THE PREVALENCE AND DETERMINANTS OF COMMON EYE CONDITIONS OF CHILDREN IN KAPSABET DIVISION OF NANDI COUNTY

BY

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DECLARATION

Declaration by the student

This thesis is my original work and has not been presented for a degree in any other University. No part of this thesis may be reproduced without prior written permission of the author and or Moi University.

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DEDICATION

I dedicate this thesis to my beloved wife Scholastica Koringura for her patience, moral support for enduring my absence while pursuing this programme, together with my beloved daughters, Cherotich, Cherop, Cheyech and son Pkemoi.

ABSTRACT

Background: Records from Kapsabet District Hospital Eye unit in the previous 5 years (2006-2010) showed that 40% of ocular morbidity affected children less than 15 years of age. Eye conditions if no early detection and prompt treatment is done, can lead to blindness.

Objectives: To determine the prevalence and determinants of common eye conditions of children in Kapsabet Division of Emgwen Constituency.

Methodology: The study was a cross sectional community based in Kapsabet Division of Emgwen Constituency. Study population was guardians with children 2 months to 15 years who consented to administered questionnaire. It aimed at ascertaining socio-demographic characteristics of both guardian and the child, and the child's status of eye condition. Data collection was carried out between the months of March and June 2012. In addition, four focused group discussions were held based on two variables, age and sex. Data was analyzed using SPSS version 17. P value less than 0.05 was considered statistically significant.

Results: Of the 384 guardians interviewed, 102 of households had children with eye conditions, making a proportion of 27%. Majority of guardians were female (60%), 75% were married and most of them were between age 18 and 43 years. Source of income for most guardians was from farming and majority had primary level of education. Children aged 5 to 10 years made up the largest group. Major complaints of eye conditions were allergic conjunctivitis 29%, eye discharge 22%, injuries 14% and congenital conditions 18%. Many guardians (32%) practiced home treatment for their children. Variables that were associated with eye condition and were statistically significant were: Number of living children a guardian had [OR: 1.610; 95% CI: 0.776-3.342] *p*-value 0.036, Level of education of guardian [OR: 1.025; 95% CI: 0.605-1.518] *p*-value 0.015. Guardian's level of education was also associated with where the child was first treated [OR: 3.6; 95% CI 1.367-9.329] *p*-value 0.006. In the multivariate analysis, the number of living children a guardian had was found to be the major predictor of eye condition.

Conclusion: Prevalence of children with eye conditions was 27% and the major complains of eye conditions were allergic conjunctivitis, discharge, injuries and congenital conditions.

Recommendation: Ministry of Public health and Sanitation and other line ministries should design strategies to educate communities on eye conditions, preventions and the dangers of home treatment. The Government should set up social insurance health policy to cater for its citizen and ensure that health facilities have enough infrastructures.

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ACRONYMS/ABBREVIATIONS

DMOH	District Medical Officer of Health
DOS	Division of Ophthalmic Services
FGD	Focused Group Discussion
H/F	Health Facility
HMIS	Health Management Information System
IAPB	International Agency for the prevention of Blindness
IREC	International Research Ethics Committee.
KDH	Kapsabet District Hospital
KNH	Kenyatta National Hospital
MOE	Ministry of Education
MOH	Ministry of Health
MOMS	Ministry of Medical Services
MOPHS	Ministry of Public Health and Sanitation.
NHIF	National Hospital Insurance Fund
OR	Odds Ratio
SPSS	Statistical Package for Social Science
WHO	World Health Organization

DEFINITION OF TERMS

1) **Child:** A boy or a girl above two months of age up to fifteen years of age.
2) **Eye condition:** Any manifestation of a disease or defect in the eye
3) **Guardian:** mother, father, uncle, aunt, grandfather, grandmother of the child, the one who takes care of the child.
4) **Home treatment:** Use of medicines or non-medical substance by guardian to treat eye condition at home without consulting health worker.

CHAPTER ONE:

INTRODUCTION

1.1 Background to the study

Eye diseases in children are important causes of medical consultations (Nwosu 1999). Children should receive prompt and proper eye care in order to avoid vision problems and eye morbidities which could affect their learning ability, personality and adjustment in schools (Adegbehingbe 2005). Vision is an important requirement for learning and communication. Complaints necessitating eye care consultations can originate from the child, parents or even teachers (King 1993). The spectrum of ocular problems varies from country to country and from region to region in same country (Pratab 1989). Not all eye conditions in children can lead to blindness, some are non vision impairing ocular conditions (Hussain 2004), while others will lead to childhood blindness and visual impairment if no early detection and intervention is done in order to alleviate.

Childhood blindness is a priority of "vision 2020—The Right to sight," which is a global initiative for the elimination of avoidable blindness. Although only 1.5 million children are included in the worldwide of 45 million blind (WHO 2000), blind children have a lifetime of blindness ahead which affect their opportunities for education, employment and earning potential. Early onset of blindness adversely affects psychomotor, social and emotional development and these children also have a higher death rate than their normal sighted counterparts. An estimated 500,000 children become blind each year, and in developing countries, up to 60% are thought to die within a year of becoming blind (Vision 2020 Action plan, WHO 2006). Almost half of all blindness in children especially in the poorest communities is due to avoidable causes that are amenable to cost effective intervention (World Bank

1993). Prevalence of blindness is higher in developing countries compared to developed nations. This is because of blinding conditions such as vitamin A deficiency, harmful traditional eye remedies and cerebral malaria which are common in these countries. Secondly preventive measures for conditions such as measles, congenital rubella and ophthalmia neonatorum are inadequate in developing countries and thirdly eye equipments and skilled personnel for managing conditions needing surgery are lacking (Gilbert and Rahi 2003).

A study by Nasiru et al (2010) in Northern Nigeria, found 80% of causes were due to corneal opacities which were related to vitamin A deficiency and measles which are avoidable causes of blindness.

Njuguna et al (2009), in a comparative study to determine the causes of severe visual impairment and blindness in children attending schools for the blind in Kenya, Malawi, Uganda, Tanzania found that the causes have not changed since 1995. They were majorly corneal scarring due to vitamin A deficiency and measles.

1.2 Statement of the problem

Visual impairment and blindness in children is still a big problem in developing nations as three-quarters of blind children worldwide live in poorest regions of Africa and Asia (Gilbert and Foster 2001). Majority are due to causes that are avoidable, preventable and curable (Ezegwui et al 2003). Many of the conditions that cause blindness in children are also causes of child mortality, such as measles, vitamin A deficiency disorders, meningitis and congenital rubella (Jones et al 2003). In Kenya childhood blindness is the fourth leading causes of blindness with approximately 10,000 blind children (MOPH & S, 2012).

Data in Division of Ophthalmic Services, Ministry of Health, 2010 showed that 37% of ocular morbidity occurred in children less than 15 years of age.

In Kapsabet District Hospital eye unit records from January to June 2011, out of 3046 total patients seen, 1182 were children less than 15 years of age representing 38.8%. Records for the last five years (2006 to 2010) in Kapsabet Eye unit showed about 40% of ocular morbidity occurred in children less than 15 years of age which is a big burden worth researching (KDH- HMIS 2011).

There is no published data on prevalence and causes of visual impairment in children of Nandi County.

1.3 Justification

Development of paediatric ophthalmology in developing countries is still in the initial stages as very few ophthalmologists have sub-specialized in paediatric ophthalmology (Maida et al 2008). Knowing the ocular morbidity in children and especially the diseases that lead to low vision and blindness will help policy makers in planning and early intervention.

This study aims at determining prevalence, socioeconomic factors, knowledge and practice of eye diseases. Such information will be useful for policy formulation like in the Ministries of Medical services, Public Health and Sanitation and Ministry of Education. Those with children who are visually impaired should be made aware of the causes and predisposing factors of eye condition for early detection. This would be geared towards achieving Millennium Development Goals, Two and Four, that is, Achieve universal primary education and Reduce child mortality and vision 2030.

1.5 Research questions:

1) What is the prevalence of children with eye condition in Kapsabet Division?
2) What is the socio-economic status of families of children with eye conditions in Kapsabet Division?
3) What is guardian's knowledge and practice of eye conditions of children in Kapsabet Division?

1.4 Objectives

1.4.1. The main objective

To determine the prevalence and determinants of eye conditions of children in Kapsabet Division

1.4.2. Specific objectives

i. To determine prevalence of children with eye conditions in Kapsabet Division.
ii. To determine the socio-economic status of families of children with eye conditions in Kapsabet Division.
iii. To establish guardian's knowledge and practice of eye conditions of children in Kapsabet Division.

CHAPTER TWO:

LITERATURE REVIEW

2.0 Introduction

Definition of childhood blindness is usually considered as a corrected visual acuity of less than 6/60 in the better eye in an individual aged between 0 and 15 years (WHO 2000). A person with low vision is one who has impairment of visual functioning even after treatment and /or standard refractive correction, and has a visual acuity of less than 6/18 to counting fingers at 3 metres, or a visual field of less than ten degrees from the point of fixation, but who uses or potentially able to use, vision for planning or execution of a task for which vision is essential (WHO 1992). Childhood blindness and low vision are both complications of childhood diseases or conditions if no proper early intervention is done.

The World Health Organization and International Agency for the prevention of Blindness (IAPB) in 1999 jointly launched "Vision 2020- The right to sight". This ambitious programme aims to eliminate unnecessary blindness and promote good vision throughout the world, including, the control of blindness in children as one of its first five priorities (WHO 1997). Given that there are estimated to be 45 million blind people, of whom only 3% are children, this may seem to be inappropriate. However childhood blindness is important because of "years of blindness". An elderly patient with blindness due to macular degeneration will have a limited number of years of visual loss, but the child who goes blind today is likely to still be with us in 2050. The concept of " blind years saved" is useful when it comes to allocation of resources as it can be argued that restoring the sight of one child blind from cataract is equivalent to restoring the sight of ten elderly adults from cataract(Gilbert and Foster 2001). Children, therefore, deserve special attention as far as eye health is concern.

