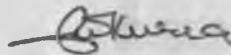


Factors that influence maternal and child-health among the  
Maasai - A case study of Olosho-Oiborr sub-location - Kajiado  
District.

By



KURIA, ELIZABETH WANJIRU

Post-Graduate Diploma in Population Studies Project Paper

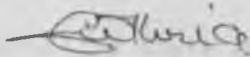
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DECLARATION

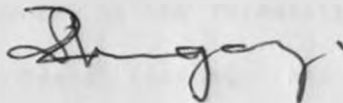
This is my original work and has not been presented for a degree in any University.



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This project has been submitted for examination with my approval as University Supervisor.



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1989

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## CHAPTER I

### 1 INTRODUCTION AND BACKGROUND OF THE STUDY AREA

#### 1.1.1 GEOGRAPHICAL LOCATION

Olosho-Oiborr sub-location is in Kekonyokie North location, Ngong Division Kajiado District.

It is at the foot of Ngong Hills bordering with Kiambu District to the North and Euaso Kendong to the west. To the east is Magadi road that runs through the Esayet Hills and stretches on to Saikeri sub-location.

The sub-location is further divided into smaller areas namely Kimuka, Ilngarog, Ntashat, Itkuashen, Olkudate and Mbatian (see map).

#### 1.1.2 DESCRIPTION

Olosho-Oiborr is semi-arid but with a good light fertile soil which can be cultivated and food crops such as beans, maize, potatoes and vegetables can be grown during the long rains period - March to May.

The area has one natural well below Kisami's and a spring at the foot of Ngong Hills.

Windmills are used to pump the spring water into storage tanks (see plate) which are situated at Olosho-Oiborr near a dispensary (see plate) (which can be as far as 20-30 km away from some of the population. The water project was built and completed in 1972 - AMREF (1989) by the community with large financial and Technical support from the Presbyterian Church (outreach projects).



During dry seasons women go to fetch water with the help of donkeys from the storage tanks; otherwise the families help themselves to rain water in the ditches during rainy seasons.

### 1.1.3 POPULATION COMPOSITION

Ethnologically Olosho-Oiborrs population is composed of Maasai (about 62%) with other ethnic groups comprising about 38% of the total population (AMREF 1989).

The settlement pattern of Olosho-Oiborr and the ethnic composition tend to lender credence to the alluded high migration rates into the area.

Land demacation was completed at Olosho-Oiborr in 1984 AMREF (1989) some selling of land has taken place since and afew immigrants who are mostly kikuyu have moved and settled down in the area.

The immigrant families are observed to cultivate land, dress differently, eat different foods and their whole way of life is generally different from the way of life of the traditional Maasai. There has been some intermarriages amongst these people.

### 1.1.4 OCCUPATION

The Maasai Nomadic way of life is limited to livestock being moved in search of pasture by the men whilst the women and children stay at home (Enkqng). An Enkong usually consists of from one to many family units.

Women and children are responsible for looking after calves, sheep and goats all of which are herded near the Enkang. Women are also responsible for erecting new houses (Ekangees), milking and cooking for the family.

The basic social behaviour of the Maasai community is still determined by the human/livestock relationship.

The Maasai of Olosho-Oiborr are undergoing a change of lifestyle brought about by land demarcation the permanent water source for their livestock (The dam built by the PCEA outreach projects), intermarriages, christianity, education and observation of their new neighbours (the immigrants). Many families have not only changed their style of dress but are observed to be cultivating their land.

The cultivated food is now accepted when it is available and it is supplement to the main food which is milk with maize products and meat.

#### 1.1.5 THE MAASAI WAY OF LIFE: COMMON AILMENTS AND TREATMENT

The Maasai are generally tall, slim, people who are so tuned to their way of life of walking long distances in search of water for their livestock and human consumption.

Visiting friends or families can involve walking a distance of many kilometres.

The Maasai traditional diet of meat, milk, meat/bone soup and herbs kept the Maasai healthy for centuries. Their knowledge and use of medicinal herbs kept simple diseases at bay.

The older generation information is that diarrhoeal diseases and worms amongst children were rare ailment in the olden days. They say that postpartum haemorrhage rarely occurred.

Generally the Maasai have a deep belief in their own traditional medicine. These are the first to be administered to the sick before they are taken to a health clinic if at all. The elders in the family would generally prescribe a certain herb for the sick person, prepare and administer it. When a difficult long dragging illness occurred, specialized medicine men/women were brought and the sick persons were taken to them for cure. In case of any problems in pregnancy, traditional birth attendants were and are usually called upon. Some of these birth attendants are "gifted" with the art of messaging.

Nowadays, often traditional medicine is combined with modern medicine. The Olosho-Oiborr share a small dispensary housed in a boma. The owner of the boma is a respected community opinion maker who lent the house to the Government eight years ago. The community has during land demarcation located a plot for the purpose of building health facilities at Olosho-Oiborr, Kinuka and Ilgarooj.

#### 1.1.6 EDUCATION

There are three primary schools in the area namely Olosho-Oiborr primary school, Kimuka Primary School and Ilngarooj Primary School. Two of these - Kimuka and Olosho - Oiborr are Government owned while Ilngarooj is a Harambee

School - built by the community and staffed by the Government.

Enrollment in these schools is generally low with some classes having as few pupils as seven. Generally the number is higher in lower primary than the number in higher primary with drop out mostly of girls coinciding with the age of circumcision which is between thirteen and fifteen years after which marriage arrangements are made.

#### 1.1.7 NUTRITION

There is a famine relief group - the St. Johns Catholic Nutrition Group which visits the area once every month. The group issues food items such as maize, beans and oil to parents with children who are five years or below. It also monitors child growth by recording weight and age of the children once every month and generally educating mothers on how to feed their children.

Due to the motivation which the famine relief offers, their clinics are very well attended.

#### STATEMENT OF THE PROBLEM

Studies by Jelliffe (1966) have identified factors for maternal and child morbidity as poverty, malnutrition, poor education unplanned child birth and poor sanitation.

The study area portrays the above characteristics. This calls for a proper research so as to provide policy makers with information that will enable them to design policies that will reduce incidencies of poor maternal and

child health and death in such like areas in general and the study area in particular.

Olosho-Oiborr the study area is served with only one small dispensary which is housed in an improved maasai boma (Enkaji) - a dome shaped, cement walled house resembling a nissen hut. The dispensary is in a poor state with leaking roof and sometimes it becomes unbearably hot. These conditions are unsuitable for the storage of medicine sometimes the medicine becomes mouldy and have to be thrown away. The dispensary is run by only one nurse (midwife) and has only one cleaner. So incase the nurse is off-duty patients have but to visit Ngong which could be as far as fifty kilometres AMREF (1989).

The area is further served with only one rough marrum road which run from Ngong, across the study area to Kisamis (see map). There are feeder roads only from Saikeri, Iingarooj and the one that goes to the storage tanks; the Dispensary and the Olosho-Oiborr Primary School.

Very few vehicles travel along this road and these are to be found mostly on market days - Wednesdays and Saturdays. Otherwise transportation in the area is a real problem.

Most of the bomas do not own latrines and it is my assumption that they use the bush.

The traditional diet of meat, milk, meat/bone soup with herbs has changed greatly resulting from a series of severe droughts and famines which have left the livestock greatly

reduced. Most of the Maasai are found to feed on Enkurma - a stiff form of porridge.

Although maasai culture does not allow women to become pregnant when the other children are still very young (not walking) some women have been observed to be carrying small babies on their backs while still pregnant.

An effective solution to the problems of maternal and child health can only be developed if and when details of those problems are accurately understood

### 1.3.1 RATIONALE

There is hope that improvement in medical care, better and more adequate water supply, better sanitation improvement in the general infrastructure such as better and more roads, more higher education especially on the use of available resources will contribute to better health, prime age at first birth, long birth intervals, avoid pregnancy wastage which will in return improve maternal and child health status.

The research hopes to convince policy makers that it is necessary to expand the resources devoted to maternal and child care in the semi-arid nomadic areas so that both the lives of mothers and of children can be protected from diseases and death.

The government should aim at raising the standard of living of the people by providing better quality of education through trying to persuade even the remote tribes to attend school. This would serve to raise age at marriage

and the improvement on the general well being of the population. The Government should aim at improving the general infrastructure in such areas so that communication and transportation problems are eased.

#### 1.4.0 SCOPE AND LIMITATION

The geographical area covered is limited to the sublocation of Olosho-Oiborr from which clusters have been sampled out among the six areas namely Ilugarooj, Kimuka, Ntashat, Irkwashen, Olkudale and Mbartan.

This is because the area is very extensive, the time for carrying out the research is very limited and will not allow the coverage of the location.

Some of the bomas (Enkanges) are extremely hard to locate and reach as there are no roads or even properly marked footpaths.

I <sup>^</sup> ~~farsee~~ limitation in the quality of data owing especially to the language barrier (I have to use an interpreter throughout some issues are very sensitive as far as the maasai are concerned. Issues such as number of children born or dead are referred to as a taboo and questions to that effect cannot be asked directly. Rather one has to ask a series of questions so as to arrive at the correct or near correct answer.

#### 1.5 OBJECTIVES OF THE STUDY

The overall aim of the study was to contribute towards the improvement of the general health status of the Kenyan

nomads through identification of the community at risk and of the specific factors responsible.

The principal objective of the study hence was to determine the factors that influence maternal and child health among the maasai.

#### 1.5.2 SPECIFIC OBJECTIVES

1. To examine the extent to which socio-cultural factors influence maternal and child health.
2. To determine the effects of sanitation and water availability and supply on maternal and child health.
3. To examine the effect of age at first birth, birth interval, family, age at last birth on maternal and child health.
4. To find out how socio-economic factors influence maternal and child health.

#### 1.6.1 LITERATURE REVIEW

##### INTRODUCTION

Most researchers in developing countries have carried out researches on child survival and mortality but have left out maternal health while it is actually the mother who determines child survival and mortality Polloni (1981).

According to the International Conference on Better Health for women through Family Planning (1987) about half a million women die every year from causes related to pregnancy. In most Developing countries, maternity hospitals in which deliveries are managed are few they



struggle to provide adequate care with limited financial resources, Personnel and facilities.

