). Bamani et al. (2013) revealed that the lack of knowledge towards eye problems that includes several eye ailments like ocular opacity, glaucoma and moon blindness added the troubles of potentially blinding trachoma by 3.5 times. Nevertheless, there was no significance between a person's nature of work and their knowhow to eye problems (Bamani et al., 2013). Amid of one hundred and thirteen individuals who knew about eye diseases, about seventy-four percent explained the relationship of the disease with presence of dirty things fallen in the eyes as the cause of an eye problem, others about fifty percent mentioned that accidents to the eyes were the reason. During emergency situations, about seventy nine percent sought health care services instantly whereas others about fifteen percent sought traditional eye treatments (Thompson et al., 2015). Khanduja et al. (2012) mentioned that the little knowhow by the communities towards eye treatments and overall perception by the population is a hindrance to eye care treatments in rural India. Moreover, a research study done in the United Kingdom showed that there were hindrances in the relationships between health providers and patients (Hausmann et al., 2008).

Cultural Beliefs

Studies in Gambia, stated that the reasons for poor uptake of eye surgery was more of cultural barriers, where males have more authority than females even up to economic power. Also the same reason was found for the poor utilization of eye surgical services even when the females may need it more (Ntsoane & Oduntan, 2010). There may also be differences in the cultures for the treatment of trachoma infections after its diagnosis. Additionally, perceptions and culture by the societies have been found to include various stops to eye treatments. In order to understand cultural underpinnings of health and the utilization of health services among pastoral communities, it is essential to note that decisions relating to healthcare use are bound by a social context (Ntsoane & Oduntan, 2010). The use of formal healthcare, however, is constrained by the lack of knowledge, limited resources and access to care, as well as cultural differences in illness and help-seeking behavior (Olusanya et al., 2016). Consequent utilization of healthcare services is limited due to differences in cultural perceptions of illness, health-seeking behavior, and inaccessibility to services (Lawrence, 2012). Therefore, a need emerges to understand the way culture influences the utilization of healthcare services in order to improve service delivery, affordability, accessibility, and life outcomes that include morbidity and mortality rates. The effects of cultural determinants on health status and health service utilization are often overlooked in research. Therefore, further research on the impact of culture on the health of pastoralists would assist providers, practitioners, and policymakers in the formulation of programs and services that are more culturally acceptable, appropriate, and accessible (Cauce et al., 2002).

Marital Status

Unmarried individuals have reduced access to resources that may affect utilization (e.g. health insurance and disposable income) than those who are married and may engage in riskier health-related behaviors, possibly impacting utilization, (Simeonova, 2013). Previous research suggests

that being married is predictive of better health status, perhaps attributable to more effective patterns of utilization (Turner et al., 2011). A substantial literature supports a positive effect of marriage on health. Married individuals, especially men, have a longer life expectancy than the unmarried, better mental health, and report greater satisfaction with overall quality of life (Wai et al., 2015). The observed relationship between marriage and health was initially thought to be due to “marriage selection” (i.e., married individuals may be self-selected based on health-related characteristics, attitudes toward health, or behavioral factors) (Olusanya et al., 2016). However, there is a growing literature regarding the concept of “marriage protection.” This concept implies a protective role of a strong social relationship that may result in better health because spouses (especially women) function as care takers, providing physical and emotional support. In an analysis of young married women (age 24–34), the positive health effects of marriage were found only among the unemployed, suggesting that the relationship between marriage and healthcare utilization may be modified by additional social circumstances (Wai et al., 2015). In addition, risk-adjusted healthcare expenditures are lower among married couples despite better health outcomes (defined as the extent of change in or preservation of health status following an intervention) (Ntsoane & Oduntan, 2010). These findings raise the possibility that marital status may influence health outcomes through efficient (improved outcomes for a given cost or reduced costs without a decrement in health outcomes) utilization of health-related resources.

2.6 Theoretical Review

There are several health seeking utilization theories which describe the stages of sickness; these theories are the Parsons’ sick role, Mechanic’s general theory and Schuman’s stages of disease and health-care utilization. The health utilization models are Rosenstock’s health belief model, Andersen’s health behavior model, and Young’s choice-making model. Theories are also known as decision level or health care seeking levels while models can be seen as sets of variable

interactions. This study briefly explained the Rosen stock health belief model and the Schuman's model although this study chose to use the Anderson model deeply due to its relevancy in the study (Aday & Andersen, 2014).

2.6.1 Anderson's Model

There are three phases of Anderson's model of health service utilization.

Phase 1 -illustrates variables through their predisposition (demography, social structuring and health myths),capacitating variables (family assets and community assets), and exigency factors (viewed wants and clinically assess what is required) that come together to affect the likelihood of an individual utilizing healthcare amenities (Olusanya et al., 2016). Predisposition habitual are seen just before a disease occurs and recount the inclination of a person to utilize healthcare amenities. Capacitating factors usually affect an individual's ability to utilize healthcare amenities where people's attitude signal to possibility of gesture, adjustable factors are viewed as more damage of sickness and possibility of taking deterrent maneuvers which incorporates wealth seen within the household and the community (Ntsoane & Oduntan, 2010).

Phase 2 –explains the populace features (predisposition, capacitating and want factors),healthcare apparatus (stratagem ,means and operations),utilization of health services (variety, reason and duration of time) and client contentment (comfort, standard ,attainability ,funding and donor features), community health intimation are general strategies of health of population, that incorporates epidemiological indexes of deaths, illnesses and handicappers (Babitsch et al., 2012). Operational components involve if a person has a frequent origin of management and the type of that particular origin. They also involve modes of transmission, duration of travels to and from and waiting time for health care service. At the circumstantial extent, funding encloses the assets

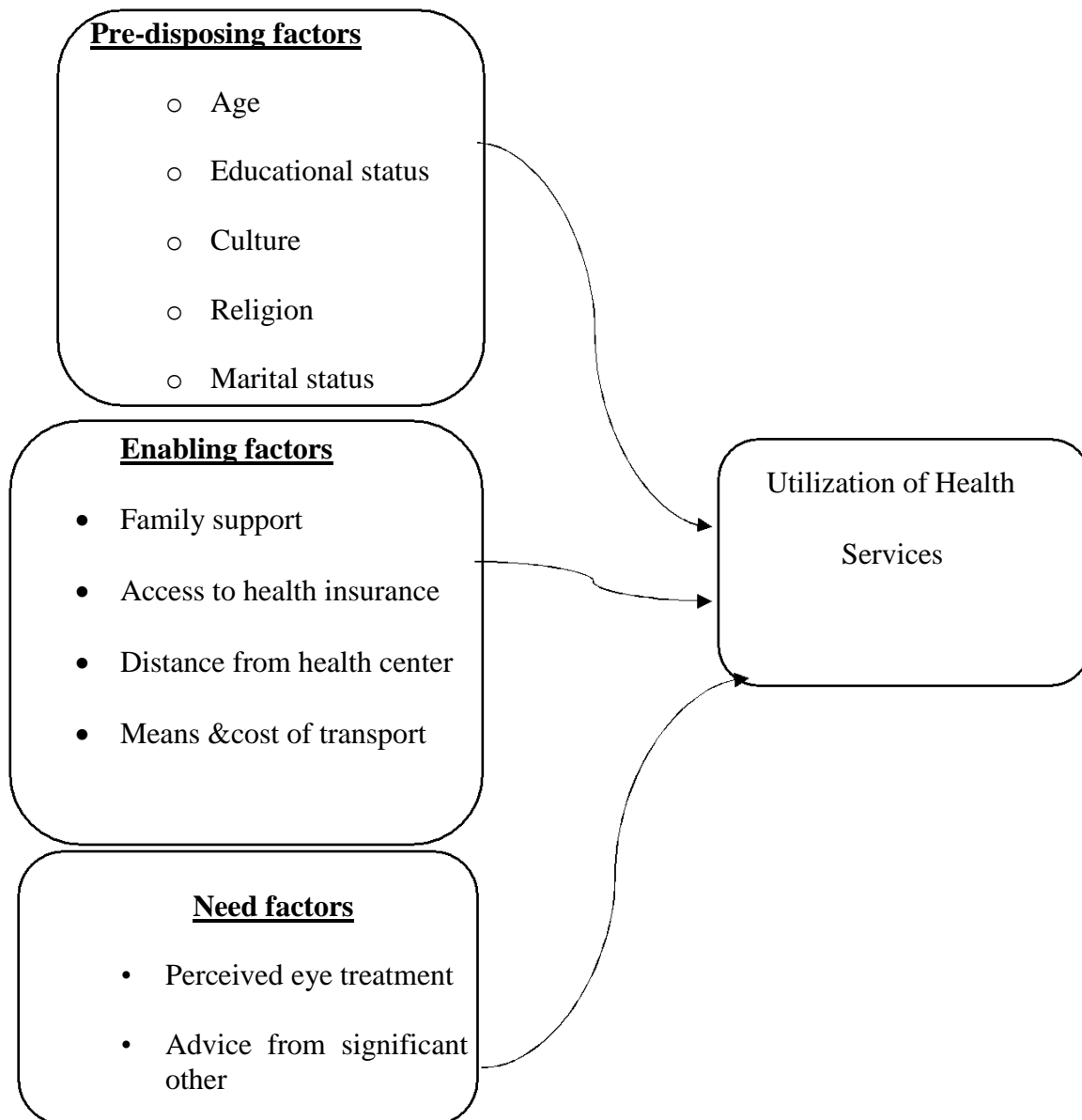
present in the community for health care provision, such as per capita income of the population, opulence, the frequency of health insurance cover, the comparative cost of produce and systems, modes of compensation for health workers, and health care disbursements (Tanser et al., 2006).

Phase 3 -explains the usage of health utilities that includes, prime factors (community features, health care amenities and the outward surroundings), health performance (individual health features and the utilization of health amenities) and health consequences (recognized health footing, assessed health footing and client contentment (Hausmann et al., 2008). At a personal level, the requirement variables are metamorphosed linking recognized requirements for health amenities, that is, how people visualize and encounter their own overall well-being, operational situation and disease symptoms and assessed requirements that is, executive evaluations and unbiased quantifications of the victim`s health footing and requirements for medical attention (Kerr, 2016).

Andersen's Health Utilization Model

Figure 2.2

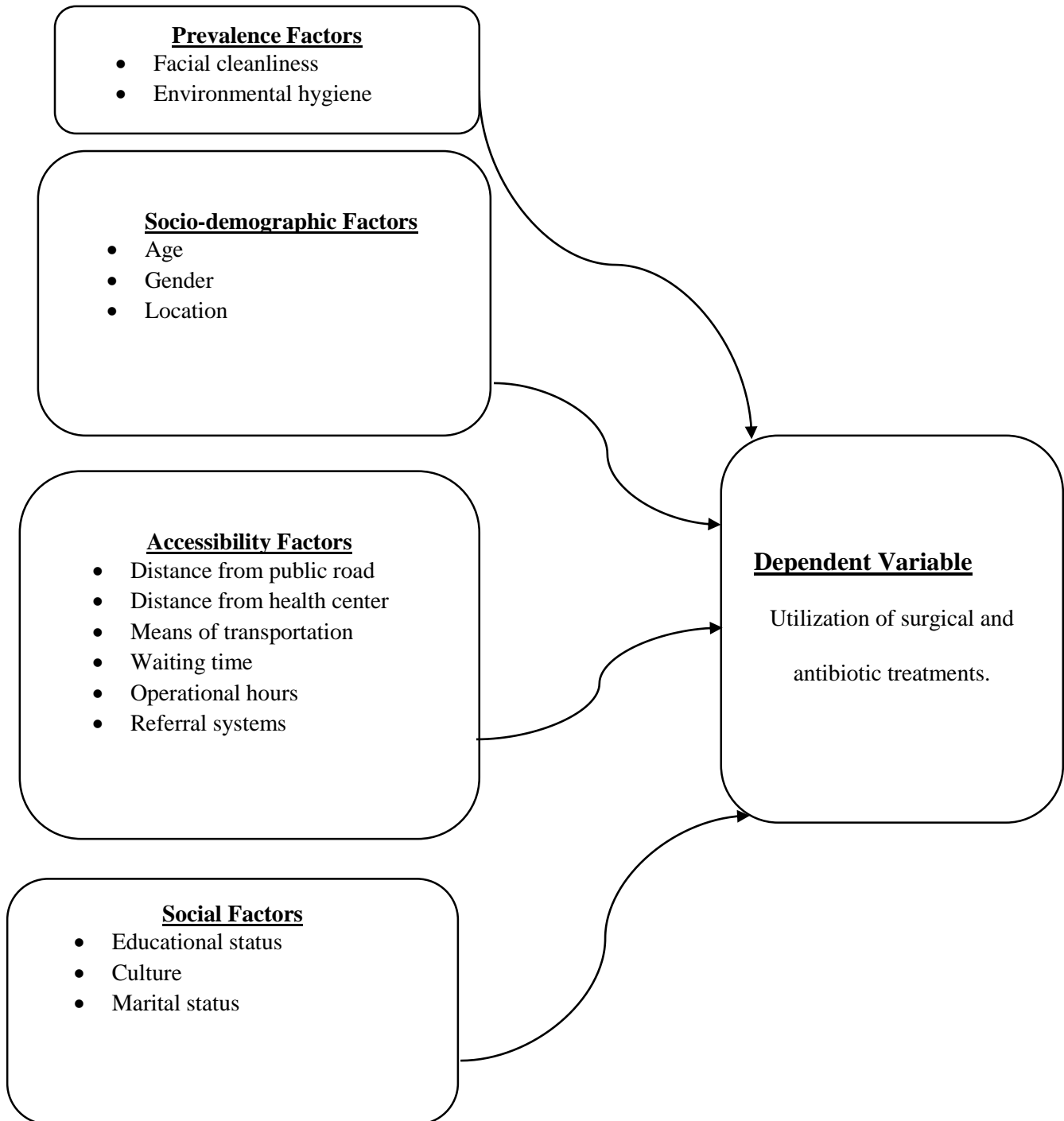
Andersen's Health Utilization Model (Aday & Andersen, 2014).



2.7 Conceptual Framework

Figure 2.3

Conceptual Framework (Ruth, 2018)



CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter discusses the methods used which included study fixture, design and population, the sample procedure and sample size variables, target population, study setting, sample and representation processes, study apparatus, statistics assemblies, and moral deliberations.

3.2 Study setting

This study was performed in June 2017 at Loodokilani ward, Kajiado west Sub County. Kajiado County lies at the southerly border of the erstwhile Rift Valley Province, which is approximately 80km from Nairobi county. It has a population of 687,312 and an area of 21,292.7km² (KNBS, 2015).

The county encircles Nairobi and expands to Tanzanian border-line in the southern parts. The county has five sub counties namely; Kajiado Central, West, North, South and East. Kajiado West sub county has a population of approximately 104,376 (KNBS, 2013). It consists of five wards namely; Euwaso Ekidong, Loodokilani, Magadi, Keekonyokie and Mosiro. Most of the residents are an equipage of nomadic pastoralists of the Masai population. Loodokilani ward has an approximate area of 2,010.60 sq.km. It has an approximate population of 11,832 (KNBS, 2013). The four locations under Loodokilani ward include; Torosei, Kilonito, Mile 46 and Singiraine. The area has a range of high trachoma prevalence making it suitable for this study. The ward under study is Loodokilani ward.

3.3 Target Population

This study targeted adults of both sexes of 18 to 60 years of age. The number of households in Loodokilani ward was approximately 2400 (KNBS, 2013). The number of sampled households in Loodokilani ward was unproportionate due to the different population densities in the locations.

3.4 Study Design

This study was a survey cross-sectional study that was both descriptive and analytical. This study is descriptive because the researcher described the proportion of persons utilization of surgical and antibiotic therapy among persons with potentially blinding trachoma in Loodokilani ward (Anthonj et al., 2017). This study is analytical because it discusses the variables that influenced the use of surgery and administration of antibiotics among people suffering from potentially blinding trachoma (Migchelsen et al., 2017).

3.5 Sample Size Determination and Sampling Procedure

The sample size was resolved using the Fisher`s test (Mugenda & Mugenda, 2009). This technique was classic for use in this research since the population under study in Loodokilani ward was higher than 10,000 i.e.11832 people. The sample size was influenced by the classic technique shown below;

$$n = Z^2 P Q / D^2$$

in that:

- n– is the predicted number of households
- Z- is the Z-score for a 95% confidence level in a normal distribution table
- P– is the unknown proportion of persons in the target population ailing from potentially blinding trachoma in Loodokilani ward and therefore it is assumed to be at 50%(Lazzeroni et al., 2016)

- Q –is the accolade of P, that is (1-P)

D -sampling error which is taken to be 0.05.

$$n = \frac{(1.96)^2 \times 0.5 \times (1-0.5)}{(0.05)^2}$$

$$n = \frac{3.84 \times 0.5 \times 0.5}{0.0025}$$

$$n = 384$$

$$10\% * 384 = 38,$$

Consequently, the actual sample size results to 384+38=422

NB: The estimated sample size was adjusted by 10 % to compensate for non-response (i.e.10%*384= 38, therefore the sample size was 384+38=422(Singh & Masuku, 2014).

According to KNBS (2013), each household in pastoral communities is averagely made up of about five to eight family members. In Kajiado County Health Records Information System, the number of persons aged 18 years to 60 years old were 61.6% of the comprehensive populace, that is equivalent to 7289 people in Loodokilani ward (KNBS, 2013) and the number of households in the study locations are as shown in Table 3.1.

Table 3.1*Population in Loodokilani Ward*

s.no	Locations	Total Population	Total Adult Population (61.6%)	Total Households	Sample Distribution (n=422)
1	Elangata Waus	4720	2908	944	168
2	Loodokilani	2372	1461	474	85
3	Kilonito	1250	770	250	45
4	Singiraine	1330	819	266	47
5	Oltepesi	1120	690	224	40
6	Torosei	1040	641	208	37
Totals =		11,832	7289	2366	422

Source: lower limit of 5* as lower limit in a family unit(Kenya National Bureau of Statistics (KNBS); ORC Macro, 2010).

In Loodokilani ward, there was a total of 120 community health volunteers (CHVs), of whom only 10 of them were trained as trachoma identifiers/case finders. The CHVs were evenly distributed in the ward and therefore covered all the six locations. Previous studies indicated that TT case finders were recruited from existing pool of Community health volunteers (CHV) in the Community Health Strategy Initiative Programme of the Ministry of Health. They were trained, validated and supervised by experienced TT surgeons (Karimurio et al., 2017). Each CHV covered an average of 20 households per location, since in the scarce areas of the ward, a CHV covered about 15 households and in densely populated areas a CHV covered about 25 households.

