

**KNOWLEDGE, ATTITUDES AND EYE CARE SEEKING PRACTICES  
ASSOCIATED WITH UTILIZATION OF TRACHOMA EYE CARE  
SERVICES IN CENTRAL DIVISION, KAJIADO COUNTY**

**BY:**

**NG'ETICH SAITABAU ARTHUR**

**A THESIS SUBMITTED TO THE SCHOOL OF PUBLIC HEALTH,  
COLLEGE OF HEALTH SCIENCES IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF  
PUBLIC HEALTH (MPH)**

**Moi University**

**© OCTOBER, 2015**

## DECLARATION

### DECLARATION BY THE CANDIDATE

This thesis is my original work and has not been submitted in part or in full to this institution or any other institution for academic purposes or otherwise. No part of this thesis may be reproduced without prior written permission of the researcher and or Moi University.

### DECLARATION BY THE SUPERVISORS

This research thesis has been submitted for examination with our approval as the university supervisors.

Sign.....

Date.....

Dr. Claudio Owino,  
Department of Surgery and Anesthesiology,  
College of Health Sciences - School of Medicine,  
Moi University.

Sign.....

Date.....

Dr. Charles Walekhwa  
Senior Lecturer - Department of Epidemiology and Nutrition  
School of Public Health, College of Health Science - Moi University

## ABSTRACT

**Background Information** - Trachoma is considered the second leading cause of avoidable blindness in Kenya, accounting for 19% of the blind. Kajiado County has been documented as an area with a high prevalence of the eye disease. The focus of most researchers has been on risk factors for trachoma and the interventions put in place towards prevention and treatment of this eye disease but not much has been done concerning utilization of the available trachoma eye care services by the communities and on the factors affecting utilization of these services.

**Specific Objectives-** To determine the level of knowledge, attitudes and eye care seeking practices of the community towards the available trachoma eye care services and assess utilization of these in Central division of Kajiado County.

**Methodology-** A cross-sectional study design was conducted. A sample of 321 respondents who met the inclusion criteria were randomly selected from the community while eleven health workers were purposively sampled from facilities providing the eye care services. Questionnaires, structured interview schedules and observational checklists were used for data collection. Data analysis was performed using STATA version 12. Categorical variables were summarized as frequencies and corresponding percentages while the continuous variables were summarized as the median and the corresponding lower and upper quartiles. The association between categorical variables was assessed using the Pearson's Chi Square test at 95% confidence level. Data was presented in prose, tabular and graphical forms.

**Results-** Of the 321 respondents included in the study, the response rate was 98.7%. The mean age of the respondents was 37 years, with female participants (65%) being the majority and most respondents (62%) having attained at most a primary level of education. The level of awareness of trachoma disease in the study area was significantly high (95%). Close to three quarters (71%) of the respondents were knowledgeable of the available trachoma eye care services provided by health facilities and NGOs in the area. The community had a positive attitude towards the available services with most of the respondents expressing need for the eye care services. Majority (59%) felt the health facilities and NGOs in the area adequately met their eye care needs. Public health facilities were preferred by most respondents. Age and educational level of the respondents were found to be associated with communities' eye care seeking practices. Most respondents subscribing to cultural practices believed in the efficacy of traditional medicine. Utilization of the available trachoma eye care services in the region was low (36%). The statistically significant factors found to influence utilization of these services were knowledge of the available eye care services and gender of respondents. The main barriers to utilization of trachoma eye care services were accessibility and affordability of the services.

**Conclusion-** The community was knowledgeable of the available trachoma eye care services and had a positive attitude towards these services. Despite this, utilization of the trachoma eye care services was quite low in the region. Accessibility and affordability of the eye care services were the main barriers to utilization of these services.

**Recommendations-** Reinforcement of positive attitudes towards the services through community based educational programs and overcoming local barriers to uptake of the services through community participation in education and provision of outreach services through mass treatment programmes.

## LIST OF ABBREVIATIONS

<b>ACK</b>	-	Anglican Church of Kenya
<b>AIC</b>	-	Africa Inland Church
<b>AMREF</b>	-	Africa Medical and Research Foundation
<b>ASAL</b>	-	Arid and Semi-Arid Lands
<b>CHMB</b>	-	County Health Management Board
<b>CO</b>	-	Corneal Opacity
<b>DALYs</b>	-	Disability Adjusted Life Years
<b>DHMB</b>	-	District Health Management Board
<b>DHMT</b>	-	District Health Management Team
<b>DPOS</b>	-	Division of Preventive Ophthalmic Services
<b>GOK</b>	-	Government of Kenya
<b>GBD</b>	-	Global Burden of Disease
<b>HH</b>	-	Household
<b>IAPB</b>	-	International Agency for the Prevention of Blindness
<b>ICD</b>	-	International Classification of Diseases
<b>ICTC</b>	-	International Coalition for Trachoma Control
<b>IEC</b>	-	Information, Education and Communication
<b>IREC</b>	-	Institutional Research and Ethics Committee
<b>ITI</b>	-	International Trachoma Initiative
<b>HIV/AIDs Syndrome</b>	-	Human Immuno-deficiency Virus/ Acute Immune-deficiency
<b>KDH</b>	-	Kajiado District Hospital
<b>KNBS</b>	-	Kenya National Bureau of Statistics
<b>KNPET</b>	-	Kenya National Plan for Elimination of Trachoma

<b>KOP</b>	-	Kenya Ophthalmic Programme
<b>MDA</b>	-	Mass Drug Administration
<b>MDGs</b>	-	Millennium Development Goals
<b>MOH</b>	-	Medical Officer of Health
<b>MoPHS</b>	-	Ministry of Public Health and Sanitation
<b>NGOs</b>	-	Non-Governmental Organizations
<b>NTDs</b>	-	Neglected Tropical Diseases
<b>OCOs</b>	-	Ophthalmic Clinical Officers
<b>PHMB</b>	-	Provincial Health Management Board
<b>SAFE</b>	-	Surgery, Antibiotics, Face-washing and Environmental Change
<b>SCHMB</b>	-	Sub County Health Management Board
<b>SCHMT</b>	-	Sub County Health Management Team
<b>SES</b>	-	Socio-Economic Status
<b>SPH</b>	-	School of Public Health
<b>SPSS</b>	-	Statistical Package for Social Sciences
<b>SSI</b>	-	Sight Savers International
<b>TF</b>	-	Trachomatous Inflammation (Follicular)
<b>TI</b>	-	Trachomatous Intense
<b>TS</b>	-	Trachomatous Scarring
<b>TT</b>	-	Trachomatous Trichiasis
<b>UNICEF</b>	-	United Nations Children's Fund
<b>WHO</b>	-	World Health Organization

## DEFINITION OF OPERATIONAL TERMS

**Blepharospasm-** refers to a neurological condition characterized by forcible closure of the eyelids.

**Blindness-** visual acuity of less than 3/60 (20/400), or a visual field loss to less than 10 $u$  from fixation in the better eye with best possible correction (ICD-10 visual impairment categories 3, 4, and 5).

**Entropion-**is a medical condition in which the eyelid (usually the upper lid) folds inward resulting in the eyelashes constantly rubbing against the cornea.

**Low Vision-** visual acuity of less than 6/18 (20/60) but equal to or better than 3/60 in the better eye with best possible correction (ICD-10 visual impairment categories 1 and 2).

**Ophthalmologist-** diagnoses and treats all eye diseases, performs eye surgery and prescribes and fits eye glasses and contact lenses.

**Optician-** a supplier of glasses and contact lenses who does not examine eyes or prescribe corrective lenses.

**Optometrist-** a qualified specialist, who carries out eye examinations, prescribes and supplies glasses and contact lenses.

**Trichiasis-** refers to the inward growth of hair around the eye opening, especially inward growth of the eyelashes, causing irritation of the eyeball.

**Utilization-** to put to use or find a practical or effective use of something/service.

**Visual Impairment-** combines both Blindness and Low Vision (ICD-10 visual impairment categories 1–5).

## TABLE OF CONTENTS

DECLARATION .....	II
ABSTRACT.....	III
LIST OF ABBREVIATIONS.....	IV
DEFINITION OF OPERATIONAL TERMS .....	VI
TABLE OF CONTENTS.....	VII
LIST OF TABLES .....	X
LIST OF FIGURES .....	XI
ACKNOWLEDGEMENTS .....	XII
CHAPTER ONE .....	1
1.0 INTRODUCTION .....	1
1.1 Background of the Study .....	5
1.1.1 Kajiado County Profile.....	5
1.1.1.1 Map on Administrative Units of Kajiado County .....	6
1.1.2 Kajiado County Health Care Profile .....	7
1.1.3 Knowledge, Attitudes and Eye Care Seeking Practices .....	9
1.1.4 Utilization of Eye Care Services .....	10
1.2 Statement of the Problem.....	13
1.3 Aim of the Study.....	14
1.4 Research Questions .....	15
1.5 Specific Objectives .....	15
1.6 Justification for the Study .....	15
CHAPTER TWO .....	17
LITERATURE REVIEW .....	17
2.1 Epidemiology of Trachoma .....	17
2.1.1 Global Distribution of Trachoma .....	18
2.2 Eye Care Services .....	21
2.2.1 Trachoma eye care services.....	21
2.2.1.1 Eye Examination .....	21
2.2.1.2 Antibiotic Therapy .....	24
2.2.1.3 Surgical Care .....	25
2.2.1.4 Health Education .....	26
2.3 Knowledge of Eye Care Services .....	28

2.4 Attitudes towards Eye Care Services .....	30
2.5 Eye Care Seeking Practices .....	33
2.6 Utilization of Eye Care Services.....	35
2.6.1 Availability of eye care services .....	35
2.6.2 Accessibility to eye care services .....	37
2.6.3 Affordability of eye care services .....	39
2.7 Conceptual Framework.....	42
CHAPTER THREE .....	44
METHODOLOGY .....	44
3.1 Study Area .....	44
3.2 Study Population.....	44
3.3 Study Design.....	44
3.4 Sample Size Determination.....	45
3.5 Sampling Techniques.....	46
3.6 PILOT STUDY .....	48
3.6 Pilot Study.....	48
3.7 Data Collection Procedures.....	48
3.8 Data Analysis and Presentation .....	50
3.9 Data Management .....	51
3.9.1 Data Quality Checks.....	51
3.9.2 Data Handling and Cleaning .....	52
3.10 Eligibility Criteria .....	52
3.11 Ethical Considerations .....	53
CHAPTER FOUR.....	54
RESULTS .....	54
4.1 Socio-Demographic Characteristics.....	54
4.2 Communities' level of knowledge of trachoma eye care services.....	58
4.3 Communities' attitudes towards trachoma eye care services .....	61
4.4 Communities' eye-care seeking practices.....	64
4.5 Utilization of trachoma eye care services .....	67
4.6 Community Household Attributes .....	73
4.7 Health Personnel Interviews .....	74
4.8 Health Facility Attributes.....	78



CHAPTER FIVE .....	81
DISCUSSION .....	81
5.1 Communities' level of knowledge of trachoma eye care services.....	81
5.2 Communities' attitudes towards trachoma eye care services .....	83
5.3 Communities' eye care seeking practices .....	86
5.4 Utilization of trachoma eye care services .....	89
5.5 Household Attributes .....	93
5.6 Health Facility Attributes.....	96
5.7 Health Personnel Interviews .....	97
5.8 Interpretation of Conceptual Framework.....	100
5.9 Study Limitation .....	101
CHAPTER SIX.....	102
SUMMARY, CONCLUSION & RECOMMENDATIONS .....	102
6.1 Summary .....	102
6.2 Conclusion .....	104
6.3 Recommendations.....	105
6.3.1 County Level .....	105
6.3.2 National Level .....	106
6.4 Areas of Further Research .....	106
REFERENCES .....	107
APPENDICES .....	118
APPENDIX I: RESEARCH PARTICIPANT CONSENT FORM.....	118
APPENDIX II: HOUSEHOLD QUESTIONNAIRE .....	120
APPENDIX III: FOMU YA IDHINI WA KUSHIRIKI KATIKA UTAFITI.....	124
APPENDIX IV: DODOSO .....	126
APPENDIX V: HEALTH PERSONNEL INTERVIEW SCHEDULE.....	130
APPENDIX VI: OBSERVATION CHECKLIST -HEALTH FACILITY .....	132
APPENDIX VII: OBSERVATION CHECKLIST -HOUSEHOLD .....	133
APPENDIX VIII: INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE FORMAL APPROVAL LETTER.....	134
APPENDIX IX: AUTHORITY TO CONDUCT STUDY LETTER .....	135
APPENDIX X: STUDY PICTORIALS.....	136

## LIST OF TABLES

Table 1: Stratified sampling by location within Central Division, Kajiado County.....	47
Table 2: Distribution of Respondents in Locations within Central Division, Kajiado County.....	54
Table 3: Distribution of gender across age groups .....	56
Table 4: Communities' level of knowledge of trachoma eye care services available in the region .....	60
Table 5: Association between knowledge of trachoma eye care services and socio- demographic characteristics of respondents .....	61
Table 6: Communities' attitudes towards trachoma eye care services available in the region .....	63
Table 7: Association between the individual need of trachoma eye care services and age of respondents.....	64
Table 8: Communities' eye-care seeking practices in relation to trachoma eye care services available in the region .....	66
Table 9: Association between socio-demographic characteristics of respondents and the first resort of treatment in the case of an eye condition .....	66
Table 10: Utilization of trachoma eye care services available in the region .....	70
Table 11: Association between utilization of trachoma eye care services and gender of respondents .....	71
Table 12: Association between utilization of trachoma eye care services and knowledge of the available services .....	71
Table 13: Barriers to utilization of available trachoma eye care services .....	72
Table 14: Respondents' opinions on ways to improve utilization of available trachoma eye care services .....	72
Table 15: Household Attributes .....	74
Table 16: Health Facility Attributes .....	80

**LIST OF FIGURES**

Figure 1: Utilization of Trachoma Eye Care Services Conceptual Framework .....	42
Figure 2: Respondents Age Groups .....	55
Figure 3: Gender Distribution.....	56
Figure 4: Employment Status.....	57
Figure 5: Level of Education .....	57
Figure 6: Marital Status .....	58
Figure 7: Trachoma Educational Materials.....	76
Figure 8: Utilization of Trachoma Educational Materials .....	77
Figure 9: Conditions of the Waiting Bay .....	79

## ACKNOWLEDGEMENTS

I am eternally grateful to my thesis supervisors Dr. Claudio Owino and Dr. Charles Walekhwa without whose guidance and extensive knowledge in this area of research, development of this thesis would have been in vain. I am also grateful to my lecturers and mentors in the School of Public Health for their invaluable contribution towards my pursuit of knowledge.

I extend my appreciation to the Medical Superintendent-Kajiado Sub County Hospital, AMREF's Trachoma Integrated Project Manager and Project Officer-Mr. Dikir and Mr. Ochieng' respectively, my research assistants, the community members and all other individuals within the study area who went out of their way to assist me undertake this research.

I also express my sincere gratitude to my fellow colleagues in the School of Public Health, friends and family for their constant encouragements throughout the period I was conducting my research.

God bless you all.

*The Lord is my shepherd I shall not want.*

*Psalms 23:1*

## CHAPTER ONE

### 1.0 INTRODUCTION

Neglected Tropical Diseases (NTDs) are one of the key areas of concern for our society. These communicable diseases affect an estimated one billion people globally, primarily poor populations living in tropical and subtropical climates, with children being the most vulnerable to infection (WHO, 2014c). World Health Organization (WHO) lists 17 diseases under the Neglected Tropical Diseases group. They flourish in impoverished, tropical environments and, though medically diverse, tend to co-exist. Beyond their negative impact on health, NTDs contribute to an ongoing cycle of poverty and stigma that leaves people unable to work, go to school or participate in family and community life activities (WHO, 2014c). Although these diseases have devastating effects on the affected communities, they normally do not draw much attention and effort towards their prevention and control in many countries where they are endemic.

In Kenya, the NTDs of great public health importance include: Lymphatic Filariasis (LF), Schistosomiasis, Soil Transmitted Helminthiasis (STHs), Trachoma and Leishmaniasis. Although these diseases are not a direct cause of mortality, they are known to cause immense suffering and often life-long disabilities to those afflicted within the endemic areas. These diseases are also known to impair growth and development in children.

From the information available on the epidemiology of these diseases in the country, their distribution is more-or-less clearly defined; Trachoma and Leishmaniasis are mainly distributed in the arid and semi-arid regions of the country. Notable from the distribution is a clear definition of endemicity-overlaps, whereby several NTDs occur

together. Trachoma and Leishmaniasis co-exist in many places in the arid and semi-arid areas associated with nomadic livelihoods (MoPHS, 2011).

Although safe and cost-effective interventions for the prevention and control of NTDs are available, these diseases have continued to afflict the rural poor due to neglect. Prevention and control of most NTDs is based on preventive chemotherapy using drugs of proven efficacy and safety. Various Mass Drug Administration (MDA) strategies utilizing a number of distribution channels can effectively be used to control and/or eliminate NTDs in endemic communities. Where a number of NTDs are co-endemic, MDA activities can be integrated or co-implemented for cost-effective control of all endemic NTDs whose control is based on preventive chemotherapy.

Trachoma is one of the neglected tropical infectious diseases and a leading cause of preventable blindness found among the poorest of the communities in the world. Globally, more than two million people are either blind or suffer from a very painful disability because of trachoma. A further 4.6 million have got to the stage of the disease where they are in need of surgery to stop them going blind. Trachoma blinds four people every hour which translates to every fifteen minutes someone going blind from the disease (ICTC, 2011). It is the leading infectious cause of blindness, followed by diseases such as onchocerciasis and measles. Systemic diseases such as leprosy and Human Immuno-deficiency Virus/ Acquired Immuno-deficiency Syndrome (HIV/AIDS) also lead to blindness, although much less frequently (Courtright & West, 2004).

Trachoma is a chronic infectious eye disease affecting marginalized population groups throughout many countries of Africa, the Middle East, Asia, and a few settings in Latin America. *Chlamydia trachomatis*, the infective agent, has no known animal

reservoir. The manifestations of trachoma vary depending upon the number of episodes of infection, severity, and the persistence of infection. Trachoma generally occurs early in life through physical transmission of *C. trachomatis* to the eye by hands, flies, or cloth. The pool of chlamydiae in the community generally resides in preschool-age children and transmission is easily facilitated by poor hygiene, scarcity of water, and crowded living conditions (Burton et al., 2003). The highest prevalence of active trachoma in hyper endemic areas is found among children one to nine years of age. Adult women are more likely to have evidence of active disease and infection. Trachoma is commonly found in areas with hot, dry and dusty climates (West et al., 1995).

The World Health Organization (WHO) has established the following five clinical stages for grading trachoma, listed from least to the most severe (WHO, 2010a; WHO, 2010b; West, 2004): (1) Trachomatous inflammation, follicular (TF), (2) Trachomatous inflammation, intense (TI), (3) Trachomatous scarring (TS), (4) Trachomatous trichiasis (TT), and (5) Corneal opacity (CO). Multiple infections over time produce scarring of the conjunctiva, leading to trichiasis, a process in which the eyelashes turn inward. This latter stage will eventually require eye-lid surgery to alleviate eyelash-rubbing on the eye and prevent blinding from corneal opacification.

Risk factors for trachoma transmission include limited access to clean water, poor sanitation infrastructure, poor personal hygiene (for example; face washing), exposure to flies, proximity of latrines to human dwellings, close proximity to cattle corrals, dense living arrangements, and nutritional deficiencies (West, 2004; Mecaskey et al., 2003; WHO, 2010a; Ngondi et al., 2010)

Trachoma prevalence in Kenya varies widely from region to region. It is considered the second leading cause of avoidable blindness in Kenya, accounting for 19% of the blind. About 7 million Kenyans live in 39 suspected trachoma endemic districts (old districts) which include the larger West Pokot, Baringo, Meru North, and Kajiado Districts among others. Baseline surveys have been conducted in 22 out of the 39 suspected trachoma endemic districts. From these surveys an average prevalence of over 20% active trachoma was revealed in children aged 1-9 years. The average prevalence of trichiasis (potentially blinding trachoma) in adults 15 years and older was over 3% (Karimurio, 2006). There are approximately 270,000 blind persons in Kenya, of which 51,300 (19%) of these have blindness attributed to trachoma (MoPHS, 2011). The WHO defines trachoma as a district-wide public health problem when active disease and trichiasis prevalence are above 10% and 1%, respectively (WHO, 2010a; WHO, 2010b; MoPHS, 2008).

The prevalence of this eye disease is known to reduce with improved socio-economic status (Johnson et al., 1998). High prevalence is associated with high climatic aridity, and lower prevalence is associated with greater rainfall, sustainable agriculture, and a higher general standard of living. Within high-risk regions, there are wide variations in age-specific prevalence and severity of the disease (Mariotti et al., 2003). Potential blinding sequelae of trachoma are more prevalent in females than in males.

There is substantial activity going on in the control of various NTDs in Kenya. These activities are in most cases small scale, erratic and on specific individual diseases. For example, the SAFE strategy, which stands for Surgery, Antibiotics, Face Washing, and Environmental Change, is the WHO adopted strategy for trachoma control (MoPHS, 2008). In Kajiado District (now Kajiado County), the SAFE strategy was rolled out and implemented through the Trachoma Integrated Project by the African



Medical and Research Foundation (AMREF) and the Ministry of Health in 2007. The project's mission was to build a multi-sector partnership to strengthen the capacity of the county and community structures and to create effective linkages between them to eliminate blinding trachoma through a comprehensive implementation of the SAFE strategy. There were also a number of Non-Governmental Organizations (NGOs) involved in carrying out trachoma control activities using the SAFE strategy in eleven of the thirty-nine trachoma endemic districts (MoPHS, 2011).

## **1.1 Background of the Study**

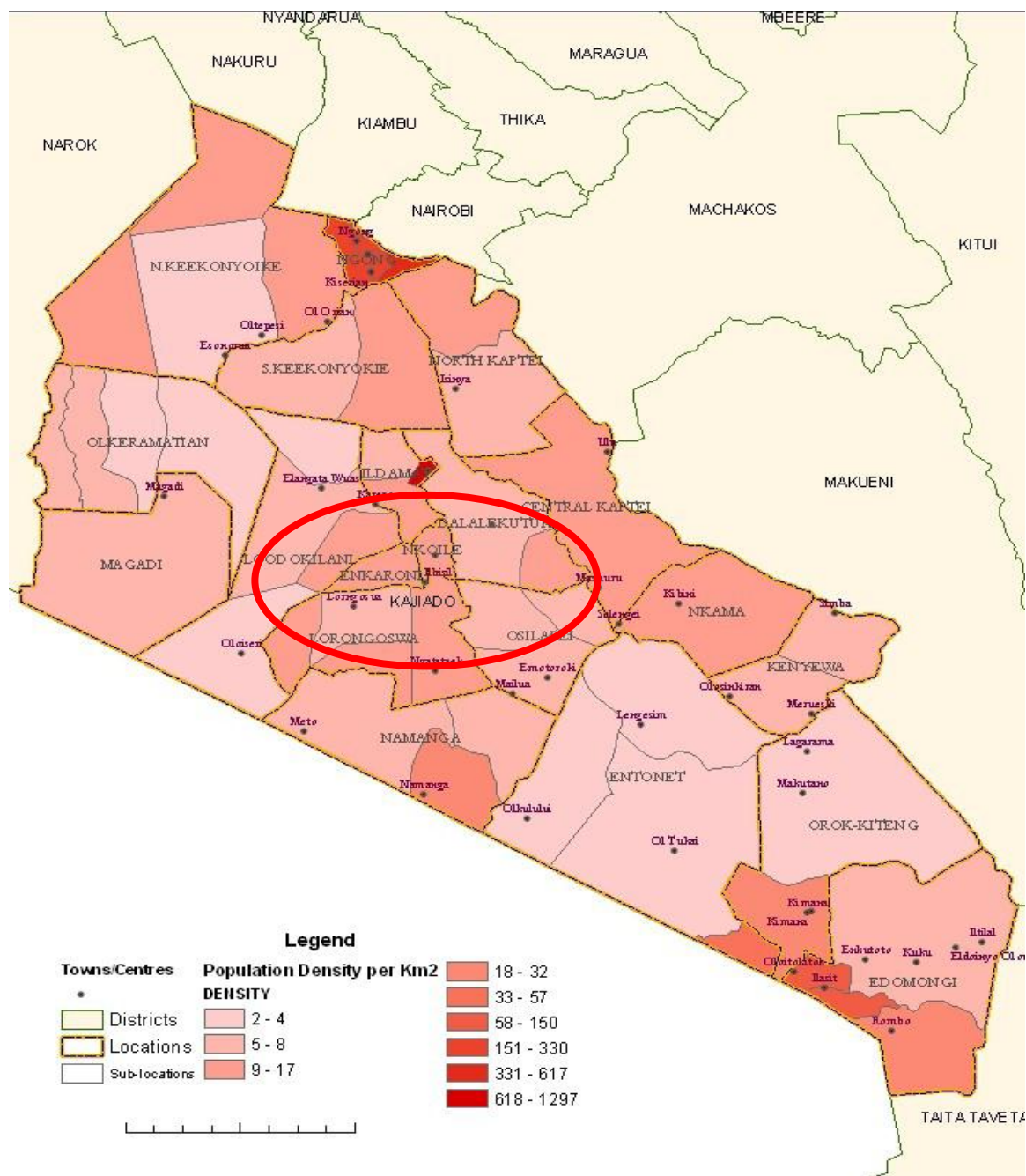
### **1.1.1 Kajiado County Profile**

Kajiado County is one of 47 counties in Kenya. It is located at the southern tip of the former Rift Valley Province. It is bordered by Tanzania to the southwest and Taita Taveta County (to the south east), Machakos County (to the east), Nairobi County (to the north east), Kiambu County (to the north) and Narok County (to the west). It has a population of 687,312 and an area of 21,292.7 km<sup>2</sup>.

The landscape of Kajiado County consists of plains plus some volcanic hills and valleys. The region is very dry and is designated as semi-arid. The annual rainfall varies between 500 and 1,250mm. In recent years there have been long periods of drought when there has been little or no rain. The indigenous peoples of the area are the Maasai but there is an increasing influx of peoples from other tribal groups.

The County is divided into seven administrative divisions. Kajiado Central constituency consists of three (3) divisions, namely; Central, Mashuru and Namanga while Kajiado North constituency consists of four (4) divisions, namely; Isinya, Magadi and Ngong while Kajiado South constituency with Loitokitok division.

### 1.1.1.1 Map on Administrative Units of Kajiado County



- Central Division, Kajiado County

According to projections from 2009 National Population and Housing Census, the population for Kajiado Central District was 162,278 with males being 80,354 and females 81,924. The district's total number of households was 35,403 with a

population density of 20 people/km<sup>2</sup>. On the other hand Kajiado North District total population was 358, 538 with males being 195,955 and females 162,583. The district's total number of households was 108,358 with a population density of 52 people/km<sup>2</sup>(KNBS, 2009).

Kajiado County has been documented as an area with a high prevalence (17.4%) of active trachoma (AMREF, 2013). The risks the community is exposed to include; water accessibility and use, socio-economic status, high fly population, cattle corrals and the household environment. These factors impact on the prevalence and burden of trachoma in this endemic region. Knowledge, change in attitudes and eye care seeking practices by the community towards all these factors may drastically modify the prevalence, severity of trachoma and the utilization of the available eye care services in the region.

