ISIOLO COUNTY INTEGRATED SMART SURVEY

KENYA

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REPUBLIC OF KENYA

MINISTRY OF HEALTH

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ABBREVIATIONS

ACF	Action against Hunger
BCC	Behavior Change Communication
BCG	Bacillus Calmette–Guérin
CI	Confidence Interval
CLTS	Community Led Total Sanitation
CNO	County Nutrition Officer
CNTF	County Nutrition Technical Forum
CSG	County Steering Group
FFA	Food for Assets
GAM	Global Acute Malnutrition
GFD	General Food Distribution
HFA	Height-for-Age
HHs	Households
HINI	High Impact Nutrition Interventions
ILRI	International Livestock Research Institute
IMAM	Integrated Management of Acute Malnutrition
IPs	Implementing partners
LVIA	Lay Volunteers International Program
MNP	Micronutrient Powders
MOA	Ministry of Agriculture
MOH	Ministry of Health
MOW	Ministry of Water
MUAC	Mid Upper Arm Circumference
NDMA	National Drought Management Authority
NIWG	Nutrition Information working group
ODF	Open Defecation Free
OPV	Oral Polio Vaccine
PPS	Probability Proportional to Population Size
SAM	Severe Acute Malnutrition
SFP	Supplementary Feeding Program
UNICEF	United Nations Children's Fund
WFA	Weight for Age
WFH	Weight-for-Height
WFP	World Food Program
WHO	World Health Organizations
Vs	Versus

EXECUTIVE SUMMARY

Isiolo County is located in the pastoral North East cluster covering an estimated area of 25,000 square kilometers. The County has three major livelihood zones; pastoral all species (67%), Agro-pastoral (26%) and firewood/charcoal (7%) respectively.[1] The integrated nutrition survey, implemented by MOH with support from NDMA and partners was conducted between 17th and 26th January 2017. The Standardized Monitoring and Assessment in Relief and Transitions (SMART) methodology was employed during the anthropometric survey in planning, training, data collection and analysis. Other data sets including data on nutrition, health, Water, Sanitation and Hygiene (WaSH), and food security were also collected during the survey. The survey covered the three sub counties namely Isiolo, Merti and Garbatulla.

OBJECTIVES

The overall objective of the survey was to estimate the prevalence of acute malnutrition amongst children aged 6-59 months. The specific objectives were:

- To determine the prevalence of under nutrition in children aged 6-59 months
- To determine the coverage for measles and Oral Polio Vaccines (OPV type 1 and 3), Vitamin A supplementation in children aged 6-59 months and Micro-nutrient Supplementation in children aged 6-23 months
- To determine maternal nutritional status based on MUAC measurements
- To estimate coverage of iron / folic acid supplementation during pregnancy in women of reproductive age;
- To collect contextual information on the possible underlying causes of malnutrition such as household food security, water, sanitation, and hygiene practices
- To build the capacity of the Ministry of Health staff and National Drought Management Authority field monitors

METHODOLOGY

The survey was implemented in the entire Isiolo County using the Standardized Monitoring and Assessment in Relief and Transitions (SMART) methodology planning, implementation and reporting. An updated standard national SMART survey questionnaire was created on phone tablets, then data was collected using open data kit (ODK) technology and stored in Kobo Toolbox server. Emergency nutrition assessment (ENA) software version 2011 updated on July 9th 2015 was used to calculate the sample size based on various parameters producing a sample size of 504 households and 486 children. Two stages cluster sampling was used with the first stage involving selection of 36 villages/clusters using probability proportionate to size (PPS) while the second stage involved selection of 14 households using simple random sampling. Four villages in Kipsing, Gafarsa, Bisan Biliqo and Gafarsa locations (one from each location) were removed from the sampling frame due to mass migration of the population to other villages and security issues.

SUMMARY OF KEY FINDINGS

During the exercise a total of 504 households and 519 children aged between 6-59 months were assessed. The overall data quality for anthropometric measurement was 4% indicating excellent. 2 children were excluded from analysis of acute malnutrition having weight for height z-scores out of range. The survey established a GAM prevalence of 18.2% (14.6-22.5 95% CI) and SAM prevalence of 3.3% (2.1- 5.3 95% CI), an increase compared to 2016 GAM prevalence of 12.3% and SAM prevalence of 1.2% with a significant difference of P=0.000 and P=0.035 GAM and SAM respectively. The current GAM rates indicate a critical

[1] NDMA livelihood classification for Isiolo County

situation. Stunting prevalence was at 17.3% (12.9-22.8 95% CI) while underweight prevalence was at 20.9% (16.4-26.3 95% CI)

. From the sample size 40.7% of the children aged 6-23 months were reported to be ill 2 weeks prior to the survey. The main illnesses were acute respiratory infections (47%), Malaria/fever (19%) and watery diarrhea (19%). Majority of the caregivers (86.7%) sought health assistance when their children were sick with public health services being the most sought (67.8%). Vitamin A supplementation relatively reduced compared to the previous year attributed early closure of ECDE centers before the Malezi bora campaigns in November 2016. Immunization of measles for the second dose at 18 months improved from 55% in 2016 to 66.8% in 2017 while the first dose remained the same.

The rate of open defecation slightly declined from 32.1% in 2016 to 29.0% in 2017. However, latrine coverage is still low at 71.0%. The food consumption score slightly declined compared to 2016 attributed to poor performance of October-December short rains. 87.3% of households were classified as having good food consumption while 3.4% were classified as having poor food consumption. The coping strategies also showed that the household were taking more coping strategies compared to 2016 with a slight increase in total weighted coping strategies index from 16.85 in 2016 to 17.4% in 2017. Table 1 highlights the summary of key results from the survey.

Table 1: Summary of Results, Isiolo County; February 2015 to January 2017[2]

		Integrated nutrition survey[3]		
INDEX	INDICATOR	February 2015 (SMART)	February 2016 (SMART)	January 2017 (SMART)
WHZ[4]-scores	Global Acute Malnutrition Weight for height <-2 z and/or oedema	13.2% (10.8-16.0)	12.3% (9.6-15.8)	18.2% (14.6-22.5)
	Severe Acute Malnutrition Weight for height <-3 z and/or oedema	1.7% (1.0- 3.0)	1.2% (0.4- 3.4)	3.3% (2.1-5.3)
HAZ[5]-scores	Stunting (<-2 z-score)	18.1% (14.3-22.6)	21.6% (18.0-25.6)	17.3% (12.9-22.8)
	Severe stunting (<-3 z-score)	4.5% (2.8- 7.3)	5.0% (3.3- 7.4)	2.8% (1.7-4.6
WAZ[6]-scores	Underweight (<-2 z-score)	16.3% (13.1-20.1)	19.5% (15.2-24.7)	20.9% (16.4-26.3)
	Severe underweight (<-3 z-score)	1.7% (0.9- 3.2)	3.0% (1.8- 5.1)	4.5% (2.7-7.4)
MUAC[7]	Global Acute Malnutrition MUAC <125 mm and/or oedema	3.5% (2.2- 5.4)	3.8% (2.3- 6.4)	7.7% (5.6-10.6)

[2]Statistics for anthropometry are as per WHO 2006 Index
[3]Results presented in brackets are expressed with 95.0% confidence interval (CI)
[4] Weight for height Z scores
[5] Height for age Z scores
[6] Weight for age Z scores
[7]Mid upper arm circumference

	Severe Acute Malnutrition MUAC <115 mm and/or oedema		0.3% (0.1- 1.4)	0.4% (0.1- 1.6)	1.3% (0.6-3.0)
Measles immunization coverage	9 Months by card		63.5%	69.0%	66.5%
	18 Months by card		32%	55%	66.8%
Vitamin A coverage	6-11 months ; Once				77.1%
	6-59 months; At least once				70.4%
	6- 59 months; more than once				63.9%
Deworming	12-59 months; once				17.4%
	12-59 months; At least once				91.5%
	12-59 months; more than once				59.4%
Micronutrient powders (MNPs) for children 6-23 months	Coverage of MNP		43.2%	51.8%	13.02%
	Consumption of MNPs		50.9%	66%	46.2%
	Main barriers		Awareness (51.8%)	Awareness (75%)	Awareness (57.6%)
Morbidity Patterns for 6-59 months	Ill in the last 2 weeks		34.7%	44.9%	40.7%
	Type of illness	Fever/Malaria	25%	42.9%	19.0%
		ARI/Cough	58%	64.7%	47.0%
		Watery Diarrhea	16.3%	25%	19.0%
Maternal Nutritional status by MUAC	Pregnant and Lactating women<210MM		7%	6.3%	7.1%
	All women (15-49)years <210MM				
IFAS intake	Over 90 days during pregnancy		3.1%	1.3%	0.0%
WaSH	Main Water sources	Piped water system	73.3%	62.7%	
	Distance to main source	≤500m	67.3%	73.31%	73.40%
		>500m-≤2km	18.8%	17.53%	4.80%
		>2k	13.9%	7.77%	22.00%
	Hand Washing Behaviors	At least 3 critical times	51.7%	12.5%	47.2%
	Latrine coverage	Own pit latrine	35.8%	33.27%	49.0%
Food Security and Livelihood	Food Consumption Score (FCS)	Poor	2%	1.4%	3.37%
		Borderline	7.8%	3.8%	9.33%
		Good	90.2%	94.8%	87.3%
	Coping strategy index (CSI)	Borrowing food	5.1	4.08	3.94
		Restrict consumption by adults	7.59	5.55	5.64
		Weighted CS Score	20.28	16.85	17.4

SUMMARY RECOMMENDATIONS

Nutrition situation in Isiolo County is at critical level. A number of interrelated factors that need intervention are attributable to this increase. Therefore, based on the findings, recommendations were put forward by the county nutrition technical forum (CNTF) and county steering group (CSG) involving government ministries and development partners. The recommendations were made after reviewing the previous survey recommendations implementation status, gaps and opportunities (table 2)

Table 2: Summary of possible recommendations from survey findings

Findings	Short term Recommendations	Long term Recommendations	Responsible
Health and Nutrition	✓ Intensified active case finding across the identified hot spots	✓ Strengthening of community health strategy to ensure timely screening	MOH, ACF, UNICEF, WFP

• GAM-18.2% and SAM-3.3% • Poor VAS coverage; • Low MNP coverage (13.02%) • Poor maternal nutrition status among PLWs MUAC <21.0cm-7.1% • Low IFAS uptake;	✓ Mass MUAC screening across the hot spots ✓ Integrated outreaches to reach population not covered by health facilities ✓ Health education on the importance of micronutrient supplementation (VAS, MNP, IFAS) because findings fall below the stipulated national targets ✓ Continued awareness creation on importance of MNPs	and referral of malnourished cases at the community level (incentives, trainings). ✓ Strong coordination of Health and Nutrition activities among the stakeholders ✓ Improve VAS and MNP documentation and supplementation through continued Mentorship and OJT to health workers on routine Vit A and MNP supplementation at the health facility level ✓ SBCC messages on maternal nutrition during community level activities	
Food Security and Livelihood • High Coping Strategy Index (17.4) • Majority purchasing food (>90%); • Poor dietary diversity with high consumption of low nutrient dense foods	✓ Promote mass livestock offtake to avoid mass loss of livestock and use the money to buy food for consumption at household level ✓ Promotion of kitchen garden(hanging gardens and bucket irrigation with shade nets) re-using water and kitchen waste ✓ Provision of GFD to community members in hot spots ✓ Health education to community members on dietary diversification and support to mothers on preparation of quality diets through recipe modification and cooking demonstrations	✓Isiolo County has 67% of its population being pastoral all species. There is need for selective restocking of goats and camels for pastoralists as the breeds are browsers and hardy hence better suited to cope with the impact of drought ✓ Fodder Production to protect the core breeding stock of the communities, fodder production along riverine and other potential areas would complement this activity and reduce the impact of the recurrent drought on the core breeding stock ✓Improve Own production which currently accounts for less than 1% of food sources ✓Strengthen linkage of Nutrition sensitive interventions-linking Agriculture to Nutrition; Agriculture and Livestock sectors. Inter-sectoral planning of activities amongst sectors i.e. Nutrition, Water and Agriculture	County Govt, MOA, MOH, ACF, UNICEF MOH MOA, MOLP, NDMA & Partners
Water, Sanitation and Hygiene ○ Increase in distance to water points (trekking more than 2 km from 7.8% to 22%) • Poor water treatment (only 38.0%) • Open	✓ Water trucking for both domestic and livestock use ✓ Provision of fast moving spare parts and stand by generators within the boreholes to address break ups ✓ Under take appropriate Continued health education to community members on hygiene and sanitation including water treatment and proper waste disposal at different fora; MtMSGs, Dialogues ✓ Provision of water treatment chemicals at the household level	✓ Establishment of new and rehabilitation of existing water sources to increase per capita water consumption and reduce distances to water sources while at the same time maintain access to safe water ✓ Establishment and strengthening of existing water user committees to be able to handle conflicts arising at various water points.	County Govt, NDMA, Partners, MOW, MOH

defecation (29%) • Handwashing during at least 3 critical times (47.2%)			