Since detecting eye condition in the early years of a child will have great impact in intervention and good outcome, school children therefore form an important large target group which must be screened adequately for early detection of eye diseases and prevention of blindness (MOPHS, 2012).

2.1 Prevalence, causes of eye conditions and visual impairment in children

Prevalence of childhood blindness varies from 0.3/1000 children in economically developed communities to over 1.0/1000 children in underprivileged societies (WHO 2000). In the poorest areas of Africa and Asia, corneal scarring accounts for 25-50%. The major cause is vitamin A deficiency often precipitated by measles or gastroenteritis in children aged six months to four years (Gilbert et al 1999).

In India causes of blindness of young children that make them enroll in blind schools are mostly congenital anomalies followed by corneal conditions (scarring, vitamin A deficiency), cataract, retinal disorders and optic atrophy and nearly half of these causes are preventable (Bhattaejee et al 2008). It has also been noted that meningococcal meningitis is a common cause of severe visual impairment and blindness that can be prevented by immunization (Bulgan and Gilbert 2002). In school going children (age 6 to 15 years) the eye diseases most frequently seen are not the same as those in younger children. For example the common eye conditions in children aged 6 to 15 years are refractive errors followed by conjunctival disorders mostly due to tropical endemic limbo conjunctivitis (Eballe et al 2009) and Ip (2006).

A study by Hussain (2004) to determine prevalence of non vision impairing ocular conditions in children found they were mainly allergic conjunctivitis (3.7%), bacterial conjunctivitis (3.5%), pterigium/pinguecular (2.6%) and acute/chronic dacrocystitis (1%).

Parental reports of diagnosed eye conditions of their children during health survey can be used to estimate prevalence and investigate association of eye diseases with broad range of environmental factors. People with low socioeconomic factors tend to have increased eye disorders (Cumberland et al 2010).

A study by Ajaiyeoba (1994) of eye diseases in children below 15 years of age, seen at an eye clinic of University College Hospital in Ibadan, Nigeria found refractive errors, vernal conjunctivitis, measles dermatitis associated with malnutrition and injuries were the leading causes of eye problems among children. Oluwatogin and Adenike (2009) conducted a retrospective review of all patients less than 15 years of age who presented to eye clinic of Wesley Guiled Hospital Ilesa, Nigeria and found out that children 11 to 15 years made the largest group or age set with ocular trauma (21.7%), allergic conjunctivitis (17.8%), infections of the eye and its adnexa (15.4%) and refractive errors (14.3%) being the most common conditions. Ayanniyi (2006) did a cross sectional survey to determine the causes and prevalence of ocular morbidity among primary school children between 4 and 15 years of age in Ilorin, Nigeria and found a prevalence of 19.9%, with refractive errors and vernal conjunctivitis being the most common ocular disorders at 6.9% and 6.7% respectively. Other less common ocular disorders included genetic (or congenital or developmental), glaucoma, infections and trauma.

In Ethiopia, Kello and Gilbert (2003) investigated causes of severe visual impairment and blindness in children in schools for the blind and concluded that vitamin A deficiency and measles were the major causes affecting cornea. A study by Nasiru et al (2010) aimed at identifying the causes of childhood blindness in Northern Nigeria which found the major causes being, congenital opacities/phthisis bulbi which is

related to vitamin A deficiency and measles and are largely preventable. Therefore priority for control of blindness in children in poorer regions of the world is to develop sustainable effective intervention for control of vitamin A deficiency and ensure high coverage with measles immunization, and of secondary importance are programmes for control of ophthalmia neonatorum and inclusion of traditional healers in primary eye care training which can reduce rate of corneal damage as a result of harmful traditional practice (Courtright et al 1996). Those children with irreversible visual loss must be assessed for low vision services, early visual stimulation, rehabilitation or special education, depending on their age and level of vision retained (Nasiru et al 2010). Visually impaired children have a right to education just like the sighted ones and need to be identified as early as possible (MOPHS & MOE, 2009).

In 2008, Murithi et al did retrospective case series study to describe the epidemiology, referral system and visual outcome of eye injuries in children and found out eye injuries in Kenyatta National Hospital (KNH) are severe, mostly affecting pre-school children from low income setting. They also noted delay in arriving at KNH and inadequate care at the referring centers. Outcomes were poor although better than on admission and may affect education, careers and quality of life. They recommended injury prevention.

In Kenya eye diseases are among the top ten causes of morbidity (MOMS- HMIS, 2009). The leading causes of visual impairment and blindness are cataract, trachoma, childhood blindness and refractive errors in that order. In children the main causes of blindness and visual impairment are vitamin A deficiency & measles, neonatal conjunctivitis, cataract, refractive errors, glaucoma and eye injuries accounting for 75% of childhood blindness which is avoidable (MOPHS & MOMS, 2010).

2.2 Socioeconomic factors

People of low socioeconomic status present late for treatment in health facilities, others come when blindness or visual impairment has already set in. This is because they lack or have limited financial resources for transport to health facilities, in addition to other basic necessities of life such as food and shelter. Because most health facilities in Kenya do not have enough stock of drugs, most of these people cannot afford to buy drugs in private chemists after prescription (de Amorin et al 2004). Astudy by Snellingen (1998) investigated barriers that prevented patients from seeking eye services earlier and found out lack of money, distance to health facility and fear were the leading barriers giving 51%, 33% and 16% respectively.

A study by Salm (2008) checking on child health dependents socioeconomic status of guardians and school enrolment in German elementary school, found out that health conditions including those that affected the eye were more common among children of less educated parents.

2.3 Health facility factors

In most developing countries avoidable blindness constitute a major public health problem. In these countries there is insufficient trained staff, and eye care services have to be given to wide area and often sparsely scattered population (Taylor 1989).

In Kenya, with a population of more than 38 million, the numbers of eye care workers are still inadequate. As of June 2010, the number of Ophthalmologist were 84, Cataract surgeons 88, Ophthalmic clinical officers 48, Ophthalmic nurses 81, Optical Technologists 54 and Low Vision Therapists 4. About 80% of all these eye care workers work in urban centres leaving burden of eye care work in rural areas to less than 20% of them (DOS, 2011).

In Kapsabet District Hospital there are only two Middle Level Eye Care workers covering the whole Nandi County with a catchment of 1.5 million population. Some people travel more than 80 kilometers to get eye services. The District Hospital is not well equipped in terms of equipment and consumables like drugs hence some patients are referred to Moi Teaching and Referral Hospital in Eldoret a distance of about 45 kilometres for specialized treatment and others go home without drugs hence leading to complications (Nandi Central District HMIS, 2010). In the rural areas of Emgwen Constituency many people still travel more than 5kilometers to get to a rural health facility for treatment or first aid eye services before referral to Kapsabet District Hospital.

2.4 Knowledge and Practice

Livingston et al (1998) did a study to determine the level of correct knowledge about common eye diseases and attitudes towards blindness prevention and treatment and how these factors influence self care practices in population based sample. The data showed a large gap in the public's knowledge and the understanding of eye diseases that will need to be scale up during eye health promotion activities. Dandona et al (2001) in assessing level of awareness of eye diseases in urban population of Hyderabad in Southern India, found out there was need to increase their level of awareness and knowledge of common eye diseases.

Most people in Emgwen constituency do not know where eye services are offered in the District and some of them do not know that there are people who are trained to offer eye services.

CHAPTER THREE:

METHODOLOGY

3.1 Study area

The study was done in Kapsabet Division of Emgwen Constituency in Nandi County. Nandi County is one of the fourty seven counties in Kenya. It borders Kericho, Kisumu Counties to the South, Vihiga and Kakamega Counties to the West, Uasin Gishi and Koibatek Counties to the East, Lugari and Uasin Gishu Counties to the North. The county is located between 36º05' and 36º54' East and between 0º22' and 055' North. It is situated about 300 km North West of the Kenyan capital, Nairobi. It lies at an average altitude that ranges between 1,600-2,400 meters above sea level.

The climate within the study area is strongly influenced by altitude and physical features such as escarpments mainly from the Nandi Escarpments. There is considerable variation in the weather conditions throughout the area strongly influenced by Lake Victoria Basin. The area has high variation in temperature ranging from 8.5 to 25.5ºC within the year thus favouring growth of agricultural crops within the area like, tea and sugarcane as cash crops and maize, beans, potatoes etc as food crops. Although some people are farmers who own large tracts of land majority own small pieces of land. Some are squatters who are labourers in private farms and Juakali's sector.

The County covers a total area of 2884.4 square kilometers and population of 752965 people with 154073 households (Kenya Population and Housing Census 2009). It has four constituencies, namely Emgwen, Aldai, Tindiret and Mosop. The County has five district hospitals (Level 4 service delivery points) of which only one of them, Kapsabet district hospital in Emgwen Constituency offers eye care services. The eye clinic is manned by three ophthalmic staff, two clinical officers and one nurse.

Emgwen Constituency covers an area of 704.5 square kilometers with a population of 231,054 people and 48,359 households (Kenya population and housing census 2009). It is divided into two Divisions namely Kapsabet and Kilibwoni and each is further subdivided into Locations and Sub-locations. Population of children 15 years and below in Emgwen is approximately 100,530, while in Kapsabet Division population is 73,030 with35,930 households. Malaria, respiratory infections, diarrheal diseases, and eye diseases are among the top ten morbidity in the district (Nandi Central District HMIS, MOH 2009).