Studies by Yerushalmy et al (1956) Jelliffe (1966) identify factors associated with maternal morbidity and mortality such as poverty, malnutrition, poor education, unplanned childbirths and poor sanitation.

#### 1.6.2 Antenatal Care

The need to identify high risk mothers and facilitate their referral to centres where they can be delivered under conditions of optimal care and safely is stressed by WHO (1977, 1978) and widely recognized in both developed-Haverskamp et al (1976) Traffers (1978); and developing countries (Hall and Jenkins (1976) Criteria for referral of obstetric patients have been determined and instructions sent to clinics throughout Kenya.

Various excellent antenatal record cards have been designed to facilitate the selection of high risk maternity cases at antenatal clinics - Dissevelt et al (1976).

#### 1.6.2 Social Economic Factors:

The UN manual IX (1979) points out that the risks associated with fetal deaths, birth defects, infant mortality and nutritional depletion for women and children which can lead to increased risks of infection and maternal mortality can be reduced through increase in nutritional education - especially to mothers and over all change of the standard of living of a population.

Bhuiya et al (1986) in rural Bangladesh ranked mothers education as having the most significant effect on the nutritional status of the boys. Education of the father had a positive impact on the nutritional status of girls. They found that regardless of the sex of the child, better nutritional status of children was a reflection of the positive impact of resource availability in the households. Large households, were also found to have a negative effect on the nutritional status of children, suggesting scarcity of resources availability.

Kielman et al (1976) found a strong association between nutritional status of children and land ownership in an Indian rural community. Socio-economic status of the family as reflected by the total family income in both urban and rural areas has also been found to be an important factor contributing to poor child nutritional status - Winikoff et al (1984), Okeahialan (1975).

In Kenya studies have been carried out by the CBS on Nutritional Survey (IRS II) which had as its target population the four year old children however excluded the pastoralists.

However it seems from the literature review that socio-economic status and parental education are important determinants of nutritional status of both the mother and the child.

#### 1.6.4 BREASTFEEDING AND WEANING PRACTICES:

Incorrect weaning practices e.g early removal from the breast, delayed introduction of supplementary food (after first year) have been reported to contribute to poor nutritional status of children CBS (1979) Diaz avery (1983). Sudden removal of child from the breast, replacing breastmilk with artificial - often incorrectly reconstituted and fed to the child often through unsanitary conditions has been shown to be associated with malnutrition, Mortorell (1983).

#### 1.6.6 FOOD AVAILABILITY AND DIET:

Studies have shown that as households income increases, more varieties of foods are taken Aoroza et al (1984). However a rise in income does not necessarily mean nutritionally improved diet. An appropriate nutritional counselling of the nomads which would consider availability of foods as well as their nutritional value in assessing the adequacy of diets of both the children and the adults, has been suggested Reichenhelm and Ebrahim (1986). The approach seeks to put emphasis on the nutrients rather than on the outdated emphasis on animal protein which the maasai of today will give only if the animal is sick or during occasions.

#### 1.6.7 THE CASE OF THE MAASAI

Little has been written about the Maasai. According to the AMREF 1989 - Nomadic Health Unit; motherhood among the

maasai women starts at about age 16 years and above. This is because the maasai girl is circumcised at puberty which is determined by how early or late she gets her first menstruation. She stays as enkaibaitoni (one recovering from circumcision) until her marriage arrangements have been made. This period of time varies from a few months to one and a half years - which means that the girl would be about 15-16 years old at the time of marriage. Informal interview with the old generation reviewed that should the girl be considered very young she would normally stay with her mother-in-law to prevent her from getting pregnant.

#### 1.6.8 Diet during Pregnancy

According to Nankai (1973) the expectant mother selects what she eats carefully particularly during the latter stages of pregnancy when the amount that she eats is reduced while the quantity of water that she drinks is progressively increased. Nankai says that it is believed that certain types of food are good for her while others are bad. Should the mother drink a lot of fresh milk, the fetus will fatten and make the process of birth difficult. Consequently she is given less milk and this is usually sour rather than fresh lest the foetus should "receive the milk direct", from the mother's stomach sour milk they believe is thicker and will therefore not pass directly into the uterus to fatten the baby. Nankai adds that pregnant woman is not allowed to drink from a cow that is about to dry up because this milk is considered too heavy.

Expectant mothers never eat the meat from any animals that have died of a disease the consumption of mutton is also controlled.

As far as starchy foods are concerned there are no restriction according to Nankai.

The pregnant woman is not allowed to eat any hard fat for this is considered harmful to the foetus. She may not even mix her porridge with milk. By so doing it is believed that neither the foetus nor the expectant mother will put on weight.

A pregnant woman is also given certain herbs which are intended to keep her healthy. Some of the herbs are meant to make her regurgitate in order to get rid of excessive gastric juice in her system. When she gets heart-burns she is given soft fat to cure it.

#### 1.6.9 Delivery Practices

According to Nankai it is mainly traditional midwife who is responsible for severing the umbilical cord and as she does so pronounces the words "you are now responsible for your life in as much as I am responsible for mine".

#### 1.6.10 Diet after delivery

Immediately after delivery the mother is given beehive to honey and blood which is obtained from the jugular vein of a bullock. From then on the woman is fed on olpurda which is a mixture of melted fat and lean meat. The wife is also given fat at intervals for sometimes (Nankai 1973).

#### 1.6.11 Diet of the new born

The new born is breastfed and also given diluted milk mixed with certain herbs (Nankai 1973).

#### 1.6.12 BIRTH ORDER

Birth order has been found to have significant association with nutritional status of children. Cherian et al (1984) found that there was increased prevalence of malnutrition among children of higher age (greater than four) Rampeard et al (1985) found that births order had significant association with nutritional status of children in the 13-16 months age group only.

Kenya CBS (1980) did not find the same association between birth order and nutritional status.

#### 1.6.13 NUTRITION OF MOTHER

According to WHO (1965) maternal nutrition is essential for good reproductive performance and maintenance of her own health. So, the diet should be adequate. Sterky and Mellander (1978) found breastmilk to be considerably reduced in poor nourished women than in better nourished ones.

#### 1.7.1 FOCUS OF THE STUDY

The study will adopt Mosley and Chens analytical framework. It will focus on four intervening variables namely maternal and child factors (Demographic) Personal illness control, environmental contamination and nutrient deficiency.

The study will concentrate on the socio-economic factors namely maternal education land owned and socio-cultural factors - see how these operate through demographic factors namely parity, birth interval; age at first and last birth; environmental factors such as sanitation (toilet facilities) and water supply to affect maternal and child health which will be measured by the number of times a mother is sick during pregnancy and after delivery (as reported in the interview) on the side of mother and weight for age as compared to standary weight per age - WHO. "

#### 1.8.0 ANALYTICAL FRAMEWORK

The impact of socio-economic, demographic environmental factors on maternal and child health will be studied using the proposed analytical framework for the study of the determinants of child survival in developing countries by Mosley and Chen (1984). The framework is based on the argument that socio-economic determinants of child mortality operate through intervening variables to affect mortality and it includes both social and biological variables.

A presentation of the mechanism through which the intervening variables influence the risk of morbidity and mortality is shown in figure 1. Maternal factors, environmental contamination, nutrient deficiency, injury and personal illness are groups that form the intervening variables which influence childs health from being healthy to sickness. The personal illness control factors affect the rate of illness through prevention and the rate of

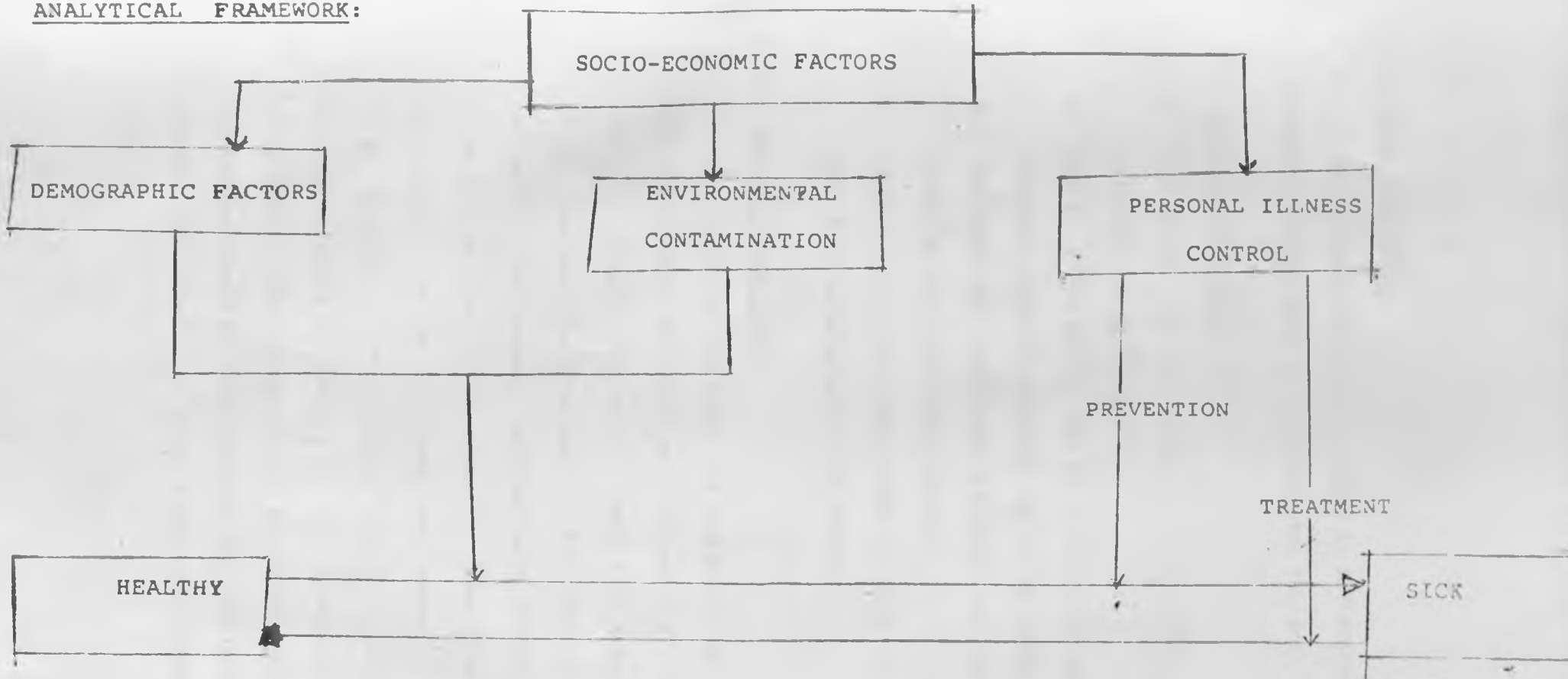
recovery through treatment. However, there is either full recovery or deteriorating health and or death. The framework consists of maternal factors namely parity, age and birth interval; nutrients deficiency such as calories, proteins, vitamins and minerals and personal illness control namely, personal preventive measure and medical treatment. The socio-economic determinants which work through intervening variables to affect the level of growth faltering and mortality are in turn grouped into three categories: i.e mother and father; traditions, norms, attitudes and thirdly the income/wealth factors and ecological health system.