### **1.1.2 Kajiado County Health Care Profile**

In Kenya, the efforts to fight avoidable blindness (VISION 2020) and provision of eye care services is coordinated by the Division of Preventive Ophthalmic Services (DPOS) within the Ministry of Health. The Division coordinates a whole range of services provided by the Government of Kenya, Non-Governmental Organizations (NGO), private and mission hospitals which together form the Kenya Ophthalmic Programme (KOP). KOP was established in 1956 with the support of Sight Saver International (SSI) and Kenya Society for the Blind (Kimani et al., 2007).

At the County level, curative services are provided by the district and mission hospitals. Preventive services are provided by the Sub-County Health Management Team (SCHMT) formerly referred to as District Health Management Team (DHMT) and the public health unit of the district hospital. Modalities exist for MOH

supervision and monitoring of NGOs in the County for example AMREF, World Vision, Fred Hollows Foundation, Sight Savers International and private facilities among others. NGOs and private facilities work with the community in collaboration with the SCHMT. Community programmes report to the Sub-County Health Management Board (SCHMB), which in turn reports to the headquarters through the County Health Management Board (CHMB) former Provincial Health Management Board (PHMB). The County structures were bound to change in line with the new constitution (MOH, 2012).

Kajiado District Hospital (KDH) is the main Level Four facility in Kajiado County and it is situated in Kajiado Township (Central Division). The eye clinic at the hospital is the main public facility of its kind in Kajiado, serving a great part of the county's population together with other private facilities and humanitarian organizations providing eye care services. Health care facilities are centralized within Central division of Kajiado County and those living in the remote areas of the county have to travel long distances to access eye care services.

In an effort to eliminate trachoma in Kenya, the Ministry of Health with support from AMREF, initiated the Trachoma Integrated Project in the Kajiado District in 2007. The SAFE (Surgery, Antibiotics, Facial Cleanliness and Environmental Improvement) strategy was implemented in order to decrease the impact of trachoma on the local community. The goal was to reduce the overall prevalence of active trachoma among children aged 1-9 from 23% to less than 10% by the year 2010 but according to a recent survey carried out in Kajiado County by AMREF in the year 2013, the prevalence of active trachoma was found to be high (17.4%) and of public health concern. Therefore, this showed the need for enhanced interventions to ensure

effective control and treatment of the eye disease to bring down the prevalence to levels below the WHO threshold of less than 10% (WHO, 2006).

### **1.1.3 Knowledge, Attitudes and Eye Care Seeking Practices**

The three aspects of knowledge of the available eye care services, attitudes towards the services and eye care seeking practices of the community play a significant role in determining utilization of eye care services. In a study of knowledge, attitude and practices regarding eye surgery in parts of India, it was found that poor knowledge regarding eye diseases were reported and respondents were unaware of the possibilities to get their sight restored through operations (Bhagwan et al., 2006). Another study in Pakistan, found that the most frequently identified barrier to uptake of eye surgery was lack of information about the services (Jadoon et al., 2007). Hence, low utility of eye care services can be attributed to poor knowledge of the available services by the community in a given area.

According to Ashaye et al. (2006), many people especially in the developing regions are still becoming blind due to barriers such as beliefs and attitudes. They found that beliefs and attitudes of the predominantly rural population are still major barriers to utilization of eye care services in Nigeria. Similarly, the communities in Kajiado County which is also regionally remote are likely to observe certain beliefs and attitudes towards the available trachoma eye care services. In South Africa, it was found that barriers to the use of eye care services in a rural community included traditional and personal beliefs about the western type of eye care services. Approximately 5% of the study population would consult traditional healers for certain eye problems rather than seek eye care from the government hospitals even

though, the public eye care services were readily available and affordable (Oduntan & Raliavhegwa, 2001).

The frequency and severity of symptoms experienced by individuals affect their self-perception of eye health thereby influencing their eye health seeking behavior (Ocansey et al., 2013). Health therefore, cannot be reduced to experts' care only since in remote and impoverished areas of the world, orthodox eye health care is often a part of a wider medical system in which exists traditional medicine that involves both self-care with medicinal plants and consultation with specialized traditional healers (Omolase et al., 2008).

In most parts of the developing world, patients consult traditional healers first and only consult modern health professionals or health units when traditional medicines have failed or complications have ensued. Some patients use both traditional and conventional medicines concurrently. This is because they believe that the disease is caused by an “evil eye”, “bad omen” or “a bad spell sent by angry gods”. It has also been reported that about 80% of the world's population has little or no access to modern health care due to poor socio-economic backgrounds yet this population has a huge burden of people suffering from eye diseases and visual disabilities with which the current health care systems cannot cope. These populations therefore, primarily depend on traditional systems of health care (Chana, 1997).

#### **1.1.4 Utilization of Eye Care Services**

VISION 2020 is the global initiative for the elimination of avoidable blindness, launched in 1999, jointly by the World Health Organization (WHO) and the International Agency for the Prevention of Blindness (IAPB) with an international membership of NGOs, professional associations, eye care institutions and

corporations. The initiative called “Vision 2020: The Right to Vision” has three major components as target activities: specific disease control, human resource development and infrastructure and appropriate technology development (Fotouhi et al., 2006). VISION 2020 seeks to eliminate the main causes of avoidable blindness in order to give all people in the world, particularly the millions of needlessly blind, the right to sight. The goal is to eliminate avoidable blindness by the year 2020.

According to Lewallen & Courtright (2001), major staff level development, infrastructure and community programmes will be necessary to achieve Vision 2020 goals. Fotouhi et al. (2006) are of the opinion that the key factor in achieving the goals of Vision 2020 is the availability of eye care services and their utilization. This implies that apart from manpower and infrastructure development, community programmes are needed to ensure utilization of eye care services.

In many parts of the world, most cases of blindness are preventable or manageable by surgery and or refractive error corrections (Lewallen & Courtright, 2001). 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 et al., 2003; Onyeluche, 1993).

Oduntan & Raliavhegwa (2001) found that only 39% of the respondents in a rural community survey in South Africa had their eyes examined within five years or more despite the accessible and affordable eye care services. The poor utilization was highlighted as a concern because the time interval between eye examinations was long enough for certain avoidable or curable ocular diseases to cause irreversible visual

loss or blindness. Factors such as cost, lack of awareness, cultural beliefs and personal factors were also identified as barriers to eye care utilization.

According to Keffe et al. (2002), utilization of eye care services can be explained by a combination of predisposing, enabling, and need characteristics. Enabling factors encompass family and community resources and accessibility to those resources. The predisposing factors are those that exist before an illness and describe the tendency of an individual using health care service, and they include age, gender, marital status, race/ethnicity, occupation, beliefs (such as attitudes towards health services), knowledge about disease, and values.

Since the inception of the SAFE strategy which was rolled out in Kajiado County through the implementation of the Trachoma Integrated Project, the overall prevalence of trachoma disease has gone down through the years. The components of the SAFE strategy constitute both preventive and curative aspects. Therefore, in looking at utilization of the available trachoma eye care services in the study area, utility of both the preventive and curative services was assessed.

The ultimate intervention goal for trachoma control is to reduce the prevalence of active trachoma (TF) to less than 10% for those aged between 1 and 9 years and that of blinding trachoma (TT) to less than one case per 1,000 in people aged 15 years and above (WHO, 2006). In a study done in Kajiado District now Kajiado County, the prevalence of TF was shown to be 28.1% (95% CI: 23.1% – 33.6%). The study showed that Kajiado District had a higher prevalence of TF in boys (32.0%) than in girls (24.0%): p-value 0.03. There was no significant statistical difference in other endemic districts (Karimurio, 2006). In a more recent report entitled 'Kenya Trachoma Action Plan' it was reported that there was a significant drop in the



prevalence of TF in Kajiado County. Impact evaluation survey data after intervention showed prevalence of TF having dropped to 17.4% and that of TT being 3.5% (Gichangi et al., 2012). This corresponds what was reported in a survey conducted by the African Medical Research Foundation (AMREF) as the current prevalence of TF (17.4%) in Kajiado County (AMREF, 2013). The drop in prevalence of the eye disease in Kajiado County between the two surveys undertaken in the area indicated that the trachoma interventions currently in place had achieved some milestone, but were yet to meet the WHO threshold of a prevalence of below 10%. Therefore, there is need to assess the factors affecting utilization of the available trachoma eye care services which constitute the SAFE strategy and how these would influence the prevalence of trachoma disease in endemic regions of Kenya. Comparing the current situation of the eye disease in the endemic areas of Kenya and that of other countries in the continent, more needs to be done to bring down its prevalence. Ghana is on track to become the first country in Sub Saharan Africa to eliminate trachoma using the SAFE strategy. By 2010, Ghana's rate of trachoma in children aged one to nine years had dropped drastically from as high as 16% to as low as 0.1-2.8%, rates well below the WHO accepted level when trachoma is no longer considered a public health problem (ITI, 2010).

## **1.2 Statement of the Problem**

Kajiado has been documented as an area with a high prevalence (17.4%) of trachoma disease (AMREF, 2013). This translates to more than 7,000 people suffering from trachoma in this county. It has been named as one of the trachoma-endemic counties in Kenya where every person is at risk of contracting the disease. The WHO defines the elimination of trachoma as a public health problem in a community as when there is less than 5% clinical activity in children since at this prevalence, it is no longer

possible for the Chlamydia bacteria to spread within the community (Bruce et al., 2003).

Trachoma eye care services and interventions including intensive awareness campaigns about the eye disease, personal hygiene programmes, mass antibiotic treatment, surgical care and on environmental sanitation have been put in place to curb this eye condition in the region. Despite this being done, there is still limited knowledge about the factors that might affect utilization of these available services such as community's level of knowledge, attitudes and eye care seeking practices in relation to these eye care services. Hence, there is no clear information on utilization and on the factors influencing utilization of these eye care services available to the community in Kajiado County.

There exists a gap between the available trachoma eye care services and the factors influencing utilization of these services. Therefore, to decrease the consequences of trachoma disease in the area, this study intended to assess utilization of trachoma eye care services available to the community and some of the factors affecting utilization of these services. This would be pertinent towards prevention and control of the eye condition and eventually bringing down its prevalence towards meeting the VISION 2020 goal of eliminating the disease.

### **1.3 Aim of the Study**

To determine the level of knowledge, attitudes and eye care seeking practices of the community towards the available trachoma eye care services and assess utilization of these services in Central division of Kajiado County.

#### **1.4 Research Questions**

The following research questions guided the study:

- 1) What is the level of knowledge, attitudes and eye care seeking practices of the community towards trachoma eye care services available in the region?
- 2) Is the community adequately utilizing trachoma eye care services available to them in the region?

#### **1.5 Specific Objectives**

The following were the specific objectives for the study:

- 1) To determine communities' level of knowledge of the trachoma eye care services available in the region.
- 2) To assess communities' attitudes towards the trachoma eye care services available in the region.
- 3) To establish communities' eye care seeking practices in relation to the trachoma eye care services available in the region.
- 4) To assess utilization of trachoma eye care services available in the region.

#### **1.6 Justification for the Study**

Trachoma is a major public health problem in Kajiado County. Eye infection caused by trachoma is a common condition reported at the Kajiado District Hospital eye clinic and other facilities in the area, with the prevalence of trachoma being 17.4 % (AMREF, 2013). It contributes to considerable blindness among patients diagnosed with the condition in its late stages.

Despite the available trachoma eye care services in Kajiado County, no data was found concerning utilization of the available services by the community and the

factors affecting utilization of these services. There is inadequate literature on whether the available trachoma eye care services are being utilized, especially by the community or whether those for whom these services are provided for were satisfied with them. This study intended to bridge this gap of knowledge and assist in improving the strategies and interventions currently in place so as to enhance use of the available trachoma eye care services.

Trachoma is a community-based disease rather than a district-level disease thus should be dealt with within these structures (Muraya, 2015). This study will provide a broad understanding of community's perception towards the available eye care services and enable the stakeholders establish intervention strategies taking into account the factors affecting utilization of the available trachoma eye care services. The ability of health care providers to identify the factors affecting utilization of eye care services is important for policy makers, given the relationship between blindness and the postponement of timely eye examination, and the high social and personal cost associated with blindness (Barraza, 1998).

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Epidemiology of Trachoma**

Globally, fifty seven (57) countries are assessed or estimated to be endemic for blinding trachoma. Trachoma is responsible for the visual impairment of about 2.2 million people worldwide, out of which 1.2 million are irreversibly blind. The number of people living in trachoma endemic districts is estimated to have reduced from 317 million in 2010 to 241 million in 2012. These are districts that were surveyed and found with active trachoma below the set threshold (<5% TF in children aged 1–9 years) and is attributed to the successful implementation of the SAFE strategy (WHO, 2014a).

The countries with the highest prevalence of the disease are in sub-Saharan Africa, particularly in the Sahel belt and East Africa. In addition, there are countries in the Middle East, the Indian sub-Continent, and Southeast Asia where trachoma is endemic, although the distribution is patchier (Taylor, 2008). The highest prevalence of trachoma has been reported in Ethiopia and Sudan, where active trachoma is often found in more than 50% of children under 10 years, and trichiasis is found in up to 19% of adults (Berhane et al., 2006; Ngondi et al., 2006).

### 2.1.1 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 2013. All rights reserved

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



**Source :** WHO Weekly Epidemiological Record (2013)

The disabling sequelae of trachoma are visual impairment and trichiasis. A study in Tanzania found that women who had trichiasis without visual impairment suffered a degree of disability that was comparable to that caused by visual impairment (without trichiasis) from causes other than trachoma. Moreover, when both trichiasis and visual impairment are present the degree of limitation rises to roughly double that of either of these two elements alone (Frick et al., 2001).

The first attempt to calculate the burden of trachoma was in the Global Burden of Disease (GBD) study (Murray & Lopez, 1996). The GBD study developed a new measure of the burden of disease: Disability-Adjusted Life Years (DALYs). This measures the gap, in terms of healthy life lost, between an “ideal” healthy population and the reality caused by a specific disease in terms of premature mortality and disability in a particular society.

Trachoma begins in childhood with an acute infection of *Chlamydia trachomatis*, and progresses over the years with repeated infections. Scarring and irritation caused by chronic inflammation of the conjunctiva (the inner eyelid) cause the eyelid to shrink and the eyelashes to turn inward, scraping the cornea. If left untreated, this condition, trichiasis, may lead to corneal opacity and eventual blindness (Beatty et al., 1994). Trachomatous blindness most frequently occurs in women in mid-life and beyond.

The risks factors include; women caring for children, water accessibility and use, socio-economic status, flies and cattle, household environment etc. These have an impact on the prevalence and burden of trachoma disease in trachoma endemic regions. Knowledge, change in attitudes and practices may drastically modify the incidence, prevalence and severity of trachoma within a community. Some of the risks include the following:

**i) Caring for children**

This has been identified as a risk factor for active trachoma and for the progression to trichiasis and blindness. Many studies indicate children are the major reservoir for chlamydial infection and have high rates of inflammatory trachoma (Thylefors et al., 1992). Women are more likely to have higher rates of trachoma because they are the primary caregivers of children, and thus in greatest contact with them.

**ii) Water Accessibility and Use**

Inaccessibility to water is a major risk factor for a number of infectious diseases, including trachoma. When water is not easily accessible, face-washing declines. Field testing has demonstrated that face-washing, even with a small amount of water, is an effective trachoma prevention strategy (Potter, 1993).

Studies of the relationship between trachoma and distance to water sources are inconclusive. In Gambia, no relationship was found between the prevalence of active disease and distance to the nearest water supply (Bailey et al., 1989).

**iii) Socio-economic Status (SES)**

Studies have found an inverse relationship between SES and the risk of trachoma (Millar & Lane, 1988). Poverty and other economic factors affecting women have created a vulnerability relating to health, knowledge and education, so that poor women do not have the necessary information to care adequately for their children. Accordingly, as the mother's education level rises, the risk of trachoma to her children declines. Increased knowledge of how the disease is transmitted would help interrupt the transmission pathway of child-to-mother infection (Thylefors et al., 1992).

**iv) Flies and Cattle**

These have been implicated as risk factors for the disease, but again, results have been inconclusive. A study in the Dodoma region of Tanzania revealed that neither the ownership of cattle, nor their presence in the village was as important to disease risk as was the proximity of the cattle corral to the households (Vanista et al., 1993).



## **v) Household Environment**

Women cooking in poorly ventilated rooms or sleeping in a room with a cooking fire may be at higher risk of the disease, since eye irritants may aggravate the conjunctiva, causing it to be more susceptible to infection (Rauf et al., 1994).

## **2.2 Eye Care Services**

### **2.2.1 Trachoma eye care services**

#### **2.2.1.1 Eye Examination**

Periodic eye and vision examinations are an important part of preventive health care. Many eye and vision problems have no obvious signs or symptoms. As a result, individuals are often unaware that the problem exists. Early diagnosis and treatment of eye and vision problems are important for maintaining good vision and eye health, and when possible, preventing vision loss (AOA, 2014).

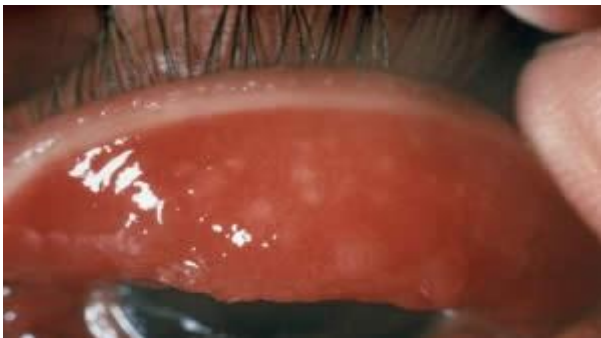
In countries with poor resources, the diagnosis of trachoma is generally made in an asymptomatic individual as part of a screening programme. People who live in or come from trachoma-endemic areas should be examined for trachoma as part of routine health examination. Diagnosis is generally based on clinical grading using the Simplified World Health Organization (WHO) grading system.

The diagnosis of an individual with trachoma is important because it should trigger a community-wide assessment of the prevalence of trachoma, which may indicate the need for a community-wide public health intervention (Wright & Taylor, 2014).

## WHO Simplified Trachoma Grading System



**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.

In a study done in Jamaica, over 43% of the population had never had an eye examination and this resulted in low utilization rate of eye care services and high prevalence of eye and vision disorders (Buchanan & Horwitz, 2000). In another study conducted in a population in America, seeing an eye care provider for preventive measures and checks on the general health of their eyes was rarely reported by participants. However, getting an eye examination was mentioned as one way of preventing loss of eyesight and preserving healthy vision. The attitude that seeing an eye care provider or obtaining an eye exam was not a necessity, highlighted a disconnect between participants' general attitudes about visiting an eye care

provider and general ideas about the importance of healthy vision and ways to prevent loss of eyesight (Alexander Jr et al., 2008).

### **2.2.1.2 Antibiotic Therapy**

The WHO (2014c) recommends two antibiotics for trachoma control, oral azithromycin and tetracycline eye ointment. Azithromycin is better than tetracycline in terms of efficacy, but it is more expensive. National trachoma control programs in a number of countries are fortunate to be beneficiaries of a philanthropic donation of azithromycin. Azithromycin is the drug of choice because it is easy to administer as a single oral dose. Its administration can be directly observed. Therefore, compliance is higher than with tetracycline and can actually be measured, whereas, with the home administration of tetracycline, the level of compliance is unknown.

Infection with *Chlamydia trachomatis* occurs in the nasopharynx; therefore, patients may re-infect themselves if only topical antibiotics are used. Beneficial secondary effects of azithromycin include its treatment of genital, respiratory, and skin infections.

Current WHO (2014c) recommendations for antibiotic treatment of trachoma are as follows:

- Determine the district-level prevalence of follicular trachoma in 1- to 9-year-old children. If the prevalence is 10% or higher, conduct mass treatment with antibiotic of all people throughout the district. If less than 10%, conduct assessment at the community level in areas of known disease.
- If assessment at the community level is undertaken in communities where the prevalence of follicular trachoma in 1- to 9-year-old children is 10% or more, conduct mass treatment of all people with antibiotics.

- If assessment at the community level is undertaken in communities where the prevalence of follicular trachoma in 1- to 9-year-old children is 5% or more but less than 10%, targeted treatment should be considered. Targeted treatment should involve the identification and treatment of all members of any family in whom one or more members have follicular trachoma.
- If assessment at the community level is undertaken in communities where the prevalence of follicular trachoma in 1- to 9-year-old children is less than 5%, antibiotic distribution may not be necessary, though targeted treatment can be considered.

Development of significant resistance to either azithromycin or tetracycline has not yet been demonstrated in *C trachomatis*. Macrolide resistance may be induced in *Streptococcus pneumoniae* by the mass distribution of azithromycin for trachoma, but multiple rounds of treatment and/or the presence of macrolide resistant isolates at baseline may be necessary for epidemiologically significant resistance to emerge (Taylor & Anthony, 2013).

### **2.2.1.3 Surgical Care**

Eyelid surgery is important for people with trichiasis, those at high-risk of trachomatous visual impairment and blindness. Eyelid surgery to correct entropion and/or trichiasis may prevent blindness in individuals at immediate risk. Eyelid rotation limits the progression of corneal scarring. In some cases, it can result in a slight improvement in visual acuity, probably due to restoration of the visual surface and reductions in ocular secretions and blepharospasm.

The WHO (2014c) has produced a training manual on the bilamellar tarsal rotation procedure. This procedure involves a full-thickness incision of the scarred lid and

external rotation of the distal margin by using three sutures. In regions where access to ophthalmologists is limited, well-trained and well-supported health workers can perform bilamellar tarsal rotation. Even after successful surgery, patients remain at risk for recurrence. Therefore, long-term follow-up care and intermittent screening are important after surgery. Evidence supports the adjuvant use of single-dose azithromycin to patients at the time of surgery.

#### **2.2.1.4 Health Education**

Health education on primary eye care including personal hygiene (face washing) and environmental control is regularly done by community health workers (health surveillance assistants) who have been trained and are fully based in the community. To ensure that everybody in the community receives health promotion messages, a variety of channels should be used. Effective settings for health promotion include places of worship, women's groups, community meetings, health centres, schools and homes. Health promotion should always be conducted during TT surgery outreach and antibiotic treatment.

Person-to-person communication is useful for discussing sensitive issues, such as explaining the need for behavioral changes or encouraging acceptance of surgery. Small group discussions and school lessons can be used to convey detailed information about trachoma and its control. The mass media (such as radio) are effective for raising general awareness and for conveying discrete pieces of information, such as the dates of mass antibiotic treatment. Ideally, a combination of person-to-person communication in homes, small group discussions, school lessons and mass media should be used. It may be useful to include practical demonstrations (of face washing, in particular), drama groups, competitions and 'trachoma days'.

**a) Face washing**

Epidemiological studies have found an association between dirty faces and active trachoma in children (Emerson et al., 2004). It was suggested that by washing away potentially infected ocular secretions, the transmission of *C. trachomatis* to others might be interrupted. To test this hypothesis, a community randomized trial of an intensive participatory face-washing strategy was conducted in Tanzania and found a moderate reduction in severe inflammatory trachoma (TI) in the intervention villages (West et al., 2005; Lynch et al., 1994). On the basis of these studies, the promotion of face washing was incorporated into the SAFE strategy.

Facial hygiene is a modifiable behavior that has been shown to be amenable to intervention (Hsieh et al., 2000). A single published randomized control trial examined the impact of facial cleanliness programs in three village pairs. In one year, those villages randomized to receive face-washing promotion in addition to mass antibiotic treatment, had a significantly lower prevalence of TI and the prevalence of TF tended to be lower (West et al., 1995).

**b) Environmental Improvements**

Many of the environmental factors addressed in studies and considered risks for high trachoma prevalence are easily recognized as markers of poverty. Water supply, fecal and refuse disposal and presence of animal pens within human households are all issues that have been addressed in studies. Interventions include provision of water, latrines, refuse dumps, insecticide spray to control flies, relocation of animal pens and health education to improve personal and environmental hygiene.

In observational studies, high fly densities are associated with outbreaks of trachoma and there is a higher prevalence of trachoma during seasons with more flies (Da Cruz et al., 2002). High fly densities in households and fly contact with feces are associated with increased levels of trachoma in children (Schemann et al., 2001). Reducing the availability of suitable breeding media for flies by providing latrines has also been hypothesized to reduce trachoma. Cross-sectional studies demonstrated lower trachoma levels in those living with access to a latrine (Burton et al., 2003).

Studies have shown that increasing distance to the nearest water source is significantly associated with rising trachoma prevalence while others showed no effect (Katz et al., 1996; West et al., 1991). When the round trip to water is 30 minutes or less, per capita water consumption is almost constant, which may explain these contradictory results. The quantity of household water may be a more important predictor, as demonstrated in cross-sectional studies (Schemann et al., 2001; Luna et al., 1992).

### **2.3 Knowledge of Eye Care Services**

Better education about prevention of blindness might help minimize the prevalence of visual impairment. If eye care services are available, affordable and accessible, and the services are not known to the target population, then the services will not be utilized. In a rural community of South Africa, one of the reasons for underutilization of eye care services was lack of awareness of the services (Oduntan & Raliavhegwa, 2001). Palagyi et al. (2008) reported that rural dwellers were almost four times more unlikely to seek eye care than their urban counterparts due to lack of awareness of the available eye care services.



O' Connor et al. (2008) in a study carried out in Australia found that low utilization of eye care services was due to lack of knowledge of the available eye care services. These studies show how knowledge of the existing eye care services in a certain region would influence adequate utilization of the services. In another study on utilization and barriers to eye surgical services in rural South India, it was found that the reason for under-utilization of eye care services among the rural population was lack of awareness of the existing free-of-cost services offered by non-governmental organizations and low-cost eye surgical services (Chandrashekhara et al., 2007).

In a rural Andhra Pradesh study, Kovai et al. (2007) found that majority of the rural population studied were illiterate and by definition blind mainly due to different eye diseases and did not seek eye care services. This relationship was attributed to their lack of knowledge on how to take care of themselves as most did not have higher education or were illiterates. Barraza (1998) reported a positive association between education and eye care use; the higher the level of education, the more likely and timely eye exams were performed, and the less likely blindness would occur.

Muller & Keefe (2007) found that following a public eye health campaign using the metropolitan and regional television, radio and newspaper in Australia, there was an improvement in the utilization of eye care services. Through such channels of mass awareness campaigns, information on the availability of eye care services can be passed to the communities to increase utilization of these services. Kovai et al. (2007) reported that the predominance of personal reasons like lack of knowledge among respondents demonstrated that greater awareness regarding the importance of seeking treatment for visual impairment is needed to facilitate uptake of eye care services.

Knowledge of available eye care services can also be transmitted from person to person during discussions and conversations amongst community members. According to Courtright et al. (1995), men and women who either talked to someone about eye surgery or knew another aphakic patient were more likely to accept surgery.

Authors of several studies have reported that knowledge of available eye care services increased utilization of the services (Schaumberg et al., 2000; Palagyi et al., 2008; Chandrashekhara et al., 2007; Bhagwan et al., 2006 and Farmer et al., 2006). Other authors (Robin et al., 2004; Ndegwa et al., 2005; Zhang et al., 2008 and Orr et al., 1999) also found that the level of education of a given individual was associated with eye care utilization. Therefore, the level of knowledge of the available eye care services is likely to impact utilization of these services.

#### **2.4 Attitudes towards Eye Care Services**

Although blindness in most developing countries is preventable or curable (Lewallen & Courtright, 2001), barriers to usage are numerous and include social attitudes and cultural beliefs (Nwosu, 2002; Fletcher, 1999 and Patel et al., 2006). Different forms of attitudes of the community towards the existing services would influence utilization of these services. In this study, community's attitude towards the eye care services was measured by looking into the 'felt-need' of the community towards these services. Notwithstanding the different forms of need existing in a community, the 'felt-need' refers to what people in the community claim to want or feel they need (Bradshaw, 1994).