3.6 Sampling Methodology

The sampling technique used was a multistage sampling that involved two stage sampling process (Sedgwick, 2015). In the ward, every location represented one unit.

The first stage included stratification of the six locations because of the different population densities Data for all villages in each location were established. Using convenience sampling, the researcher first visited those households that had better access to a health facility in terms of distance.

The second stage involved random sampling to identify households at the entrance, the center and the exit of each location. The data collected of the listed households identified persons with potentially blinding trachoma. One adult per sampled households was engaged in answering of the administered questionnaires.

3.7 Study Instruments

The instruments that were used in this study included; community household questionnaires which were used to identify patients, socio-demographic, access and social factors influencing utilization of surgical (tertiary prevention) and antibiotic treatment (secondary prevention), for adult patients aged between 18 – 60 years; it used open-ended questions. Community household observational checklists were used to identify the primary prevention indicators, that is, (facial cleanliness and environmental hygiene indicators (primary prevention) of households, using close-ended questions (Likert scale).

3.8 Validity and Reliability of Instruments

3.8.1 Validity

Data collection instruments validity was based on the WHO experts grading tool. (*See Appendix 6*). Rationality of the study tools confirmed the content validity of instruments, that is, the checklist and interview guides, and were approved by the supervisor and public health experts in the field. The information collected during the study was very accurate since it involved first-hand information by patients or those affected by potentially blinding trachoma.

3.8.2 Reliability

This study used trachoma monitors who were already trained and who routinely used the WHO grading cards (*See Appendix 6*).

Reliability was done through pretesting and was repeated for two weeks to assess clarity of the questionnaire items. Those questions that were found inadequate were modified to improve the quality of the data collecting instruments and a comparison of answers were made and analyzed. A pilot study was conducted in Magadi ward before the actual data collection on a 10% household sample drawn from study site for pretesting. This helped in the determination of the accuracy, clarity and suitability of the research instruments (Mugenda & Mugenda, 2009). Only the Kajiado west CHV's case identification tool was already in use before the study as part of routine case reporting. Research assistants previously trained on trachoma monitoring were drawn from the study sites and trained for three days on primary data collection techniques. During the data collection process, the researcher supervised all the research assistants randomly and consistently. The data collected was reliable in the analysis of the SAFE situation in the study area.

3.9 Data Collection Methods

Questionnaires were used to interview adults aged 18 to 60 years of age in the households selected under study. Semi-structured and structured questionnaires collected both qualitative and quantitative information on the civic, accessibility, knowledge and perception factors influencing utilization of surgical and antibiotic therapy (Leeuw & Schmeets, 2016).

Another study done by Williamson et al. (2018) ,described data being brought together with the assistance of a coalition of information and assembly apparatus. In this research respondent-provided tests were used to receive data from the respondents and these instruments were used to evaluate the usage of the eye treatments and receive data on variables influencing consumption of eye care amenities by the population.

Direct observation was also used to identify potentially blinding trachoma cases among the population under study via signs and symptoms of potentially blinding trachoma. “unswerving monitoring at the homestead measure assigned data on allocations of the home ambience that affected probability consideration for potentially blinding trachoma” (Gill et al., 2008)

Observation checklists evaluated the F&E factors which affected the prevalence of potentially blinding trachoma in Loodokilani ward.

3.10 Inclusion and Exclusion Criteria

The study excluded all people that were not 18-60 years of age, those without sound mind, those that were totally blind during the study and those that were not residents of Loodokilani ward. Any visitor found in the sampled households at the time of research who may or may not have been affected with potentially blinding trachoma was not allowed to participate. The study included resident adults, both male and female of 18 – 60 years of age only who agreed to be involved in the research.

3.11 Statistical Analysis

Descriptive statistics were used to measure central tendencies and the distribution of the data in the population. The means, medians and the variance were also calculated (i.e. %) for categorical variables (Rendón-Macías et al., 2016).

Analytical statistics were used to test the hypotheses. Pearson's chi-square test was used to test associations. Significance of the results were tested using inferential statistics and were used to test the null hypothesis (DasGupta, 2008).

3.12 Ethical Review

Ethical review included ethical clearance, voluntary participation, confidentiality, personal and general benefits, risks and informed consent (Anderson, 2011).

Ethical Clearance

Moral agreement was solicited from SERC at Kenya Methodist University (KeMU), the County Department of Health in Kajiado County and the NACOSTI permit.

Voluntary Participation

Participation by respondents was on voluntary basis and the participants were explained to the purpose of the research which was to collect information that would help in identification of patients with potentially blinding trachoma and improve on the exercise of eye treatment through provision of appropriate surgical and antibiotic treatment.

Confidentiality

Participants were assured of confidentiality; the interviews were conducted in a private section of the household away from other people. Filled questionnaires were stored and locked in a safe cabinet and data in the computer secured with a password. Anonymity was ensuring by respondents not writing their names on the questionnaires.

Personal and General Benefits

There were no monetary benefits involved however overall benefits were well explained by the researcher on improvement of utilization of surgical and antibiotic therapy to prevent blindness caused by potentially blinding trachoma.

Risks

The participants` acceptance to join the study did not prevent the respondents to quit from the research at any time.

Informed Consent

Informed consent was received from the respondents by signing a consent indicating their acceptance to be involved in the study. The documents were locked safe in a drawer that only the researcher could access.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

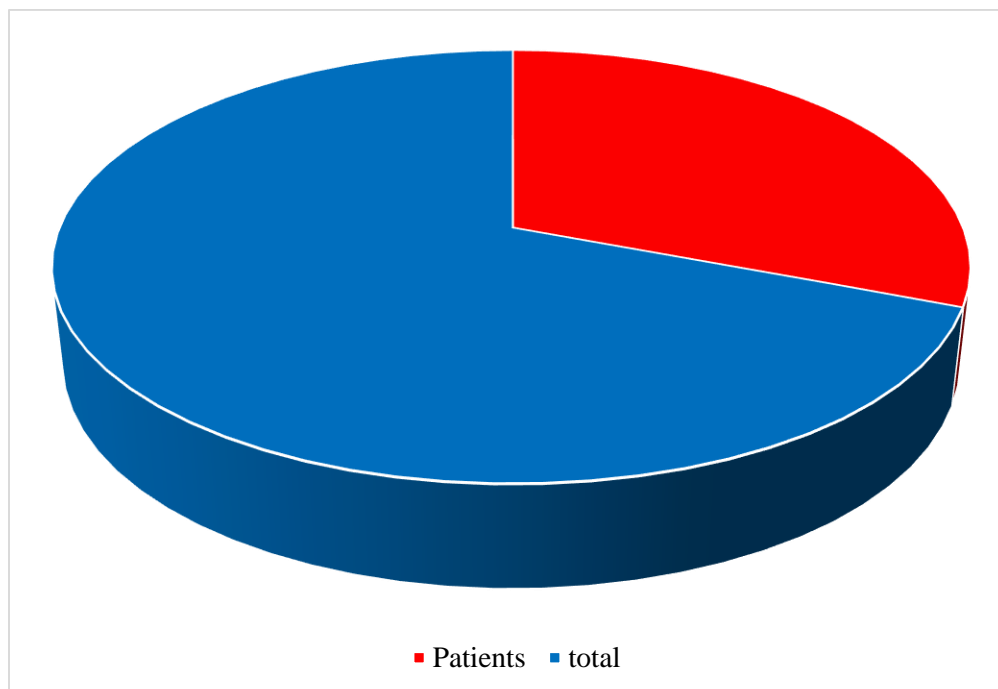
This chapter discusses the results of the collected information, interpretations and discussions of research that work towards establishing the utilization of surgical and antibiotic therapy for the treatment of potentially blinding trachoma in Loodokilani ward, Kajiado west sub county. The findings are discussed as per the purpose of this research.

4.2 Proportion of persons with Potentially Blinding Trachoma in Adults.

The study identified 188 patients out of the total 422 respondents. This was equivalent to 44.5% prevalence in Loodokilani ward.

Figure 4.1

Proportion of persons with Potentially Blinding Trachoma in Adults.



4.3 Level of Utilization of Surgical and Antibiotic Treatment

The study indicated data of the overall utilization of surgical and antibiotic therapy by the 188 patients in Loodokilani ward.

Table 4.1

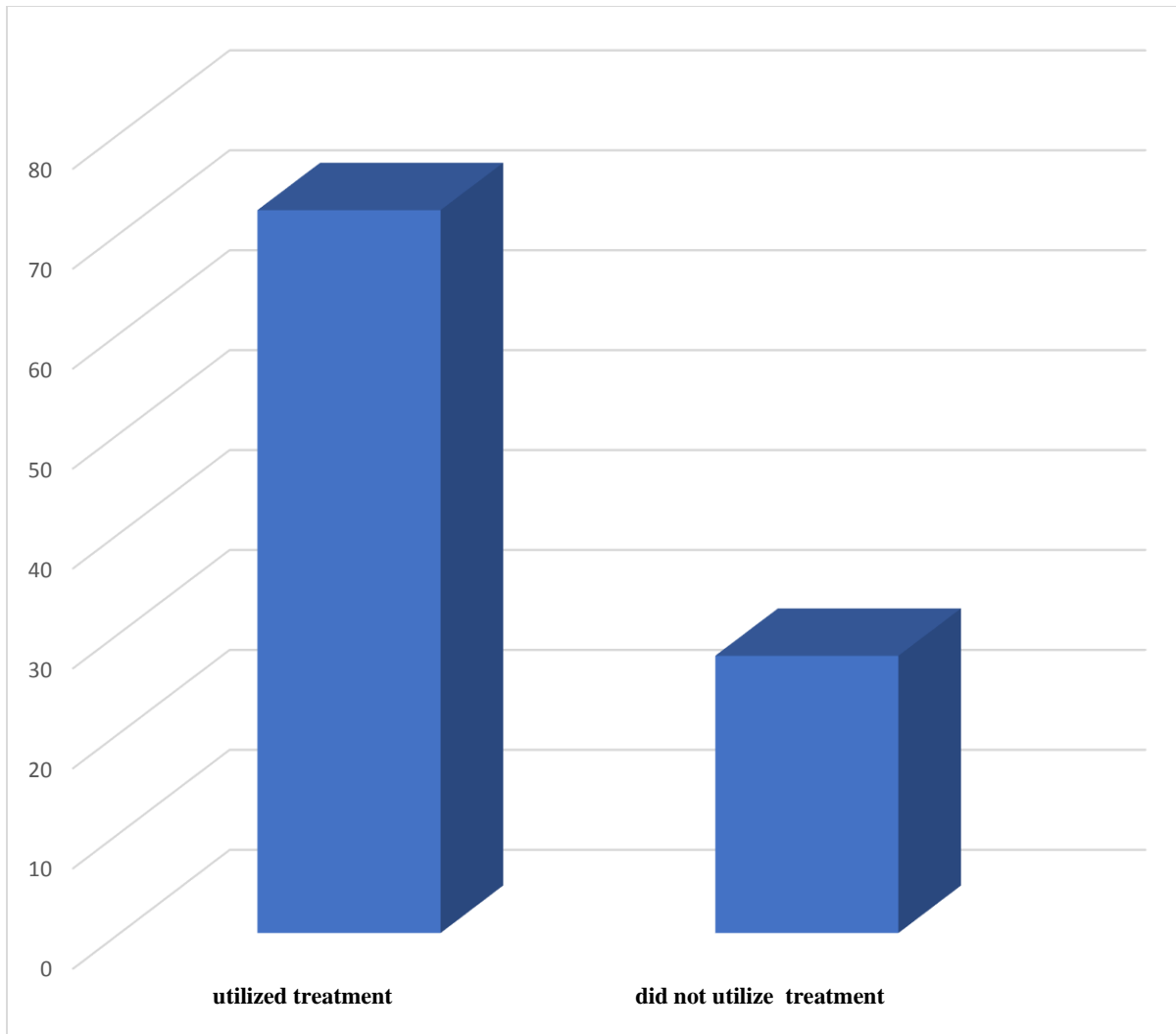
Level of Utilization of Surgical and Antibiotic Treatment

Location		Elangata	Torosei	Loodokilani	Kilonito	Singiraine	Oltepesi	
		Waus						
PTB Patients (N=188)		76	23	40	10	10	29	
Type of Service Sought	Surgical Therapy	23	9	3	5	1	1	4
	%	12.2	39	13	22	4	4	17
	Antibiotic Therapy	113	46	14	24	6	6	17
	%	60.1	41	12	21	5	5	15
	No utilization	52	21	6	11	3	3	8
	%	27.7	40	12	21	6	6	15
Chi-square	0.034							
P-Value	P> 0.05							

The study recorded a majority of patients utilizing treatment 136(72.3%) as compared to those not utilizing 52(27.7%) treatment in Loodokilani ward.

Figure 4.2

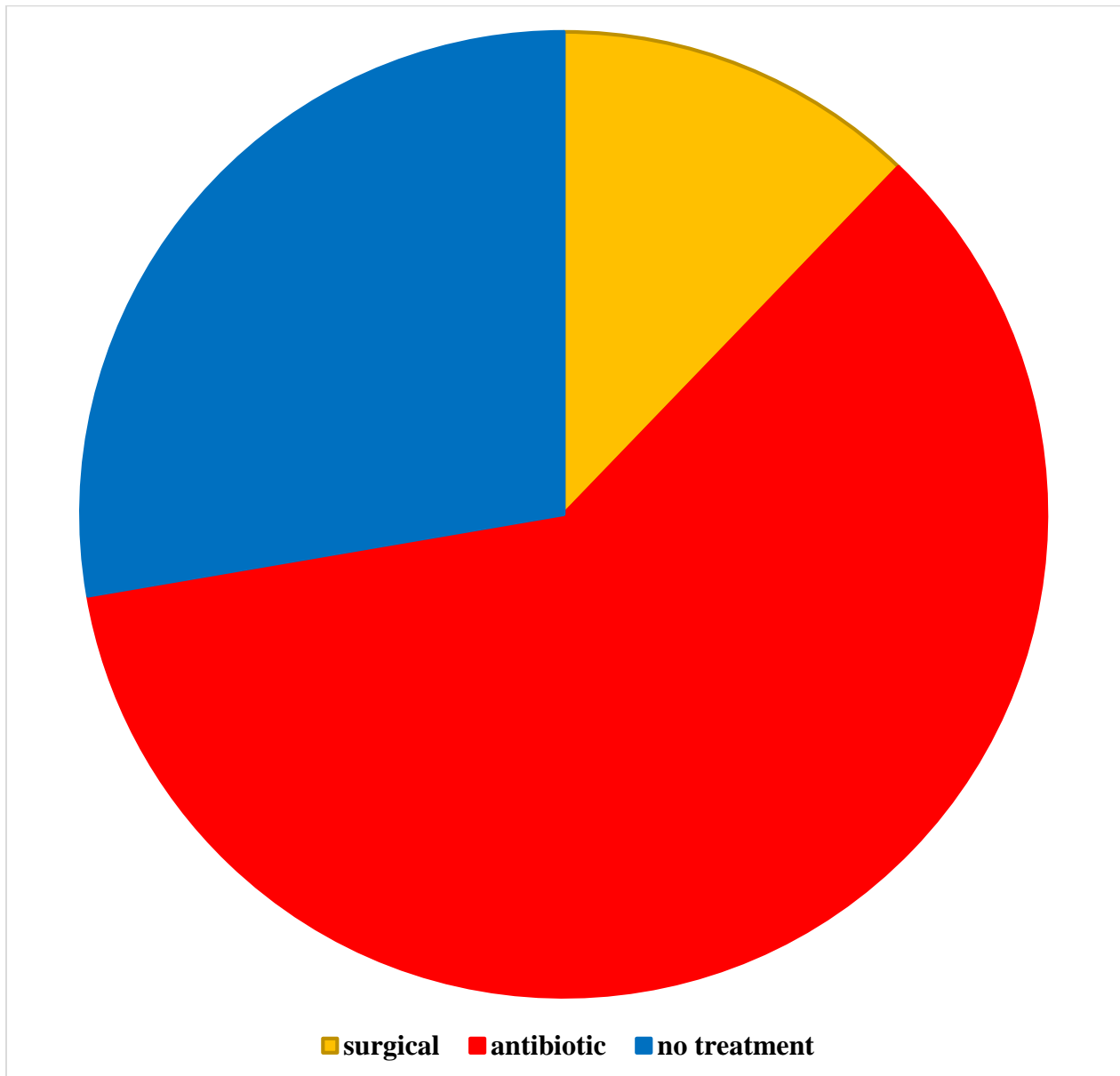
Levels of utilization in Loodokilani Ward.



Patients receiving antibiotic treatment were higher 113(60.1%) as compared to those utilizing surgical treatment, 23(12.2%). However, those who did not utilize any treatment were 52(27.7%).

Figure 4.3

Utilization of Surgical and Antibiotic Treatment in Loodokilani Ward.