The analytical framework looks at the ways in which household income and wealth variables have an impact on child's health and mortality. Such variables as food, water clothing/bedding, housing, fuel energy, access to preventive and curative health facilities and other basic services; type of hygienic/preventive care, type of sickness care, and source of information are identified.



CONCEPTUAL FRAME-WORK ADOPTED FROM MOSLEY AND CHEN'S (1984)

ANALYTICAL FRAMEWORK:



#### 1.9.1 BROAD HYPOTHESIS

The maternal and child health is influenced by socio-economic, demographic and environmental factors.

#### 1.9.2 SPECIFIC HYPOTHESIS

1. The level of education, income status influence maternal and child health.
2. Age at first birth, age at last birth, parity, birth interval influence maternal and child health.
3. The level of sanitation (toilets and water supply) affect maternal and child health.
4. Lack of proper care when mother or child is ill have an impact on maternal and child health.

#### 1.10.1 BENEFIT OF THE STUDY

The results of the study are expected to bring to light the factors that influence maternal and child health among the Maasai (nomads in general) - which will help in planning of the developmental strategies. The factors that affect the health, their causes, existence and nature, magnitude, vulnerable section of the community, means of achieving the set objectives of the programmes are essential information to be included in the baseline data. In particular, the information would be useful to the Government especially Ministries of Health, Education and Development Planning), the non-governmental organizations e.g. World Health, FAO, UNICEF and others to plan appropriate program for the area.

## 2.1 CHAPTER II

### 2.1.0 DATA COLLECTION AND DATA ANALYSIS

#### 2.1.1 STUDY DESIGN:

The study was designed as a case study in which primary data was collected from two hundred women who were either pregnant at the time of the study, were breastfeeding or had children who were five years and under.

#### 2.2.0 QUESTIONNAIRE DESIGN

A structured questionnaire based on personal interview was presented to the correspondents. The questionnaire consisted of identical questions arranged in a similar order. This was done in order to standardize the questionnaire. The questionnaire consisted of closed and open ended questions. There were no set answers to many questions and the interviewers had many open ended questions to avoid imitations and perhaps alot of important information being lost in the code "other".

Information sought included:

- i. Demographic Information namely,
  - Parity, age at first birth, age at last birth, maternal age, birth interval; postpartum period, child spacing and family planning.
- ii. Socio-economic namely education, land owned foods grown.
- iii. Nutrition including
  - Family nutrition
  - Nutrition during pregnancy

- Nutrition after delivery
- Lactation period
- Weaning foods

iv. Environmental factors including

- Sanitation and water supply
- Toilets

### 2.3 PRE-TESTING

After the questionnaire was ready, it was tested-using the Sakuda family and some amendments were made accordingly. This was important in revising any difficult questions, ambiguous or awkward questions.

#### 2.4.1 RECRUITMENT OF RESEARCH ASSISTANTS

Four research assistants were recruited from the study area. Each had lived in the area for more than ten years: All had reached form four.

#### 2.4.2 TRAINING DURATION

The training of the enumerators took two days in which the enumerators were introduced to the survey procedures. The objectives of the study were explained to them. The enumerators were explained how to address the interviewee and especially the head of the household. Also explained to them was how to estimate ages of the interviewees.

#### 2.5.2 SAMPLING FRAME

A rough hand map (drawn by the nurse at Olosho - Oiborr dispensary was used as a sampling frame. The map showed

location of the bomas. A map of the Area got from AMREF-Nomadic Health Unit was used to show the boundaries dividing the six areas into which Olosho-Oiborr is divided - namely Kimuka, Ntashat, Irkuashen, Olkudate and Mbatan. The area was divided into six clusters. The clusters were listed and then using a table of random numbers three of these were chosen. Households in the selected clusters were listed and then using the table of random sampling fifteen enkages were selected from each of the clusters.

#### 2.6 THE ADMINISTRATION OF THE QUESTIONNAIRE

With the help of the four research assistants the questionnaire was administered to women of reproductive ages (14 to 44 yrs). The interviewee showed interest. Responses were recorded after they had been agreed upon. Where the head of the household said that the wives were not available (as was the case in two bomas) a second visit was arranged and made.

#### 2.7 DATA COLLECTION SUPERVISION

The author was among the group and made sure that the procedures laid were being followed. Most of the questionnaires were administered in the presence of the author and checked.

#### 2.8 DATA PROCESSING

Each questionnaire was fully checked for missing data a suspected incorrect information immediately after completion and before leaving the household to avoid a second visit to

the same household. Data cleaning on the completed questionnaire went on simultaneously with the rest of data collection. Any questions not precoded was coded. Data was entered on data record sheets ready for processing.

Data analysis method used was descriptive statistics.

## 2.8 LIMITATIONS

Due to the limited time and lack of equipment alot of data which would have been of great help in the survey was left out. The Olosho-Oiborr Dispensary did not have a balance scale nor did they have a heamogloimeter to measure the heomoglobin level of blood for those mothers who visited the dispensary for consultation and the only information which would be useful from the dispensary was only the types of diseases reported by expectant mothers and the frequency of anaemia in the expectant mothers - As judged by the nurse through the checking of the colour of the eyes and palms. Effort to get a heomogloimeter were not successful and after all it was learnt that the Maasai would not agree to give blood samples as that could be the first time to have blood sample being asked for. It would require alot of time to persuade them and have them understand and accept the issue.

Due to the shortage of time, arm circumference would not reveal any useful information as this would require more than one measurings - to determine whether there is any decrease in the measurements.

There was non-response on some of the questions mostly on the duration a birth attendant stays with the woman after

delivery, number of times a woman has been pregnant and some other questions here and there.

Information on the length of breastfeeding was based on re-call information and so was not accurate - there was generally a heaping around ages two and a half to three years.

Some of the enkanges were difficult to reach and the survey took longer than expected.

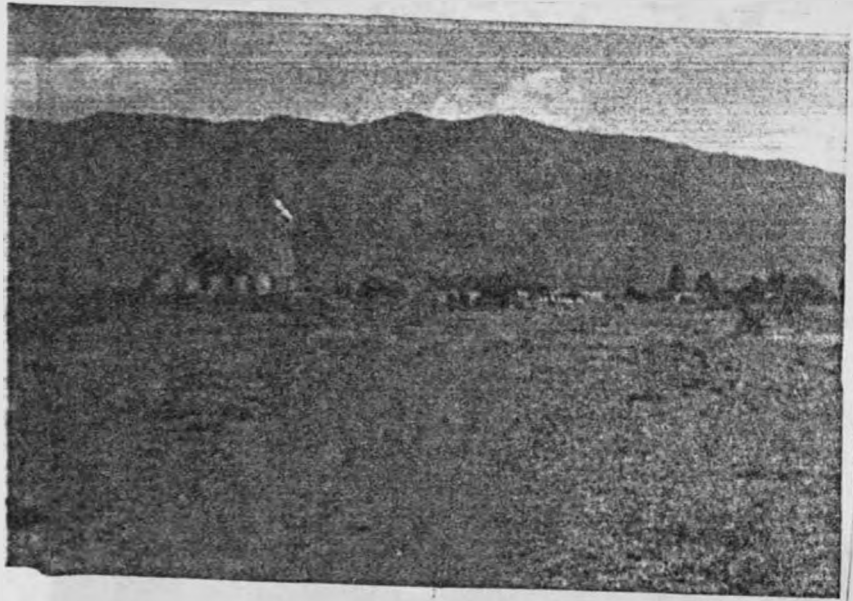
The population had been already sensitized by the earlier survey by the AMREF and so some mothers reported diets which they were not having.

Some of the participants expected incentives in order to participate. However, it was explained to them that there was no immediate gain but that the information gathered would be used in planning helpful programmes for the area.

Despite these shortcomings, most families visited were relatively co-operative.



Olosho-Oiborr Dispensary



Wind Mills and storage Tanks



Olosho-Oiborr Primary School





Modern Maasai Boma



Traditional Maasai Boma



Maasai women with their children



Head of household

## CHAPTER III

### 3.1 FINDINGS AND ANALYSIS

#### 3.1.1 INTRODUCTION

Information as to the distribution of population among the seven areas of the survey area in relation to the accessibility to the only dispensary available and the permanent water site both of which are situated at Olosho-Diborr revealed that only a few people live at or near Olosho-Diborr. Owing to land demarcation - which was completed in the area in 1984, people have moved to settle in farms allocated to them in the peripheri's of Olosho-Diborr - namely Mbatan, Olkudate, Iingarooj, Ntashat and Irkuashen which can be as far away from the dispensary and the water site as over 25 kilometres (see map and table 4).

The study has found household sizes to range from one to nine wives. In the households themselves, age distribution have been found to range from 18 years to 70 years - meaning that a man of 70 years could comfortably and conveniently marry a girl aged 15 years. There is a hypothesis that Maasai women start motherhood earlier than women from other tribes (ethnic groups) - AMREF (1989).

As regards education the study has found that the Maasai have little value for it (Table 3).

The study sought to find out whether and to what extent distance from the dispensary and water site, household sizes, land owned; education especially that of the mother, maternal age affect maternal and child health - through

proper and adequate nutritional practices weaning practices, child spacing, attendance to the health services including immunization and environmental contamination.