The need for health care should be recognized only when it can be met with some medical intervention that has a positive utility and that can actually alter the prognosis of the disease in some favorable way and at a reasonable cost (Cochrane, 1976).

When need arises from the risk of morbidity then there is need for prevention. In order to meet the need for prevention then it may be possible to modify the environment by removing the component which is a risk to human health or protect the client against the disease or alter the course of the disease favorably as a result of early diagnosis (Donabedian, 1974). The way in which a health need is met depends ultimately upon how resources are partitioned and directed towards preventive and curative services, caring services and research and development (Acheson, 1978).

People in the community can express different attitudes towards eye care services depending on their needs. Palagyi et al. (2008) reported attitudinal reasons like 'feel there was no need for eye care services' was cited by greater proportion of participants in Timor-Leste. It was further reported that in Timor-Leste, dissatisfaction with treatment was one of the barriers to eye care utilization, and satisfaction with treatment from private services was higher than that for government and expatriate service providers.

Chandrashekhara et al. (2007) found that one of the most common reasons for not undergoing eye surgery among patients with low visual acuity in rural South India was fear of operation and the feeling that there was no need for such a procedure. Therefore, this influenced utilization of the available surgical services leading to increased loss in sight. In another study examining the knowledge, attitude, and beliefs about dilated eye examinations among African-Americans, it was found that not having any symptoms and being too busy with other duties were part of the frequently mentioned reasons for not seeking eye care (Elish et al., 2007). Such attitudes would influence utilization of the available eye care services since people in the community feel attending to other activities is more important. Ignorance and

personal attitudes such as ‘problem not causing much discomfort’, ‘did not bother’, ‘could manage’, and ‘accepted the condition’ were the reasons for not seeking conventional eye care in a survey population in Kenya (Ndegwa et al., 2005). Such reasons given by the community members form part of the social attitudes influencing utilization of the available services and this is in agreement with Patel et al.(2006), who reported that social attitudes towards visual health issues were the principal barriers to uptake of eye care services.

Dhaliwal & Gupta(2007), reported that the major barriers to eye care utilization were more related to patient’s attitude such as ‘ability to manage daily work in spite of the poor vision’, ‘disease not matured’, ‘could see clearly with the other eye’, and ‘busy with work’. Other barriers were fear of surgery and possibility of surgery causing death. These barriers were reported more often than accessibility and cost. Therefore, other attitudes in the form of fear of the community towards eye care services may largely influence utilization of these services. Also in Gambia, one of the most frequently identified reason for not undergoing eye surgery was fear of vision loss (Johnson et al., 1998).

Consumer satisfaction is an important factor in sustaining utilization of health care and it has been reported that dissatisfaction with the services is a barrier to eye care utilization (Ashaye et al., 2006). Satisfaction with the available eye care services is an indicator of positive attitudes of the people in the community towards the services and this is more likely to influence utilization of the services. It has been identified that one of the reasons for poor utilization of government health facilities in India was that the eye services at the primary health centres are provided by general nurses and these centres are usually not equipped to provide the necessary services (Dhaliwal & Gupta,

2007). Therefore, in addition to an increase in service quantity, there needs to be an improvement in intervention and service quality, to facilitate equitable, acceptable and effective eye care. Satisfaction with the quality of eye care services provided translates to improved attitudes in terms of the community admitting to requiring the available eye care services.

## **2.5 Eye Care Seeking Practices**

Notwithstanding the availability of conventional forms of eye treatment in public and private facilities in many regions of Africa, communities still adopt various forms of eye care seeking habits. Health seeking behavior refers to the sequence of remedial actions that individuals undertake to rectify perceived ill-health. It is initiated with symptom definition, whereupon a strategy for treatment action is devised. Treatment choice involves a myriad of factors related to illness type and severity, pre-existing beliefs about illness causation, the range and accessibility of therapeutic options available and their perceived efficacy, convenience, opportunity costs, quality of service, staff attitudes as well as the age, gender and social circumstances of the sick individual (Rahman et al., 2011).

Reports indicate that less than ten percent of people in low income countries receive optimal eye care largely due to limited access to appropriate eye care services. The situation is further compounded by other barriers such as poor attitudes towards the eye care providers, affordability and accessibility of the services (Gyasi et al., 2007). People who live in communities with inadequate or inaccessible eye care facilities tend to seek other alternatives of eye care services. In developing countries like Ghana, with limited regular eye care facilities, substantial eye care information and services are sought outside the regular eye care system (Ntim-Amponsah et al., 2005).

Spiritual healing by traditional healers may provide good psychotherapy to the patient; though it may delay early presentation to eye health professionals for treatment (Bimal, 1997). Similarly, Kajiado County being an area predominantly inhabited by the Maasai community, use of various forms of traditional regimens to treat different kinds of human diseases is prevalent. Majority of the people in this region use traditional herbs for medication without proper diagnosis of the illness they are suffering from. Most traditional remedies are however, harmful including instillation of human saliva, urine, animal products, soil, powder and extracts from plants into the eye, application of hot metals/fluids to ocular adnexae and lens couching. These practices may cause irreversible damage to the eye and vision (Chana et al., 1994; Courtright & Lewallen, 1997).

There are other forms of eye care seeking habits practiced by people in the community including resorting to self-medication or treatment of eye conditions. Self-treatment is an integral part of local medical cultures in African societies, where people are used to taking treatment into their own hands on a daily basis (Deressa et al., 2003). In a study done in Bondo District in Kenya, majority of the respondents who opted for self-treatment were those who reported trachoma and conjunctivitis as being severe. It was also found out that there were gender differences in self-treatment with men more likely to report self-treatment compared to women. This may be related to the fact that men and women have unequal access to financial resources. It may also be due to the fact that women have more interactions with the public medical system through under-five children clinics than men (Geissler et al., 2002)..

An investigation into the use of the available eye care services availed to the community is paramount, so as to enable providers of these services gain an in-depth

understanding of the factors affecting utilization of the available services. It is also important for eye care service providers to understand the communities' level of knowledge, attitudes and eye care seeking practices towards the available eye care services and how these factors may affect utilization of the services. This will enable them make informed decisions by improving the existent interventions and in the long run achieve increased use of the available eye care services, so as to reduce the disease burden on the community.

## **2.6 Utilization of Eye Care Services**

Availability, accessibility and affordability of eye care services are important issues in the prevention of visual impairment. A service that is not available rules out utilization. If the patient lives very far from the available service, then the service may not be accessible to the client, and because of the long distance, the patient has to spend large sums of money which he or she cannot afford; then the service is not affordable. The interdependence of availability, accessibility and affordability needs to be recognized in provision of eye care services and towards monitoring utilization of these services.

### **2.6.1 Availability of eye care services**

Availability refers to the extent to which a system provides facilities (which is the structural form) and services (which is the process) that meets the needs of people. Availability of eye care services varies from country to country in many regions of the world, and the number of eye care providers per million-population in the richest countries may be nine times more than in the poorest countries (Silva et al., 2002). Even within a country, availability of services may vary from province to province, from district to district, even from one community to another. Poor practitioner-to-

patient ratios, absence of eye-care personnel, inadequate facilities, poor state funding and lack of educational programs have been considered as the hallmarks of eye care in Africa, with preventable and treatable conditions being the leading cause of blindness (Naidoo et al., 2006).

Ophthalmological services are not available in many parts of Africa, and presumably in the rural areas of the developing countries. In sub-Saharan Africa, the ophthalmologist-to-person ratio is 1:1,000,000, representing a significant challenge to eye health that is particularly formidable in remote areas like rural Kenya. The total number of ophthalmologists in the country was fifty, with thirty of these in Nairobi city. The ophthalmologist per population ratio in Kenya was 1:600,000 and the ophthalmic clinical officers (OCOs) per population ratio was 1:300,000. The OCOs were the key workers in public service and in the rural areas (Karimurio, 2000).

Currently, in Kenya, the VISION 2020 program relies heavily on the training of ophthalmologists at the University of Nairobi's Department of Ophthalmology (Lewallen & Kello, 2009). However, the ophthalmic care personnel per population ratios have barely changed from what was previously reported. It should also be emphasized that non-availability is not the only barrier to utilization of eye care services. In countries like India, Brazil and Malawi, it has been shown that 33-92% of eye blindness patients remain blind, even when surgery is available. Therefore, factors other than non-availability need to be considered in dealing with issues of poor utilization. Also, the disproportionate distribution of ophthalmic services between rural and urban areas in many developing countries may increase the rate of visual impairment in the rural areas.



Availability of trachoma eye care services in Kajiado County has been documented but utilization of some of these services, for example use of eye surgical services amongst those who progress to the advanced stages of the eye disease is influenced by other factors even though the service is available. According to Lewallen & Courtright (2000), eye surgery coverage is low in many places for obvious reasons such as lack of trained manpower and supplies; even in places where services are available, there are many barriers which prevent patients from using the services.

### **2.6.2 Accessibility to eye care services**

Accessibility refers to the geographic location of a person seeking health care in relation to the location of the place where health services are offered. Measures like spatial distance, travel time, mode of transportation used to reach the facility, type of road network etcetera are considered when assessing the physical accessibility of people seeking health care. Studies by (Talen & Anselin, 1998; Black & Ebener, 2005; Bagheri & Benwell, 2005; Amer, 2007; McGrail & Humphreys, 2008) have been done on physical accessibility to public facilities and mostly healthcare services. Accessibility relates to the ability of people to overcome the friction of distance to avail themselves for the services at fixed points in space (Amer, 2007).

Kajiado County which is characterized as an arid and semi-arid area with scattered human settlements and very poor terrain in terms of road networks, the area is faced with a major challenge of accessibility to public utilities especially health care facilities. Non-affordability and poor accessibility of the services have been identified as important causes of the high prevalence of blinding eye diseases (Silva et al., 2002). According to Di Stefano (2002), the lack of accessible eye and vision care globally is a critical barrier to the successful elimination of avoidable blindness.

People need access to preventative services that are effective in the prevention of disease or in the detection of asymptomatic diseases or risk factors at an early and treatable stage.

In a study in Melbourne, Australia, it was reported that proximity and convenience were listed as main facilitators to eye care use and contrarily, issues relating to transport and the need for an accompanying person were barriers to utilization of low vision services (O' Connor et al., 2008). It was reported in a WHO report that Australia was the only developed country where blinding trachoma was still prevalent (Dawson & Schachter, 1999). In a study of the perceived barriers to eye care and attitude among older black Americans, it was reported that the most frequently cited barrier by both the patients and eye care providers was transportation, suggesting that the eye care facilities were not easily accessible. The situation of accessibility of health services in developing countries is worse compared to the developed ones coupled with poverty and poor infrastructure (Owsley et al., 2006).

According to Chandrashekhar et al., (2007), one of the reasons for poor utilization of government facilities for eye care in India was the distance of the hospitals from rural villages. Kajiado County is sparsely populated and with very few health care facilities located in the main community centres. Therefore, people living in the more remote areas travel very long distances so as to access the available eye care services. Similarly, Dhaliwal & Gupta(2007) reported that the barrier to utilization of eye care services among patients seeking eye care in India included distance from the hospital, or from the main road and lack of transport. In Gambia, it has been reported that the most frequently identified barriers to uptake of eye surgery were transportation difficulties and lack of an escort (Johnson et al., 1998) and patients in Malawi living

near the district hospital have been found to most likely present to the ophthalmic specialists for eye care services compared to those living in areas located further away from the health facility (Courtright et al., 1995).

### **2.6.3 Affordability of eye care services**

Affordability refers to the financial component of eye care services. Affordability is influenced by income levels and cost of the services. Affordability of the available eye care services can be in terms of services charges at the health facilities or in terms of the transport cost of accessing these services or business profits forgone while seeking eye care services. Robin et al. (2004) stated that, in both the developing and developed nations, finances can definitely influence the utilization of ophthalmic health care. In many rural areas of the world, poverty is a major issue, hence residents are not able to afford the cost of eye care services and therefore conditions which could have been treated at an early stage are not attended to and may result in low vision and blindness (Oduntan, 2005).

Fotouhi et al., (2006) reported that the likelihood of seeking eye care in Iran was associated with higher levels of education. It was presumed that due to the fact that educated people are members of the higher socioeconomic class thus may have greater access to the eye care services and find them more affordable. Morales et al. (2010) and Orr et al. (1999) found that people with a higher education were significantly more likely to seek eye care services and this was attributed to the fact that most people with higher education were higher earners and could afford health care services. Kajiado County which is characterized by nomadic pastoralism has a great proportion of the populous having attained low levels of education and therefore, a majority of them practice livestock keeping as their main socioeconomic

activity. This socioeconomic activity barely earns them enough money to be able to comfortably and willingly afford paying for the available eye care services.

Owsley et al.(2006) and McGwin et al. (2010) reported that one of the main barriers to the use of eye care services among elderly Americans was the cost. Owsley et al. (2006) found that cost and lack of insurance were common barriers to eye care use among old black Americans. The situation may be worse off in the developing nations given the socioeconomic status of people living in remote areas of these countries. Schaumberg et al. (2000) found that American women with high annual income were likely to have an examination within two years compared to women with lower income; and those with higher household incomes were particularly likely to have more frequent eye examinations. This showed the difference in utilization of eye care services brought about by the ability to afford the services. Zhang et al. (2008) reported that Americans without health insurance had the lowest use of eye care services compared to those with health insurance. Possession of health care insurance and urban residence was also associated with greater use of eye care services (Elliot et al., 2010 and Morales et al., 2010). In Latin America and the Caribbean, affordability was found to be an important barrier to utilization of services by the poorest segments of the population (Silva et al., 2002). Elliot et al. (2010) reported that the cost and having no insurance coverage for eye care were the two most commonly cited reasons why women with eye diseases do not visit an eye care provider.

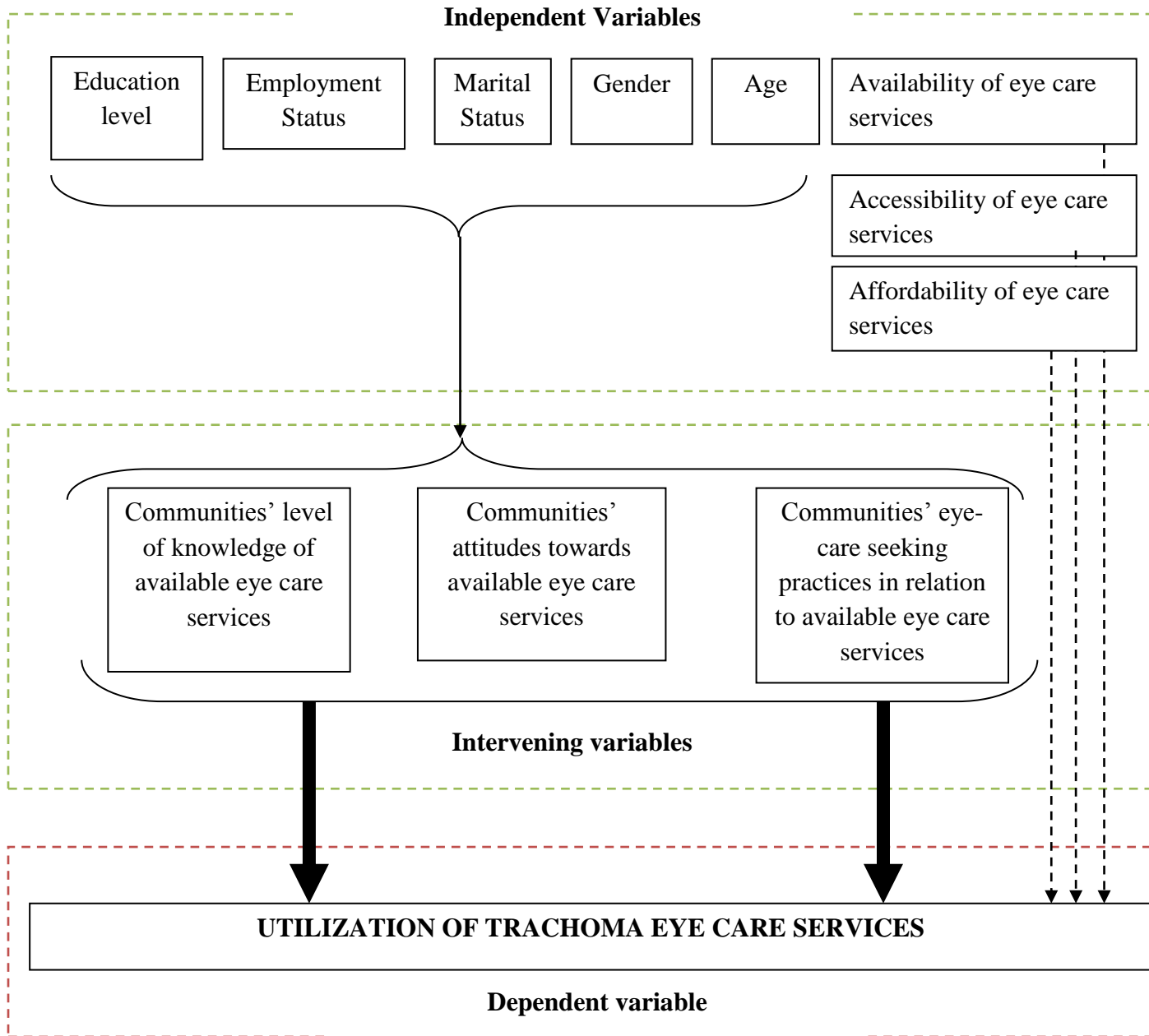
Prevalence of visual impairment is high in Ethiopia and eye care services utilization is limited, the main barrier has been attributed to the indirect costs of the services (Melese et al., 2004). Indirect costs of eye care may include the lost profits in business while seeking the services or the costs incurred when travelling to the health facilities

to seek the services. Habte et al. (2008) suggested that indirect cost of surgery was one of the main barriers to uptake of surgical treatment for trachomatous trichiasis in the North of Ethiopia. Lewallen & Courtright (2000) reported that the cost of eye surgery varies widely and in some places, it may be more than what poor people can afford. Also, in addition to the surgery, there are other costs such as transportation to the hospital, loss of work to the patient or to the caregiver accompanying the patient and living expenses for the carer while the patient is in the hospital.

According to Chandrashekhar et al.(2007), it was found that the most common reason for not undergoing eye surgery among patients with low visual acuity in rural South India was inability to afford the operation. Similarly, Dhaliwal & Gupta (2007) found that barriers to the uptake of surgery in India were related to cost and affordability and according to Kovai et al.(2007) it was found that among the visually impaired populations in the rural Andhra Pradesh, South India, about half of them cited economic reasons for not seeking treatment even after having noticed decreased vision.

Ndegwa et al. (2005) reported that lack of money was one of the main barriers to eye care use in Kenya. This a common feature of developing countries where many communities are impoverished. In Nepal, non-surgical expenses alone have been estimated to be one fifth of the annual income of a rural patient (Lewallen & Courtright, 2000). Several other studies have identified cost of eye care services in themselves and in accessing them as a major barrier to uptake of these services (Sapkota et al., 2003; Jadoon et al., 2007; Palagyi et al., 2008;Rabiu, 2001; Mpyet et al., 2005).

**2.7 Conceptual Framework**



**Figure 1: Utilization of Trachoma Eye Care Services Conceptual Framework**

**Source:** Principal Investigator

Assessing health care utilization, which in turn is affected by health care accessibility and individuals' health seeking behavior, is a conceptual framework for measuring effective coverage of a health care service (Shengelia et al., 2003). Based on this, the conceptual framework for this study was designed to show the relationship between three variables i.e. independent, intervening and dependent variables as illustrated below.

- 1) **Independent Variables:** this category included; affordability of trachoma eye care services, accessibility and the availability of these services. These factors would directly affect utilization of trachoma eye care services. The other independent variables included the respondents' socio-demographic characteristics which would influence the intervening variables to use of the eye care services.
- 2) **Intervening Variables:** this second category formed the link between the independent variables and utilization of trachoma eye care services. It included the communities' level of knowledge of the available eye care services, communities' need for these eye care services (i.e. their attitudes towards the available services) and their eye care seeking practices in relation to the available trachoma eye care services. These factors would then affect the level utilization of the available trachoma eye care services.
- 3) **Dependent Variable:** this last category represented the outcome variable which was the utilization of the available trachoma eye care services by the community.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Study Area**

The study was conducted in Central division of Kajiado County. Central division has thirteen (13) locations namely; Elangata-Wuas, Enkaroni, Enkorika, Ildamat, Kikuro, Kilonito, Loodokilani, Nkoile, Olibelibel, Olontulungum, Sajiloni, Township and Torosei. It was deemed appropriate by the researcher to choose Central division of Kajiado County to be the study area, because the main health care facilities and organizations providing trachoma eye care services are situated here.

#### **3.2 Study Population**

The target population of the study comprised of the community members in Central division of Kajiado County. The respondents included all those aged 18 years or older and willing to participate in the study. The reason for choosing those aged 18 years and over was because the ultimate goal of any trachoma intervention is to reduce the prevalence of potentially blinding trachoma (TT) to less than one case per 1,000 in people aged 15 years and above (WHO, 2006). They were also considered eligible and provided the relevant views needed for the study. Other study participants were eye care personnel working in health care facilities providing trachoma eye care services within the study area.

#### **3.3 Study Design**

A cross-sectional study design was adapted, because the target population/subjects were assessed at a given point in time. The study explored information from the respondents on their level of knowledge, attitudes and eye care seeking practices associated with utilization of trachoma eye care services available to them in Central



division of Kajiado County. A cross sectional health facility survey was conducted in all the health facilities that were purposively sampled and observed.

Key variables included respondents' age, gender, level of education, employment status, level of knowledge of available eye care services, attitudes towards these services and eye care seeking practices affecting the utilization of available trachoma eye care services. Other variables were related to the information obtained from health care personnel interviews and observation of health facility and household attributes.

### 3.4 Sample Size Determination

The sample size was determined in accordance with the Fisher's Formula (Mugenda & Mugenda, 2003). The formula was deemed appropriate for this study because the target population in Central Division was greater than 10,000 i.e. 13,120 households (KNBS, 2009). The sample size was determined using the formula below;

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

Where:

n –is the desired sample size.

Z -is the Z-score for a 95% confidence interval in a normal distribution table

P –is the proportion in the target population estimated to be suffering from active trachoma i.e. prevalence of Active Trachoma in Kajiado County is 28.1% (Karimurio, 2006).

Q –is the compliment of P, thus (1-P).

D -sampling error which is taken to be 0.05.

$n=1.96^2(0.281) (0.719)/ (0.05)^2=310$  respondents (translates to **310 households heads**)

The sampling unit for the study was the community households and this translated to the number of people interviewed in the community since only the household heads or a representative aged eighteen years and over were interviewed. Therefore, the minimum sample size for the study was **three hundred and ten (310)** respondents within Central division but up to a maximum of **three hundred and twenty one (321)** respondents were interviewed to cover for non-response.

### **3.5 Sampling Techniques**

The study subjects in Central division were selected by stratified sampling by locations and simple random sampling was used to select the households in each location until the desired sample size was reached. All the thirteen (13) locations within Central division of Kajiado County were selected in the study. The sample size was proportionately allocated to the thirteen strata as indicated in Table 1. A computer software (Microsoft Excel) was used to generate random numbers adding up to the required sample size of 321 respondents. Unique identifiers (i.e. the name of household heads) used during the 2009 National Population and Housing Census were used to generate a list of all the households in each of the locations in Central Division. If a random number matched a household's unique identifier, that household was automatically added to the list of selected households. The researcher and research assistants used the list of selected households in their respective sub-locations and villages to interview the study participants.

The list of household heads (defined as the persons who were perceived by household members to be the primary decision makers in the family) in each of the locations was obtained from the relevant authorities (i.e. County Planning and Development office; based on the 2009 National Population and Housing Census). Only the household heads were interviewed but in their absence, a household member aged 18 years or older was interviewed. Convenient sampling was applied in the selection of respondents within households depending on their availability and willingness to participate in the study.

**Table 1: Stratified sampling by location within Central Division, Kajiado County**

LOCATIONS	SUB-LOCATIONS	NO. OF H/H	% OF TOTAL (H/H)	SAMPLE SIZE
ELANGATA WUAS	ELANGATA WUAS	941	7%	22
ENKARONI	ISIATI	554	5%	16
	NALEPO			
	ENKARONI			
ENKORIKA	ORIENIE	914	7%	22
	PILIWA			
	MALILIMA			
ILDAMAT	ESOKUTA	821	7%	22
	OLOSUYIAN			
	OLOYIANKALANI			
	OLKILORITI			
KIKURO	KIKURO	306	3%	9
KILONITO	INDUPA	513	4%	12
	KILONITO			
LOODOKILANI	LOODOKILANI	1036	8%	25
	TOROKA			
	KARERO			
NKOILE	NKOILE	527	6%	18
	KUMPA			
OLIBELIBEL	OLIBELIBEL	276	2%	6
OLONTULUNGUM	BAKA	265	2%	6
	OLOMUNYI			
SAJILONI	ISEURI	1529	12%	40
	NKIWANCHANI			
	ISAJILONI			
TOWNSHIP	MAJENGO	4256	32%	104
	HOSPITAL			
	MARKET			
TOROSEI	OLTEPESI	787	6%	19
	OLOIKA			
<b>TOTAL</b>		<b>12,725</b>	<b>100%</b>	<b>321</b>

The total number of households in each location and the number of study participants was determined by proportion according to size (i.e. number of households in locations within the division). The number of respondents to be interviewed in a given location within Central division was arrived at using the following formula:

$\frac{\text{Total No. of Households in Location}}{\text{Total No. of Households in Division}} \times \text{Total Sample Size}$
---

### **3.6 Pilot Study**

Three months prior to the actual data collection, a pilot study involving twenty two (22) community respondents and three (3) health care personnel was conducted in Isinya division of Kajiado County to test and refine the research instruments. The sample size for the pilot study was 10% of the study sample size (Mugenda & Mugenda, 2003). The results of the pilot study were used to refine the community questionnaire.

### **3.7 Data Collection Procedures**

The pre-tested data collection tools were used to collect data from the household respondents and eye care personnel. The research assistants were trained prior to carrying out the interviews basically on the research tools, interviewing skills and clarifications on ethical issues in research. Logistical assistance was provided to the research assistants by the Principal Investigator. Household respondents were interviewed through an interviewer-administered questionnaire while structured interview schedules were used to capture information given by the eye care personnel. Each of the two research assistants covered the sampled households in four locations

and the health care facilities offering trachoma eye care services. The principal investigator covered the sampled households in the remaining locations and their main health care facilities providing these services. Combinations of data collection techniques were applied in the study to ensure quality of the data collected and to reduce the chances of bias. The data collection methods used in the study are discussed in detail below. The tools are illustrated in the appendices section of the document.

**a) Questionnaires**

Interviewer-administered questionnaires were used to obtain information from the respondents. This tool obtained information on factors affecting utilization of the services including respondents' knowledge of the available trachoma eye care services, attitudes towards these services and their eye-care seeking practices in relation to the available eye care services. The questionnaire also contained a list of barriers for not seeking trachoma eye care services.

**b) Interviews**

Structured interview schedules were used to conduct face-to-face interviews of eye care personnel on their knowledge of the available trachoma eye care services and on utilization of available trachoma eye care services by the community. Information obtained gave an understanding of the knowledge health workers had regarding utilization of these services and on factors influencing utilization. These interviews supplemented the information obtained from the questionnaires.