1.0 INTRODUCTION

1.1 Background Information

Isiolo County, located in the Pastoral North East cluster, is classified as arid and semi-arid lands of Kenya covering a surface area of 25, 336 square Kilometers (km^2) with an estimated population of 181,781[8]. Consisting of three Sub-counties, Isiolo, Garbatulla and Merti, the county is characterized by recurrent droughts, hot and dry climate with low and erratic rainfall patterns. There are four main livelihood zones in the county namely Casual and Waged Labor, Pastoral (all Species), Pastoral Cattle and Goats, and Agro Pastoral livelihood zones comprising 32, 15, 35 and 15 percent of the population respectively as shown in Figure 1[9]. Pastoralism, all species and cattle, goats and sheep, is the main source of livelihood in the county with little agro-pastoralism being practiced along Ewaso-Nyiro River whereas firewood selling, casual waged labor and some formal employment in big towns is the least of the livelihood zones.

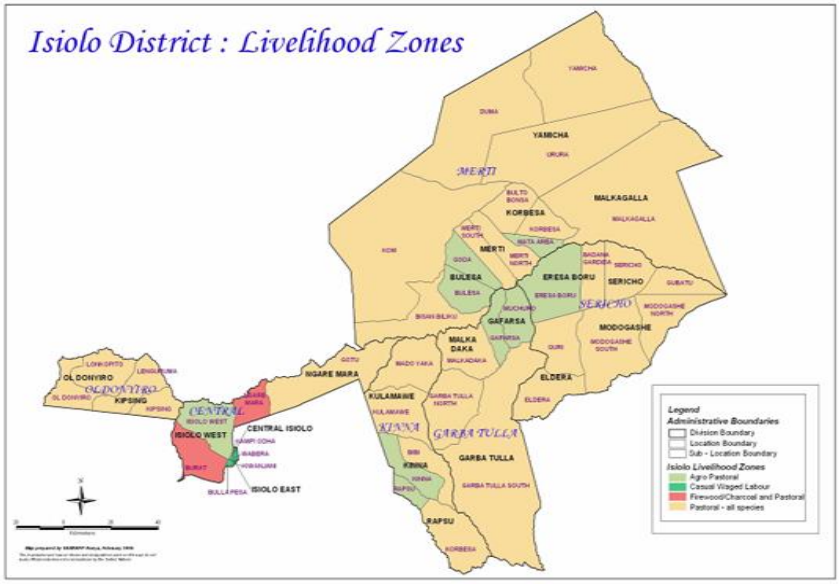


Figure 1: A map of Isiolo County livelihood zones

Isiolo has two rainfall seasons namely long (Mid-March to May) and short rain (October-December) season. The communities depend much on the short rains than the long rains. The seasonal calendar also characterizes dry season into short (January-Mid March) and long (June to mid-October) dry season as seen in figure 2.

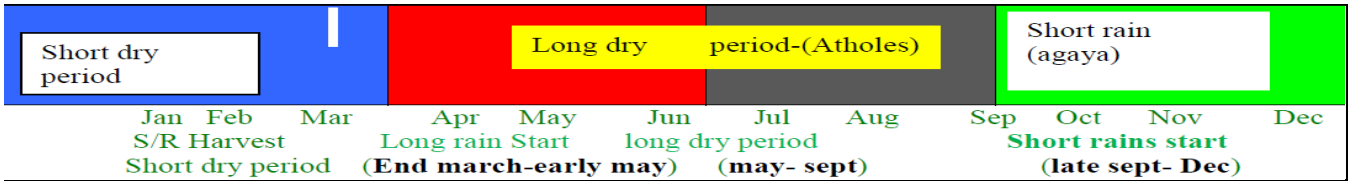


Figure 2: Isiolo County Seasonal calendar

An integrated SMART survey conducted in February 2016 unveiled a serious Global Acute Malnutrition (GAM) prevalence of 12.3% (9.6-15.8 95% CI) and Severe Acute Malnutrition (SAM) prevalence of 1.2% (0.4- 3.4 95% CI). The October-December Short Rains onset in 2016 was late across the county with the Rainfall starting in the 2nd Dekad of November. It was characterized with poor progression and distribution in all livelihood zones. Sericho, Merti, Cherab and Oldonyiro divisions did not receive rainfall. December 2016 Vegetation Cover Index (VCI) indicated negative trends with poor rainfall performance across all livelihood zones. The critical situation is aggravated by emerging intercommunity conflicts among pastoralists in Isiolo North.

[8] KNBS 2009 Population Census report

[9] Isiolo County Long rain Assessment report, August 2016

This has affected Food security situation in Isiolo County which has resulted to unusual out migration of livestock, low livestock productivity and resource based conflicts in parts of the county. Further, the indicators showed the current county drought status as **Alarm** and worsening[10]. The January 2017 integrated nutrition SMART survey, the fourth in the county, was conducted by MOH in close collaboration with other stakeholders to further monitor the food security and nutrition situation.

1.2 Objectives of the Survey

The main objective of the survey was to estimate the prevalence of acute malnutrition amongst children aged (6-59) months in Isiolo County. The specific objectives were:

1. To determine the prevalence of acute and chronic malnutrition in children aged 6-59 months;
2. To determine the immunization coverage for Measles, Oral Polio Vaccines (OPV 1 and 3), and vitamin A supplementation in children aged 6-59 months;
3. To assess coverage and consumption of micronutrients powder in children aged 6-23 months
4. To establish coverage of iron / folic acid supplementation during pregnancy among pregnant and lactating women
5. To determine the nutritional status of women of reproductive age (15-49 years)
6. To collect contextual information on possible causes of malnutrition such as household food security, water, sanitation, and hygiene (WASH) practices; Morbidity
7. To build the capacity of the county ministries, development partners in survey methodology and mobile phone based data collection techniques.

2.0 SURVEY METHODOLOGY

2.1 Type of Survey

The integrated health and nutrition survey was a cross sectional survey undertaken in Isiolo County in January, 2017 using the SMART methodology. Secondary information review of various existing surveillance data to include; NDMA monthly bulletins, Health Information System (DHIS) and previous assessments was undertaken prior to the survey. The SMART methodology was employed during the anthropometric survey in planning, training, data collection and analysis. Other information that relates to malnutrition such as immunization, deworming, supplementation, morbidity, water sanitation and hygiene practices and food security were also collected.

2.2 Sampling Procedures

A sample size of 36 clusters by 14 households was used based on various parameters as indicated in tables 3 and 4. A two stage sampling methodology was employed. In the first stage 36 clusters were sampled using probability proportional to population size (PPS). Population data was obtained from Kenya Bureau of Statistics (Census 2009) then triangulated with population data from the administrative leaders.

The second stage involved obtaining an updated and complete list of households from village elder at the cluster/village level. 14 households were then selected using simple random sampling. All the households sampled were interviewed using the household questionnaire and anthropometric measurements taken on all children aged 6-59 months.

[10] Isiolo County Drought Early Warning Bulletin for December 2016

Four villages in Kipsing, Gafarsa, Bisan Biliqo and Gafarsa locations (one from each location) were removed from the sampling frame due to mass migration of the population to other villages and security issues.

Table 3: Sampling Methodology for Anthropometric Survey

Data entered in ENA for SMART	**Anthropometric survey**	**Rationale**
Estimated prevalence	15.8%	➢ From contextual data (DHIS, NDMA EWS) it's showing a worsening trend
±Desired precision	3.5%	➢ The higher the malnutrition rates the lower the precision; ➢ In order to meet the set objectives
Design effect	1.07	➢ Obtained from nutrition SMART survey 2016 results; to cater for heterogeneity within the County
Average household size	6	➢ From previous survey
Proportion of under-fives	18.4%	➢ From previous survey, DHIS
Non-response rate	3.0%	➢ Based on previous assessments ongoing community mobilization is expected to create awareness of upcoming assessment. In addition, there is likely low migration of populations
Households	**504**	
Children	**486**	

2.3 Training Framework

The teams training took place in Isiolo town at Catholic Diocese of Isiolo from 17th to 26th January 2017 with standardization test and pilot test being part of the training package. The training package included an intense exercise of four days focusing on survey objectives, sampling, and data collection tools (Open data Kit), anthropometric measurements, interviewing techniques, field procedures and questionnaire administration and data quality assurance. A total of 27 persons were trained. A standardization test was also done on 10 children with aim of testing the participants' precision and accuracy in taking anthropometric measurements. A pilot test of 2 households per team in nearby villages (not sampled, but similar and convenient to the training location) was also conducted on the final day of the training. This exercise helped the teams a lot because at the end of the pilot test, the enumerators, team leaders, and survey supervisors were confident that each team could use the Open Data Kit (ODK), undertake the survey accurately. In addition, they were able to estimate how long it would take to complete a survey of each household. The experiences and arising challenges were shared and addressed.

2.4 Survey Teams and Supervision

The survey team was composed of 6 team leaders and 18 enumerators eventually forming 6 teams. The team leaders were obtained from relevant county government ministries. 5 NDMA field monitors and 13 community members with experience in surveys were considered for enumerators positions. The coordination and supervision of the entire process was led by the County Nutrition Coordinator under technical support from development partners' staff. Data quality assurance process was maintained by observing the following steps:

- Validation of the survey planning and methodology at the Nutrition information working group
- Survey team training in adherence to SMART standards to including undertaking of both standardization and pilot test
- Daily support and supervision of teams at the cluster level
- Daily feedback session through plausibility and questionnaire checks
- Continuous daily data monitoring and primary analysis of all datasets on the servers

2.5 Case Definitions and Inclusion Criteria

Primary data was gathered from the sampled villages to make inferences with regard to the survey objectives for a period of 6 days.

Anthropometric data was collected from all eligible children aged 6-59 months. The children were targeted with the following information

- **Age**: The child's immunization card, birth certificate or birth notification were the primary source for this information. In the absence of these documents, a local calendar of events developed from discussions with community members, enumerators and key informants. Age calculation chart was used for ease of identifying age in months (see Annex).
- **Child's Sex:** This was recorded as either '**m**' for male or '**f**' for female.
- **Weight:** A seca[11]digital weighing scale was used to measure the children's weight. The electronic scales were calibrated on daily basis using a standard weight to confirm measurements and any faulty scales were replaced. In order to enhance accuracy and hence quality, of emphasis was placement of weight scale to a hard flat surface, minimal or no movement of the child and accurate recording of measurements to the nearest 0.1kg
- **Height:** Recumbent length was taken for children less than 2 years of age while those children above 2 years of age were measured standing up. A height board was used to measure length/height. Of emphasis was ideal placement of cursor as per instructions on height measurements (SMART/IMAM[12] guidelines) ensuring minimal or no movement of the child and maintaining height readings at eye level to the nearest 0.1cm.
- **MUAC:** Mid Upper Arm Circumference was measured on the left arm, at the middle point between the tip of the elbow and the tip shoulder bone while the arm is at right-angle, then followed MUAC measurements of the arm while it is relaxed and hanging by the body's side. MUAC was measured to the nearest mm. In the event of a disability on the left arm or a left-handed child, the right arm was used. Of emphasis during the exercise was correct identification of mid-point and correct tension upon placement of MUAC tape on arm.
  Maternal MUAC tapes were used to measure MUAC in women of reproductive age.
- **Bilateral Oedema:** This was assessed by the application of moderate thumb pressure for at least 3 seconds on both feet. If a depression formed on both feet upon pressure application, then presence of bilateral oedema was confirmed.