TABLE 1  
AGE DISTRIBUTION OF THE INTERVIEWED POPULATION

| AGE BRACKET | NUMBER | PERCENTAGE |
|-------------|--------|------------|
| 15-19       | 22     | 11%        |
| 20-24       | 52     | 26%        |
| 25-29       | 46     | 23%        |
| 30-34       | 48     | 24%        |
| 35-39       | 28     | 14%        |
| 40-44       | 4      | 2%         |
| TOTAL       | 200    | 100%       |

The age correlates with the ages of alternative groups e.g. Luo, Luhya e.t.c - (CBS 1976-79). Most of the interviewed Population were aged below 35 years and most participants were in the age bracket 20-24 years.

TABLE 2  
NUMBER OF CHILDREN EACH INTERVIEWED WOMAN HAD\_  
BY THE AGE OF MOTHER

| Age Bracket | 0-1 | 2  | 3  | 4  | 5+ |
|-------------|-----|----|----|----|----|
| 14-19       | 15  | 5  | 2  | 0  | 0  |
| 20-24       | 2   | 19 | 21 | 8  | 2  |
| 25-29       | 1   | 12 | 19 | 10 | 6  |
| 30-34       | 0   | 16 | 20 | 8  | 4  |
| 34-39       | 0   | 4  | 10 | 7  | 7  |
| 40-44       | 1   | 0  | 2  | 1  | 1  |

TABLE 3  
EDUCATION ATTAINMENT BY STANDARD ATTAINED

| EDUCATIONAL LEVEL | TOTAL NUMBER | PERCENTAGE AMONG THE EDUCATED | PERCENTAGE AMONG TOTAL POPULATION INTERVIEWED |
|-------------------|--------------|-------------------------------|---|
| LOWER PRIMARY     | 20           | 34.5%                         | 10%   |
| UPPER PRIMARY     | 16           | 27.6%                         | 8%  |
| SECONDARY         | 8            | 13.8%                         | 4%  |
| POST SECONDARY    | 2            | 3.4%                          | 1%  |
| ADULT EDUCATION   | 12           | 20.7%                         | 6%  |
| TOTAL             | 58           |                               |   |

Most of the interviewed population had reached upper primary which coincides with age of initiation 13-15 years after which marriage arrangements are made.

TABLE 4  
DISTANCE FROM THE DISPENSARY AND THE PERMANENT WATER SUPPLY

|        | NUMBER | PERCENTAGE |
|--------|--------|------------|
| 1-5 Km | 32     | 16%        |
| 5-9    | 30     | 15%        |
| 10-14  | 24     | 12%        |
| 15-19  | 30     | 15%        |
| 20-24  | 38     | 19%        |
| 25-30  | 46     | 23%        |

About 57% of the interviewed population live over 15km away from the only dispensary and the permanent water supply.

TABLE 5  
NUMBER OF TIMES PREGNANT WOMEN VISITED ANTE-NATAL  
CLINIC

| Order of visit | Total Number of Pregnant Women |
|----------------|--------------------------------|
| 1st            | 140                            |
| 2nd            | 80                             |
| 3rd            | 30                             |
| 4th            | 3                              |
| 5th            | 0                              |

Most pregnant women were seen only once and the ~~per~~ model visit was 1 visit per woman. Only 4 made 4 visits.

TABLE 6  
NUMBER OF VISITS BY EDUCATION OF MOTHER

| Visits        | No<br>Educ-<br>ation | Lower<br>Primary | Upper<br>Primary | Secondary | Post<br>Seco-<br>ndary | Adult<br>Educ-<br>ation |
|---------------|----------------------|------------------|------------------|-----------|------------------------|-------------------------|
| Once          | 100                  | 14               | 14               | 7         | 0                      | 3                       |
| Twice         | 48                   | 10               | 13               | 6         | 0                      | 1                       |
| Thrice        | 14                   | 2                | 8                | 3         | 0                      | 1                       |
| Four<br>times | -                    |                  | 1                | -         | 2                      | -                       |

There seems to be a association between education and the number of antenatal visits. 2 post secondary pregnant women (100%) visited the clinic four times.

TABLE 7  
REASONS FOR NEVER ATTENDING DURING PREGNANCY

| Reason          | Number |
|-----------------|--------|
| Husband refused | 13     |
| Distance        | 21     |
| Felt okay       | 6      |
| No Answer       | 8      |

Majority failed to attend because of the distance from the dispensary.

TABLE 3  
AMOUNT OF LAND CULTIVATED BY THE INTERVIEWED POPULATION

| AMOUNT CULTIVATED | NUMBER WHO HAVE CULTIVATED | PERCENTAGE |
|-------------------|----------------------------|------------|
| 0 Acres           | 66                         | 33%        |
| < 1/2 Acre        | 94                         | 47%        |
| 1/2 Acre          | 30                         | 15%        |
| > 1 Acre          | 10                         | 5%         |

The model cultivated amount of land is < 1/2 acre with 47% of the population.

TABLE 9  
AMOUNT CULTIVATED BY EDUCATION OF MOTHER

|            | No<br>Educ-<br>ation | Lower<br>Primary | Upper<br>Primary | Secondary | Post<br>Secun-<br>dary | Adult<br>Educ-<br>ation |
|------------|----------------------|------------------|------------------|-----------|------------------------|-------------------------|
| 0 Acres    | 53                   | 5                | 3                | 0         | 0                      | 5                       |
| < 1/2 Acre | 61                   | 10               | 12               | 5         | 1                      | 5                       |
| 1/2-1 Acre | 24                   | 3                | 1                | 1         | 0                      | 1                       |
| > 1 Acre   | 4                    | 2                | 0                | 2         | 1                      | 1                       |

There is a association between land cultivation and education. Only 22.4% of the educated do not engage in cultivation while 37.3% of the non-educated do not cultivate the land.

TABLE 10  
AMOUNT CULTIVATED BY AGE OF MOTHER

| A          | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 |
|------------|-------|-------|-------|-------|-------|-------|
| 0 Acres    | 10    | 20    | 18    | 21    | 16    | 8     |
| < 1/2 Acre | 8     | 15    | 17    | 10    | 4     | 3     |
| 1/2-1 Acre | 2     | 13    | 8     | 11    | 2     | 7     |
| > 1 Acre   | 2     | 4     | 3     | 6     | 6     | 10    |

There seems to be no associated between the amount of land cultivated and the age of the population.

TABLE 11 CULTIVATED FOOD BY EDUCATION OF THE WIFE

| FOOD                                     | NO EDUC-<br>ATION | LOWER<br>PRIMARY | UPPER<br>PRIMARY | SECONDARY | POST<br>SECO-<br>NDARY | ADULT<br>EDUC-<br>ATION |
|--|-------------------|------------------|------------------|-----------|------------------------|-------------------------|
| Non                                      | 53                | 5                | 3                | 0         | 0                      | 5                       |
| Maize &<br>Beans                         | 63                | 7                | 6                | 4         | 0                      | 3                       |
| Maize<br>Beans<br>Potatoes               | 20                | 4                | 5                | 2         | 1                      | 3                       |
| Maize<br>Beans<br>potatoes<br>vegetables | 6                 | 4                | 2                | 2         | 1                      | 1                       |

The more educated the population, the more the food items grown. Only 6 people (4.2%) of the uneducated engaged in vegetable cultivation while 10 (17.2%) of the educated population grows vegetable. The most food items grown are maize and beans.

TABLE 12  
CULTIVATED FOOD BY AGE OF THE MOTHER

| FOOD                                     | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 |
|--|-------|-------|-------|-------|-------|-------|
| None                                     | 10    | 20    | 18    | 21    | 16    | 2     |
| Maize<br>beans                           | 6     | 18    | 16    | 18    | 8     | 2     |
| Maize<br>beans                           | 3     | 9     | 8     | 6     | 2     | 0     |
| Maize<br>beans<br>potatoes<br>vegetables | 3     | 5     | 4     | 3     | 2     | 0     |

It seems as if the older generation does not very much engage in cultivation of crops. The only 2 people in age bracket 40-44 cultivate maize and beans.



TABLE 13  
HOW THE CULTIVATED FOOD IS USED BY EDUCATION OF MOTHER

|                 | NO<br>EDUC-<br>ATION | LOWER<br>PRIMARY | UPPER<br>PRIMARY | SECONDARY | POST<br>SECO-<br>NDARY | ADULT<br>EDUC-<br>ATION |
|-----------------|----------------------|------------------|------------------|-----------|------------------------|-------------------------|
| Eaten           | 38                   | 7                | 10               | 6         | 0                      | 4                       |
| Eaten &<br>sold | 68                   | 5                | 2                | 1         | 0                      | 3                       |
| Eaten<br>stored | 36                   | 8                | 4                | 1         | 2                      | 5                       |

Most of the uneducated women appear to sell food grown. Post secondary eat and store the food they grow. They do not sell any.

TABLE 14  
HOW THE CULTIVATED FOOD IS USED BY AGE OF MOTHER

|                   | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 |
|-------------------|-------|-------|-------|-------|-------|-------|
| Eaten             | 5     | 20    | 29    | 31    | 10    | 1     |
| Eaten &<br>sold   | 12    | 10    | 6     | 4     | 3     | 2     |
| Eaten &<br>stored | 5     | 22    | 11    | 13    | 15    | 1     |

Most of the population in the age bracket 15-19 are observed to sell most of their food items. This could be because this group has less children than the rest of the population. Age bracket 30-34 eat most of the food grown 64.5% is observed to eat foods grown.