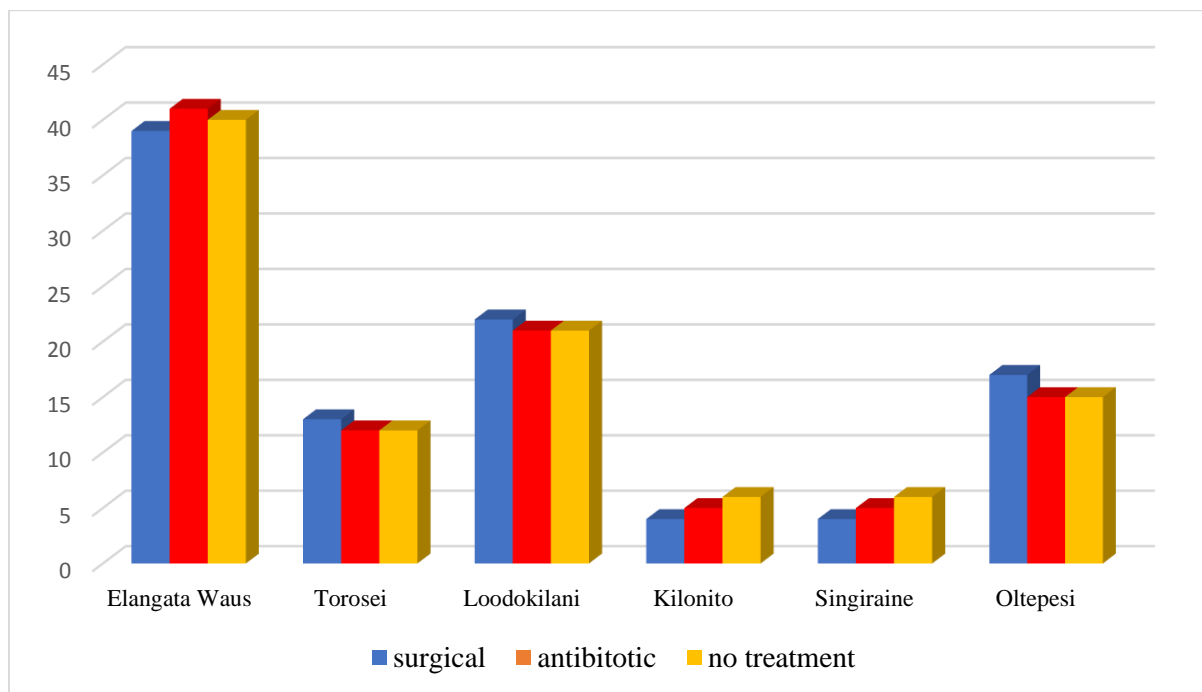
4.4 Socio Demographic factors

Location

Elangata Waus location recorded the highest count in surgical and antibiotic treatments with 9(39%) and 46(41%) respectively. The same location recorded highest in those who did not utilize treatment, 21 (40%).

Figure 4.4

Utilization of Surgical and Antibiotic Treatment per location.



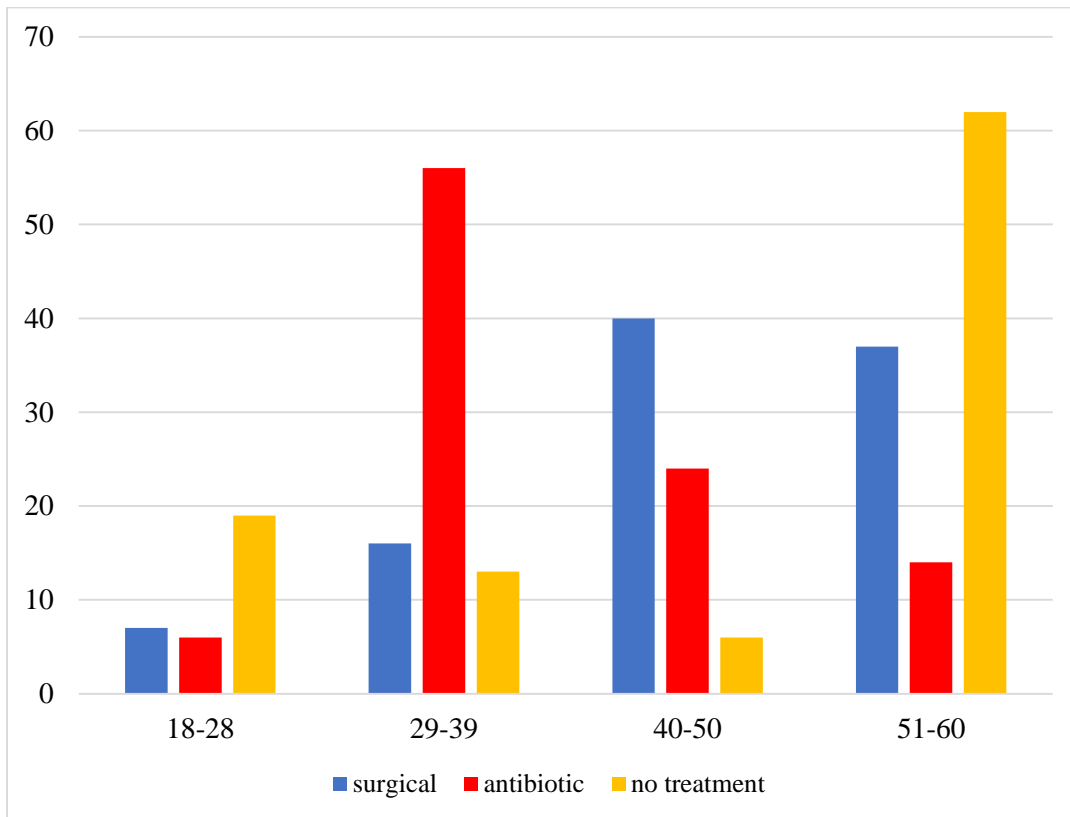
According to this study, it was noted that despite the high population in Elangata Waus location, the location still recorded the highest utilization of surgical and antibiotic therapy treatments. Locations have different characteristics which they positively or negatively affect the utilization outcome (Polack et al., 2005).

Age

The study noted that majority of the patients utilizing surgical services 12, (40%) were between 40-50 years, while those utilizing antibiotic treatments were observed highest 28(56%) in age group 29-39 years. Those who did not utilize the treatments were observed highest 67(62%) in age group 51-60 years.

Figure 4.5

Utilization of Surgical and Antibiotic Treatment per age group.



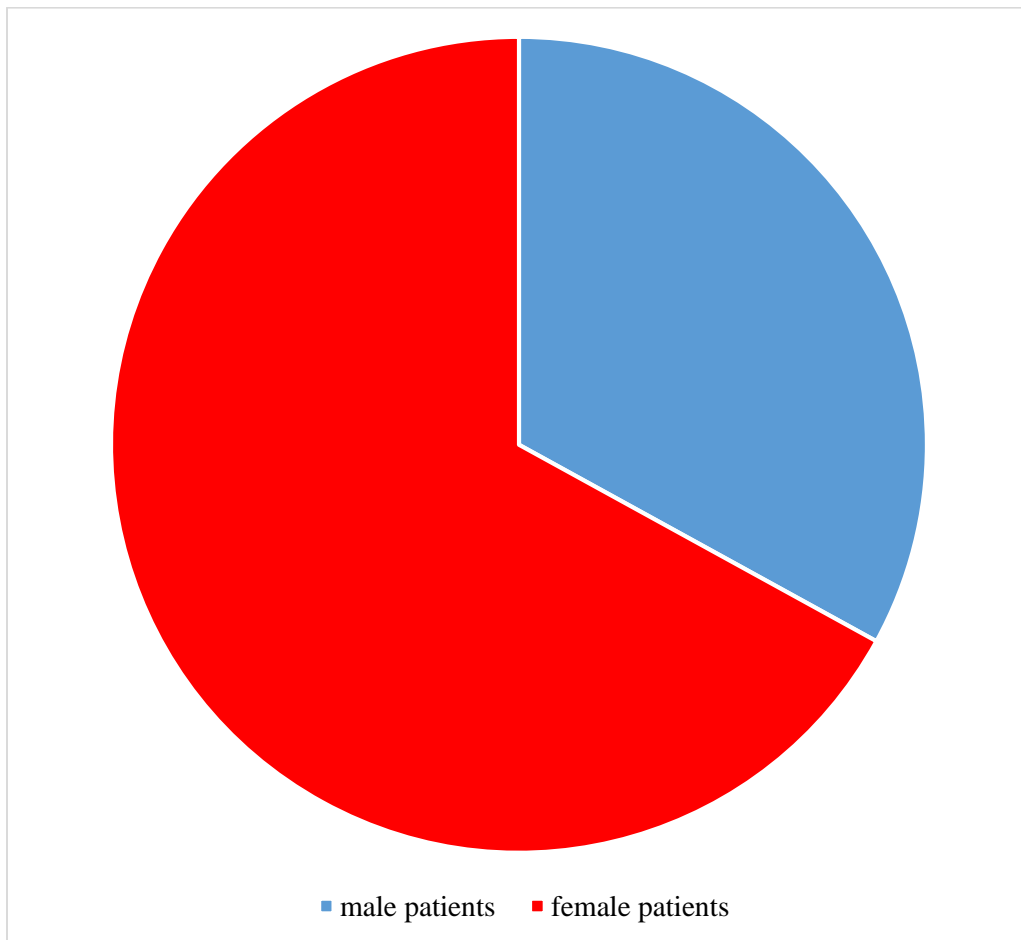
A study done by (Gambhir et al., 2009) presented an age-structured mathematical model of trachoma transmission and disease to predict the impact of interventions on the prevalence of blinding trachoma.

Gender

This study revealed more female patients 126(67%) than male patients 62(33%) in Loodokilani ward.

Figure 4.6

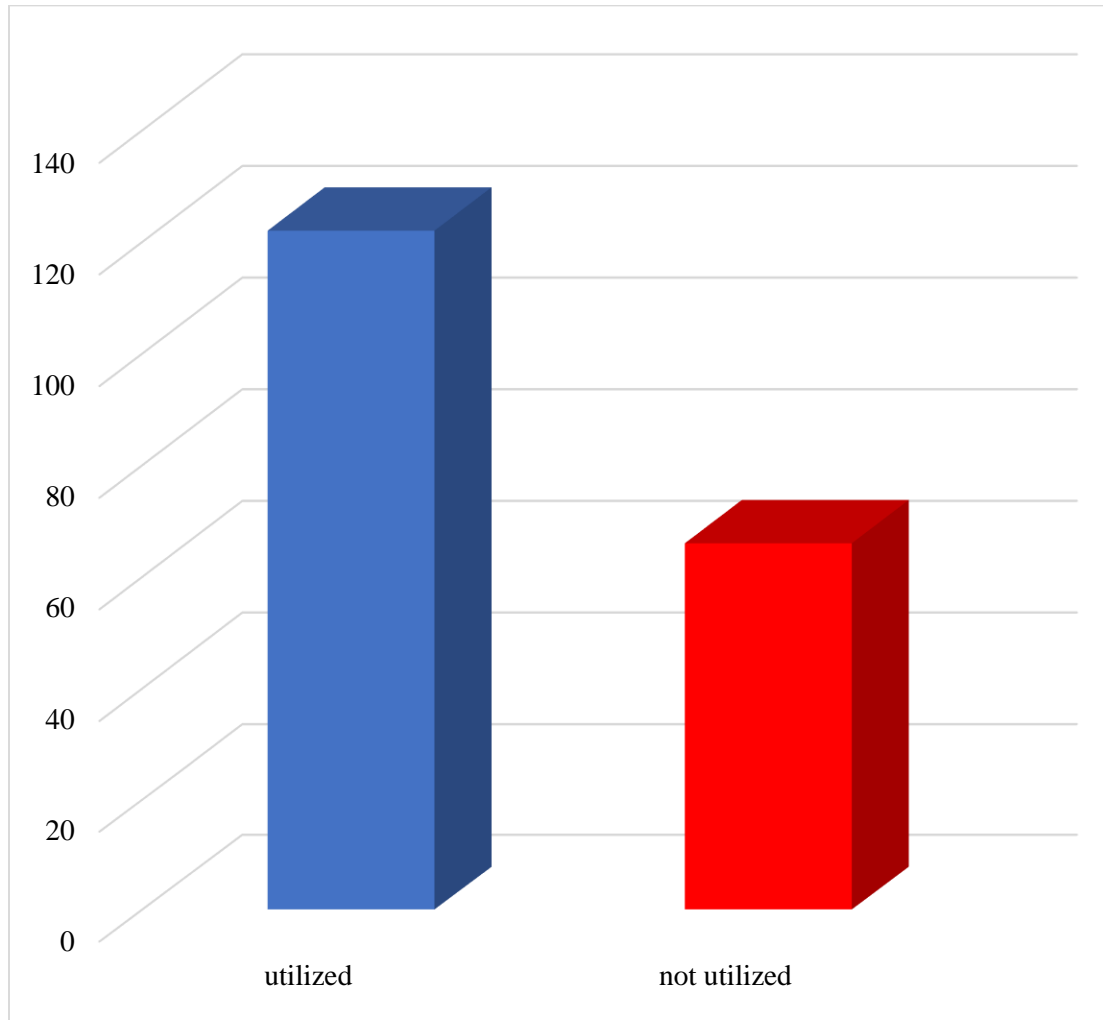
Proportion of Patients Per Gender



The study noted that there was generally a higher rate in utilization, 122(65%) for both male and female patients, than it was for non- utilization, 66(35%).

Figure 4.7

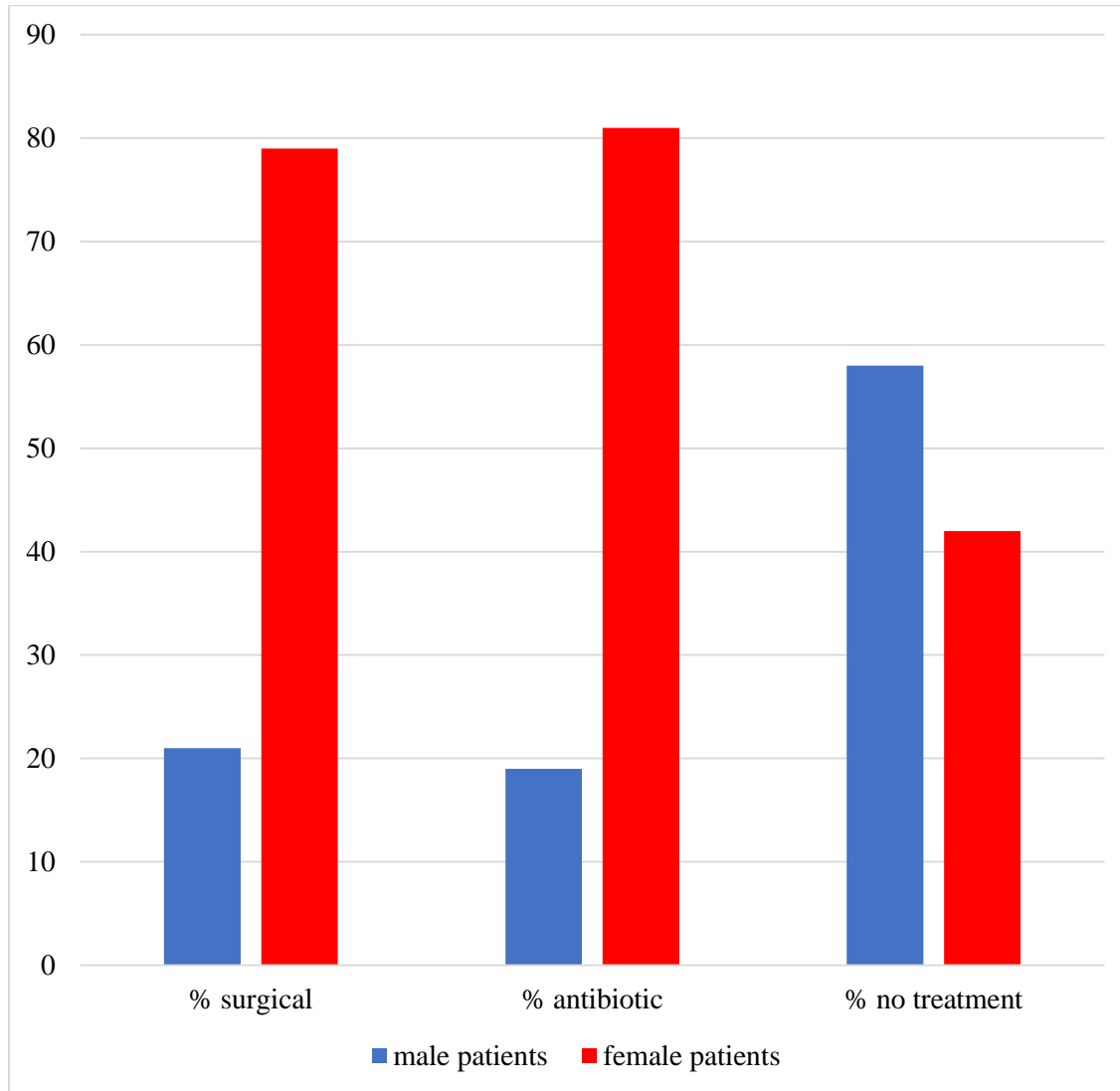
Utilization Versus Gender of Patients



It was observed that more female patients, 30(79%) utilized surgical services than their male counterparts, 8(21%). Antibiotic treatments were seen higher in females, 68(81%) than male patients, 16(19%), while those who did not seek any treatment were observed higher in male, 38(58%) than in female patients, 28(42%).

Figure 4.8

Utilization of Surgical and Antibiotic Treatment per gender of patients.



This study agrees with a study by Babitsch et al. (2012) that gender does not necessarily have a direct impact on utilization of health services.

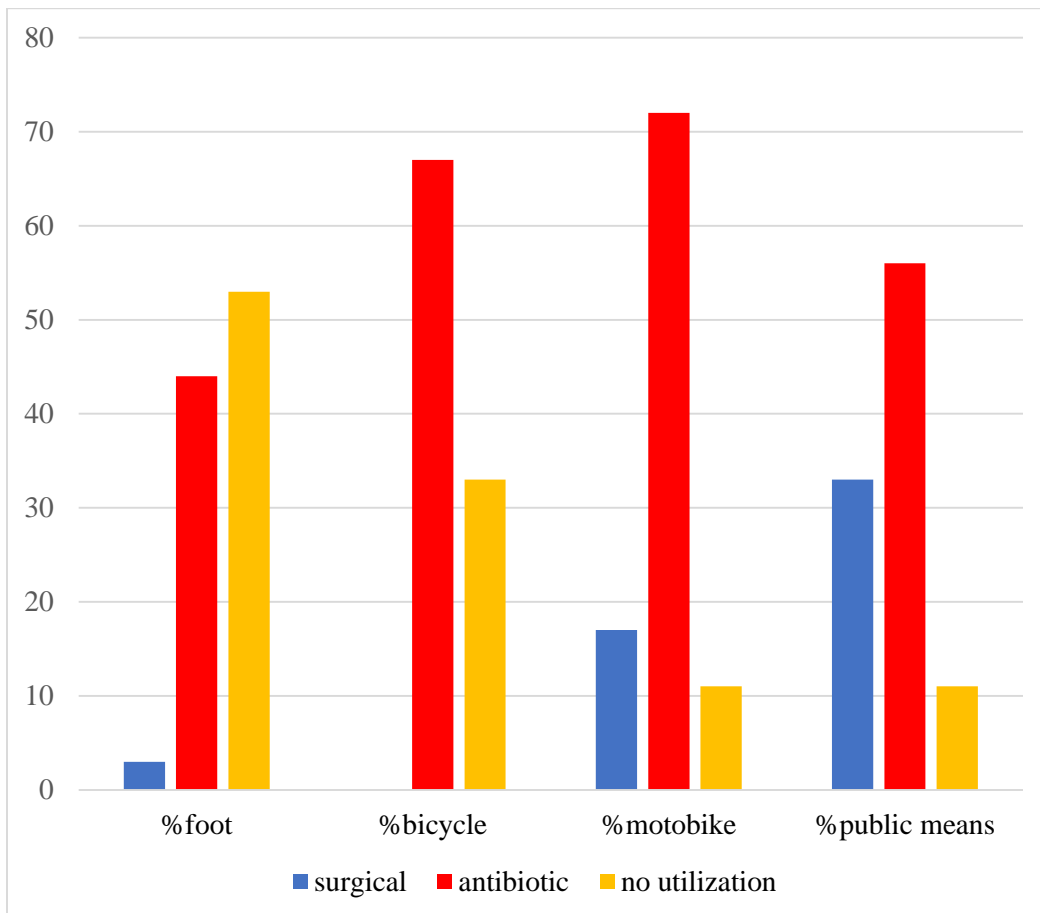
4.5 Access Factors

Mode of Transport

The study indicated that utilization of surgical and antibiotic treatment was affected by the modes of transport. Majority of those who utilized surgical services used public means as their main mode of transport, 6(33%), majority of those who utilized antibiotic services used motorbikes, 42(72%), while those who did not utilize any treatment, 58(53%) used foot as their main mode of transport.

