INTEGRATED HEALTH, NUTRITION AND FOOD SECURITY SURVEY

BARINGO CENTRAL AND BARINGO NORTH DISTRICTS

FINAL REPORT

Consultant Nutritionist
Sophie Ochola (PhD)
Telephone: 651755/552086
Cell Phone: 0721 449 803
sochola@yahoo.com/ocholasa55@gmail.com

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ACRONYMS AND ABBREVIATIONS

ALRMP	Arid Lands Resource Management Project
ANC	Ante-natal clinic
ASAL	Arid and Semi-Arid Lands
CHWs	Community Health Workers
CSB	Corn-Soya Blend
CTC	Community Therapeutic Care
DMOH	District Medical Officer of Health
DNOs	District Nutrition Officers
EC	European Commission
EMOP	Emergency Operation
ENA	Emergency Nutrition Assessment
FFA	Food for Assets
FGDs	Focused Group Discussions
GAM	Global Acute Malnutrition
GFD	General Food distribution
GoK	Government of Kenya
HDDS	Household Dietary Diversity Score
HINI	High Impact Nutrition Interventions
IPC	Integrated Food Security Humanitarian Phase Classification
IRC	International Rescue Committee
IYCF	Infant and Young Child Feeding
IYCF	Infant and Young Child Feeding
KAP	Knowledge, Attitudes and Practices
KCSE	Kenya Certificate Secondary of Education
KFSSG	Kenya Food Security Steering Group
KII	Key Informant Interviews
MCH	Maternal Child Health
MOH	Ministry of Health
MOPHS	Ministry of Public Health and Sanitation
MOPHS	Ministry of Public Health and Sanitation
MUAC	Middle Upper Arm Circumference
NGOs	Non-governmental Organizations
OJT	On the job training
OTP	Outpatient therapeutic Programme
PRRO	Protracted Relief and Recovery Operation
SC	Stabilization Centre
SFP	Supplementary Feeding Programme
SMART	Standardized Monitoring and Assessment of Relief and Transition
VCT	Voluntary Counselling and Testing
WFH	Weight for Height
WFP	World Food Programme
WHO	World Health Organization
WVK	World Vision Kenya

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EXECUTIVE SUMMARY

Introduction

This report summarizes the outcomes of a nutrition survey undertaken in November 2011 in Baringo Central and Baringo North districts. The main purpose of the survey was to assess food security, health and nutritional status of children between 6 and 59 months old and to investigate causes leading to long standing poor health and nutrition indicators.

The primary objectives of the survey were to:

1. Assess the prevalence of acute and chronic malnutrition in children aged 6-59 month;.
2. Assess the prevalence of malnutrition in pregnant women and Lactating mothers;
3. Assess care seeking behaviors, rates of exclusive breastfeeding as well as complementary feeding knowledge, attitudes, and practices;
4. Estimate coverage for SFP, OTP, Measles and BCG vaccination, de-worming and vitamin A;
5. Estimate morbidity rates in children 6-59 months;
6. Estimate crude and under five mortality rate;
7. Assess Household food security levels/situation;
8. To establish hygiene and sanitation practices of the community;
9. Provide information for revising the national guidelines for conducting nutrition surveys in Kenya; and
10. To establish baseline for high impact nutrition interventions indicators

Methodology

The survey used a two-stage cluster sampling methodology based on proportion to population size to select 42 clusters of 17 households each. The clusters were selected from a comprehensive list of the smallest geographical unit (sub-locations) for which population statistics was available. Data was collected on the anthropometric measurements of 851 children. Data was also collected on morbidity status, immunization and vitamin A supplementation coverage, feeding programmes' coverage, infant and young child feeding practices, food security status of the households and household dietary diversity. The Emergency Nutrition Assessment (ENA) for Standardized Monitoring and Assessment of Relief and Transitions (SMART) version 2010 was used for the planning, training and for data entry and analysis of anthropometry data. The rest of the data were entered and analyzed in SPSS version 17.0 for Windows. Focus group discussions were conducted with men and women from the community to solicit their perceptions on the causes and possible solutions to the problems of health and nutrition in the camp as well as on the food security situation in East Pokot and Marigat districts.

KEY FINDINGS FOR BARINGO CENTRAL AND BARINGO NORTH NUTRITION SURVEY NOVEMBER 2011

	Baringo Central and Baringo North districts (%)
Demographic Household Characteristics	
Mean (sd) household size	5.7 (sd 2.2)
Total population	3197
Males	1573
Females	1595
Sex ratio	1:1
Proportion of underfives	31.2%
Nutritional Status (Children 6-59 months of age) (WHO Standards 2006). Weight-for-height Z scores **(Wasting)**	
Global Acute Malnutrition (GAM)	(36) 4.2 % (2.9 – 6.2 95% C.I.)
Severe Acute Malnutrition (SAM)	(5) 0.6 % (0.0 – 1.3 95% C.I.)
Nutritional Status (Children 6-59 months of age) (WHO Standards 2006) Weight-for-Age Z scores (**Underweight)**	
Prevalence of global underweight (<-2 z-score)	(158) 18.4 % (15.4 - 21.8 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(32) 3.7 % (2.6 - 5.4 95% C.I.)
Nutritional Status (Children 6-59 months of age (WHO Standards 2006) Height-for-age Z scores (**Stunting)**	
Prevalence of global stunting (<-2 z-score)	(260) 31.6 % (27.9 - 35.4 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(89) 10.8 % (8.5 - 13.7 95% C.I.)
Prevalence of acute malnutrition for children 6-59 months of age based on MUAC	
Severe <115 mm	0.6
Moderate 115–<125 mm	3.4
Total malnourished	4.0
At risk125 – <135 mm	12.7
Child morbidity (<59 months old)	
Sick in the two weeks prior to the survey	35.2
Watery Diarrhoea	7.6
Bloody Diarrhoea	0.7
Fever (alone or in combination with other symptoms)	13.5
ARIs (cough and cough with difficult breathing)	10.0
Immunization Coverage for children 6-59 months old	
OPV1	97.2
OPV3	91.7
Measles (children ≥ 9 -59 months	95.7

Vitamin A supplementation Coverage	
Children 6-59 months old	76.7
Children 6-11 months	66.7
Children 12-59 months old (received twice in the last 1 year)	50.2
De-worming of children 2-5 years of age	
Children 2-5 years de-wormed in the last 6 months Children 1- 5 years de-wormed in the last 6 months	66.2 60.8
Zinc supplementation	
<5 yrs supplemented with zinc during the last diarrhoea episode	4.3
Point Coverage of selective feeding programme	
Coverage of OTP (MUAC) **Coverage of OTP (Z scores)**	25.7 Numbers too few for meaningful interpretation
Coverage of SFP (MUAC) **Coverage of SFP (Z scores)**	25.0 Numbers too few for meaningful interpretation
Nutrition Status of caregivers of <5 year old children based on MUAC	
Pregnant and Lactating women <21 cm Non-pregnant and non-lactating women <21 cm	
MORTALITY	
Crude Death Rate (CDR)	0.73 (0.47 – 1.11 95% CI
Underfive Death Rate (U5DR)	1.48 (0.58 -3.72 95% CI)
Household food consumption	
Households that normally eat the following number of meals per day: • 3 meals • 2 meals • 1 meal	 79.1 10.9 0.3
Households ate following number of meals the day preceding the survey: • 3 meals • 2 meals • 1 meal	 79.1 9.5 1.0
Household dietary diversity score	8.2 (2.1)
Infant and Young Child Feeding Practices	
Breastfeeding Practices	
Put to breast within 1 hour	89.9
Exclusive breastfeeding <6 months old	50.0
Breastfeeding at 1 year	80.4
Breastfeeding at 2 years	50.0
Complementary Feeding Practices	
Minimum Dietary diversity (children 6-23 months)	
• Breastfed children consuming 3+ food groups • Non-breastfed children consuming 4+ food groups • Consuming 3+ OR 4+ food groups (breastfed and non-breastfed respectively)	77.8 65.9 73.8

Frequency of meals	
Breastfed infants 6-8 old who ate ≥2 times /day	96.5
Breastfed children 6-23 months old who ate at ≥3 times/day	87.4
Non-breastfed children 6-23 months who ate ≥4 times/day	67.8
≥ 2 meals for breastfed children 6-8 months, ≥3 for breastfed 6-23 months and ≥4 times for non-breastfed children	76.6
Factors related to the acceptable level of malnutrition	
• Relative household food security; there was plenty of food during the survey because of heavy rains • Relatively low burden of morbidity among the children, • Appropriate IYCF practices in terms of timely initiation, continuation of breastfeeding up to 1 year • Fairly good access to latrines • Appropriate hygiene practices in terms of hand washing practices	

Plausibility checks

Indicator	Survey Value	Acceptable value/range	Interpretations/comments
Digit preference - weight	5	0-20	Good
Digit preference - height	5	0-20	Good
WHZ (Standard Deviation)	0.97	0.8 – 1.2	Good
WHZ (Skewness)	0.11	-1 to +1	Good
WHZ (Kurtosis)	0.35	-1 to +1	Good
Percent flags WFH	1.6%	Less than 3%	Good
Age distribution %			
6-17 months	26.5	20-25%	Fair
18-29 months	23.0	20-25%	Good
30-41 months	23.7	20-25%	Good
42-53 months	18.9	20-25%	Poor
54-59 months	7.8	Around 10%	Fair
Age Ratio: G1+G2/G3+G4+G5	1.0	Around 1.0	Good
Sex Ratio	1.02	0.8 – 1.2	Good
General Acceptability	5%		Good

CONCLUSIONS

- The nutritional status of children (wasting) was within acceptable level judged by WHO guidelines. The nutritional situation in Baringo Central and Baringo North was contributed to by the fact that most households were food insecure, the children had relatively low burden of morbidity and the IYCF practices were on the whole appropriate at the time of the survey;
- Stunting and underweight were high although slightly lower than the national prevalence rates;
- Mortality rates were below emergency cut-off (Sphere Standards, 2004);
- Morbidity burden was highest for fever ARIs and watery DD and lower than both the national and the Rift Valley provincial rates;
- Zinc supplementation for diarrhoeal diseases was extremely low. The majority of the caregivers did nothing about the most recent diarrhoeal disease episode in their children;
- Immunization coverage was high, over 80% for all the antigens;
- Vitamin A supplementation for children 6-59 months old was slightly below the 80% acceptable level. Frequency of administration as per the WHO guidelines was poor;
- De-worming coverage for children was low;
- Iron/folate supplementation for pregnant women slightly lower than both the national and provincial rates. Compliance was low as only 5% had taken for the recommended ≥ 90 days. The findings may have been influenced by recall bias;
- Household food security was adequate. There was no increased food insecurity at the time of the survey;
- IYCF practices were on the whole adequate.
    - Breastfeeding practices were adequate in terms of initiation within 1 hour of birth and continued breastfeeding at 1 year. Nonetheless, continued breastfeeding at 2 years was poor. Despite the relatively high exclusive breastfeeding rate in comparison to the national rate, it still to reach the WHO recommended 90% acceptable level.
    - Complementary Feeding in terms of dietary diversity and frequency of feeding was good but can still be improved; and
- Most of the households used and drank unsafe water and yet the majority did not treat the drinking water.

RECOMMENDATIONS

<u>Short-term interventions</u>

- The following indicators of health and nutrition should be improved:
    - De-worming coverage;
    - Appropriate washing of hands;
    - Treatment of drinking water;
    - Exclusive breastfeeding and continued breastfeeding to 2 years;
    - Dietary diversity of complementary foods especially for the non-breastfed child;
    - Zinc supplementation of diarrhoea diseases;
    - Iron/folate supplementation for pregnant women; and
    - Coverage of Supplementary and therapeutic feeding programmes. It is recommended that more efficient methods of estimating coverage of SFP and OTP such as SQUEAC be used in the future.

The indicators listed above can be improved through intensified health education. There should be wider dissemination of such information through increased outreaches, campaigns, mobile clinics and the acceleration of the community strategy in offering health services. All the stakeholders; Ministry of Public Health and Sanitation, Ministry of Medical Services, WVK and other NGOs working on child survival programmes and also faith-based or community-based organizations should take the lead in this;

- Continue with SFP and OTP particularly during the dry seasons when there is increased household food security to deal with the hunger gap and reduce morbidity and mortality due to malnutrition. This should implemented by MOPHS, MMS, APHIA, UNICEF and WFP;
- Increase coverage for Food for Assets (FFA) especially during the dry season and where there is crop failure. The community members expressed preference for this intervention rather than GFD as they reported that they were tired of getting hand outs. This should be implemented by WFP and WVK; and
- Increase household accessibility to safe water. It suggested that water harvesting by water pans should be implemented or accelerated.

Long-term interventions

- Improve latrine coverage with MOPHS taking the lead role;
- Improve food production by provision of improved quality seeds, short season seeds and irrigation. These sentiments were strongly expressed by the community members. This recommendation should be implemented by MOA and other stakeholders; and
- Protection of crops from destruction by wild animals. This was reported during the FGDs to be a major cause of food insecurity in some parts of the districts. The MOA should take the lead in this working in collaboration with other stakeholders.

1. INTRODUCTION

This report summarizes the outcomes of a nutrition survey whose aim was to determine the prevalence of global and severe malnutrition in Baringo Central and Baringo North districts. The assessment was commissioned by Ministry of Public Health and Sanitation (MOPHS) and its implementing partner World Vision Kenya (WVK). The overall aim of the survey was to assess food security, health and nutritional status of children between 6 and 59 months old and to investigate causes leading to long standing poor health and nutrition indicators. This survey was conducted in November 2011.

1.1 Background Information

Baringo County is in Rift Valley Province and is divided into four administrative districts namely: Baringo Central, Baringo North, Marigat and East Pokot. It borders Turkana to the North, West Pokot to the North West, Keiyo and Marakwet to the West, Koibatek and Nakuru to the South and Laikipia and Samburu to the East.

The Coutny covers an area of 8,655 square kilometres which includes 140.5 square kilometres of Lake Baringo, Lake Bogoria and Lake Kamnarok and the recently a new lake named 94 has developed in the last fifteen years. The County has an estimated population of 406,839 (according to the 2009 National Census) spread in four livelihood zones namely mixed farming, pastoral, agro-pastoral and irrigated cropping (Figure 1).

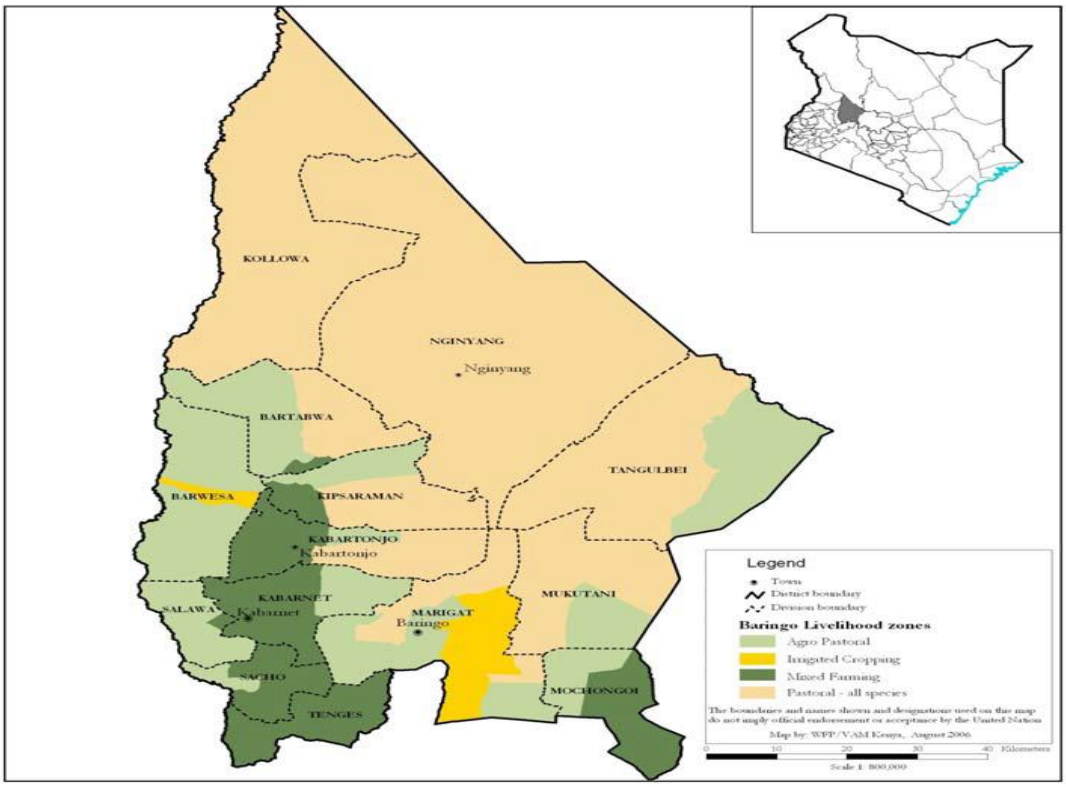


Figure 1: Baringo Livelihood zones

The food security situation in Baringo County is affected by factors including; poor rainfall performance, poor agronomic practices, human-wildlife conflict and high food prices. Baringo County has been on Emergency Operation (EMOP) food relief support since September, 2004 to August, 2009 after which it was put under Protracted Relief and Recovery Operation (PRRO) whose phase 1 commenced in September, 2009 to date. No relief food was received between the periods of March, 2007 and September, 2008. The Protracted Relief and Recovery Operation phase IV covered the period March, 2011 to August, 2011.The number of people that benefited in this phase was 96,223. There was a joint effort by the government of Kenya (GoK) and the World Food Programme (WFP) in terms of relief food provision accounting to 16,200 beneficiaries under Food for

Asserts (FFA) and 13,960 beneficiaries under the Government of Kenya (GoK) General Food Distribution (GFD)[1].

At the time of the survey, Baringo Central was not receiving food relief having been phased out in December 2010 whereas the distribution of relief food had just commenced in Baringo North targeting 16,000 beneficiaries or 7.1% of the population. The general food distribution was 50% ration in which a cereal, corn soya blend (CSB), a pulse, iodized salt and fortified oil was distributed on a monthly basis. Most of the GFD was provided by WFP[2]. There was supplementary feeding programme (SGP) targeting children underfive years of age, pregnant and lactating women and outpatient therapeutic programme (OTP) in both the districts.

Nutrition and Health Activities in Baringo County

WVK, WFP and UNICEF are working in collaboration with the MOPHS on child survival activities in the County. The main responsibility of MOPHS is quality assurance of the nutrition and health-related activities through the coordination of all activities in Baringo County. The main health and nutrition activities in which WVK works in partnership with MOPHS include:

- Implementation of High Impact Nutrition Interventions (HINI) activities from May 2011. These include:
    - Prevention and management of malnutrition through SFP and OTP and in-patient management of severely acutely malnourished children in stabilisation centres (SC). Each of the district hospitals has a SC. WFP provides the corn soya blend (CSB) for treatment of moderate malnutrition (MAM) and UNICEF the plumpy nuts for management of severe acute malnutrition (SAM). The newly developed plumpy sup for moderately malnourished was about to be introduced at the time of the survey;
    - Micronutrient supplementation: iron/folate for pregnant women and children underfive years of age; vitamin A and micronutrient supplementation for children underfive years of age; and zinc supplementation for diarrhoeal diseases;
    - De-worming of children underfive years of age and pregnant women; and
    - Promotion of; appropriate hand washing messages, appropriate IYCF practices (both breastfeeding and complementary feeding) though health education and mother to mother support groups;

Most of the activities are implemented through outreaches services bringing the services nearer to the people since the health facilities are not easily accessible. The outreaches are conducted on a monthly basis.