**c) Observations**

Observation checklists were filled out for the health care facilities providing trachoma eye care services in the region. The checklists were used to determine the attributes of

the health facilities which would influence utilization of the available trachoma eye care services. Scores were awarded for the various attributes observed at the health facilities. Direct observations at the household level provided information on attributes of the household environment that influenced risk factors for trachoma disease. The reason for adapting direct observations was because it was possible that respondents would give answers based on what they perceived as being most socially desirable to the interviewer.

The responses from administered questionnaires were compared with the responses from eye care personnel interviews as well as the information obtained from the observation checklists describing the attributes of households and health facilities that may have indicated or influenced utilization of trachoma eye care services by the community in the region.

### **3.8 Data Analysis and Presentation**

Filled questionnaires, structured interview schedules and observation checklists were checked for completeness and coded. Data was entered in computerized MS Access database software and later exported to STATA version 12 Special Edition (STATA/SE) for analysis. Categorical variables were summarized as frequencies and corresponding percentages while the continuous variables were summarized as the median and the corresponding lower and upper quartiles, here denoted as (IQR). The test for normality was done using the Shapiro-Wilks test for normality. The association between categorical variables was assessed using the Pearson's Chi Square test. The variable was declared as normally distributed if the test was statistically non-significant. The level of awareness of trachoma disease and level of knowledge of the available trachoma eye care services alongside the corresponding

95% confidence limits were reported. The variables measuring the household attributes were scored. An attribute was scored if it met the required standards of public health or if what ought to be present was physically seen else it scored a zero. Other attributes like the distance within a kilometer from the household to the health facility or from the household to the bus terminal scored 1 else it scored zero. These scores were summed up together for each household. The median value and the corresponding inter quartile ranges were reported. Similarly, data from the health facilities attributes were scored in the same way as the data from the households attributes. The waiting time was scored 1 if it was less than 1 hour else it scored zero. The binary variables with an answer as either “Yes” or “No” scored 1 if the response was “Yes” else it scored zero. Each of the conditions of the waiting bay that was observed scored 1 else it scored zero if not available. If a health care facility was operational for 24 hours it scored 1 else it scored a zero. Other attributes like having regular meetings with various stakeholders (i.e. other facilities or organizations in the region) to discuss issues on trachoma eye care services and having a functional surveillance system for community eye health related conditions (i.e. specifically on trachoma) scored 1 for each of these attributes, if they were in place or else they scored a zero. Analyzed data was presented in prose, tabular, diagrammatical and graphical formats as suitable.

### **3.9 Data Management**

#### **3.9.1 Data Quality Checks**

The questionnaires, structured interview schedules and observation checklists were piloted and reviewed before use in the actual study to establish their accuracy in generation of required information. Checks for errors and inconsistencies were done by the principal investigator at all stages of the study to ensure that the outcomes were

factual. Regular progress meetings were held by the researcher together with research assistants on a daily basis after every data collection exercise to review progress and address any challenges experienced.

### **3.9.2 Data Handling and Cleaning**

Coding of questionnaires was done before the data collection exercise for ease of data entry and analysis. The completed questionnaires and household observation checklists were submitted to the Principal Investigator at the end of each working day. Data was entered into a computer program after which both hard and soft copies were kept under lock and key. The computer program (STATA version 12) which has a function for data editing was run to check the data for completeness and consistency. In cases where missing values were detected, the corresponding questionnaire was traced and values entered where appropriate.

### **3.10 Eligibility Criteria**

#### **a) Inclusion Criteria**

The community members in Central division of Kajiado County, specifically household heads or representatives aged 18 years and above were included in the study.

#### **b) Exclusion Criteria**

The community members in Central division of Kajiado County who had stayed in the area for less than 6 months or those visiting the region at the time of the study were not included.



### 3.11 Ethical Considerations

Ethical considerations for this study included the following:

- An approval from the Institutional Research and Ethics Committee (IREC) of Moi University was obtained prior to the commencement of the study.
- Clearance was sought from the School of Public Health through the Dean and Head of Department of Epidemiology and Disease Control prior to start of the study.
- Authority to conduct the study was sought from the concerned authorities in Kajiado County prior to start of the study.
- Informed consent was sought from community respondents and health care personnel involved in the study.
  - i) The aim of the study was explained in detail before gaining informed consent from respondents.
  - ii) All the information from respondents was treated with utmost confidentiality.
  - iii) Respect and dignity was upheld during data collection.
- All study respondents requiring treatment or in need of further eye examination were included in the study and later referred to Kajiado District Hospital.

## CHAPTER FOUR

### RESULTS

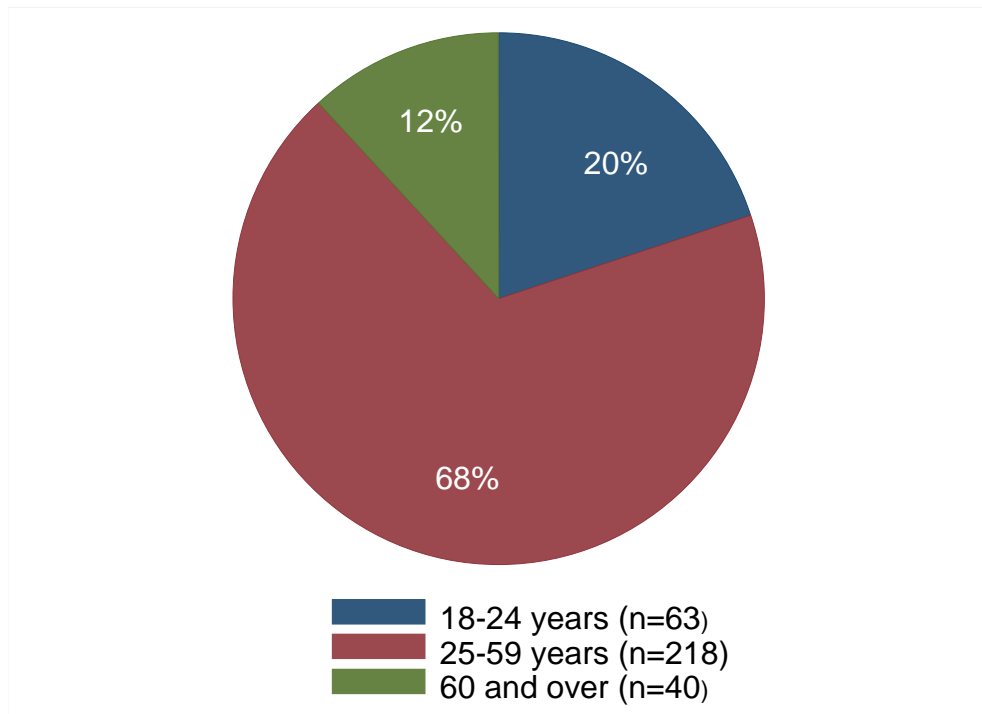
#### 4.1 Socio-Demographic Characteristics

Data was collected from a total of 321 participants in the thirteen locations of Central Division (Table 2). Township location had the highest number of respondents 104(32%) followed by Sajiloni location with 40(12%). Loodokilani location had 25(8%) respondents while Elang'ataWuas, Enkorika, and Ildamat locations each had 22(7%) respondents. The rest of the locations had less than 20 respondents.

**Table 2: Distribution of Respondents in Locations within Central Division, Kajiado County**

Locations	n(%)
<b>Elangatawuas</b>	22(7%)
<b>Enkaroni</b>	16(5%)
<b>Enkorika</b>	22(7%)
<b>Ildamat</b>	22(7%)
<b>Kikuro</b>	9(3%)
<b>Kilonito</b>	12(4%)
<b>Loodokilani</b>	25(8%)
<b>Nkoile</b>	18(6%)
<b>Olbelibel</b>	6(2%)
<b>Olontulungum</b>	6(2%)
<b>Sajiloni</b>	40(12%)
<b>Township</b>	104(32%)
<b>Torosei</b>	19(6%)
<b>Total</b>	<b>321</b>

Of the 321 participants included in the study, 63(20%) were between the age group 18 and 24 years, while 218(68%) were aged between 25 and 59 years. The rest were 60 years and over (Figure 2). The mean age of the respondents was thirty 37.5 years and the response rate was at 97.8%.



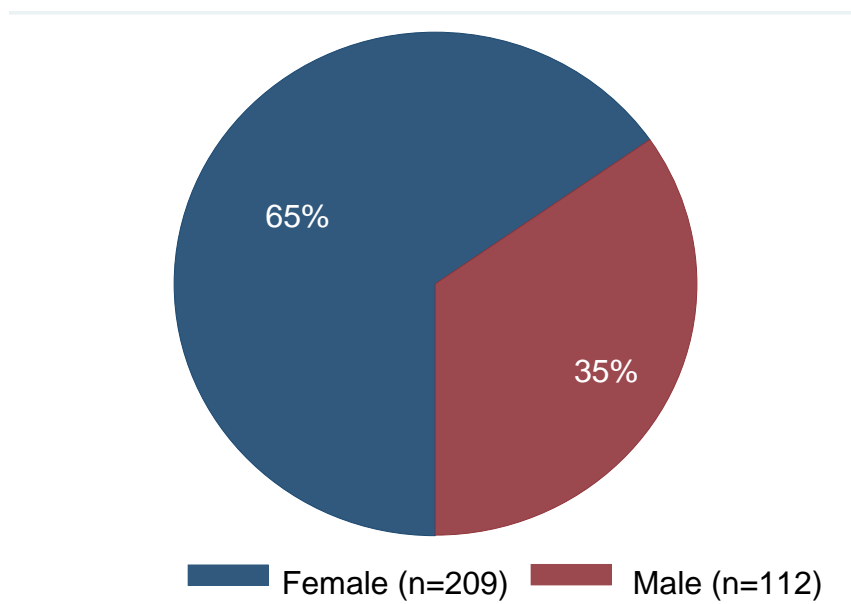
**Figure 2: Respondents Age Groups**

Among the respondents, 209(65%, p-value<0.001) were females and 112 (35%, p-value <0.001) were males (Figure 3). Among the female respondents, 44(21%) were aged 18-24 years, 142(68%) were aged 25-59 years, and 23(11%) were aged 60 years and over. Similarly, among the male participants, 19(17%) were aged 18-24 years, 76(68%) were aged 25-59 years, and 17(15%) were aged 60 years and over (Table 3).

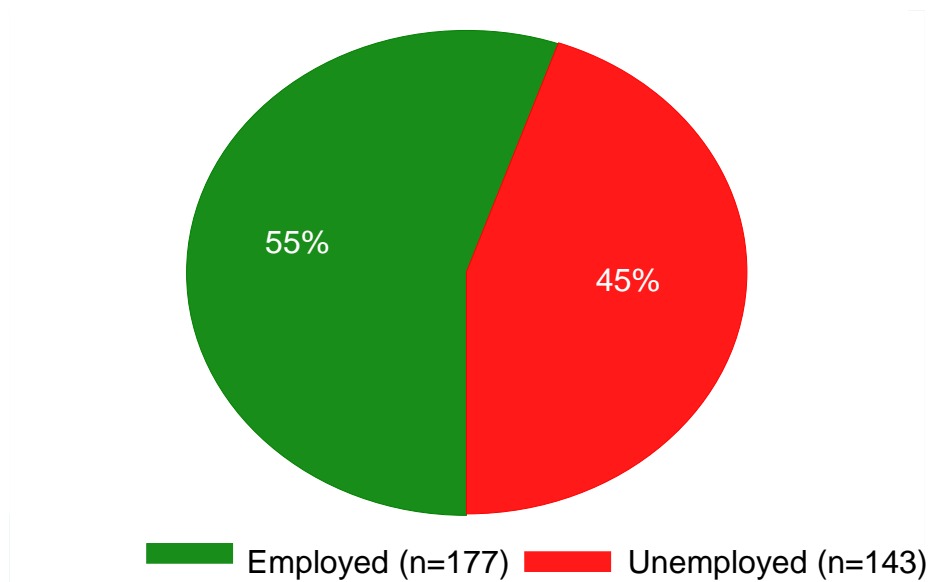
**Table 3: Distribution of gender across age groups**

Variable		Gender		
		Female	Male	Total
Age (years)	18-24	44(21%)	19(17%)	63(20%)
	25-59	142(68%)	76(68%)	218(68%)
	60 and over	23(11%)	17(15%)	40(12%)
	Total	209(100%)	112(100%)	321(100%)

The Chi Square test for differences in gender distribution across the age groups was not statistically significant (p-value=0.504).

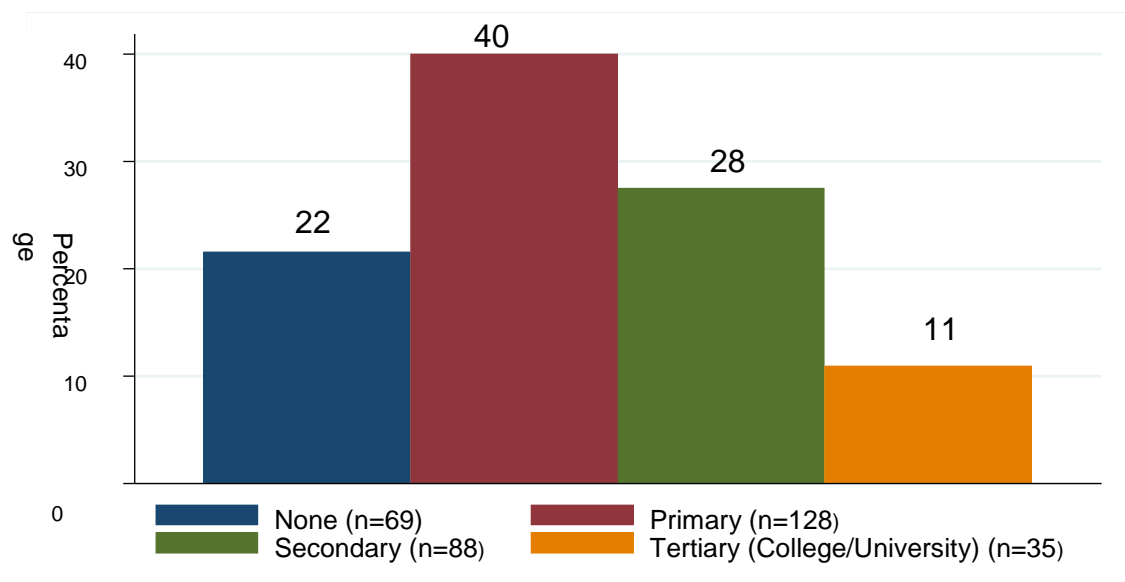
**Figure 3: Gender Distribution**

Slightly over a half of the study participants (55%) were in employment while the rest were unemployed (Figure 4).



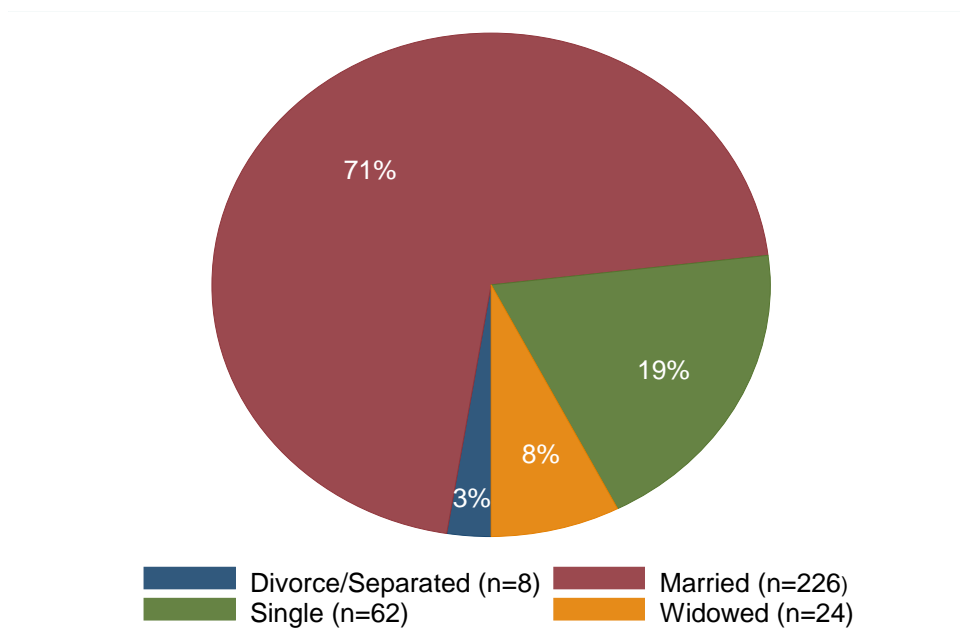
**Figure 4: Employment Status**

About 62% of the participants had attained primary education, while 88(28%) and 35(11%) had secondary and tertiary education respectively (Figure5).



**Figure 5: Level of Education**

Seventy one percent (71%) of the respondents were married, 62(19%) were single while the rest were either widowed or divorced/separated (Figure 6).



**Figure 6: Marital Status**

#### **4.2 Communities' level of knowledge of trachoma eye care services**

Three hundred and five (95%, 95% CL: 0.92-0.97) respondents in Table 4 were aware of the existence of trachoma disease in the area. Of these, 159(50%) knew of facilities or organizations in the region offering trachoma eye care services. Sixty six (42%), 8(5%), and 14(9%) respondents reported to know of a public health facility, private facility and an NGO or other organizations offering trachoma eye care services respectively. The public health facilities mentioned included Kajiado District Hospital, Bissil, Mashuuru and Magadi Health Centres and Sajiloni Dispensary; the private health facilities were Kitengela Health Centre and Kajiado Nursing Home. In addition, the mission hospitals were AIC Mission Hospital and ACK Dispensary and the NGO's were AMREF, UNICEF, World Vision and Kenya Red Cross. Other respondents cited a combination of these health facilities and organizations as shown in Table 4. Only three respondents knew the chemists offering these eye care services in the region.

Another 224(71%) knew of the trachoma eye care services being offered in the public or private health facilities and in NGO's. The common eye care service mentioned was antibiotic treatment (83%), and some mentioned a combination of both antibiotic treatment and eye surgery (12.5%). The rest of the eye care services mentioned by the respondents are as shown in Table 4 below.

The test for differences in the levels of awareness of trachoma disease by age, gender, marital status, level of education and employment status did not show any significant differences with p-values equal to 0.108, 0.659, 0.732, 0.564 and 0.482 respectively.

In Table 5, the test for association between the socio-demographic characteristics and the levels of knowledge on the available trachoma eye care services was also conducted. Age, employment status, and the level of education were significantly associated with the respondents' knowledge of available trachoma eye care services. Those aged 60 years and over were less likely to be knowledgeable of the available trachoma eye care services compared to those aged below 60 years (p-value<0.0001). The level of knowledge of the available trachoma eye care services was higher among the working respondents compared to the unemployed (p-value=0.007). The respondents with no education had a low level of awareness on the available trachoma eye care services compared to those who had at least a primary level of education (p-value<0.0001).

The association between gender and marital status and the level of knowledge of the available trachoma eye care services was not statistically significant, p-values =0.161, and 0.150, respectively.

**Table 4: Communities' level of knowledge of trachoma eye care services available in the region**

<b>Variables</b>	<b>Levels</b>	<b>Sample size</b>	<b>n(%)</b>
<b>Awareness of trachoma disease</b>	Yes vs. No	321	305(95%)
<b>Knowledge on any facility or organization in the region that offers trachoma eye care services to the community</b>	Yes vs. No	320	159(50%)
<b>Knowledge on specific health facilities or NGOs offering trachoma eye care services</b>	Public	159	66(42%)
	NGOs & other organizations		14(9%)
	Private		8(5%)
	Public & private		24(15%)
	Public & NGOs		26(16%)
	Private & NGOs		12(8%)
	Private, Public & NGO		6(4%)
<b>Knowledge on any trachoma eye care services provided by public or private health facilities or NGO's</b>	Yes vs. No	312	224(71%)
<b>Knowledge on the specific trachoma eye care services offered by public or private health facilities or NGO's</b>	Eye Examination	224	4(1.8%)
	Eye surgery		2(0.9%)
	Antibiotic Treatment		186(83%)
	Antibiotic Treatment & Eye Surgery		28(12.5%)
	Antibiotic Treatment & Eye Examination		4(1.8%)



**Table 5: Association between knowledge of trachoma eye care services and socio-demographic characteristics of respondents**

Variable	Levels	Knowledge of trachoma eye care services			Chi Square test
		No	Yes	Total	p-value
<b>Age (years)</b>	18-24	15(23%)	49(77%)	64(100%)	<0.0001
	25-59	52(24%)	167(76%)	219(100%)	
	60 and over	25(66%)	13(34%)	38(100%)	
<b>Employment status</b>	Employed	40(23%)	137(77%)	177(100%)	0.007
	Unemployed	52(36%)	91(64%)	143(100%)	
<b>Education Level</b>	None	39(57%)	30(43%)	69(100%)	<0.0001
	Primary	34(27%)	94(73%)	128(100%)	
	Secondary	12(14%)	76(86%)	88(100%)	
	Tertiary (College/University)	6(17%)	29(84%)	35(100%)	

### 4.3 Communities' attitudes towards trachoma eye care services

As shown in Table 6, 299(95%) individuals expressed their need for the available trachoma eye care services. 246(77%) preferred to visit a public health facility as opposed to private facilities if they suffered from the eye condition. Out of this number, 80(32.5%), 48(19.5%), 22(8.9%), and 15(6.1%) preferred to visit public health facilities because of affordability/low cost, accessibility/convenience, adequacy/high quality services and lack of an alternative/having no other choice respectively. Sixty one (24.8%) respondents reported that they would visit a public health facility because of their affordability/low Cost and accessibility/convenience. Other respondents cited a combination of reasons as is evident from Table 6. Among the seventy-two respondents who would prefer to visit a private health facility,

55(76.4%) reported that this would be so because of their adequacy/high quality standards while another 9(12.5%) said they would do so because of accessibility/convenience. Most of the respondents, 188(59%), felt that the health facilities or NGOs in the region adequately met their needs by making available the trachoma eye care services while 79(25%) were of a contrary opinion. There were 54(17%) respondents who reported not knowing whether or not these health facilities or organizations adequately met their needs of trachoma eye care services.

The test for differences in the levels of individual attitudes on their need for trachoma eye care services across the levels of socio-demographic characteristics showed that the middle aged (25-59 years) respondents were more likely to acknowledge need for the available trachoma eye care services compared to those aged (18-24 years) and those aged (>60 years), Fisher's exact p-value=0.022 (Table 7).

There were statistically non-significant differences in the levels of individual attitudes on their need for the available trachoma eye care services by employment status, education level, marital status, and gender with p-values equal to 0.937, 0.052, 0.228, and 0.402 respectively.

**Table 6: Communities' attitudes towards trachoma eye care services available in the region**

<b>Variable</b>	<b>Levels</b>	<b>Sample size</b>	<b>n(%)</b>
<b>Need for trachoma eye care services</b>	Yes vs. No	315	299(95%)
<b>Preferred health facility</b>	Public vs. Private	318	246(77%)
<b>Reasons for preferring Public health facilities</b>	Affordability/Low Cost	246	80(32.5%)
	Accessibility/Convenience		48(19.5%)
	Adequacy/High quality standards		22(8.9%)
	Lack of alternative/No choice		15(6.1%)
	Affordability/Low Cost & Accessibility/Convenience		61(24.8%)
	Affordability/Low Cost & Adequacy/High quality standards		9(3.7%)
	Accessibility/Convenience & Adequacy/High quality standards		7(2.9%)
	Accessibility/Convenience & Lack of alternative/No choice		3(1.2%)
	Affordability/Low Cost, Accessibility/Convenience & Adequacy/High quality standards		1(0.4%)
	<b>Reasons for preferring Private health facilities</b>		Accessibility/Convenience
Adequacy/High quality standards		55(76.4%)	
Lack of alternative/No choice		1(1.4%)	
Affordability/Low Cost & Adequacy/High quality standards		3(4.2%)	
Accessibility/Convenience & Adequacy/High quality standards		4(5.6%)	
<b>In your opinion, do health facilities or organizations in this area adequately meet your needs for trachoma eye care services?</b>	Yes	321	188(59%)
	No		79(25%)
	Don't know		54(17%)

**Table 7: Association between the individual need of trachoma eye care services and age of respondents**

Variable	Levels	Do you think, you as an individual need these trachoma eye cares services?		
		No	Yes	Total
Age (years)	18-24	4(6%)	60(94%)	64(100%)
	25-59	7(3%)	209(97%)	216(100%)
	60 and over	5(14%)	30(86%)	35(100%)
	Total	16(5%)	299(95%)	315(100%)

**Chi-Square test value=7.85, degrees of freedom=2, Fisher's exact p-value=0.022.**

#### **4.4 Communities' eye-care seeking practices**

As shown in Table 8, 198(62.5%) respondents reported that they would visit a public health facility as their first resort of help in case they suffered from an eye condition suspicious of trachoma. There were 55(17.4%) and 53(16.7%) who would visit a private health facility and who would opt to treat themselves respectively. A few others admitted they would seek advice from their fellow community members first while others would first opt to consult community/traditional doctors. This showed how dynamic the communities' practices were in terms of seeking eye care towards controlling trachoma disease in relation to the available services in the region. 40 (13%) respondents admitted to subscribing to certain cultural beliefs and practices that made them not seek trachoma eye care services available at the health facilities. A majority of them, 30 (75%) said they believed in the efficacy of herbal medicine while the rest claimed to believe in healing through divine intervention.

The test for association between the first resort of treatment in case of an experience of an eye condition and the socio-demographic characteristics of study respondents

was conducted. The test showed that the age of the respondents and their level of education were associated with the first resort of treatment in case of an experience of an eye condition ( $p < 0.001$ ). A higher proportion of the older study participants (aged 60 and over) were more likely to first seek help from the community/traditional doctors, opt for self-treatment or seek help from community members in case they suffered from an eye condition (17(45%) vs. 42(19%) among those aged 25-59 vs. 5(8%) among those aged 18-24). Study participants with no level of education were more likely to first resort to community/traditional doctors, self-treatment, and their fellow community members in case of an eye condition compared to those who had attained at least a primary education or higher (Table 9). Respondents who had a primary education or higher were more likely to first seek help from private health facilities in case they suffered from an eye condition. However, there were no clear differences in the choice of a public health facility across the respondents' levels of education. The first resort of treatment in case of an eye condition had the community/traditional doctors, self-treatment and community members collapsed together to avoid failure of convergence when the test of association was run due to small cell counts.

The Pearson's Chi Square test for association showed no significant relationship between gender, marital status and employment status of the respondents with the first resort of treatment in case of an experience of an eye condition ( $p = 0.871$ ,  $0.104$  and  $0.131$  respectively).

**Table 8: Communities' eye-care seeking practices in relation to trachoma eye care services available in the region**

Variable	Levels	Sample size	n(%)
<b>If you were to experience an eye condition what would be your first resort of help?</b>	Community members	317	1(0.3%)
	Community/Traditional Doctors		10(3.2%)
	Private Health facility		55(17.4%)
	Public Health facility		198(62.5%)
	Self-treatment		53(16.7%)
<b>Are there any cultural beliefs and practices you subscribe to regarding eye care?</b>	Yes vs. No	315	40(13%)
<b>Cultural beliefs and practices mentioned</b>	Belief in herbal medicine	40	30(75%)
	Belief in divine intervention		10 (25%)

**Table 9: Association between socio-demographic characteristics of respondents and the first resort of treatment in the case of an eye condition**

Variable	Levels	If you were to experience an eye condition what would your first resort of help be?			Test for association
		Community or Traditional Doctors, Self-treatment, and Community members	Private Health facility	Public Health facility	p-value
<b>Age(years)</b>	18-24	5(8%)	17(27%)	41(65%)	<0.001 <sup>f</sup>
	25-59	42(19%)	36(17%)	138(64%)	
	60 and over	17(45%)	2(5%)	19(50%)	
<b>Education level</b>	None	28(41%)	2(3%)	39(57%)	<0.001 <sup>f</sup>
	Primary	19(15%)	16(13%)	91(72%)	
	Secondary	11(13%)	26(30%)	50(57%)	
	Tertiary	6(18%)	10(29%)	18(53%)	

<sup>f</sup> – Fisher's exact test p-value.