Figure 4.9

Utilization of Surgical and Antibiotic Treatment per Mode of Transport



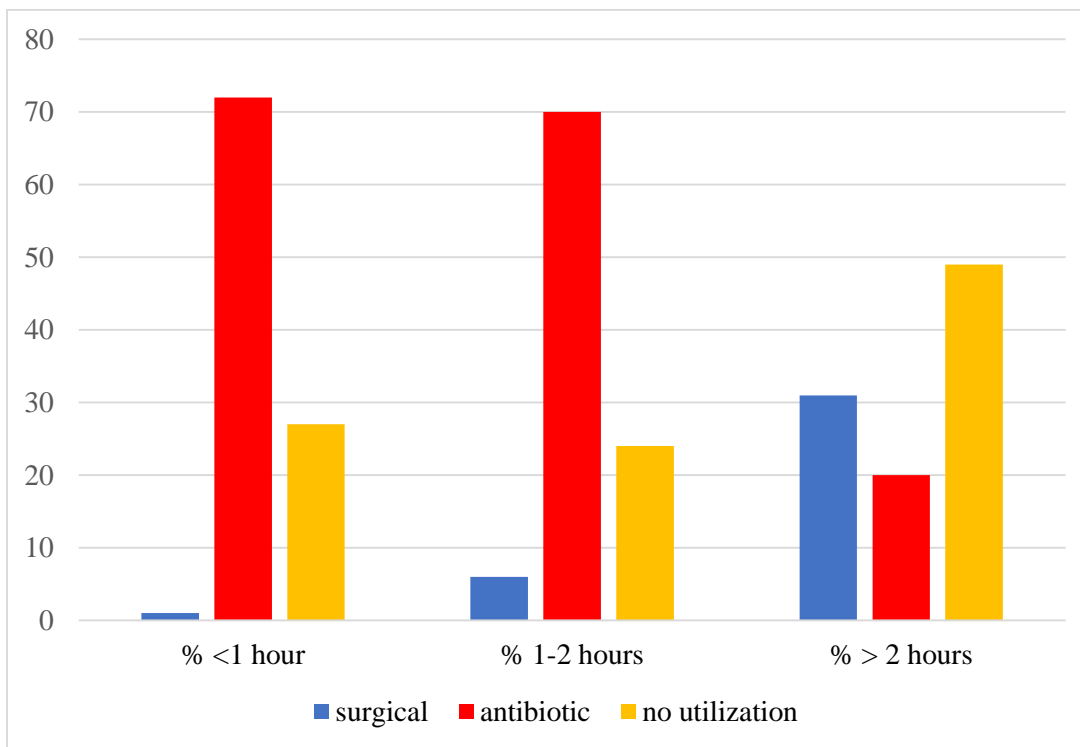
According to Ntsoane & Oduntan (2010), poor accessibility to eye treatment has been documented in the remote environments of most growing countries

Waiting Time

Most surgical patients waited for more than two hours, 19(31%) in most satellite facilities, while most patients utilizing antibiotic treatments, 55(72%) waited less than one hour. Most patients who did not utilize treatment services, 29(49%) complained of waiting for more than two hours to be attended to by health workers.

Figure 4.10

Utilization Versus Waiting Time



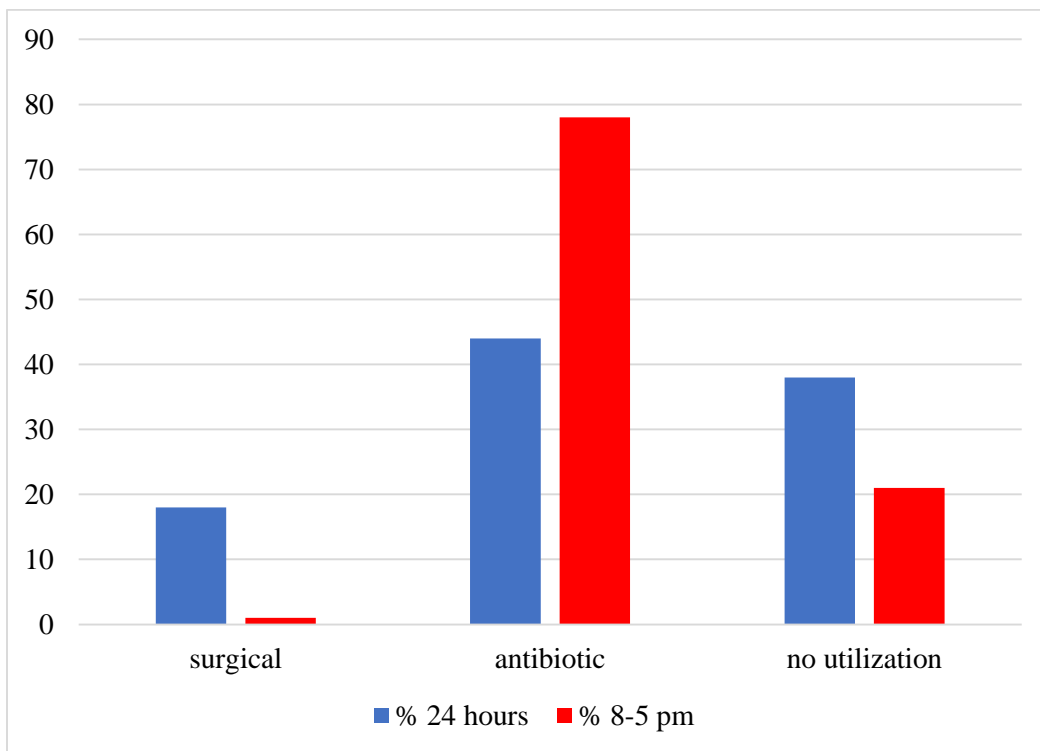
Waiting times were either affected by ratio of patients to health workers, times of work shifts or overload of work for other days. In a study done in South Africa and Ghana, it was reported that long queues and long waiting times was considered the main hindrance to seeking eye examination amongst those able to access eye care services (Ntsoane & Oduntan, 2010).

Operational Hours

Most patients utilizing surgical treatment preferred 24 hours operation time, 18(18%) while those utilizing antibiotic treatment preferred operational hours between 8-5pm, 70(78%). Most patients who did not utilize treatment, 40(38%) suggested that they would utilize if hours were maintained at 24hours.

Figure 4.11

Utilization Versus Operational Hours



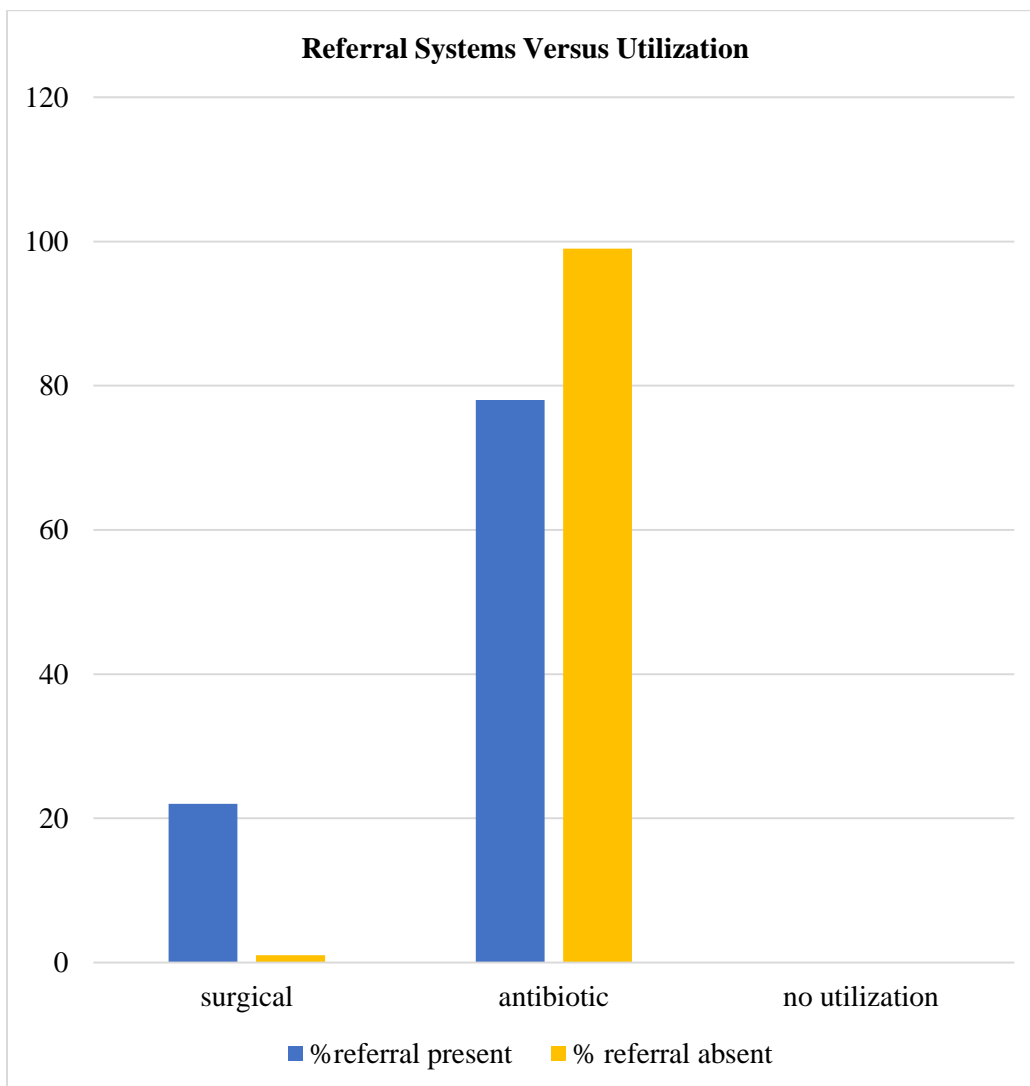
There are two sides to the access problem of high number of patients versus the operation hours of the health facility. On the supply side, good quality, effective health care may not be offered. On the demand side, individuals may not utilize services from which they could benefit. The two are obviously related. Poor quality care will arouse little interest from the public. A high level of demand, made effective by purchasing power, will induce the provision of quality care.

Referral Systems

The study noted high number of referrals for surgical patients, 22(22%) however, most referrals were not done for patients utilizing antibiotic treatments, 86(99%). Patients who did not utilize any treatments, did not require any referrals, 0(0%).

Figure 4.12

Referral System Versus Utilization



A referral system enables management of client health needs comprehensively with resources locally unavailable (Oladipo, 2014).

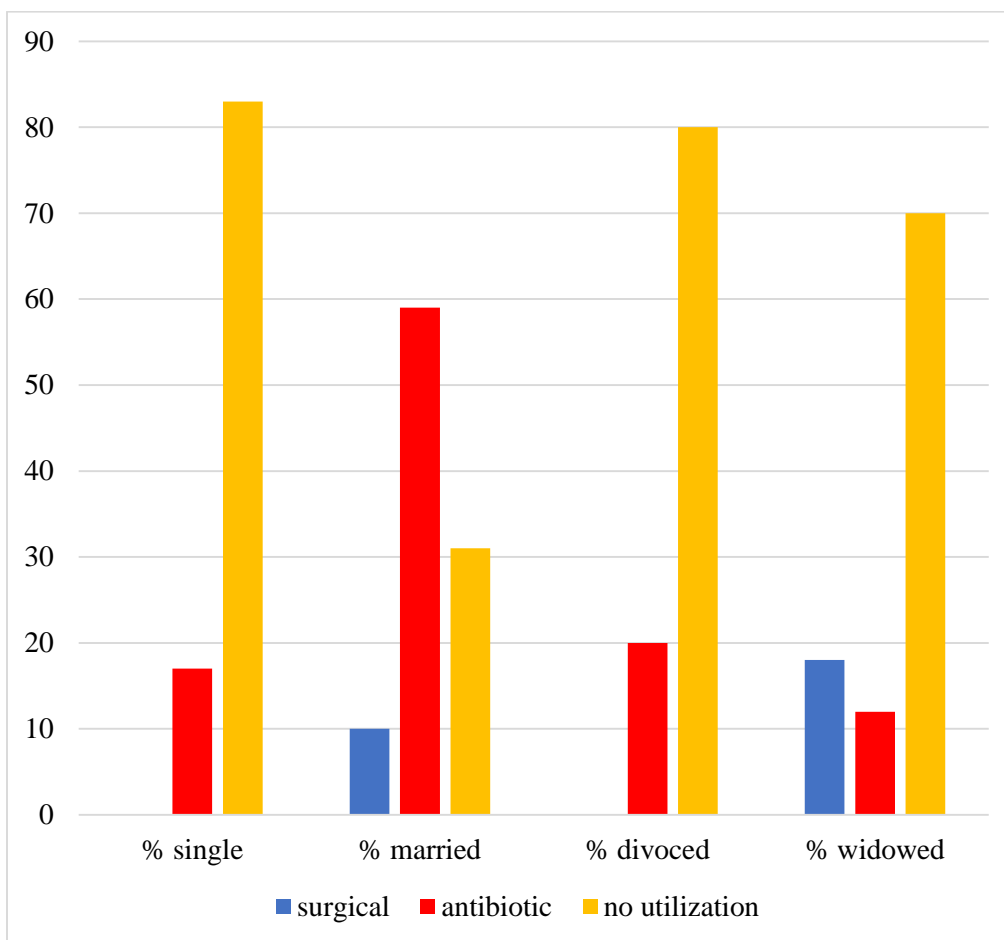
4.6 Social Factors

Marital status

Surgical services were utilized highest by widowed patients, 3(18%), while antibiotic treatment was highest in the married, 88(59%). Patients who were single did not utilize any treatments, 15(83%).

Figure 4.13

Utilization Per Marital Status

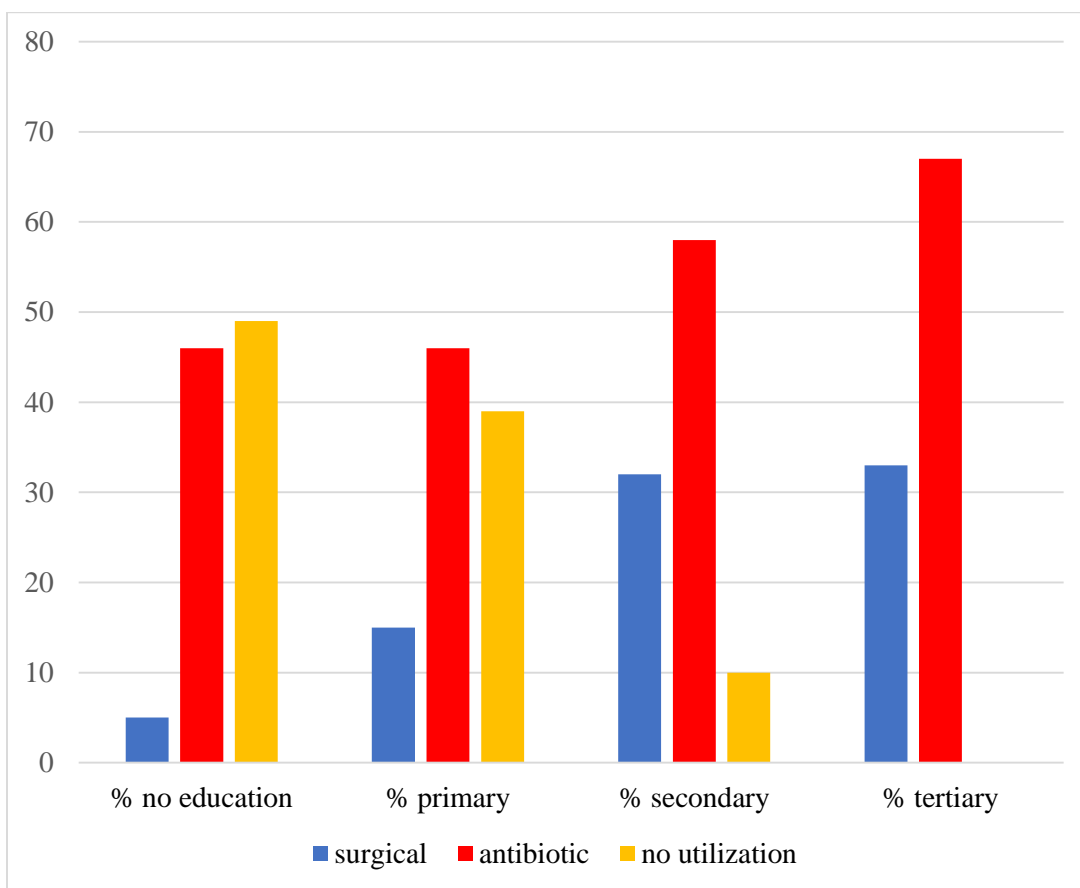


Education Levels

The study noted that majority of the patients at tertiary level recorded highest in utilization of surgical, 1(33%) and antibiotic, 2(67%) treatments respectively. Patients with no education recorded highest in non-utilization, 50(49%) of any treatment.