The main challenges to programme implementation were reported to be:

- Long distances to health facilities which were also few in number;
- Inadequate health staffing. In some of the areas, the health facilities were being manned by community health workers (CHWs);
- Logistics because of the vastness of the areas, the hilly terrain that interferes with transportation and distances to and between health services; and
- Mobility of community members in some areas.

2. OBJECTIVES

2.1 Overall Purpose and Objective

To assess food security, health and nutritional status of children between 6 and 59 months old and to investigate causes leading to long standing poor health and nutrition indicators.

[1] Baringo District Long Rains Assessment, August 2011
[2] WFP Programme Assistant, Eldoret

2.2 Specific objectives

The following objectives guidelines guided the implementation of the survey. To:

11. Assess the prevalence of acute and chronic malnutrition in children aged 6-59 month;.
12. Assess the prevalence of malnutrition in pregnant women and Lactating mothers;
13. Assess care seeking behaviors, rates of exclusive breastfeeding as well as complementary feeding knowledge, attitudes, and practices;
14. Estimate coverage for SFP, OTP, Measles and BCG vaccination, Deworming and vitamin A;
15. Estimate morbidity rates in children 6-59 months;
16. Estimate crude and under five mortality rate;
17. Assess Household food security levels/situation;
18. To establish hygiene and sanitation practices of the community;
19. Provide information for revising the national guidelines for conducting nutrition surveys in Kenya; and
20. To establish baseline for high impact nutrition interventions indicators (Annex 1 for ToR).

3. SURVEY METHODOLOGY

3.1 Survey Design

The survey used a cross-sectional study design comprising two phases in which both quantitative and qualitative data was collected. In the first phase of the survey, desk review of the following: nutrition surveys; Kenya Food Security Steering Group (KFSSG) Short Rains and Long Rains reports and Arid Lands Resource Management Project (ALRMP) Drought Monitoring Bulletin was conducted. In addition, Key in-depth interviews (KII) were conducted with WFP, District Medical Officer of Health (DMOH) for Baringo Central and Marigat districts and the Nutrition Project Manager WVK. Information on the health and nutrition situation in the district and the challenges constraining the provision of services was also obtained. This phase also included a meeting with the MOPHS and its partners to review and agree on the scope of the questionnaire.

The second phase of the survey involved training of the survey team and data collection. Focus group discussions (FGDs) were conducted with a cross-section of the community members (women and men) to solicit their perceptions on the causes and possible solutions to the problems of health and nutrition in the districts. The focus of the FGDs was; malnutrition among the underfives and women, food security issues, morbidity and health seeking behaviour, and Infant and Young Child Feeding Practices (IYCF).

3.2 Target Population

The survey was conducted on children 6-59 months of age in order to determine their nutritional status. In addition, children 0-23 months old were targeted to assess IYCF practices as well as women of the reproduction age (18-45 years) so at to establish their nutritional status.

3.2.1 Sampling Technique and Sample Sizes

Emergency Nutrition Assessment (ENA) for Standardized Monitoring and Assessment of Relief and Transitions (SMART) version 2010 was used in the planning, training, data entry and analysis.

The sampling frame consisted of all households in the two districts. The population data was based on the Kenya National Bureau Statistics estimates[3]. Sample size calculation was based on the assumption that the prospected GAM was higher than during the May 2010 nutrition survey. The sample size was calculated using the global acute malnutrition (GAM) for the October 2010 East Pokot survey because there was no other survey conducted in Baringo in the same year. The upper confidence interval (18.7%) was used for the calculation since it was anticipated that the nutrition status of the children was worse than it was in 2010. A precision of ±4.2% was used for the survey and a design effect of 1.5 for the cluster methodology. The proportion of the under fives was estimated at 16.9%.The average household size was 4.7. The non-response rate was estimated at 3%. The resulting sample size was 716 households expected to yield 497 children underfive years of age for

[3] Baringo County; Kenya National Bureau of Statistics, November 2011

anthropometric measurements. The number of clusters was 42 each comprising 17 households each. The resulting sample size for anthropometric measurements was 851.

The sample size for collection of data on IYCF indicators was 3 infants 0-5 months of age per cluster and 8 infants 6-23 months of age per cluster making a total of 462 infants per district.

For the mortality rates (both crude and underfive mortality) the sample sizes was also calculated using ENA for SMART 2010. The sample size was calculated based on the crude mortality estimate (1.4 per 10,000 people per day) based on the East Pokot Nutrition Survey 2010. A precision of ±0.5% was used for the survey, a design effect of 1.5 for the cluster methodology and the recall period was 90 days. The average household size was 6. The non-response rate was estimated at 3%. The calculated sample size was 739 households expected to yield a population of 3585. This translated to 19 households per each of the 42 clusters.

Selection of Clusters

A two-stage cluster survey, proportional to population size, using the smallest geographical administration (sub-location) was employed in carrying out the survey. The sampling unit/cluster was the sub-location because of lack of population statistics at the village level. In the first sampling stage, the total population for each of the sub-locations in each survey were listed. Clusters were allocated to the sub-locations from the cumulative population list proportional to population size. Sampling was done using the ENA for SMART software 2008 (Annex 2 for selected clusters). Some sub-locations (with large population sizes) had more than one cluster assigned to them making it necessary to further sub divide them into smaller units using the best and most representative option so as to minimize bias.

Selection of Households

The definition of a household was a shelter or more whose residents eat from the same “cooking pot”. The principle of randomness was used in the selection of households. Each survey team moved to the approximate centre of the selected cluster from where a pen was spun to randomly determine the starting direction. The teams then moved along the selected direction to the edge of the cluster. At this point the team spun the pen again until it pointed to the inside of the cluster. The team moved along this direction and carried out a census of all the households from to the edge of the cluster. The first household to be visited was randomly selected from the list of households using the lottery system. Thereafter, the next nearest household as one left the household already visited was selected. The team then carried out interviews in all eligible subsequent households until they visited 15 households per cluster.

If nobody was home at the time of the first visit, after checking with neighbours or family members, to ensure they were not close by, the team attempted to revisit the household at least 2 times. Households where interviews did not take place because the person refused or nobody was available, was recorded as such and the household was not replaced as the sample size took into account non-response.

Selection of children for anthropometry

All children between 6-59 months of age staying in the selected household were measured. The respondent was the primary care giver of the index child/children. If a child and/or the caregiver were temporarily out of the house, then the survey team re-visited the house to collect the data at an appropriate time. This process was repeated until the required number of households (16) per cluster was attained.

Selection of children for assessment of IYCF practices

The sample for children 0-23 months old was attained by enlisting the children in these age categories as they were found in the households visited. In case the required sample size was not realized from the number of households visited, more households were sampled in a similar manner to those for the anthropometric survey (described above) until the required sample was realized.

Selection of women for determination of nutritional status

All women in the reproductive age (15-45 years) in the identified households were enlisted in the study and their MUAC measurements taken.

3.3 Selection of the survey team, training and pre-testing of the questionnaires

3.3.1 Survey Team

The survey was coordinated and supervised by an external consultant, an assistant consultant and a data analyst. The consultants were assisted by the Nutrition Manager WVK. District Nutrition Officers (one from each of the districts) assisted in the coordination of data collection. The survey was undertaken by 5 teams; each team comprised 4 members inclusive of a team leader/supervisor. The team leader doubled as the interviewer while the rest of the team members translated the questions and responses and also took the anthropometric measurements. The team leaders were mainly from MOPHS and partner agencies whereas the rest of the team members were largely drawn from community members with at least Kenya Certificate of Secondary Education (KCSE) and with prior experience in surveys.

3.3.2 Training of team leaders, measurers and interviewers and pre-testing of questionnaire

A five-day training workshop was conducted before the commencement of the survey. The training took place from 22th to 26th November, 2011. The training focused on: the purpose and objectives of the survey; familiarization with the questionnaire by reviewing the purpose for each question; interviewing techniques and recording of data; how to take anthropometric measurements; and cluster and household selection. Role-plays on how to administer the questionnaire and record responses were conducted. Demonstrations on how to take anthropometric measurements were also conducted. This was followed by practice to standardize anthropometric measurements. The standardization of anthropometric measurements took one day.

A half day of the training was allocated to pre-testing of the questionnaire (in areas that had not been selected for inclusion in the survey) and reviewing of the data collection tools based on the feedback from the field (Annex 3 for questionnaires). The anthropometric measurements from pre-testing were entered into the ENA for SMART software and a plausibility report developed for each team and this information was used to correct the teams' mistakes.

3.4 Data collection

Data collection took 5 days, from 28th November to 4th December 2011. The consultant, assistant consultant, representatives from the partner agencies and DNOs supervised the teams throughout the data collection period. Teams administered the standardized questionnaire to the mother or caregiver. Each survey team explained the purpose of the survey and issues of confidentiality and obtained verbal consent before proceeding with the interview.

3.5 Variables Measured

Age: The exact age of the child was recorded in months, based on information gathered from the caregiver and confirmed with information from health, baptismal or birth certificates. A calendar of events (Annex 4) was used for those children whose mothers could not remember the date of birth of their children and those who did not have any documentation of the date. A chart for calculation of age in months was used to enable accurate and fast determination of age (Annex 5).

Weight: Children were measured in the nude using a 25 kg hanging spring Salter scale to the nearest 100g.

Height: Recumbent length was taken for children less than 87 cm or less than 2 years of age while those greater or equal to 87 cm or more than 2 years of age were measured standing up.

MUAC: Mid Upper Arm Circumference (MUAC) was measured on the left arm, at the middle point between the elbow and the shoulder, while the arm was relaxed and hanging by the body's side. MUAC was measured to the nearest mm. In the event of a disability the right arm was used or for those who are left-handed, MUAC was taken on the right arm. MUAC measurements were taken for children 6-59 months of age and for women in the reproductive age (18-45 years of age).

Bilateral oedema: Assessed by the application of normal thumb pressure for at least 3 seconds to both feet at the same time. The presence of a pit or depression on both feet was recorded as oedema present and no pit or depression as oedema absent.

Enrolment in the selective feeding programmes: For all children 6-59 months of age, the caretakers were asked to state whether the child was enrolled in a supplementary feeding programme (SFP) or a therapeutic feeding programme (OTP) on the day of the survey. Point coverage for the SFP was calculated as the proportion of children attending the programme divided by the number of cases not attending the programme plus the number of children attending the programme based on MUAC and Z scores. The coverage rate for OTP was similarly calculated as the proportion of severely malnourished children enrolled in the programme. The coverage rate was calculated based on the survey findings and not on the number of children enrolled in the programme at the time of the survey.

Morbidity: Information on two-week morbidity prevalence was collected by asking the mothers or caregivers if the index child had been ill in the two weeks preceding the survey and including the day of the survey. Illness was determined based on respondent's recall and was not verified by a clinician.

Immunization status: For all children 6-59 months, information on BCG, Pentavalent 1-3, DPT 1-3, measles vaccinations and full immunization status was collected using health cards and recall from caregivers. When estimating measles coverage, only children 9 months of age or older were taken into consideration as they are the ones who were eligible for the vaccination and thus the coverage was calculated as the proportion of children 9 months and above who had received measles vaccination. The vaccination coverage was calculated as the proportion of children immunized based on records and recall.

Vitamin A supplementation status: For all children 6-59 months of age, information on Vitamin A supplementation in the 6 months prior to the survey date was collected using child health and immunization campaign cards and recall from caregivers.

De-worming status: Information was solicited from the caregivers as to whether children 24-59 months of age had received de-worming tablets or not in the previous 6 months. This information was verified by card where available.

Information on Infant Feeding Practices: Information on timely initiation of breastfeeding, giving of colostrum and pre-lacteal feeds, exclusive breastfeeding rates, maintenance of breastfeeding, frequency of feeding, diversity of complementary feeds was solicited based on a 24-hour recall, in line with the WHO guidelines to minimize recall bias and thus obtain more valid information. The indicators used were based on WHO[4] and Kenya Demographic Health Surveys. The information was obtained for children 0-23 months of age.

Dietary diversity for children 6 to 23 months of age: The dietary diversity indicator is based on the premise that the more diverse the diets are the more likely they are to provide adequate levels of a range of nutrients. There is considerable evidence for this idea[5]. For this indicator, the minimum dietary diversity for children 6-23.9 months is ≥4 food groups out of 7 groups. The food groups are summed, with each of the groups scored "1" If the child had the food group yesterday, and "0" if not. This results in a diversity score ranging from 0 to 7 for each child. Higher scores correspond to a more adequate range of foods groups in the diet.

The food groups were as follows:

- Grains, roots and tubers
- Legumes and nuts
- Dairy products (milk, yoghourt, cheese)

[4] Indicators for Assessing Infant And Young Child Feeding Practices. Conclusions of a consensus meeting held 6-8 November 2007 in Washington DC., USA.

[5] Ruel M. T. (2002): *Is dietary diversity an indicator of poor food security or diversity quality? A review of measurement issues and research needs.* Food Consumption and Nutrition Division, International Food Policy Research Institute (IFPRI). FCND Discussion Paper NO. 140.

- Flesh foods (meat, fish, poultry and liver/organ meats)
- Eggs
- Vitamin A-rich fruits and vegetables
- Other fruits and vegetables

Food security status of the households: Information on the number of meals usually eaten and the number of meals eaten on the day preceding the survey was solicited to establish the food security status of the households. Additionally, information on the family members who had missed a meal the day preceding the survey was also solicited. Information on the primary source of the dominant food was also solicited.

Household food diversity: Dietary diversity is a qualitative measure of food consumption that reflects household access to a wide variety of foods, and is also a proxy of the nutrient intake adequacy of the diet for individuals. Dietary diversity scores were created by summing the number of food groups consumed over a 24-hour period to aid in understanding if and how the diets are diversified. (Annex 3). Household dietary diversity score (HDDS) is meant to reflect, in a snap shot the economic ability of a household to consume a variety of foods[6]. A score of 1 was allocated to each food group that was consumed by the household and a score of 0 for each of the food groups not consumed by the household, and thus the highest possible score was 15.

Food Aid: Information was also sought on whether a household had received any food aid in the past three months; the source of the food, the number of times received, what foods were received, how the ration was used and the duration each food commodity lasted.

Coping Strategies: Information on coping strategies households employ during times of food scarcity was obtained from respondents.

Household water consumption and utilization: The indicators used were main source of drinking and household water, time taken to water source and back, cost of water per 20-litre jerry-can and treatment given to drinking water.

Sanitation: Information on household accessibility to a toilet/latrine, disposal of children's faeces and occasions when the respondents wash their hands was obtained.

Nutrition Indicators:

Nutritional Indicators for children 6-59 months of age

The following nutrition indicators were used to determine the nutritional status of the underfives:

- Weight-for-height (WFH) index

Acute malnutrition rates were estimated from the weight for height (WFH) index values combined with the presence of oedema. The WFH indices were compared with WHO Standards 2006. WFH indices were expressed in Z-scores. The expression in Z-scores has true statistical meaning and allows inter-survey comparison.

Guidelines for the results expressed in Z-scores:

- Severe malnutrition is defined by WFH <-3 SD and/or existing bilateral oedema on the lower limbs of the child
- Moderate malnutrition is defined by WFH <-2 SD and >=-3 SD and no oedema

Global acute malnutrition (GAM) is therefore defined as the proportion of children presenting with a weight for height index less than -2 Z scores with/without oedema.

[6] Guidelines for measuring household and individual dietary diversity. Version 2, June 2007. Prepared by FAO Nutrition and Consumer Protection Division with the support from EC/FAO Food Security Information for Action Programme and the Food and Nutrition Technical Assistance (FANTA) Project. Rome, Italy

MUAC

Guidelines for the results expressed as follows:

- Severe malnutrition is defined by measurements <115mm
- Moderate malnutrition is defined by measurements >=115mm to <125mm
- At risk is defined by measurements >=125mm to <135mm
- Normal >=135mm

Table 1: Definitions of acute malnutrition using WFH and/or oedema in children aged 6–59 months

Acute malnutrition (WFH)	**Z score**	**oedema**
Severe	< - 3 z scores	Yes / no
	> -3 z scores	Yes
Moderate	< –2 z-scores to ≥ –3 z-scores	No
Global	< –2 z-scores	Yes / No

Adapted from SMART Manual, Version 1, April 2006

MUAC cut off points for the women for pregnant and lactating women[7]: Cut off <21 cm signifying under nutrition

3.6 Data Analysis

Four data entry clerks were hired by WVK and an external data analyst were responsible for data entry under the coordination and supervision of the consultant. ENA for SMART software nutrisurvey was used for data entry and analysis of anthropometry data. The rest of the data was analyzed in Statistical Package for Social Science (SPSS) version 17.0 for Windows. The data entry could not be completed at the field and therefore another team of data entry clerks were identified by the consultant and completed the task in Nairobi.

3.7 Methodological Challenges

Age: Age determination was a major challenge as many mothers/caregivers did not know the birth dates of their children and many did not have child health cards. Ages were thus approximated by the use of local calendars of events; one for Baringo Central and another for Baringo North. It was however realized during data collection that the even the child health cards many times did not have accurate dates of birth because many of these cards were issued at the first visit at the maternal and child health (MCH) clinic for immunization as many births took place at home.

Supervision of data collection: Supervision of data collection was a major challenge due to the heavy rains which made some of the survey teams to spend nights in the field.

Population statistics: There were no population statistics for the smallest geographical unit, the village. The sampling unit was therefore the sub-location for which population statistics were available.

[7] Kenya National Bureau of Statistics and Ministry of Public Health and Sanitation, Guidelines for Nutrition Assessments in Kenya, 2008

4. RESULTS

4.1 Household Demography and Socio-economic Status

4.1.1 Household Demography

The mean household size was 5.7 (sd 2.2). The sex ratio (male to female) was as expected (1.1). The proportion of children underfive years of age was higher than expected for the developing world (18-20%) at 31.2% (Table 2).

Table 2: Household Demographic Characteristics

Demographic Characteristics	
Mean (sd) household size	5.7 (sd 2.2)
Total population	3197
Males	1573
Females	1595
Sex ratio	1.1
Proportion of Underfives	31.2%

4.1.2 Livestock Ownership

Table 3: Livestock Ownership

	N= 585	
	n	%
Household owns livestock	361	61.4
Livestock increased in last 6 months	231	56.6
Reasons for increase*: (n=230)		
• Animals gave birth	196	85.2
• Bought	27	11.7
• Dowry	2	0.9
• Donation	5	2.2
Livestock decreased in the last 6 months	75	19.9
Reasons for decrease*:		
• Sold	43	70.5
• Death caused by drought	6	9.8
• Death caused by disease	12	19.7
Livestock remained the same in the last 6 months	88	23.4

*Multiple responses

4.2 Anthropometry

4.2.1 Age and sex distribution of the sampled children

Verification of age of index child/children

Table 4: Verification of age of index child/children

	N=529	
	n	%
Health card	390	73.7
Birth certificate/notification	8	1.5
Total Verified	**398**	**75.2**
Recall	131	24.8

The ages of children were verified by; health cards, baptismal cards, birth notification and birth certificates. In the absence of these cards, age was determined by recall, in the majority of cases, based on a local calendar of events developed by the survey team prior to the commencement of the study. Even though some of the children's ages were verified by the use of a health card, it is important to note that for some, no exact date of birth was recorded on the card other than the date the child was first seen at the health facility which was not necessarily the date of birth. The survey teams therefore had to probe and use the local calendar of events to estimate the age of the child in months. For the majority of the children (73.7%), age was verified by health cards and birth certificate or notification (Table 4). For a one-quarter of the children (24.8%) age was based on recall and calculated using a local calendar of events.