TABLE 16  
FAMILY DIET BY MATERNAL EDUCATION

|                             | NO<br>EDUC-<br>ATION | LOWER<br>PRIMARY | UPPER<br>PRIMARY | SECONDARY | POST<br>SECO-<br>NDARY | ADULT<br>EDUC-<br>ATION | %   |
|-----------------------------|----------------------|------------------|------------------|-----------|------------------------|-------------------------|-----|
| Githeri                     | 57                   | 6                | 5                | 2         | 1                      | 3                       | 37% |
| Enkuruaa<br>Milk            | 60                   | 10               | 8                | 2         | 0                      | 4                       | 42% |
| Milk<br>Meat                | 4                    | 2                | 1                | 1         | 0                      | 2                       | 5%  |
| Rice<br>Veg.<br>Chapatichi  | 1                    | 0                | 1                | 1         | 0                      | 1                       | 2%  |
| Githeri<br>Potatoes<br>Veg. | 20                   | 2                | 1                | 2         | 1                      | 2                       | 14% |

Enkuruma is eaten by most of the interviewed population followed by Githeri

TABLE 17  
FOODS NOT ALLOWD DURING PREGNANCY BY MATERNAL EDUCATION

|                             | NO<br>EDUC-<br>ATION | LOWER<br>PRIMARY | UPPER<br>PRIMARY | SECONDARY | POST<br>SECO-<br>NDARY | ADULT<br>EDUC-<br>ATION | %    |
|-----------------------------|----------------------|------------------|------------------|-----------|------------------------|-------------------------|------|
| Fresh<br>Milk               | 93                   | 16               | 10               | 6         | 0                      | 6                       | 65.5 |
| Githeri                     | 100                  | 11               | 6                | 4         | 0                      | 4                       | 62.5 |
| Meat from<br>sick<br>animal | 132                  | 16               | 13               | 5         | 2                      | 4                       | 86.5 |

More educated people, it seems do eat githeri and milk which are otherwise traditionally prohibited for pregnant mother.

TABLE 18  
REASON WHY FOOD IS PROHIBITED

|                          | CHILD<br>GET SICK | CHILD<br>WILL BE<br>BIG | MOTHER<br>WILL BE<br>SICK | MOTHER<br>CHILD<br>WILL BE<br>SICK | NO<br>ANSWER |
|--------------------------|-------------------|-------------------------|---------------------------|------------------------------------|--------------|
| MILK                     | 0                 | 188                     | 0                         | 0                                  | 12           |
| GITHERI                  | 0                 | 0                       | 193                       | 6                                  | 1            |
| MEAT FROM<br>DEAD ANIMAL | 35                | 0                       | 43                        | 120                                | 2            |

TABLE 19  
NUTRITION DURING LACTATION

| FOOD ITEMS    | ALLOWED | NOT ALLOWED | NO |
|---------------|---------|-------------|----|
| WATER         | 0       | 185         | 5  |
| GITHERI/UGALI | 82      | 108         | 10 |
| SOUP & HERBS  | 198     | 0           | 2  |
| BLOOD & MILK  | 188     | 0           | 12 |
| VEGETABLES    | 98      | 12          | 90 |
| MEAT          | 189     | 0           | 1  |

TABLE 20  
LACTATION: FOODS NOT ALLOWED BY MATERNAL EDUCATION

|                   | NO<br>EDUC-<br>ATION | LOWER<br>PRIMARY | UPPER<br>PRIMARY | SECONDARY | POST<br>SECO-<br>NDARY | ADULT<br>EDUC-<br>ATION |
|-------------------|----------------------|------------------|------------------|-----------|------------------------|-------------------------|
| Githeri/<br>ugali | 133                  | 8                | 4                | 3         | 0                      | 7                       |
| Veg.              | 5                    | 0                | 0                | 0         | 0                      | 1                       |
| Water             | 142                  | 14               | 13               | 5         | 1                      | 8                       |

Most of the population express the fact that water and hard foods are not allowed during lactation

TABLE 21  
FOODS PROHIBITED BY AGE OF MOTHER

|                   | 15-19 | 20-24 | 25-29 | 30-34 | over 35 |
|-------------------|-------|-------|-------|-------|---------|
| Githeri/<br>ugali | 16    | 34    | 38    | 40    | 12      |
| Veg.              | 0     | 1     | 2     | 1     | 1       |
| Water             | 20    | 41    | 43    | 43    | 29      |

Fewer young women than older ones seem to cling to the prohibition of the listed foods

TABLE 22 CHILD/INFANT NUTRITION  
BREASTFEEDING PERIOD ACCORDING TO MATERNAL EDUCATION

|           | NO<br>EDUC-<br>ATION | LOWER<br>PRIMARY | UPPER<br>PRIMARY | SECONDARY | POST<br>SECO-<br>NDARY | ADULT<br>EDUC-<br>ATION |
|-----------|----------------------|------------------|------------------|-----------|------------------------|-------------------------|
| <1/2 year | 0                    | 0                | 0                | 0         | 0                      | 0                       |
| 1/2 year  | 0                    | 1                | 3                | 2         | 1                      | 0                       |
| 1-2 years | 67                   | 10               | 8                | 4         | 1                      | 8+                      |
| 3 years   | 75                   | 9                | 5                | 2         | 0                      | 4                       |

More uneducated women breastfeed their infants for longer periods than the educated women.

TABLE 23  
BREASTFEEDING PERIOD ACCORDING TO MATERNAL AGE

|            | 15-19 | 20-24 | 25-29 | 30-34 | over 35 |
|------------|-------|-------|-------|-------|---------|
| <1/2 year  | 0     | 0     | 0     | 0     | 0       |
| 1/2-1 year | 5     | 10    | 10    | 6     | 0       |
| 1-2 years  | 6     | 22    | 21    | 16    | 12      |
| 3 years    | 6     | 17    | 14    | 27    | 20      |

Older generation - over 30 years seem to breastfeed their children for longer periods of time than young ones

TABLE 24  
WEANING FOODS ACCORDING TO MATERNAL EDUCATION

|                      | NO<br>EDUC-<br>ATION | LOWER<br>PRIMARY | UPPER<br>PRIMARY | SECONDARY | POST<br>SECO-<br>NDARY | ADULT<br>EDUC-<br>ATION |
|----------------------|----------------------|------------------|------------------|-----------|------------------------|-------------------------|
| Butter/fat           | 70                   | 16               | 10               | 7         | 1                      | 10                      |
| Milk with<br>herbs   | 83                   | 14               | 13               | 7         | 1                      | 12                      |
| Potatoes/<br>bananas | 38                   | 11               | 13               | 6         | 2                      | 8                       |
| Porridge<br>rice     | 78                   | 12               | 19               | 5         | 2                      | 6                       |
| Githeri              | -                    | 1                | 3                | 1         | 1                      | 3                       |

Most mothers combine many weaning foods. Some indicate that they use the whole list of food items as weaning foods.

TABLE 25  
WEANING FOODS ACCORDING TO MATERNAL AGE

|                      | 15-19 | 20-24 | 25-29 | 30-34 | over 35 |
|----------------------|-------|-------|-------|-------|---------|
| Butter/fat           | 20    | 40    | 38    | 19    | 30      |
| Millet<br>herbs      | 18    | 37    | 35    | 15    | 31      |
| Bananas/<br>potatoes | 5     | 12    | 25    | 10    | 27      |
| Porridge<br>rice     | 5     | 13    | 21    | 11    | 26      |
| Githeri              | 1     | 2     | 0     | 3     | 0       |

There does not seem to be a marked difference in the types of weaning foods according to different ages.

TABLE 26  
FAMILY PLANNING METHOD BY EDUCATION OF MOTHER

|                     | NO<br>EDUC-<br>ATION | LOWER<br>PRIMARY | UPPER<br>PRIMARY | SECONDARY | POST<br>SECO-<br>NDARY | ADULT<br>EDUC-<br>ATION |
|---------------------|----------------------|------------------|------------------|-----------|------------------------|-------------------------|
| Breast<br>feeding   | 70                   | 16               | 8                | 3         | 0                      | 11                      |
| Sex<br>abstinence   | 82                   | 15               | 10               | 2         | 0                      | 13                      |
| Contra-<br>ceptives | 0                    | 2                | 6                | 5         | 2                      | 1                       |
| Tying               | 1                    | 0                | 0                | 0         | 0                      | 0                       |

All uneducated mothers seem to be using traditional methods of family planning by tying I mean where a husband tie the wives toes and pronounces that she should not give birth again.

TABLE 27  
FAMILY PLANNING BY MATERNAL AGE

|                     | 15-19 | 20-24 | 25-29 | 30-34 | over 35 |
|---------------------|-------|-------|-------|-------|---------|
| Breastfeeding       | 10    | 21    | 20    | 21    | 14      |
| Sex<br>abstinence   | 9     | 30    | 31    | 39    | 28      |
| Contra-<br>ceptives | 4     | 6     | 4     | 0     | 0       |
| Tying               | 0     | 0     | 0     | 0     | 1       |

It seems that from age 30 onwards women do not use contraceptives - modern family planning method. Most mothers seem to be using abstinence method of family planning.

TABLE 28  
 ENVIRONMENTAL FACTORS  
 NUMBER WITH LATRINES BY EDUCATIONAL LEVEL

|                  | NO<br>EDUC-<br>ATION | LOWER<br>PRIMARY | UPPER<br>PRIMARY | SECONDARY | POST<br>SECO-<br>NDARY | ADULT<br>EDUC-<br>ATION |
|------------------|----------------------|------------------|------------------|-----------|------------------------|-------------------------|
| With<br>Latrines | 0                    | 0                | 1                | 5         | 2                      | 1                       |

Those households where the head of household has education from upper primary seem to be the ones with latrines in their bomas.

### 3.1.2 LAND OWNED

Generally, socio-economic status of a household have been found to be associated with nutritional status. Better and higher socio-economic status have been found to be positively related to better nutritional status - Cherion et al (1984) Aguilon et al (1984) Kielman et al (1976). However, each Maasai woman is responsible for the nutrition of the her house. So, the amount of land owned may not very much be connected with the nutrition of her householed. What seem to affect the nutrition of individual houses is the amount of land each wife cultivates (see table 8, 9 and 10) and foods that each wife cultivates (see table 11, 12 and 13). The way in which each wife uses the food that she grows also affects nutritional status in her house (see table 13 and 14) findings on nutritional status will however be discussed under individual nutritional status topics.

### 3.1.3 EDUCATION

Education has been associated with improved nutritional status. More and higher education is associated with increased earning capacity which in turn may improve socio-economic status of the family. Education of the mother, in particular, has been found to be essential in improving the family's nutritional status - Pellet (1977).