Figure 4.14

Utilization Versus Education Level



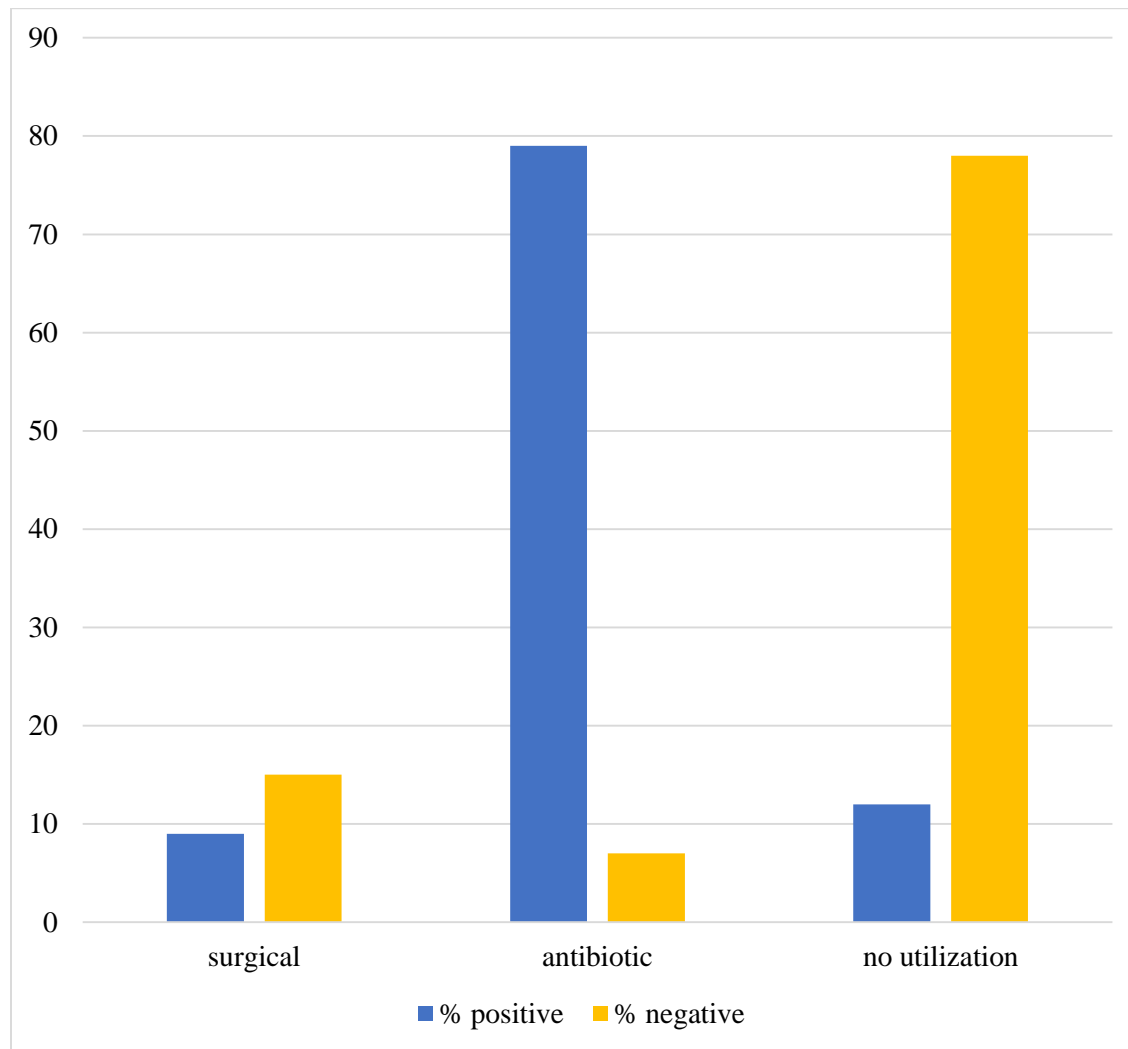
The education status can also affect ingress to eye treatments since it may influence the capability to achieve, comprehend and utilize data to positively affect attitudes on well-being (Shrestha et al., 2014).

Cultural Beliefs

Negative cultural beliefs highly affected utilization on surgical treatment, 15(15%) while positive cultural beliefs highly affected antibiotic treatment, 68(79%). Negative cultural beliefs also had a high impact on non – utilization, 80(78%).

Figure 4.15

Utilization Versus Cultural Beliefs



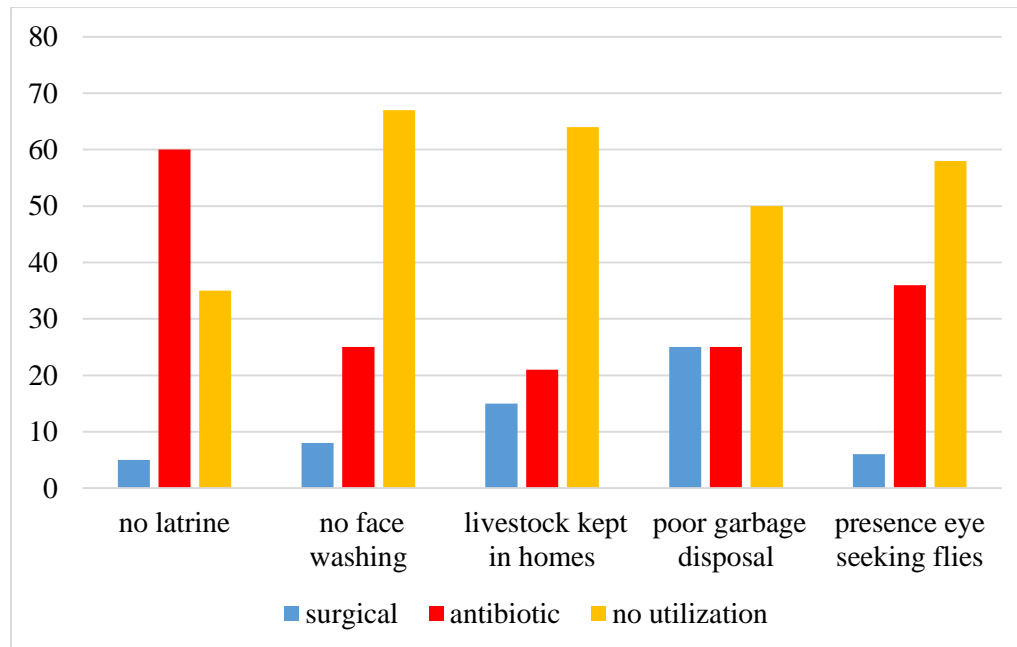
According to a study by Aday & Andersen (2014) many people, especially in the developing regions are still becoming blind due to barriers such as belief and attitudes. Cultural beliefs strongly affect attitude towards utilization.

4.7 Facial and Environmental Hygiene indicators

Poor facial and environmental hygiene were present in all households where patients resided. Absence of a latrine was highest in patients utilizing antibiotic treatment, 12(60%). Absence of a face washing receptacle was observed highest in households where patients did not utilize any treatment, 8(67%). Livestock kept inside homesteads were observed highest where patients did not utilize any treatment, 44(64%). Poor garbage disposal was observed highest in households where patients did not utilize any treatments, 4(50%). Eye seeking flies were observed highest in households where patients did not utilize any treatments, 45(58%).

Figure 4.16

F&E Indicators and Utilization



According to the study, it was noted that all F&E indications were statistically significant ($p < 0.05$) to prevalence of potentially blinding trachoma.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter discusses a synopsis of the key results, cessations and recommendations derived from this thesis. The main aim of the research was to examine factors that influenced the utilization of surgical and antibiotic therapy for treatment of potentially blinding trachoma disease in Loodokilani ward.

5.2 Summary of the Findings

Proportion of Persons with Potentially Blinding Trachoma

The study found out that 188 (44.5%) respondents had potentially blinding trachoma. Dynamic trachoma occurs in children of between 1-9 years of age, if the infections are left untreated, then the infections increase and thus leads to potentially blinding trachoma and if its further left untreated, then they get corneal opacity (blindness).

Utilization of Surgical and Antibiotic therapy

The study noted that majority of patients in Loodokilani ward utilized services more than those who did not. Continuous interventions through campaigns and outreaches in the ward encouraged more patients to seek surgical and antibiotic treatments. Most patients feared the severity of disease and therefore, when attacked with the disease, they preferred to treat it early. This is well justified with the number of patients in the ward observed to utilize more of antibiotic than surgical treatment. However, some mentioned the potentiality of one becoming blind after using the medication, others considered themselves disabled after surgical procedures while others believed that once one underwent surgery, they will die. By these believes, some patients mentioned that they preferred herbal or traditional medicine which they believed was better than the drugs

prescribed to them. Some traditional medications involved sharing some certain pieces of clothes that they put traditional medicine in them and all the patients could use this piece of cloth. This sharing of the piece of cloth further spread the *chlamydia trachomatis* bacteria and hence this increased prevalence of the disease. It was observed that there was no statistical significance ($p>0.05$) between utilization of surgical and antibiotic treatments and the disease.

Socio Demographic Factors

Location

Elangata Waus location recorded highest in all levels of utilization. This location was unique since it was the largest in terms of both geographical area and population density. It contained a diverse population that had special characteristics. In terms of implementation of health education, the community in this location chose what suited them in terms of prevention. If what was provided by the government did not fit well with them, then utilization dropped drastically. The sensitivity of the population was clustered in different villages of a particular political interest hence affecting utilization. On the other hand, high utilization in the location was brought about by the existence of a health center that was bigger and better than of the rest of the locations in the ward. Elangata Waus location bears the largest urban component which includes pollution, overcrowding and congestion, and inner town poverty hence this facilitates the increase in disease burden as compared to Torosei, Singiraine and Kilonito which bear the largest rural components. Most outreaches and campaigns happened in this location and therefore most of the residents were aware of the periodic prevention campaigns every year. Some patients got used to the campaigns and outreaches to a point they never bothered to participate any more. Some of the patients residing more than one kilometer away from the center in the location, found it tiresome to access and participate in the health campaigns and only depended on community health volunteers to provide

the information closer to their homes. There was a statistical significance ($p < 0.05$) between the locations resided by the patients and utilization.

Age

The study noted that most patients of 40-50 years utilized surgical treatment. At this stage of life, most patients if not careful experience severity of the disease and eventually goes for surgical treatment. This is because the disease progresses as age increase and therefore it becomes difficult to treat the patient using antibiotics.

Majority of patients utilizing antibiotic treatments were between 29-39 years. During this stage, blinding trachoma graduated from *trachoma folliculitis* and *trachoma scarring* to *trachoma trichiasis*. Patients who recorded highest in non-utilization of both surgical and antibiotic treatments were between age 51-60 years. Usually most young adults don't have the habit of going for general eye checkups. They assume that the potentially blinding trachoma disease is only for the old people and hence unknowingly, or ignorantly, they assume that despite their unhygienic actions, they will not get the disease. This goes hand in hand with the Anderson model, which states that, unless one becomes a patient, then they assume the role of general eye checkup.

Gender

This study noted a higher number of patients in females than in males. In Masai culture normally the men herd cattle or sell their cattle in the markets while the women are left home performing certain duties like, construction of manyattas, taking care of lambs and children as well as organizing the home. This led to a higher exposure of women to the risk factors of potentially blinding trachoma. The study noted a higher utilization by females than males. General utilization was observed as higher for both genders than for non-utilization. Surgical treatment was observed higher in females than in males. Antibiotic treatments were seen higher in females than in males.

Non utilization was observed more in males than in females. Women tend to have more minor (transient) illnesses and nonfatal chronic diseases, while men have more fatal chronic diseases and higher mortality rates.

According to the study, differences in utilization was partly explained by differences in somatic morbidity, therefore it was noted that gender was not significant ($p>0.05$) to utilization. Several factors have been suggested to explain these gender-related differences in health care utilization and morbidity, such as acquired risks, psychosocial factors and health-reporting behavior.

Access Factors to Utilization

Mode of transport

Antibiotic treatment was observed highest in all modes of transport. Surgical treatment was observed least among all other modes of transport. Non utilization was seen highest in both use of foot and bicycle. Bicycles were not available in most locations since the harsh terrain of Loodokilani ward does not favor durability of bicycles. Most patients admitted the fact that it could get to a point that walking to the nearest health facility for general eye checkup for instance would be tiresome in cases where there was no money for transport. Individuals residing in remote areas at global level, are normally of lower middle-class status, and consequently are not able to utilize health amenities.

Most remote environment in the ward had all issues altogether, that is, poor road networks, the far distance between households and nearest satellite facilities, and absence of mobile phone network.

Waiting Time

Antibiotic treatment was observed highest for patients who waited for less than one hour and those that waited between one to two hours. Most patients preferred antibiotic treatment because it did not involve a lot of procedures, and this would reduce their waiting time in the health facilities. Non utilization was observed highest for patients who waited for more than two hours. Most patients resided far away from satellite facilities and this restricted their waiting time during the day. Some even opted to not utilize any services since either queue were too long or health systems were too slow. It was noted that the main factor of waiting time was the ratio of health workers to eye patients.

It was also noted that in some satellite facilities there was poor relationship between health providers and patients. This led to the patients preferring health facilities that are quite far due to their attitudes towards the improper handling by the health service providers (Kovai et al., 2012). In other cases patients had a close relationship with the health care providers and this boosted the delivery of eye treatments, thereby reducing cases of potentially blinding trachoma in some locations in the ward.

Operational Hours

Surgical treatment was observed lowest in health facilities offering services between 8-5pm. Most patients who did not utilize any services preferred health facilities to operate 24 hours. Operation hours of health facilities depended on several factors some of them being, health worker to patient ratio, average distance of health facilities to households, security of the area and wildlife conflicts among others.

Referral Systems

This study noted absence of referrals for patients utilizing antibiotic treatment. This meant that there was availability and accessibility of drugs in the satellite facilities throughout the year. It was noted that surgical referrals were present but on lower level. Patients who did not utilize any

treatments were not affected by referrals. Referral systems were determined by several factors including availability of ophthalmologists at the satellite health centers, availability of adequate eye related drugs and equipment, level of skills on eye health by health providers at satellite health centers among others. Active community units were also observed, where efforts of Community Health Volunteers in the community units were seen to assist in accessibility of eye care services through identification, referral of patients to satellite facilities, health education and mass drug administration.

Referral systems were determined by several factors including availability of ophthalmologists at the satellite health centers, availability of adequate eye related drugs and equipment, level of skills on eye health by health providers at satellite health centers among others. Referral systems was statistically significant to utilization ($p < 0.05$). Most of the health facilities in Loodokilani ward suffered the inadequacy of ophthalmologists. The right to the highest attainable standard of health is a fundamental human right and, central to this right within a hierarchical health system, is the existence of a well-functioning referral system that allows for continuity of care across the different tiers of care.

Social Factors on Utilization

Marital Status

The study noted that marital status was significant to utilization of surgical and antibiotic treatments. Most patients who utilized surgical treatments were widowed. Majority of those who utilized antibiotic treatments were married while the highest number of patients not utilizing any treatments were single. There was no statistical significance ($p > 0.05$) in the marital status of the patients utilizing eye care services. In Maasai culture, most decisions in the families are done by men as household heads.

Educational Levels

It was noted by the researcher, that the highest number of those who utilized surgical and antibiotic treatment services were at tertiary level. Highest level of non-utilization was observed in those not educated at all. There was no statistical significance ($p>0.05$) between the education levels and utilization of eye care services by patients in Loodokilani ward. In pastoral communities, for many years it has been a challenge to ensure that all children access education till tertiary levels. Up to date, it poses as a big challenge especially for girls from nomadic communities and lately the government in making sure that all children access education to tertiary levels. Most of the ignorant nomadic pastoralists have been arrested for not allowing their children to access education.

This study indicated that Loodokilani ward had high illiteracy levels in the larger community. The illiteracy levels affect comprehensions of how to desire treatments and the most appropriate methods to dispense it. In some cases, patients end up getting unnecessary toxification from drugs because of either overdosing or under dosing and therefore leading to even more problems despite their possibility of going blind due to poor medications. An illiterate individual may encounter indecisions on treatment of the eye, have scrutiny trouble for printed matter, or have trouble understanding health care data.

Cultural Beliefs

This study identified both negative and positive cultural impact on utilization. Negative cultural beliefs affected utilization of surgical treatment. However, antibiotic treatment was positively affected by cultural beliefs. High levels of non-utilization were affected by negative cultural beliefs.

Some communities in Loodokilani ward are affected by culture in that it becomes so difficult to convince them to construct and utilize the toilets so that they don't open defecate in the open which increases the potentially blinding trachoma infections. In some instances, the county government

through the department of health ensured homesteads are constructing and utilizing toilets through enforcement. When community members refused to construct and utilize a toilet, they were arrested and charged in the courts through the Public Health Act Cap 242, Laws of Kenya. Those practicing open defecation were forced to live in a safe environment to protect themselves and others.

Culture plays a role in this case because despite communities being reached by the Community Led Total Sanitation program, most of them did not take it seriously to ensure that they practiced the facial hygiene and environmental sanitation which includes the CLTS indicators. It was very clear that culture was gradually moving towards achievement of good health care services through antibiotic treatment. More communities especially the nomadic communities had already embraced better practices of health and therefore high advocacy towards community health systems strengthening was maintained.

It was observed in the study that most of the community members only become serious with prevention measures when they have already gotten the disease or even when they have had a serious case of one of their community members going blind because of trachoma infections and laxity to seek for eye medications in good time. If culture is not molded towards better health seeking behaviors in such areas, then culture may grow to be a block towards achievement of health care.

Facial Cleanliness and Environmental Hygiene Indicators

According to the study, it was noted that all F&E indications were statistically significant ($p < 0.05$) to prevalence of potentially blinding trachoma. It was evident that most households did not have latrines, there was presence of eye seeking flies, few households had receptacles for face washing and also most households had livestock near their homes. Patients utilizing antibiotic treatments were highest in not utilizing latrines. Those patients who did not utilize any treatment had the

highest number in lack of face washing receptacles, poor garbage disposal, presence of eye seeking flies and they also kept livestock inside their homesteads.

Having the majority of the respondents not having toilets nearby was a clear indication that there was a lot of open defecation practice especially at night that led to increase in the presence of the vector-*musca sorbents* flies which carries the *chlamydia trachomatis* bacteria to the persons eyes and thus leading to infection. Due to the scarcity of water there was limited practice of hand and face washing. Through face to face contact, use of shared infected clothing to wipe children faces, poor disposal of food waste and practice of open defecation, there was increase in the spread of potentially blinding trachoma. In the Maasai culture, livestock keeping is the order of the day. Most of the residents practiced keeping of livestock within the compound of their homesteads. In public health, livestock should be kept at about 30 meters away from the boma (homestead). This is so as to prevent the presence of flies in the homestead.