Distribution of children by age and sex

Of the children surveyed, 50.9% were boys and the 49.1% were girls (Table 5). The overall ratio of boys to girls (calculated by diving the total number of boys with the total number of girls) was 1.0 which was within the recommended range of 0.8 – 1.2[8], demonstrating an unbiased sample. The ratios of boys to girls were within the normal range except for the age category 54-59 months.

Table 5: Distribution of the children by age and sex

	Boys		**Girls**		**Total**		**Ratio**
AGE (months)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy:girl**
6-17	111	48.3	119	51.7	230	26.4	0.9
18-29	98	48.8	103	51.2	201	23.1	1.0
30-41	110	53.4	96	51.2	206	23.7	1.1
42-53	85	51.8	79	46.6	164	18.9	1.1
54-59	39	52.5	19	47.5	69	7.9	1.3
Total	443	50.9	427	49.1	870	100.0	1.0

4.3 Prevalence of malnutrition weight-for-height z-scores (WHO Standards 2006)

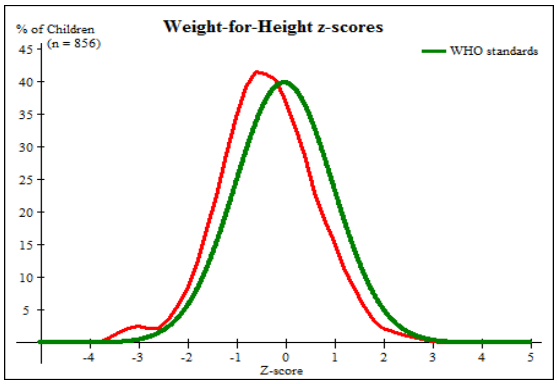
The GAM rate; 4.2% (2.9 – 6.2% 95% CI) was within acceptable level (<5%) as per the WHO guidelines (Table 6). The SAM rate was 0.6% (095% CI) which was also within acceptable level. The boys were more undernourished 5.0% (2.9% - 8.7 95% CI) compared to the girls 3.4% (1.0 – 5.9% 95% CI). The difference in the level of malnutrition between boys and girls was not statistically significant (Chi-square test P=0.083).

[8] Assessment and Treatment of Malnutrition in Emergency Situations, Claudine Prudhon, Action Contre la Faim (Action Against Hunger), 2002.

Table 6: Prevalence of malnutrition weight-for-height z-scores (WHO Standards 2006)

Nutritional Status Indicator	All n=851	Boys n=536	Girls n=415
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(36) 4.2% (2.9 – 6.2% 95% CI)	(22) 5.0% (2.9 – 8.7 95% CI)	(14) 3.4% (1.9 – 5.9 95% CI)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(31) 3.6% (2.4 – 5.4 95% CI)	(21) 4.8% (2.8 – 8.2 95% CI)	(10) (1.2 – 4.6 95% CI)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(5) 0.6% (0.0 – 1.3 95% CI)	(1) 0.2% (0.0 – 1.8 95% CI)	(4) 1.0% (0.4 – 2.5 95% CI)
% of oedema	(0) 0%		

4.3.1 Weight for height z-score distribution based on WHO Standards 2006



The sample curve shows displacement to the left of the reference population. This is an indication of poor nutrition status of the sampled population in comparison to the reference population. The standard deviation of this sample was 0.97, (which lies within the acceptable range 0.8 – 1.2), indicating representativeness in the sample selection (Figure 2).

Figure 2: Weight for height Z-score distribution

4.4 Prevalence of acute malnutrition (wasting) by age based on weight-for-height Z-scores and or oedema (WHO Standards 2006)

The children were categorized into age groups to examine the effect of age on nutritional status. This is necessary to guide the targeting of interventions taking into account the vulnerabilities in relation to a child's life cycle. The children in the age category 48-59 months had the highest burden of malnutrition (6.2%). This was followed by those in the age category 12-23 months which may imply poor IYCF practices (Table 7).

Table 7: Prevalence of acute malnutrition (wasting) by age based on weight-for-height Z-scores and or oedema

		Severe wasting <-3 z-score	Moderate Wasting (>= - and <-2 z-score	Global Acute Wasting (<- z score)
Age in Months	Total No			
6-11	138	(2) 1.4	(2) 1.4	(4) 2.8
12-23	178	(0) 0.0	(8) 4.5	(8) 4.5
24-35	200	(2) 1.0	(6) 3.0	(8) 4.0
36-47	194	(1) 0.5	(6) 3.1	(7) 3.6
48-59	143	(0) 0.0	(9) 6.3	(9) 6.2
Total	**853**	**(5) 0.6**	**(31) 3.5**	**(36) 4.2**

4.5 Prevalence of acute malnutrition based on MUAC

The prevalence of malnutrition based on MUAC (4.0%) was more or less the same as that by WHZ (4.2%). 12.7% of the children were at risk of malnutrition whereas 0.6% was severely malnourished (Table 8).

Table 8: Prevalence of Malnutrition based on MUAC

	N=877
Severe under nutrition < 115 mm	(5) 0.6
Moderate 115–<125 mm	(30) 3.4
Total malnourished	(35) 4.0
At risk125 – <135 mm	(111) 12.7

The MUAC cut-off points are based on the WHO guidelines

4.6 Prevalence of underweight (weight-for-age)

Table 9: Prevalence of weight-for-age (underweight) by sex based on Z-scores

	All N=860	**Boys N=440**	**Girls N=420**
Prevalence of underweight (<-2 z-score)	(158) 18.4 % (15.4 - 21.8 95% C.I.)	(86) 19.5 % (15.6 - 24.3 95% C.I.)	(72) 17.1 % (13.6 - 21.4 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(126) 14.7 % (11.8 - 18.1 95% C.I.)	(68) 15.5 % (11.7 - 20.1 95% C.I.)	(58) 13.8 % (10.8 - 17.5 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(32) 3.7 % (2.6 - 5.4 95% C.I.)	(18) 4.1 % (2.7 - 6.2 95% C.I.)	(14) 3.3 % (1.8 - 6.1 95% C.I.)

The prevalence of underweight was high (Table 9). The global underweight was 18.4% (15.4 - 21.8 95% C.I.) and that of severe underweight was 3.7 % (2.6 - 5.4 95% C.I.). These rates are however; lower than the national and Rift Valley provincial rates[9]. A higher proportion of boys 19.5% (15.6 - 24.3 95% C.I.) compared to the girls 17.1% (13.6 - 21.4 95% C.I.). Nonetheless, the difference was not statistically significant (Chi-square test P= 0.999).

4.7 Prevalence of stunting

Stunting rates were high but below the national rate (35.3%) and the Rift Valley Province rate (35.7%)[10]. The prevalence of stunting was 31.6% (27.9 - 35.4 95% C.I.) and for severe stunting was 10.8% (8.5 - 13.7 95% C.I.) (Table10). A higher proportion of boys 35.4% (30.2 - 41.0 95% C.I.) compared to girls 27.5% (6.2 - 14.2 95% C.I.). The high level of stunting may be an indication of chronic food insecurity experienced in most parts of Baringo Central and Baringo North districts because of chronic drought.

[9] KDHS 2008-09
[10] KDHS 2008-09

Table 10: Prevalence of stunting based on height-for-age Z score and/or oedema

	All N-824	**Boys N=421**	**Girls N=403**
Prevalence of stunting (<-2 z-score)	(260) 31.6 % (27.9 - 35.4 95% C.I.)	(149) 35.4 % (30.2 - 41.0 95% C.I.)	(111) 27.5 % (22.4 - 33.4 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(171) 20.8 % (18.5 - 23.2 95% C.I.)	(98) 23.3 % (20.0 - 26.9 95% C.I.)	(73) 18.1 % (14.7 - 22.1 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(89) 10.8 % (8.5 - 13.7 95% C.I.)	(51) 12.1 % (8.8 - 16.5 95% C.I.)	(38) 9.4 % (6.2 - 14.2 95% C.I.)

4.8 Prevalence of child morbidity (children 0-59 months of age)

The prevalence of common illnesses was determined based on a two-week recall period thus yielding two-week point prevalence. Overall, the level of morbidity among the children was high as about one-third (35.2%) had been ill (Table 11). The most prevalent symptom was fever alone or in combination with other symptoms (13.5%) followed by ARIs (coughs and cough with difficult breathing) and then watery diarrhoea (7.6%). The morbidity burden for ARIs and watery diarrhoea were lower than the national and Rift Valley provincial rates.

Table 11: Prevalence of morbidity among children 0-59 months of age

Illnesses	**N=847**	
	n	%
Sick in the 2 weeks before the survey	292	35.2
Watery diarrhoea	63	7.6
Bloody diarrhoea	6	0.7
Fever (alone or in combination with other symptoms)	112	13.5
ARIs (cough and cough with difficult breathing)	83	10.0
Others	20	2.2

Multiple Responses

4.9 Maternal Management of Diarrhoea

The most common method of managing diarrhoea for about one-fifth (21.7%) of the mothers was administering pre-packed oral rehydration solution (ORS) to children (Table 12), which is WHO recommended protocol to control dehydration. The newly recommended protocol, supplementation with zinc was very low (4.3%). This may partly be because the majority of the mothers (69.6%) did not seek any assistance for the child with diarrhoea. Additionally, the long distances to the health facilities could have been a reason for many mothers not to seek assistance at health facilities.

Table 12: Management of diarrhoea

	N= 69	
	n	%
Pre-packed ORS	15	21.7
Home-made salt-sugar solution	1	1.4
Another home-made liquid	1	1.4
Zinc	3	4.3
Others	1	1.4
Nothing	48	69.6

4.10 Maternal Health Seeking Behaviour

The majority of the mothers/caretakers (65.9%) sought assistance from public health facility for their sick children. Almost one-tenth (8.7%) of the mothers used herbs and home remedy whereas 7.6% sought no

assistance and 6.2% received health services from mobile clinics. The relatively high proportions of mothers who bought medicine from shops/kiosks (5.1%) and 4.7% from pharmacy should be discouraged because proper diagnosis should be done before prescription of the appropriate medicine. The self-diagnosis conducted by mothers/caregivers and the decision on the medicines to purchase for their sick children is likely to be a dangerous practice with adverse health consequences on the child.

Table 13: Health seeking behaviour by mothers for their sick children

	N= 276	
	n	%
Traditional Healer	2	0.7
Community Health Worker	2	0.7
Private clinic / Pharmacy	13	4.7
Shop / kiosk	14	5.1
Public health facility	**182**	**65.9**
Mobile Clinic	17	6.2
Relative / Friend	1	0.4
No assistance sought	21	7.6
Herbs/home remedy	24	8.7

4.11 Coverage of Selective Feeding Programmes

Period coverage[11] expressed in the following formula was used to determine the coverage of the selective feeding programmes:

$$\frac{\text{Number of children attending a selective feeding programme}}{\text{Number of cases NOT attending the feeding programme + Number of children attending the feeding programme}} \times 100$$

Coverage for the selective feeding programmes was calculated using, the percentage of the median, MUAC and Z scores because the three measures of acute malnutrition are used to admit children into SFP and OTP programmes.

4.11.1 SFP Coverage rate

SFP Coverage based on MUAC

Based on the formula above the SFP coverage rates based on MUAC was 25.7% (Table14). This coverage is much lower than the 50.0% acceptable coverage as per the Sphere Standards (2004).

Table 14: SFP coverage based on MUAC for all the districts

Number of children in SFP	9
Children with 115mm - <125mm	30
Number of cases in SFP	4
Number of cases not in SFP	26
Coverage rate	**25.7%**

SFP coverage based on Z- scores

The SFP coverage based on Z–scores (25.0%) was more or less the same as that based on MUAC (Table 15).

[11] In, Myatt et.al., *A field trial of a survey method for estimating the coverage of selective feeding programmes,* Bulletin of the World Organization, January 2005, 83 (1).

Table 15: SFP coverage based on Z-scores for all the districts

Number of children in SFP	9
Children <-3 z scores	30
Number of cases in SFP	3
Number of cases not in SFP	27
Coverage rate	**25.0%**

4.11.2 Coverage of OTP

The coverage for OTP could not be computed because the number of severely malnourished children was too few to allow meaningful computation and interpretation.

4.12 Immunization Coverage for Children 7-59 months of age

4.12.1 BCG Immunization Coverage

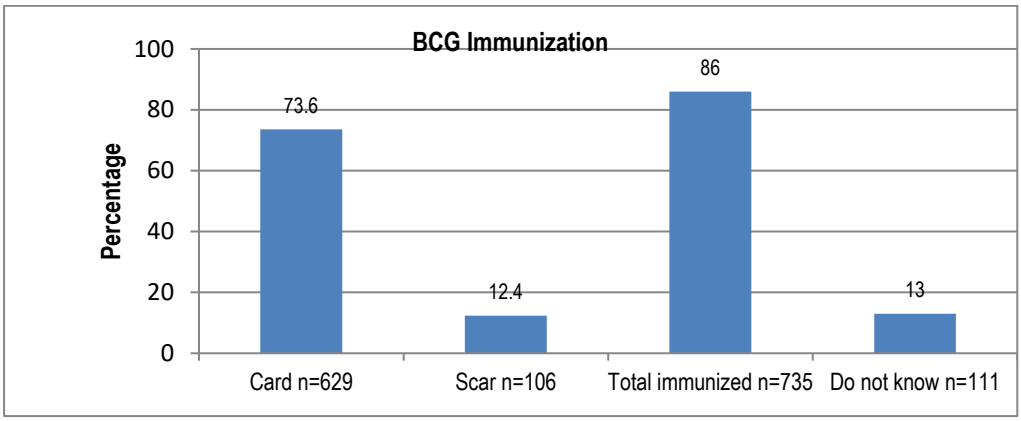


Figure 3: BCG Immunization Coverage

The immunization coverage for BCG was above the WHO recommended acceptable level (80.0%). For a relatively large proportion of children (13.0%) the mothers/caretakers did not know if they the children had been vaccinated or not (Figure 3).

4.12.2 Immunization Coverage

The immunization coverage rate for OPV1/pentavalent1 (by card and recall) was high and above the acceptable WHO cut-off of 80%. Nonetheless, the relatively large proportion of children (21.1%) for whom immunization was based on recall is of concern because this can lead to unnecessary re-vaccination (Figure 4).

OPV1/pentavalent1 Immunization Coverage

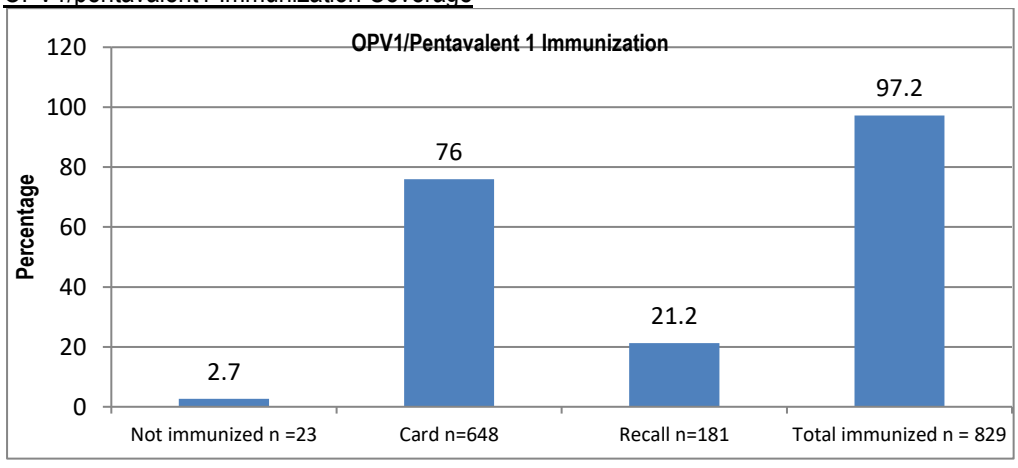


Figure 4: OPV1 immunization coverage

OPV2/pentavalent 2 Immunization Coverage

The immunization coverage for OPV2/pentavalent 2 was high (94.0%) and above the WHO 80% acceptable level. Nonetheless, one-fifth of those reported immunized was based on recall (Figure 5).

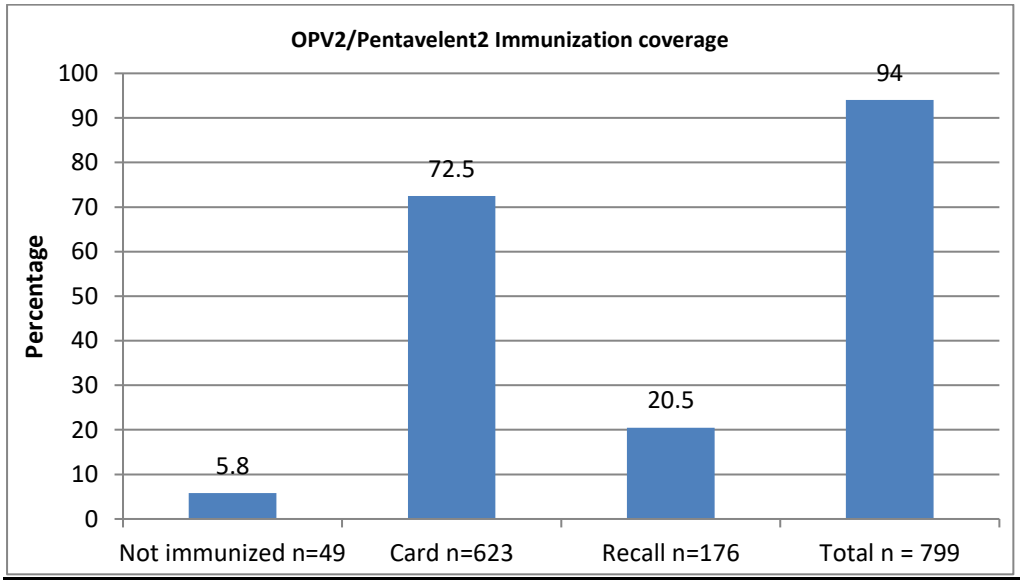


Figure 5: OPV2/Pentavalent 2 Immunization Coverage

OPV3/pentavalent 3 Immunization Coverage

Immunization coverage rate for OPV3 was also high 91.7% when cases verified by card and those by recall were considered (Figure 6). Again, one-fifth of the reported immunized were based on recall.

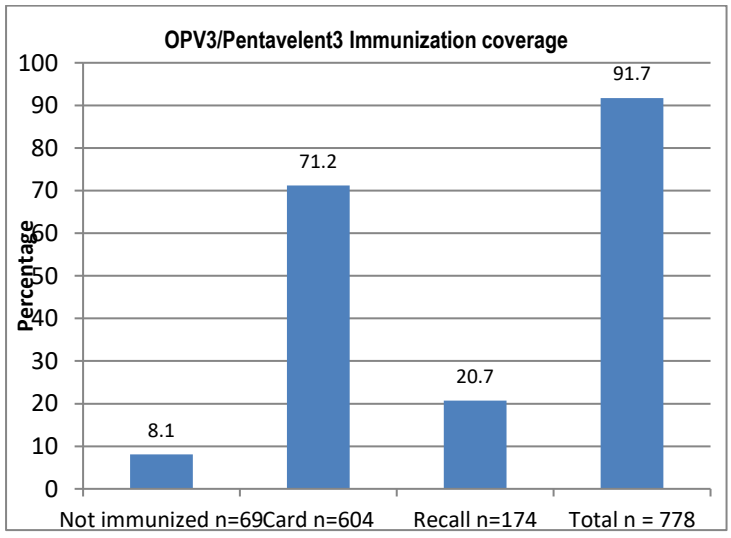


Figure 6: OPV3/Pentavalent 3 immunization coverage

4.12.3 Measles Immunization Coverage for children 9-59 months of age

Based on both recall and those cases verified by card, the coverage rate for measles was high (95.7%) and above the WHO 80% acceptable cut-off (Table 16).