Education among the maasai especially women is yet of low priority. Out of the 200 interviewed population only 58 (29%) had attended school. Following is a breakdown of the standards obtained (see table 3).

|                |   |          |
|----------------|---|----------|
| Lower Primary  | - | 20 (10%) |
| Upper Primary  | - | 16 (8%)  |
| Secondary      | - | 8 (4%)   |
| Post Secondary | - | 2 (1%)   |

12 women had attended adult education classes. The study reviewed that most of the interviewed population had had either lower or upper primary education 13-15 years after which marriage arrangements are made.

The study found for example that there was a relationship between education attainment and antenatal attendance. Out of 140 pregnant women who had attended antenatal clinic in 1989 - (January - July) only 14 out of 100 uneducated women had attended the clinic for more than two times. Sixteen educated women visited the clinic thrice and only 3 women (who were also educated) visited the clinic four times.



## 3.2 NUTRITION

### 3.2.1 INTRODUCTION

Traditionally milk was the staple food of the maasai diet and was consumed either fresh or in sour form during the time of plenty. Butter and ghee are commonly used in feeding children and babies. Slaughtering of animals was performed on special occasions e.g. when a woman gives birth, when a person is very sick or convalescing, when Ilmorran go on retreats or when ceremonies take place- AMREF (1987-88).

Animal fat is commonly used by the maasai for remedies, purgatives, cleansing and as food. It is also used for preservation of meat such as olprudo (meat preserved in fat) and ironkena (meat after the fat has been drawn out by boiling).

Blood is tapped from the jugular vein of a healthy animal and given to those who need to replace lost blood such as when a woman gives birth, when a person is wounded or after circumcision. Traditionally blood was drunk during the dry season when there was a shortage of milk - AMREF (1987-88).

Through a series of severe draughts and famines leaving the livestock greatly reduced, the maasai diet has been changing and agricultural foods have been adopted into the diet - thus enkurma (a thick stiff form of porridge) has gradually become part of the Maasai's regular diet. Enkurma becomes the staple food for the whole family during the dry

season when there is very little milk available or no milk when livestock has been moved away in search of pasture. Immigrants, intermarriages and school education (formal education) has introduced land cultivation among the Maasai.

### 3.2.2 FAMILY NUTRIITION

The study sought to know

- How much land was cultivated.
- What was grown in the cultivated land
- Whether all the cultivated food is eaten sold or stored
- Which of the cultivated foods have been intergrated in the family diet
- Whether the pregnant woman is allowed to eat these foods
- If there are foods she is not allowed, the reason why
- The diet of lactating mother
- The diet of the child under five years.

In order to find out the above, the study sought out to know how many of the correspondents cultivate land. One hundred and thirty four (67%) of the interviewed population cultivated land (see table 8). Foods grown in the cultivated pieces of land included maize, beans, potatoes and vegetables which included sukuma wiki, cabbages, and spinach. Most of the population cultivates (grows) maize and beans.

The amount of land cultivated, the varieties of foods grown and their integration into the Maasai diet seem to vary between the educated and the non-educated but not between different age groups (see tables 9 and 10). Out of

the 66 (33%) of the interviewed population who do not cultivate their land 53 (80.3%) are non educated while only 13 (19.7%) are educated. More educated people are observed to cultivate larger pieces of land than the uneducated people (Table 9) out of the 142 non educated population interviewed, only 4(2.8%) seem to be cultivating more than 1 acre per person while 10 (1.3%) of the educated populations seem to be cultivating land, pieces larger than 1 acre.

Only 6 (4.2%) of the uneducated population grow more than three food crops including vegetables in their land while 10 (17.2%) of the educated population grow more than three food items including vegetables in their individual pieces of cultivated land (TABLE 11). Difference in age does not very much seem to affect foods grown as is revealed in table 12.

More uneducated people appear to sell more of their people (see table 13). Out of the 142 uneducated population interviewed, 69 (48.6%) reported that they sell some of their cultivated foods while 11 (18.9%) educated population reported that they had sold some of the cultivated food.

The population among the lower age brackets especially (15-19) seem to sell their farm produce more than the higher age brackets (Table 14).

Ekurma and milk are given as the main regular family dish by both the educated and non educated (Table 16) Githeri is the next regular dish mentioned. The community is well provided for in proteins through maize and beans

which, supplemented with milk appears to provide for adequate proteins. Even though protein seem to be adequately covered, iron seem to be inadequate since only 29 (14.5%) reported that they include vegetables. Only a very small percentage said they use sukuma wiki or spinach. Vitamin A which is required for normal growth seem to be covered by milk; and ghee which is given to the child from early months. Vitamin D is always present in a Maasai who like sitting or basking in the sun - a possibility as to why the Maasai have strong teeth and bones - (since Vitamin D is necessary for the absorption of calcium which the Maasai gets from the milk). Vitamin B is also present in a Maasai diet since the sources of this Vitamin are pulses and lean meat which are also mentioned as regular diets. This could be possibly the reason why Maasai people have beautiful skin. I have associated the healthy Maasai's gum with milk and wild fruit consumption. Also to the herbs which are present in Maasai diet in one form or another, Mineral elements are well covered in a Maasai diet.

However, food can only be grown in the study area during the long rains. Milk is in plenty during and just after the long rains. There are therefore months in between the rainy seasons when families are mainly dependent on enkuruma as the main dish - further, the method used to estimate the quality of the diet of the study population can only be used to make general remarks. More detailed qualitative diet evaluation at household and individual

level would be required to come up with findings that could be reliably used to make conclusive statements on the study population.

### 3.2.3 NUTRITION DURING PREGNANCY

The maasai pregnant woman is dieted for the most part of her pregnancy. Informal interview revealed that when a woman is pregnant for the first time, her diet consist of only enkare pus (diluted milk or sour milk) and water only. The young woman is usually sent away in the morning to look after sheep and calves so as to reduce any chances of her coming into contact with food. At home, the mother-in-law makes sure that the woman does not eat any other food apart from the prescribed ones. Otherwise any pregnant woman is and must be dieted during the last trimester - Nankai S.S (1973). The diet is restricted in order to reduce the possibility of delivering a big baby and therefore to reduce complications during delivery.

Fresh milk is believed to be received directly by the baby making it fat. The mother is therefore not allowed even to add milk in her porridge as ekuruma. Lean meat is allowed as was revealed by informal interviews with the population but never meat from a dead animal (table 17). Starchy foods such as Githeri and enkuruma are allowed in smaller quantities. Since starchy foods are new to the Maasai, they do not as yet know that they are fattening.

Water is encouraged in large quantities. The pregnant woman is given herbs frequently to induce vomiting in order to cleanse her stomach and blood.

Table 18 indicate the reasons for diet restriction as to prevent the child from becoming big and secondly to prevent the mother or mother and child from getting sick (infected). Pregnant woman must remain slim and the foetus small in order to make delivery easy AMREF (1987-88). Traditionally any woman who broke the dieting customary practices was severely punished. This can be very well understood taking into account the fact that there were no maternity wards to deal with any complications. Although health facilities are now found, they are very few and far from the population (Table 4), road facilities are poor (see map II).

Obsterically, the pregnant woman is advised to eat a diet containing enough proteins, vitamins and mineral elements (especially iron) for herself and the foetus. This would give them both the strength to go through the delivery. The woman is expected to build fat deposits which will help her to establish lactation adequately. The foetus is expected to grow in length and weight. Small babies have a hard start in life AMREF (1987-88). However, this is not the case among the maasai. The maasai woman should be advised to eat adequately. This is however difficult in as far as she is still witnessing other women having delivery complications as long as there are no facilities to deal

with the complications that the Traditional Birth attendant is not able to deal with. Since it is a question of attitude, complications will always be blamed on the "fat/big baby". The maasai elders and the Traditional Birth Attendants will on advising the pregnant woman to eat less in order to avoid complications during delivery AMREF (1987-88).

#### 2.4 NUTRITION DURING LACTATION

Traditionally the lactating mother was extremely well fed as opposed to pregnant mothers. She was given food especially made for lactating mothers in order to:

- (i) Regain blood lost during delivery
- (ii) Regain in weight what she had lost during pregnancy
- (iii) Build adequate breastmilk for the new born baby.

The newly delivered (entomononi) was traditionally fed with honey immediately after delivery then she is given sheep's fat for three consecutive days - a full esingau- (capacity of 500ml). This fat is supposed to induce vomiting and diarrheating. She would then be fed with blood mixed with milk for the next 30 days. It was after his that slaughtering started so the lactating mother could start eating meat (olpurde) and special soup with herbs. The special diet was given for a period of 3-6 months depending on the husbands wealth and his willingness to care for his wife. After this period the woman could eat the forbidden foods such as cold foods (milk and water). These foods had

been forbidden in order to protect the woman from catching puerperal fever which can be very serious. For the same reason the entomononi was supposed to stay indoors for the same length of time. The contemporary maasai entomononi is still afraid of catching the fever (AMREF 1987/88). This is indicated in table 19 where a total of 185 (92.5) of the interviewed population indicated that they are not supposed to drink water during the early months after delivery. She avoids eating Githeri and ugali as there may cause thirst which might force her to drink water (AMREF) 98 (49%) women indicated that they eat vegetables. 82 (41%) could Githeri indicating a change in the trend of events (see table 19, 20 and 21).

## 2.6 NUTRITION OF THE UNDER 5 YEARS

Traditionally the maasai baby's first taste of food was a touch of honey on the tongue - a kind of blessing ritual; "May what you eat from now on bless you". The baby was then messaged and wrapped with a cloth and given to its mother to put on the breast. The baby was from there on breastfed on demand. Empunywa (soot from a special herb mixed with fat) was given - a scoop of finger was given daily for the first three days of the child's life. This was to cleanse the baby's bowels from this time the baby was fed on butter, cream of milk or soft fat from livestock (about a tea spoonful daily) - for about two months. In case the mother did not have enough milk - the breastmilk was supplemented with cows milk diluted with herbal water.



Breastfeeding continued for about 2-3 years until the father observed that the child was old enough for a brother/sister. This he would be judged by throwing pieces of meat away from the child to check if the child can run fast enough to get the meat (from about 6 months the baby in response to its interest was given chunks of meat to suck or a taste of what the rest of the family was eating - AMREF (1987/88).