Facial cleanliness and environmental hygiene indicators were still low in Loodokilani ward and thus this contributed to the spread and persistence of trachoma infections. Facial cleanliness and environmental hygiene are a critical measure towards prevention and control of potentially blinding trachoma. It was recommended that children's faces be frequently washed at least twice a day, in the morning and the evening. The lack of water in such environments lead to poor personal hygiene because the little water that the family gets, they prefer to have for drinking other than for cleaning. This in turn leads to *fecal-oral* diseases since there is poor handwashing behaviors and also potentially blinding trachoma disease will increase because of the poor facial hygiene.

5.3 Conclusion

This study noted a high prevalence (44.5%) in potentially blinding trachoma in Loodokilani ward. The study assessed that utilization of surgical and antibiotic therapy was higher, (72.3%) than non-utilization (27.7%) in Loodokilani ward. The study also agreed with the alternate hypothesis that stated antibiotic utilization was higher than surgical utilization. It was noted that more patients utilized antibiotic treatment (60.1%), than those utilizing surgical treatment (12%).

Age was statistically significant ($p < 0.05$) to utilization. Patients who utilized surgical treatment were highest, (40%) among 40-50 years. Those who utilized antibiotic treatment were observed highest in 29-39 years, (56%).

Location was statistically significant ($p < 0.05$) to utilization. Elangata Waus location was identified as the highest affected, (40%) with non-utilization of both treatments among all other locations.

Gender was not statistically significant ($p > 0.05$) to utilization. The study identified more female patients, (67%) than male patients, (33%). Non utilization of both surgical and antibiotic treatments was observed higher in male patients, (58%) than female patients, (42%).

This study rejected the null hypothesis that stated no relationship between access factors and utilization. All access factors were statistically significant ($p < 0.05$) to utilization. Most surgical patients preferred to use public means, (33%), while the patients on antibiotic treatment preferred to use motorbikes, (72%). Most of the community members relied on walking on foot as the main mode of transport since only those with more serious eye infections could access motorbikes or public means to visit nearest health facilities, and that would be too costly for them. Patients who did not utilize both treatments used foot, (53%) as the main means of transport.

Patients who did not utilize any treatment were seen to have waited for service delivery for more than two hours, (49%) as compared to those who utilized services, (51%), stated that they either waited for less than an hour or between one to two hours.

All patients, (62%) who utilized both surgical and antibiotic treatments were comfortable with either the 24-hour clock or 8-5pm system of the health facilities as compared to those who did not utilize any treatments preferred the 24-hour clock system, (38%). Operation hours on 24-hour clock system, positively affected service utilization as more people used more hours travelling through foot almost throughout the day and hence arriving in the nearest satellite facilities in the evening hours to get treatment if not general eye checkups. This indication is very encouraging since despite all these challenges, residents ensured that they sought medical attention to prevent negative consequences of potentially blinding trachoma. Due to the long distances some residents experienced, they chose the 24-hour clock system as they could receive services any time of the day or night. Referral of surgical patients was observed at, (22%), while those on antibiotic treatments were rarely referred, (99%).

Marital status was not statistically significant ($p>0.05$) to utilization. It was noted that most of the single population did not utilize, (83%) both surgical and antibiotic treatments as compared to other types of marital statuses.

Education levels were statistically significant ($p<0.05$) to utilization. Patients that had attained tertiary levels were observed as highest in the utilization of both surgical, (33%) and antibiotic treatments, (67%) as compared to those with no education, (49%) who were seen to not utilize any of the treatments. In this study it was noted that poor utilization in some locations was due to lack of knowledge by some residents although that went hand in hand with literacy levels. However, the number of people with the disease and blindness due to the disease had extremely reduced.

Cultural beliefs were statistically significant ($p<0.05$) to utilization. Positive cultural behavior increased the utilization of antibiotic treatments, (79%). Negative cultural behavior affected non utilization, (78%). A few people indicated cultural resistance or acceptability where some people believed that potentially blinding trachoma was caused by witchcraft while others believed that those affected were a cursed generation whereas others believed that it was caused by poverty.

The study identified all facial and environmental hygiene factors as statistically significant ($p < 0.05$) to utilization. The study identified that majority of patients on antibiotic treatments, did not own latrines in their households, (60%).majority of patients who did not utilize any treatments, had no face washing receptacles, (67%),they practiced poor garbage disposal (50%), practiced unsafe keeping of livestock inside their homesteads (64%), and there was presence of many eye seeking flies in those households (58%). Lack of toilets by most of residents especially in Loodokilani ward was found to have an association with fly's contamination and spread of trachoma infections. The combination of lack of a toilet, presence of eye seeking flies, poor garbage disposal, closeness of livestock bomas to households and poor or lack of the regular practice of face washing provided very difficult conditions to prevent and control potentially blinding trachoma. The patients would have re-infections due to poor preventable measures besides water scarcity in the area. Health officials periodically planned and identified communities that had high number of *fecal-oral* infections including potentially blinding trachoma and then planned to visit these communities to trigger them through disgust method, explaining the shit calculation, the F-diagram and medical expenses. This message to the communities was wrapped up by an action plan where the communities themselves forged a way forward to ensure that besides them not `eating` their own shit, they do not get trachoma infections. During this stage natural leaders emerged to ensure that the entire village, that is, every homestead is free of factors that lead to presence of potentially blinding trachoma and other *fecal oral* infections. upon the village attaining ODF, celebrations are conducted to motivate other communities to stop open defecation.

The study focused on tertiary (surgical) and secondary (antibiotics) levels of prevention(Cumberland et al., 2008). Facial cleanliness and environmental hygiene focused on primary level of prevention. This study was conducted according to the Andersen health utilization model, where it was observed that the predisposing and enabling factors had major impact on

health service utilization as compared to the need factor thereby leading to health inequity among patients. Studies reveal that based on the Andersen health utilization model, equity in health care is achieved when need factors have a strong positive association with health care utilization. The duration of the study could not allow the researcher to analyze time variable. Studies have shown that trachoma infections occurred during the drought seasons due to the scarcity of water and high population of *Musca sorbents flies*.

Potentially blinding trachoma is a huge economic drain to the already poor and marginalized communities. This is because patients become non-productive to the economy due to their incapability to perform normal duties. During the infective stage, the children affected drop out from schools while young men and women don't engage in businesses that will reduce poverty in their homes. Only during the mass drug administrations and outreaches is where treatments are usually considered free, otherwise all these other times the community members usually seek treatments themselves and certainly not all of them see the disease as important while others often suffer depression since they cannot afford antibiotic and surgical therapies or even general eye checkups.

It is a matter of concern for health authorities in the county department of health as the prevalence of potentially blinding trachoma is close to 50% threshold. Over the last three decades, a lot has been achieved in the control of trachoma worldwide. New assessment techniques, operative evidence-based control approach with new procedures and drugs, and an antagonistic global corporation for the control of the disease have evolved.

5.4 Recommendations of research findings

The County Department of Health should ensure necessary recommendations are met towards achievement of all (tertiary, secondary and primary) levels of prevention for potentially blinding trachoma. These achievements may be boosted by the Public Private Partnerships that will ensure smooth achievement of the recommendations. More non-governmental organizations are encouraged to assist in the livelihood of communities through implementation of water related projects.

Accessibility factors

Through the County Department of Health, in collaboration with the Department of Public Works should ensure more satellite facilities are provided in such remote areas and also improvements of mobile phone networks, road networks and provision of local transport mechanisms besides foot, should be highly considered to ensure that there is ease in provision and accessibility to eye treatments.

Better infrastructure to the satellite health facilities and public transport should be considered by the county government of Kajiado, Department of Roads and Infrastructure. The costs of surgical and antibiotic therapy should be affordable and available throughout the years. Most respondents preferred more free medical camps and outreaches. The Department of Public Health and Sanitation should ensure consistent activation of Community Units, deployment of more Community Health Assistants and motivation of CHVs towards enlightening the communities on the SAFE strategy.

Social factors

The County Government through the Department of Youth and Culture, should ensure cultural practice is used as an avenue towards better eye care utilization. It should also encourage the safe

preventive measures (face washing and environmental hygiene) for prevention and control of potentially blinding trachoma. It is therefore recommended that livestock be kept at least thirty meters away from the homes to avoid interaction of flies. In most cases it is difficult to address this issue till action is taken because some communities have the practice of keeping livestock too close to their homes as a sign of protection and wealth and therefore one has to have very good convincing powers to ensure that all homesteads in Loodokilani ward practice the safe distance of livestock bomas and their homes not affecting their culture negatively.

It is the responsibility of community health volunteers and community health assistants to ensure consistent community sensitizations on the SAFE strategy. In the Maa culture, men are the major decision makers, and it is therefore the duty of household heads to ensure F&E is practiced in their homes. Utilization of eye treatment amenities improve more when women get empowered. This way, they will make decisions on their own and improve health seeking behaviors. Women empowerment through the County Department of Health will assist in ensuring that all women practice the facial and environmental hygiene in their homes and thus reducing the burden of potentially blinding trachoma.

It was encouraged by the researcher that more of health staff deployed to the satellite health facilities should be well vast or familiar with the cultures and local languages of the immediate communities they serve. This will in turn encourage more patients to have a positive health seeking behavior.

Monitoring of disease

Though the County Department of Health, there should be periodic mapping (surveys) of potentially blinding trachoma so as to monitor trends, alert and action thresholds on prevalence of the disease. Community Health Volunteers should be more equipped with advanced technological methods towards monitoring the disease at household level. They should also be provided with

motorbikes to be able to improve on monitoring of patients at household level. Periodic capacity building of both public health officers and community health volunteers should be practiced at least in every quarter of the year.

The County Department of Health in collaboration with relevant donor funded organizations, should ensure continuous annual mass drug administration until the prevalence drops below 5% (Evans & Solomon, 2011)(Evans & Solomon, 2011)(Evans & Solomon, 2011)(Evans & Solomon, 2011)(Evans & Solomon, 2011)(Evans & Solomon, 2011)(Evans & Solomon, 2011)(Evans & Solomon, 2011)(Evans & Solomon, 2011)(Evans & Solomon, 2011).This will enable health care providers reach more communities in the remote parts of Loodokilani ward. When households practice regular face washing and environmental hygiene, then the risk factors will be reduced and thus reducing the burden of disease.

Advocacy

The County Department of Health should adopt all the WHO recommended strategies towards eliminating potentially blinding trachoma in endemic counties. More campaigns towards elimination of trachoma should be done Kajiado county every year hence this will encourage more communities to practice best practices. Through the Community Led Total Sanitation program, the county should ensure proper funding towards facilitation of health officers in sensitizing communities on effects of open defecation and the burden of potentially blinding trachoma. Besides construction and utilizing toilets, the County Government, through the Community Led Total Sanitation program ensured that all other factors were put to consideration; these included provision of squat hole covers, provision and utilization of handwashing facilities fully equipped with clean water ,soap or ash, presence of a cloth line, presence of an appropriate dish rack and the active practice of face and hand washing during critical times.

The County Department of Health should set aside funds to scale up the elimination of potentially blinding trachoma. Most often than not, these communities are usually willing to practice the SAFE approach but they are unable to unless the government comes in to intervene for them by providing clean and safe water that is easily accessible to the entire village.

5.5 Recommendations for Further Research

From the literature review, it was noted that the poor utilization factors to surgical and antibiotic therapy may affect the prevalence of potentially blinding trachoma, therefore similar studies are suggested focusing on the SAFE strategy towards elimination of potentially blinding trachoma.

There is need for further research to find out the prevalence of trachoma and utilization of SAFE strategy in Kajiado County. There is need for research on the preventive aspect of face hygiene and environment hygiene in ASAL areas, towards eradication of potentially trachoma.

Andersen Health behavior model should be widely accepted as a reliable tool for similar studies on utilization of health-care.

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APPENDICES

Appendix 1: Factors affecting Prevalence and Utilization of Treatment for Potentially Blinding Trachoma.

		LOCATION						Total	Chi Square	p-value
		Elangata Waus	Torosei	Loodokilani	Kilonito	Singiraine	Oltepesi			
Age	18-28	23 ^{31%}	7 ^{9%}	20 ^{27%}	8 ^{11%}	6 ^{8%}	11 ^{15%}	75		
	29-39	33 ^{23%}	13 ^{9%}	26 ^{18%}	16 ^{11%}	39 ^{28%}	14 ^{10%}	141		
	40-50	66 ^{47%}	13 ^{9%}	28 ^{20%}	16 ^{11%}	5 ^{4%}	12 ^{9%}	140		
	51-60	29 ^{44%}	9 ^{14%}	16 ^{24%}	5 ^{8%}	0	7 ^{11%}	66		
Total		151	42	90	45	50	44	422	64.985	p<0.05
Sex	Male (Olee)	49 ^{32%}	14 ^{9%}	38 ^{25%}	21 ^{14%}	16 ^{10%}	17 ^{11%}	155		
	Female (Ene)	102 ^{38%}	28 ^{10%}	52 ^{19%}	24 ^{9%}	34 ^{13%}	27 ^{10%}	267		
Total		151	42	90	45	50	44	422	5.029	p=0.412
Marital status	Single	12 ^{36%}	1 ^{3%}	15 ^{39%}	2 ^{5%}	3 ^{8%}	5 ^{13%}	38		
	Married	125 ^{37%}	32 ^{10%}	64 ^{19%}	35 ^{10%}	46 ^{14%}	34 ^{10%}	336		
	Divorced/Separated	2 ^{18%}	4 ^{36%}	0	3 ^{27%}	0	2 ^{18%}	11		
	Widowed	12 ^{32%}	5 ^{14%}	11 ^{30%}	5 ^{14%}	1 ^{3%}	3 ^{8%}	37		
Total		151	42	90	45	50	44	422	32.684	p<0.05
Parity Status	0 To 2	20 ^{34%}	4 ^{7%}	16 ^{28%}	7 ^{12%}	3 ^{5%}	8 ^{14%}	58		
	3 To 5	54 ^{32%}	19 ^{11%}	40 ^{24%}	20 ^{12%}	20 ^{12%}	14 ^{8%}	167		
	6 To 8	55 ^{37%}	16 ^{11%}	19 ^{13%}	15 ^{10%}	27 ^{18%}	17 ^{11%}	149		
	9>	22 ^{46%}	3 ^{6%}	15 ^{31%}	3 ^{6%}	0	5 ^{10%}	48		
Total		151	42	90	45	50	44	422	28.147	p<0.05

With Disease	Yes	76 ^{40%}	23 ^{12%}	40 ^{21%}	10 ^{5%}	10 ^{5%}	29 ^{15%}	188		
	No	75 ^{32%}	19 ^{8%}	50 ^{21%}	35 ^{15%}	40 ^{17%}	15 ^{6%}	234		
Total		151	42	90	45	50	44	422	33.223	p<0.05
Transport										
Transport	Foot	114 ^{45%}	17 ^{7%}	30 ^{12%}	33 ^{13%}	37 ^{15%}	24 ^{9%}	255		
	Bicycle	3 ^{36%}	1 ^{13%}	1 ^{13%}	2 ^{25%}	1 ^{13%}	0	8		
	Motorbike	24 ^{19%}	20 ^{16%}	57 ^{46%}	5 ^{4%}	12 ^{10%}	7 ^{6%}	125		
	Public Transport	10 ^{29%}	4 ^{12%}	2 ^{6%}	5 ^{15%}	0	13 ^{38%}	34		
Total		151	42	90	45	50	44	422	116.451	p<0.05
WaitingTime										
WaitingTime	Less Than 1hr	49 ^{28%}	8 ^{4%}	40 ^{22%}	5 ^{3%}	47 ^{26%}	29 ^{16%}	178		
	1-2 Hours	34 ^{31%}	26 ^{24%}	23 ^{21%}	15 ^{14%}	3 ^{3%}	8 ^{7%}	109		
	More Than 2 Hours	68 ^{50%}	8 ^{6%}	27 ^{20%}	25 ^{19%}	0	7 ^{5%}	135		
Total		151	42	90	45	50	44	422	125.929	p<0.05
Operation Hours										
Operation Hours	24 Hours (Plus Weekends)	99 ^{42%}	25 ^{11%}	39 ^{17%}	37 ^{16%}	2 ^{1%}	32 ^{14%}	234		
	8-5pm (Working Hours)	52 ^{28%}	17 ^{9%}	51 ^{27%}	8 ^{4%}	48 ^{26%}	12 ^{6%}	188		
Total		151	42	90	45	50	44	422	94.926	p<0.05
Referral Systems										
Referral Systems	Yes	32 ^{23%}	17 ^{12%}	38 ^{27%}	6 ^{4%}	15 ^{11%}	31 ^{22%}	139		
	No	119 ^{42%}	25 ^{9%}	52 ^{18%}	39 ^{14%}	35 ^{12%}	13 ^{5%}	283		
Total		151	42	90	45	50	44	422	50.086	p<0.05
Service Sought										
Service Sought	Surgical Services	22 ^{42%}	12 ^{23%}	10 ^{19%}	5 ^{9%}	0	4 ^{8%}	53		
	Antibiotic Therapy	77 ^{33%}	20 ^{9%}	42 ^{18%}	24 ^{10%}	40 ^{17%}	29 ^{13%}	232		
	General Eye Checkup	52 ^{38%}	10 ^{7%}	38 ^{28%}	16 ^{12%}	10 ^{7%}	11 ^{8%}	137		
Total		151	42	90	45	50	44	422	31.71	p<0.05
Barriers										
Barriers	Distance/Proximity to Health Facility	61 ^{33%}	11 ^{6%}	51 ^{28%}	28 ^{15%}	2 ^{1%}	32 ^{17%}	185		

	Cost/Affordability	61 ^{45%}	22 ^{16%}	36 ^{27%}	9 ^{7%}	1 ^{1%}	6 ^{4%}	135		
	Cultural Resistance/Acceptability	26 ^{46%}	8 ^{14%}	2 ^{4%}	7 ^{12%}	9 ^{16%}	5 ^{9%}	57		
	Other Reasons	0	1 ^{100%}	0	0	0	0	1		
	None	1 ^{3%}	0	1 ^{2%}	1 ^{2%}	37 ^{90%}	1 ^{2%}	41		
Total		151	42	90	45	50	44	422	335.965	p<0.05
Education										
	No Education	81 ^{35%}	22 ^{9%}	55 ^{24%}	26 ^{11%}	31 ^{13%}	18 ^{8%}	233		
	Primary	55 ^{40%}	15 ^{11%}	29 ^{21%}	9 ^{6%}	12 ^{9%}	19 ^{14%}	139		
	Secondary	15 ^{32%}	4 ^{9%}	5 ^{11%}	10 ^{21%}	7 ^{15%}	6 ^{13%}	47		
	Tertiary	0	1 ^{33%}	1 ^{33%}	0	0	1 ^{33%}	3		
Total		151	42	90	45	50	44	422	21.868	p=0.11
Culture Influence										
	Positive	87 ^{38%}	20 ^{9%}	44 ^{19%}	9 ^{4%}	45 ^{20%}	24 ^{10%}	229		
	Negative	64 ^{33%}	22 ^{11%}	46 ^{24%}	36 ^{19%}	5 ^{3%}	20 ^{10%}	193		
Total		151	42	90	45	50	44	422	49.496	p<0.05

Appendix 2: Informed Consent (English)

I am a postgraduate student at Kenya Methodist University pursuing a Master of Public Health, Epidemiology and Disease Control in the Department of Public Health, School of Medicine and Health Sciences. As a requirement for completion of this Programme, I am undertaking a research to determine the utilization of surgical and antibiotic therapy for potentially blinding trachoma in Loodokilani ward, Kajiado west sub county.