3.2 Study population

Guardians (parents or relatives) with children 2 months to 15 years old who lived in Kapsabet Division of Emgwen Constituency and consented for the interview.

3.2.1 Inclusion criteria

Guardians who:

- Were 18 years of age and above with children 2 months up to 15 years of age and willing to consent.
- Had been residents of Kapsabet Division for the last six months prior to the study period.

  NB: Children less than 2 months were not included because they were still having maternal antibodies after birth and were still protected from any infection.

3.2.2 Exclusion criteria

- Guardians less than 18 years of age.
- Guardians who had not been residence of Kapsabet Division for the last six months prior to the study period.

- Children less than two months and above 15 years of age.

3.3 Study design

A cross sectional study to determine prevalence of families, causes and factors associated with eye conditions of children in Kapsabet Division of Emgwen Constituency. It was chosen in favour of other designs because it was easier to undertake and was cost effective. The community based study was chosen in favour of health facility as it was representative of the population since some people may not have come to health facilities to give that needed information. The study was designed to explore possible complaints of eye conditions of children and factors that affect management of eye diseases leading to complication like blindness. Both qualitative and quantitative methods were used for data collection.

3.4 Sample size determination

Sample size was calculated according to the Fisher's formula below (1991) (as described in Mugenda and Mugenda, 1999).

$$n = \frac{z^2 \, p \, q}{d^2}$$

Where;

n = Minimum sample size required.

z = the standard normal deviation at the required confidence level.

p =proportion in the target population estimated to have characteristics being measured (50% if the proportion is unknown).

q = 1-p

d = the level of statistical significance set.

In this study;

z = 1.96

p = 50%

q = 50%

d = 5%

Hence; $n = \frac{(1.96)^2(0.5)(0.5)}{(0.05)^2}$

$= 384$

3.5 Study methods

3.5.1 Sampling technique

Emgwen Constituency has two Divisions, Kapsabet and Kilibwoni. Kapsabet Division was chosen by purposive sampling because of many eye conditions. Records for the last five years (2006 to 2010) in Kapsabet Eye unit showed about 40% of ocular morbidity affects children less than 15 years of age and the majority (60%) came from Kapsabet Division (KDH, HMIS 2011). Of the twelve Locations in Kapsabet Division, three Locations were selected through simple random sampling and these were: Kapkangani, Kamobo and Chemundu Locations. Kapkangani Location consist of three sublocations namely, Kiborgok, Chepsonoi and Tindinyo. Kamobo Location comprises of Kamobo and Kamurguywa Sublocations, while Chemundu Location consist of only Baraton Sublocation. All the Sub Locations in the three Locations were included in the study. A sample of 384 households was selected from the three locations proportionate to respective population. From each sub-location four villages were selected using simple random sampling. Since boundaries of villages were either feeder roads or streams it was easy to identify. Selected villages from all the Sub-locations were identified. The middle of the villages was identified with help of respective village headmen, from where a pen was

spanned, the direction the pen pointed was selected and the first house was selected in that direction. The second and subsequent households were selected using Rule of Five, where every fifth household was selected from a systematic arrangement of houses along the feeder road or stream until the number of households required in each village was attained. Those who decline to be interviewed were replaced by going to the next household. Where there was more than one child between two months and 15 years with eye condition in same household, the youngest child was selected.

Table 1: Table showing number of households as sampled in each Location

Sub-locations used in the study	**Total number of households**	**No. of households interviewed**
Tindinyo	1,973	69
Chepsonoi	1,572	55
Kiborgok	1,590	56
Kamobo	1,821	64
Kamurguywa	908	32
Baraton	3,092	108
Total	**10,956**	**384**

3.5.2 Data collection techniques

Four research assistants were trained from the locality to assist in data collection. This is because they knew the geographical study area well. Pre-testing of questionnaire was done using 5% sample size in Meswo Location, which was not a study area, was carried out to evaluate data collection tool. Any noted inconsistencies with the questions were adjusted to enhance validity. Research assistants together with the

Principal researcher administered an interviewer questionnaire to consenting, eligible participants (guardians) to document their demographic and socio economic variables like education, employment, age of child who had an eye problem, eye complaints where he or she was treated and the treatment administered.

Four focused group discussions (FGD) were held, one per week with each group comprising 6 participants with similar characteristics based on two demographic variables (age and sex). Age was categorized into two groups, 18-30 years and above 30 years, while sex was either female or male 18 years and above. The principal researcher was the moderator and one of the research assistants was recording the responses.

3.5.3 Data collection tools.

- Structured questionnaires were administered.(see appendix)
- Focus group discussion guide was used for Focus Group Discussion (FGD).

3.6 Data processing and analysis

Quantitative raw data which was in questionnaire form was collected, cleaned and checked by the researcher to ensure that all questions had been answered then coded and entered into the computer. Data was analyzed by the use of Statistical Package for Social Sciences (SPSS) program version 17. Descriptive statistics was used to describe the study population. Prevalence of households of children with eye conditions was computed by calculating proportions. Association between eye conditions and demographic characteristics, knowledge level, practice, socio-economic status was explored using cross tabulations. The chi-square test was used to measure the significance of association of eye condition with risk factors. Measures of association were presented as odds ratio. P-value< 0.05 was considered statistically

significant. Multivariate analysis was computed on variables that were statistically significant to determine the major predictor of eye condition. Data was presented in text, tables, charts and graph.

Qualitative findings were presented as statements supporting the quantitative results according to emerging themes.

3.7 Study Limitations

- Respondents truthfulness could not be ascertained.

3.8 Ethical consideration

Authorization of the study was obtained from Institutional Research and Ethics Committee (IREC) in the College of Health Sciences, Moi University and Moi Teaching and Referral Hospital. Also permission was obtained from relevant authorities, District officer, chiefs and assistant chiefs of respective locations and sub-locations chosen. An authority letter was written by District commissioner Nandi Central District, District Medical Officer of Health informing the public of the research study. Guardians of sampled households were briefed about study and assured of confidentiality, their individual consent was obtained. Only those who consented were interviewed. Data collected was kept confidential and only accessed by the investigator and only used for the purpose of this study.

3.9 Data dissemination and utilization

Findings of the study are presented to Moi university, School of Public Health as partial fulfillment of the requirement for award of Masters of Public Health Degree. They will also be disseminated to District Health Management Team (DHMT) Nandi

Central district as health report and will be published in relevant journals. Our findings may be used by other scholars/researchers, policy makers such as the Division of Ophthalmological Services (DOS) for planning and management of eye services in Kenya.

CHAPTER FOUR

RESULTS

The study was conducted between the months of January and June 2012.

4.1 Study population

4.1.1 Demographic characteristics of guardians

Three hundred and eighty four (384) respondents or households were interviewed during the study. Most of them were female (60%) and male (40%). Majority of the guardians were married at 75% and 25% single. The respondents' ages range from 18 to 70 years with average age of 34 years (SD 9.4).Majority of the guardians(56%) had 2 to 4 living children in their families, 30% had 5 and above and 14% had one child under their care. Other demographic characteristics like education and source of income are shown in tables 4.1, 4.2 and figure 4.1

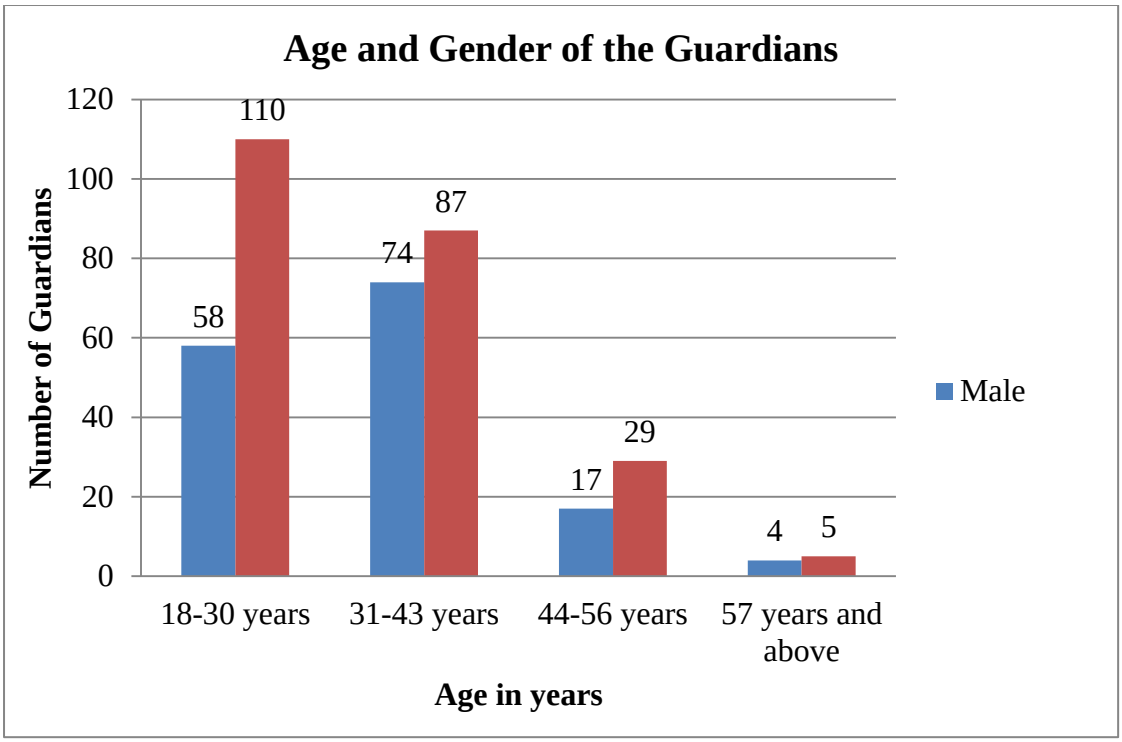

Figure 1: Participant age in years in relation to sex

Among the participants age 18-30 years was 44% (15% male, 29% female), 31-43 years 42% (19% male, 23% female), 44-56 years 12% (4% male, 8% female), 57and above years was 2% (1% male, 1% female).