Table 16: Measles Immunization Coverage (Children ≥9 months)

	N=650	
	n	%
Not immunized	28	4.3
Card	471	72.5
Recall	151	23.5
Total	**622**	**95.7**

4.13 Vitamin A Supplementation Coverage for children

The WHO guidelines, stipulate that children below five years of age living in areas where the vitamin intake is inadequate receive vitamin A supplement every 6 months. Kenya has adopted these guidelines and aims to provide the supplementation once every 6 months for children 6-59 months old. According to these guidelines; children 6-11months of age should receive the supplement once in a period of 12 months. The number of times a child receives the supplement may be higher than once in a 12-month period because of the integration of vitamin A supplementation with immunization during national days, which are meant to improve coverage especially in areas where there is limited accessibility to health facilities.

4.13.1 Vitamin A supplementation for children less than 59 months old

The coverage (76.6%) for vitamin A supplementation for children less than 59 months old was slightly below the WHO accepted rate of 80% with one-quarter (25.5%) of the children having not received the supplement (Figure 7). Below half (46.3%) of the cases reported to have received the supplement were based on recall. Documentation of the supplementation is critical to avoid toxicity from over-dosing.

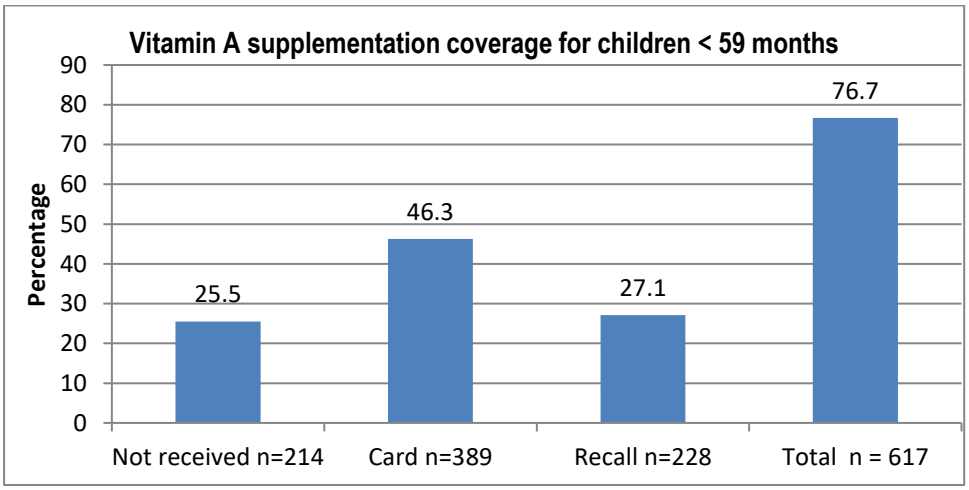


Figure 7: Vitamin A supplementation for children <59 months in the last 12 months

4.13.2 Vitamins A supplementation for children 6-11 months old

Vitamin A supplementation coverage rates for children 6-11 months old (66.7%) was below the WHO 80% acceptable rate (Figure 8). More concerted efforts are required to improve vitamin A supplementation of this age category of children.

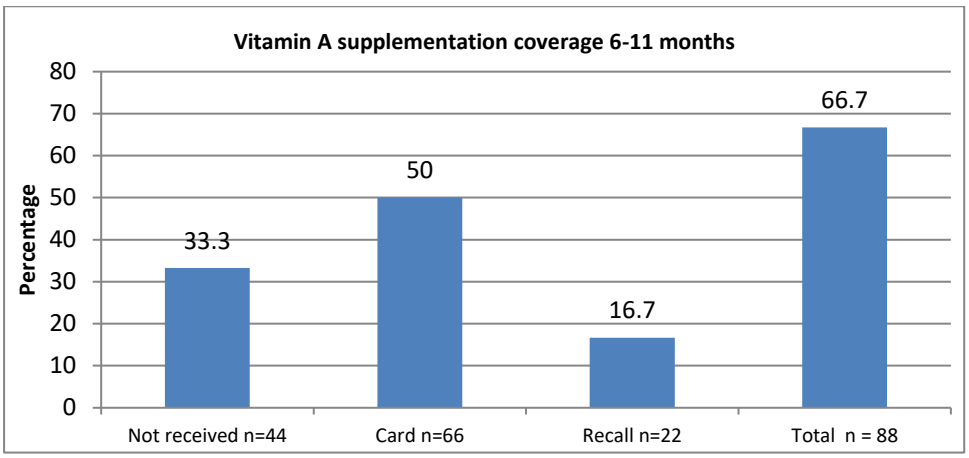


Figure 8: Vitamin A supplementation coverage for children 6-11months old

4.13.3 Frequency of vitamin A supplementation for children 12-59 months old

The WHO guidelines stipulate that children 12-59 months old should receive vitamin A supplement twice in a period of 12 months. Again, the number of times a child receives the supplement may be higher than twice in a 12-month period because of the integration of vitamin A supplementation with immunization during national days.

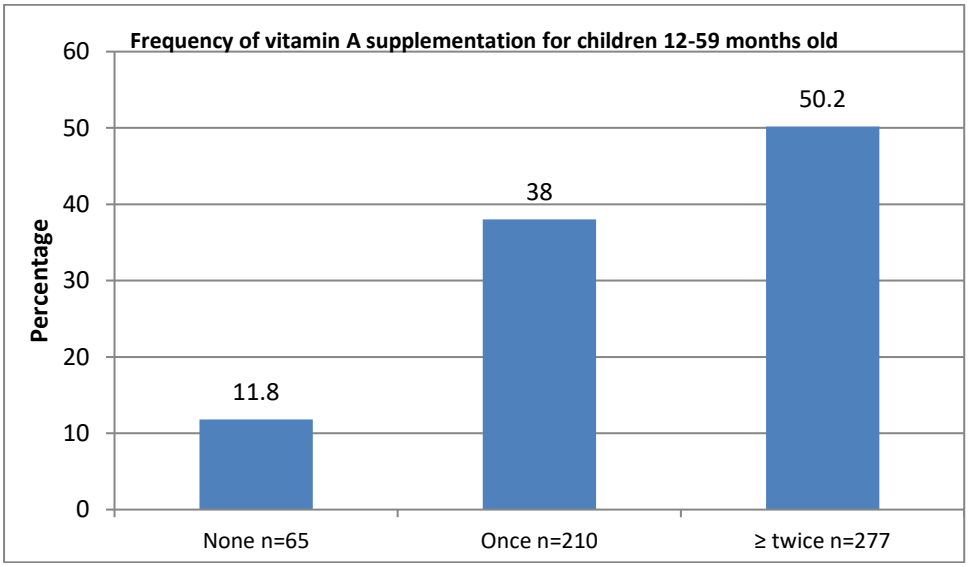


Figure 9: Frequency of vitamin A supplementation for children 12-59 months old

The findings indicate that only half of the children (50.2%) had received vitamin A supplementation at least twice in the previous 12 months (Figure 9). The importance of supplementation every 6 months needs emphasis in the health messages.

4.14 De-worming of Children

4.14.1 De-worming of children 24-59 months of age

Certain types of intestinal parasites can cause anaemia. Periodic de-worming for organisms like helminthes and schistosomiasis (bilharzia) can improve children's micronutrient and nutritional status. WHO recommends that children in developing countries exposed to poor sanitation and poor availability of clean safe water be de-wormed once in a 6-month period. The de-worming coverage for children 24-59 months old was 66.2%. Of those de-wormed, the majority (44.9%) were based on recall and only 21.3% cases were verified by card (Figure 10). The importance of de-worming should be emphasized in the health education messages.

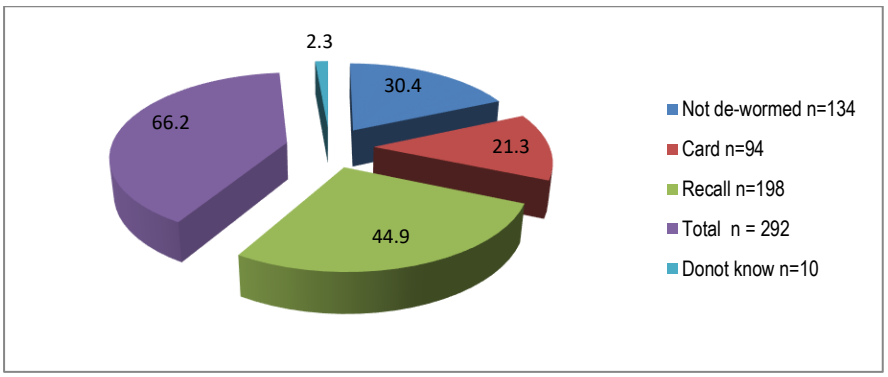


Figure 10: De-worming coverage for children 24-59 months old

4.14.2 De-worming of children 12-59 months of age

The de-worming coverage for children 12-59 months old was 60.8%, slightly less than those 24-59 months of age at 66.2% (Figure 11). The cases of de-worming based on recall (40.4%) was double that verified by card (20.4%) calling for more concerted efforts to document de-worming or for emphasis to the mothers on the importance of safe keeping of child health cards.

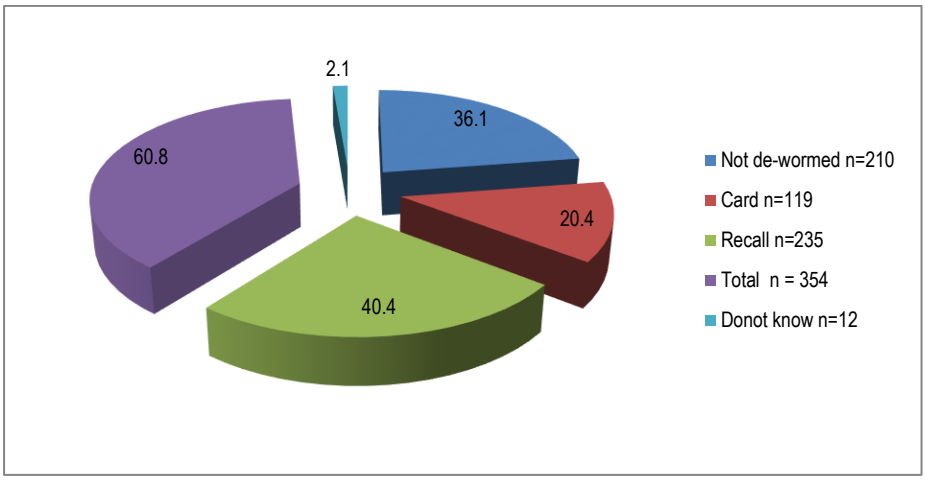


Figure11: De-worming coverage for children 12-59 months old

4.15 Infant and Young Children Feeding (IYCF) Practices

4.15.1 Breastfeeding Practices

Information on infant and young child feeding (IYFC) practices was obtained based on the previous day recall period because it has been widely used and found appropriate in surveys of dietary intake when the objective is to describe infant feeding practices in populations. This is in line with the WHO guidelines to minimize recall bias and thus obtain more valid information. Previous day recall will cause the proportion of exclusive breastfeeding in infants to be overestimated, as some infants who are given liquids irregularly may not have received them the day before the survey (Ochola et. al., 2008; Engebtresen et. al, 2007; Bland, Rollins & Coutsoudis, 2002). The indicators used for infant feeding practices in this survey are based WHO (2007) guidelines the Kenya National Guidelines for Health and Nutrition surveys. The indicators are based on children 0-23 months old. This period provides the window of opportunity for interventions after birth because from 24 months of age, the damage caused by poor and inappropriate feeding practices are essentially irreversible.

Table 17 : Breastfeeding Practices

	n	%
Ever breastfed (n=402)	400	99.5
Giving of colostrum (n=404)	342	84.9
Timely Initiation of breastfeeding (within 1hr) (n=404)	363	89.9
Exclusive breastfeeding <6 months (n=106)	53	50.0
Pre-lacteal feeds given (n=404):	174	43.1
Types of pre-lacteal feeds:		
Plain Water	44	24.5
Sugar/Glucose water	10	2.0
Powdered/animal milk	2	0.4
Continued breastfeeding at 1 year (12 – 15 months) (n=46)	37	80.4
Continued breastfeeding at 2 years (20- 23.9 months) (n=54)	27	50.0
Continued breastfeeding 6-23 months old (n=404)	342	84.9

Breastfeeding was universal, with 99.5% of the children 0-23 months old having been initiated to breastfeeding. The practice of timely initiation of breastfeeding (within 1 hour of birth) was appropriate for 89.9% (Table 17). This is a much higher rate than both the national and the Rift Valley Provincial rates at 58.1% and 63.7% respectively. Giving of colostrum was common with 84.9% of the children having received it. Half (50.0%) of the infants less than 6 months of age were exclusively breastfed. Although this rate is below the WHO acceptable level of 90%, it is much higher than the national rate at 32%[12]. In terms of continued breastfeeding, the majority of the children (80.4%) were still breastfeeding at the age of one year. In contrast, only 50.0% of the children were still breastfeeding at 2 years implying that half the children had stopped breastfeeding prematurely and thus were not getting the benefits of breastmilk for the duration recommended.

Pre-lacteal feeds were given to 43.1% of the children which compare with the national rate at 41.8% and lower than the Rift Valley Provincial rate at 48.0%. The most commonly given pre-lacteal was plain water given to 24.5% of the children, a finding that is agreement with the national findings[13]. Complementary Feeding Practices

[12] KDHS 2008-09
[13] KDHS 2008-09

4.15.2 Complementary Feeding Practices

Table 18: Complementary feeding practices

Complementary Feeding Practices	Central	
	n	%
Complementary Feeding rate:		
Proportion of infants 6-8.9 months who received complementary feeding	28/55	(50.9)
Minimum dietary diversity:		
Breastfed children 6-23 months of age who received ≥3 food groups (n=186)	114/186	(77.8)
Non-breastfed children 6-23 months of age who received ≥4 food groups (n=91)	60/91	65.9
Breastfed children consuming ≥3 food groups + non-breastfed children consuming ≥4 food groups (n=277)	204	73.8
Minimum meal frequency:		
Breastfed children 6-8 months who received complementary foods ≥2 times (n=57)	55	96.5
Breastfed children 6-23 months who received complementary foods ≥ 3 times per day (n=175)	153	87.4
Non -breastfed children 9-23.9 months who received complementary foods a ≥4 times (n=87)	59	67.8
Breastfed children 6-8 months old ≥ 2 times +Breastfed children 6-23 months old ≥3 times + non-breastfed children 6-23 months old ≥ 4 times (n=295)	237	76.6

Minimum dietary diversity of complementary foods

Minimum dietary diversity is calculated for children 6-23 months of age and is further disaggregated by the breastfeeding status of the children. For non-breastfed children the minimum dietary diversity is considered to be consumption of foods from ≥4 food groups out of 7 food groups per day (Section on Variables Measured, Page 10). For breastfed children the minimum dietary diversity is considered to be ≥3 food groups. The dietary diversity indicator is based on the premise that the more diverse the diets are the more likely they are to provide adequate levels of a range of nutrients. There is considerable evidence for this idea[14]. For this indicator, each of the groups is scored "1" if the child had the food group yesterday, and "0" if not. This results in a diversity score ranging from 0 to 7 for each child. Higher scores correspond to a more adequate range of food groups in the diet.

The findings showed a relatively high proportion of breastfed children (77.8%) and 65.9% non-breastfed children attained the minimum dietary diversity respectively (Table 18). These findings imply that the non-breastfed children consumed a less diverse diet than the breastfed children and were thus likely to be limited in the diversity of nutrients received. The composite indicator from the two indicators of dietary diversity showed that 73.6% of all the children achieved the minimum dietary diversity for their breastfeeding status.

Minimum meal frequency

[14] Ruel M. T. (2002): *Is dietary diversity an indicator of poor food security or diversity quality? A review of measurement issues and research needs.* Food Consumption and Nutrition Division, International Food Policy Research Institute (IFPRI). FCND Discussion Paper NO. 140.

The minimum meal frequency indicators are also based on the breastfeeding status of the children. The minimum meal frequency indicator is ≥2 times per day inclusive of snacks for the breastfed children 6-8 months of age and ≥ 3 times per day for breastfed children 6-23 months old. For non-breastfed children 6-8months old, the minimum indicator is ≥ 4 meals per day (Table 18). Almost all (96.5%) the breastfed children 6-8 months old and 87.4% of the breastfed children between 6-23 months old attained the minimum meal frequency respectively. The proportion of non-breastfed children 6-23 months old that attained the minimum frequency was 67.8%. The composite indicator for the three indicators of minimum meal frequency showed 76.6% having achieved the minimum meal frequency (Table 18) for their breastfeeding status.

4.16 Nutritional Status of pregnant and lactating women

MUAC was used to determine the level of under nutrition among pregnant and lactating women. The cut-off used was <21 cm (Table 40)[15].

Overall, the maternal nutritional status was good. There were no wasted pregnant and lactating women and only 2.0% wasted non-pregnant and non-lactating women (Table 19).

Table 19: Nutritional Status for pregnant and or lactating women based on MUAC measurements

Pregnant and Lactating Women (n=105)	n	%
Wasted (< 21cm)	0	0
Well nourished (≥ 21cm)	105	100
Non-pregnant and non-lactating Women (n= 205)		
Wasted (< 21cm)	4	2.0
Well nourished (≥ 21cm)	201	98.0

4.17 Iron/folate supplementation of pregnant women

About two-thirds (62.3%) of the women took iron/folate supplementation during the current or the last pregnancy. Only 5.4% took the supplement for at least 90 days in line with the HINI recommendations (Table 20).

Table 20: Iron/folate supplementation during the last and current pregnancy

	n	%
Received iron/folate supplementation (n=516)	321	62.3
Took iron supplementation for ≥90 days (n=313)	17	5.4

4.18 Mosquito Bed Net Ownership and Utilization

Household ownership and source of bed-nets

The majority of the households (82.7%) owned mosquito bed-nets with almost all of them (97.3%) having received them from the Ministry of Health (Table 21).

Table 21 : Household ownership and source of mosquito bed-nets

	n	%
Own mosquito bed net (n=573)	474	82.7
Source of bed nets (n=473):		
• Shop	11	2.3
• Agency/church	2	0.4
• MOH	460	97.3

[15] Kenya National Bureau of Statistics and Ministry of Public Health and Sanitation, Guidelines for Nutrition Assessments in Kenya, 2008

4.19 Household Water Consumption

4.19.1 Sources of Water

The main source of household was the river 76.0% followed by tap water at 16.0%. The main source of drinking water was the river for 75.0% of the households (Table 22). The main source of drinking water was the river (75.0%) and the second most common source was the lake for 16.6% of the households. The overall, picture was that few households had access to safe drinking water.

Table 22: Sources of water

Sources of water	Water for household use N=592		Sources of drinking water N=592	
	n	%	n	%
River	450	76.0	443	75.0
Lake	2	0.3	98	16.6
Tap water	95	16.0	11	1.9
Borehole	12	2.0	3	0.5
Unprotected well	2	0.3	3	0.5
Protected well	2	0.3	4	0.7
Public pan	2	0.3	2	0.3
Water tanks	3	0.5	4	0.7
Dam	10	1.7	1	0.2
Springs	4	0.7	0	0
Others	10	1.7	0	0

4.19.2 Availability of water to households

The mean amount of water available per household per day was 74.3 (sd30.6) per day (Table 23). The mean amount of water available per person per day was 15.0 (sd 8.5) litres. Slightly above one-quarter (28.3%) of the households attained the 20 litres minimum amount of water per person per day recommended by Sphere 2004 recommended. The majority of the households (71.7%) did not attain the minimum amount of water recommended per person per day. As a whole, water accessibility and availability was limited because many households did not have the minimum required amount of water per person to enable adequate hygiene practices.