The baby's growth was monitored by older women - to begin with by the traditional birth attendant who had delivered the baby. This was done by lifting the baby and feeling the weight of the baby

- Observing the firmness of the upper arm, and thigh muscles
- Observing the smoothness of the skin
- Observing the general alertness of the baby
- Some beads were put around the wrists, ankles and waist which were used as growth indicators.

Modern research has shown that breastmilk is adequate for the baby-supposing the mother is getting an adequately nutritious diet for the first 4-5 months. The only supplement that would be necessary energy giving foods towards 5-6 months.

Information gathered as to how long mothers breastfed the last child they weaned revealed that 98 (49%) breastfed their infants for a period ranging from 1-2 years while 95 (47.5%) breastfed for over 3 years (Table 22). This indicates that most Maasai women breastfeed their children

adequately. More uneducated mothers seemed to breastfeed their children for longer periods of time than educated mothers. Out of the 58 (educated women) interviewed, 20 (34.5%) indicated that they breastfeed for a period of 3 years or over while, out of 142 uneducated ones, 75 (52.8%) indicated that they breastfed their children for more than 3 years (Table 22). Older women breastfeed for longer periods than young ones as shown in table 23. Out of 22 interviewed women aged 15-19 only 6 (27.3%) breastfed their children for about 3 years while out of the 32 women aged over 35 years 20 (62.5%) breastfed for a period of from three years onwards.

Maasai women use a combination of available foods as weaning foods (Table 24, 25). Although personal observation, I noticed that mothers interest in the child's diet and consequently food intake and care decreased with age. Failure of mothers to realize the increased need for nutrients and overlooking or being ignorant of importance of proper weaning practices may and does affect the health of the growing child greatly. Furthermore, from the second year onwards the child is a crawler in an often insanitary environment. This coupled with the decreasing material care especially after the third year when the mother may be pregnant does affect the health of the child. Mothers should therefore give adequate care until the children are out of risk. However the findings are based on quite a small sample and it is suggested that to rule out results

based on chance studies using larger samples would be necessary to obtain conclusive findings.

### 3. FAMILY PLANNING

Traditionally, maasai women spaced their children by two and a half to three years with the co-operation of the husband who ultimately determined when a child was old enough to have a sibling. He would then instruct the mother to stop breastfeeding. Breastfeeding as well as abstinence from sexual intercourse was used as a method of spacing children. The husband had in the old days more than one wife so he was not required to abstain. The child spacing practices are still used as indicated in table 26 and 27. Only 16.8% reported that they are using contraceptives as a family planning method. All those using contraceptives had had formal education. One woman had been "tied by her husband" - this is a symbolic gesture where the husband literally ties his wife's toe or ankle and pronounces that she will not give birth again. I learnt that it works. Comparison made to see in which ages contraceptives were used revealed that young women 15-29 years are the ones who reported that they had used contraceptives (Table 26 and 27).

#### 3.4 SANITATION

##### 3.4.1 ENVIRONMENTAL CONTERMINATION

Out of the whole population interviewed, only 7 households had latrines. Absence of toilets/latrine has

been observed to be negatively associated with good health. This however did not seem to affect the population a great deal maybe because the area is bushy and possibly wild animals collected the faeces thus cleaning the environment.

There was also no association between nutritional status and absence or presence of latrines in the study area. Studies which have found an association between nutritional status and level of sanitation have used study groups from different settings. MartOrell (1985) based his conclusion on observations made in predominantly rural environments which were densely populated where pathogens density because of close interaction between men and animals and lack of clean waters were more prominent.

### 3.5 IMMUNIZATION

The interviewed population had their children appropriately immunized. This is possibly because immunization has been carried out during St. Johns Catholic Nutrition group - Visits (clinics). This is a Famine Relief group which visits the area once every month. It monitors child growth through taking and the recording their weights and ages. They also issue the parents with food items such as maize, beans and oil. Because of the motivation which this group offers their clinics are very well attended - So the children receive their immunization promptly.

## CHAPTER IV

### 4. CONCLUSION AND RECOMMENDATIONS

#### 4.1 SUMMARY OF THE FINDINGS AND CONCLUSIONS

Among the variables looked into; the amount of cultivated land, foods grown and the way in which they are used, lack of enough and adequate medical services, parity, birth intervals, maternal age and child spacing, family nutrition including nutrition during pregnancy and weaning practices, lack of adequate supply of safe drinking water and environmental contamination have been identified as the major risk factors influencing maternal and child health status among the maasai in general and Olosho-Oiborr community in particular. Studies in other parts of the world have come up with similar results.

Nevertheless, from this study it is not possible to come up with one single intervention that promises to tackle the problems facing the community.

There is decidedly the need to improve the means of food production and nutritional status, women status medical services, child spacing and the level of environmental sanitation. These are but a few possible interventions, that could improve the health of the community in general and maternal and child health in particular. However, improvement of the overall living conditions rather than direct single introductions like improvement of nutritional status of health status is a feasible approach.

An integrated approach different professions under the umbrella of interested organizations, like the African Medical Research Foundations (AMREF) Nomadic Health Unit, would have to be applied to tackle the socio-economic, socio-cultural, health and nutritional problems with which the community under study is faced if the conditions were to be improved.

#### 4.2 RECOMMENDATIONS

Based on the findings and observation of the study population, the following recommendations have been made.

##### 4.2.1 LITERACY

Education plays an important role in the maintenance of the overall well-being of a population.

Illiteracy is a national concern and efforts are being made to abolish it in the whole country. If all ethnic groups in the country made use of the free primary education, illiteracy would be greatly reduced. The resultant effects would lead to overall improvement in the well-being of the nation.

However, this is not always possible. The study area is faced with a shortage of educational facilities. The whole area is served with only three primary schools which are understaffed, are faced with stationary, water and latrines shortages just to mention a few of the problems. Although there is a hypothesis that the Maasai do not value education, efforts by the community like building of the

harambee primary school at Ilingarooj indicate that the maasai have an interest in the education of their children.

The Government through the Ministry of Education should see to it that first, conditions in the existing primary schools are improved and secondly put up some more schools at strategic places. Since Land Demarcation in 1984, most maasai are moving into the interior to settle on the pieces of land allocated to them. As a result some children have had to leave schooling due to the great distances between their new homes and the only 3 schools in the area.

There are no secondary schools near by. The Government should make an effort and put up at least one secondary school so, the maasai could feel that they are being taken care of. This, I am convinced will go along way in changing the maasai attitude towards education and that the young people will go on to obtain higher education. Informal interview with members of the community revealed that some parents were unable to pay the high boarding fees for their children and the children had to abandon schooling at the upper primary level.

Facilities such as houses for teachers, which are lacking in the schools should be provided so as to attract more qualified teachers into the area. These will go along way towards the improvement and value of education in this area in particular and the maasailand in general: Education will serve to raise women: status and age at marriage.

#### 4.2.2 NUTRITION

The traditional diet of the maasai's changing and foods that were not earlier known as used among the maasai are now common. Family dishes such as maize and the maize products. The initial change has been brought about by the immigrants, severe and repeated famines (brought about by droughts) and finally land demarcation which has and is forcing the maasai to settle down in the allocated land. Since the maasai live in semi-arid land, they will be forced to either cultivate land or improve the livestock in order to have adequate food supply throughout the year.

The Government should, through agriculture and Livestock Officers, and Home Economists teach and train the community how to improve the nutritional status through experimentation in growing crops. Agricultural officers should experiment in growing crops which are suitable for semi-arid areas, including fruits. The survey revealed that only few mothers could afford to introduce fruits and vegetables as weaning foods. Keeping of chicken should also be encouraged. Livestock officers should experiment growing appropriated foods for the livestock. The community should be trained to cut grass soon after the rains when it is in plenty for the purpose of storage in the form of hay which can be used during the dry season. The community should be encouraged to cross breed the livestock in order to improve the stock. The community in conjunction with the Government should improve and increase dipping possibilities



insecticides and veterinary medicine should be made more easily accessible. The community should also be encouraged to use manure from the animals towards the improvement of the soil instead of selling it as is currently the case.

Home-economists should train the community how to make kitchen gardens. Regular demonstrations should be organized to train the maasai women, how to prepare and incorporate the new foods in their diet. The value of different types of foods should be stressed.

Health technicians should motivate and train the community in sanitation. Finally these should do demonstrations on how to use appropriate materials to build latrines.

#### 4.2.3 INCOME GENERATING PROJECTS

Money economy has come to the maasai too. The interviewed proportion sells some of the cultivated food. The community has been observed to sell milk, livestock and land. The community should be trained to establish appropriate commercial items such as beehives. Dairy cooperatives should be formed which would buy the milk from the community, and find appropriate market for it.

The survey group usually found women sitting idly inside the bomas when they were visited. Such women should be encouraged to form themselves into women groups which would then be indicated to use the skills they have such as breads work and maximize on the time available through dovetailing their home making duties with these income

generating activities. This would greatly increase and better the household incomes.

An assessment on the skills which the maasai women possess would be necessary before the recommendations can be implemented.

#### 4.2.4 FAMILY PLANNING

In view of the early ages at which women start families and sometimes the short intervals between births as indicated by the number of the under five years children which each woman has; it is recommended that family planning education should be part and parcel of every community project in the study area.

#### 4.3.0 RECOMMENDATIONS FOR FUTURE STUDY (RESEARCH)

Experience in the study area has shown that much more time is required in order to understand the study area, understand the population and obtain their acceptance and support. There is need to go into details in the areas already covered.

As this is a needy community, they expect reward. Caution should therefore be exercised not to create high expectations among the population which cannot be fulfilled. Unfulfilled promises may injure the work of future researchers in the area by the respondents refusal to cooperate.

QUESTIONNAIRE ON FACTORS THAT INFLUENCE MATERNAL AND CHILD HEALTH  
AMONG THE MAASAI

1. DEMOGRAPHIC DETAILS

DISTRICT: .....

DIVISION: .....

LOCATION: .....

SUB-LOCATION: .....

DATE OF INTERVIEW: .....

2. HOUSEHOLD DETAILS

2.1 (Name of the head of household)

What is your name?

Ekiji Nga'e

2.2 Number of wives

.....

2.3 Number of houses in the boma

.....

2.4 How old are you?

Kaja iliariu liata?

2.5 Education

2.5.1 Have you ever been to school?

Itijiug'a aikata sukuulu?