[11]Electronic SECA scale manufactured by Secagmbh& co.kg. Hammer Steindamm 9-25.22089 Hamburg. Germany.

[12] Integrated Management of Acute Malnutrition

- **Measles vaccination:** The child's vaccination card was used as a source of verification. In circumstances where this was not available, the caregiver was probed to determine whether the child had been immunized against measles or not (done subcutaneously on the right upper arm). All children with confirmed immunization (by date) on the vaccination card, the status were recorded as "1" (Card) otherwise as "3" (Not immunized). Oral confirmation from the caregiver without proof of card was recorded as "2" (Recall). Children between 9 to 18 months or greater were used to determine coverage of this in the final analysis.
- **Oral Polio Vaccine (OPV) 1 (**1st dose at 6 weeks) **and OPV3** (3rd dose at 14 weeks) was calculated for all children aged 6-59 months.

Other relevant information about the eligible child was also gathered as follows:

- **De-worming:** Determined by whether the child had received drugs for intestinal worms in the past one year. This was recorded as "0" for No, "1" for Yes by card, ''2'' for Yes by recall and ''3'' for Do not know.
- **Vitamin A coverage**: This was determined by the number of times the eligible child had received vitamin A in the past year. The response received (number of times) was probed (to determine where health-facility/outreach sites or elsewhere and the number of times recorded in the card) and eventually recorded on the anthropometric questionnaire.
- **Micronutrient powders**: The eligible children for this information were 6-23 months. The respondent was asked whether the child was enrolled in the program; recorded in the questionnaire as "0" for No and "1" for Yes. Those who said no were probed for reasons as to why not enrolled. Those enrolled were probed on adherence
- **Morbidity:** This was gathered over a two week recall period by interviewing/probing the mothers/caretakers of the target child and eventually determined based on the respondent's recall. This information was however not verified by a clinician.
- **Other data sets**: the Household questionnaire was used to gather data on other variables related to HINI indicators, WaSH (Water Sanitation and Hygiene) and FSL (Food Security and Livelihood).

Other data sets: The household questionnaire was used to gather data on health related variables, HINI[13] Indicators, water availability and accessibility, sanitation and hygiene practices, food sources, dietary diversity and coping strategies.

2.6 Data Entry and Analysis

Mobile technology in data collection and submission continued to be used after its pilot and approval as the most reliable, efficient and fastest data collection tool compared to papers during the 2016 integrated SMART survey. The standard SMART questionnaire form was developed on ODK build and downloaded on ODK collect for Android operating system application software on phone tablets. The teams could send data to the configured servers where it could be retrieved and analyzed. Anthropometric data was analyzed using ENA for SMART software version 2011 (9th July 2015) while all other data sets were entered and analyzed using Microsoft Excel.

2.7 Indicators, Guidelines and Formulas Used In Acute Malnutrition

Weight for height (WFH) index

This was estimated from a combination of the weight for height (WFH) index values (and/or oedema) and by sex based on WHO standards 2006. This index was expressed in WFH indices in Z-scores, according to WHO 2006 reference standards.

[13] High Impact Nutrition Interventions

Z-Score:

- Severe acute malnutrition is defined by WFH < -3 SD and/or existing bilateral oedema,
- Moderate acute malnutrition is defined by WFH < -2 SD and >-3 SD and no oedema,
- Global acute malnutrition is defined by WFH < -2 SD and/or existing bilateral oedema.

Mid upper arm circumference (MUAC)

MUAC analysis was also undertaken to determine the nutrition status of sampled children and women of reproductive age (15-49 years). The following MUAC criteria were applied.

Table 4: MUAC guidelines

MUAC Guideline	Interpretation
Children 6-59 months	
MUAC <115mm and/or bilateral Oedema	Severe acute malnutrition
MUAC >=115mm and <125mm *(no bilateral oedema)*	Moderate acute malnutrition
MUAC >=125mm and <135mm *(no bilateral Oedema)*	Risk of malnutrition
MUAC > 135mm (no bilateral Oedema)	Adequate nutritional status
Women of Reproductive Age (15-49 years)	
MUAC <21-23cm	At Risk of malnutrition
MUAC <21cm	Moderate Acute Malnutrition

2.8 Referrals

During the survey, all severe and moderately malnourished children as per MUAC and Weight-for-Height cut offs were referred to the nearby health facilities. Pregnant and lactating women with MUAC <21cm were also referred.

3.0 SURVEY FINDINGS

3.1 General Characteristics of Study Population and Households

During the survey a total of 504 randomly selected households were assessed. The survey involved 2,119 persons with an average population of 4.2 persons per household. The average number of children below 5 years of age in a household was 1.2. Mosquito net ownership was 71.8% of all the surveyed households. Sale of livestock and livestock products, and casual labor remained the main income source although they showed a slight decrease compared to the previous year with an observed increase in petty trade as shown in figure 3. The increase in petty trade (firewood and charcoal sale) is attributed to households seeking alternate source of income as a coping mechanism.

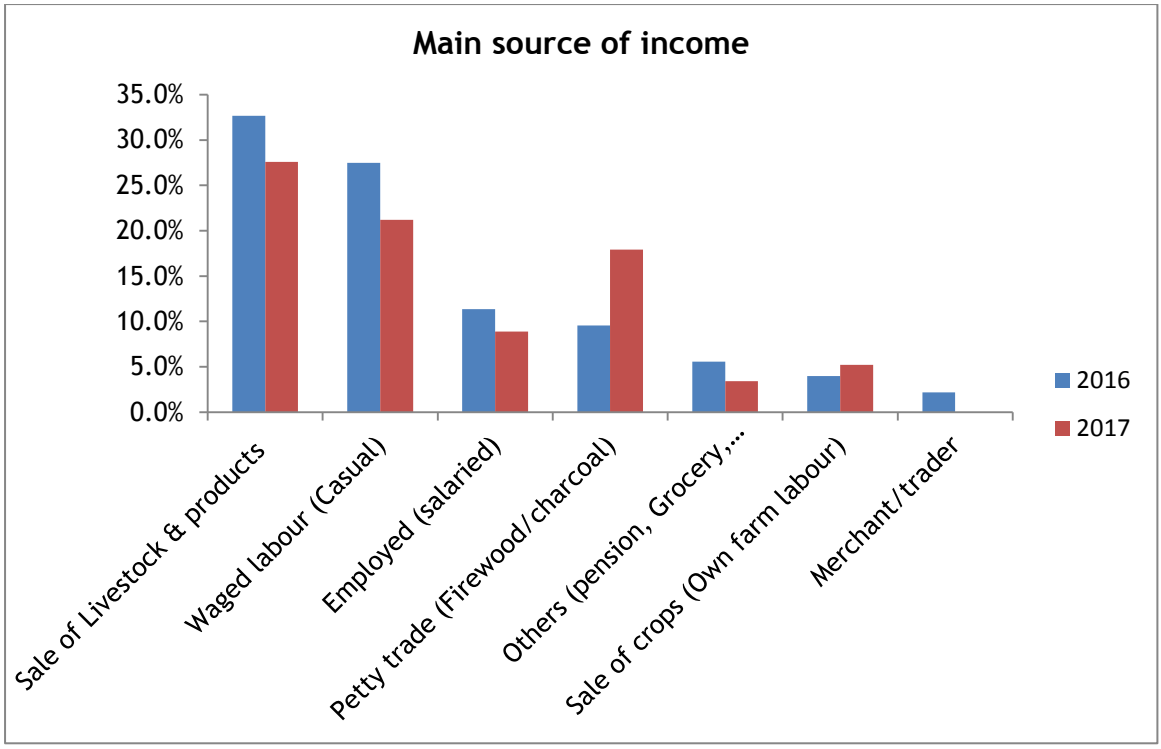


Figure 3: Main source of income

The survey assessed enrollment in schools for the school going age (3-18 years). Assessment of 835 children aged between 3 and 18 years showed that majority (85.8%) were enrolled in school. Some of the sited main reasons for children not enrolled in schools were perception that the child is still young (37.2%), family labor responsibilities (29.4%), ignorance (11.8%), poverty (5.9%), early marriages (2.5%) and absence of school nearby (2.5%). Adult literacy levels were still low, though indicated a slight improvement compared to the previous year, with majority of the adults (46.3%) having no education as shown in figure 3.

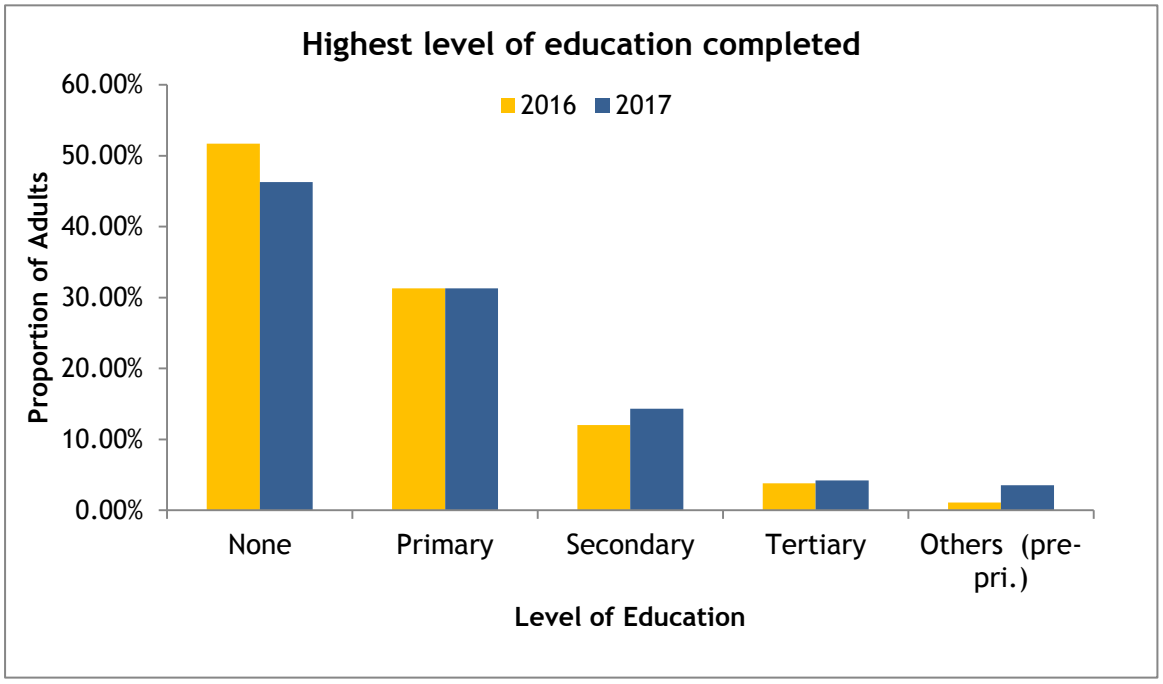


Figure 4: Level of education among adults

3.2 ANTROPOMENTRY

3.2.1 Distribution by Age and Sex

The survey assessed nutritional status of 519 children aged between 6-59 months. 264 boys and 255 girls were assessed with boys to girl ratio of 1:1 as shown in table 5. The sex ratio was 1.0 which is within the estimated range of 0.8-1.2 with a p-value of 0.693. Overall age distribution indicated a significant difference (p=0.004) attributed to older children being not at home during the survey; owing to migration/movement of children together with their migrating families and some moving in with other relatives.