Table 2: Level of education of guardians

Level of education	**Number (%)**
No education	94 (25%)
Primary	177 (46%)
Secondary	88 (23%)
Post secondary	25 (6%)
Total	**384 (100%)**

Table 3: Guardians'

Sources of income	**Number (%)**
Farming	167 (44%)
Petty trading	123 (32%)
Profession (e.g. teachers, doctors etc)	40 (10%)
Others e.g. casual labour, etc	54 (14%)
Total	**384 (100%)**

4.1.2 Demographic characteristic of children with eye condition

A total of 102 children between the ages of 2 and 180 months were reported to have had eye condition within the previous two weeks prior to the study. Out of this number, 56% were male and 44% were female. The age of the study population ranged between 4 months and 180 months. The children had a mean age of 88 months

and median age of 84 months (SD 45.6). The high frequency age group is between 60 and 120 months at 50% (see figure 4.3)

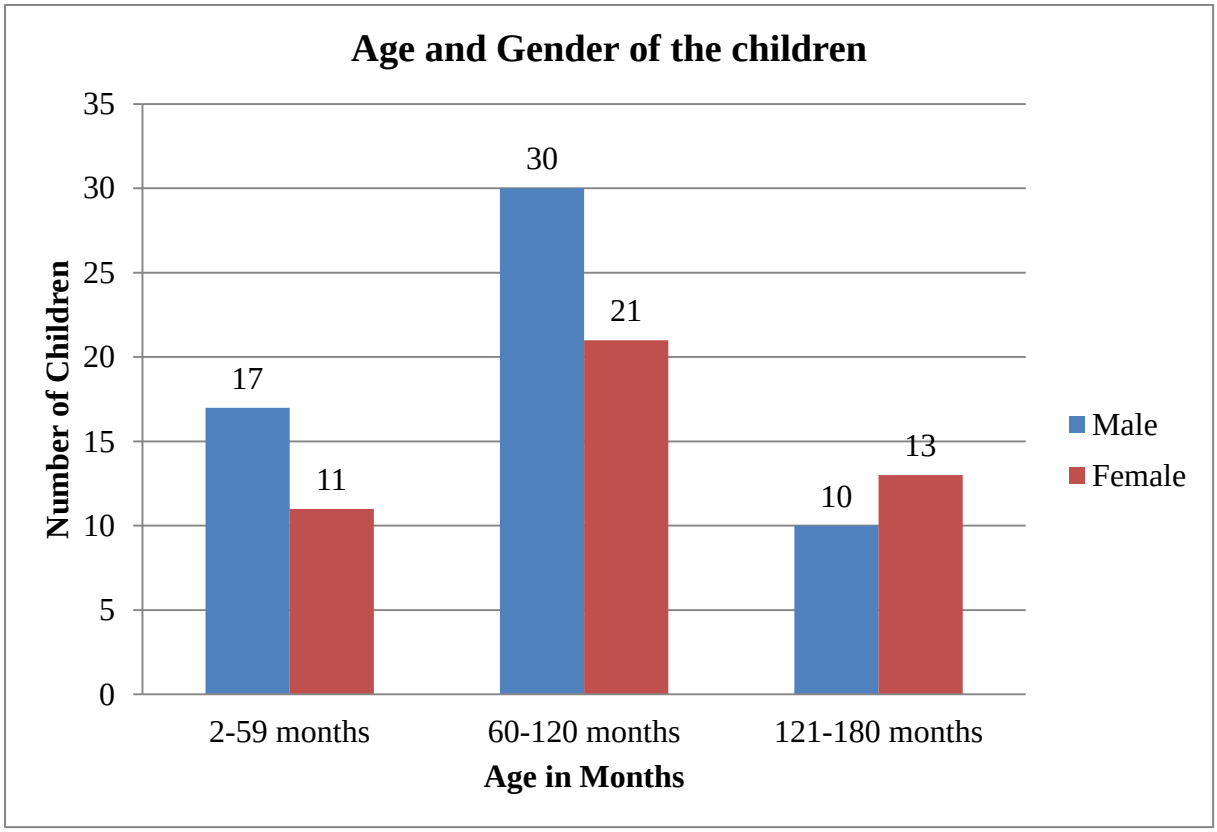

Figure 2: Age and sex distribution of children with eye condition

Proportion of children with eye condition, 2 to 59 months old were 27%, 60 to 120 months 50% and 121 to 180 months were 23%

4.2 Prevalence of eye condition of children in Kapsabet Division

According to the study, a total of 102 (27%) children had eye conditions during the two weeks preceding the study. The major complains reported were, itching eyes which was associated with cold and rainy season, eye discharge, congenital conditions, injuries and others (See table 4.3).

From the focused group discussion most participants reported eye discharge in their children especially in the morning. Majority of participants reported itching eyes especially during cold season and after using some chemicals, one participant commented "*sometimes when I use certain lotions and soaps I experience together with my children itching eyes and the whole body.*" Some participants reported injuries being common, which occur at home or when the children are in school, especially when they are playing with other children.

Table 4: Complains of eye conditions frequently reported

Variable	**No (%)**
Eye complains	
Chronic seasonal eye itching	30 (29%)
Eye discharge	22 (21%)
Congenital conditions	18 (18%)
Injuries	14 (14%)
Others	18 (18%)
Total	**102 (100%)**

4.3 Socio-economic status of families with eye condition

The families of children who had eye conditions, 74% of them were from married families and 26% from single families. Of the guardians, 63% were female and 37% were male. Socio-demographic factors of guardian in relation to eye condition of the child are shown in table 4.4.

Table 5: Socio demographic factors versus eye conditions

	Dependent variable (Eye condition)	**Yes**	**No**	**Chi-square**	**p-value**
	Age of guardian (in years)				
	18-30	37	131		
	31-43	44	117	5.759	0.124
	44-56	18	28		
	57 and above	3	6		
	Sex of guardian				
	Male	38	115	0.388	0.308
	Female	64	167		
	Marital status				
	Not married	27	67	0.279a	0.344
	Married	75	214		
	Level of education				
	No education	34	60		
	Primary	35	142	10.428	0.015
	Secondary	28	60		
	Post secondary	5	20		
	Number of living children				
	1	10	42	6.636	0.034
	2-4	51	164		
	5 and above	41	76		
	Source of income				
	Farming	40	127		
	Petty trading	38	85	2.530a	0.470
	Profession	12	28		
	Others	12	42		

In this study two variables were found to be statistically significant: Total number of children each guardian had. Those guardians who had 2 or more children were 1.61 times more likely [OR: 1.610; 95% CI: 0.776-3.342] to have a child with eye condition than guardians with one child (*p*- value 0.034).

Level of education of the guardians also had association with eye condition. Guardians with low level of education were 1.025 times more likely [OR: 1.025; 95% CI: 0.605-1.518] to have a child with eye condition than guardians with high level of education (*p*-value 0.015.

There was no significant association between eye condition of children and other guardian factors like marital status, age of guardian, sex, type of family and ways of earning a living.

4.4 Knowledge and practice of eye condition

4.4.1 Knowledge of eye condition

From the study majority(77%) of guardians were aware of health personnel who were specifically trained to treat eye condition and referred them as eye specialists, and were mostly found in eye clinics in district hospitals. 81% of guardians were aware that if eye conditions were not prevented or treated early enough may lead to blindness.

The report concurred with focused group discussion where most participants reported blindness as one of the end result if eye conditions were not treated early. Most guardians had knowledge of prevention against eye conditions like early and prompt treatment; prevent injuries, eating food rich in vitamin A. The same was enlightened in focused group discussion where majority of participants reported that eating food

with vitamin A and early treatment in hospital for children with eye diseases are important ways of preventing blindness in children, . One participant said, "*My family and I normally eat raw carrots to prevent eye diseases and I have never experienced eye problem in my family since I discovered this."*

Table 6: Knowledge on preventive measures against eye conditions

Preventive measures	**Number (%)**
Eating food rich in vitamin A	16 (16%)
Prevent injuries	19 (19%)
Attend antenatal clinic for pregnant women	10 (10%)
Early and prompt eye treatment in hospital	33 (32%)
Others	7 (7%)
Not aware of eye prevention	17 (16%)
Total	**102 (100%)**

From the study most guardians (43%) got information on eye prevention through media and health workers. Some participants also reported getting information on eye prevention from health workers during hospital visits like antenatal clinics and through public health officers in various Locations of the Division.

Table 7: Source of information on eye prevention

Source	**Number (%)**
Health workers	31 (36%)
Media (Radios, TVs, News papers, etc)	36 (43%)
Friends, neighbours, relatives	18 (21%)
Total	**85 (100%)**

4.4.2 Practice

4.4.2.1 Where they sought treatment

From the study 32% of guardians practiced home treatment (self medication) and 68% took their children to health facility for treatment (see Table 4.7)

Table 8: Where treatment of the child was sought

Where treatment was sought	**Number (%)**
Home treatment Health facility treatment	33 (32%) 69 (68%)
Total	**102 (100%)**

4.4.2.2 Level of education of guardian & awareness of eye specialists versus where the child was first treated

Place where the child was first treated was associated with education of the guardian and knowledge of eye conditions. In this study educated guardian were 3.6 times more likely [OR: 3.6; 95% CI: 1.367-9.329] to go to health facility for treatment compared to those with no or low level of education (*p* –value 0.006). Those who were aware of eye specialists took their children to health facilities for treatment (*p* – value 0.001).