YES

NO

2.5.2 If yes to which level.

Amaa tenitijinga kaji itabaikia?

1. Lower primary

2. Upper primary

3. Secondary

4. University

2.5.3 Have you had adult Education?

Ishoma aikata enkisoma oltung'ana kituak?

YES

NO

2.5.4 Have you had any other form of education?  
Inoto aikata ai kisoma?

YES

NO

2.5.5 If yes specify.  
Amaa tininota kaa kisoma?

2.6 Economical status

2.6.1 (Land owned)

How big is the piece of land owned by the head of household?

2.6.2 (Any cultivation done?)

Do you cultivate your land?  
Iata oshi olchamba liremito.

YES

NO

2.6.3 If yes how much land is cultivated?

2.6.4 Who does the cultivation of land?

2.6.5 What foods are grown on your land?

Kainyoo ituuno teilo olchomba?

1.....

2.....

3.....

4.....

5.....

2.6.6 What do you do with the food that is cultivated  
Kaa oshi intaas endaa nituui tolchamba?

1. Eat .....

2. Sell .....

3. Store .....

4. Other. Specify .....

3. PERSONAL DETAILS

(Selection of Interviewee)

(Interviewee will be women who are pregnant or have been pregnant for the last 5 years)

3.1 What is your name?  
Ekiji ng'ae?

.....

3.2 How old are you?  
Kaja Uariu liata?

.....

3.3 Do you have children who are not old enough to look after goats?  
Iata inkera neton mepuo intare?

YES

NO

3.4 Is there a possibility that you might be pregnant?  
Keidimayu sa naaji nintiesho tenarishata?

YES

NO

If no to questions 3.3 and 3.4 the interviewer should see the mother and wish the mother well. If yes, the interviewer should continue. He should explain to those who are continuing that he wants to know what was during the last pregnancy or now if the woman is pregnant.

3.5 Education

3.5.1 Have you ever been to school  
Itinjing'a aikata sukuulu?

YES

NO

3.5.2 If yes to what level?  
Aman tenitijinga kaji itabaia?

Lower primary

Upper primary

Secondary

Other specify

3.5.3 Have you had adult Education?  
Ishoma aikata enkisoma oltung'ana kituak?

YES

NO

3.5.4 Specify any other form of education if any

3.6 Nutrition

This applies to mother of children under 5 years, lactating and pregnant mothers and children under 5 years.

3.6.1 What foods does your family eat regularly?  
Kakua daiki oshi esig enya enkaji ino?

1. ....

2. ....

3. ....

4. ....

5. ....

3.6.2 (Pregnant mothers)

Is (was) this first pregnancy?

YES

NO

3.6.3 If no which number?  
Amoa teneme enddukuya, kaa?

3.6.4 Are/were you allowed to eat the same foods that family eats when you are/were pregnant?

Ekinchori oshi indaiki niimaka naanya enkaji ninuta?

YES

NO

3.6.5 If no why not?  
Kainyoo pee mikinchori inosa nena daiki?

3.6.6 What did you eat yesterday?  
Kaninyoo ng'ole inosa?

Morning .....

Midday .....

Evening .....

3.6.7 Was it more, the same or less than the amount you would eat when you are not pregnant?  
Kebaa kaisapuk kerisiore ana keikiti alang' eninya osh minuta?

MORE

SAME

LESS

3.6.8 Are the above foods the foods you eat daily when you are pregnant?

YES

NO

3.6.9 If no what other foods do you eat during pregnancy?  
Kakua daiki oshi kulie ninya enkata ninuta?

.....

.....

.....

.....

3.6.10 Are there foods you are not allowed to eat, when you are pregnant?  
Ketii kulie daiki nimikiachori inya ashu iok enhata nin?

YES

NO

3.6.11 If yes which?

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

3.6.12 Why are you not allowed to eat tense foods?  
Kainyoo pee mikinchori inya nena daiki?

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

3.7 LACTATING MOTHERS

3.7.1 Are there any foods that are special for breast feeding mothers?

Ketii oshi indaiki naanare neishori intokomonok  
naitanakata inkera?

YES

NO

3.7.2 If yes, which foods?  
Tenetii kakua daiki nena?

| <u>Foods</u> | <u>for how long relate to stage a in Q.</u> |
|--------------|---|
| .....        | .....                                       |
| .....        | .....                                       |
| .....        | .....                                       |

3.7.3 Are there foods you are not allowed to eat or drink?  
Ketii oshi kulie daiki nimikinchori inosa ashu tooko?

YES

NO

3.7.4 If yes, what?  
Amaa tenetii kakua nena?

.....  
.....



.....  
3.7.5 Why are you not allowed to eat?  
Kainyoo pee minya kuna daiki?

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

3.8 CHILD UNDER 5 YEARS

3.8.1 How long did you breastfeed the last child you weaned?  
Kebaa erishata nintanaa enkerai ino nibayie?

1. When the child began to sit (4-6 months)
2. When the child was crawling (6-10 months)
3. When the child was toddling (10-15 months)
4. Others (specify)

3.8.2 Why did you stop breastfeeding when you did?  
Kainyoo apa pee itooruo ino enkerai oikina?

1. Due to mothers sickness
2. Due to childs sickness
3. Not enough breastmilk
4. Became pregnant
5. Child was old enough
6. Other (specify)

3.9 WEANING

3.9.1 Do you have a child who has started to sit?  
Iata enkerai naiterua aton?

YES

NO

(If NO go to section 3.10)

3.9.2 If yes does the child talk yet?  
Amaa tenlata keiterua aaku keiro?

YES

NO

3.9.3 What foods did you introduce to this child and at what stage

FOOD

AGE/STAGE

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

3.9.4 Are there any types of foods that young children (0-5 years) are not allowed to eat?

YES

NO

If yes what types?

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

3.10 MOTHERHOOD

3.10.1 Will you please tell me the names of all your children including the ones that are not at home?  
Tolikioki inkarn onkera inona, natii ong'o nemettii.

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

3.10.2 How many times have you been pregnant?

.....  
.....

3.11. PREGNANCY HISTORY

3.11.1 Did you attend ante-natal clinic during your last pregnancy?  
Ishomo apa klink ontuan tengata enutai apa nibaiyie ashu tena?

3.11.2 If no why not?  
Keinyoo pee eitu ilo?

.....  
.....

3.11.3 Did anybody else see you during last (present) pregnancy?  
Ketii likae tung'ani likingurayie tenutai nibayie ahu tena?

YES

NO

3.11.4 If yes who?  
Amaa tenetii, keng'ae?

1. Traditional Birth Attendant
2. Traditional Healer
3. Medical person
4. Other (specify)

3.11.5 What did she do to you?  
Kainyoo kintaasa?

3.11.6 Did you have any complications during your last/ present pregnancy?  
Keeta apa enayamali ninoto tenbitai nibaiyie tena?

YES

NO

3.11.7 If yes which?  
Kaa enyamali ninoto?

1. Severe vomiting
2. Bleeding
3. Severe Oedema

4. Severe headache

5. Miscarriage

6. Other (specify)

3.11.8 Were you treated?  
Paa ekitabaake apa?

YES

NO

3.11.9 If yes what treatment were you given?  
Kaa apa kingonaki tenekibaki?

1. Massage

2. Given traditional medicine

3. Given medical treatment.

4. Other (specify)

3.11.10 How long were you in labour?  
Kebaa engata nitaara enkop (Kibaboloki)?

.....

.....

3.11.11 Who helped you deliver your last child?  
Tiang' itoishe kang'ae?

TBA

Healer

Co-wife

Neighbour

Medical person

Other (specify)

3.11.12 What did the helper do to you to prepare you for  
delivery?  
Kainyoo kintaasa enkaitoyioni etoniarita enkop?

.....

.....

3.11.12 What did she do to prepare the room for delivery?  
kainyoo eitaasa oltiren eanyita pee kintofoiu?

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

3.11.13 What did she do to prepare herself for delivery?  
Kaji ekunakine enakaitoyioni oinapei lenye (Kaa eitaasa  
kewon)

.....  
.....

3.11.14 What did she do during delivery?  
Kaa kintaasa kigira aitoiu?

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

4. POST PARTUM PERIOD

4.1 How many days did the helper stay with you after delivery?  
Keng'olong'i aja kitaboitare enkaitoyioni pee lindip  
atijing'a aji?

.....

4.2 If she did not stay, did she come back?  
Kamaa teneitu kiboitare kinyaaka alolo abaiki?

.....

4.3 If yes what did she do?  
Kainyoo kintaasa pee eshukunyie?

.....

4.4 Have had problems since delivery?  
Keeta enyamali ninota teishoi nibayie?

YES

NO

If yes which?  
Kakua nena inyamalitin ninoto?

.....  
.....

4.5 How did you reward the helper for her work?  
Kainyoo enashe nitorinyoko enkaitoyioni te siai nikintaosa?

.....  
.....

5. FAMILY PLANNING

5.1 How long should the present child be before you get another one?

.....

5.2 How do you manage to stay without getting pregnant?

.....

6.1 What types of diseases are common to mothers and children?

Diarrhoea

Stomachache

Common cold

Malaria

Fever

Vomitting

Headache

Measles

Coughing

6.2 How are the children treated when they fall sick?

a) Taken to hospital

b) Treated by a traditional healer

c) Other (specify)

6.3 Has your child been immunized? Which vaccines has the child had?

B.C.G.

D.P.T.

POLIO

MEASLES

NONE

7. SANITATION

7.1 Where do you get your water?

Dam

Well

Pool

River

Tap

Others (specify)

7.2 Do you have any latrines in the Roma?

YES

NO

7.3 If no what do you use?

.....

.....

7.4 How many people use the toilet?

.....

8. ANTHROPOMETRIC MEASUREMENTS

8.1 Arm circumference of mothers. (Hospital cards)

8.2 Weight of mother

(St. John Nutrition Group).

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# SHOWING POSITION OF BOMAS

## MAP OF OLOSHO-OIBOR

SCALE 0 1 2 3 4 KM

**REFERENCE**

- Country Roads
- Other Roads and Footpaths
- Water Rivers
- Other Water Features
- Boundaries
- Settlements
- Clashes
- Disturbances
- Contours
- Contours
- Contours



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