#### 4.5 Utilization of trachoma eye care services

As shown in Table 10, 33(10%) respondents sought trachoma eye care services in a health facility. Among them, 7(21%) sought eye examination, 23(70%) antibiotic treatment, 2(6%) underwent eye surgery and also received antibiotic treatment while one respondent underwent eye surgery only.

The predominant language of communication between them and the healthcare providers was Kiswahili (55%). Twelve (36%) communicated both in vernacular (Maasai language) and Kiswahili while 2(6%) communicated in English. Only one communicated exclusively in Maasai language. The most common mode of transport to the health facilities was public service vehicles, 18(55%).

There were 84(26%) respondents who had never sought trachoma eye care services but were aware of community members who had visited a health facility seeking eye care services. It was reported that the most sought trachoma eye care service was antibiotic treatment, 70(83.3%). Only one respondent had no idea what specific trachoma eye care service/s the person sought.

Those who had sought trachoma eye care services but failed to be served were 22(7%). The reasons given included; unavailability of eye specialists 8(62%), lack of financial support 1(7%), no health workers on duty 3(23%) and that health workers were too busy for the patients 1(7%).

There was a significantly higher proportion of female participants who sought trachoma eye care services in a health facility compared to their male counterparts, ( $p=0.035$ ) (Table 11). There were no apparent associations between utilization of trachoma eye care services in a health facility by age, education level, marital status,

and employment status with p-values equal to 0.452, 0.276, 0.081, and 0.655 respectively.

The association between utilization of eye care services and knowledge of availability of trachoma eye care services was also conducted. The results showed that there was a statistically significant relationship between the two ( $p < 0.001$ ). A greater proportion of those who were utilizing the trachoma eye care services compared to those who were not were well aware of the availability of the trachoma eye care services.

The association between utilization of trachoma eye care services and respondents' attitudes (i.e. the need for trachoma eye care services) was also conducted but the relationship was found to be statistically insignificant ( $p = 0.449$ ).

There were various barriers that hindered individuals from seeking trachoma eye care services. Forty four (14%) of respondents cited affordability or cost, and 88(28%) cited proximity or distance to the health facility as barriers to use of available trachoma eye care services. A significant proportion 148(47%) did not either cite any barrier or were not aware of any barrier to seeking trachoma eye care services (Table 13). Others barriers also cited by respondents included; ignorance on the presence of trachoma disease, not seeing the need of eye care services and long waiting queues at the health facilities.

Among the 174 respondents who gave their opinions on ways to improve utilization of the available trachoma eye care services, 127(73%) reported that outreach services would help the community easily access the available services in the region. These outreach services included providing treatment services to the community and undertaking mass awareness campaigns to sensitize the community on the available



services. Thirty four respondents, representing 20%, suggested provision of free trachoma eye care services while 13(7%) suggested both a combination of free services as well as outreach services.

Other responses were the need for awareness creation through training and health education on available trachoma eye care services, 60(38%) and the need for more drug supply and increase in the number of health personnel trained on management of trachoma disease, 26(17%).

**Table 10: Utilization of trachoma eye care services available in the region**

Variable	Levels	Sample size	n(%)
<b>Have you visited a health facility seeking any trachoma eye care services?</b>	Yes vs. No	314	33(10%)
<b>Trachoma eye care services sought</b>	Eye Examination	33	7(21%)
	Antibiotic Treatment		23(70%)
	Antibiotic & Eye surgery		2(6%)
	Eye surgery		1(3%)
<b>Language of communication</b>	English & Kiswahili	33	2(6%)
	Kiswahili		18(55%)
	Kiswahili & Maasai		12(36%)
	Maasai		1(3%)
<b>Means of transport to travel to the facility</b>	Walking	33	6(18%)
	Walking & public service vehicle		3(9%)
	Private vehicle		2(6%)
	Public service vehicles		18(55%)
	Public service vehicles & Motor bicycle		4(12%)
<b>Do you know of anyone who has ever visited a health facility seeking any trachoma eye care services?</b>	Yes vs. No	314	84(26%)
<b>Trachoma eye care services sought</b>	Eye Examination	84	1(1.2%)
	Eye Examination and Antibiotic treatment		2(2.4%)
	Antibiotic treatment		70(83.3%)
	Antibiotic treatment & Eye surgery		9(10.7%)
	Eye surgery		1(1.2%)
	No idea		1(1.2%)
<b>Have you ever sought trachoma eye care services and failed to be served?</b>	Yes vs. No	314	22(7%)
<b>Reasons for failing to get the services</b> <i>Missing: 9</i>	Unavailability of eye specialists	13	8(62%)
	Lack of financial support		1(7%)
	No health worker on duty		3(23%)
	Health workers too busy for patients		1(7%)

**Table 11: Association between utilization of trachoma eye care services and gender of respondents**

Variable	Levels	Have you ever visited a health facility seeking trachoma eye care services?		
		No	Yes	Total
Gender	Female	178(87%)	27(13%)	205(100%)
	Male	103(95%)	6(5%)	109(100%)
	Total	281(89%)	33(11%)	314(100%)

**Chi Square value =4.45, df =1, p-value =0.035**

**Table 12: Association between utilization of trachoma eye care services and knowledge of the available services**

Variable	Levels	Have you ever visited a health facility seeking trachoma eye care services?		
		No	Yes	Total
Knowledge of available of trachoma eye care services	No	91(32%)	1(3%)	92(29%)
	Yes	197(68%)	32(97%)	229(71%)
	Total	288(100%)	33(100%)	321(100%)

**Chi Square value =11.82, df =1, p-value <0.001<sup>f</sup>**

<sup>f</sup> – Fishers exact test p-value.

**Table 13: Barriers to utilization of available trachoma eye care services**

Variable	Levels	Sample size	n(%)
<b>Barriers to utilization of trachoma eye care services</b>	Acceptability/Cultural resistance	314	4(1.3%)
	Acceptability/Cultural resistance & Proximity/Distance travelled		1(0.3%)
	Affordability/Cost		44(14%)
	Affordability/Cost& Proximity/Distance travelled		29(9%)
	Don't know/No reason		148(47%)
	Proximity/Distance travelled		88(28%)
<b>Other Barriers mentioned</b>	Ignorance about the presence of the disease	9	7(78%)
	Not seeing the need of trachoma eye care services		1(11%)
	Long waiting queues at the health facilities		1(11%)

**Table 14: Respondents' opinions on ways to improve utilization of available trachoma eye care services**

Variable	Levels	Sample size	n(%)
<b>How can trachoma eye care services be improved to meet needs of the community and improve their utilization?</b>	Provision of free eye care services	174	34(20%)
	Provision of free eye care services & Outreach services		13(7%)
	Outreach services		127(73%)
<b>Other ways of improving utilization of trachoma eye care services</b>	Don't know	156	70(45%)
	Awareness creation through training and health education		60(38%)
	Increased number of health personnel and more drug supplies		26(17%)

#### 4.6 Community Household Attributes

The community household attributes assessment was done and the responses shown in Table 15. Forty nine (15%) households were located a kilometer away from the bus stage while another 44(14%) households were located a kilometer away from the health facility. Two hundred and thirty seven (74%) households had a water holding receptacle for bathing or face washing present within their homesteads. There were 196(61%) households that had latrines within 6 meters. One hundred and thirty nine (71%) of these households had lockable doors provided for the latrines. There were 56(17%) households that had livestock corrals located away from the households and 123 (38%) households that had impermeable floors/sprinkled earthen floors. One hundred and eight (34%) households had a garbage/animal waste disposal pit present within the household compound. It was also observed that 156(49%) households had a low fly (*Musca sorbens*) population within the household surroundings.

The attributes that were assessed in Table 15 were scored and the median sum of the scores was computed. The maximum score was 8 and the minimum score was zero. The median score for the household attributes was 4(IQR: 2-5) for all the 321 households sampled in the study.

**Table 15: Household Attributes**

Variable	Levels	Sample size	n(%)
Proximity from the main public transport terminal	<1km vs. >1km	321	49(15%)
*Proximity from the health facility	<1km vs. >1km	321	44(14%)
Presence of water holding receptacle within the household for bathing/face washing	Yes	321	237(74%)
	No		84(26%)
Presence of a latrine within 6m of the household	Yes	321	196(61%)
	No		83(26%)
	N/A		42(13%)
Presence of a lockable door provided for latrines (privacy)	Yes	196	139(71%)
	No		57(29%)
Presence of livestock corral located away from the household	Yes	321	56(17%)
	No		229(71%)
	N/A		36(11%)
Presence of impermeable floors/sprinkled earthen floors	Yes	321	123(38%)
	No		198(62%)
Presence of garbage/animal waste disposal pit	Yes	321	108(34%)
	No		213(66%)
Low fly ( <i>Musca sorbens</i> ) population within the household surroundings	Yes	321	156(49%)
	No		165(51%)

**\*Reference point-** Kajiado District Hospital (Level Four Facility)

#### 4.7 Health Personnel Interviews

Among the eleven health personnel interviewed, 6(55%) were from the public health facilities, 2(18%) from the mission or private health facilities. The rest worked in organizations (governmental or non-governmental). The trachoma eye care services available in these health facilities/organizations according to the health personnel were eye examinations, antibiotic treatment, eye surgery and health education. However, three (3) of them reported that there were no trachoma eye care services available in their facilities/organizations.

Seven (64%) admitted that their facilities had trained personnel on trachoma eye care. Of the four (4) who said that there were no trained personnel, one was from a non-governmental organization and the other three (3) worked in the public health facilities. Three of these four were those who reported that there were no trachoma eye care services available to the community in their health facilities. The areas of trachoma eye care they were trained in according to the six (6) of the respondents were antibiotic drug dispensation, eye surgery and on health education.

On average the number of clients seen by the health personnel per day in those health facilities that offered trachoma eye care services were in the range of 1-5 according to 6(75%) of the health care personnel interviewed. Five out of eleven health personnel did not see any client and among them were two health facilities that offered trachoma eye care services.

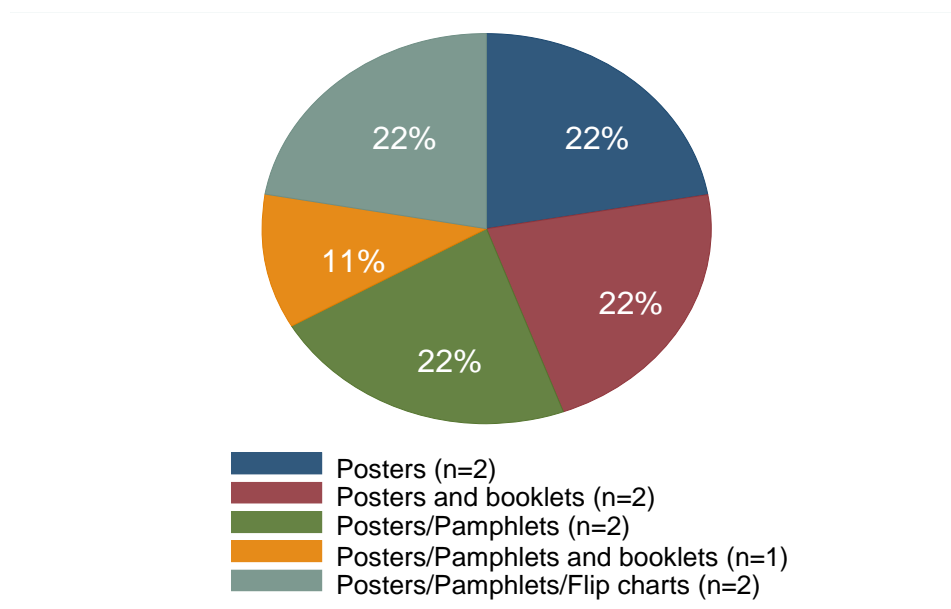
All the health personnel interviewed were in total agreement that their health facilities carried out sensitization or provided information to the community about the available trachoma eye care services, including those health facilities that had claimed not to offer these services. These were done through health education and mass awareness campaigns.

The same health personnel interviewed also admitted that their facilities have been working with the community to improve measures aimed at safeguarding their eye health. Some of the measures put in place included offering outreach services; health education, mass awareness campaigns and provision of antibiotics.

The trachoma eye care educational materials available to the community at these facilities included posters, booklets, pamphlets, and flip charts (Figure 7). Only two

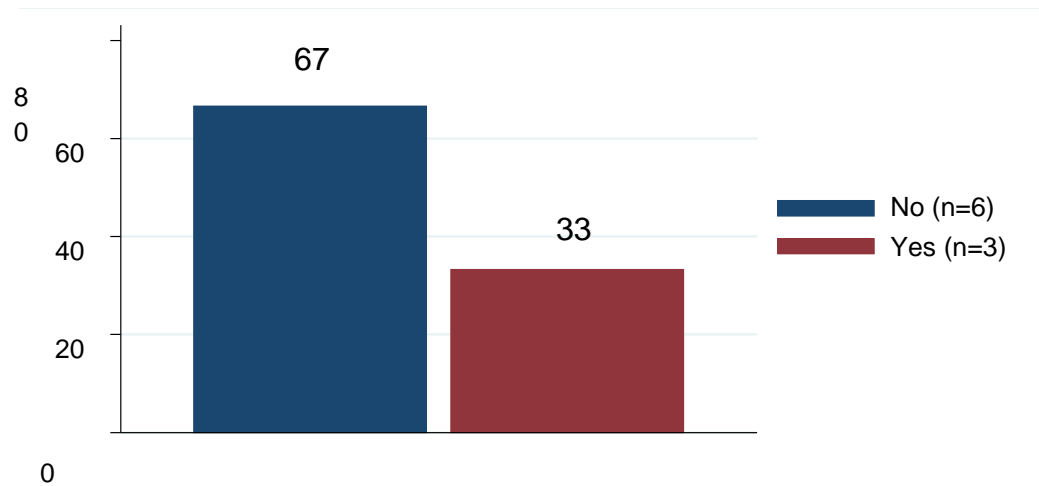
(2) health personnel working in public health facilities reported that their health facilities did not have these materials.

Of the nine (9) health facilities that had the educational materials available only three (3) of the health personnel in their respective facilities reported that the materials were being utilized (Figure8).



**Figure 7: Trachoma Educational Materials**





**Figure 8: Utilization of Trachoma Educational Materials**

In order to increase the availability and accessibility of the trachoma eye care services to the community all the eleven (11) health facilities and organizations reported they offered community based outreach services. Some of these outreach services included; health education, antibiotic treatment, eye screening and referral of progressed cases of trachoma disease to the health facilities.

Only four (4) of the eleven health personnel interviewed felt their facilities were adequately equipped and staffed to meet the trachoma eye care needs of the community in the area. Two (2) of them were from NGOs, one working in a mission hospital while another in a public health facility.

The health personnel also felt that more funding was required to help improve provision of trachoma eye care services in order to meet the needs of the community. They reported that the funding would be used to facilitate outreach services, help train the health workers further on management of trachoma, improve health personnel pay and help procure facilities' supplies.

#### **4.8 Health Facility Attributes**

As shown in Table 16, of the eight health facilities observed, six (6) representing 75% recorded waiting times for the patient/client as less than an hour while the other two facilities recording waiting times of between one and two hours. Only six (6) of the eight health facilities had referral systems in place for trachoma cases. The location of two (2) health facilities was found to be convenient. Convenience meant that the health facilities were located within a kilometer from the public transport drop off point.

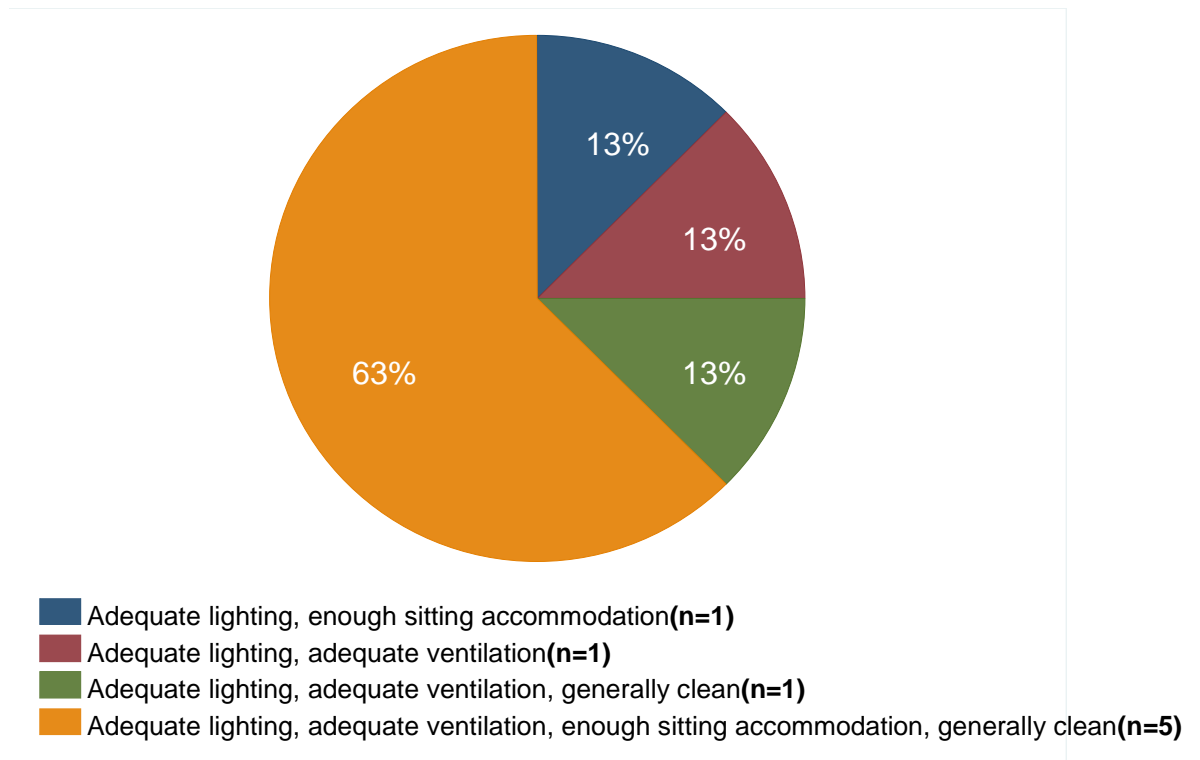
The conditions of the waiting bay were assessed. Five (5) health care facilities had adequate lighting (that is, there was an adequate number of windows to allow in natural light, and electric lights providing artificial lighting), adequate ventilation (that is, there were windows and doors to allow proper air circulation), they were generally clean, and had enough sitting accommodation. The other facilities conditions were as shown in the chart below (Figure 9).

The operational time during which the community can access trachoma eye care services was 8am to 5pm as observed in six (6) of the health facilities. Two (2) health facilities operated 24 hours a day.

From the displayed meeting schedules in four (4) of the health facilities, it was observed that regular meetings with other stakeholders (other facilities or organizations) to discuss issues on provision trachoma eye care services in the region were periodically undertaken.

Only two (2) health facilities observed had a functional surveillance system for community eye health related conditions.

The total scores from the observation checklists for each facility was obtained. The individual total scores ranged from zero to 14 with a median score of 10.5(IQR: 8.5 - 12.5) for all the health facilities.



**Figure 9: Conditions of the Waiting Bay**

**Table 16: Health Facility Attributes**

<b>Variables</b>	<b>Levels</b>	<b>Private n(%)</b>	<b>Public n(%)</b>	<b>Combined n(%)</b>
<b>Waiting times</b>	1-2 hrs	0	2(33%)	2(25%)
	<1 hr	2(100%)	4(67%)	6(75%)
<b>Referral system</b>	Yes vs. No	2(100%)	4(100%)	6(75%)
<b>Convenient location</b>	Yes vs. No	1(100%)	1(100%)	2(25%)
<b>Convenient operational hours</b>	Open 24 hours	1(50%)	1(17%)	2(25%)
	Open 8AM-5 PM	1(50%)	5(83%)	6(75%)
<b>Functional surveillance system</b>	Yes vs. No	2(100%)	1	3(37.5%)

## CHAPTER FIVE

### DISCUSSION

#### **5.1 Communities' level of knowledge of trachoma eye care services**

Majority (95%) of the respondents were aware of trachoma disease. This may be as a result of the high prevalence of the eye disease in the region and increased sensitization about the disease. The study respondents were able to differentiate trachoma disease from other eye diseases by correctly describing how the disease manifests itself. Livingston et al. (1998) found out that amongst the subjects of a study done in Australia, four percent of them could not differentiate trachoma from glaucoma disease. Therefore, a high level of awareness of trachoma disease by the community in Central division would in effect influence community's knowledge of the available trachoma eye care services provided in the region.

A test for differences in the levels of awareness of trachoma disease by age, gender, marital status, employment status and the level of education amongst the sampled respondents in the region did not show any significant differences. None of the socio-demographic characteristics was found to be significantly associated with awareness of the eye disease. This contrasts with a study done in Australia, where it was found out that the significant predictors of correct knowledge of eye disease amongst the respondents were being of a younger age, female in gender, having a higher level of formal education and having recently visited an eye practitioner (Livingston et al., 1998).

Out of the 159 respondents in the study, 42% of them were aware of the public health facilities offering trachoma eye care services with lesser proportions of 4% and 9% being aware of the same in mission facilities and NGOs. Knowledge of trachoma eye

care services offered in public facilities was higher partly because health care services offered in government facilities were more known to this community given the perception of affordable health care services in public health facilities. In a study by Kimani et al.(2008) done in Nairobi, most respondents knew of government or public facilities offering various health care services but were not aware that eye care services were also available in these facilities. Amongst those aware of public health facilities (42%), this was a low proportion compared to a study done in a rural community in South Africa where it was found that more than three-quarters (78.5%) of the study participants were aware of eye care services offered in government hospitals (Ntsoane et al., 2012).

Close to three-quarters (71%) of the study respondents were knowledgeable of specific trachoma eye care services being offered in the public or private health facilities or by non-governmental organizations in the area. Of these, 83.3% of them knew about antibiotic treatment of trachoma disease, with a lesser proportion (12.6%) of the respondents claiming to be aware of both antibiotic treatment and eye surgical services. Very few respondents were knowledgeable of eye screening services offered to ensure early detection of trachoma disease. The higher proportion of those who were knowledgeable of antibiotic treatment can be explained by the fact that a lot of awareness is created during the multi-drug administration (MDA) programs and campaigns as opposed to eye surgical services. In a study on utilization and barriers to eye surgical services in rural South India, the reason for under-utilization of eye care services among the rural population was lack of awareness of the existing free-of-cost services offered by non-governmental organizations and low-cost eye surgical services (Chandrashekhar et al., 2007). Surgical services are usually offered to the few patients who get to the advanced stages of the eye disease. Therefore, knowledge

on the availability of the surgical services is low compared to antibiotic treatment for trachoma disease.

Findings from the study showed that the age of respondents, employment status and education level were the only variables which were significantly associated with the level of knowledge of the community on the available trachoma eye care services. The results indicated that the level of knowledge of the available trachoma eye care services was high among those participants who were aged 60 years and below, those who were employed and those who had at least a primary level of education. Similarly, in a study in Southern India, it was found out that the respondents aged 30 years and beyond, male in gender and of a higher educational level, were more likely to be aware of services offered towards eye diseases (Dandona et al., 2001). There is an association between the socio-demographic characteristics of people in the community and their level of knowledge of the available eye care services offered in a given region.

## **5.2 Communities' attitudes towards trachoma eye care services**

There were 299(95%) respondents who felt they needed trachoma eye care services and this indicated a positive attitude by the community towards the eye care services available in the region. Expression of need of the available health care services offered in a given area would often influence utilization of these services. Similarly, in a study done in rural South India, it was found that close to three quarters (72.7%) of the study population admitted to requiring eye care services against visual impairment and ocular diseases (Nirmalan et al., 2004). In another study regarding the attitude of older African Americans towards vision and eye care, their comments were predominantly positive (69%), when they highlighted the importance of eye care or

behaviors and attitudes that facilitated care (Owsley et al., 2006). A higher expression of need for eye care services would often result to increased utilization of these services.

Contrary to the study findings on the communities' positive attitudes regarding their need for eye care services, Palagyi et al.(2008) reported attitudinal reasons like 'felt there was no need for eye care services' were cited by a greater proportion of study participants in Timor-Leste. In another study in Ghana, some of the study participants noted that they did not see the need to go for eye examinations because the eye conditions did not cause any discomfort (Ilechie et al., 2013). Such poor attitudes amongst people in a given community would result in low utilization of the available eye care services.

Slightly more than a half of the respondents (59%) felt that the health facilities or NGOs in the area adequately met their eye care needs. This meant that a significant proportion (40%) of the respondents interviewed were not satisfied by what was being done by health facilities and NGOs regarding trachoma eye care and felt more needed to be done in terms of availing services towards prevention and control of the eye disease. This proportion was closely similar to that of a study done in South Africa where it was reported that only 59.3% of the respondents were satisfied with the eye care services received at the hospitals as their eye care needs were met (Ntsoane et al., 2012). Satisfaction with health care services offered in health facilities or by organizations in given area would translate to increased utilization of these services by the community they serve.

Seventy seven (77%) percent of the respondents preferred to visit public health facilities as opposed to visiting private facilities, it was observed that a majority



(32.5%) preferred the public health facilities claiming affordability of the services offered. A lesser proportion (8.9%) preferred public health facilities because of their adequacy and quality of the services. This contrasts a study done in Limpopo province, South Africa where a bigger proportion (68.3%) claimed that government hospitals offered good quality eye care services (Ntsoane et al., 2012). In another study in Fiji, of the study participants who sought eye care, majority (75.6%) of them preferred services offered in government facilities (Brian et al., 2012).

Amongst the respondents (23%) who preferred private facilities, most (76.4%) of them attributed their choice to the adequate and high quality services offered in these facilities. It was clear that the community in Central division mostly preferred to seek health care in government facilities claiming affordable services offered in these facilities. Amongst those who preferred private facilities, this was attributed to the adequate and high quality services available in these facilities. This showed that improved service delivery and quality of eye care services offered in the public health facilities within Kajiado County would increase utilization of the services.

Similarly, in a study done in Kibera and Dagoretti divisions of Nairobi, the choice of private health facilities was based on good service and kind workers at the facility (Kimani et al., 2008). In another study in Timor-Leste, it was reported that satisfaction with treatment from private facilities was higher than that from government service providers (Palagyi et al., 2008).

Age was the only statistically significant variable found to determine individual attitudes regarding their need for trachoma eye care services in that, the middle aged (25-59 years) respondents were more likely to acknowledge that they needed trachoma eye care services compared to those aged (18-24 years) and those sixty

years and over. This can be attributed to the fact that most of those aged 25-59 years, had attained a higher level of education in comparison to the other age groups and hence, more enlightened on the benefits accruing from utilization of available trachoma eye care services. Similarly in a study done in Australia, the significant predictors of positive attitudes towards blindness treatment were being of a younger age and correct knowledge of eye disease (Livingston et al., 1998). Therefore, age of the respondents is seen to influence the attitudes of people in the community towards the available eye care services as has been portrayed by the two studies.