Table 5: Distribution of Sample Size by age and sex

	Boys		Girls		Total		Ratio
Age (months)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy: girl**
6-17	74	57.8	54	42.2	128	24.7	1.4
18-29	66	46.2	77	53.8	143	27.6	0.9
30-41	57	49.1	59	50.9	116	22.4	1.0
42-53	48	46.6	55	53.4	103	19.8	0.9
54-59	19	65.5	10	34.5	29	5.6	1.9
Total	264	50.9	255	49.1	519	100.0	1.0

3.2.2 Nutritional Status of Children 6-59 Months

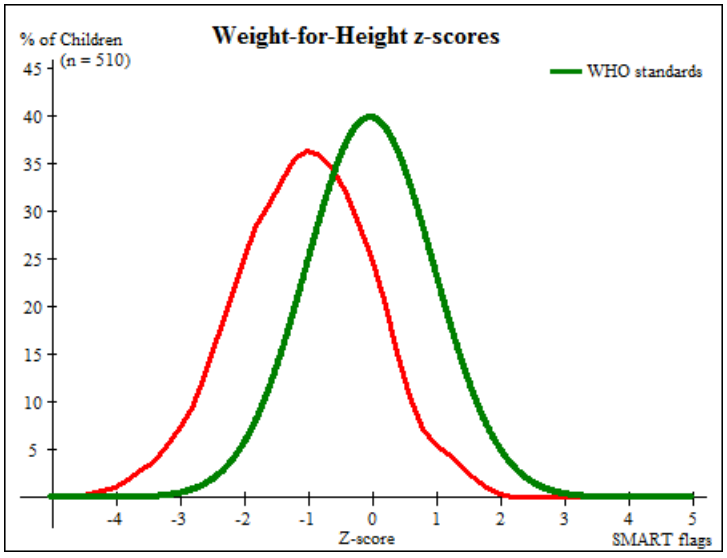
3.2.2.1 Prevalence of global acute malnutrition based on Weight-for -Height Z score

The anthropometric survey involved 519 children, with 510 being included in the final analysis of acute malnutrition based on weight for height. 9 children were excluded as their z score were out of range. The survey established a global acute malnutrition (GAM) prevalence of 18.2 % (14.6 - 22.5 95% CI) and a severe acute malnutrition (SAM) prevalence of 3.3 % (2.1 - 5.3 95% CI) as shown in table 6.

Table 6: Prevalence of global acute malnutrition based on Weight-for -Height Z score (and/or oedema) and by sex (at 95% Confidence Interval)

	All n = 510	**Boys** n = 258	**Girls** n = 252	**P value** (Boys vs Girls)
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(93) 18.2 % (14.6 - 22.5)	(49) 19.0 % (13.5 - 26.1)	(44) 17.5 % (13.4 - 22.4)	0.696
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(76) 14.9 % (11.5 - 19.0)	(39) 15.1 % (10.0 - 22.3)	(37) 14.7 % (11.2 - 19.0)	0.910
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(17) 3.3 % (2.1 - 5.3)	(10) 3.9 % (2.0 - 7.4)	(7) 2.8 % (1.3 - 5.9)	0.506

The Current GAM rates indicate a critical situation compared to **previous year** same period, with a significant difference (GAM P=0.000 and SAM P=0.035). The increase was attributed compromised household food security with households embracing more than one coping mechanisms and poor state of dietary diversity as result of limitation to food access and availability, increased food prices and seasonal variations (poor performances of both long and short rain seasons)[14]. In addition, it was attributed to disease incidences, inadequate case finding at household level, stock outs reported for the Supplementary Feeding Program in all health facilities and health workers strike leading to defaulting due to lack of follow up.



Gaussian curve (Figure 4) indicates that the sample curve has deviated to the left of the reference population with a mean and standard deviation based on WHZ at -1.05 and ±1.05 respectively.

Figure 5: Frequency of distribution of WFH

[14] Isiolo County Drought Early Warning Bulletin for December 2016

The overall malnutrition levels for severe and moderate malnutrition was at 3.3% and 14.9% respectively. Malnutrition levels by age groups as shown in table 7 reflects higher malnutrition rates by WHZ <-3SD in children aged 30-41 months (n=5 out of 115) and 54-59 months (n=3 out of 29) and higher malnutrition rates by WHZ <-2SD in children aged 30-41 months (n=24 out of 115) and 54-59 months (n=5 out of 29) though not significant.

Table 7: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (months)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	125	3	2.4	10	8.0	112	89.6	0	0.0
18-29	140	4	2.9	24	17.1	112	80.0	0	0.0
30-41	115	5	4.3	24	20.9	86	74.8	0	0.0
42-53	101	2	2.0	13	12.9	86	85.1	0	0.0
54-59	29	3	10.3	5	17.2	21	72.4	0	0.0
Total	510	17	**3.3**	76	**14.9**	417	**81.8**	0	0.0

3.2.2.2 Distribution of acute malnutrition and Oedema based on weight-for-height z-scores

During the assessment there was no Oedema cases identified. However, 21 children were classified as marasmic from Olla Odha, Demo B, Tuluroba, Guyo Sekena, Sericho North, Guba Dida, Shambani, Kura, Matundai villages (one child from each), and Kawalash, Lowangila, Acacia, Maili Tano, Zebra and Game villages (2 children from each) as shown in table 8.

Table 8: Distribution of acute malnutrition and oedema based on weight-for-height z-scores

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 21 (4.0 %)	Not severely malnourished No. 498 (96.0 %)

3.2.2.3 Prevalence of Acute Malnutrition by MUAC

Middle upper arm circumference (MUAC) is used as a good indicator to identify malnourished children with a high risk of death in need of treatment. MUAC is used for rapid detection and referral of children with acute malnutrition[15]. Based on MUAC measurements, in Isiolo County the survey unveiled GAM prevalence of 7.7% (5.6-10.6, 95% C.I.) and SAM prevalence of 1.3% (0.6-3.0, 95% C.I.), with a significant difference (GAM p=0.012) from GAM prevalence of 3.8% (2.3- 6.4 95% CI) and SAM prevalence of 0.4% (0.1-

[15] WHO MUAC Definition

1.6 95% CI) unveiled in February 2016. There was no significant difference in the GAM and SAM prevalence between boys and girls as shown in table 9.

Table 9: Prevalence of acute malnutrition based on MUAC cut offs (and/or Oedema) and by sex expressed with 95% CI

	All n = 519	**Boys** n = 264	**Girls** n = 255	**P Value (Boys Vs Girls)**
Prevalence of global malnutrition (< 125 mm and/or oedema)	(40) 7.7 % (5.6 - 10.6)	(20) 7.6 % (4.4 - 12.7)	(20) 7.8 % (5.0 - 12.0)	0.939
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(33) 6.4 % (4.4 - 9.1)	(15) 5.7 % (3.2 - 9.9)	(18) 7.1 % (4.3 - 11.3)	0.554
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(7) 1.3 % (0.6 - 3.0)	(5) 1.9 % (0.8 - 4.3)	(2) 0.8 % (0.2 - 3.2)	0.261

3.2.2.4 Prevalence of underweight by Weight-for-age (WFA) Z-scores

Moderate underweight malnutrition is defined as a z-score between <-2 and -3 and severe underweight malnutrition as a z-score < -3 based on weight for age Z-scores (WAZ) standard deviations from the median weight for age of reference population[16]. The prevalence of underweight was 20.9 % (16.4 - 26.3 95% CI) while severe underweight was 4.5 % (2.7 - 7.4 95% CI). This was an observed increase compared to prevalence of underweight 19.5% (15.2-24.7 95% CI) and severe underweight 3.0% (1.8- 5.1 95% CI) unveiled in February 2016 at p value of 0.678 and 0.270 respectively. There was no significant difference in the prevalence of underweight between boys and girls as shown in table 10.

Table 10: Prevalence of underweight based on weight-for-age z-scores by sex results expressed with 95% CI

	All n = 511	**Boys** n = 257	**Girls** n = 254	**P value (Boys vs Girls)**
Prevalence of underweight (<-2 z-score)	(107) 20.9 % (16.4 - 26.3)	(58) 22.6 % (16.3 - 30.4)	(49) 19.3 % (14.4 - 25.4)	0.457
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(84) 16.4 % (13.0 - 20.6)	(45) 17.5 % (12.8 - 23.5)	(39) 15.4 % (10.9 - 21.2)	0.567
Prevalence of severe underweight (<-3 z-score)	(23) 4.5 % (2.7 - 7.4)	(13) 5.1 % (2.1 - 11.5)	(10) 3.9 % (2.1 - 7.2)	0.631

[16] Ministry of Public Health & Sanitation and Ministry of Medical Services 2006 WHO Standards

3.2.2.5 Prevalence of stunting based on height-for-age z-scores

Stunting is defined as lower than average height for a child's age. It's an indicator used to access chronic malnutrition by comparing child's height to standard height of children in the same age[17]. Moderate stunting is defined as a z-score between <-2 and -3 and severe stunting malnutrition as a z-score < -3 based on height for age Z-scores (HAZ) standard deviations from the median height for age of reference population. The survey results indicated a stunting prevalence of 17.3% (12.9-22.8 95% CI) and severe stunting prevalence of 2.8% (1.7-4.6 95% CI). This was an observed decline compared 2016 with stunting prevalence of 21.6% (18.0-25.6 95% CI) and severe stunting at 5.0% (3.3- 7.4 95% CI) though not significantly different with a p value of 0.168. There was no significant difference in the prevalence of stunting between boys and girls as shown in table 11.

Table 11: Prevalence of stunting, height-for-age z-scores and by sex results expressed with 95% CI

	All n = 496	**Boys** n = 250	**Girls** n = 246	**P-values (Boys Vs Girls)**
Prevalence of stunting (<-2 z-score)	(86) 17.3 % (12.9 - 22.8)	(49) 19.6 % (14.0 - 26.8)	(37) 15.0 % (10.3 - 21.4)	0.270
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(72) 14.5 % (10.5 - 19.7)	(42) 16.8 % (11.4 - 24.0)	(30) 12.2 % (8.1 - 18.0)	0.245
Prevalence of severe stunting (<-3 z-score)	(14) 2.8 % (1.7 - 4.6)	(7) 2.8 % (1.3 - 5.7)	(7) 2.8 % (1.4 - 5.7)	1.000

Further analysis was done on stunting per age category as shown in table 12. The analysis shows that children aged between 18 and 29 months and 30-41 months were the most stunted (severe stunting). The poor state of stunting can be attributed to deterioration of child health and nutrition status over time related to underlying causes of malnutrition including sub-optimal complementary feeding, poor hygiene practices and poor childcare practices.

Table 12: Prevalence of stunting by age based on height-for-age z-scores

		Severe stunting (<-3 z-score)		**Moderate stunting (>= -3 and <-2 z-score)**		**Normal (> = -2 z score)**	
Age (months)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	113	1	0.9	9	8.0	103	91.2
18-29	141	6	4.3	27	19.1	108	76.6
30-41	112	4	3.6	17	15.2	91	81.3
42-53	101	3	3.0	16	15.8	82	81.2
54-59	29	0	0.0	3	10.3	26	89.7
Total	496	14	2.8	72	14.5	410	82.7

[17] Ministry of Public Health & Sanitation and Ministry of Medical Services 2006 WHO Standards

3.2.3 Integrated Management of Acute Malnutrition (IMAM) Program

Acute malnutrition reduces resistance to disease and impairs a whole range of bodily functions. Children who are malnourished are at a high risk of mortality and morbidity and therefore it is important that identification and appropriate care is timely. At the community level, Community health volunteers may identify children at risk of malnutrition whereas at the health facility level, staff can determine if sick children are at risk of malnutrition. Those identified with acute malnutrition are then admitted and treated at the health facilities or outreach sites. The process of identification through screening, triaging and diagnosis and treatment for acute malnutrition form the integrated management of acute malnutrition (IMAM) program. The basic objectives in the IMAM are to prevent malnutrition by early identification, public health interventions and nutrition education and to treat acute malnutrition to reduce morbidity and mortality. Children 6-59 months of age with moderate and severe acute malnutrition without complications are admitted in Supplementary Feeding Program and Outpatient Therapeutic Program respectively. Those diagnosed with SAM with complications are treated in-patient program in stabilization centers.

In Isiolo County IMAM program is implemented in 45 health facilities including 3 health facilities with stabilization centers for children with severe acute malnutrition with complications. The integrated SMART survey, for the first time assessed IMAM coverage for children 6-59 months of age found with acute malnutrition. Only 16% (15 out of 93) of children with acute malnutrition were found to be enrolled in IMAM program (both OTP and SFP). Low coverage attributed to inadequate case finding at household level, stock outs (SFP) and health workers strike leading to defaulting due to inadequate follow up.