In Figure 4.5, guardians with higher level of education took their children to health facility for treatment, and there was no one with post secondary education who practiced home treatment.

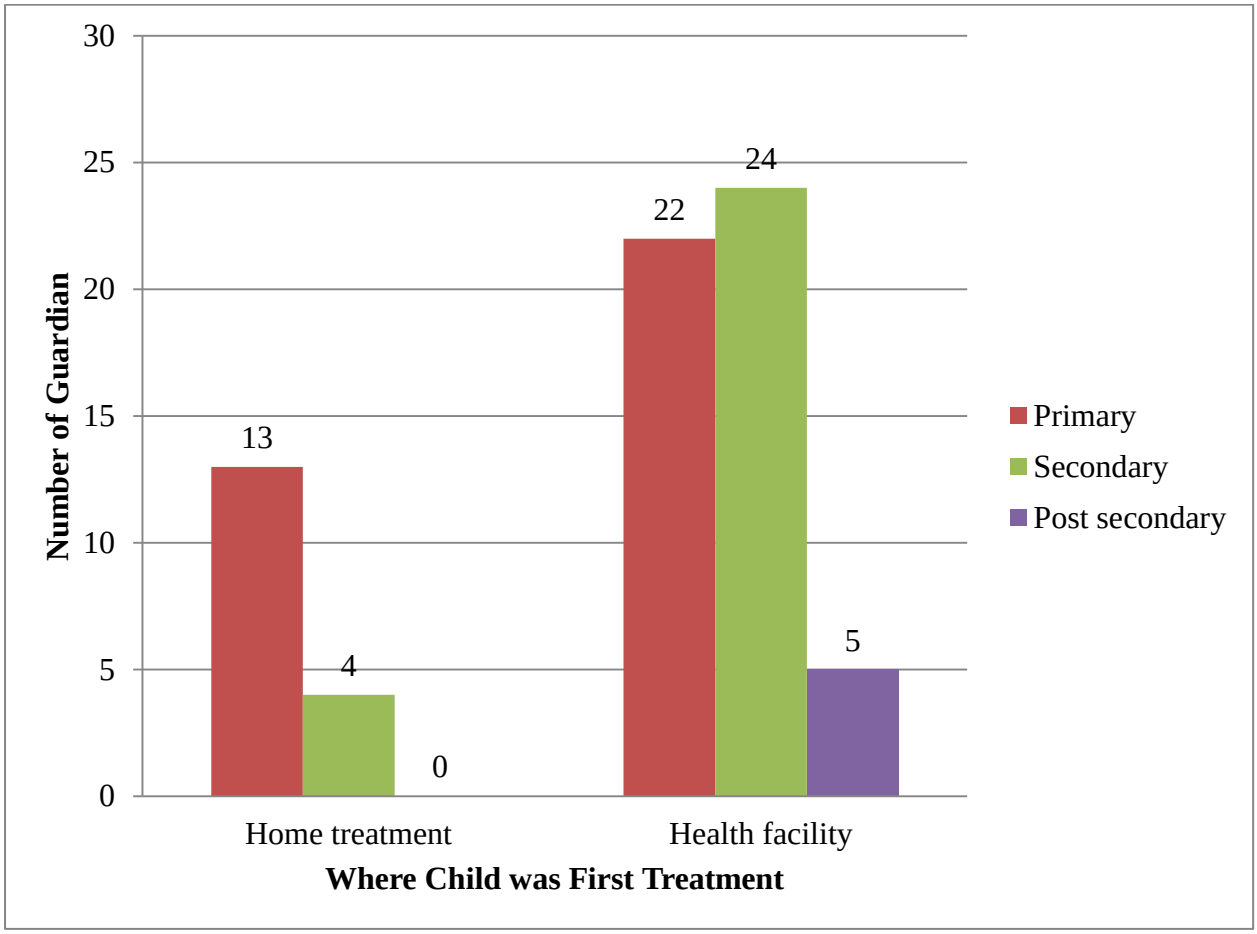

Figure 3: Level of education of guardians in relation to where the child was treated

4.4.2.2 Reasons for home treatment (self-medication)

The following reasons were given for not attending health facility for treatment: child improved with no treatment, health facility was far, no money for treatment and transport, (Table 4.8).

Table 9: Reason for not attending health facility for treatment

Reason	**No (%)**
Child improved with no treatment	6 (19%)
Eye clinic/hospital was far	2 (6%)
No money for treatment and transport	16 (50%)
No answer	8 (25%)
Total	**32 (100%)**

The types of home treatment given by guardians to their children are summarized in table 4.9.

Table 10: Home treatment given

Home treatment given	**Number (%)**
Washing eyes using water	5 (15%)
Use of drugs from previous treatment or borrowed from a neighbour	5 (15%)
Bought drugs from kiosk or drug outlet	10 (31%)
Used herbs	12 (37%)
Total	**32 (100%)**

From focused group discussions many participants reported lack of transport and registration money for hospital being some of the reasons why people do not go to health facilities for treatment. One participant reported*," I don't go to hospital because I have no enough money for hospital treatment, I just go to herbalist because he charges less, sometimes he treats for free if you are a regular customer."*

Majority of participants reported lack of drugs in Government hospital in most of the time. A participant commended, "*Most of the times when you go to public hospital*

you miss drugs and health personnel refer you to buy drugs from private chemist, so what is the reason of going to the hospital, when you can buy drugs from nearby kiosk and avoid wasting time and money in hospital?

It was also enlightened in focused group discussion that there was shortage of health workers in Government health facilities that could not cope in case of emergencies. Most of these health workers were demoralized and spend more time in tea rooms hence patients take much time queuing for services.

4.5: Multivariate analysis

The variables that were found to be statistically significant were further run in multivariate analysis, so as to get the major predictor of eye condition, a step wise method was used. It was found out that the number of living children was the major predictor. (see table 4.10)

Table 11: Statistically significant variables associated with eye condition

Variable	**Bivariate analysis** **OR (95% CI) p-value**	**Multivariate analysis** **p-value**
Number of living children	1.61 (0.776-3.342) 0.036	0.013
Level of education of guardian	1.025 (0.605-1.518) 0.015	------

CHAPTER FIVE

DISCUSSION

5.1 Eye condition in children

Age of children with eye condition: 2 - 59 months was 26%, 60 - 120 months, 50%, 121 -180 months, 23%. From this results majority of the study population were between 60 -180 months (5 - 15 years) which is common age at primary schools in Kenya. School children form an important large target group which must be screened adequately for early detection of eye conditions and prevention of blindness (MOPHS, 2012).

5.1.1 Prevalence and causes of eye condition

In this study the prevalence of families with eye condition was 27% and mainly thought to have been caused by allergic conjunctivitis 29%, infection 22%, congenital conditions 18% and injuries 14%. The study was in line with focus group discussion where majority reported allergy and injuries being main causes of eye diseases. The study concurs with the one done by Scott (2003) about eye diseases in general outpatient clinic in Ibadan, Nigeria who found eye conditions to be conjunctivitis (including allergy) 32.9%, ocular injuries 12.8%, refractive errors 9.9% despite that Scott's study was hospital based where eye specialist screened and identified the exact eye condition.

Prevalence of families of children with eye condition was slightly higher compared with study by Ayanniyi (2009) and Ip et al (2006) with prevalence of 19.9% and 15.2% respectively. The study by Ayanniyi was amongst primary school children and that of Ip et al was a cross-sectional population based study on 6 year-old children. Major causes in Ip et al study were refractive errors 15%, congenital malformation

12% while that of Ayanniyi were allergic conjunctivitis 6.7%, refractive errors 6.9%, congenital malformation 2.8%.The findings differed from the current because my it adopted administered questionnaire and no examination by trained eye specialist was done as in the other studies.

A study by Onakpoya (2009) on childhood eye diseases in Southwest Nigeria: a tertiary hospital study, found out ocular injuries was the leading eye condition at 21.7%, allergic conjunctivitis 17.8%, eye infection 15.4% refractive errors 14.3% and congenital malformation 13.3%. Onakpoya study was based in a referral hospital where injured patients were referred from other health facilities and refractive errors diagnosed by trained personnel, it could not be marched with community based study.

5.2 Socio-demographic status of families with eye conditions

From the study, 86% of guardians of children with eye condition were 18-43 years of age while 21% were 44 and above years. 43 years and below is the age of most parents whose children are still below 15 years of age which was the age bracket of study population. While those guardians 44 years and above most of their children well grown up and above 15 years of age and may not have been captured in criteria of study population.

Majority of guardians (60%) were female while 40% were male, and this is true in most African families where children are under the care of their mothers as most of them are housewives while their fathers are employed or at least doing casual work during the day to fend for their families. So the fathers were rarely found at home during the day.

From the study more families earned their living from farming at 44% followed by petty trading at 32%, professionals 10% and casuals 14%. This is because Nandi county being among the leading counties in agricultural production in Kenya, majority of the people earns their living from farming. Kapsabet Division specifically practice maize, tea and dairy farming at a small scale, so most people in this area depend on the produce from these farming for food, others use it for trading within the area. The farming has created self employment to the people of this locality; others are hired as casuals who work in these farms.