Table 23: Water availability and accessibility

Mean (sd) litres of water used by household per day	74.3 (30.6)
Amount of water used/available per person/day	15.0 (8.5)
% Households with <20 litres of water/person/day	71.7%
% Households with ≥20 litres of water/person/day	28.3%

4.19.3 Treatment of drinking water

The majority (70.6%) of the people did not treat drinking water despite the fact that the source of the drinking water for the majority of the households was unsafe (from the river). Only 25.9% of the households boiled water before drinking and only 2.5% used chemicals to treat drinking water (Table 24). The treatment of drinking water needs to be encouraged particularly because of the unsafe sources of drinking water for the majority of the households.

Table 24: Treatment of drinking water

Treatment given to water before drinking	N=591	
	n	%
Boiling	153	25.9
Use chemicals	15	2.5
Filters/sieves	1	0.2
Decant	4	0.7
Use of traditional herbs	1	0.2
Nothing	417	70.6

4.19.4 Cost of Water

The mean cost of water per 20 litre jerry can was Kenya shillings (Ksh.) 4.00 (sd 3.00). Those households that paid for water on a monthly basis Ksh. 294.7 (sd 238.5) showing a wide variability in the amount of water used or the cost (Table 25).

Table 25: The cost of water

Cost of water	Baringo North and Baringo central districts
Cost of water (Kshs) of per 20 litre jerry-can [mean (sd)]	Ksh. 4.00 (3.00)
Cost of water (Kshs) per month [mean (sd)]	Ksh 294.7 (238.5)

4.20 Sanitation

4.20.1 Accessibility to and utilization of toilet facilities

Three-quarters (74.2%) of the households has access to toilet facilities with most (78.0%) of the facilities being the traditional pit latrine (Table 26). The proportion of households with ventilated improved pit latrines was 19.3%. For the majority (84.5%) of the households the latrines were within 100 metres from the house. About one-quarter (22.1%) of the households had latrines with an aperture cover or fly screen on vent pipe. Most of the latrines were used solely by the family (83.4%) and 16.6% of the households sharing the facility with other families. Almost (98.1%) of the latrines were in use at the time of the survey (Table 26).

The majority of the households without toilet facilities used the bush with a few using the open field and the river/laga (3.2% and 3.8%) respectively. Children's faeces was disposed appropriately by the majority (67.7%) of the households (Table 26). About one-quarter (26.7%) of the households disposed the faeces in the bush and 1.9% scattered in the compound. This practice should be strongly discouraged because inappropriately disposed faeces can be a source of contamination of disease especially for children.

Table 26: Accessibility to and utilization of latrines

Sanitation practices	N=594n	%
Households with access to toilets or latrines	437	74.2
Type of toilet facilities (n=431)		
• Traditional pit latrine	336	78.0
• Ventilated improved pit latrine	83	19.3
• Flush toilet	4	0.9
Pit latrines within 100 metres (n=433)	366	84.5
Shared or family latrine: (n=422)		
• Shared	70	16.6
• Family latrine	352	83.4
Toilet facilities in use (n=425)	417	98.1
Pit latrine has an aperture cover or fly screen on vent pipe	92	22.1
Those without toilets used: (n=158)		
• Bush	139	88.0
• Open field	4	3.2
• River/laga	6	3.8
How children's faeces is disposed: (n=576)		
Immediately and hygienically	390	67.7
Immediately in the bush	154	26.7
Scattered in the compound	11	1.9
Other	19	3.7

4.21 Hygiene Practices

Hand washing is one of the practices designated as high impact nutrition interventions (HINI) based on empirical evidence[16],[17] because of the role it plays in promoting child health and nutrition. A large proportion of the respondents (75.8%) practiced appropriate hand washing (with water and soap) and 23.7% washed their hands with only water (Table 27). The majority of the respondents also reported washing their hands after visiting the toilet (75.9%), before preparing a meal (75.6%). Relatively smaller proportions, (44.2%) and 36.2% washed their hands before feeding a child and after attending to a child who has defaecated (respectively). In contrast, only 7.4% households had a hand washing facility near the latrine and only 6.1% hand soap at the hand washing place (Table 27).

Table 27: Hand washing practices

	n	%
Items used for hand washing (n=566):		
• Water only	134	23.7
• Water and soap	429	75.8
• Water and ash	3	0.5

[16] The Lancet (2008). Maternal and Child Undernutrition, Special Series.

[17] The World Bank. Repositioning Nutrition as Central to Development: A strategy for Large Scale Action. International Bank for Reconstruction and Development/World Bank: Washington, DC, 2006.

• Washing facility near the latrine/in the compound (n=540)	40	7.4
Occasions when hands are washed (n=594)*:		
• After using the toilet	451	75.9
• After attending to a child who has defaecated	215	36.2
• Before feeding a child	265	44.6
• Before preparing a meal	449	75.6
• After handling animals	26	4.4
• After changing sanitary pads	14	2.6
• When washing face	44	7.4
• When bathing	38	6.4
• Others	5	0.8
Presence of soap/ash at hand washing facility (n=559)		
• Yes	34	6.1
• No	415	74.2
• No strategic hand washing facility	110	19.7

Multiple responses

4.22 Household Food Security

4.22.1 Food Aid

The majority of the households (76.0%) did not receive food aid in the three months prior to the survey (Figure 12) indicating that the food aid was not the source of foods for most of the households.

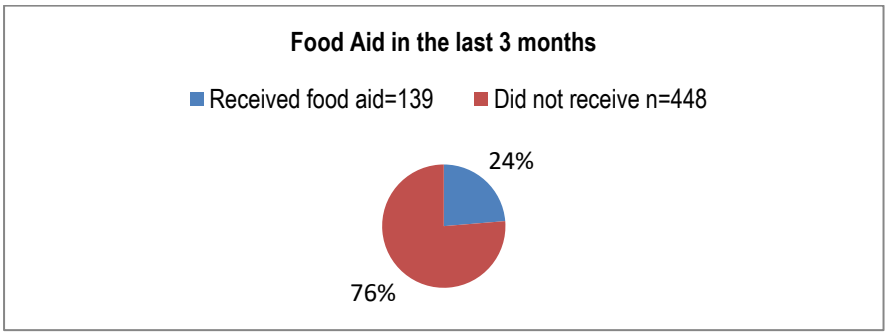


Figure 12: Households that received food aid in the three months prior to the survey

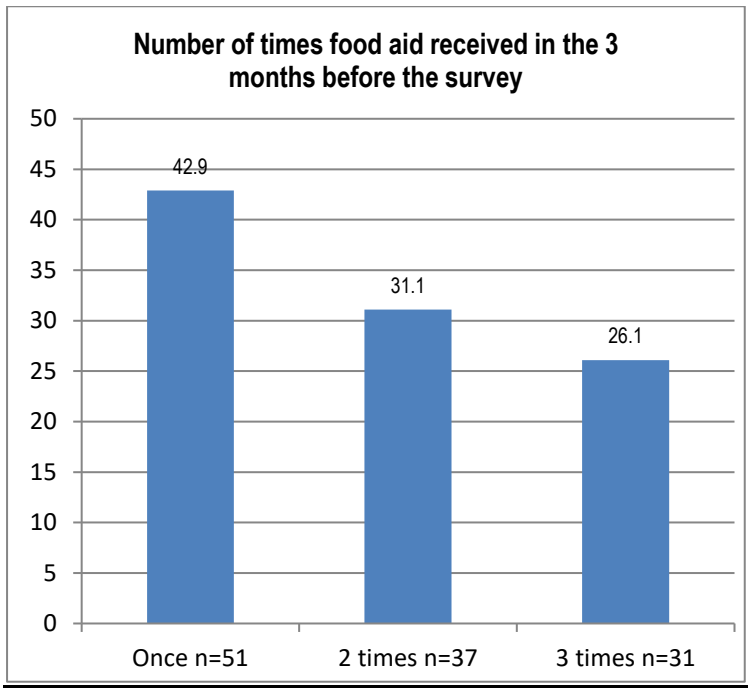


Figure 13: Number of times food aid received in the last three months

Number of times food aid received in the three months prior to the survey

Of those who received food aid, 42.9% received it once, 31.1% twice and 26.1% three times (Figure 13). These findings imply that for most households, food aid was not the major source of food.

4.22.2 Frequency of Meal Consumption

The respondents were asked how many meals the household members normally ate per day and how many meals they ate the day before the survey. This was in order to get an indication of the household food security situation at the time of the survey. The majority (79.1%) of the households normally ate 3 meals per day. The same proportion also ate 3 meals the day prior to the survey (Figure 14). The same trend was observed for those households that ate one meal, two meals and ≥4 meals per day. These findings demonstrate no increased food insecurity at the time of the survey compared to normal other times.

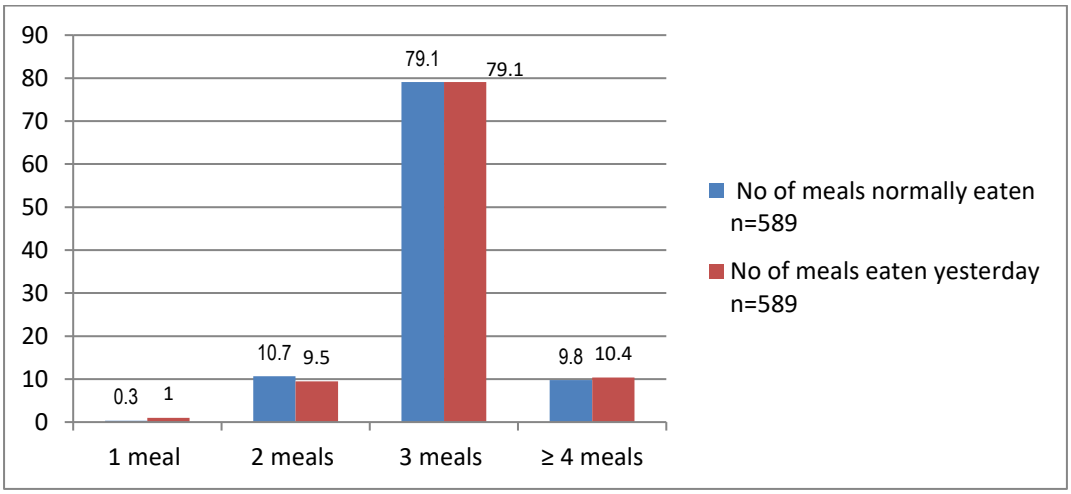


Figure 14: Frequency of meals usually eaten and that eaten the day prior to the survey

4.22.3 Household members that missed meals the day prior to the survey and reasons for missing meals

The majority of the households (82.4%) reported that no member missed a meal the day prior to the survey (Table 28). The majority of those who missed a meal where fathers (75.5%) and the major reason for missing a meal was because of being away from home. These findings imply that food insecurity was not a major issue at the time of the survey.

Table 28: Household members who missed meals the day prior to the survey and reasons for missing meals

	n	%
Households where no member missed a meal	482	82.4
Households where some members did not eat (n=585)	103	17.6
Members who missed meals: (n=113)		
• Children under five years	3	2.7
• Children 5-12 years	2	1.8
• 13-19 years	3	2.7
• Mother	10	8.8
• Father	85	75.2
• Above 19 years	10	8.8
Reasons for missing meals:		
• Food not enough	4	5.4
• Away from home	103	92.8

4.22.4 Household Dietary Diversity

Household Dietary Diversity

A 24-hour dietary diversity score was calculated to determine the households' economic capacity to consume various foods. The household dietary diversity score (HDDS) was 8.2 (sd 2.1) implying that on average the households consumed 8 food out of 15 groups. About two-fifths (44.4%) of the households consumed 8 food groups or more (Table 29).

Table 29: Household dietary diversity score based on a 24-hour recall

	N=594 Mean (sd)
Household dietary diversity score (HDDS)	8.2 (±2.1)
% of households consuming ≥8 food groups	44.4%

4.22.5 Variety of foods consumed

As is expected, cereals and cereal products were consumed by the majority of the households (98.8%). The other commonly consumed foods were milk and milk products (95.2%), oils and fats (95.7%), and dark green leafy vegetables (92.5%) of the households (Table 30). Other food groups consumed by over 80% of the households were; pulses and legumes, sweets mainly in the form of sugar and other vegetables in the form of tomatoes and onions. The least consumed food groups by less than 10% of the households were organ meats and fish.

Table 30: Foods consumed by households based on a 24-hour recall

Food groups	N=594	
	n	%
Cereals and cereal products	582	98.8
Vitamin A rich vegetables & tubers	203	36.8
White tubers and roots	191	36.1
Dark green leafy vegetables	542	92.5
Other vegetables (tomatoes, cabbage etc)	485	82.8
Vitamin A rich fruits	203	36.8
Other fruits (including wild)	264	44.4
Organ meat	40	7.5
Flesh meat and offal	148	27.3
Eggs	108	20.8
Fish	16	3.1
Pulses and legumes	489	85.2
Milk and milk products	558	95.2
Oils/fats	562	95.7
Sweets/sugar/honey etc	490	84.2

4.22.6 Main source of dominant food item (cereals)

Table 31: Main source of dominant food item

Food sources	N=577	
	n	%
Own production	335	58.1
Purchases	226	39.2
Gifts from friends	1	0.2
Food Aid	13	2.3
Borrowed	1	0.2
Others	1	0.2

The main source of the dominant food item (cereals) in the diet was own production (58.1%) followed by purchases by 39.2% of the households (Table 31). Food aid was a source of the dominant food for only 2.3% of the households.

4.23 Coping Strategies

Respondents were asked to state the coping strategies that their households employed in the month prior to the survey. The findings showed that a number of strategies were used by the households (Table 31). The majority of the households (72.5%) purchased food on credit, followed by 67.2% who engaged in casual labour. Slightly less than two-thirds (61.8%) borrowed food, 52.3% reduced the size of meals and 45.2% reduced the number of meals. Other coping strategies were practiced by relatively fewer households (Table 32). The overall picture was that many households did not practice extreme measures in times of food shortage.

Table 32: Coping strategies employed during food shortage

Coping Strategies	**N=589** %
Reduction of no of meals per day	45.2
Skip meals for an entire day	27.2
Reduce size of meals	52.3
Restrict consumption for adults to allow more children to eat	34.0
Shift to less preferred food	58.4
Hunting and gathering	9.9
Engaging in casual labour	67.2
Borrow Food	61.8
Purchase food on credit	72.5
Consume wild foods	17.0
Consume decomposed fish	10.0
Send household members to eat elsewhere	9.5
Send child/children to school	16.3
Begging	12.1
Sale of livestock	28.9
Sale of charcoal/firewood/small scale business	17.7
Part of family migrating with animals to look for pasture	7.3
Sale of milk, meat, fish	21.9
Donation	18.3

4.24 Mortality

Mortality measurements and indices

The *crude death rate* (CDR) is defined as the number of people in the total population who die over a specified period of time. It is calculated using the following formula:

$$\textbf{CDR} = \frac{\text{Number of deaths}}{\text{Total population}} \times \frac{\text{Time Interval}}{10,000} = \text{Deaths/10,000 people/day}$$

In the formula, total population is the population present at the midpoint of the time interval. The time interval is the length of time within which the respondents are asked to state if any deaths have occurred; this is usually referred to as the "recall period." The units for the formula are deaths per 10,000 per day when the "time interval" is expressed in days. In this survey the "recall period" was 90 days as recommended for use in developing countries.

The same formula was used for calculating the Under five Death Rate (U5DR).

Crude Death Rate

The crude death rate (CDR) was within acceptable level (<2 deaths/10,000 people/day) as per the SPHERE Standards 2004 (Table 32). The CDR was 0.73 (95%CI: 0.47– 1.11) deaths/10,000/day.

Underfive Death Rate

The underfive death rates (U5DR) for all the districts were within acceptable level (<4 deaths/10,000 people/day) as per the SPHERE Standards 2004. The U5DR was1.48 (95%CI: 0.58 – 3.72) (Table 33).

Table 33: Crude and Underfive Death Rates in all the four survey sites

Crude Death Rate (CDR)	0.73 (95%CI: 0.47-1.11)
Underfive Death Rate (U5DR)	1.48 (95%CI: 0.58-3.72)

5. DISCUSSION

The findings of the FGDs have been used to complement the quantitative findings while highlighting disparities where they exist.

5.1 4.1 Nutrition situation in Baringo Central and Baringo North Districts

No survey has ever been conducted in for Baringo Central and Baringo North districts as one entity and therefore there was no comparison to show trends in the nutrition situation in the districts. Furthermore, there was no survey conducted in any of these districts in the year 2010. The GAM rates in these districts was within acceptable level (<5% WHO, 1995) based on the findings of the present survey. The nutrition situation should be interpreted within the context of the time the survey took place. The survey took place during heavy rains and there was plenty of food then. This was confirmed through observation by the survey team and also by the community members during the focus group discussions (FGDs) who reported that most of the households were food secure and had food to last until end of January 2011. The situation was likely to deteriorate as soon as the rains stop. There was likelihood of a hunger gap before the long rains begin in March 2012 rendering the households vulnerable.

5.2 Coverage of Selective Feeding Programmes

The coverage for SFP did not reach the Sphere Standards 2004 (>50%) based on MUAC and Z scores. The OTP coverage was not calculated due to the few numbers and thus meaningful interpretation could not be made. The formula used to calculate coverage includes children who may not be eligible for entry into the programme on the day of the survey (children who are in the recovery phase and whose weight-for-height is higher than that required for entry into the programme or who no longer exhibit nutritional oedema). These children, now in recovery, were recently undernourished. This formula[18] is therefore an estimator of RECENT coverage in a given period (PERIOD PREVELENCE). The findings should therefore be interpreted as estimates, rather than actual coverage rates.

5.3 Immunization, de-worming and Vitamin A supplementation coverage

Immunization coverage was high and above the KEPI and WHO acceptable level of 80% for all the antigens. This high level of coverage may be attributed to the newly implemented HINI programme and the increased community outreaches therefore taking the services to the people. The outreaches are important in improving coverage because of the limited accessibility of health services due to the few health facilities which are far from one another. Vitamin A supplementation for children did not meet the WHO recommended acceptable level. The frequency of administration was poor with only half of children 12-59 months of age having received the supplementation twice within a 12-month period as per the WHO protocol. De-worming coverage was low despite the poor availability of clean safe water as well as poor sanitation for most households that predisposes the children to helminthes infestation, making de-worming a crucial exercise.

5.4 Child Morbidity and Maternal Health Seeking Behaviour

Compared to the national and Rift Valley Provincial rates, the burden of morbidity was lower in Baringo Central and Baringo districts. The majority of the mothers/caregivers sought assistance for their sick children from public health facilities. Of concern was the relatively high percentage of caregivers who sought no assistance for their sick children. Of equal concern is the practice of buying medicines for sick children from shops or kiosks. This practice needs to be discouraged because the self-diagnosis conducted by mothers/caregivers and then the decision on what medicines to purchase is likely to have adverse health consequences on the child. The importance of seeking medical attention from health professionals should be re-emphasized in the health education messages. It is noteworthy that for many people in the two districts, health services are not easily

[18] In, Myatt et.al., *A field trial of a survey method for estimating the coverage of selective feeding programmes,* Bulletin of the World Organization, January 2005, 83 (1).

accessible because of the poor infrastructure and the few health facilities which are, in many cases, poorly staffed.