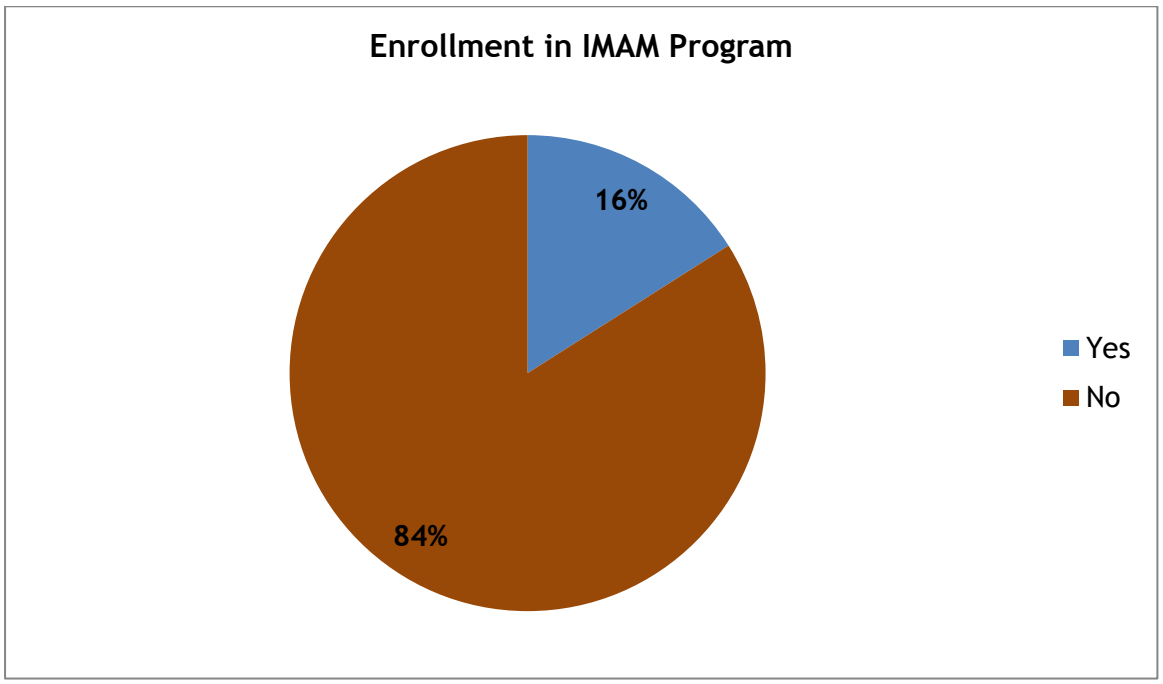


Figure 6: IMAM Program Coverage

3.3 Child Immunization, Vitamin A Supplementation and Deworming

Vaccines stimulate the body's own immune system to respond to infections or diseases. Immunization is designed to protect infants and children early in life, when they are most vulnerable and before they are exposed to potentially life-threatening diseases. In Kenya, The Ministry of Health through the Division of Vaccines and Immunization aims to increase

access to immunization services nationwide in order to reduce morbidity and mortality due to vaccine preventable diseases. The ministry supports scales up of immunization through supply management, awareness campaigns through mass media and advocacy. BCG vaccination is done on the left hand birth to prevent against tuberculosis. Oral Polio vaccination is done orally to prevent against poliomyelitis. Assessment of Oral Polio vaccine 1(OPV 1) is done to inform immunization coverage while Oral polio vaccine 3 (OPV 3) is done to inform utilization.

In Isiolo County BCG coverage verified by presence of scar in the lower left arm was at 94.2% above the national target which is mostly attributed by health education and outreach services. OPV 1 and OPV 3 coverage by card was 75.1% and 74.4%, while OPV 1 and OPV 3 coverage by recall was at 24.7% and 23.9% respectively. Measles at 9 months was at 66.5% and 27.4% by card and recall respectively. The second measles vaccine at 18 months was at 66.8% and 29.4% by card and recall respectively. There was a notable increase in coverage of measles at 18 months from 55% to 66.8% by card attributed by increased health education, outreach activities, campaigns and proper documentation.

Vitamin A is a critical micronutrient for the survival and physical health of children exposed to disease. In Kenya, up to 85 % of children are vitamin A deficient, putting them at risk of illness and death[18]. Improving the vitamin A status of these children through supplementation enhances their resistance to disease and can reduce mortality from all causes by approximately 23%. Guaranteeing high supplementation coverage is therefore critical, not only to eliminating vitamin A deficiency as a public-health problem, but also as a central element of the child survival agenda[19]. The county vitamin A coverage was still below the national target coverage of 80%; 6-11 months supplemented once at 77.1% (an increase compared to 2016 coverage of 69.9%), 6-59 months supplemented at least once at 70.4% and 6-59 months supplemented more than once at 63.9% as shown in table 13.

The nutritional impairment caused by soil-transmitted helminthes is recognized to have a significant impact on growth and physical development. To reduce the worm burden, WHO recommends periodic drug treatment (deworming) of all children living in endemic areas. WHO also recommends health and hygiene education, and provision of adequate sanitation[20]. Deworming in Isiolo County was assessed in children 12-59 months. The deworming rates for children 12-59 months dewormed once decreased to 17.4% compared to 41.7% reported in SMART 2016 while the rate of children 6-59 months deworming more once than increased from 37.9 in % 2016 to 59.4%. This was attributed to stocks availability, increased sensitization for routine deworming.

The low coverage of vitamin A supplementation among children 6-59 months and deworming for children 12-59 months is attributed to poor health seeking behaviors, inadequate follow up after completion of immunization and early closure of schools before Malezi Bora National Campaign in November 2016.

[18] the Micronutrient Initiative
[19] Vitamin A Supplementation: A decade of progress © The United Nations Children's Fund (UNICEF), 2007
[20] e-Library of Evidence for Nutrition Actions (eLENA)

Table 13: Vitamin A Supplementation and Deworming Coverage

	Age Category	Coverage
Vitamin A coverage	6-11 months ; Once	77.1%
	6-59 months; At least once	70.4%
	6- 59 months; more than once	63.9%
Deworming	12-59 months; once	17.4%
	12-59 months; At least once	91.5%
	12-59 months; more than once	59.4%

3.4 Micronutrient powders (MNP) among children 6-23 months

Multiple micronutrient powders have been developed as alternative way of providing micronutrients to populations where other interventions are difficult to implement. Multiple micronutrient powders are single-dose packets of vitamins and minerals in powder form that can be sprinkled onto any ready to eat semi-solid food consumed at home, school or any other point of use. The powders are used to increase the micronutrient content of a child's diet without changing their usual dietary habits. Multiple micronutrient powders have been shown to reduce the risk of iron deficiency and anaemia in infants and young children, 6-23 months of age. Home fortification with micronutrient powder (MNP) has been shown to be a low-cost, feasible, and effective approach to address micronutrient deficiencies.

3.4.1 Coverage of MNP program

Through support from the World Food Program (WFP), The Ministry of Health (MOH) continued implementing the micronutrient powders supplementation program through home fortification in Isiolo County. The program had been previously implemented as a pilot by MOH and ACF until October 2015 when it was handed over to MOH to take lead in the implementation. At the time of handing over, the stocks had been exhausted. New stocks were supplied to the health facilities in October 2016. The delivery point for the MNPs has been the health facility and outreach sites. The survey assessed 192 children aged 6-23 months where only 13.0% (n=26) were found to have been enrolled in the program. From those not enrolled into the program (N=165), lack of awareness about the program was cited as the greatest barrier at 57.6%. The rest cited discouragement, distance, illness and child being enrolled in a feeding program as contributing to them not enrolling their children to the program as shown in figure 7.

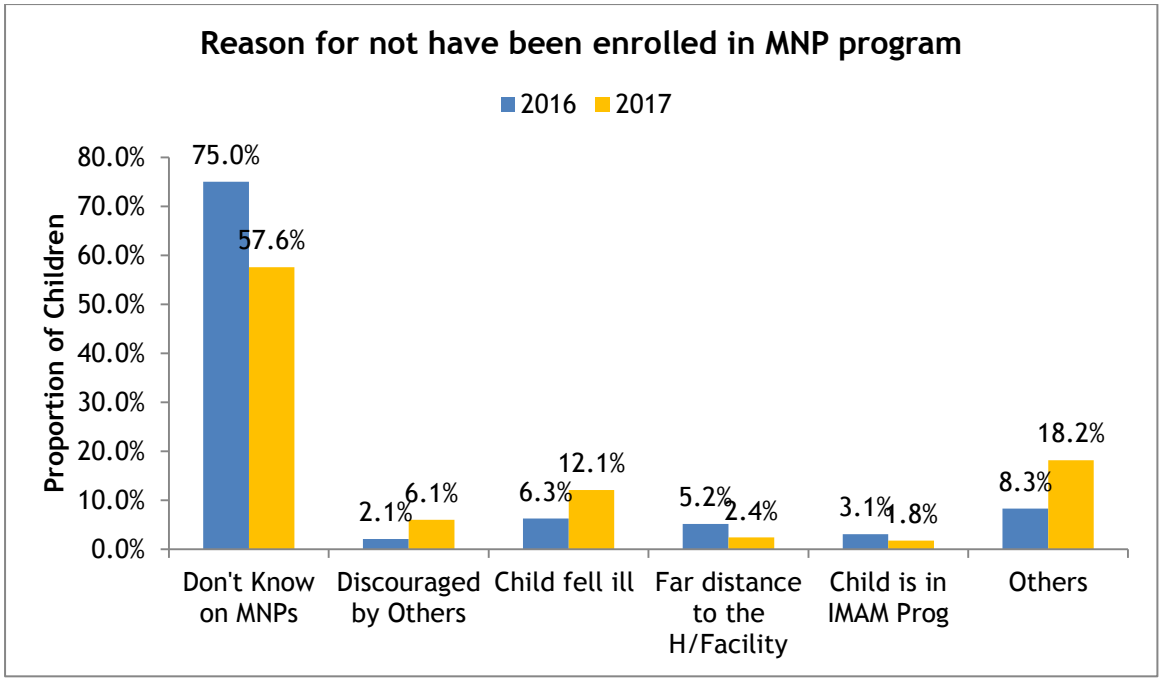


Figure 7: Reasons for not being enrolled in MNP program

3.5 Child morbidity

3.5.1 Incidence of disease among children 6-59 months

Assessment of childhood illnesses was based on a two-week recall period prior to the survey date. During the assessment, 40.7% children were reported to be sick 2 weeks prior to the survey. The most common illnesses were Acute Respiratory Infections (47.0%), fever associated to malaria (19.0%) and watery diarrhea (19.0%) The other illnesses reported were bloody diarrhea (1.0%) and other illnesses at 28.0%. The seasonal calendar for Isiolo County shows that from the month of October through December there is a general trend of increased child illnesses namely; malaria and diarrhea attributed to water borne illnesses as result of water contamination coupled with increased reservoirs for inhabiting vectors namely, mosquito causing malaria etc. However, there was an observed decrease in both malaria and watery diarrhea compared to 2016 attributed to the short fall of October-December 2016 short rains as shown in figure 8.