### **5.3 Communities' eye care seeking practices**

The communities' eye care seeking practices regarding their eye health was assessed by finding out their first choice of place to seek treatment in case they suffered from an eye disease suspicious of trachoma. Majority of the respondents (62.5%) preferred to visit public health facilities as their first resort of treatment in case they suffered from such an eye condition, compared to 17.4% and 16.7% who instead preferred visiting private health facilities or opted to treat themselves respectively. Similarly, Kimani et al.(2008) in a study done in Kenya, reported that a majority (33%) of study subjects preferred visiting public health facilities when seeking eye care, 21.5% preferred mission hospitals, while the rest opted for private clinics, optical shops, chemists and traditional healers. A higher preference of eye care services offered in public health facilities might be attributed to the perception the community have of the affordable health care services available in these facilities as was reported earlier. In contrast, a study done in Korogoshi slums of Nairobi, found out that most of the study subjects preferred seeking eye care from mission hospitals, city council clinics and free eye camps (Nyaga et al., 2007). Elsewhere, a study done in an Argentinean population, found out that 25.6% of patients preferred self-medication when faced

with ocular conditions as opposed to seeking treatment in health institutions (Marquez et al., 2012).

A smaller proportion (3.2%) would seek treatment from community/traditional doctors as their first resort in case they suffered from an eye condition suspicious of trachoma. It can be assumed therefore, that this proportion would be greater in the more remote regions of Kajiado County where conventional health care is relatively inaccessible to the community. This also agrees with findings of Ashaye et al.(2006). Rural communities have a strong faith in and respect for traditional healers, who provide the first line of medical attention for most people in remote areas where modern medical services are inaccessible (Chana et al., 1994). But a study done in Uganda, reported about 44% of the respondents used traditional remedies to treat their eye conditions inspite them living in close proximity to modern health units (Nyathirombo et al., 2013). Increased use of alternative sources of eye care including traditional healers and patent medicine sellers, who serve as frontline health workers was also reported in Ghana and Togo (Ntim-Amponsah et al., 2005;Balo et al., 2004).

A smaller proportion (13%) of respondents admitted to subscribing to certain cultural beliefs and practices that made them not see the need to seek trachoma eye care services available at the health facilities. Twenty four (73%) of them admitted to subscribing to cultural beliefs and practices and believed in the efficacy of herbal medicine. Such communities have strong attachments to their cultural beliefs and this norm may even be stronger in communities living in the more remote regions of the county where conventional eye care is unavailable or inaccessible. In agreement with this observation, was a study done in South Africa, where five percent of the study population consulted traditional healers for certain eye problems rather than seeking

eye care from the government hospitals even though, the public eye care services were readily available and affordable. Some of the factors that influenced the use of eye care services in a rural community included traditional and personal beliefs about the western type of eye care services (Oduntan & Raliavhegwa, 2001).

A further (24%) of those who subscribed to cultural beliefs and practices believed that healing from any health condition only came from a higher spiritual power. Similarly, in a study in Nigeria, a few of the study participants with eye problems reported that they relied on spiritual care, self-medication and use of local herbal medicine because their eye conditions got more worse after going to the hospitals (Ashaye et al., 2006). Consequently, community members who subscribe to certain cultural eye seeking practices would register low use of the available trachoma eye care services.

Respondents' age and educational level were the only socio-demographic variables found to be significantly associated with their choice of first resort of treatment in case they suffered from an eye condition. The more elderly (aged 60 years and over) respondents and those without any level of education were more likely to first seek help from community/traditional doctors, their fellow community members or opt for self-treatment in case they ever suffered from an eye disease suspicious of trachoma. This was because most of the elderly respondents had attained low levels of education or none at all and so they were less knowledgeable of the available conventional trachoma eye care services offered in the region. Therefore, they would resort to other options of eye treatment while most respondents with at least a primary level of education or higher would first resort to conventional health care facilities for treatment in case they experienced this eye condition. Similar findings were reported in Australia (Livingston et al., 1998). In a study done in Uganda, it was noted that the

use of traditional remedies increased with age with a peak at the (41-50) age group but there was no significant association between the levels of education attained and choice of the method of eye treatment sought (Nyathirombo et al., 2013).

In both studies done in Australia and Uganda, gender was found to be significantly associated with the eye-care seeking practices, with a higher proportion of the males in Uganda seeking traditional eye health services compared to the females. This contradicted findings from the study, which showed that there was no significant relationship between gender and the first resort of treatment in case of an experience of an eye condition suspicious of trachoma disease.

#### **5.4 Utilization of trachoma eye care services**

Uptake of both preventive and curative trachoma eye care services available to the community in the study area was low. Health education, eye examinations, antibiotic treatment and eye surgery formed part of the preventive and curative services offered to the community in the study region. History of an eye care visit to seek any of the available trachoma eye care services was considered a determinant of eye care service utilization. Utilization of trachoma eye care services was low (36%) in the study area, this being a combined proportion of the respondents claiming to have sought various trachoma eye care services in the health facilities and those who reported to know of someone else other than themselves who had ever sought these services in the same region. This is in contrast to a study done in a rural region of South Africa where a bigger proportion of respondents (62.7%) used eye care services provided in the health facilities in the past (Ntsoane et al., 2012).

A greater proportion of those who were utilizing the eye care services were aware or were knowledgeable of the availability of these trachoma eye care services ( $p < 0.001$ ).

There was no association between utilization of trachoma eye care services and the need for these services in this study. Studies done in rural India, Timor-Leste and Australia however found that lack of knowledge of the available services and poor knowledge of eye diseases negatively influenced eye care utilization (Chandrashekhar et al., 2007; Dhaliwal & Gupta, 2007; Palagyi et al., 2008; O' Connor et al., 2008; Bhagwan et al., 2006; Robin et al., 2004 and Bylsma et al., 2004). The need for trachoma eye care services was regarded as a positive attitude towards the available services in present the study. Contrary to this, a study done in South Africa found out that, knowledge of available services and need for regular eye tests were positively associated with utilization of the services (Ntsoane et al., 2012).

There was a significantly higher proportion of female respondents (13%) who sought trachoma eye care services than the male respondents (5%). Women were more likely seek eye care services given that they visit health care facilities while bringing children for immunizations or while attending ante-natal and post-natal clinics as opposed to their male counterparts. This is in contrast to a study done in South Africa where it was found that gender was an insignificant predictor of utilization of eye care services. Female and male utilization levels were not significantly different statistically, presumably due to the higher proportion of female participants in the study, as this reduced the intra-gender percentage of utilization (Ntsoane et al., 2012). Similar observations were also reported in an urban population in southern India (Dandona et al., 2000).

Age of the respondents, their education level, marital status and employment status were found to have no apparent association with utilization of trachoma eye care services and this agrees with a study done in South Africa where age and educational

level were found to be insignificant predictors of use of eye care services (Ntsoane et al.,2012); but partly contrasts with a study done by Morales et al.(2010a) where it was found out that age, gender and marital status were significant predictors of eye care utilization amongst the Latino community. Dandona et al.(2000) found age to be a significant factor determining eye care utilization, with subjects <60 years of age seeking treatment less compared with subjects >60 years of age. This was of importance because people in the younger age group are more likely to be economically productive.

Majority (73%) of respondents thought that provision of trachoma eye care outreach services would improve utilization of these services and help meet their eye care needs as a community. Another twenty percent (20%) of the respondents thought that provision of free trachoma eye care services would increase utilization of the services. This is in agreement with a study in rural South India, which established that underutilization of the available eye care services existed because patients were not aware of the services and that they were being offered free of charge (Robin et al., 2004). Therefore, even though there might be free-of-cost trachoma eye care services being offered by health facilities and non-governmental organizations in Kajiado County, the community might not be aware of these free services or might have a negative perception or attitudes towards them. Hence, this may result to under-utilization of the available eye care services.

There were 44(14%) respondents who cited affordability or cost as being a factor affecting utilization of trachoma eye care services. Respondents looked at cost in terms of affordability of transport fares to the health facilities while others had the assumption that the eye care services offered at the health facilities were too costly.

They also claimed that eye care services were costly in terms of the forfeited profits in business while seeking these services. This was similar to studies done in Ghana and South India where cost emerged as a major barrier to seeking eye care and as a major reason for not up taking eye services among the visually impaired populations (Ilechie et al., 2013; Kovai et al., 2007). Studies done in various parts of Kenya have also shown cost to be a major barrier to utilization of eye care services (Karimurio et al., 2007; Kimani et al., 2007; Ndegwa et al., 2005).

In addition to the cost incurred from eye surgery being a barrier to utilization of eye care services, there are other costs such as transportation to the hospital, loss of work to the patient or to the caregiver accompanying the patient and living expenses for the carer while the patient is in the hospital (Lewallen & Courtright, 2000). In many developing countries, poverty is a major issue hence people are not able to afford the cost of eye care services and therefore conditions which could have been treated at an early stage are not attended to and may result in low vision and blindness (Ashaye et al., 2006).

The findings from the facility observation checklists indicated favorable waiting times by majority of the respondents (i.e. clients spending less than an hour before being attended to by health care personnel) in most of the health facilities in the division. In a study done in South Africa and Ghana, long queues and long waiting times were considered the main hindrance to seeking eye examination amongst those able to access eye care services (Ntsoane et al., 2012; Ilechie et al., 2013). Elsewhere, dissatisfaction at hospital level due to long waiting lists and poor communication with specialists and staff was also considered a barrier to uptake of eye care services by the Indian population (Patel et al., 2006). The language barrier between the health care



personnel and the respondents who sought the trachoma eye care services was not found to affect utilization of these services in the present study.

Eighty eight (28%) respondents cited proximity or distance to the health facilities as a factor affecting utilization of the available trachoma eye care services and 29(9%) more respondents cited both affordability and accessibility as being a combination of factors affecting utilization of these services. Results from the household observation checklists also indicated a small proportion 15% and 14% of households located less than a kilometer away from the bus terminal and health care facility respectively. In agreement with these findings was a study by Chandrashekhar et al. (2007) and Dhaliwal & Gupta(2007) where it was reported that lack of transport and the long distances from villages to the hospitals were the main factors affecting utilization of eye care services in India. According to Di Stefano(2002), the lack of access to eye care services globally is a critical barrier to the successful elimination of avoidable blindness as proposed by Vision 2020 and that people need access to preventive services that are effective in the prevention of eye disease or in the detection of asymptomatic diseases or risk factors at an early and treatable stage.

### **5.5 Household Attributes**

Observations were done on the household attributes which were regarded as indicators of utilization of the preventative services by the community in the study area. The observation checklists were used as impact evaluation tools of the preventative services (i.e. health education and mass awareness campaigns on facial cleanliness and environmental control) implemented and ongoing in Kajiado County. This study tool focused on household attributes leading to the reduction in physical eye health risks and improvements to the physical environment to protect eye health.

Health promotion programs may have a range of immediate effects on individuals or communities and on social and physical settings. Immediate effects may be in terms of improved health knowledge and changes to health actions and behavior.

Close to three-quarters (74%) of households observed had a water holding receptacle present within the homestead for bathing or face washing. This was a positive attribute given the association between unclean faces and active trachoma. More than half (62%) of the households in Central division of Kajiado County lacked impermeable floors and the households with earthen floors were poorly sprinkled with water to prevent dusty conditions. Dust-free conditions prevent eyes-to-fingers transmission of the disease causing agent (*Chlamydia* bacteria). Presence of water in a dry environment including water spilt or sprinkled on the ground, would provide an alternative source of moisture to flies which would otherwise seek it on peoples' eyes and faces (Cairncross, 1999). A study done in Mali showed that children living in cemented houses were less likely to suffer active trachoma compared to those who lived in earthen homes (Schemann et al., 2002).

Use of latrine facilities reduces fly population lessening the transmission of the disease causing organism. According to the present study, about 61% of households in the study area had latrines located at least six (6) metres from the households as is recommended by the World Health Organization (WHO, 2014b), because having latrines close to the household encourages their use. Most (71%) of the latrines had lockable doors provided, hence, giving the users of the facilities a good sense of privacy. Privacy is known to encourage the use of these sanitary facilities amongst the Maasai community. Communities with a higher proportion of households using latrines were more likely to experience a reduction in the prevalence of ocular chlamydia. Specifically, for each 10% increase in latrine use, there was a 2% decrease

in the community prevalence of ocular chlamydia over the subsequent years (Haile et al., 2013).

Among the households observed which reared livestock, close to three-quarters (71%) of them had livestock corrals located very close to the homesteads. This contributed to increased population of flies within the household surroundings. In a study done in Ethiopia, it was reported that there was an increased risk of severe trachoma and conjunctivitis when cattle were present around the homestead. The study reported that neither cattle ownership nor the presence of cattle in the villages had a major role in the size of the fly population. Instead, the major determinant seemed to be how far from the households the cattle were kept (De Sole, 1987).

More than a half (66%) of the households observed lacked properly designated garbage/animal waste disposal pits within the homestead compound. This would lead to increased fly population within the households. But in study done in Mali, there was no difference in trachoma prevalence observed between households with or without garbage disposal pits (Schemann et al., 2001).

It was further observed that close to a half (51%) of the households in the study area had a high fly (*Musca Sorbens*) population within their household surroundings. According to Emerson et al.(2006), *Musca sorbens* breeds in feces, most prolifically in human feces lying in the shade on the soil surface, but also in cow dung and dog feces. Therefore, where *Musca sorbens* are present, steps to minimize fly-to-eye contact and reduce breeding opportunities for flies by disposing of feces properly should be taken. These attributes indicated that there were inadequate measures put in place by most households to control the fly population.

The median score for the observed household attributes was 4(IQR: 2-5) for all the 321 households observed in the study. This meant that the observed households were yet to meet most of the attributes likely to protect the inhabitants of the households from the risk factors of trachoma disease and help interrupt the pathways of transmission of the disease. This further illustrated the low utilization of the preventative services (i.e. health education and mass awareness campaigns on facial cleanliness and environmental control) offered to the community in Central division of Kajiado County.

### **5.6 Health Facility Attributes**

Health facility attributes that would influence utilization of trachoma eye care services were also observed. The attributes would measure the client-friendliness of the health facilities in providing eye care services. A client-friendly facility would determine utilization of the eye care services offered by it. Observation checklists were filled for eight health facilities offering trachoma eye care services in the area, six (6) being public health facilities and two (2) being private health facilities.

Clients who visited most health facilities did not experience long delays before being attended to by health personnel. This observation complimented what was reported in the household questionnaires where only one respondent felt long waiting times at the health facilities was a factor affecting the utilization of the available trachoma eye care services. Similarly, in a study done in Nairobi's Kibera and Dagoretti areas, long queues did not seem to deter people from choosing health facilities as only 1% of respondents chose the particular facilities due to absence of long queues (Kimani et al., 2008). It was also observed that a good number (6) of the health facilities had referral systems in place for trachoma patients. A small proportion of the health

facilities were conveniently (less than a kilometer) located from the public transport drop-off points. This distance was deemed appropriate in measuring accessibility of the health facilities, since most people travel from the various remote areas of the region to seek health care in the centres where the health facilities are mostly located. In a study in Melbourne, Australia, it was reported that proximity and convenience were listed as main facilitators to eye care use (O' Connor et al., 2008).

Most of the health facilities were observed to have good conditions at the waiting bay. Some of the conditions observed were; adequate lighting and ventilation, good general state of cleanliness and adequate sitting accommodation available at the waiting bay. Three-quarters of the health facilities observed operated between 8am-5pm with only two of the health facilities operating for 24 hours. A few of the health facilities had a functional trachoma surveillance system with a majority of health facilities having general disease surveillance systems in place rather than those that are specific to community eye-related conditions.

Scoring of the individual attributes observed in all the health facilities, gave an overall median and mean scores of 10.5 (IQR: 8.5-12.5) and 10.4 (SD: 2.7) respectively. This meant that a majority of the health facilities observed had attributes that met the threshold for them to be regarded as client-friendly facilities in terms of provision of trachoma eye care services. Hence, the facilities observed were likely to encourage utilization of the available eye care services by the community in the region.

### **5.7 Health Personnel Interviews**

The interviews gave insight on the trachoma eye care services available to the community in Central division and on factors that affected utilization of these services. The health care personnel worked in the observed facilities and non-

governmental organizations in the area. Of the eleven (11) health care personnel interviewed, six (6) of them worked in public health facilities, two (2) in mission and private health facilities and the rest (3) worked in non-governmental organizations in the region.

Majority (8) of health care personnel interviewed admitted that their facilities/organizations offered trachoma eye care services to the community (i.e. eye checkups, antibiotic treatment, eye surgery and health education programmes).

A good proportion (64%) of the health care personnel admitted to having trained personnel in trachoma eye care in their facilities but majority of the health personnel working in public health facilities claimed to lack health staff trained on the same. The main areas of training were on eye examination and surgery, antibiotic drug dispensation and health education facilitation.

Three-quarters (75%) of the health care personnel interviewed claimed to see 1-5 clients in a single day seeking trachoma eye care services in their facilities. Majority of health care personnel claimed to see at most one or two clients seeking these eye care services in a normal day.

All the health personnel interviewed claimed their facilities/organizations provided outreach services to the community in the region. Some of the outreach services included health education and mass awareness campaigns, mass drug administration, eye examinations and referral of progressed cases of trachoma disease to the health facilities. This agreed with what was reported in the questionnaires. Amongst the respondents whose opinion was sought on how trachoma eye care services can be improved to meet the needs of the community, close to three-quarters (73%) of them

thought outreach services would improve access and increase utilization of these services.

Most of the health personnel claimed their facilities provided educational materials on trachoma eye care including posters, pamphlets, booklets and flip charts. Of these health personnel, only three of them claimed that the educational materials were being utilized by the community. Utilization of the available educational materials was by the clients asking for and reading through the materials. According to (Kidd et al., n.d.), in a study done in Loitoktok district, of the respondents who claimed to have received verbal and written IEC(Information, Education and Communication) materials about trachoma, most were unable to identify even the most basic methods of trachoma prevention (i.e. face washing, keeping flies away, and latrine use). In many cases, respondents only had knowledge of “take a pill” and “go to the doctor/clinic” as methods of preventing and treating trachoma, respectively. The lack of eye health information, in certain cases, has been reported to affect prioritization of receiving eye care services relative to other health care services and personal responsibilities (Alexander Jr et al., 2008).

Close to three-quarters of the health personnel thought their facilities were not adequately equipped and staffed to meet the trachoma eye care needs of the community in the region.

All the health personnel interviewed were of the opinion that more funds were needed in their facilities to improve provision of trachoma eye care services. They claimed that the funding would facilitate outreach services, trainings and supplement running costs of the facilities/organizations.

## **5.8 Interpretation of Conceptual Framework**

The conceptual framework adapted in the study showed the relationship between the three variables, that is, independent, intervening and dependent variables. From the study findings, it was clear that some of these variables determined utilization of trachoma eye care services in the study area. The conceptual framework illustrated how some of the independent variables directly affected utilization of trachoma eye care services while others indirectly influenced use of these services via the intervening variables.

Availability, affordability and accessibility of the eye care services directly affected utilization of these services. The independent variables that influenced knowledge on the available trachoma eye care services were age of respondents, employment status and their level of education. Being of a younger age (<60 years), in employment and those with at least a primary level of education or higher were found to be more knowledgeable about these services. This was in effect seen to predict utilization of trachoma eye care services with those knowledgeable about the services (intermediate variable) likely to register higher utilization of the eye care services (dependent variable) more than those who lacked the knowledge of them.

Regarding the attitudes of the community (intervening variable) towards the available trachoma eye care services, the only independent variable found to predict a positive attitude was the respondents' age. Those aged 25-59 years were more likely to admit their need for the eye care services. This further affected utilization of the eye care services with those expressing their need for the services likely to utilize them more.

Age of the respondents and their education level were also found to be the independent variables that predicted their eye care seeking practices with regards to



the preferred first resort of treatment in case of an eye condition. Choice of eye care seeking practices (intermediate variable) in effect affected utilization of trachoma eye care services in the area with those preferring to visit both public and private health facilities utilizing the available services as opposed to those who preferred to seek help from traditional doctors and those who opted for self-treatment of the eye condition.

According to Andersen (1968), an individual is more likely to use health services based on demographics (age, sex, marital status e.t.c.), position within the social structure (i.e. knowledge and economic status) and beliefs of health services benefits (i.e. perceptions and attitudes). An individual who believes health services are useful for treatment will likely utilize those services. Similarly, the conceptual framework adapted in this study showed how the independent and intervening variables interacted and influenced utilization of trachoma eye care services.

### **5.9 Study Limitation**

1) The study was carried out amongst the community members living in Central division, who live relatively closer to the health facilities. Therefore, the results from this study cannot be generalized to those living in the more remote areas of the County. This is because; based on the findings of this study we would expect utilization of trachoma eye care services to be much lower in these far-to-reach areas.

## CHAPTER SIX

### SUMMARY, CONCLUSION & RECOMMENDATIONS

#### 6.1 Summary

In summary, this study set out to determine the level of knowledge, attitudes and eye care seeking practices of the community regarding the available trachoma eye care services and assess utilization of the services by the community in Central division of Kajiado County.

The study found out that the level of awareness of trachoma disease amongst the respondents in the study area was significantly high. Results from the study showed those aged below 60 years, those employed and those with at least a primary level of education were more knowledgeable about the available trachoma eye care services in the region.

Majority of the study respondents had a positive attitude towards the available trachoma eye care services being offered in the area. Most of the respondents admitted to requiring the available trachoma eye care services.

Those in the adult cohort (25-59 years) had a more positive attitude towards the available trachoma eye care services and felt the need for the services more compared to those in the younger (18-24 years) and older (>60 years) age groups. Slightly more than half of the respondents felt that the health facilities and non-governmental organizations in the area adequately met their eye care needs by providing trachoma eye care services.

Most (77%) of the study respondents preferred visiting public health facilities as opposed to private facilities and majority of them based their preference on the affordability of services provided in these facilities.

It was common practice for a majority of the respondents to visit public health facilities as a first resort of treatment in case they experienced an eye condition, with a small proportion of the respondents seeking eye care services in private health facilities and others opting for self-treatment. A lesser proportion opted to sought treatment from community/traditional doctors as their first resort of treatment in case they suffered from an eye condition.

Subscription to certain cultural beliefs and practices by a few of the respondents made them not feel the need for trachoma eye care services available at the health facilities. Majority of them strongly believed in the efficacy of herbal medicine and a smaller proportion believed in healing through divine intervention.

The overall utilization of trachoma eye care services was low, with only a few (10%) of the respondents interviewed claiming to have once visited a health facility seeking any one of the available eye care services at a point in time and another 26% claiming to know of a person/s in the community other than themselves who has/have ever sought trachoma eye care services available in the region. A greater proportion of the respondents who had knowledge of the available trachoma eye care services were found to seek the services more compared to those who lacked the knowledge of these services. A significantly higher proportion of female respondents sought trachoma eye care services available in the region compared to the male respondents.

Slightly less than a half (44%) of the respondents claimed that affordability of transport fares and hospital service fees as being a factor influencing utilization of trachoma eye care services in the region. Some respondents cited the proximity of the health facilities as being a factor affecting utilization of these services.

The community household attributes observed hardly met the public health threshold required to protect the inhabitants of the households from the risk factors of trachoma disease. On the other hand, most of the health facilities that were observed had attributes that regarded them as client-friendly facilities in terms of provision of trachoma eye care services.

## **6.2 Conclusion**

- The level of awareness of trachoma disease in Central Division of Kajiado County was significantly high. Close to three quarters of the respondents were knowledgeable about the available trachoma eye care services in the area and slightly more than half of the respondents were knowledgeable about the health facilities providing these eye care services in the region. Therefore, it was clear that the community was quite knowledgeable of the available trachoma eye care services.
- The community in Central Division had a positive attitude towards the available trachoma eye care services in the area, with most of them admitting that they required these services. Majority of them also felt that the health facilities and organizations in the region adequately met their eye care needs.
- Public health facilities were the preferred first resort of treatment by most of the community members in the area. Age, educational level and employment status were found to be the significant factors influencing eye care seeking practices in

terms of the first choice of treatment in case they suffered from eye conditions. Majority of those who admitted to subscribing to certain cultural beliefs and practices strongly believed in the efficacy of traditional medicine.

- The overall utilization of the available trachoma eye care services in Central Division of Kajiado County was at 36%. Therefore, the community did not adequately utilize eye care services available to them in the region. Knowledge of the available eye care services and gender of the respondents were found to be the significant factors associated with utilization of the available eye care services in the region. The main barriers to utilization of trachoma eye care services in the region were; accessibility to health care facilities and the affordability of both transport and hospital service charges.

### **6.3 Recommendations**

#### **6.3.1 County Level**

- Rigorous awareness campaigns on the available trachoma eye care services especially amongst those living in the rural and more remote areas of Kajiado County is pertinent. In order to prevent avoidable blindness, eye care promotions and awareness on available eye care services must be done intensively and the implications of delayed eye care need to be emphasized.
- Attitudes and cultural factors affecting utilization of trachoma eye care services need to be investigated in the communities living in the more remote areas of Kajiado County and appropriate education provided by the concerned stakeholders through community-based educational programs focusing on strategies for overcoming personal obstacles to utilizing eye care services.
- Need for utilization of verbal educational materials over written materials so as to increase the awareness of symptomless eye diseases such as trachoma, in order to

detect them early and manage them appropriately so as to reduce the burden of visual impairment and blindness. Community health workers should be facilitated with their education efforts through provision of IEC materials and additional training on trachoma disease management.

### **6.3.2 National Level**

- Utilization of available trachoma eye care services can be improved through health policy frameworks that sustain dialogue between traditional and western practitioners and also give attention to the education of patients who may prefer traditional interventions over conventional medicine.
- To overcome under-utilization of trachoma eye care services in the endemic areas, stakeholders should address the local barriers to uptake of these services through community participation in education, use of community health workers, strengthening of first level health units and provision of outreach services.
- Improved service delivery and quality of services offered in public health facilities to increase utilization of the available trachoma eye care services in all the trachoma endemic regions of the country.

### **6.4 Areas of Further Research**

- Studies ought to be done to determine how the attitudes and actions of eye care personnel providing trachoma eye care affects utilization of these services.
- Similar studies should be conducted in other trachoma endemic counties in Kenya to assess the utilization of the available trachoma eye care services and on the factors affecting utilization of these services.