Of particular concern, is the management of diarrhoeal diseases; very few cases of diarrhoea were supplemented with zinc as per the WHO standard protocol requirement and 70.0% mothers did not do anything either at home or in terms of seeking assistance.

5.5 Infant and Young Child Feeding Practices (IYCF)

Breastfeeding Practices

Breastfeeding practices in terms of timely initiation, giving of colostrums and continued breastfeeding at 1 year of age was appropriate. Despite the fact that exclusive breastfeeding rate in this survey was higher than the national rate it was lower than the WHO accepted rate of 90% and therefore still needs attention. A relatively high proportion of children were given pre-lacteal feeds and only half of the children were still breastfeeding at 2 years of age indicating that they stopped getting the benefits of breastfeeding prematurely.

Complementary Feeding Practices

As a whole, the complementary feeding were practices adequate in terms of frequency of feeding and minimum dietary diversity. This meant that many children were getting adequate nutrients for optimal growth and development. This is likely to have been to contributed by the improved household food security status at the time of the survey and probably by increased knowledge on appropriate IYCF practices as result of increased activities with the introduction of HINI programme. It is noteworthy that the non-breastfed children were fed less frequently and had a lower dietary diversity than the breastfed child and therefore this category of children need special attention in the promotion of appropriate IYCF messages.

5.6 Availability and Utilization of Mosquito Bed nets

5.7 Water and Sanitation and Hygiene Practices

Access to safe water both for domestic use and for drinking was limited. Despite this, the majority of the households did not treat drinking water therefore rendering the household members particularly children vulnerable to infections. Latrine coverage was good but over one-quarter of the household disposed children's faces inappropriately in the bush. The majority of the respondents washed their hands with soap and after visiting the latrine and before preparing meals. Nevertheless, there is need for improvement in washing hands before feeding children.

5.8 Household Food Security

The findings on the proxy indicators of household food security indicated that there was no increased food security at the time of the survey. The dietary diversity was relatively high with the households consuming a mean of 8 out of 15 food groups. There was no difference in the number of meals consumed the day before the survey and that consumed normally. The number of family members who missed meals the day before the survey was low, and the majority of them were fathers who were away from away from home and not due to food shortage. The same findings were reported during the FGDs when the community members reported that at the time of the survey most of the households were food secure.

5.9 Factors associated with malnutrition in Turkana

The level of malnutrition in these two districts was acceptable and thus the discussion will focus on the possible factors that contributed to this.

5.9.1 Immediate Causes

Dietary Intake

The findings of this survey revealed adequate dietary intake by the majority of the households. Many households ate 3 meals per day and the number of meals. The household dietary diversity was good with a large proportion

of households having consumed foods from most of the food groups except fish, eggs, and organ and flesh meats.

Disease

The burden of morbidity was lower than both the national and provincial rates indicating that the children suffered from a relatively lower burden of morbidity. These diseases have a profound negative effect on the nutritional status of children and therefore a relatively lower prevalence of morbidity means that fewer children would suffer from the effect of infections on nutritional status.

5.9.2 Underlying causes of malnutrition

The major underlying causes that may have contributed to malnutrition among the children were inadequate health services and unhealthy environment. The health facilities were not easily accessible for the majority of the population and many public ones were understaffed. In some of the places, health services were offered through outreaches. Despite this, some of the respondents did not seek services for their sick children. This was especially true for diarrhoeal diseases for which about two-thirds did nothing when their children were ill. Zinc supplementation for diarrhoeal diseases was low and could have contributed to longer episodes of the disease.

Many households depended on water from unsafe sources such as the river. This was compounded by the fact that most of the households did not boil drinking water. The scarcity of water can interfere with hygiene practices such as washing of hands.

5.9.3 Basic causes of malnutrition

There is poor infrastructure in some parts of Baringo County in terms of roads and health facilities. Transportation is further compounded by the hilly terrain making delivery of services to some areas a challenge.

6. CONCLUSIONS

- The nutritional status of children (wasting) was within acceptable level judged by WHO guidelines. The nutritional situation in Baringo Central and Baringo North was contributed to by the fact that most households were food insecure, the children had relatively low burden of morbidity and the IYCF practices were on the whole appropriate at the time of the survey;
- Stunting and underweight were high although slightly lower than the national prevalence rates;
- Mortality rates were below emergency cut-off (Sphere Standards, 2004);
- Morbidity burden was highest for fever ARIs and watery DD and lower than both the national and the Rift Valley provincial rates;
- Zinc supplementation for diarrhoeal diseases was extremely low. The majority of the caregivers did nothing about the most recent diarrhoeal disease episode in their children;
- Immunization coverage was high, over 80% for all the antigens;
- Vitamin A supplementation for children 6-59 months old was slightly below the 80% acceptable level. Frequency of administration as per the WHO guidelines was poor;
- De-worming coverage for children was low;
- Iron/folate supplementation for pregnant women slightly lower than both the national and provincial rates. Compliance was low as only 5% had taken for the recommended ≥ 90 days. The findings may have been influenced by recall bias;
- Household food security was adequate. There was no increased food insecurity at the time of the survey;
- IYCF practices were on the whole adequate.
    - Breastfeeding practices were adequate in terms of initiation within 1 hour of birth and continued breastfeeding at 1 year. Nonetheless, continued breastfeeding at 2 years was poor. Despite the relatively high exclusive breastfeeding rate in comparison to the national rate, it still to reach the WHO recommended 90% acceptable level.
    - Complementary Feeding in terms of dietary diversity and frequency of feeding was good but can still be improved; and

- Most of the households used and drank unsafe water and yet the majority did not treat the drinking water.

7. RECOMMENDATIONS

Short-term interventions

- The following indicators of health and nutrition should be improved:
    - De-worming coverage;
    - Appropriate washing of hands;
    - Treatment of drinking water;
    - Exclusive breastfeeding and continued breastfeeding to 2 years;
    - Dietary diversity of complementary foods especially for the non-breastfed child;
    - Zinc supplementation of diarrhoea diseases;
    - Iron/folate supplementation for pregnant women; and
    - Coverage of Supplementary and therapeutic feeding programmes. It is recommended that more efficient methods of estimating coverage of SFP and OTP such as SQUEAC be used in the future.

  The indicators listed above can be improved through intensified health education. There should be wider dissemination of such information through increased outreaches, campaigns, mobile clinics and the acceleration of the community strategy in offering health services. All the stakeholders; Ministry of Public Health and Sanitation, Ministry of Medical Services, WVK and other NGOs working on child survival programmes and also faith-based or community-based organizations should take the lead in this;

- Continue with SFP and OTP particularly during the dry seasons when there is increased household food security to deal with the hunger gap and reduce morbidity and mortality due to malnutrition. This should implemented by MOPHS, MMS, APHIA, UNICEF and WFP;
- Increase coverage for Food for Assets (FFA) especially during the dry season and where there is crop failure. The community members expressed preference for this intervention rather than GFD as they reported that they were tired of getting hand outs. This should be implemented by WFP and WVK; and
- Increase household accessibility to safe water. It suggested that water harvesting by water pans should be implemented or accelerated.

Long-term interventions

- Improve latrine coverage with MOPHS taking the lead role;
- Improve food production by provision of improved quality seeds, short season seeds and irrigation. These sentiments were strongly expressed by the community members. This recommendation should be implemented by MOA and other stakeholders; and
- Protection of crops from destruction by wild animals. This was reported during the FGDs to be a major cause of food insecurity in some parts of the districts. The MOA should take the lead in this working in collaboration with other stakeholders.

ANNEX 1: TOR

Nutrition Survey

Terms of Reference

Baringo County
(Baringo Central and Marigat)

World Vision Kenya

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Survey Summary

Province	Rift Valley Province
Districts	Baringo and East Pokot
Evaluation Type	Nutrition Survey
Evaluation Purpose	To assess food security, health and nutritional status of children between 6 and 59 months old and to investigate causes leading to long standing poor health and nutrition indicators.
Primary Methodologies	**Key informant Interviews, Focus Group Discussions, Review of secondary data**
Evaluation Period	**September**
Anticipated Evaluation Report Release Date	**30th October**

Description of the district

The larger Baringo District is in Rift Valley Province and is divided into four administrative districts namely: Baringo Central, Baringo North, Marigat and East Pokot. It borders Turkana to the North, West Pokot to the North West, Keiyo and Marakwet to the West, Koibatek and Nakuru to the South and Laikipia and Samburu to the East.

The district covers an area of 8,655 square kilometres which includes 140.5 square kilometres of Lake Baringo, Lake Bogoria and Lake Kamnarok and the recently a new lake named 94 has developed in the last fifteen years. The district has an estimated population of 406,839 (according to the 2009 National Census) spread in four livelihood zones namely mixed farming, pastoral, agro pastoral and irrigated cropping as shown in the in Table 1.

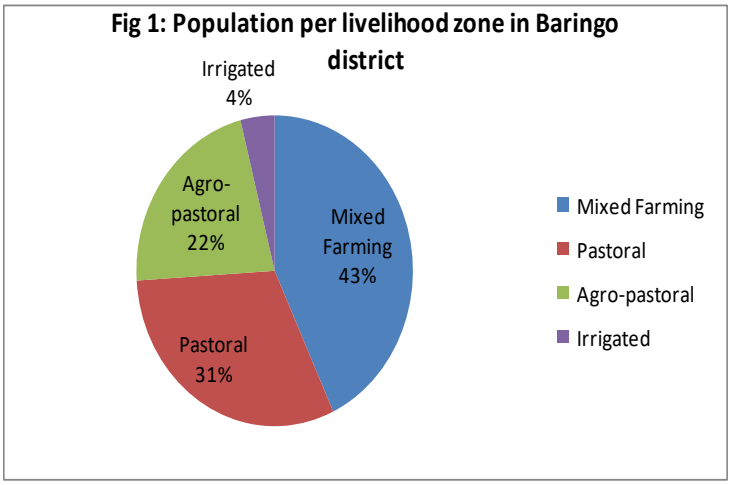

Figure 15: Population by livelihood zone

In the last six months Baringo district has been under stressed (Borderline/moderate) phase and has been worsening in all livelihood zones as a result of the erratic rains. Livestock prices have gone down as food prices continue to go up. (Long Rains 2011 Assessment Report)

Current factors affecting food security

- Poor rainfall performance.
- Conflict over resources (cattle rustling along the border of East Pokot and Turkana, and within the district).
- Land degradation in East Pokot.
- Poor agronomic practices.
- Human –wildlife conflict in Churo, Tangulbei, Koloa, Sacho and Salawa divisions.
- Very high food price that is currently experienced in the country.

In order to guide programming in these two districts, a nutrition survey is needed. The survey will provide not only nutrition information, but also information related to WASH, health and food security.

Evaluation Target Audiences

Proposed Collaboration

Ministry of Public Health & Sanitation/Ministry of Medical Services

District Health Management Teams (DHMTs)

District Medical Officers of Health (DMoH)

District Nutrition Officers

District Statistics Officers (DSO)

District Commissioners

At the community level, the survey will target children under five years, pregnant and lactating mothers for anthropometric measures, care givers and household heads for questioners and general population for focus group discussions.

Justification for the nutrition survey

The last nutrition survey in the district was done in October 2010 and covered only East pokot and depicted a Global Acute Malnutrition (GAM) rate of 16.4% and a Severe Acute Malnutrition (SAM) rate of 2.3%. There has been no recent survey in Baringo North, Central and Marigat.

Generally, the nutrition status of children under five years old is poor. The percentage of children at risk of malnutrition as measured using the mid upper arm circumference (MUAC) is above average for 2011 data from January to July.

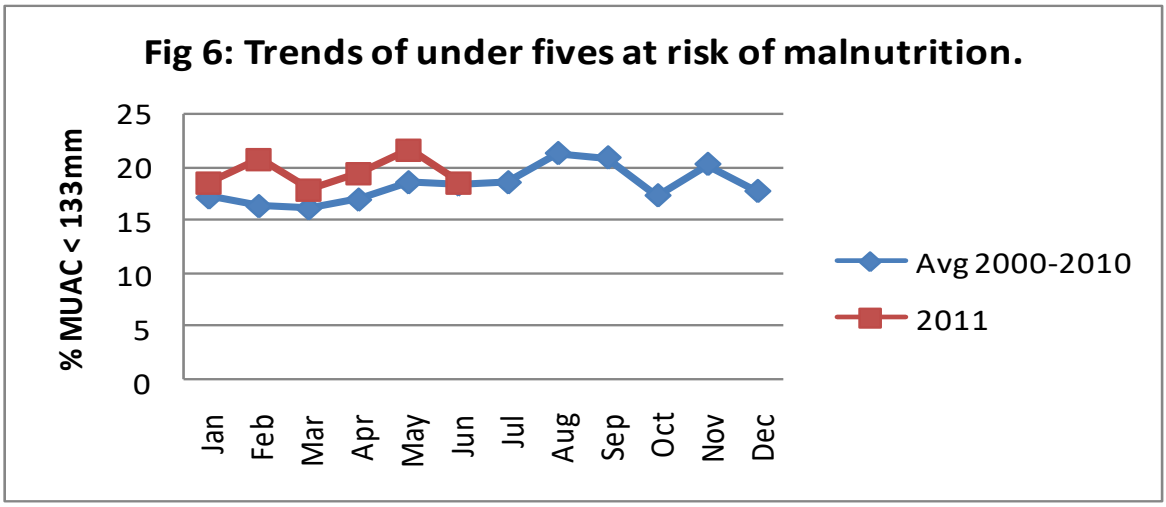

Figure 2: Malnutrition trends-MUAC data

The district food security situation is currently stressed owing to the erratic temporal distribution of the rains across the livelihood zones and flooding in some regions. Very high food price that is currently experienced in the country, Conflict over resources (cattle rustling along the border of East Pokot and Turkana, and within the district) have impacted negatively on the communities living in the areas affected. Livestock rustling limit access to health facilities in some parts of the districts.

Latrine coverage is poor, the situation is worse in the lowlands where the bigger population uses the bush to relieve themselves. The major leading diseases among under fives include malaria, pneumonia, diseases of respiratory tract and diarrhea diseases and these impact negatively to the nutritional status of children under five as well as the general population as they also lead to shifting of resources that would otherwise be used positively at household levels.

This has affected household food security, and has contributed to high numbers of children who are currently reported by health facilities as having moderate and severe acute malnutrition (Fig 3)

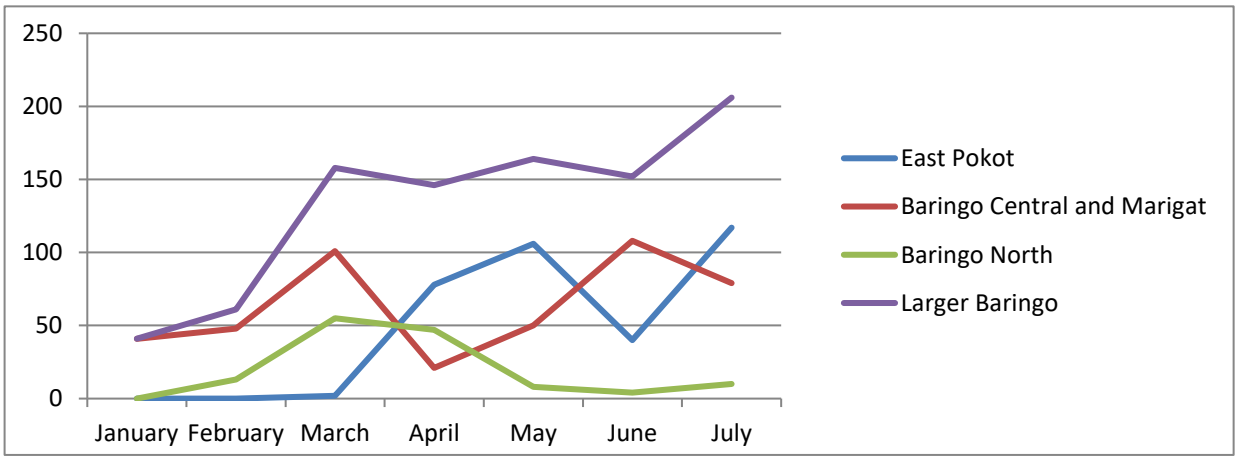

Figure 3:OTP admissions trend from January.

World Vision Kenya (WVK) has previously undertaken nutrition surveys in the region and currently providing nutrition services in the county.

The survey will provide clear baseline information as well as progress for the Higher Impact Nutrition Intervention that is currently being implemented in the larger Baringo County.

Overall Purpose and Objective:

To assess food security, health and nutritional status of children between 6 and 59 months old and to investigate causes leading to long standing poor health and nutrition indicators.

Specific objectives:

1. Assess the prevalence of acute and chronic malnutrition in children aged 6-59 months.
2. Assess the prevalence of malnutrition in pregnant women and Lactating mothers
3. Assess care seeking behaviors, rates of exclusive breastfeeding as well as complementary feeding knowledge, attitudes, and practices.
4. Estimate coverage for SFP, OTP, Measles and BCG vaccination, Deworming and vitamin A.
5. Estimate morbidity rates in children 6-59 months.
6. Estimate crude and under five mortality rate.
7. Assess Household food security levels/situation.
8. To establish hygiene and sanitation practices of the community.
9. Provide information for revising the national guidelines for conducting nutrition surveys in Kenya.
10. To establish baseline for high impact nutrition interventions indicators

Expected results:

1. % of GAM and SAM for children 6-59 months
2. Provide a measure of child care and feeding practices related to nutrition
3. % coverage of immunization, and vitamin A supplementation, Deworming and nutrition interventions programs
4. Morbidity rates of children below five years
5. Crude and under five mortality rate
6. Provide measure of food security situation
7. Provide information for revising the national guidelines for conducting nutrition surveys in Kenya
8. Latrine coverage, number of household that have knowledge on hand washing as well as water treatment practices
9. Baseline indicators for all high impact nutrition interventions

Sustainability of results

Information obtained from the survey will be used for effective planning of sustainable nutrition services in the county. Conducting Standardized Monitoring Assessment for Relief and Transitions (SMART) survey is one way of building the capacity of government staff especially the Ministry of Health. At district level, the MOH staff will be involved in all levels survey from planning and implementation to validation and dissemination of the result for use. It is envisaged that the capacity developed among the MOH staff will be critical in future surveys where the MOH will be able to conduct the surveys with minimal assistance.

Methodology

The evaluation will utilize several methodologies among them:

- Review of secondary data from MOH especially on statistical reports from district health records and information officers, District Nutrition Officers and other DHMTs
- Review Food security reports
- Focus Group discussions with caregivers, household heads, health workers, and key decision makers in the community.
- Questionnaires to caregivers and household heads
- Anthropometric data from children between 6-59 months, pregnant and lactating mothers.

Two surveys will be conducted. One survey will cover East Pokot and parts of Baringo North while the other shall over the Marigat, Baringo Central. East Pokot and Baringo North is in the pastoral livelihood zone while Marigat, Baringo Central are in the agro-pastoral zone. The two surveys will be conducted independently.