Trachoma has been one of the leading causes of blindness in the world and especially in developing countries. Utilization of surgical and antibiotic therapy for the communities in trachoma endemic areas is critical to identify the most beneficial ways of public health interventions so as to improve efficiency of trachoma control by the government and private organizations.

I hereby would like to kindly request for your participation by responding to my questionnaires.

NB: The information provided by respondents was confidential and will **only** be used for this research study. In cases of a potentially blinding trachoma case of a child from 15 years, the Guardian will assist on answering the questionnaires. In cases of disabilities of an affected adult that will hinder the interviewee to answer the questionnaire, the spouse will assist.

Participant agreement;

Yes..... No.....

If yes, I..... have read the content in this form, my questions have been answered, I agree to participate in this study.

Signature of Participant..... Date of Signed Consent.....

Signature of Research Assistant.....

Appendix 3: Informed Consent (Maasai)

Kara enkeraitesukul e kemuaasitaendigiriiearetesiaieboitisho.Teyieunotoenkidipataenadigirii, kaasittaejurroro,ayiolooeadano , eyiangarewembaareenkoyetoloodokilani ward. Ore enkoyenetaaninyeenedukuyatemodokisho. Ore ecidanoeyiangarewembaaretiatua community nwejitinneetienkoyenetaaninyeenetipataenkoitoi.

Etipatnaibooriekienkoyeteserikalioltungariakbinafsi.

Kaamonuorusapekiwalikikunakiliwanat. Ore orkilikualikinjonemeipang` enajuroreenkisumaakeesieki.

Temasiteshugulikiaengerai le maswali nano, yaenkisuma.

Participant agreement;

Yee..... aah.....

Tena yee, nano.....,enkisumabaruaende , le maswali nano, yaenkisuma.

Tesahihishonano:.....Entariki le sahihishoorusa:.....

Sahihisho le enkaraitesukul:.....

Appendix 4: Community Household Questionnaire

a) Demographic Data (Tick Where Appropriate)

1. AGE (years): *ilarin*

18-28

29-39

40- 50

51-60

2. SEX :*olee/ene*

Male (*olee*)

Female (*ene*)

3. LEVEL OF EDUCATION:

No Education (*itusuma*)

Primary (*primari*)

Secondary (*secondari*)

Tertiary (*inifasiti*)

4. MARITAL STATUS:

Single (*miyama*)

Married (*iyama*)

Divorced/Separated (*itoorote*)

Widowed (*ekoliai*)

5. NUMBER OF CHILDREN

0-2

3-5

6-8

9 >

6. LOCATION OF RESIDENCE:

Elangata Waus

Torosei

Loodokilani

Kilonito

b) **Knowledge and Attitude on Potentially Blinding Trachoma.**

1. Do you know what Trachoma Disease is?

Yes.... No.....

2. How does it present?*(tick where necessary)*

- Itchy eyes.....
- Reddened eyes.....
- Discharge in the eyes.....

- **Painful eyes.....**
- **None of the above.....**
- **All of the above.....**

3. a) Do you have a history of potentially blinding trachoma?

Yes..... No.....

4. If yes, did you seek eye care services in a health facility?

Yes..... No.....

5. If No, do you know of a family member with the disease?

Yes.... No....

6. Have they seeked any treatment?

Yes.... No....

7. If yes, what kind of services did they seek?

(tenaeekaabilahudumaemoyianoonkonyekingorua?)

- **Surgical services (*eyiangare*).....**
- **Antibiotic therapy services (*abaataorkiek*)**
- **General eye checkup (*enkingurarotoonkonyektekubungata*)**

8. If no, what is the main reason?

.....

9. Do you know of any person who has ever visited a health facility seeking trachoma surgical and antibiotic therapy?
(iyolooltunganiotabaikiaakatasipitaliingoruiyiangataoonkonyeknairkieklemoyianoonkonyek?)

Yes (*yee*) No (*aaa*)

10. If yes, what kind of eye services did they seek?
(tenaeekaabilahudumaemoyianoonkonyekingorua?)

- **Surgical services (*eyiangare*).....**
- **Antibiotic therapy services (*abaataorkiek*)**
- **General eye checkup (*enkingurarotoonkonyektekubungata*)**

11. Do you understand the importance of early treatment of potentially blinding trachoma?

(itoningoecidanoembaataenkoyetesiekunoto?)

Yes (yee).....

No (aaa).....

12. Does your culture beliefs affect your eye health care?

(kejaaenkirukotoorkuaklinyiteramatareoonkonyek?)

Yes (yee).....

No(aaa).....

c) **Practice of Utilization of Services of Trachoma Disease**

1. Have you ever visited a health facility seeking any trachoma eye care services?*(itubaikiaakatasipitalieserikaliingoruebaataemoyianoonkoyek)*

Yes (yee): No (aah):

2. If yes, which specific trachoma eye services did you seek?*(tenaeee,kabaareemoyianoonkonyekapaingorua?)*

- **Surgical Services (*hudumaeyiangare*)**
- **Antibiotic Therapy Services (*ekisiareoorkiek*)**
- **General Eye Checkup (*tenaaenkingurarototelulungata*)**

3. What means of transport do you use to reach the nearest health facility?*(Kaambinuintumiyayapeibakikisipitalinataana?)*

- **Foot (*ingejek*).....**
- **Bicycle (*ebicikil*)**
- **Motorbike (*orpikipik*).....**

- **Public transport** (*engarieraia*)

- **Private vehicle** (*engariolopeny*)

4. What language do you communicate at the health facility?
(*kaakutukitumiyalireotesipitali?*)

- **Maasai (vernacular)** (*kimaasai*)

- **Kiswahili** (*kiswahili*).....

- **English** (*kinkeresa*).....

5. What are the conditions of the waiting bay? (*kesidaiwejineenyishereki?*)

- **Generally Clean** (*kesafi*).....

- **Enough seating accommodation** (*ikitoshaenetonieki*).....

- **Adequate lighting** (*ikitoshailtai*)....

- **Adequate ventilation** (*ikitoshaeneimleneimoenkijiape*)...

6. What is the waiting time before health care personnel attends to you?
(*kebaerishataniyanyuetonitukilotuoldakitari le sipitaliaduware?*)

- **Less than 1 hour** (*karibu le saanabo*)
- **1-2 hours** (*le saanabombaka are*)
- **More than 2 hours** (*saidiosai are*)

7. Is there a convenient referral system in health facilities? ()

Yes (*yee*)..... **No** (*aaa*)....

8. Which operations hours are convenient for you to access trachoma services in health facilities? (*kaarishataecidaipitumabaataenkoyetesipitali?*)

- **24 hours (plus weekends)** (*engolongmusima*).....
- **8am-5pm (working hours)** (*saareenkakenyambakasaalomonooboenteipa-saai naasishoreki*).....

9. What are the barriers to accessing available trachoma eye care services in Loodokilani ward? (*kakwanyamalitinentumoto e hudumaemoyianoonkonyeknatumoi to inkiboorotLoodokilani ward?*)

- **Distance/Proximity to Health Facility** (*elakuanipibaiksipitalinataana*)

- **Cost /Affordability (*kelelekelaata*).....**
- **Cultural Resistance/Acceptability (*kenyorraritemila*)**
- **Other Reasons (*inguliesababuni*)**
- **None (*metii*).....**

10. How can trachoma surgical and antibiotic therapy services in this area be improved to meet your needs as a community? (*kajieikonipeiyieponarienyuaataeyiangareoongonyek oenkishoorotooorkiekpeyie?*)

- **Campaigns/outreaches (*ebaataeboo*).....**
- **Free medical camps (*embaataepesho*)**
- **Others (*ingulie*)**

11. Are there any side effects of surgical and antibiotic therapy that you have ever experienced?

(ketiiitoroninitoningoebaataenkoyearashuirkie?)

Yes (yee).....

No (aaa).....

12. If yes, what was the experience?

(tenaitonigo?).....

Appendix 5: Community Household Checklist

Sanitation factors (Tick Where Appropriate)

1. Presence of a latrine within 15meters from the household (*ketii choo atua imitaitomonimiettorikajijik*)

Yes (*yee*).... No (*aaa*)....

2. Presence of a lockable door for latrines for privacy reasons (*ketiimilangoninaikenoi echoo to sababuniesin*)

Yes (*yee*) No (*aaa*)....

3. Presence of impermeable floors for the latrines (*kegololtiren le choo*)

Yes (*yee*).... No (*aaa*) ...

4. Presence of a water holding receptacle within the household for face washing (*ketiioipiralengareenkaloemanyishonaisujiekiinkamomi*)

Yes (*yee*)... No (*aaa*).....

5. Presence of livestock near the household (*ketiinchooenkalomanyisho*)

Yes (*yee*) ... No (*aaa*) ...

6. Presence of a garbage collection/disposal point (*ketiiwejinepikiineyaytakataka*)

Yes (*yee*)... No (*aaa*)

7. Presence of eye seeking flies (*Musca sorbens*) within the compound ((*ketiilojangak atuaang`*))

Yes (*yee*).... No (*aaa*)...

Situation and location

1. Proximity of household from public transport (*kebaaelakuanitiang` olkurrotoloongarrin*)

- <1km (*mebayainkilomitanabo*)
- >1km (*saidiinkilomitanabokegiroo*)

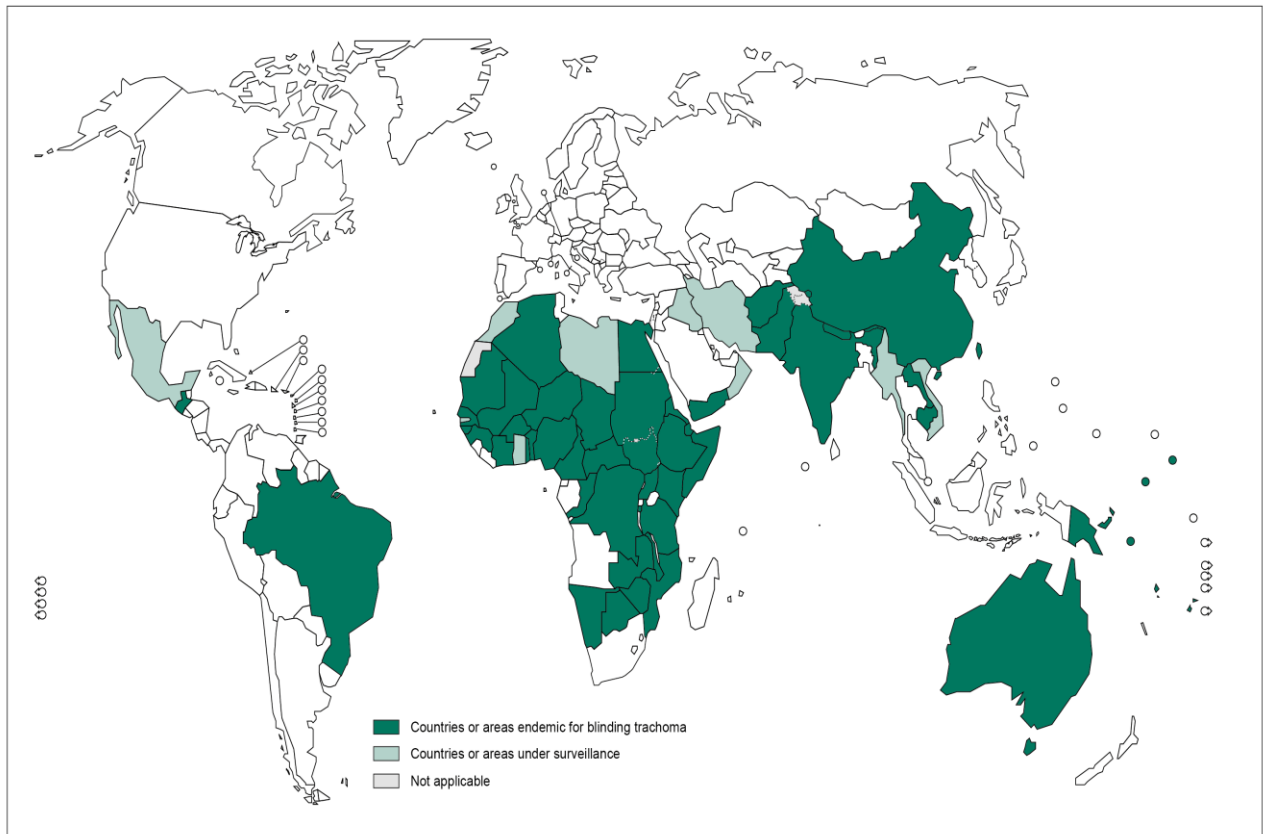
2. Proximity of household from health facilities (*kebaaelakuanitiang` osipitali*)

- <1km (*mebayainkilomitanabo*)
- >1km (*saidiinkilomitanabokegiroo*)

Appendix 6: Maps

Global Distribution of Trachoma

Distribution of trachoma, worldwide, 2012



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement. © WHO 2014. All rights reserved

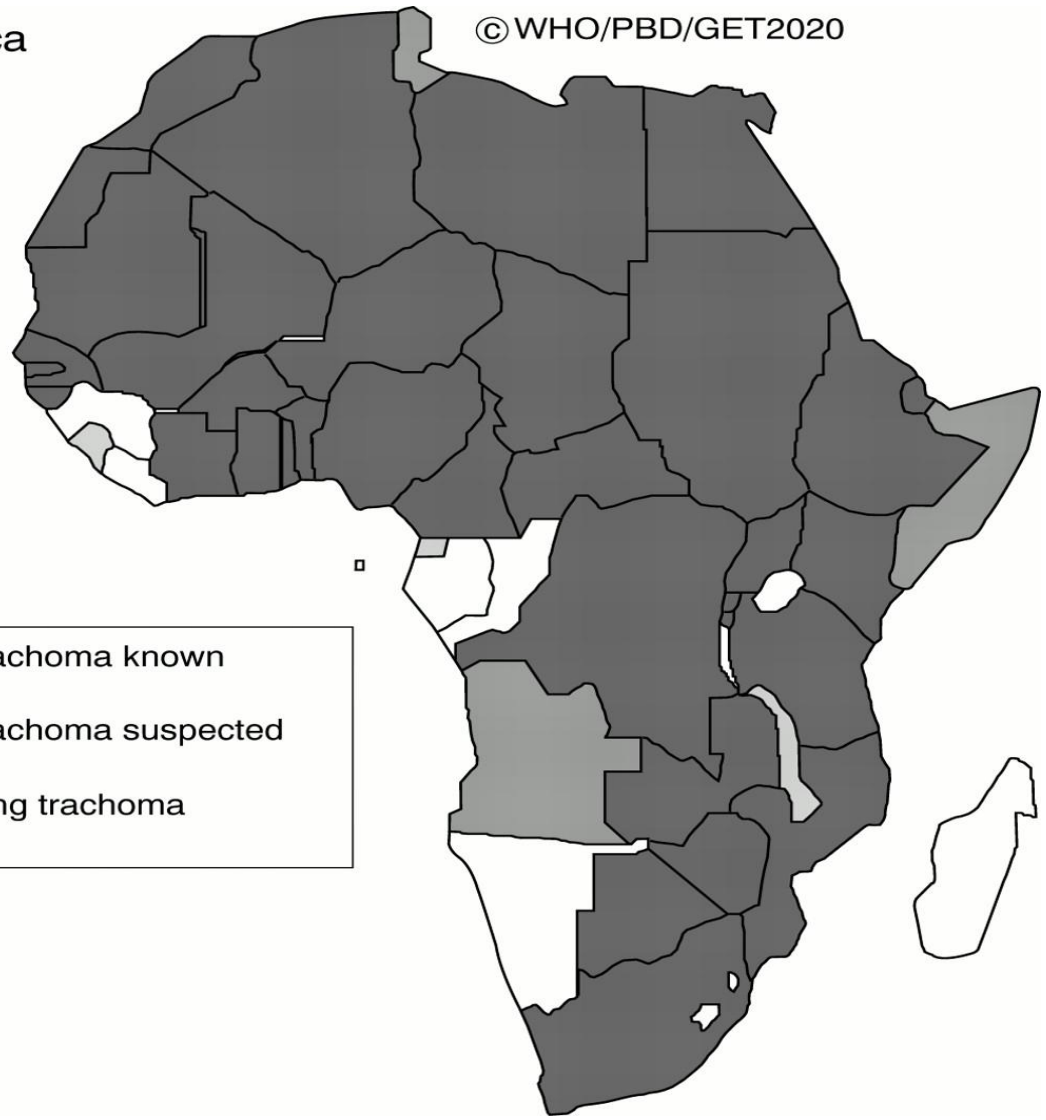
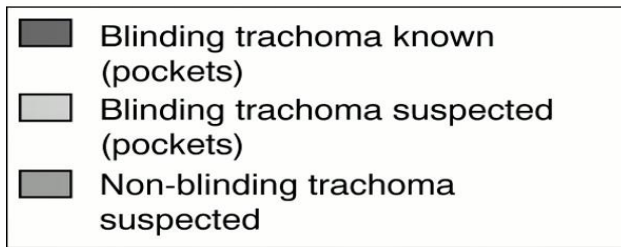
Data Source: World Health Organization
Map Production: Control of Neglected
Tropical Diseases (NTD)
World Health Organization