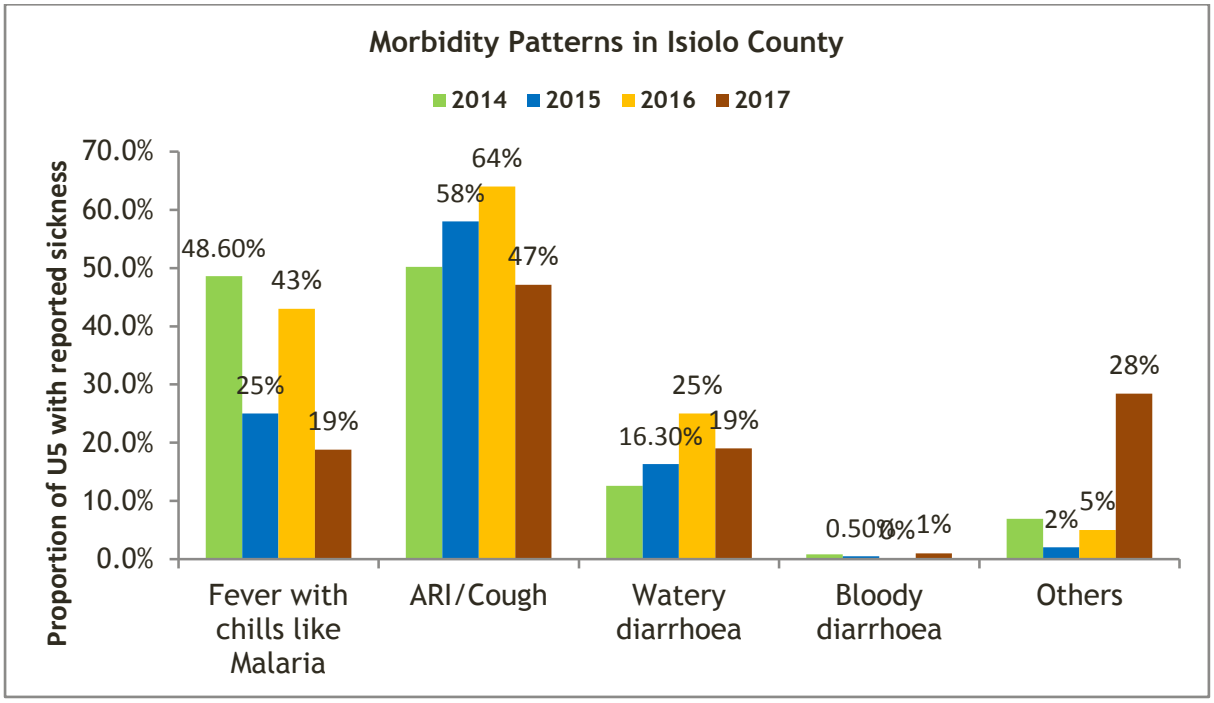


Figure 8 : Child Morbidity

3.5.2 Health Seeking Behavior

The survey further assessed the health seeking behavior of the caregivers when the children were sick. The analysis showed that majority of the caregivers (67.8%) took their children to public clinics while 22.8% of the caregivers took their children to private clinics. Other areas where the caregivers sought assistance were shops (2.2%) and community health workers (5.0%), while 2.2% of the sick children were either treated with herbs at home or visited traditional healers. A significant number of caregivers however did not seek any form of assistance during illness (13.3%).

3.5.3 Therapeutic Zinc supplementation in treatment of watery Diarrhea

Studies have shown that zinc supplementation reduces the duration and severity of diarrheal episodes and likelihood of subsequent infections for 2–3 months[21]. In Isiolo County 90% of the children with watery diarrhea were supplemented with zinc. The proportion is above the national targets of 80% due to adequate stock availability owing to contingency planning in anticipation for increased incidences during the short rains.

3.6 Maternal Health and Nutrition

Maternal nutrition was assessed for all women of reproductive age (15-49 years) based on MUAC. A total of 488 women were within the reproductive age, with 7.5% being pregnant, 44.5% lactating and 48.0% being neither pregnant nor lactating.

3.6.1 Iron folate supplementation during pregnancy

Iron folic acid supplementation (IFAS) during pregnancy helps in preventing maternal anemia and improving the overall birth outcomes. Based on the current pregnancy (for

[21] Bhutta ZA et al. Therapeutic effects of oral zinc in acute and persistent diarrhea in children in developing countries: pooled analysis of randomized controlled trials. American Journal of Clinical Nutrition, 2000, 72(6):1516–22.

women with children less than 2 years) the survey assessed consumption of iron folic acid supplements during pregnancy. 97.0% of women aged 15-49 years (N=224) consumed IFAS in their last pregnancy. However, none of them took the supplements for over 90 days. There was an increase in the proportion that took between 31 and 90 days attributed to health education, individual counselling to ANC mothers on the importance of IFAS and stocks availability as shown in figure 9.

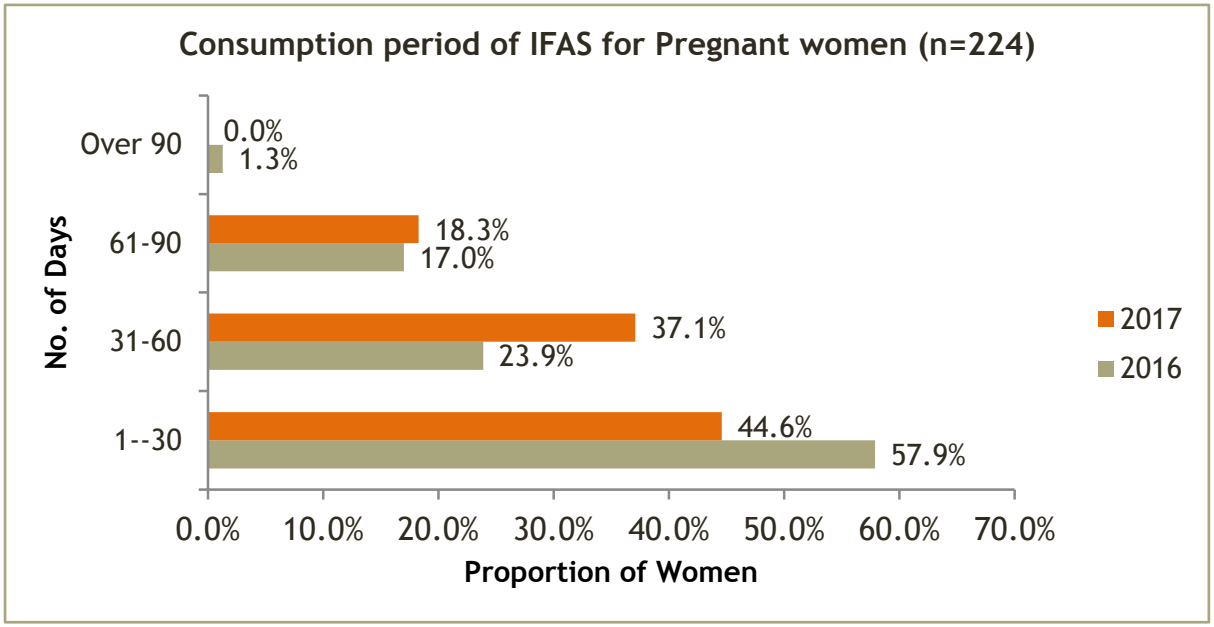


Figure 9 : Consumption period of iron folic acid supplementation

3.6.2 Maternal nutrition status based on Mid Upper Arm Circumference (MUAC)

All girls and women aged between 15-49 years were assessed for their nutrition status based on MUAC. Malnutrition among pregnant and lactating women slightly increased from 6.3% in February 2016 to 7.1% in January 2017, while PLWs at risk of malnutrition remained the same compared to February 2016. Increased women workload due to water and pasture shortage and food shortage due to prevailing drought were the attributed reason for high maternal malnutrition as shown in figure 10.

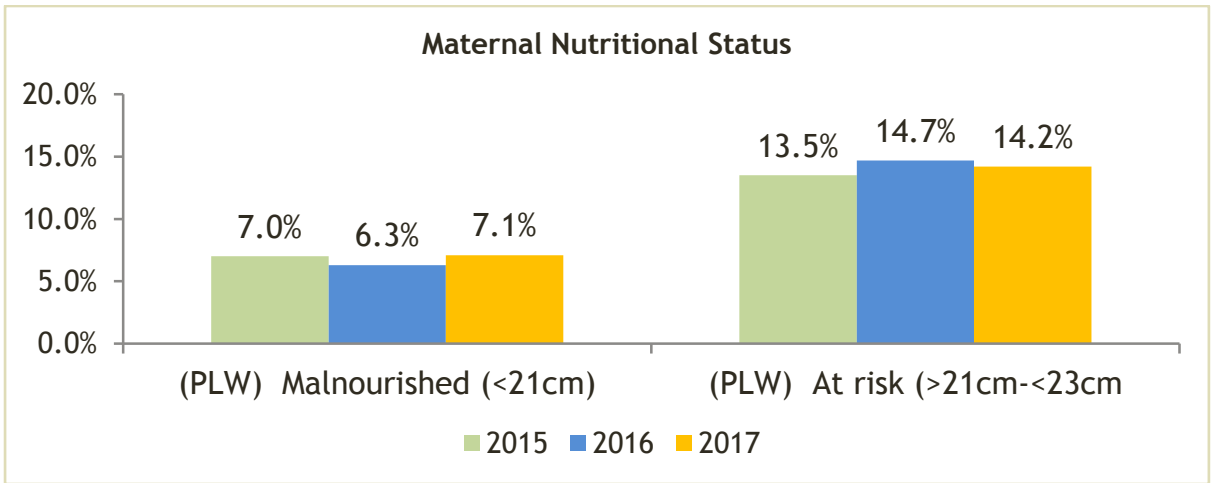


Figure 10: Malnutrition by MUAC for Pregnant and Lactating Women

3.7 Water Sanitation and Hygiene (WaSH)

3.7.1 Water

In Isiolo County 74.0% of the households were found to be consuming water from protected water sources. The increase in consumption from piped water system compared to 62.7% in 2016 could be attributed to rainfall failure with no recharge of water in rivers, earth pans and unprotected springs as shown in figure 11. Only 38.6% of the households (n=17) consuming water from unprotected sources were found to be treating water by either boiling or using chemicals. Half of the households (59.1%) pay for water. The Average per capita water consumption for Isiolo County was 15.1litre/person/day (recommended Sphere standard is 15l/p/d, while National standards are 20l/p/d for high potential areas or 15 l/p/d for medium potential) with majority of the households consuming >20l/day. The survey areas were in both high and medium potential areas with many households accessing far more than standard adequate water supplies, thus increasing the overall average.

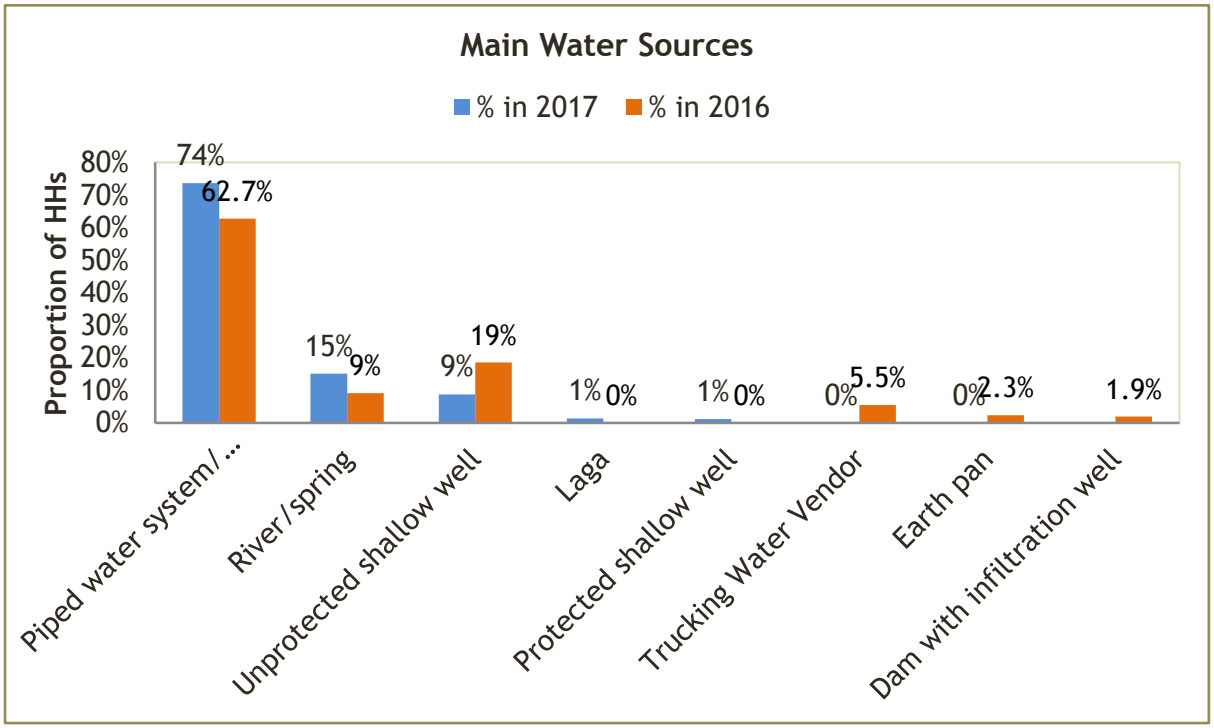


Figure 11: Trends in Main Water Sources

The Proportion of households trekking ≤500m remained the same (73%) while >2km increased up to 22% compared to 2016 indicating that nearby water sources have been depleted due to October-December 2016 rainfall failure as shown in figure 10.