## REFERENCES

- Acheson, R. (1978). The Definition and Identification of Need for Health Care. *Journal of Epidemiology and Community Health, 32*, 10–15.
- Alexander Jr, R. L., Miller, N. A., Cotch, M. F. & Janiszewski, R. (2008). Factors that influence the receipt of eye care. *American Journal of Health Behavior, 32*(5), 547.
- Amer, S. (2007). Towards spatial justice in urban health services planning: A spatial-analytic GIS-based approach using Dar es Salaam, Tanzania as a case study (p. 299). Utrecht University.
- AMREF. (2013). Preventing Trachoma, Preserving Sight. Retrieved March 20, 2013, from <http://amref.org/news/news/preventing-trachoma-preserving-sight/>
- Andersen, R. (1968). *A Behavioral Model of Families' Use of Health Services* (No. 25). Chicago, IL: Center for Health Administration Studies: University of Chicago.
- AOA. (2014). Comprehensive Eye and Vision Examination. Retrieved January 19, 2014, from <http://www.aoa.org/patients-and-public/caring-for-your-vision/comprehensive-eye-and-vision-examination>
- Ashaye, A., Ajuwon, A., & Adeoti, C. (2006). Perceptions of blindness and blinding conditions in rural communities. *J Nat Med Assoc, 98*, 887–893.
- Bagheri, N., & Benwell, L. (2005). “Measuring spatial accessibility to primary health care.”
- Bailey, R., Osmond, D., & Mabey, D. (1989). Analysis of the household distribution of trachoma in a Gambian village using a Monte Carlo simulation procedure. *International Journal of Epidemiology, 18*, 944–951.
- Balo, P. K., Serouis, G., Banla, M., Agla, K., Djagnikpo, P. A., & Gué, K. B. K. (2004). [Knowledge, attitudes and practices regarding glaucoma in the urban and suburban population of Lomé (Togo)]. *Santé (Montrouge, France), 14*(3), 187–191.
- Barraza, J. (1998). The role of educational attainment in utilization of eye care services by Medicare recipients with diabetes mellitus. *Medicare, 15*, 253–254.
- Beatty, W., Bryne, G., & Morrison, R. (1994). Repeated and persistent infection with chlamydia and the development of chronic inflammation and disease. *Trends in Microbiology, 2*(3), 94–98.
- Berhane, Y., Worku, A., & Bejiga, A. (2006). *National Survey on Blindness, Low Vision and Trachoma in Ethiopia*. Addis Ababa: Ministry of Health.

- Bhagwan, J., Rastogi, I., Malik, J., & Dhull, C. (2006). Knowledge, attitude and practices regarding cataract surgery among severe cataract cases in Haryana. *Indian J Comm Med*, *31*, 66–68.
- Bimal, P. (1997). Traditional healers as eye team members in Nepal. *Community Eye Health*, *10*(21), 45.
- Black, M., & Ebener, S. (2005). Using GIS to Measure Physical Accessibility to Health Care. Presented at the International Health Conference, World Health Organization.
- Bradshaw, J. (1994). The conceptualisation and measurement of need: a social policy perspective. In J. Popay & G. William (Eds.), *Researching the People's Health* (pp. 45–57). Routledge: London.
- Brian, G., Maher, L., Ramke, J., & Palagyi, A. (2012). Eye care in Fiji: a population-based study of use and barriers. *Ophthalmic Epidemiology*, *19*(2), 43–51. doi:10.3109/09286586.2011.628135
- Bruce, G., Yinghui, M., & Vicky, C. (2003). Eradication may not be too high a goal for trachoma programs. *Emerging Infec. Dis.*, *9*, 596–598.
- Buchanan, N., & Horwitz, S. (2000). Health Policy and Eye Care Services in Jamaica. *Optom Vis Sci*, *77*, 51–57.
- Burton, M., Holland, M., Faal, N., Aryee, E., Alexander, N., Bah, M., Bailey, R. (2003). Which Members of a Community Need Antibiotics to Control Trachoma? Conjunctival Chlamydia trachomatis Infection Load in Gambian Villages. *Investigative Ophthalmology & Visual Science*, *44*(10), 4215–4222. doi:10.1167/iovs.03-0107
- Bylsma, G. W., Le, A., Mukesh, B. N., Taylor, H. R., & McCarty, C. A. (2004). Utilization of eye care services by Victorians likely to benefit from eye care. *Clinical & Experimental Ophthalmology*, *32*(6), 573–577. doi:10.1111/j.1442-9071.2004.00905.x
- Cairncross, S. (1999). Trachoma and Water. *Community Eye Health*, *12*(32), 58–59.
- Chana, H. (1997). Integration of traditional healers into primary eye care. *Community Eye Health*, *10*(21), 3.
- Chana, H., Schwab, L., & Foster, A. (1994). With an Eye to Good Practice: Traditional Healers in Rural Communities. *World Health Forum*, *15*, 144–146.
- Chandrashekhar, T. S., Bhat, H. V., Pai, R. P., & Nair, S. K. (2007). Coverage, utilization and barriers to cataract surgical services in rural South India: Results from a population-based study. *Public Health*, *121*(2), 130–136. doi:10.1016/j.puhe.2006.07.027



- Cochrane, A. (1976). In Health Information; Planning and Monitoring. In R. Acheson, D. Hall, & L. Aird (Eds.), (p. 42). Oxford: Oxford University Press.
- Courtright, P., Kanjaloti, S., & Lewallen, S. (1995). Barriers to acceptance of cataract surgery among patients presenting to district hospital in rural Malawi. *Trop Geog Med*, 47, 15–18.
- Courtright, P. & Lewallen, S. (1997). Traditional healers in prevention of blindness. *Community Eye Health*, 10(21), 1.
- Courtright, P., & West, S. K. (2004). Contribution of sex-linked biology and gender roles to disparities with trachoma. *Emerging Infectious Diseases*, 10(11), 2012.
- Da Cruz, L., Dadour, I., McAllister, I., Jackson, A., & Isaac, T. (2002). Seasonal variation in trachoma and bush flies in north-western Australian Aboriginal communities. *Clin Experiment Immunol*, 30, 80–83.
- Dandona, R., Dandona, L., John, R. K., McCarty, C. A., & Rao, G. N. (2001). Awareness of eye diseases in an urban population in southern India. *Bulletin of the World Health Organization*, 79(2), 96–102.
- Dandona, R., Dandona, L., Naduvilath, T. J., McCarty, C. A., & Rao, G. N. (2000). Utilisation of eyecare services in an urban population in southern India: the Andhra Pradesh eye disease study. *The British Journal of Ophthalmology*, 84(1), 22–27.
- Dawson, C., & Schachter, J. (1999). Can blinding trachoma be eliminated worldwide? *Archives of Ophthalmology*, 117, 974.
- De Sole, G. (1987). Impact of cattle on the prevalence and severity of trachoma. *British Journal of Ophthalmology*, 71(11), 873–876.
- Deressa, W., Ali, A., & Enqusellassie. (2003). Self treatment of Malaria in rural communities, Butajira, Southern Ethiopia. *Bull. Wld Hlth Org*, 81, 261–268.
- Dhaliwal, U., & Gupta, S. (2007). Barriers to uptake of cataract surgery in patients presenting to a hospital. *Indian J Ophthalmol*, 55, 133–136.
- Di Stefano, A. (2002). The challenge of leadership for the new millennium. *American Journal of Optometry*, 73, 339–349.
- Donabedian, A. (1974). *Aspects of Medical Care Administration*. Cambridge, Mass: Harvard University Press.
- Elliot, A., Chou, C., Zhang, X., Crews, J., Saaddine, J., Beckles, G., & Owens-Gary, M. (2010). Eye care utilization among women aged 40 years with eye diseases in 19 states (2006-2008). *Morb Mort Weekly Report*, 59, 588–591.

- Ellish, N., Royak-Schaler, R., & Higginbotham, E. (2007). Knowledge attitudes and beliefs about dilated eye examination among African Americans. *Invest Ophthalmol Vis Sci*, 48, 1989–1994.
- Emerson, P, Frost, L., Baley, R., & Mabey, D. (2006, January). Implementing the SAFE Strategy for Trachoma Control. The Carter Center. Retrieved from <http://www.cartercenter.org>
- Emerson, PM, Lindsay, S., & Alexander, N. (2004). Role of flies and provision of latrines in trachoma control: cluster-randomised controlled trial. *Lancet*, 363, 1093–1098.
- Farmer, J., Iversen, L., Campbell, N., Guest, C., Chesson, R., Deans, G., & Macdonald, J. (2006). Rural /Urban differences in accounts of patients' initial decision to consult primary care. *Health and Place*, 12, 210–221.
- Fletcher, A. (1999). Low uptake of eye health in rural India: A cultural challenge of blindness prevention. *Arch Ophthalmol*, 117, 1393–1399.
- Fotouhi, A., Hashemi, H., & Mohammed, K. (2006). Eye care utilization patterns in Tehran population: A population based cross-sectional study. *Brit J Ophthalmol*, 6, 4–12.
- Frick, K., Melia, B., Buhrmann, R., & West, S. (2001). Trichiasis and disability in a trachoma-endemic area of Tanzania. *Arch Ophthalmol*, 119, 1839–1844.
- Geissler, P., Harris, S., Prince, R., Olsen, A., Achieng' Odhiambo, R., Oketch-Rabah, H., Molgaard, P. (2002). Medicinal plants used by Luo mothers and children in Bondo districts, Kenya. *J. Ethnopharmacol*, 83, 39–54.
- Gichangi, M., Baraza, E., & Courtright, P. (2012). *Kenya Trachoma Action Plan: A Case Study - Achievements of the implementations 2011-2012*. Retrieved from [http://www.iapb.org/sites/iapb.org/files/Dr%20Michael%20Gichangi\\_%20Kenya%20Trachoma%20Action%20Plan,%20Case%20Study%20finale.ppt](http://www.iapb.org/sites/iapb.org/files/Dr%20Michael%20Gichangi_%20Kenya%20Trachoma%20Action%20Plan,%20Case%20Study%20finale.ppt)
- Graz, B. (1993). Trachoma possibilities of prevention: A study in the Sultanate of Oman. *European Journal of Ophthalmology*, 3(3), 127–131.
- Gyasi, M., Amoaku, W., & Asamany, D. (2007). Barriers to cataract surgical uptake in the upper East region of Ghana. *Ghana Medical Journal*, 41, 167–170.
- Habte, D., Gebre, T., Zerihun, & Assefa, Y. (2008). Determinants of uptake of surgical treatment for trachomatous trichiasis in North Ethiopia. *Ophthalmol Epidemiol*, 15, 328–333.
- Haile, M., Tadesse, Z., Gebreselassie, S., Ayele, B., Gebre, T., Yu, S. N., Keenan, J. D. (2013). The Association between Latrine Use and Trachoma: A Secondary Cohort Analysis from a Randomized Clinical Trial. *The American Journal of Tropical Medicine and Hygiene*, 89(4), 717–720. doi:10.4269/ajtmh.13-0299

- Hsieh, Y., Bobo, L., Quinn, T., & West, S. (2000). Risk factors for Trachoma: 6-year follow-up of children aged 1 and 2 years. *Am J Epidemiol*, *152*, 204–211.
- ICTC. (2011). *The End In (Of) Sight: 2020 INSight*. International Coalition for Trachoma Control.
- Ilechie, A. A., Otchere, H., Darko-Takyi, C., & Halladay, A. C. (2013). Access to and Utilization of eye Care Services in Ghana. *International Journal of Health Research*, *6*(3), 7–15.
- ITI. (2010). *ITI 10th Anniversary Report-Bringing on the Light: The Coming Defeat of Blinding Trachoma* (p. 24). International Trachoma Initiative. Retrieved from [http://www.pfizer.com/sites/default/files/responsibility/ITI\\_10th\\_anniversary\\_report.pdf](http://www.pfizer.com/sites/default/files/responsibility/ITI_10th_anniversary_report.pdf)
- Jadoon, Z., Shah, S., Bourne, R., Dineen, B., Khan, M., Gilbert, C., Khan, M. (2007). Cataract prevalence, cataract surgery coverage and barriers to uptake of cataract surgery service in Pakistan: The Pakistan national blindness and visual impairment survey. *Brit J Ophthalmol*, *91*, 1260–1273.
- Johnson, J., Goode, S., & Faal, H. (1998). Barrier to uptake of cataract surgery. *Trop Doct*, *28*, 218–220.
- Johnson, J., Minassian, D., & Weale, R. (1998). *The Epidemiology of Eye Disease* (No. 1998) (pp. 8–30). London: Chapman and Hall Medical.
- Karimurio, J. (2006). Prevalence of trachoma in six Districts of Kenya. *East Africa Medical Journal*, *83*, 4.
- Karimurio, J., Gichangi, M., Adala, H., & Huguet, P. (2007). Rapid Assessment of Cataract Surgical Services (RACSS) survey. (*Lions Supported, Unpublished*).
- Karimurio, J. (2000). African Programme: Kenya. *Community Eye Health*, *13*(36), 53.
- Katz, J., West, K. J., Khatry, S., LeClerq, S., Pradhan, E., Thapa, M., ... Taylor, H. (1996). Prevalence and Risk Factors for Trachoma in Sarlahi district, Nepal. *Br J Ophthalmol*, *80*, 1037–1041.
- Keeffe, J. E., Weih, L. M., McCarty, C. A., & Taylor, H. R. (2002). Utilisation of eye care services by urban and rural Australians. *The British Journal of Ophthalmology*, *86*(1), 24–27.
- Kidd, J. D., Maas, M. E., McCoy, M. E., Ngata, S. W., Winfrey, O. K., & Young, R. A. (n.d.). Evaluation of the Burden of Active Trachoma Among Children Aged 1-9 in Loitokitok District, Kenya. Retrieved from <http://jeremykidd.myefolio.com/files/Uploads/Pediatric%20Trachoma%20Final%20Report.pdf>

- Kimani, K., Jerroh, S., Botwey, D., Karimurio, J., Osundwa, E., & Muli, A. (2007). Preliminary Report of the Kericho Bomet and Bureti districts, Evaluation/ Rapid Assessment of Avoidable Blindness (RAAB) survey. (*SSI Report, Unpublished*).
- Kimani, K., Karimurio, J., Gichuhi, S., Sheila, M., Nyaga, G., Wachira, J., & Ilako, D. (2008). Barriers to utilization of eye care services in Kibera and Dagoreti, Kenya. *East African Journal of Ophthalmology*, *14*(2). Retrieved from <http://www.coecsa.org/ojs-2.4.2/index.php/JOECSA/article/view/39>
- KNBS. (2009). *2009 Kenya Population and Housing Census*. Kenya: Kenya National Bureau of Statistics.
- Kovai, V., Krishnaiah, S., Shamanna, B., Thomas, R., & Roa, G. (2007). Barriers to accessing eye care services among visually impaired population in rural Andhra Pradesh, South India. *Indian J Ophthalmol*, *55*, 365–371.
- Lewallen, S., & Courtright, P. (2000). Recognizing and reducing the barrier to cataract surgery. *Comm Health*, *13*, 20–21.
- Lewallen, S., & Courtright, P. (2001). Blindness in Africa: Present and future needs. *Brit J Ophthalmol*, *85*, 897–903.
- Lewallen, S., & Kello, A. (2009). The need for management capacity to achieve VISION 2020 in Sub-Saharan Africa. *PLoS Medicine*, *6*(12), 1–4.
- Livingston, P. M., McCarty, C. A., & Taylor, H. R. (1998). Knowledge, attitudes, and self care practices associated with age related eye disease in Australia. *The British Journal of Ophthalmology*, *82*(7), 780–785.
- Luna, E., Medina, N., Oliveira, M., De Barros, O., Vranjac, A., Melles, H., Taylor, H. (1992). Epidemiology of Trachoma in Bebedouro State of Sao-Paulo, Brazil- Prevalence and Risk-Factors. *Int J Epidemiol*, *21*, 169–177.
- Lynch, M., West, S., & Munoz, B. (1994). Testing a Participatory Strategy to Change Hygiene Behaviour: Face Washing in Central Tanzania. *Trans R Soc Trop Med Hyg*, *88*, 513–517.
- Mariotti, S. P., Pararajasegaram, R., & Resnikoff, S. (2003). Trachoma: looking forward to Global Elimination of Trachoma by 2020 (GET 2020). *American Journal of Tropical Medicine and Hygiene*, *69*(5), 33.
- Marquez, G. E., Torres, V. E., Sanchez, V. M., Gramajo, A. L., Zelaya, N., Peña, F. Y., Luna, J. D. (2012). Self-medication in ophthalmology: a questionnaire-based study in an Argentinean population. *Ophthalmic Epidemiology*, *19*(4), 236–241. doi:10.3109/09286586.2012.689076
- McGrail, M., & Humphreys, J. (2008). Measuring spatial accessibility to primary care in rural areas: Improving the effectiveness of the two-step floating catchment area method. In *Applied Geography In Press*. Corrected Proof.

- McGwin, G., Khoury, R., Cross, J., & Owsley, C. (2010). Vision impairment and eye care utilization among Americans 50 years and older. *Cur Eye Res*, *35*, 451–458.
- Mecaskey, J., Knirsch, C., Kumaresan, J., & Cook, J. (2003). The possibility of eliminating blinding trachoma. *The Lancet*, *3*, 728–734.
- Melese, M., Alemayehu, W., Friedlander, E., & Courtright, P. (2004). In-direct cost associated with assessing eye care services as a barrier to service use in Ethiopia. *Trop Med Int Health*, *9*, 426–431.
- Millar, M., & Lane, S. (1988). Ethno-Ophthalmology in the Egyptian Delta: A historical systems approach to ethnomedicine in the Middle East. *Soc. Sci. Med*, *26*(6), 651–657.
- MOH. (2012). Kenya Health Policy 2012-2030.pdf. Retrieved December 3, 2013, from <http://www.health.go.ke/img/Kenya-Health-Policy-2012-2030.pdf>
- MoPHS. (2008). *Kenya National Plan for Elimination of Trachoma*. Kenya: Division of Preventive Ophthalmic Services.
- MoPHS. (2011). *National Multi-Year Strategic Plan for control of Neglected Tropical Diseases*. Kenya: Ministry of Health.
- Morales, L. S., Varma, R., Paz, S. H., Lai, M. Y., Mazhar, K., Andersen, R. M., Los Angeles Latino Eye Study Group. (2010a). Self-reported use of eye care among Latinos: the Los Angeles Latino Eye Study. *Ophthalmology*, *117*(2), 207–215.e1. doi:10.1016/j.ophtha.2009.07.015
- Mpyet, C., Dineen, B., & Solomon, A. (2005). Cataract surgical coverage and barriers to uptake of cataract surgery in leprosy villages of the North Eastern Nigeria. *Brit J Ophthalmol*, *89*, 936–938.
- Mugenda, O., & Mugenda, A. (2003). *Research Methods: Quantitative and Qualitative Approaches*. Nairobi: African Centre for Technology Studies (ACT).
- Muller, A., & Keeffe, J. (2007). Changes in eye care utilization following an eye health promotion campaign. *Clin Exp Ophthalmol*, *35*, 305–309.
- Muraya, J. (2015, January 10). Why clean face will keep your eyes open. *The Standard*, p. 9. Nairobi.
- Murray, C., & Lopez, A. (1996). *The Global Burden of Disease: A comprehensive assessment of mortality and disability from disease, injuries and risk factors in 1990 and projected to 2020* (Assessment). Cambridge: Harvard University Press.
- Naidoo, K., Savage, B., & Westerfall, B. (2006). Creating a sustainable spectacle delivery solution. *Vision*.

- Ndegwa, L., Karimurio, J., Okelo, R., & Adala, H. (2005). Barriers to utilization of eye care services among slum dwellers of Kibera in Nairobi, Kenya. *East Afr. Med. J*, *12*, 13–14.
- Ngondi, J., Gebre, T., & Shargie, E. (2010). Estimation of effects of community intervention with Antibiotics, Facial cleanliness, and Environmental Improvement (A,F,E) in five districts of Ethiopia hyperendemic for Trachoma. *British Journal of Ophthalmology*, *94*, 278–281.
- Ngondi, J., Ole-Sempele, F., Onsarigo, A., Matende, I., & Baba, S. (2006). Blinding Trachoma in post-conflict Southern Sudan. *PLoS Med*, *3*(e478).
- Ngondi, J., Teferi, T., Gebre, T., Shargie, E., Zerihun, M., Ayele, B., Emerson, P. (2010). Effect of a community intervention with pit latrines in five districts of Amhara, Ethiopia. *Tropical Medicine and International Health*, *15*, 592–599.
- Nirmalan, P. K., Katz, J., Robin, A. L., Krishnadas, R., Ramakrishnan, R., Thulasiraj, R. D., & Tielsch, J. (2004). Utilisation of eye care services in rural south India: the Aravind Comprehensive Eye Survey. *The British Journal of Ophthalmology*, *88*(10), 1237–1241. doi:10.1136/bjo.2004.042606
- Ntim-Amponsah, C., Amoaku, W., & Ofosu-Amaah, S. (2005). Alternate Eye Care Services in a Ghanaian District. *Ghana Medical Journal*, 19–23.
- Ntsoane, M. D., Oduntan, O. A., & Mpolokeng, B. L. (2012). Utilisation of public eye care services by the rural community residents in the Capricorn district, Limpopo Province, South Africa. *African Journal of Primary Health Care & Family Medicine*, *4*(1), 7 pages. doi:10.4102/phcfm.v4i1.412
- Nwosu, S. (2002). Beliefs and attitude to eye diseases and blindness in Anambra State, Nigeria. *Nig J Ophthalmol*, *1*, 16–20.
- Nyaga, G., Kollmann, M., Kimani, K., & Ilako, D. (2007). Magnitude and pattern of eye diseases in Korogocho slum, Nairobi. *East Afr. Ophthalmol J*, *13*, 29.
- Nyathirombo, A., Mwesigye, F., & Mwaka, A. (2013). Traditional eye health practices in Atyak Sub-county, Nebbi district- Uganda. *JOECSA*, *16*(1). Retrieved from <http://www.coecsa.org/ojs-2.4.2/index.php/JOECSA/article/view/58>
- O' Connor, P., Mu, L., & Keeffe, J. (2008). Access and utilization of a new low vision rehabilitation. *Clin Exp Ophthalmol*, *36*, 547–552.
- Ocansey, S., Kumi-Kyereme, A., Awusabo-Asare, K., Iechie, A., Boadi-Kusi, S., & Abraham, C. (2013). Utilization of eye care services among Ghanaian elderly population: Evidence from a peri-urban community. *Ophthalmology Research: An International Journal*, *1*, 89–101.

- Oduntan, A. (2005). *Global Visual Impairment: Epidemiology, Implication and Prevention*. Polokwane South Africa: University of Limpopo, Turfloop Campus Press.
- Oduntan, A., Nthangeni, M., Ramudzuli, M., & Madu, S. (2003). Causes and prevalence of low vision and blindness in black South African adults in the Limpopo province. *S Afr Optom*, 62, 8–15.
- Oduntan, A., & Raliavhegwa, M. (2001). An evaluation of the impact of the eye care services delivered to the rural communities in the Mankweng Health sub-district of the Northern Province. *S Afr Optom*, 60, 71–76.
- Omolase, C., Afolabi, A., & Omolase, B. (2008). Ocular self-medication in Owo, Nigeria. *Nigerian Postgraduate Medical Journal*, 1, 8–14.
- Onyeluche, C. (1993). Constraints to optometric practice in the third world. *J Am Optom Assoc*, 64, 710–715.
- Orr, P., Barron, Y., Schein, O., Rubin, G., & West, S. (1999). Eye care utilization by older Americans. *Ophthalmol*, 106, 905–909.
- Owsley, C., McGwin, G., Scilley, K., Girkin, C., Phillips, J., & Searcey, K. (2006). Perceived barriers to care and attitudes about vision and eye care: Focus groups with older African Americans and eye care providers. *Invest Ophthalmol Vis Sci*, 47, 2797–2802.
- Palagyi, A., Ramke, J., Du Toit, R., & Brian, G. (2008). Eye care in Timor-Leste: A population-based study of utilization and barriers. *Clin Exp Ophthalmol*, 36, 47–53.
- Patel, D, Baker, H., & Murdoch, I. (2006). Barriers to uptake of eye care services in the Indian population living in Ealing, London. *Health Educ*, 65, 267–276.
- Patel, Daksha, Baker, H., & Murdoch, I. (2006). Barriers to uptake of eye care services by the Indian population living in Ealing, west London. *Health Education Journal*, 65(3), 267–276. doi:10.1177/0017896906067777
- Potter, A. (1993). Combating blinding trachoma (editorial). *BMJ*, 307(6898), 213–4.
- Rabiu, M. (2001). Cataract blindness and uptake of cataract surgery in a rural community of Northern Nigeria. *Brit J Ophthalmol*, 85, 776–780.
- Rahman, M., Islam, M., Sadhya, G., & Latif, M. (2011). Disease pattern and health seeking behavior in rural Bangladesh. *Faridpur Medical College Journal*, 5, 32–37.
- Rauf, A., Ong, P., Pearson, R., & Wormald, R. (1994). A pilot study into the prevalence of ophthalmic disease in the Indian population of Southall. *Journal of the Royal Society of Medicine*, 87, 78–79.

- Robin, A., Nirmalayan, P., Ramasamy, K., Rengappa, R., Tielsch, J., Ravilla, D., & Friedman, M. (2004). The utilization of eye care services by persons with Glaucoma in rural South India. *Trans Am Ophthalmol Soc*, *102*, 47–52.
- Sapkota, Y., Pokharel, G., Dulal, S., Byanju, R., & Maharjan, I. (2003). Barriers to uptake of cataract surgery in Gandaki Zone, Nepal. *Kathmandu Univ Med J*, *2*, 103–112.
- Schaumberg, D., Christen, W., Glynn, R., & Buring, J. (2000). Demographic predictors of eye care utilization among women. *Med Care*, *38*, 638–646.
- Schemann, J., Sacko, D., Malvy, D., Momo, G., Traore, L., Bore, O., Banou, A. (2001). Risk factors for trachoma in Mali. *International Journal of Epidemiology*, *31*(1), 194–201.
- Shengelia, B., Murray, C., & Adams, O. (2003). Beyond Access and Utilization: Defining and Measuring Health System Coverage. *Geneva: WHO*, 221–234.
- Silva, J., Bateman, J., & Contreras, F. (2002). Eye disease and care in Latin America and the Caribbean. *Surv Ophthalmol*, *47*, 267–274.
- Talen, E., & Anselin, L. (1998). “Assessing spatial equity: an evaluation of measures of accessibility to public playgrounds.” *Environment and Planning A*, *30*, 595–613.
- Taylor, H. (2008). *Trachoma: A blinding scourge from the Bronze Age to the twenty-first century*. Melbourne. Australia: Centre for Eye Research.
- Taylor H.R., & Anthony, W. (2013). Trachoma Treatment & Management. Retrieved January 20, 2014, from <http://emedicine.medscape.com/article/1202088-treatment>
- Thylefors, B., Negrel, A., & Pararajasegaram, R. (1992). *Epidemiologic aspects of global blindness prevention* (pp. 824–834). World Health Organization.
- Vanista, J., Haicl, P., & Benes, C. (1993). Trachoma: An imported disease. *Central European Journal of PublicHealth*, *1*(2), 94–95.
- West, S, Munoz, B., Lynch, M., Kayongoya, A., Chilangwa, Z., Mmbaga, B., & Taylor, H. (1995). Impact of face-washing on Trachoma in Kongwa, Tanzania. *Lancet*, *345*(8943), 155–158.
- West, SK. (2004). Trachoma: New assault of an ancient disease. *Progress in Retinal and Eye Research*, *23*, 381–401.
- West, SK, Munoz, B., & Mkocha, H. (2005). Infection with Chlamydia trachomatis after mass treatment of a trachoma hyperendemic community in Tanzania: A longitudinal study. *Lancet*, *366*, 1296–1300.