25% of the guardians had no education, 46% had primary education, 23% secondary education and 6% had post secondary education. The study found out that level of education of guardians was determinant of eye condition, those guardians with no education or low level of education had more children with eye conditions compared to those with higher level of education. Guardians with high level of education probably knew prevention of eye conditions than those with low level or no education at all. This study revealed that eye conditions were associated with low level of education of guardian which concurred with study by Salm (2008) on child health disparities, socio-economic status and school enrolment decisions, where he found health conditions were more common among children of less educated parents. Also it concurred with Cumberland (2010) where he found people with low socioeconomic factors tended to have increased eye disorders.

5.3 Knowledge and practice

Eye condition of children was common in the community and guardians could give presenting complains that can be associated to certain eye conditions. Majority of guardians were aware of some of the causes of eye conditions like chronic seasonal

eye itching 29%, infection 22%, congenital conditions 18% and injuries 14%. Most (77%) of them were aware that some health workers were trained specifically to treat eye conditions and referred to them as eye specialist and knew they work in eye clinics in various district hospitals in the country. Majority (81%) knew that blindness was one of the end results if eye condition was not treated urgently and most of them knew its prevention as it was also enlightened during focus group discussions.

Knowledge on eye condition was associated with where treatment was sought by the guardians. Those who had knowledge of eye conditions most of them sought treatment from health facilities for their children.

Level of education for the guardian was a determinant factor to where treatment was sought. Those with higher level of education like secondary and post secondary took their children to health facilities for treatment and most of those who sought home treatment were guardians with low level of education or those with no education at all. From the results it was found that 68% of guardians sought treatment from health facilities while 32% practiced home treatment (self medication) which was in consistence with study by Ayanniyi (2009) on guardians' knowledge and attitude towards pupils' eye health, where 87.9% of guardians were aware of eye specialist, 62% had hospital treatment and 38% home treatment or neglect.

From this study most guardian got information on prevention of eye condition from media 40%, health worker 34% and others (friends, relatives, neighbors) 26% which concurred with focused group discussion, where most participants said they received health information from radio at home and from health workers during hospital visits. Media especially radio was the easiest and cheapest way of receiving information in rural areas in Kenya, at least a family can afford to buy a small radio and nowadays

where almost every adult owns a mobile phone, people can tune in radio stations through their mobile phones.

Those guardians who sought home treatment gave various reasons for not seeking health facility treatment. Most of them (50%) said they had no money for hospital registration and treatment, child improved 19%, health facility being far 6% which concurred with a study by Snellingen et al (1998) who found lack of money as a barrier that prevented patients from seeking eye services earlier giving 51%. In practice of home treatment most of guardians 30% said they bought drugs from kiosks or drug outlets, 18% used drugs at home from previous treatments, 15% washed eyes with water and 37% used herbs. From focused group discussion majority of participants reported that many people in the community lack funds for transport to hospital and for registration plus treatment.

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1 Conclusions

Eye conditions are common and if not recognized and treated early can lead to blindness. Knowledge of eye conditions by guardians is a determinant of proper care of children. Prevention of eye diseases is very vital in ensuring eye health is maintained especially in young children when visual function is still developing. The objectives of this study was to find out the prevalence of families of children with eye condition, socio-economic status of families with eye condition, knowledge and practice of guardians of children with eye condition in Kapsabet Division.

6.1.1 Prevalence of eye condition

The prevalence of eye conditions of children between 2 months and 15 years of age in Kapsabet Division was 27%. The presenting complains of these eye conditions as mentioned by guardians were chronic seasonal eye allergy 29%, eye discharge 21%, condition children were born with 18% and injuries 14%. These eye conditions were influenced by socio-demographic factors. Practice of guardians on eye condition was influenced by their knowledge on eye conditions.

6.1.2 Socio-demographic characteristic on eye condition

Number of living children a guardian had was found to be determinant of eye condition. Guardians with two or more children were more likely to have a child with eye condition than those with only one child.

Level of education of the guardian was also a determinant of eye conditions. Those with no education or with low level of education were more likely to have children with eye conditions than those with higher level of education.

6.1.3 Knowledge and practice

Guardians' knowledge of eye condition was a determinant on their practice. Guardians who were aware of eye specialists and where they were found took their children to health facilities for treatment, the same to those with high level of education, while majority of guardians who practiced home treatment had no education or low level of education.

6.2 Recommendations

1) Given that prevalence of families of children with eye condition was high and that more than 30% still practice home treatment of which some still uses herbs that are harmful to human eyes that can lead to blindness; Ministry of Public health and Sanitation should design strategies using mass media to educate communities, with priority message focusing on eye conditions, preventions and dangers of using herbs.
2) Since majority of children with eye condition were between 5 and 15 years, teachers and pupils should be sensitized on detection, prevention and care of children with eye condition, so that they will be able to inform parents for early intervention where possible.
3) Majority of guardians who did not take their children to health facility for treatment mentioned lack of money for hospital registration and treatment. The Government of Kenya should set up social health insurance policy to cater for its citizen so that they can be treated without cash payment especially for the unemployed and the poor in the society. The Ministry of Medical Services should stock hospitals with enough drugs, to avoid guardians buying drugs from kiosks.

6.3 Recommendation for further research

Given the study was done on children between 2 months and 15 years who may have come from same socioeconomic background, so further research can be undertaken in another area for comparison.

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APPENDICES

APPENDIX I: STUDY CONSENT FORM.

Proportion, and determinants of common eye conditions of children in Kapsabet Division of Emgwen Constituency.

You are invited to participate in this study because as a community member and a care giver to a child who had eye problem for the last two weeks you can share with us your knowledge and views regarding these issues. If you are willing, we would like to have an interview with you to discuss among other things your personal experience on child who had eye problem. You can refuse to answer any question that you are uncomfortable with. You can also withdraw from the interview at any time. All the information collected will be kept confidential; only you, my assistant and I may know who participated. You are free to decline to participate in this interview and this will not affect you in any way.

If you have any further questions that I cannot answer, you may **ask Mr Samuel Koringura of Kapsabet District Hospital on Tel (254)720324866/(254)733653224, e-mail: samuelkoringura@yahoo.com.**

IREC Contact: MTRH Box 3 Eldoret Tel 33471/2/3 or Moi University CHS Box 4606 Eldoret.

Are you willing to participate in this interview? Yes/No

SIGNATURE OR THUMB PRINT ……

APPENDIX 2: QUESTIONNAIRE
Instructions to the person filling the questionnaire:

Please write label or relevant number in the boxes provided where applicable.

Registration /study # ☐☐☐☐

Today's Date ☐☐☐☐☐☐

Interviewer's code/initials ☐☐

Signature ……..

TIME START:☐☐☐☐

TIME FINISH:☐☐☐☐

	DEMOGRAPHIC INFORMATION.	
1	**Participants Age in Years**	☐☐
2	**What is your marital status?** 1=married monogamous 2=married polygamous 3=widowed 4=separated/divorced 0=single	☐
3.	**Sex** 0=. Male 1=female	☐
4.	**How many living children do you have now?** 0=1, 1=2-4, 2=5 and above	☐
5.	**What type of family do you have?** 0=Nuclear family 1=Extended family	☐
6.	**What is your ethnic group?** 0=Kalenjin 1=Luhya 2=Kikuyu 3=Luo 4= others specify……	☐
7.	**What is your highest level of education?** 0=none 1= primary 2=	☐

	secondary 4=post secondary	
8.	**Are you currently employed?** 1=Yes 0=No	☐
9.	**What do you do to earn a living?** 0= farmer 1=petty trader 2=professional (nurse, teacher, etc)	☐
10.	**If married What is your partner's occupation?** 0 = farmer 1=petty trader 2=office work (clerk, accountant, etc) 3=professional (nurse, teacher, etc) 4=others, specify……	
11.	**Asses the type of house the person is occupying.** 0=Temporary permanent 3=Permanent 3 = others specify……..	
12	**Asses level of sanitation of the household.**0=No toilet 1=has a toilet	
13.	**Do you have children fifteen years of age and below in your household who have suffered from an eye illness for the last two weeks?** 0= No 1= Yes	☐
	If No, STOP, thank the guardian and go the next household. **If Yes, identify the child.(if they are more than one select the youngest child).**	
INFORMATION ON CHILD		
14.	**How old is the child ☐☐ in Months?**	☐☐
15.	**What is the sex of your child?** 0=Male1=Female	☐
17.	**What is the child's birth order?** 0=1st born 1=2nd born 2= 3rd born 3=4th born Others specify……	☐

18.	**How are you related to the child?** 0= Mother 1=. Father 2.=Sister/brother 3 =Aunt/uncle 4= Other, specify…….	☐
19.	**Is the child in school?** 0= Yes 1= No	☐
20.	**What were the eye complains?** 0=pain 1= redness 2= eye discharge 3= itching 4=poor vision 5=Others, specify……..	☐
21.	**What caused it?** 0= Had injury 1= infection 2= chronic seasonal itching 3=Born with it 4= others, specify ……	☐
22.	**Has the child had the same problem before?** 0= Yes 1= No	
23.	**How long has the child been having eye problem?** 0=1-7 days 1=1-2 weeks 2=2-4 weeks 3= more than one month	☐
24.	**Is the condition of the child common in the family?** 0= Yes 1= No	☐
25.	**When the child had an eye illness, , did he/she had problem with sight?** 0= No ; 1=Yes; 2=DON'T KNOW	☐
26.	**What were the other complaints that the child had**? 0=fever 1=any other congenital/developmental defect 2=none	☐
27.	**when did you seek first treatment**? 0 =Same day; 1=Next Day; 2= 3-4days; 3= 5 or more days later	☐
28	**Where did you first seek the treatment? if H/F go to 32** 0=Home treatment 1=Health facility	☐
29.	**(If not treated in eye clinic/hospital) What prevented you from taking the child to the eye clinic/hospital?** 0=Child improved 1=Eye clinic/hospital is far 2=No money for eye treatment and transport 3=No answer.	☐