Authority and Responsibility

Authority	**Responsibility**
National Office	-Hiring of consultants -Review evaluation report
Integrated Program Manager	Provide logistical support to consultant
Ministry of Health	-Provide data -Participation in evaluation
Project manager	-Support the consultant -Review evaluation report
Sub branch ICD/Program officer/National nutrition coordinator	-Review evaluation report
Consultant	-Data collection - Analysis of statistical report from MOH - Develop evaluation data collection tools -Generate evaluation report including lessons learnt

Logistics

Activity	**Responsible Person**
Accommodation and meals for consultant	Nutrition Manager
Travel and field facilitation for consultant	Nutrition Manager
Supervisors and data collectors	Nutrition Manager

Provider interpreters where necessary	Nutrition Manager
Provide room for briefings	Nutrition Manager
Stationeries	Nutrition Manager

Products

The consultant will:

I. Develop a consultancy proposal detailing methodology, work plan and budget
II. Develop data collection tools and share with WVK for review before use
III. Undertake data collection and analysis
IV. Generate an evaluation report
V. Share the preliminary report with stakeholder's forum at district level and incorporate feedback
VI. Present draft report to the nutrition information working group at national level
VII. Incorporate the feedback from stakeholders and produce final report

Nutrition Technical Forum will review and adopt the survey report and release it to the relevant ministries and partners for use interventions.

Documents review

The following documents will be reviewed as part of secondary data.

I. Statistical reports on nutrition indicators from District Health Information Record
II. Integrated Management of Acute Malnutrition data
III. High Impact Nutrition baseline and progress reports
IV. Food security reports
V. Previous nutrition survey reports

Result Framework

Level	Narrative Summary	Indicators	Baseline	Target	Means of Verification
Goal	To reduce the magnitude of malnutrition for children under five years of age and to provide information for an effective interventions and management of current nutrition programming in Baringo County.	Improved food security status indicators Mortality and morbidity rates Malnutrition levels	2010 Health Nutrition Survey of East Pokot and 2009 Nutrition Survey Baringo Central, Marigat and North.	Baringo County	Nutrition survey reports
	To assess food security, health and nutritional	• Immunization	2010 Health Nutrition Survey of	Children aged 6-	

Purpose	status of children between 6 and 59 months old and to investigate causes leading to long standing poor health and nutrition indicators.	coverage • Vitamin A supplementation and Deworming coverage • Coverage of selective feeding programmes	East Pokot and 2009 Nutrition Survey Baringo Central, Marigat and North	59 months of age	Nutrition survey reports
	Assess the prevalence of acute and chronic malnutrition in children aged 6-59 months	Malnutrition levels (NCHS and WHO) - GAM - SAM - % with oedema - % under weight - % stunting • - MUAC	2010 Health Nutrition Survey of East Pokot and 2009 Nutrition Survey Baringo Central, Marigat and North	Children aged 6-59 months of age	Nutrition survey reports
	Assess the prevalence of malnutrition in pregnant women and mothers with children <5 years of age.	• MUAC • Iron Folate supplementation coverage	2010 Health Nutrition Survey of East Pokot and 2009 Nutrition Survey Baringo Central, Marigat and North	Pregnant women and Mothers of children<5 years	Nutrition survey reports
	Estimate coverage for SFP, OTP, measles and BCG vaccination and vitamin A.	• Immunization coverage • Vitamin A supplementation coverage • Coverage of selective feeding programmes	2010 Health Nutrition Survey of East Pokot and 2009 Nutrition Survey Baringo Central, Marigat and North	Baringo County	Nutrition survey reports
	Estimate morbidity rates in children 6-59 months and pregnant women and lactating mothers with children <5 years.	• Fever (alone or in combination with other symptoms) • ARIs: %	2010 Health Nutrition Survey of East Pokot and 2009 Nutrition Survey Baringo Central, Marigat and	Baringo County Children aged 6-59 months of age	Nutrition survey reports

		• Diarrhea: %	North.		
	Estimate crude and under five mortality rate.	• Crude mortality rates (CMR) – number/10,000/day • Under 5 mortality rates (U5MR) – number/10,000/day	2010 Health Nutrition Survey of East Pokot and 2009 Nutrition Survey Baringo Central, Marigat and North	Baringo County Children aged <5 years	Nutrition survey reports
	Assess the nutrition intervention coverage in the District.	• Immunization coverage • Vitamin A supplementation coverage • Coverage of selective feeding programmes	2010 Health Nutrition Survey of East Pokot and 2009 Nutrition Survey Baringo Central, Marigat and North	Baringo County	Nutrition survey reports
	Asses Household food security levels/situation in Baringo and East Pokot districts	• Source of food • Source of Income • Coping Strategies • Number of meals eaten per day • Role of food aid		Baringo County.	Nutrition survey reports

ANNEX 2: SAMPLED CLUSTERS

Assignment of Clusters – Baringo Central and Baringo North		
Geographical unit	Population size	Assigned cluster
AKORIAN	2950	1
ATIAR	1771	2, 3
AYATIA	636	
BARKETEW	3285	
BARTABWA	1179	4
BARTOLIMO	4033	
BARWESSA	3047	5
bekibon	940	
chebano	1622	6
chebunyur	868	
cheplambus	1531	
Eitui	716	
ISSAS	2187	
kabarak	1285	
kabasis	4027	7
KAIMUGUL	2059	8
KALABATA	1237	
KAPCHEPKOR	2593	9
kapcherebet/turkwo	319	
kapkelelwa	776	
kapkiai	974	
KAPKIAMO	2026	
KAPKIRWOK	1031	
KAPKOIWO	4245	RC, 10
KAPKOMBE	1111	
kaplel	1238	
KAPLUK	2753	11, 12
kaprogonya	6498	
kapsoo/borowoni	1968	
KAPTERE	2379	13
kaptich	489	
KAPTILIMWO	1655	
kaptiriony	2020	14
kaptorokwo/kitumbi	1778	15
KAPTUM	3521	16
kaptumo	1898	RC
KAPTURO	1033	
kapyemit	1552	
KASAKA	1350	
kasetan	1065	

KASISIT	2256	17
KATIBEL	2559	
katunoi	493	
KELYO-MOSOP	2526	18, 19
KESUMET	1429	
KETURWO	3096	20, 21
kewamoi	6189	22, 23, 24, 25
kibei	705	
kiboino	1343	
kimoso	935	
KINYACH	1009	26
kinyo	3008	27, 28
KIPCHERERE	1568	
kipkaech	1561	
kisonei	1221	
kituro	2351	29
koibarak	860	
KONOO	2727	30
KOROTO	708	
KUIKUI	4063	
kurumbompsoo	745	
LELIAN	949	
lelmen	1590	
LORUK	2732	31
MAREGUT	1407	32, 33
moigutwo	1059	
moloi	3107	34
morop	2100	35
MUCHUKWO	2043	
ochii	615	RC
riwo	1657	
RONDININ	1179	
sagasak	415	
saimet	397	
salawa	1440	
seguton	4488	36
seretaunin	4092	
SIBILO	4172	37
sironoi	745	
sirwet	377	
sogon	723	
sorok	1362	38
sosion	450	
SUMEYON	1044	

tabarin	1191	
TAIMON	1220	RC
tebei	907	
tenges	1366	
TERIK	2824	RC, 39, 40
TILOI	745	
timboiwo	3929	41, 42
tinomoi	1248	
TIRIMIONIN	2242	
TIRIONDONIN	3841	
tiriony	1399	
TULUK	1369	
tuluongoi	1501	
(RC = Reserve Clusters, approx. 10% of the original clusters, all of the reserve clusters should be surveyed when it was not possible to collect some of the other clusters.)		

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Nutrition and Food Security Survey Questionnaire

Name of District	Name of Division	Name of sub location	Cluster Number	Team number	Household Number	Date of Interview (dd/mm/yy)	Name of Interviewer	Name of Team Leader
						____/____/____		

1. HOUSEHOLD DATA

How many people live in this household together and share meals? (Household size) ☐

1.1 Age group	1.2 Person ID and Name (*Start with the youngest to the oldest member of the household. Insert the names of the persons and ensure that numbering is continuous*)		1.3 Approx.* Age Enter months for children under 5 years and years for over 5's		1.4 Childs age verified by (1=Health card, 2=Birth certificate/notification, 3=Baptism card, 4=Calendar of events, 5=Recall)	1.5 Sex (1= Male, 2= Female)	1.6 Main Occupation of the household head and the respondent or caregiver (enter code from list)
	ID	NAME	Date of birth dd/mm/yy	AGE (MONTHS)		SEX	OCCUPATION
Under 5 years	1						
	2						
	3						
	4						
over 5 years	ID	NAME		AGE (YRS)		SEX	OCCUPATION
	5. HH						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
CODE 1.6	1=Agricultural labour, 2=Livestock herding, 3=Own farm labour, 4=Employed(salaried), 5=Waged labour (Casual), 6=Petty trade, 7=Unemployed, 8=Student, 9=Merchant/trader, 10=Mining 11=Housewife (Only those who completely stay home and have no other source of income),12=Domestic help, 13=Hunting, gathering, 14=Firewood/charcoal selling, 15= Brewing, 16=Weaving/basketry, 17=Fishing, 18= Very old, 19=Others (Specify)……..						

Name of District	Name of Division	Name of sub location	Cluster Number	Team number	Household Number	Date of Interview (dd/mm/yy)	Name of Interviewer	Name of Team Leader
						_____/_____/_____		

2. IMMUNIZATION COVERAGE: ASK FOR ALL CHILDREN LESS THAN 59 MONTHS

	Name of the child	Sex of the child M =1 F = 2	AGE IN MONTHS copy from page 1	Has the child received **vitamin A** supplement in **last 12 months?** 0=No **1=Yes (Card)** 2=Yes (Recall) 4=Do not know	If YES, How many times in the **last 12 months?**	Has the child received **deworming medicine** in **last 6 months?** 0=No **1=Yes (Card)** 2=Yes (Recall) 4=Do not know	**BCG** 0=No **1=Yes (Card)** 2= Yes (Recall) 3=Yes (by scar) 4=Do not know	**OPV1** 0=No **1=Yes (Card)** 2=Yes (Recall) 4=Do not know	**OPV2** 0=No **1=Yes (Card)** 2=Yes (Recall) 4=Do not know	**OPV3** 0=No **1=Yes (Card)** 2=Yes (Recall) 4=Do not know	**PENTA 1** 0=No **1=Yes (Card)** 2=Yes (Recall) 4=Do not know	**PENTA 2** 0=No **1=Yes (Card)** 2=Yes (Recall) 4=Do not know	**PENTA 3** 0=No **1=Yes (Card)** 2=Yes (Recall) 4=Do not know	**Measles** 0=No **1=Yes (Card)** 2=Yes (Recall) 4=Do not know
1														
2														
3														
4														

Name of District	Name of Division	Name of sub location	Cluster Number	Team number	Household Number	Date of Interview (dd/mm/yy)	Name of Interviewer	Name of Team Leader
						____/____/_____		

3. MORBIDITY: ASK FOR ALL CHILDREN LESS THAN 59 MONTHS

	Name of the child	Sex 1=M 2=F	In the last 2 weeks including today, has [name] been sick? Yes--Ask the mother to describe illness No--continue with IYCF question	**Watery Diarrhea** An episode of 3 or more loose /watery stools in 24 hours	**Bloody diarrhea** An episode of 3 or more watery stools with blood in 24 hours	**Cough with difficult breathing** Any episode with difficult breathing,, rapid breathing or severe or persistent cough	**Fever** High temperature/Hot body-anything that is used to describe a high temperature	**Fever with chills** High body temperature with feelings of hot and cold spells	**Other Specify** **Anything that does not fit other categories**	**When the child was sick, where did you first seek assistance? (enter code)** 1=Traditional healer 2=Community health worker 3=Private clinic/ pharmacy 4=Shop/kiosk 5=Public health facility 6=Mobile clinic 7=Relative or friend 8=No assistance sought 9= Herbs/home remedy 10=Prayer 11= Others (specify)
1			**Yes** ☐ No☐	☐ **Watery diarrhea** ☐ **Bloody diarrhea** ☐ **Cough with difficult breathing** ☐ **Fever** ☐ **Fever with chills** ☐ **Other (specify)**_____	If diarrhoea is YES. Was [name] given any of the following: CIRCLE THE RESPONSE 1. A fluid made from a special packet called ORS? 2. A home-made sugar-salt solution **3.** Another home-made liquid such as porridge, soup, yoghourt, coconut water, fresh juice, tea 4. Zinc 5. Others (specify)_____				
2			**Yes** ☐ No☐	☐ **Watery diarrhea** ☐ **Bloody diarrhea** ☐ **Cough with difficult breathing** ☐ **Fever** ☐ **Fever with chills** ☐ **Other (specify)**_____	If diarrhoea is YES. Was [name] given any of the following: CIRCLE THE RESPONSE 1. A fluid made from a special packet called ORS? 2. A home-made sugar-salt solution **3.** Another home-made liquid such as porridge, soup, yoghourt, coconut water, fresh juice, tea 4. Zinc 5. Others (specify)_____				
3			**Yes** ☐ No☐	☐ **Watery diarrhea** ☐ **Bloody diarrhea** ☐ **Cough with difficult breathing** ☐ **Fever** ☐ **Fever with chills** ☐ **Other (specify)**_____	If diarrhoea is YES. Was [name] given any of the following: CIRCLE THE RESPONSE 1. A fluid made from a special packet called ORS? 2. A home-made sugar-salt solution **3.** Another home-made liquid such as porridge, soup, yoghourt, coconut water, fresh juice, tea 4. Zinc. 5. Others (specify)_____				
4			**Yes** ☐ No☐	☐ **Watery diarrhea** ☐ **Bloody diarrhea** ☐ **Cough with difficult breathing** ☐ **Fever** ☐ **Fever with chills** ☐ **Other (specify)**_____	If diarrhoea is YES. Was [name] given any of the following: CIRCLE THE RESPONSE 1. A fluid made from a special packet called ORS? 2. A home-made sugar-salt solution **3.** Another home-made liquid such as porridge, soup, yoghourt, coconut water, fresh juice, tea 4. Zinc 5. Others (specify)_____				

Name of District	Name of Division	Name of sub location	Cluster Number	Team number	Household Number	Date of Interview (dd/mm/yy)	Name of Interviewer	Name of Team Leader
						____/____/_____		

4. INFANT AND YOUNG CHILD FEEDING PRACTICES (IYCF) FOR CHILDREN 0-23 MONTHS OF AGE

Make every effort to speak with the mother. If she is not available, speak with the primary caregiver responsible for feeding of the child. For every question use the child's name.

CH. No	Name of child	Background Information				Infant Feeding information					
		4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9	4.10
		Child's date of Birth: dd/mm/yy	Source of birth date (Record the approp. code) 1 = CARD 2 = RECALL 3 = DNK	Age of child in months	Sex of child 1 = M 2 = F	Did you ever breastfeed [name]? 1= Yes 2= No 3=DNK If No, go to 4.6 If yes, go to 4.7	If No, why? See code below for the answers	If yes, How long after birth did you put [name] on the breast? See code below for the answers	During the first 3 days after delivery, did you give [Name] the fluid/liquid that came from your breasts? 1= Yes, 2= No, 3= DNK	In the first 3 days after delivery, was [Name] given anything to drink other than breast milk? Codes below	Are you still breastfeeding [Name]? 1= Yes 2= No

Question 4.6: 1= No milk; 2= Did not want to breast feed;3= Medical advice 4= Mother died 5=Other_____
Question 4.7: 1= Within I hr; 2= Within 24 hours; 3=After 24 hours; If mother does not know, record: **88** :
Question 4.9: 1= Plain water; 2= Sugar water or glucose water; 3= Powdered milk (Milki, hayat, coast), animal milk; 4 = Infant formula (Lactogen, Nan), 5= Gripe water; 6= Not given; 7 = Ghee 8=Other (specify)

Name of District	Name of Division	Name of sub location	Cluster Number	Team number	Household Number	Date of Interview (dd/mm/yy)	Name of Interviewer	Name of Team Leader
						____/____/_____		

Now, I will ask you about what [Name] drank YESTERDAY during the day and the night. During the day and the night, did [Name] receive any of the following fluids? Refer to the name of the child for each question. READ OUT EACH FOOD ONE BY ONE TO THE MOTHER AND RECORD THE RESPONSE.

CH. No	Name of child	4.11	4.12	4.13	4.14	4.15	4.16	4.17	4.18
		Breast milk Only one answer coded as below: 1. Yes 2. No 3. DNK	Infant formula (Lactogen, Nan) 1. Yes 2. No 3. DNK	Other milks: animal milk, - reconstituted powdered milk (Safari land etc) - Sour milk /mursik lolon/ngakibuk/naoto 1. Yes 2. No 3. DNK	Sweetened flavored juices (Quencher, Juissy, afia, juice cola) Soda 1. Yes 2. No 3. DNK	ORS/dawa ya chumvi 1. Yes 2. No 3. DNK	Tea/Coffee 1. Yes 2. No 3. DNK	Plain water 1. Yes 2. No 3. DNK	Porridge 1. Yes 2. No 3. DNK

Name of District	Name of Division	Name of sub location	Cluster Number	Team number	Household Number	Date of Interview (dd/mm/yy)	Name of Interviewer	Name of Team Leader
						_____/_____/_____		

Now, I will ask you about what [Name] drank YESTERDAY during the day and the night. During the day and the night, did [Name] receive any of the following fluids? Refer to the name of the child for each question. READ OUT EACH FOOD ONE BY ONE TO THE MOTHER AND RECORD THE RESPONSE.

CH. No	Name of child	4.11	4.12	4.13	4.14	4.15	4.16	4.17	4.18
		Breast milk Only one answer coded as below: 1. Yes 2. No 3. DNK	Infant formula (Lactogen, Nan) 1. Yes 2. No 3. DNK	Other milks: animal milk, - reconstituted powdered milk (Safari land etc) - Sour milk /mursik lolon/ngakibuk/naoto 1. Yes 2. No 3. DNK	Sweetened flavored juices (Quencher, Juissy, afia, juice cola) Soda 1. Yes 2. No 3. DNK	ORS/dawa ya chumvi 1. Yes 2. No 3. DNK	Tea/Coffee 1. Yes 2. No 3. DNK	Plain water 1. Yes 2. No 3. DNK	Porridge 1. Yes 2. No 3. DNK

Name of District	Name of Division	Name of sub location	Cluster Number	Team number	Household Number	Date of Interview (dd/mm/yy)	Name of Interviewer	Name of Team Leader
						____/____/_____		

SANITATION AND TOILET AVAILAIBILITY AND UTILIZATION

6.1. Does your household have access to a toilet/ latrine facility? 1=Yes 2=No(**IF NO, GO TO QUESTION 6.3**) **6.1.1 Observe if latrine is within 100 meters distance from houses.** 1=Yes 2=No 6.**1.2 Observe if latrine is in use.** 1=Yes 2=N 6.1.3 If YES, is it: A. Shared latrine B. Family latrine 6.14 If shared by how many families? _____	**6.2. If yes, what type of toilet facility do you have?** 1=Traditional pit latrines 2=Ventilated improved pit latrine 3=Flush toilet 4=Other Specify _____ 6.2 **.1 Does latrine have the aperture cover or fly screen on vent pipe?** 1=Yes 2=No _____ **6.2.2 Who uses this Latrine?** 1= ALL members 2= Selected members	**6.3. If No, where do you go (defecate)/use? (probe further)** 1= Bush 2=Open field 3.=Near the river/Lagga 4.=Behind the house 5.=Out of the compound 6.=Other (specify)_____	**6.4. How is children's faeces disposed (Probe and OBSERVE)** 1= Disposed of immediately (and hygienically) in a toilet 2= Disposed of immediately in the nearby bushes 3= Not disposed (scattered in the compound) 4= Use of dogs(left for/ given to dogs goats sheep and other domestic animals to clear) 5= Bury 6=Burn 7=Sprinkling soil on top 8=Putting a stone on top 9=Other (specify).....	**6.5. On what occasion (s) do you wash your hands?** **Record ALL that applies** **See codes for 6.5 below** _____ **6.5.1 Observe for presence of a hand washing facility next to the latrine/ in the compound**. 1=Yes 2=No **6.5.2** **What do you use to clean (wash) your hands?** (Multiple responses) 1=Water only 2=Water and soap 3=Water and ash 4=Water and cow dung 5=Animal urine 6=Other (specify) _____ **6.5.3 Observe for strategic presence of soap/ash at hand washing facility**

				1=Yes 2=No 3= No strategic hand washing facility
6.5 1= After using the toilet/ defecating ; 2= After attending to a child who has defecated, 3= Before feeding a child (including before breastfeeding a child), 4=Before eating or preparing a meal; 5=After handling animals, 6= After changing sanitary pads 7= When washing the face 8. When bathing, 9=others specify				

Name of District	Name of Division	Name of sub location	Cluster Number	Team number	Household Number	Date of Interview (dd/mm/yy)	Name of Interviewer	Name of Team Leader
						____/____/_____		

7. 7. FOOD CONSUMPTION AND DIET DIVERSITY - ASK IN HOUSEHOLDS WITH CHILDREN 0-59 MONTHS OLD

Twenty four hour recall food consumption in the households. The interviewers should establish whether the previous day and night was usual or normal for the households.