- West, SK, Munoz, B., Turner, V., Mmbaga, B., & Taylor, H. (1991). The epidemiology of trachoma in Central Tanzania. *Int J Epidemiol*, 20, 1088–1092.
- WHO. (2006). *Trachoma Control: A guide for program managers*. Geneva: World Health Organization.
- WHO. (2010a). Prevention of Blindness and Visual Impairment, Priority eye diseases, Trachoma. Retrieved September 15, 2012, from <http://www.who.int/blindness/causes/priority/en/index2.html>
- WHO. (2010b). Water-Related Diseases – Trachoma. Retrieved July 24, 2012, from [http://www.who.int/water\\_sanitation\\_health/diseases/trachoma/en/index.html](http://www.who.int/water_sanitation_health/diseases/trachoma/en/index.html)
- WHO. (2014a). Global Health Observatory: Trachoma-Situation and Trends. Retrieved June 4, 2014, from [http://www.who.int/gho/neglected\\_diseases/trachoma/en/](http://www.who.int/gho/neglected_diseases/trachoma/en/)
- WHO. (2014b). WHO-Fact sheets on environmental sanitation. Retrieved February 21, 2014, from [http://www.who.int/water\\_sanitation\\_health/hygiene/emergencies/envsanfactsheets/en/index2.html](http://www.who.int/water_sanitation_health/hygiene/emergencies/envsanfactsheets/en/index2.html)
- WHO. (2014c). WHO-Neglected Tropical Diseases. Retrieved January 29, 2014, from [http://www.who.int/neglected\\_diseases/about/en/](http://www.who.int/neglected_diseases/about/en/)
- Wright, H., & Taylor, H. (2014). Trachoma. Retrieved May 26, 2014, from <http://bestpractice.bmj.com/best-practice/monograph/958/diagnosis/step-by-step.html>
- Zhang, X., Lee, P., Thomson, T., Sharma, S., Bake, L., Geiss, L., Saddine, J. (2008). Health insurance coverage and use of eye care services. *Arch Ophthalmol*, 126, 1121–1126.

## APPENDICES

### APPENDIX I: RESEARCH PARTICIPANT CONSENT FORM

By signing this document, I am giving my consent to be a participant in this research study being conducted by **Ng'etich S. Arthur**, a Master of Public Health student at Moi University-Eldoret. I have been made to understand that the study is on the **Knowledge, Attitudes and Eye Care Seeking Practices Associated with Utilization of Trachoma Eye Care Services in Central Division of Kajiado County**. I am informed that my participation in this study is voluntary and should I desire to withdraw from the study there will be no form of penalty whatsoever.

#### **Purpose of the study:**

I understand that the research study is in partial fulfillment of the award of a Master of Public Health degree of Moi University and information from the study will be used to obtain baseline data of the eye problem so as to inform policy makers and enable concerned stakeholders to develop strategies that ensure utilization of the available trachoma eye care services by the community.

#### **Research process:**

I understand that a questionnaire will be administered to me by the researcher. I have been informed the data will then be checked for accuracy and completeness, responses coded and analyzed to produce useful results and recommendations.

#### **Confidentiality and Privacy:**

I have been assured that a high degree of confidentiality and privacy of data obtained will be upheld in this study.

#### **Risks and Costs:**

I have been informed that there will be no form of risk and costs involved in this study.

#### **Right of withdrawal from study:**

I have been made to understand that my participation in this study is voluntary and I am free to withdraw at any given time.

**Queries/Concerns:**

In case of any further questions, concerns or complaints relating to the research study, I will contact the researcher through; Cell – 0710890400 or P.O Box 7470 (30100) Eldoret or [arthursaitabau@gmail.com](mailto:arthursaitabau@gmail.com).

**Consent:**

I hereby agree to participate in this study.

Respondent:

**SIGNATURE**

-----

**DATE**

-----

<b>Questionnaire Sr. No.</b>
------------------------------

## APPENDIX II: HOUSEHOLD QUESTIONNAIRE

- The following is a questionnaire intended for academic research.
- Any information given in this questionnaire will be confidential.
- Honesty is of utmost importance in your response to questions in this questionnaire.
- Participation in this study is voluntary and you are free to withdraw at any given time.

<b>DEMOGRAPHIC DATA</b>										
<b>AGE (Years) (Q01)</b>		<b>SEX (Q02)</b>		<b>EDUCATIONAL BACKGROUND (Q03)</b>		<b>MARITAL STATUS (Q04)</b>		<b>PLACE OF RESIDENCE (Location)(Q05) (Tick as appropriate)</b>		
15-24		MALE		NO EDUCATION		SINGLE		01	08	
								02	09	
25-59			FEMALE		PRIMARY		MARRIED		03	10
									04	11
60 and above		TERTIARY (College/ University)			SECONDARY		DIVORCED/ SEPARATED		05	12
									06	13
							WIDOWED		07	
<b>EYE CARE SERVICES DATA</b>										
Q100	Are you aware of trachoma disease?					YES				
						NO				
Q101	Are you aware of any eye care services provided towards controlling this eye condition?					YES				
						NO				
Q200	Do you know of any facility/organization offering trachoma eye care services to the community?					YES				
						NO				
Q201	If YES, please mention these facilities/organizations									
Q300	Do you know of any trachoma eye care services provided at the health facilities or by the organizations?					YES				
						NO				

Q301	If <b>YES</b> , please mention these trachoma eye care services		
Q400	Do you think, you as an individual need these trachoma eye care services?	<b>YES</b>	
		<b>NO</b>	
Q500	Have you ever visited a health facility seeking any trachoma eye care services?	<b>YES</b>	
		<b>NO</b>	
	If you answered <b>YES</b> to question (Q500) above, which specific trachoma eye care service did you seek? <b>(Tick as appropriate)</b>		
Q501	Eye Examination		
Q502	Treatment (with antibiotics)		
Q503	Treatment (Eye surgery)		
	Others (Specify)..... ..... ..... .....		
Q600	What language did you communicate with at the health facility? <b>(Tick as appropriate)</b>	Vernacular (Maasai)	
		Kiswahili	
		English	
Q700	What means of transport did you use to reach the health facility? <b>(Tick as appropriate)</b>	Public Service Vehicle	
		Private Vehicle	
		On foot	
		Others (Specify).....	
Q800	Do you know of anyone who has ever visited a health facility seeking any trachoma eye care services?	<b>YES</b>	
		<b>NO</b>	
	If you answered <b>YES</b> to question (Q800) above, which trachoma eye care service did they seek? <b>(Tick as appropriate)</b>		
Q801	Eye Examination		
Q802	Treatment (with antibiotics)		
Q803	Treatment (Eye surgery)		
	Others (Specify)..... ..... .....		

Q900	If you were to experience an eye condition ( <b>suspicious of trachoma</b> ) what would your first resort of help be? (Tick one answer, please)		
Q901	Self treatment		
Q902	Community members		
Q903	Community/Traditional doctor		
Q904	Public Health facility		
Q905	Private Health facility		
	Others (Specify).....		
Q1000	In case you are in need of trachoma eye care services, would you prefer to visit a public or private clinic?	<b>PUBLIC</b>	
		<b>PRIVATE</b>	
	What are the reasons for <b>PREFERRING</b> a public/private health facility above (Q900)? (Tick as appropriate)		
Q1001	Affordability/Low Cost		
Q1002	Accessibility/Convenience		
Q1003	Adequacy/High quality standards		
Q1004	Lack of alternative/No choice		
	Others (Specify).....		
Q1100	What are some of the barriers to accessing available trachoma eye care services? (Tick as appropriate)		
Q1101	Proximity/ Distance travelled		
Q1102	Affordability/Cost		
Q1103	Acceptability/Cultural resistance		
Q1104	Don't Know/No reason		
	Others (Specify).....		
Q1200	Are there any cultural beliefs and practices you subscribe to regarding eye care?	<b>YES</b>	
		<b>NO</b>	
	If <b>YES</b> , please explain .....		

Q1300	In your opinion, do health facilities/organizations in this area adequately meet your needs for trachoma eye care services?	<b>YES</b>	
		<b>NO</b>	
Q1400	Have you ever sought trachoma eye care services and failed to be served?	<b>YES</b>	
		<b>NO</b>	
	If <b>YES</b> , what was the reason .....		
Q1500	How can trachoma eye care services in this area be improved to meet your needs as a community? <b>(Tick as appropriate)</b>		
	Outreach services		
	Free eye care services		
	Others (Specify).....		

### **APPENDIX III: FOMU YA IDHINI WA KUSHIRIKI KATIKA UTAFITI**

Kwa kutia saini yangu kwenye karatasi hii, nimetoa idhinisho kushiriki katika utafiti huu unafanywa na **Ng’etich S. Arthur** ambaye ni mwanafunzi katika Chuo Kikuu cha Moi-Eldoret. Nimeelezwa ya kwamba utafiti huu ni juu ya **‘Matumizi ya huduma za ungonjwa wa Trachoma zinazopatikana katika eneo la kati mwa Kaunti wa Kajiado.’** Nimejulisha kuwa kushiriki kwangu katika utafiti huu ni kwa hiari yangu na sitaadhirika kwa njia yoyote ile nisipo toa idhini wa kushiriki katika utafiti huu.

#### **Lengo la Utafiti:**

Nimeelezwa kwa kina ya kuwa lengo la utafiti huu ni wakimasomo na matokeo yake yataweza kutumiwa na watunga sera za serikali na watoa huduma za afya kubuni mipango ya kutoa huduma bora katika kukinga jamii yote ya Wamaasai katika eneo hili na ugonjwa wa Trachoma katika siku zijazo.

#### **Uelekezaji wa Utafiti:**

Nimeelezwa ya kwamba takwimu litatumiwa kuniuliza maswali na mtafiti kwa njia wa kuelekeza utafiti huu.

#### **Uwekezaji wa Siri:**

Nimeelezwa ya kwamba hakuna uwezekano wowote ambapo jina langu litahusishwa na takwimu zozote katika uchambuzi na usambazaji wa matokeo ya utafiti huu.

#### **Huru wa Kujiondoa:**

Ninaweza kujiondoa kwa wakati wowote ikiwa nitajisikia kuwa na wasiwasi na utafiti huu. Kujiondoa kwangu katika kushiriki kwa utafiti huu hautanidhuru kwa njia yoyote ile.

#### **Maswali:**



Ikiwa nitakuwa na maswali yoyote kuhusiana na utafiti huu, nitaweza kuwasiliana na timu ya utafiti kupitia; Simu – 0710890400 au Anwani - P.O Box 7470 (30100) Eldoret au [arthursaitabau@gmail.com](mailto:arthursaitabau@gmail.com).

**Idhinisho:**

Nimetoa idhini wangu kushiriki katika utafiti huu.

Mshiriki:

-----  
**SAIHIHI**

-----  
**TAREHE**

## APPENDIX IV: DODOSO

Nambari la dodoso.....

- Uchunguzi huu ni wa kimasomo.
- Jawabu zote zitawekwa kwa siri.
- Tafadhali jibu maswali yote kwa uaminifu.
- Kushiriki katika uchunguzi huu si lazima.

MASWALI KUHUSU JAMII/FAMILIA										
UMRI (miaka) (Q01)		KAZI (Q03)		KIWANGO CHA MASOMO (Q04)		UMEOA AU KUOLEWA (Q05)		TARAFI (Q06) (Weka tiki)		
15-24		KUAJIRI WA		SIJAEIMISHWA		SIJAOA/KUOLEWA		01	08	
				SHULE YA MSINGI		NIMEOA/KUOLEWA		02	09	
25-59								03	10	
								04	11	
60 nakupita		KUJIAJIRI		SHULE YA UPILI		NIMETALAKIWA/ TUMETENGANA		05	12	
								06	13	
JINSIA (Q02)	MUME	BILA AJIRA		CHUO KIKUU		MJANE		07		
	KIKE									
MASWALI KUHUSU HUDUMA ZA TRACHOMA										
Q100	Je, unafahamu ugonjwa wa trachoma?						NDIO			
							LA			
Q101	Je, unafahamu huduma za kujikingana ugonjwa huu wa macho?						NDIO			
							LA			
Q200	Je, unafahamu vituo vya afya au shirika zozote katika eneo hii ambazo zinahudumia ummakatikakujikinganaugongjwawa trachoma?						NDIO			
							LA			
Q201	Ikiwa jibu lako ni <b>NDIO</b> , tafadhali taja vituo au shirikahizo									
Q300	Je, unafahamu huduma hizi za kujikinga na ugonjwa wa trachoma zinazopatikana katika vituo hivi vya afya au shirika ulizotaja?						NDIO			
							LA			
Q301	Ikiwa jibu lako ni <b>NDIO</b> , tafadhali taja huduma hizo									

Q400	Je, wadhani wewe binafsi wahitaji huduma hizi za kujikinga na ugonjwa wa trachoma?	<b>NDIO</b>	
		<b>LA</b>	
Q500	Je, umewahi tembelea kituo cha afya ukihitaji huduma hizi za kujikinga na trachoma?	<b>NDIO</b>	
		<b>LA</b>	
	Ikiwa jibu lako ni <b>NDIO</b> , taja huduma hizo ulizohitaji? <b>(Weka tiki)</b>		
Q501	Kuangaliwa Macho		
Q502	Matibabu (kwa kutumia dawa)		
Q503	Matibabu (kupitia upasuaji wa jicho au macho)		
	Huduma zinginezo (bainisha) ..... .....		
Q600	Je, uliwasiliana kwa lughagani kwenye kituo hicho cha afya?  <b>(Weka tiki)</b>	Kwa lugha ya Kienyeji (Maasai)	
		Kwa lugha ya Kiswahili	
		Kwa lugha ya Kingereza	
Q700	Je, ulisafiri kwa namna gani hadi kwenye kituo hicho cha afya?  <b>(Weka tiki)</b>	Kwa matatu	
		Kwa gari la kibinafsi	
		Kwa miguu	
		Kwa njia zinginezo(bainisha)..... .....	
Q800	Je, unamfahamu mtu aliyetembelea kituo cha afya akiwaanahitaji huduma za trachoma?	<b>NDIO</b>	
		<b>LA</b>	
	Ikiwa jibu lako ni <b>NDIO</b> , taja huduma hizo walizohitaji? <b>(Weka tiki)</b>		
Q801	Kuangaliwa Macho		
Q802	Matibabu (kwa kutumiadawa)		
Q803	Matibabu (kupitia upasuaji wa jicho au macho)		
	Hudumazinginezo (bainisha) .....		
Q900	Je, ungeugua ugonjwa wa macho ( <b>ukiwa unashuku ni trachoma</b> ), huduma lipi litakuwa la kwanza kwako? <b>(Weka tikimojatu, tafadhali)</b>		
Q901	Kujitibu		
Q902	Familia au Jamii		
Q903	Mganga/Daktari wakienejeji		
Q904	Kituo cha afya cha Umma		

Q905	Kituo cha afya cha Kibinafsi		
	Huduma zinginezo (bainisha) .....		
Q1000	Ukiwa unahitaji huduma za trachoma, je, utalitembelea kituo kipi? <b>(Weka tiki moja tu, tafadhali)</b>	<b>CHA UMMA</b>	
		<b>CHA KIBINAFSI</b>	
	Je, ni sababu zipi zitafanya ukitembelee kituo cha umma au cha kibinafsi? <b>(Weka tiki)</b>		
Q1001	Bei za chini za huduma		
Q1002	Umbali wa kituo cha afya		
Q1003	Uzuri au ubora wa huduma hizo		
Q1004	Kukosa namna		
	Sababu zinginezo (bainisha).....		
	Je, ni sababu zipi zinachangia ugumu wa kupata huduma hizi za kujikinga na ugonjwa wa trachoma? <b>(Weka tiki)</b>		
Q1101	Umbali wa kusafiri kituoni		
Q1102	Bei za juu za huduma		
Q1103	Kuzuiliwa na tamaduni		
Q1104	Sitambui sababu zozote		
	Sababuzinginezo (bainisha) .....		
Q1200	Je kuna tamaduni au mazoea ambazo unafuata zinazohusiana na kupata huduma za ugonjwa wa macho?	<b>NDIO</b>	
		<b>LA</b>	
	Ikiwa jibu lako ni <b>NDIO</b> , tafadhali eleza.....		
Q1300	Kwa maoni yako, je, unadhani vituo vya afya au mashirika katika eneo hili yanatimiza mahitaji yenu ya huduma za trachoma?	<b>NDIO</b>	
		<b>LA</b>	
Q1400	Je, umewahi kutembelea kituo cha afya kwa ajili ya huduma za trachoma lakini ukakosa kuhudumiwa?	<b>NDIO</b>	
		<b>LA</b>	
	Ikiwa jibu lako ni <b>NDIO</b> , eleza sababu.....		

Q1500	Je, unadhani huduma za ugonjwa wa trachoma zinaeza kuimarishwa kwa njia zipi kulingana na mahitaji yenu kama jamii ya Wamaasai? <b>(Weka tiki)</b>	
	Huduma za kufikia nyumbani	
	Huduma zabure za macho	
	Sababu zinginezo (bainisha).....	

## APPENDIX V: HEALTH PERSONNEL INTERVIEW SCHEDULE

My name is **Ng’etich S. Arthur** and I am undertaking a research study in this health facility/organization on the utilization of trachoma eye care services available to the community in Central division, Kajiado County.

The study outcome will help inform concerned stakeholders and the general public on utilization of the available trachoma eye care services and the factors affecting utilization of these services. Your identity and responses in this interview will be treated with confidentiality.

Name of Health Facility/ Organization	<b>PUBLIC HEALTH FACILITY</b>		INTERVIEW SCHEDULE NO.
	<b>PRIVATE HEALTH FACILITY</b>		
	<b>ORGANIZATION (FBO/NON. GOV)</b>		
001	What trachoma eye care services are available to the community at this facility/organization?		
002	a) Are there personnel in this facility/organization with any training in trachoma eye care?	<b>YES</b>	
		<b>NO</b>	
	b) If so, what area of trachoma eye care was their training?		
003	On average, how many patients/clients suffering from trachoma does a health personnel attend to in this facility/organization per day?	1-5	
		6-10	
		>10	
004	a) Has this facility/organization done anything to provide information to the community in this area about trachoma eye care services?	<b>YES</b>	
		<b>NO</b>	
	b) If <b>YES</b> , what has this facility/organization done to provide information to the community in this area/visiting this facility about trachoma eye care services?		

005	a) Does this facility/organization work with the community to improve measures aimed at safeguarding their eye health/care?	<b>YES</b>	
		<b>NO</b>	
	b) If <b>YES</b> , what are some of the measures put in place to improve communities' eye health/care?		
006	a) What trachoma eye care educational materials are available for the community in this facility/organization?		
	b) Are they being utilized adequately?	<b>YES</b>	
		<b>NO</b>	
007	a) Does this facility/organization offer any community based outreach activities services to increase availability and accessibility of trachoma eye care services?	<b>YES</b>	
		<b>NO</b>	
	b) What are some of these outreach services provided?		
008	Would you say that this facility/organization is adequately equipped and staffed to meet the trachoma eye care needs of the community in this area?	<b>YES</b>	
		<b>NO</b>	
009	In your opinion, how can eye care services in this facility/organization be improved to meet community trachoma eye care needs?		

**APPENDIX VI: OBSERVATION CHECKLIST -HEALTH FACILITY**

<b>CLIENT-FRIENDLY ATTRIBUTES AT HEALTH FACILITY (PUBLIC/PRIVATE)</b>		<b>TICK AS APPROPRIATE</b>	
1	Waiting time before a patient consults a health care personnel	<b>LESS THAN 1 HR</b>	
		<b>1-2 HRS</b>	
2	Referral system in place (whenever necessary)		
3	Convenient location of the facility (less than a kilometer from public transport drop off point)		
4	Conditions of waiting bay ( <b>Tick as appropriate</b> )		
	Has adequate lighting (windows to allow natural lighting/electric lights kept on)		
	Has adequate ventilation (windows/doors to allow for air conditioning)		
	Has enough seating accommodation at any one time.		
	It is generally clean		
5	Convenient operational hours during which the community can access trachoma eye care services	OPEN 24HRS (plus weekends)	
		OPEN 8 AM-5PM (only working hours)	
6	Schedules showing regular meetings with other stakeholders (public/private facilities or organizations) to discuss issues on providing trachoma eye care services		
7	Functional surveillance system in place for community eye health related conditions (i.e. trachoma)		
	<b>TOTAL SCORE</b>		



**APPENDIX VII: OBSERVATION CHECKLIST -HOUSEHOLD**

<b>HOUSEHOLD ATTRIBUTES</b>		<b>TICK AS APPROPRIATE</b>	
<b>Situation and Location</b>			
1	Proximity of household from public transport terminal/stage	<1KM	
		>1KM	
2	Proximity of household from the health facilities	<1KM	
		>1KM	
<b>Sanitary conditions</b>			
3	Presence of water holding receptacle within the household for bathing/face washing		
4	a) Presence of a latrine within 15m of the household		
	b) Presence of a lockable door provided for latrines (privacy)		
5	Presence of livestock corral located away from the household		
6	Presence of impermeable floors/sprinkled earthen floors		
7	Presence of garbage/animal waste disposal pit		
8	Low fly ( <i>Musca sorbens</i> ) population within the household surroundings		
	<b>TOTAL SCORE</b>		

**APPENDIX VIII: INSTITUTIONAL RESEARCH AND ETHICS  
COMMITTEE FORMAL APPROVAL LETTER**



MOI TEACHING AND REFERRAL HOSPITAL  
P.O. BOX 3  
ELDORET  
Tel: 33471/2/3

Reference: IREC/2012/33  
**Approval Number: 000934**

Ng'etich Saitabau Arthur,  
Moi University,  
School of Public Health,  
P.O. Box 4606-30100,  
**ELDORET-KENYA.**

Dear Mr. Ng'etich,

**RE: FORMAL APPROVAL**

The Institutional Research and Ethics Committee have reviewed your research proposal titled:-


***"Knowledge and Attitudes Study on Utilization of Trachoma Eye Care Services in Central Division of Kajiado County"***

Your proposal has been granted a Formal Approval Number: **FAN: IREC 000934** on 8<sup>th</sup> February, 2013. You are therefore permitted to begin your investigations.

Note that this approval is for 1 year; it will thus expire on 7<sup>th</sup> February, 2014. If it is necessary to continue with this research beyond the expiry date, a request for continuation should be made in writing to IREC Secretariat two months prior to the expiry date.

You are required to submit progress report(s) regularly as dictated by your proposal. Furthermore, you must notify the Committee of any proposal change (s) or amendment (s), serious or unexpected outcomes related to the conduct of the study, or study termination for any reason. The Committee expects to receive a final report at the end of the study.

Sincerely,

  
**DR. W. ARUASA**  
**VICE-CHAIRMAN**  
**INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE**

cc:	Director	-	MTRH
	Principal	-	CHS
	Dean	-	SOM
	Dean	-	SPH
	Dean	-	SOD
	Dean	-	SON



MOI UNIVERSITY  
SCHOOL OF MEDICINE  
P.O. BOX 4606  
ELDORET  
Tel: 33471/2/3  
8<sup>th</sup> February, 2013



## APPENDIX IX: AUTHORITY TO CONDUCT STUDY LETTER

### MINISTRY OF HEALTH

Telegrams: **MEDICAL Kajiado**  
 Telephone **0202311602**  
 Tel fax **0202018867**



**Kajiado District Hospital,  
 P.O. Box 31,  
 Kajiado.**

Email: [medsupkajiado@yahoo.com](mailto:medsupkajiado@yahoo.com)

TO  
 NG'ETICH S. ARTHUR,  
 MOI UNIVERSITY,  
 SCHOOL OF PUBLIC HEALTH,  
 P.O. BOX 4606-30100,  
ELDORET.

July 16<sup>th</sup>, 201

3

Dear Mr. Ng'etich,

**RE: STUDY APPROVAL**

Your request to carry your research on; "Knowledge, Attitudes and Eye Care Practices Associated with Utilization of Trachoma Eye Care Services in Central Division, Kajiado County" has been approved.

During your stay here you will be expected to follow the code of regulation.

FOR MEDICAL SUPERINTENDENT  
 KAJIADO DISTRICT HOSPITAL  
 DR. VIRGINIA MUSAU  
 FOR: MEDICAL SUPERINTENDENT  
 KAJIADO DISTRICT HOSPITAL

**APPENDIX X: STUDY PICTORIALS**



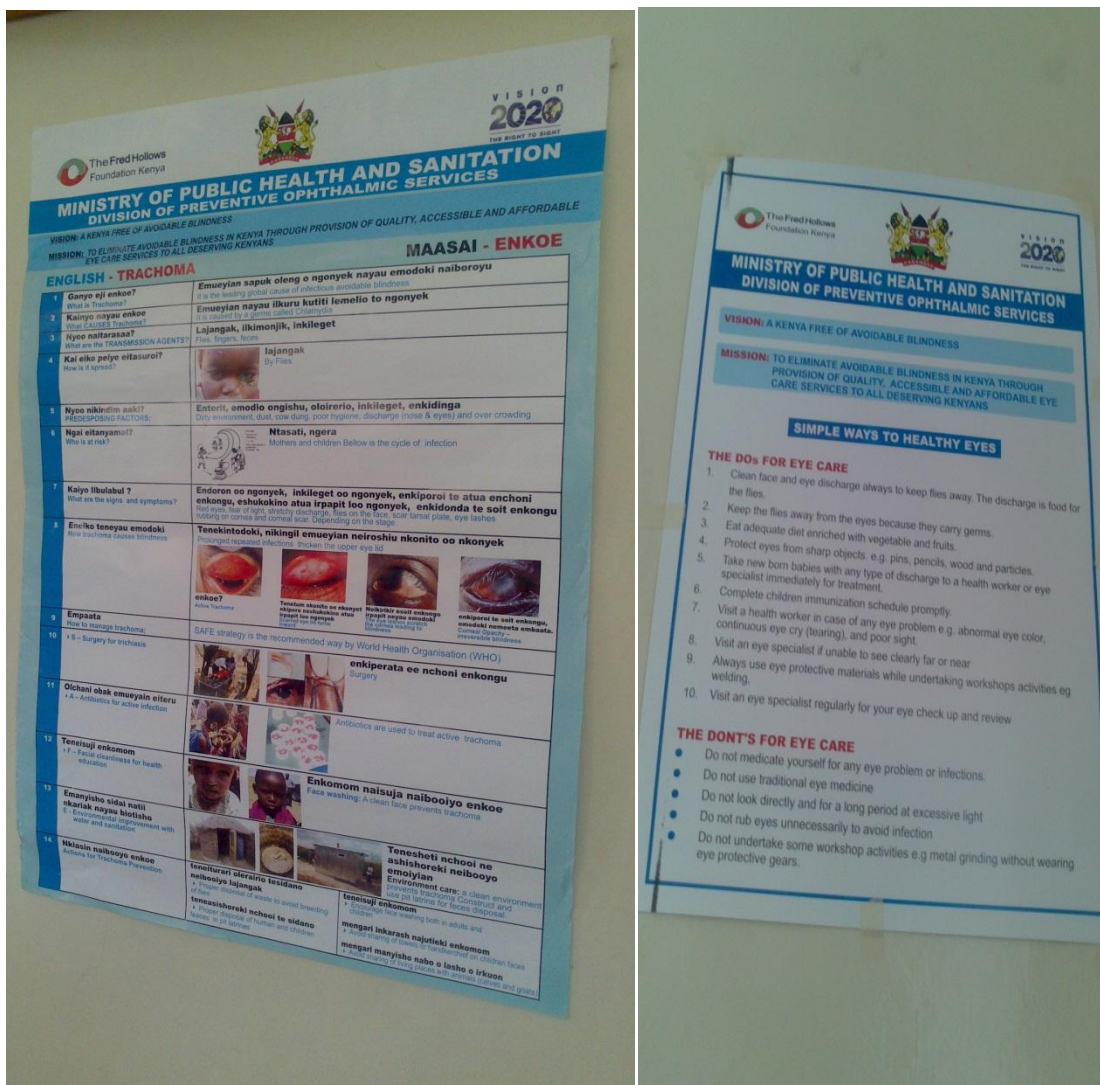
**Picture 1: Kajiado District Hospital Eye Clinic**







**Picture 2: Eye Examination Room and Trachoma Eye Examination Process**



Picture 3: IEC Materials (Trachoma Eye Disease Posters)