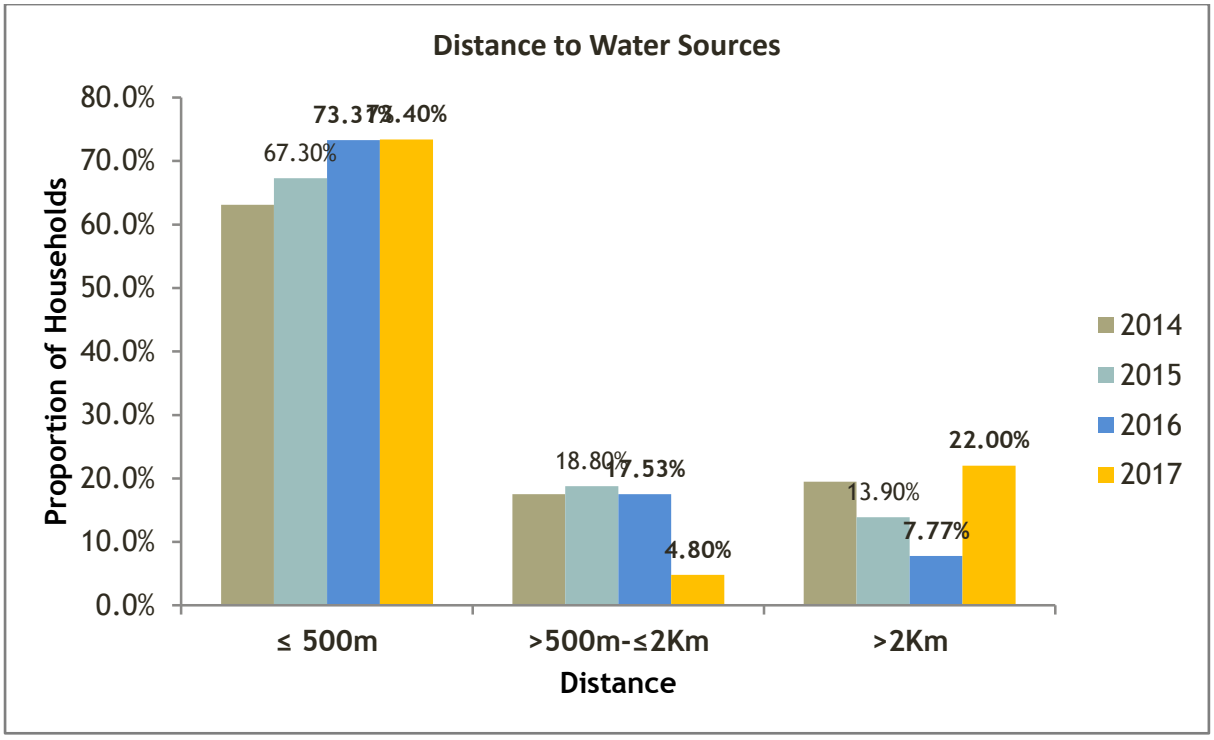


Figure 12: Trends in Distance Main Water Sources

In addition, there was an increase in the proportion of households queueing for water (27.6%) compared to 8.7% in 2016 with a notable increase in the proportion of households that queued for more than one hour (43.2%) as shown in figure 13. This is attributed to water shortage and scarcity due to poor performance of the short rains.

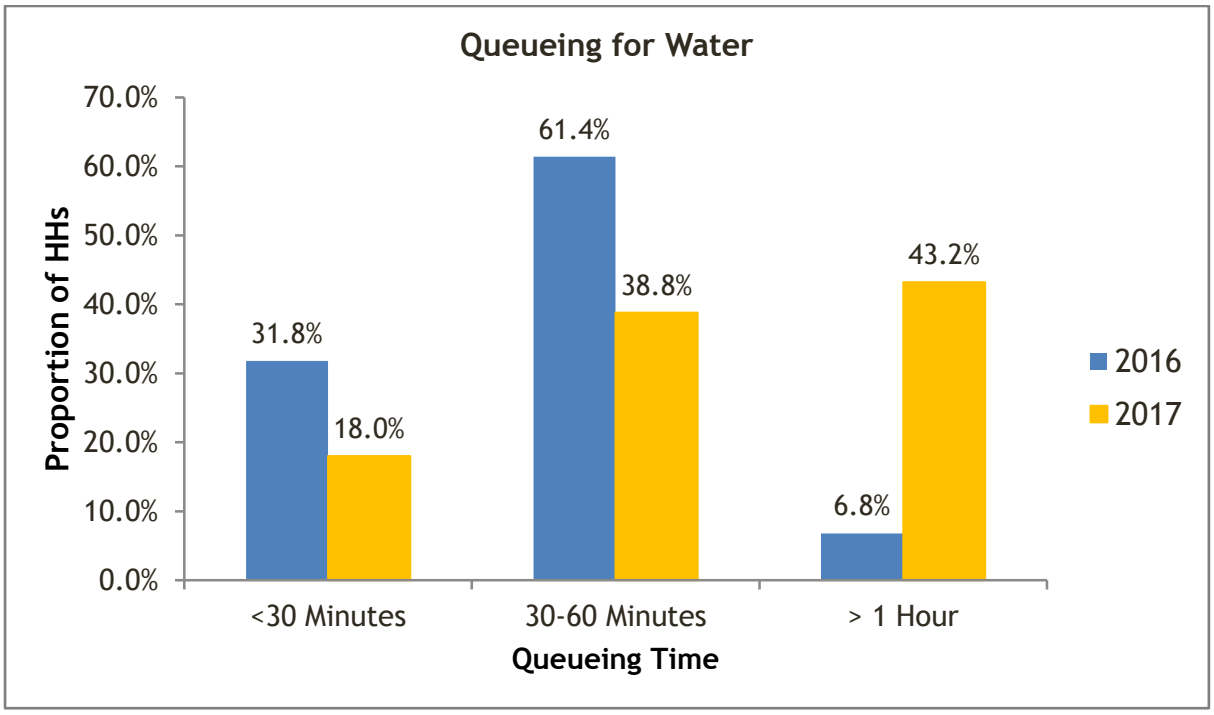


Figure 13: Trends in Queueing for Water

3.7.3 Hygiene Practices

Proper storage of water using closed containers was embraced by only 69.9% of households. In prevention of the spread of diarrheal diseases, appropriate hand washing at critical times is very vital. 75.0% of caregivers reported washing hands after toilet, 52.0% before cooking, 72.0% before eating and 18.7% after taking children to toilet. Generally, only 47.2% washed their hands at least during three critical times as shown in figure 14. The reduction in handwashing after visiting the toilet and before eating compared to February 2016 was attributed to a possibility of little emphasis on the all the critical times of handwashing and water shortage. Effective hand washing entails the use of clean water and soap. When asked what they use for handwashing, 65.1 % of the households were found to use soap and water while 34% used water only.

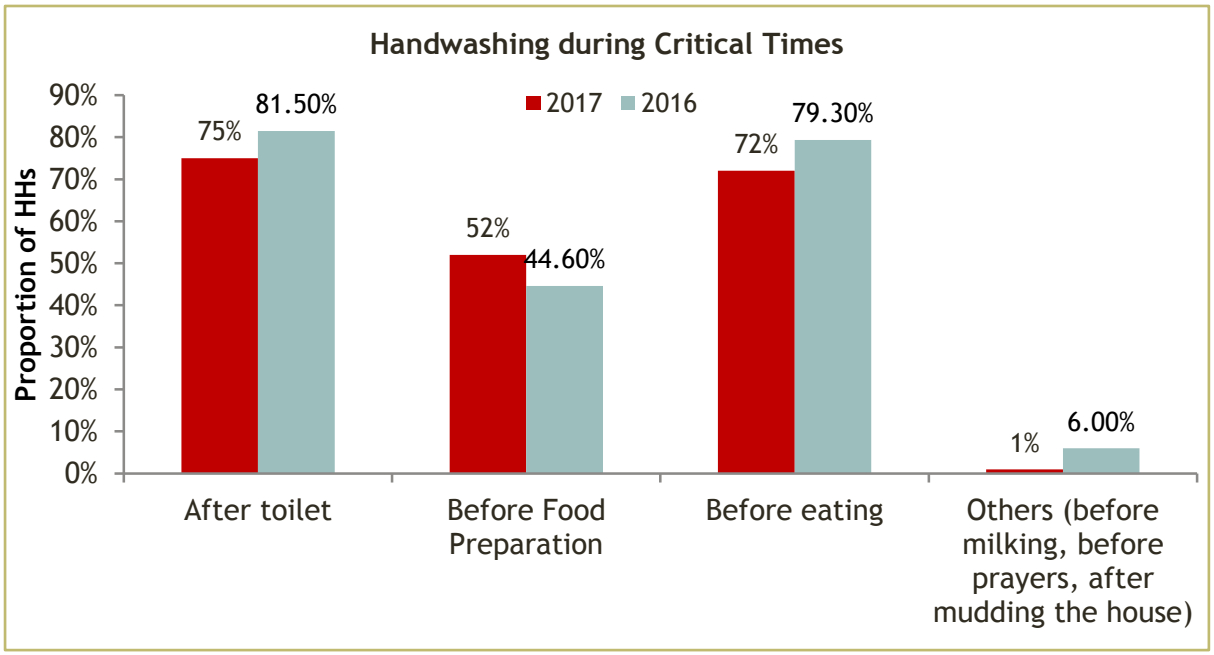


Figure 14: Trends in Critical Hand washing Times

3.7.3 Sanitation Practices

Latrine coverage improved in 2017, compared to 2016. Majority of the HHs (49%) had own latrines while there was observed reduction in Open defecation (29%) as shown in figure 15. The decline could be attributed to continued public health promotion by the department of public health in collaboration with a number of partners supporting water, sanitation and hygiene promotion in the county such as CCM, Caritas Isiolo and World Vision Kenya.