30.	**If home treatment, what did you do?** 0= Washed with water 1= Used available drug in the house/borrowed from neighbor 2=bought drugs from the kiosk/drug outlet 3=Used herbs,	☐
31.	**If Health facility which one?** 0=Eye clinic/Hospital 1=Dispensary/Health centre	☐
32.	**How long did you stay before being attended in health facility?** 0=Immediately 1= After 30 minutes 2= more than one hour	☐
33.	**What was done in the health facility?** 0=Treated 1=Referred	☐
34.	**If treated Did the child improve?** 0=no 1=yes	☐
35.	**If no where did you seek treatment next** 0=eye clinic/hospital 1=dispensary/H Centre 2= Herbalist 3=Stayed at home, GO TO 32	☐
36.	**How far is nearest health facility from here?** 0=More than 5 kilometers 1=less than 5km	☐
37.	**What transport did you use to get there?** 0=Walked 1= bus/matatu 2= bicycle 3= Taxi	☐
38.	**Are you aware there are eye specialists who treat eye diseases in this district?** 0=Yes 1=No	☐
39.	**If yes, where are they found?** 0=Eye clinic/District hospital 1=Dispensary/Health centre 2= Do not know	☐
40.	**What eye conditions are common in children of this community ?** 0=allergic conjunctivitis 1=injuries 2=infections 3=others specify---------- 4= do not know	☐
41.	**What eye complications are encountered if eye diseases are not treated urgently?** 0=Blindness 1=No complication 2=others specify	☐
42.	**Are there preventions in some eye conditions?** 0=Yes 1=No	☐

43.	**If yes, what are some of the preventive measures you know?** 0=eating food rich in vitamin A ,1= prevent injuries, 2=antenatal clinic for pregnant women, 3=early prompt treatment	☐
44.	**Where did you get the information on eye prevention and management of eye diseases?** 0=From health worker 1= From media (radio, TV, News papers, etc) 2= Friends, neighbors, relatives.-	
45	**What first thing do you do when your child develop eye condition?** 0= Wash or remove FB and take straight away to eye clinic/specialist 1=Take to dispensary 2=Go to chemist to buy medicine 3=borrow medicine from neighbor 4=Go to herbalist	☐

APPENDIX 3: FOCUSED GROUP DISCUSSION GUIDE

1. Are eye conditions in children common in this community?
2. What are the common eye conditions in your children under 15 years of age?
3. What causes these eye conditions?
4. What do you usually do when a child is having these eye conditions?
5. Who is consulted when a child fall ill at home? And why?
6. Where do the people in these communities take children with eye problem?
7. What complications do children with eye condition get especially when treatment is delayed?
8. What issues in the community delays the treatment of eye conditions?
9. What means of transport do you use to reach health facility?
10. What are the major problems in health facilities that affect treatment of patients?
11. What are the preventing measures of eye conditions you know? And where did you get this information?

Appendix 4: Consent form from International Ethical Committee

INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE (IREC)

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

MOI UNIVERSITY
COLLEGE OF HEALTH SCIENCES
P.O. BOX 4606
ELDORET
Tel: 33471/2/3

Reference: IREC/2011/195
Approval Number: 000803

21st March, 2012

Dr. Samuel Koringura,
Moi University,
School of Public Health,
P.O. Box 4606-30100,
ELDORET-KENYA.

INSTITUTIONAL RESEARCH & ETHICS COMMITTEE
APPROVED
21 MAR 2012
P.O. Box 4606 ELDORET

Dear Dr. Koringura,

FORMAL APPROVAL

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

"To Determine Proportion of, and Socio-Economic Factors Affecting Common Eye Conditions of Children in Kapsabet Division of Emgwen Constituency".

Your proposal has been granted a Formal Approval Number: **FAN: IREC 000803** on 21st March, 2012. You are therefore permitted to start your study.

Note that this approval is for 1 year; it will thus expire on 20th March, 2013. 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.

Yours Sincerely,

PROF. E. WERE
CHAIRMAN
INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE

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

Appendix 5: Permission from DC, Nandi Central District

OFFICE OF THE PRESIDENT

Tel: 053 52621, 52003, Kapsabet
Fax No. 053 – 52503
E-mail: nandi.central@yahoo.com
When replying, please quote

Ref: No. ADM.15/15/VOL.III/(212)

District Commissioner's Office,
Nandi Central District,
P.O. Box 30,
KAPSABET.

27th March, 2012

Mr. Samuel Koringura
Moi University,
School of Public Health,
P.O. Box 4606-30100,
ELDORET.

RE: RESEARCH AUTHORIZATION

This is in reference to the Institutional Research and Ethnics Committee's letter No. IREC/2011/195 and Approval Number 000803 on the above cited subject.

You are hereby authorized to conduct research on **"To Determine Proportion of, and Socio-Economic Factors Affecting Common Eye Conditions of Children in Kapsabet Division of Emgwen Constituency"** the period ending **20th March, 2013.**

W. BUNDE,
For: DISTRICT COMMISSIONER
NANDI CENTRAL.

For: DISTRICT COMMISSIONER
NANDI CENTRAL

Appendix 6: Permission from DMOH, Nandi Central District

REPUBLIC OF KENYA

MINISTRY OF PUBLIC HEALTH AND SANITATION

Telephone 053 52233
When replying,
Please quote

District Medical Officer of Health
Nandi Central District
P.O. Box 5
KAPSABET

Ref No: DMOH//G/VOL.I/14

27TH MARCH 2012

TO WHOM IT MAY CONCERN

RE: FORMAL APPROVAL – DR. SAMUEL KORINGURA

In reference to the college approval reference number IREC/2011/195, to undertake your research in this division, this office has no objection for the above named officer to conduct the research.

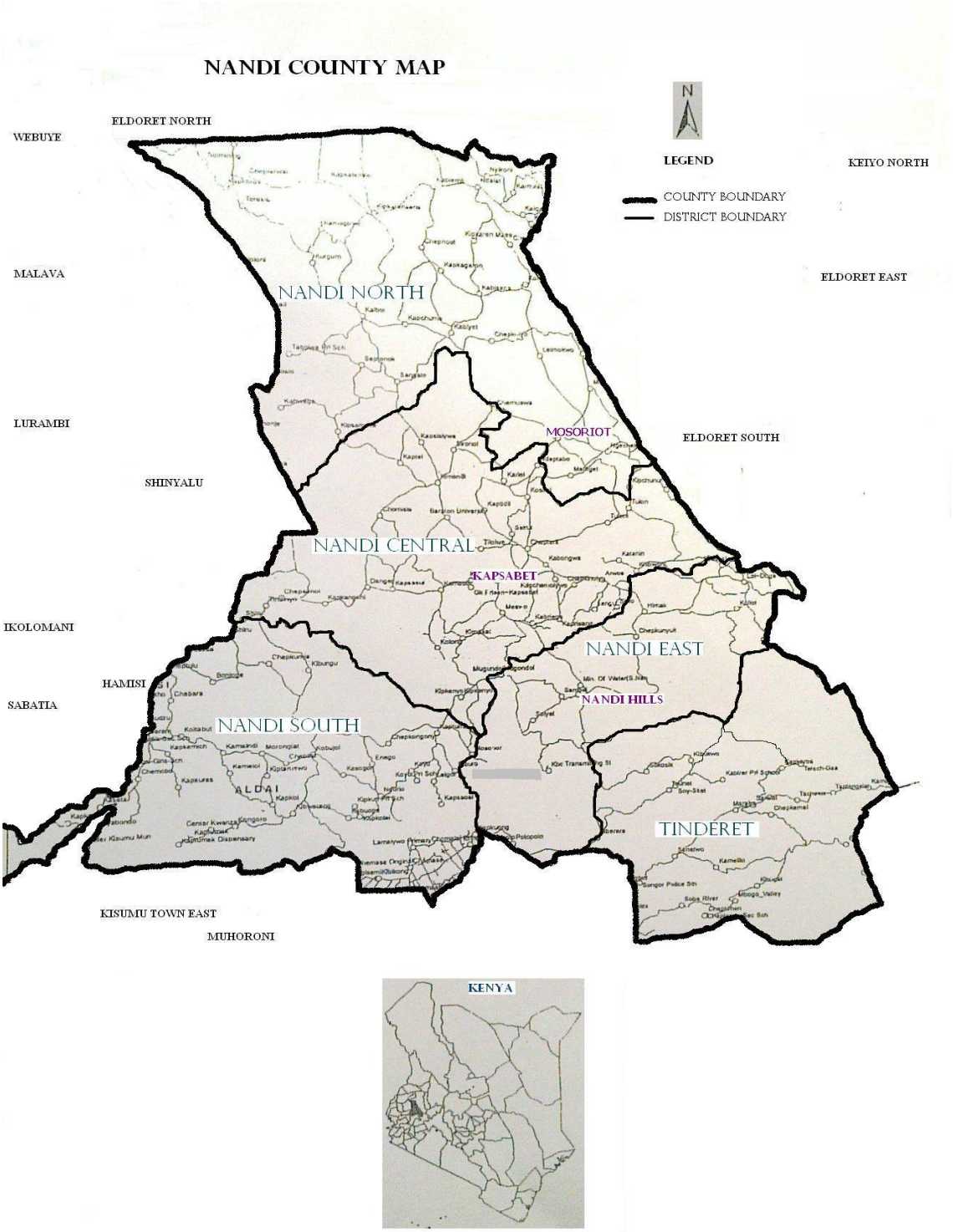
Any assistance accorded to him will be appreciated.