7.1 Food group consumed Were the foods consumed 1. Usual? 2. Not usual (Circle the response)	**7.2. Did a member of your household consume food from any of these groups in the last 24 hours (from this time yesterday to now)? Include any snacks consumed** 1= Yes 0= No	**7.3 What is the main source of the dominant food item consumed** ***(Please insert the appropriate code)*** 1=Own production 2= purchases 3=gifts from friends/ family 4= food aid 5= traded or bartered 6=borrowed 7=Gathering /wild 8= Others specify
Type of food		
1. Cereals and cereal products (e.g. sorghum, maize, spaghetti, rice, bulga wheat, bread, Millet, chapati)		
2. Vitamin A rich vegetables and tubers: Pumpkin, carrots, yellow fleshed sweet potatoes		
3. White tubers and roots: Potatoes, white yams , cassava or foods from roots, white sweet potatoes,		
4. Dark green leafy vegetables: Dark green leafy vegetables including wild ones + locally available vitamin A rich leaves such as, pumpkin leaves, kunde leaves, sukuma wiki, spinach, managu,mrenda		
5. Other vegetables (e.g. tomatoes, biringanya, onions, cabbages)		
6. Vitamin A rich fruits: Ripe mangoes , papayas + others locally available like watermelon,		
7. Other fruits like oranges, tamarinds, wild fruits		
8. Organ meat (Iron rich): Liver, kidney, heart, tongue or other organ meats or		

blood based foods , spleen		
9. Flesh meat and offal's (matumbo): Meat, poultry, (cow goat, camel, sheep, game meat etc)		
10. Eggs		
7.1 Food group consumed	**7.2. Did a member of your household consume food from any of these groups in the last 24 hours (from this time yesterday to now)? Include any snacks consumed** 1= Yes 0= No	**7.3 What is the main source of the dominant food item consumed** **(*Please insert the appropriate code)*** 1=Own production 2= purchases 3=gifts from friends/ family 4= food aid 5= traded or bartered 6=borrowed 7=Gathering /wild 8= Others specify
11. Fish: Fresh or dried fish or shell fish or smoked , salted, fried		
12. Pulses legumes or nuts (e.g. beans , lentils, green grams, cowpeas, dried peas, groundnuts, macadamia nuts, *edapal, eduung, eruit, ngimare*)		
13. Milk and milk products (e.g. goat , camel, fermented milk , cow's milk, donkey's milk, powdered milk)		
14. Oils/ fats (e.g. cooking fat or oil, butter , ghee, margarine, goat's fat, sheep's fat)		
15. Sweets: Sugar, honey, sweetened juice, soda/sugary foods such as sweets, ekaamit, glucose		

Please probe and accurately indicate the number of meals consumed per day and the previous day. Information on household members who ate the previous day, those who did not eat as well as reasons for not eating should be probed and recorded appropriately

7.4. Including food eaten in the morning, how many meals does your family normally eat per day? *(Please indicate the number of meals consumed e.g.* 1, 2, 3, 4, 5 ,6)	7.5. Including food eaten in the morning, how many meals did your family eat <u>YESTERDAY</u>? *(Please indicate the number of meals consumed e.g.* 0, 1, 2, 3, 4, 5,6)	7.6. Did all the members of your family eat yesterday? (*Please record all responses*) 1.Yes***(If Yes, Go to question 8 Food Aid)*** 2.No ***(If No, Go to 7.7)***	7.7. If some household members did not eat, Who did not eat yesterday? *(Please record all the responses)* 1=Child under 5 2= 5-12 years old 3=13-19 years old 4= Mother 5= Father 6= Above 19 years	7.8. Why did the person/s not eat? *(Please record all the responses***)** 1= Food not enough 2= Sickness 3= Away from home 4=Fasting 5=Other (specify)

Name of District	Name of Division	Name of sub location	Cluster Number	Team number	Household Number	Date of Interview (dd/mm/yy)	Name of Interviewer	Name of Team Leader
						____/____/_____		

8. FOOD AID - ASK IN HOUSEHOLDS WITH CHILDREN 0-59 MONTHS OLD

8.1. Have you received **FOOD AID** in the last **three (3)** months? (Please circle) **1 = Yes 2 = No (If no go to section 9 on coping strategies)**

8.2 If, YES which one? 1= GFD; 2= FFA 3=From the DC or government (Multiple responses allowed)

8.3 How many times have you received food aid in the last 3 months? **1= Once 2= Two times 3= Three times 4= More than three times**

Of the food aid received please indicate how it was used					
8.4 FOOD AID COMMODITY	**8.5 Resold in the market**	**8.6 Bartered for other item**	**8.7 Shared with kin**	**8.8 Consumed by household members**	**8.9 How many days did each food commodity last? Write number of days**
Bulga wheat					
Maize					
Beans					
CSB					
Oil					
Salt					

Name of District	Name of Division	Name of sub location	Cluster Number	Team number	Household Number	Date of Interview (dd/mm/yy)	Name of Interviewer	Name of Team Leader
						____/____/_____		

9.0 COPING STRATEGIES

	In the previous month, has the household done any of the following?	1=Yes 2=No 88 = Do not know
9.1	Reduction in the number of meals per day	
9.2	Skip food consumption for an entire day	
9.3	Reduction in size of meals	
9.4	Restrict consumption of adults to allow more for children	

9.5	Swapped consumption to less preferred or cheaper foods	
9.6	Hunting and gathering	
9.7	Engaging in casual labour	
9.8	Borrow food from a friend or relative	
9.9	Purchase food on credit	
9.10	Consume wild foods (normal wild food)	
9.11	Consume decomposed fish/ food	
9.12	Send household members to eat elsewhere	
9.13	Send child(ren) to School	
9.14	Begging	
9.15	Sale of livestock	
9.16	Sell of charcoal and/or fire wood/small scale business	
9.17	Part of family migrating with animals to look for grazing	
9.18	Sale of milk and/or meat, and/or fish/ hides/ chicken	
9.19	Donation	
9.20	Others (Specify)	

Name of District	Name of Division	Name of sub location	Cluster Number	Team number	Household Number	Date of Interview (dd/mm/yy)	Name of Interviewer	Name of Team Leader
						____/____/_____		

10. MOSQUITO AND BEDNET USE

10.1. Does this household have a mosquito net? 1 = Yes 2 = No **(IF NO, GO TO 11)**	**10.2. Where did you get it from:** 1 = A Shop 2 = An agency/ 3=Church 4 = Ministry of Health 5= Others (specify)_____	**10.3. Who slept under the mosquito net last night?** **(Probe - enter all responses mentioned)** 1. Children less than 5 years 2. Children over 5 years 3. Pregnant mother or other pregnant woman 4. Father 5. Mother 6. Other members of the house hold 7. Nobody uses; WHY? **a.** It is difficult to fix the net **b.** Torn **c.** Too large for size of house **d.** Others (specify)_____

12. LIVESTOCK OWNERSHIP

11.1	Does the house hold own livestock? (Chicken not included) 1=Yes; 2=NO. **IF NO, GO to question 12.**	
11.2	Has the size of the livestock herd changed in the last 6 months? (1=increased, 2=reduced, 3=remained the same, DNK=4). **IF REMAINED THE SAME OR DNK GO to question 12.**	
11.3	If increased what are the reasons? ***(Multiple responses are acceptable)*** (1=animals gave birth, 2=bought, 3=given, 4=raid, 5= Dowry; 6=restocking; 7=donation; 8=Other (specify)	
11.4	If decreased, What are the reasons? ***(Multiple responses are acceptable)*** (1=sold, 2=death because of drought, 5=death because diseases, 6=raid, 7= Dowry; 8=Other (specify)	

Name of District	Name of Division	Name of sub location	Cluster Number	Team number	Household Number	Date of Interview (dd/mm/yy)	Name of Interviewer	Name of Team Leader
						____/____/_____		

ADULTS NUTRITIONAL STATUS - ASK IN HOUSEHOLDS WITH CHILDREN 0-59 MONTHS OLD

<table>
<tr><td colspan="3">QUESTIONS TO BE ANSWERED IF CARE GIVER IS A FEMALE:

• Measure MUAC of RESPONDENT
• RESPONDENT must be female between 15 and 49 years of age
• If there are multiple caregivers, interview only the one who is a primary caregiver</td><td></td></tr>
<tr><td>WOMAN 1

12.1. How old are you?

a)_____ years

b) DNK</td><td>12.2. What is the woman's current physiological status? (Ask carefully and Circle)

1 = Pregnant and breastfeeding
2= Not pregnant/not breastfeeding
3= Currently pregnant
4= Breastfeeding (<6months infant)
5= Breastfeeding (6-24months)

FOR THOSE WOMEN WHO ARE NOT PREGNANT

12.3 Did you take iron/folate supplementation during your last pregnancy?
1 =YES
2= NO
3= DNK

IF YES, For how many days did you take the supplementation?
_____days</td><td>12.4. MUAC (cm), left arm (To the nearest 0.1 cm), do not round up

_____.____cm</td><td>12.5 FOR PREGNANT WOMEN ONLY

Are you currently taking iron/folate supplementation?

1=YES
2=NO

12.5 If YES, Where did you get it from?

1. Health Facility
2. Brought from the shops

12.6 IF NO, Why NOT?

1= Do not see the need of taking them
2= Not available at the ANC
3= They make me sick
4= Have not started attending clinic
5= Any other, specify_____</td></tr>
</table>

WOMAN 2	**12.2 .....** **12.3.....**	 **12.4.....**	**12.5.....** **12.6.....**

Name of District	Name of Division	Name of sub location	Cluster Number	Team number	Household Number	Date of Interview (dd/mm/yy)	Name of Interviewer	Name of Team Leader
						____/____/_____		

13. ANTHROPOMETRY AND SELECTIVE FEEDING PROGRAMMES FOR ALL CHILDREN 6-59 MONTHS

	Name of children 6-59 months	Sex 1=M 2=F	Birth date dd/mm/yyyy	Age in months	Weight (to the nearest 0.1kg)	Height (to the nearest 0.1cm)	Oedema Yes=Y No=N	MUAC cm	Is the child currently in any feeding programme? 0=No 1=SFP 2=OTP 3=SC 4= Not sure/Do not know
1									
2									
3									
4									
5									

NB: FILL IN THE MORTALITY QUESTIONNAIRE

QUESTIONNAIRE FOR MORTALITY RATE CALCULATION (ONE SHEET PER CLUSTER)

Name of District	Name of Division	Name of sub location	Cluster Number	Team number	Household Number	Date of Interview (dd/mm/yy)	Name of Interviewer	Name of Team Leader
						____/____/____		

HH No.	Total no in hold	Total under 5 in House-hold	Total Join House-hold since 28th August 2011	Total Under 5 join Household since 28th August 2011	Total Leave Household since28th August 2011	Total under 5 leave Household since 28th August 2011	No. of births since 28th August 2011	Total deaths since 28th August 2011	Cause of death SEE CODES BELOW	Total No. under 5 deaths since 28th August 2011	Cause of death SEE CODES BELOW
1											
2											
3											
4											
5											
6											
7											

1= Diarrhoea 2= Fever 3= Measles 4= Difficulty in breathing 5= Malnutrition 6= Violence 7= Other (Specify)

FOCUS GROUP DISCUSSION GUIDE (FGDs)

Start time: _____ Finish Time: _____

Name of District	Name of sub location	Name of Cluster	Cluster Number	Date dd/mm/yy	Facilitator/Moderator	Recorder	No of participants	Indicate if FGD is with men or women

You are to visit 5 clusters per survey site
In each cluster, conduct two (2) FGDs one with women of childbearing age (15-49 years old) and the other with fathers of young children.
In total, carry TEN FGDs per district (4-5 with women and 4-5 with men).
The FGD group should comprise of 8 – 12 community members residing in the sampled geographic area. Representations should be sought from pastoralists, crop farmers, agro-pastoralists, and other community members (rich, medium and poor; women and men]. Indicate if FGD was for women or men. Community leaders should not be part of the FGD

FGD QUESTIONS

1.0 Major causes of malnutrition

1.1 How would you describe the nutritional situation of children in this community?
1.2 Please comment on the trends **(improved/worsened/no difference)** of malnutrition in this community over the last two years?
1.3 What in your view are the major causes of malnutrition in children in this community?
1.4 What interventions are in place by NGOs, MOH and other agencies to address malnutrition in this community?
1.5 What impact have the interventions had in improving the nutrition status of children?
1.6 What else do you think should be done to improve the situation?
1.7 What can the community do to improve the situation?

2.0 Food Security

2.1 What is the current food security situation in your community [Probe to find out whether people are having enough food to eat or are having food access problems].
2.2 Why is the situation the way it is? [Probe to find out what food resources have become scarce/plenty and why].
2.3 If food is scarce, how are people coping?
2.4 How is the current food situation compared to other times? (Probe for improvement or decrease in access and why)
2.5 For how long in the future is this situation expected to continue?
2.6 What should be done to sustain or avert the situation, and by whom?
2.7 -What can the community do to sustain/improve the situation?

3.0 Food Aid

3.1 What are the types of food aid given to this community? (PROBE for GFD, FFA, from the DC and Kenya for Kenyans)
3.2 Do the food aid programmes reach the needy people in the community? If NOT, why?
3.3 What food programmes are in place for malnourished children and women? [PROBE FOR SFP and OTP]
3.4 What is the impact of food aid on the nutritional status of the children?
3.5 Are you aware of a new strategy targeting households where children enrolled in SFP and OTP come from and linking them to GFD? What is your opinion on this strategy in the management of malnutrition?
3.6 What do families who receive food aid (GFD, CSB, Plumpy and pumby nut) and supplementary food do with it?
3.7 For each use, probe why?
3.8 Is the food given adequate? (Probe for quantity and variety)

4.0 Maternal Nutrition

4.1 Do most pregnant women in this community attend ANC?
4.2 Is iron/folate supplementation commonly given to pregnant women attending ANC
4.3 What is the level of compliance to taking these supplements? PROBE FOR REASONS.
4.4 Are these supplements useful?

5.0 Illness and health seeking behavior

5.1 What are the common childhood illnesses in this community?
5.2 What are the contributing factors to these illnesses?
5.3 How are the following illnesses managed in this community?
- a) Diarrhoea
- b) Fever
- c) Acute respiratory infections (coughs, colds and difficult breathing)
- d) Malaria/fever with chills

5.4 In your view, are these illnesses adequately managed? If NOT, which areas and how can the management be improved?
5.5 What factors influence maternal health seeking behavior?

6.0 Coverage of health services

6.1 Do most children get immunized against childhood diseases; de-worming, vitamin A supplementation and zinc supplementation during diarrhoea?
6.2 If YES, what factors contribute to this?
6.3 If NO, what are the challenges/hindrances.

7.0 Infant and Young Child Feeding Practices

7.1 In your opinion, are the breastfeeding practices in this community satisfactory?

7.2 Do you belief that a child can survive on breastmilk alone without even water? If YES, for how long?

7.3 Is exclusive breastfeeding common in this community?

7.4 What are the benefits of exclusive breastfeeding?

7.5 What factors influence women to either exclusively breastfeed or not?

7.6 What challenges did you experience/discouraged you from practicing exclusive breastfeeding for 6 months?

7.7 At what age are children commonly introduced to solid and semi-solid foods?

7.8 What foods are commonly given to children?

7.9 How frequently are children fed?

BARINGO CENTRAL CALENDAR OF EVENTS

MONTHS	MAJOR EVENTS	2007	2008	2009	2010	2011
January	New year celebrations	**59** Rift Valley Fever	**47** Post election violence	**35** Drought-serious water shortage Obama sworn in	**23** Second cattle take- off/ off loading	**11** Putting Murram on the Kipsaraman road
February	Secondary schools form ones	**58** Rift Valley Fever	**46**	**34** Drought-serious water shortage	**22** Opening of IPA, WVK offices at Bartabwa	**10**
March		**57** Rift Valley Fever	**45** Koffi Annan &National Accord Grand Coalition	**33** Drought-serious water shortage	**21** Y- results received at Arap Moi's H.S.	**9**
April	Schools Close	**56** Rift Valley Fever	**44**	**32** Polio campaign	**20**	**8**
May	Heavy Rains	55 Rift Valley Fever	**43**	**31**	**19**	**7**
June	Heavy Rains	**54**	**42**	**30** Cattle take- off/ offloading	**18**	**6**
July	Heavy Rains	**53** Safari Rally organized by KCB	**41**	**29** Cattle take- off/ offloading	**17**	**5**
August	Schools Close	**52**	**40** Polio Campaign	**28** National Census	**16** Promulgation of the new constitution	**4**
September	Harvesting of Sorghum	**51**	**39**	**27**	**15** Construction of a new Health Centre at Bartabwa	**3**
October		**50**	**38**	**26**	**14** KASS night at Kipkogom	**2**
November	Start of KCSE	**49** **Circumcision**	**37** Pokot Raids in Kinyach, Kalabata, Chepkesit	**25** Circumcision	**13**	**1**
December	Preparations of Land For Planting Sorghum CHRISTMAS	**48** Post Election Violence	**36** Circumcision	**24** Circumcision	**12** Circumcision Naming of the Ocampo six	

BARINGO NORTH CALENDAR OF EVETNS

MONTHS	MAJOR EVENTS	2007	2008	2009	2010	2011
January	New year celebrations	**59** Rift Valley Fever	**47** Post election violence	**35** Drought-serious water shortage Obama sworn in	**23** Second cattle take- off/ off loading	**11** Putting Murram on the Kipsaraman road
February	Secondary schools form ones	**58** Rift Valley Fever	**46**	**34** Drought-serious water shortage	**22** Opening of IPA, WVK offices at Bartabwa	**10**
March		**57** Rift Valley Fever	**45** Koffi Annan &National Accord Grand Coalition	**33** Drought-serious water shortage	**21** Y- results received at Arap Moi's H.S.	**9**
April	Schools Close	**56** Rift Valley Fever	**44**	**32** Polio campaign	**20**	**8**
May	Heavy Rains	55 Rift Valley Fever	**43**	**31**	**19**	**7**
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October		**50**	**38**	**26**	**14** KASS night at Kipkogom	**2**
November	Start of KCSE	**49** **Circumcision**	**37** Pokot Raids in Kinyach, Kalabata, Chepkesit	**25** Circumcision	**13**	**1**
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