Blinding Trachoma in Africa

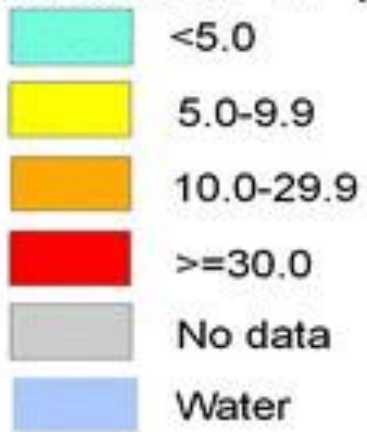
Africa
1996

© WHO/PBD/GET2020

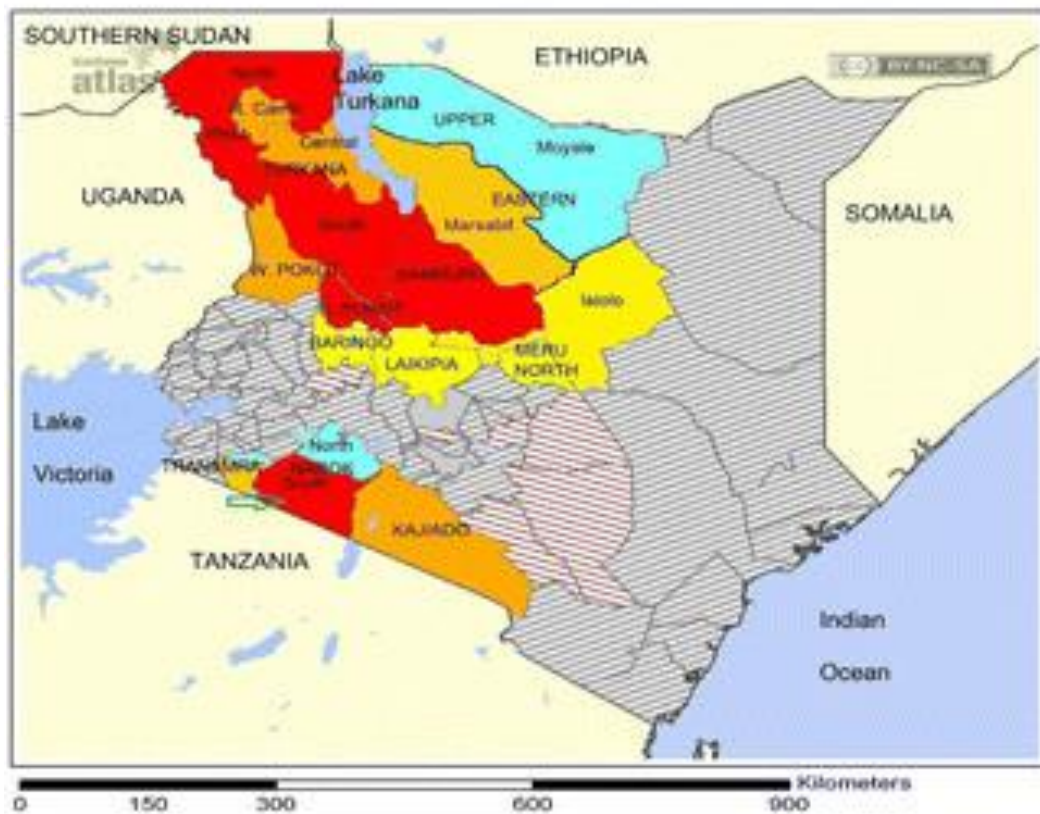
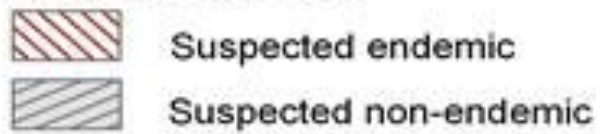


Distribution of Active Trachoma in Kenya

Prevalence of TF (%)

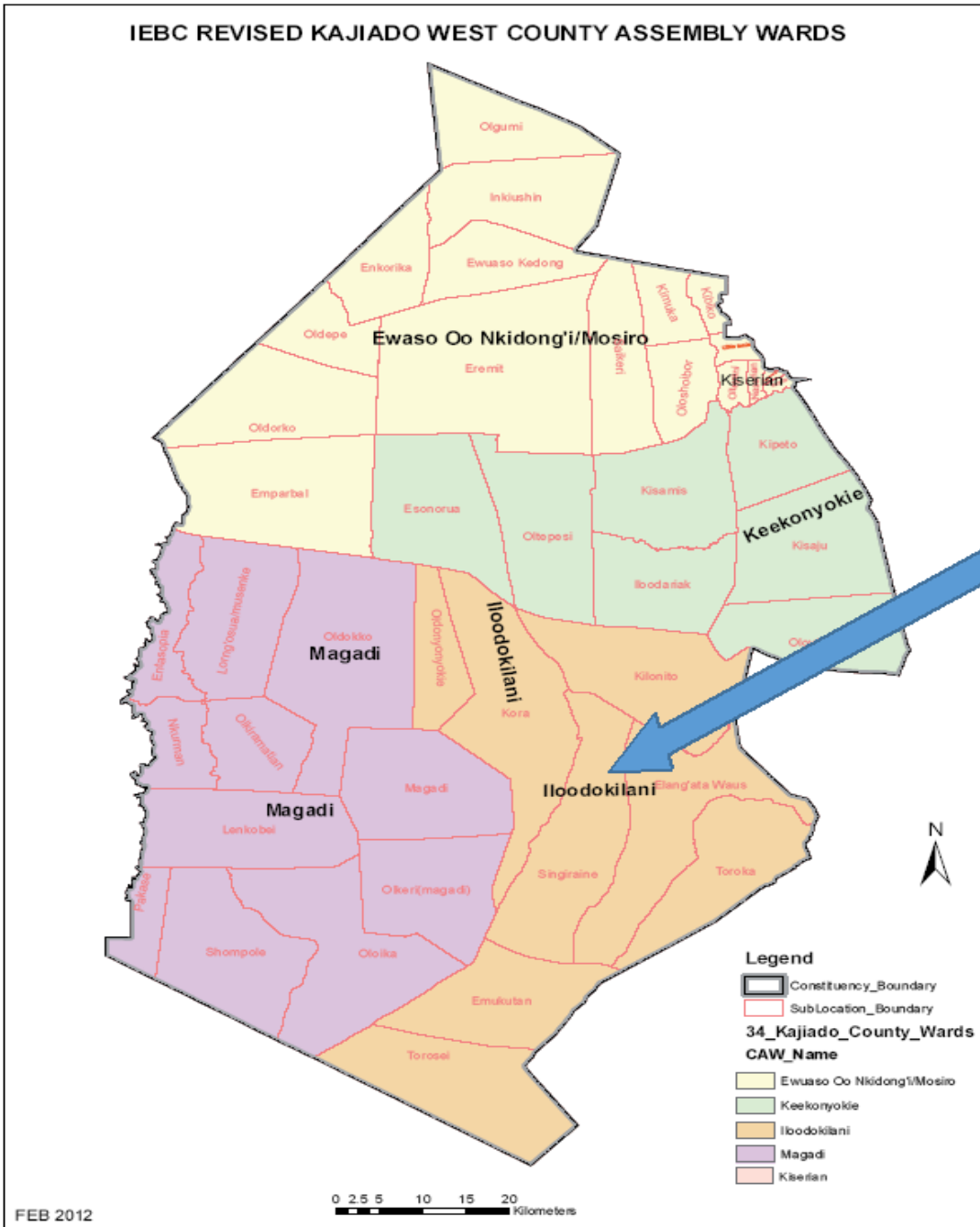


MoH Classification



Source: Survey of Kenya, 2014

Map Showing Loodokilani Ward in Kajiado West Sub county



Appendix 7: Ethical Clearance



KENYA METHODIST UNIVERSITY

P. O. BOX 267 MERU - 60200, KENYA
TEL: 254-064-30301/31229/30367/31171

FAX: 254-64-30162
EMAIL: INFO@KEMU.AC.KE

14TH FEBRUARY 2018

Ruth Nataana Parsimei
PHT-3-1882-1/2015

Dear Ruth,

RE: ETHICAL CLEARANCE OF A MASTERS' RESEARCH THESIS

Your request for ethical clearance for your Masters' Research Thesis titled "**Utilization of Surgical and Antibiotic Therapy for Treatment of Potentially Blinding Trachoma in Lcodokilani Ward, Kajiado County (Household Survey)**" has been granted to you in accordance with the content of your Thesis proposal.

As Principal Investigator, you are responsible for fulfilling the following requirements of approval:

1. All co-investigators must be kept informed of the status of the Thesis.
2. Changes, amendments, and addenda to the protocol or the consent form must be submitted to the SERC for re-review and approval **prior** to the activation of the changes. The Proposal number assigned to the Thesis should be cited in any correspondence.
3. Adverse events should be reported to the SERC. New information that becomes available which could change the risk: benefit ratio must be submitted promptly for SERC review. The SERC and outside agencies must review the information to determine if the protocol should be modified, discontinued, or continued as originally approved.
4. Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by subjects and/or witnesses should be retained on file. The SERC may conduct audits of all study records, and consent documentation may be part of such audits.

5. SERC regulations require review of an approved study not less than once per 12-month period. **Therefore, a continuing review application must be submitted to the SERC in order to continue the study beyond the approved period.** Failure to submit a continuing review application in a timely fashion will result in termination of the study, at which point new participants may not be enrolled and currently enrolled participants must be taken off the study.

Please note that any substantial changes on the scope of your research will require an approval.

Thank You,

Dr. Wamachi

Chair, SERC

Cc: Dean, RD&PGS



Appendix 8: Authorization Letter (KeMU)



Kenya Methodist University

P. O Box 267 - 60200, Meru, Kenya, Tel: (+254-020) 2118423-7, 064-30301/31229 Fax: (+254-064) 30162 Email: info@kemu.ac.ke , Website: www.kemu.ac.ke

February 22, 2018

TO WHOM IT MAY CONCERN

RE: PARSIMEI NATAANA RUTH PHT-3-1882-1/2015

This is to confirm that the above named is a student in the Department of Public Health, pursuing a Master of Public Health.

As a requirement, the student is expected to undertake an independent **primary research** in their area of specialization.

The purpose of this letter is therefore; to introduce the student to you and request you to allow her undertake the research in your organization.

The student has been advised to ensure that all data and information from the organization is treated with utmost confidentiality and only used for academic purposes unless otherwise stated.

Any assistance accorded to her will be highly appreciated.

Yours faithfully,

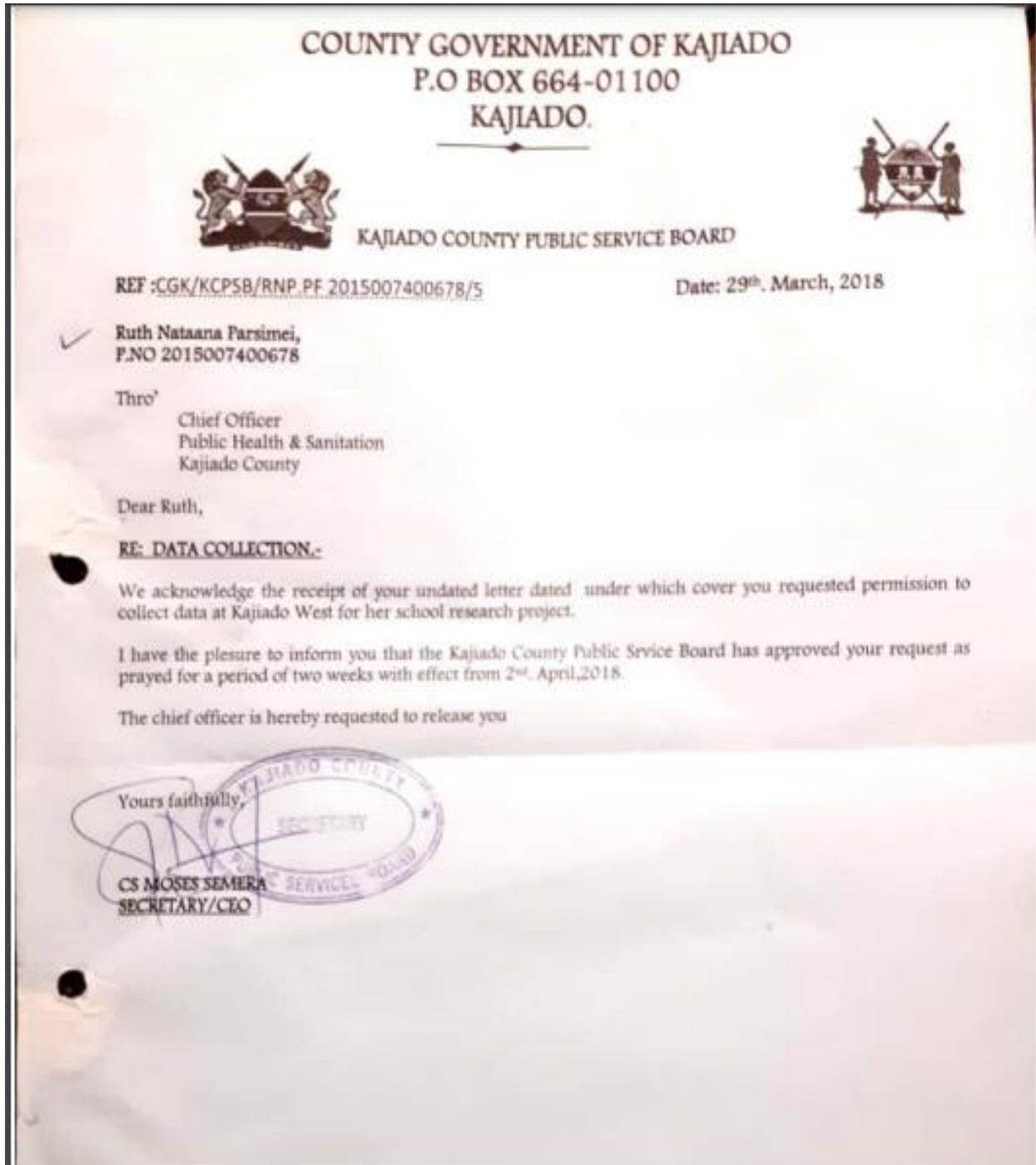
Mr. Bernard Baimwera
Deputy Registrar -Academic Affairs



Nairobi Campus: Koinange Street, P.O. Box 45240-00100 Nairobi - Tel: +254-20-2118443/2248172/2247987/0725-751878 Fax: 254-20-2248160 Email: nairobicampus@kemu.ac.ke
Nakuru Campus: Mache Plaza, 4th Floor, P.O. Box 3654-20100, Nakuru, Tel +254-51-2214456 Fax 051-2216446 Email: nakurucampus@kemu.ac.ke
Mombasa Campus: Former Oshwal Academy, P.O. Box 89983, Mombasa. Tel: +254 - 041-2495945 / 8, Fax 041-2495946. Email: mombasacampus@kemu.ac.ke
Nyeri Campus: Lware Building, 4th Floor, Tel: +254-61-2032904, Fax: 254-61-2034100 Email: nyericampus@kemu.ac.ke

The Future is Here!

Appendix 9: Authorization Letter-County Government of Kajiado



Appendix 10: NACOSTI Permit

 <p>REPUBLIC OF KENYA</p>	 <p>NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION</p>
<p>Ref No: 148767</p>	<p>Date of Issue: 28/September/2019</p>
<p>RESEARCH LICENSE</p>	
	
<p>This is to Certify that Ms. Ruth Natusua Parasani of Kenya Methodist University, has been licensed to conduct research in Kajiado on the topic: UTILIZATION OF SURGICAL AND ANTIBIOTIC THERAPY FOR TREATMENT OF POTENTIALLY BLINDING TRACHOMA IN LOODOKILANI WARD, KAJIADO COUNTY, (HOUSEHOLD SURVEY) for the period ending : 28/September/2019.</p>	
<p>License No: NACOSTI/P/2014/368</p>	<p>Applicant Identification Number</p>
<p>Director General</p>	<p><i>Walter Kimani</i></p>
<p>Director General NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION</p>	
<p>Verification QR Code</p>	
	
<p>NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.</p>	

**Appendix 11: Kajiado West Chv`s Case Identification Tool In House To House Visit
Registration Logbook of Trichiasis Patients Identified During House to House Visit**

	Name	Father Name	Grandfather Name	Cellphone number	Sex	Age	Address		Confirmed by TT surgeons (Yes and No)	Follow up/ Surgery performed (Yes or No)
							Husband Name if Married Women	Household Head Name		
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

Village: _____ Boma/Manyatta _____
 Date of visit _____ Number of households visited _____

Appendix 12: The WHO Grading Card for Trachoma

Stages of trachoma



Normal Healthy Eye



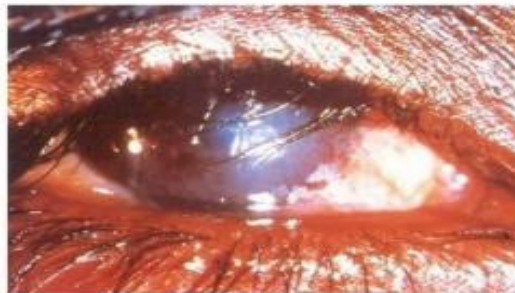
Active Trachoma (TF)



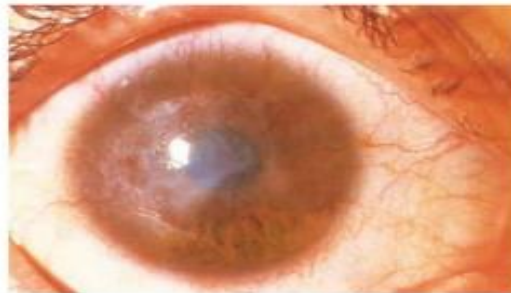
Severe Infection (TI)



Scar Tissue from Prolonged Infection and Reinfection (TS)



In-Turned Eye Lashes Rubbing Against Eye Trichiasis (TT)



Blind Eye Caused by Prolonged Infection Corneal Opacity (CO)

Source (WHO, 2018).