Thank you.

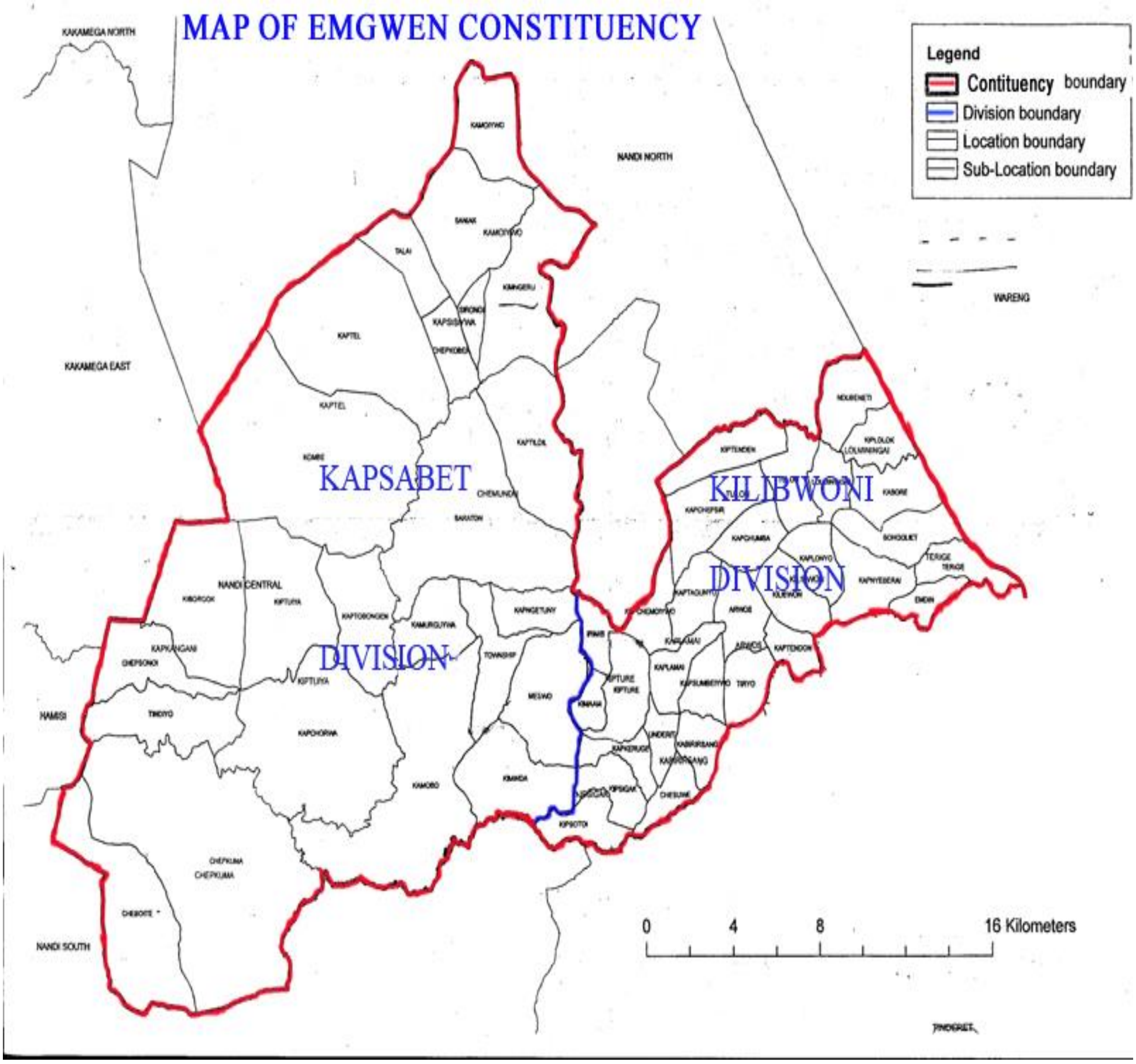
District Medical Officer of Health
(DMOH)
NANDI CENTRAL

ISAAC ROTINO
Ag. District Medical Officer of Health
NANDI CENTRAL

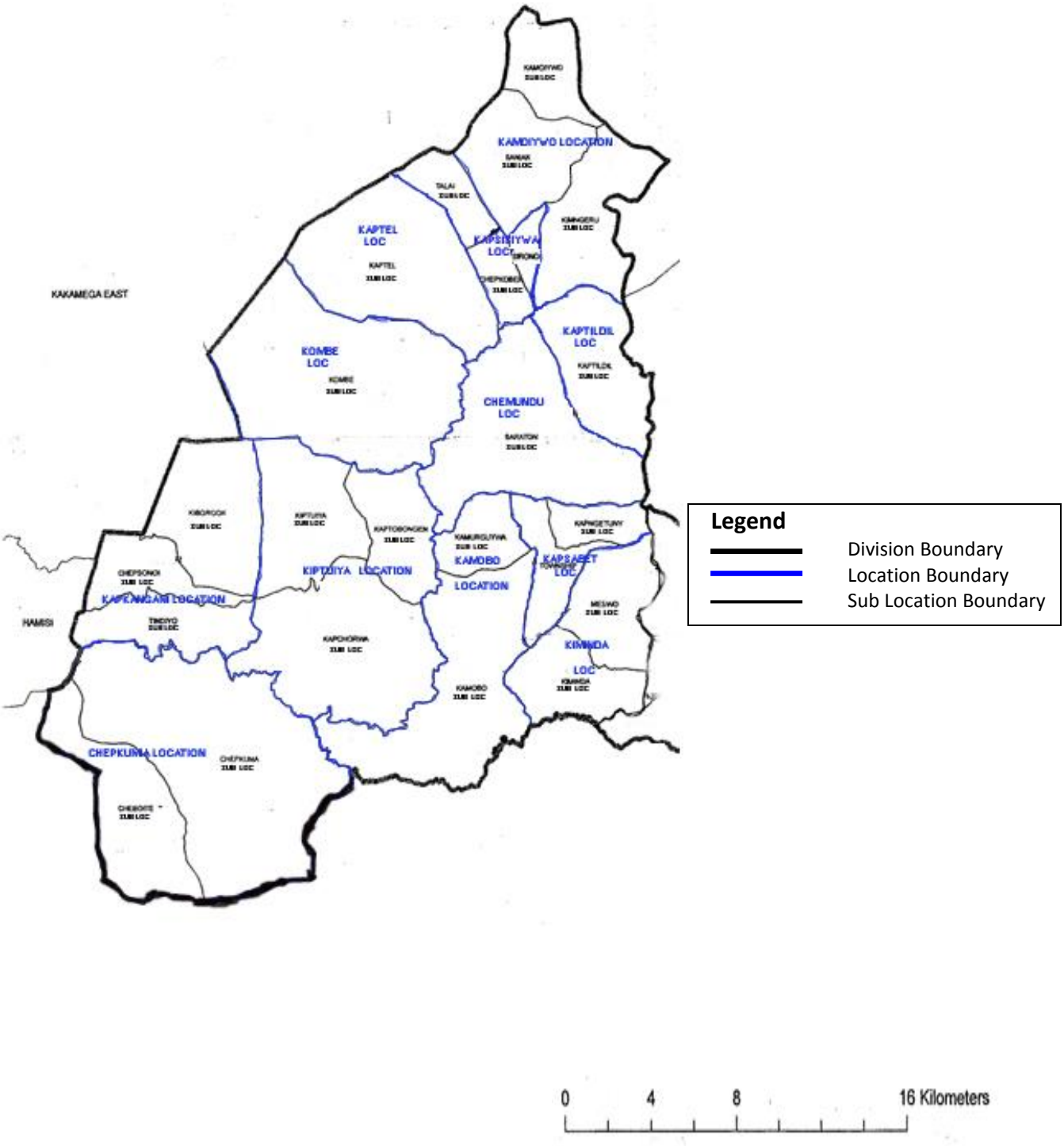
Appendix 7: Map of Nandi County



Appendix 8: Map of Emgwen Constituency (Nandi Central District)


MAP OF EMGWEN CONSTITUENCY
Legend
Contituency boundary
Division boundary
Location boundary
Sub-Location boundary
KAKAMEGA NORTH
KAKAMEGA EAST
NANDI NORTH
NANDI CENTRAL
NANDI SOUTH
KAPSABET
DIVISION
KILIBWONI
DIVISION
0
4
8
16 Kilometers

Appendix 9: Locations and Sub-locations of Kapsabet Division



Appendix 10: District population by population category (Nandi Central)

	Description	District proportions	Population
1	Total catchment population		247,989
2	Total number of house holds		49,598
3	Children under 1 year (12 months)	3.82	9,448
4	Children under 5 years (60 months)	15.81	39,208
5	Under 15 year population	43.70	108,372
6	Women of child bearing age (15 – 49 Years)	24.04	59,616
7	Estimated Number of Pregnant Women	5.00	12,400
8	Estimated Number of Deliveries	5.00	12,400
9	Live Births	5.00	12,400
10	Estimated Number of emergency obstetric complications	0.75	1,860
11	Estimated Number of Post-Abortion Cases	0.75	1,860
12	Total number of Adolescent (15-24)	15.50	38,438
13	Adults (24-59)	34.10	84,564
14	Elderly (60+)	5.50	13,639