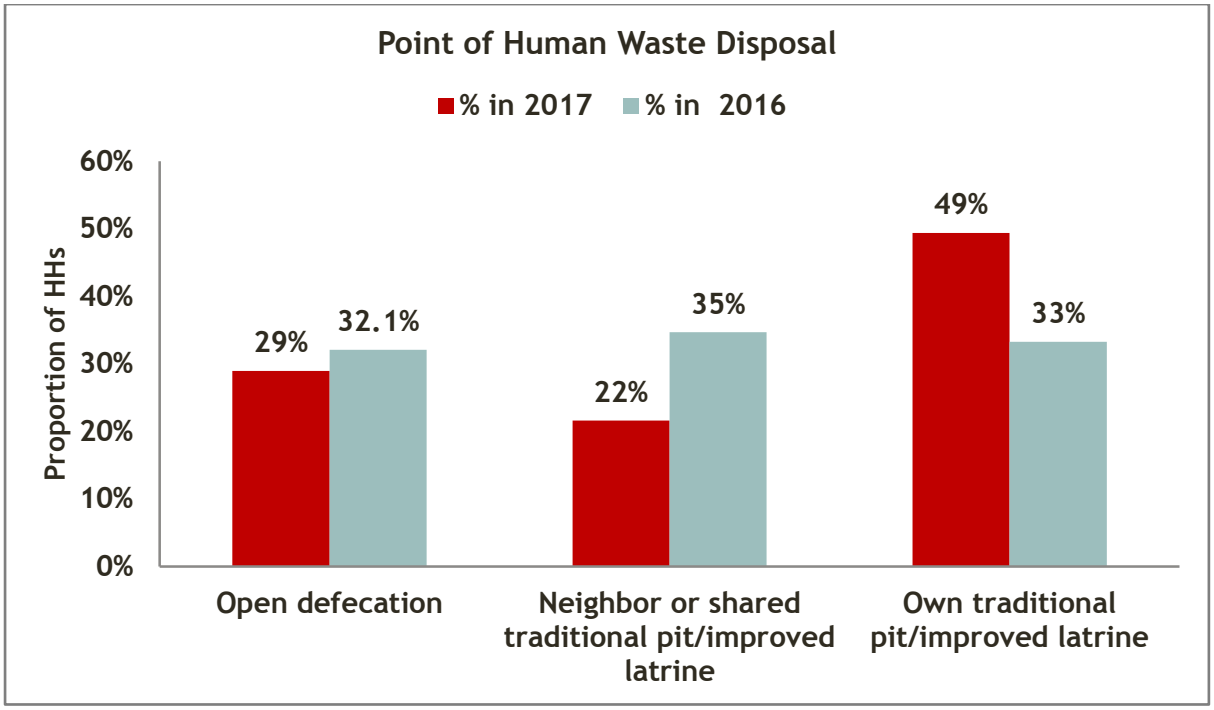


Figure 15: Trends in Latrine Coverage

3.8 Food Security and Livelihoods

3.8.1 Food security Information

At the time of the survey, Isiolo County was classified in the Stressed Phase (IPC Phase 2). The situation was attributed to poor rainfall performance across all livelihood zones. This has affected food security situation in Isiolo County which has resulted to unusual in and out migration of livestock, low livestock productivity and resource based conflicts in some part of the county. In the pastoral zone, milk was available but production had reduced by half to one litre per household per day. Acquisition of food in the market was compromised by low and diminishing purchasing power. The terms of trade as calculated by the number of kilos of maize one can purchase from the proceeds of the sale of a goat was lower than normal by 13%[22].

3.8.2 Household dietary diversity

Household dietary diversity was assessed based on 24 hours recall to assess the ability of the households to access a variety of foods. Majority of the households frequently consumed four food groups consisting of cereals, pulses, milk, fruits and vegetables and occasionally meat. There was a slight deterioration compared with February 2016 when a similar survey was conducted, mainly attributed to drought stress, limited purchasing power, cultural barriers/food taboos that limit consumption of certain foods and unavailability in the market. The least consumed food includes fish, organ meat, eggs and fruits. However, there was observed slight improvement in consumption of Vitamin A rich fruits and vegetables, and Fish as shown in figure 16. The main source of the commonly consumed foods was purchase (91.9%).

[22] Short Rains Assessments Food Security Report, January 2017

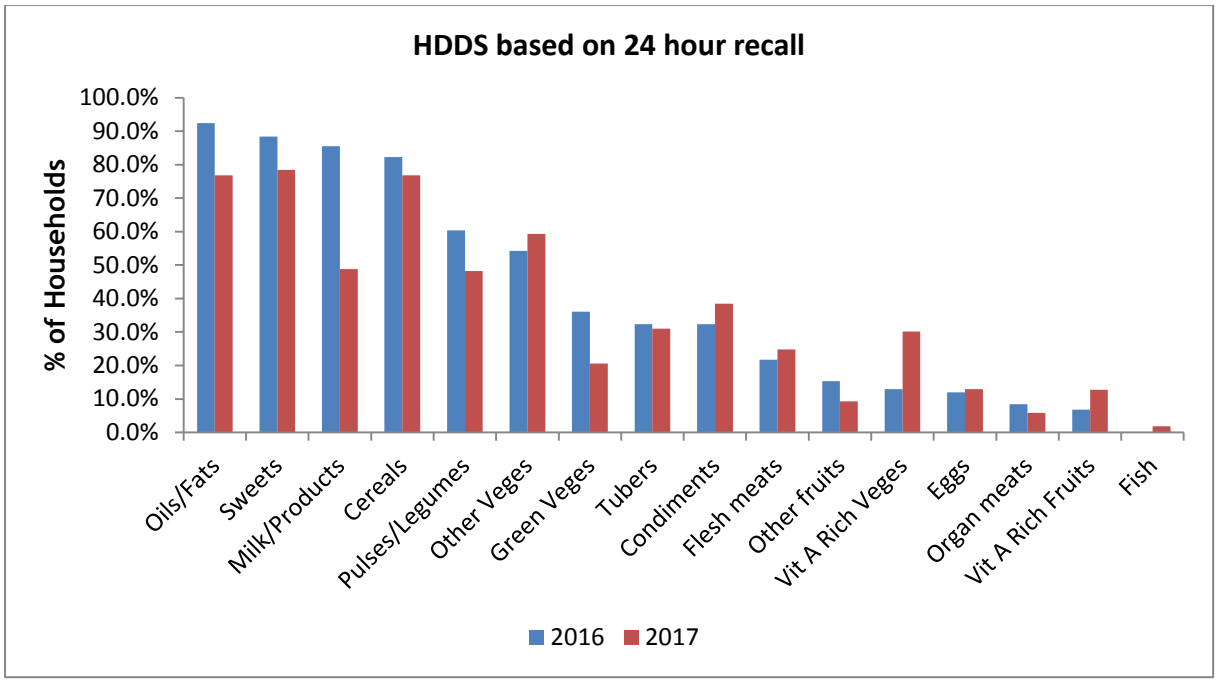


Figure 16: Trends in Household dietary diversity based on 24 hours recall

Majority of the households did not meet the acceptable dietary diversity of six food groups and above based on 24 hours recall. Majority of the households (41.3%) were in medium dietary diversity tercile as shown in table 14. The generalized poor dietary diversity was highly attributed to increased food prices[23], inaccessibility of variety and the poor performance of the short rains.

Table 14: Food groups consumed by >50% of households by dietary diversity tercile (24 hour recall)

Lowest dietary diversity (=< 3 food groups) 39.1% (n=197)	Medium dietary diversity (4 and 5 food groups) 41.3% (n=208)	High dietary diversity (=> 6 food groups) 19.3% (n=97)
Cereals	Cereals	Cereals
Oils/fats	Milk	Green leafy vegetables
Sweets	Fats/oils	Other vegetables
	Sweets	Pulses
		Milk
		Oils/fats
		Sweets

3.8.3 Mean Dietary Diversity-Women

[23] Isiolo NDMA Monthly Bulletins-January 2017

MDD-W is a bilateral indicator of whether or not women 15-49 years of age have consumed at least five out of ten defined food groups the previous day or night. The proportion of women 15–49 years of age who reach this minimum in a population can be used as a proxy indicator for higher micronutrient adequacy, one important dimension of diet quality[24]. Groups of women who achieve minimum dietary diversity (i.e. meet the threshold of five or more groups) are more likely to have higher (more adequate) micronutrient intakes than groups of women who do not[25]. The assessment unveiled the mean consumption by women of reproductive age as 4.8 out of 10 food groups with only 38% (n=159) of women having consumed more than 5 food groups. This indicates that only 38% of women achieved minimum dietary diversity, and they are more likely to have higher (more adequate) micronutrient intakes than the 62% of women who did not.

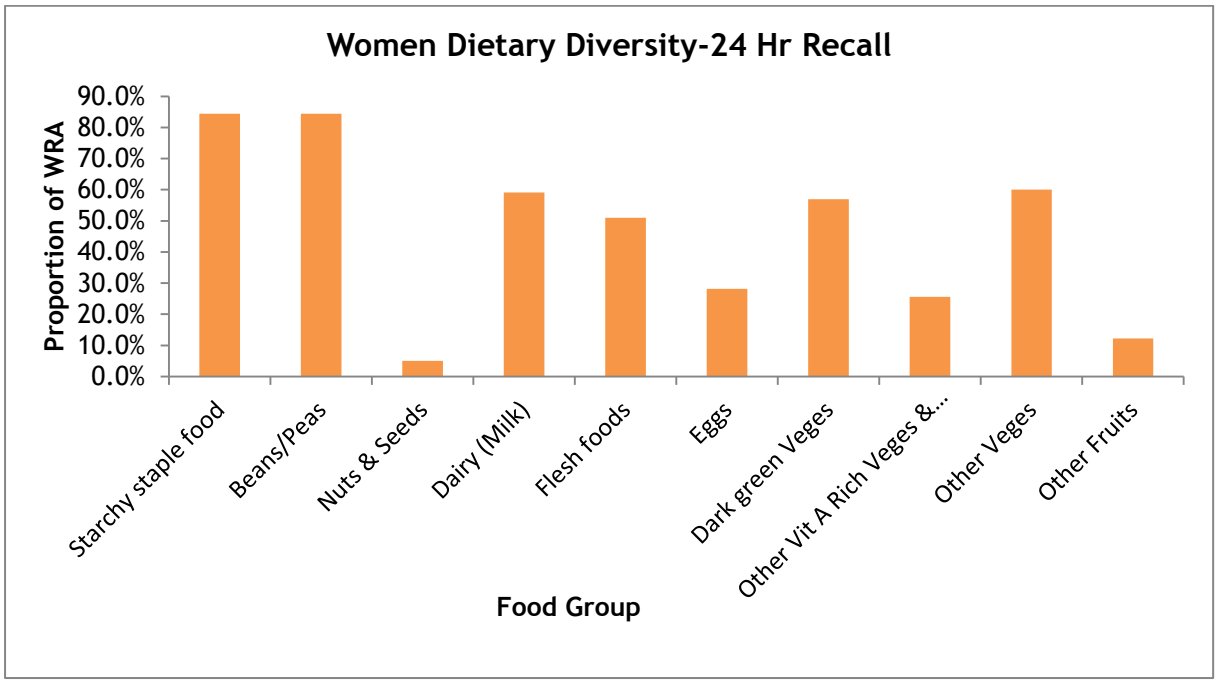


Figure 17: Mean Dietary Diversity- Women

3.8.4 Food Consumption Score

Food Consumption Score combines frequency of food intake and relative importance of each food. Based on the findings of the survey, majority of the households were found to be within good food consumption threshold 87.3% a slight decrease compared to 94.8% in 2016, with an increase of 9.33% and 3.37% for the households with borderline and poor food consumption scores respectively based on 7 days recall as shown in table 17. The increase in borderline and poor food consumption scores is attributed to the deteriorating food security situation in the county following October-December short rains failure.

Table 15: Food Consumption Score

Main	Nomenclature	2017	2016

[24] Minimum Dietary Diversity for Women-Food And Nutrition Technical Assistance III Project (FANTA), 2016

[25] (Martin-Prével et al., 2015)

Threshold		Findings	Findings
0-21	Poor food consumption…mainly cereal	**3.37%**	**1.4%**
21.5-35	Borderline food consumption Cereal, protein or milk (3-4/week), oil, sugar	**9.33%**	**3.8%**
>35.5	Good food consumption Cereal, protein and milk (>5/week), or fruit or vegetable, oil, sugar	**87.3%**	**94.8%**

3.8.5 Coping Strategy Index

The coping strategy index assesses how a household copes in times of food shortage or lack of food. Household were assessed based on five strategies which were then weighted based on their severity. An estimated 46.4% of the households employed at least one food consumption-based coping strategies; relying on less preferred or less expensive food, limiting meal portions and reducing the number of meals. There was deterioration on the overall weighted score Compared to 2016 as shown in table 16.

Table 16: Coping Strategy Index

Coping strategy	% of HH (N=504)	Frequency score (0-7)	Severity score (1-3)	2017 *weighted score*	2016 *weighted score*
Rely on less preferred & less expensive food	46.03	3	1	3	2.37
Borrow food	38.3	1.97	2	3.94	4.08
Limit portion sizes	45.4	1.82	1	1.82	2.41
Restrict consumption of food by adults for young children to eat	40.5	1.88	3	5.64	5.55
Reduced number of meals	44.4	3	1	3	2.44
Total weighted coping strategy score				**17.4**	**16.85**

4.0 CONCLUSION

Based on WHO classification the prevalence of acute malnutrition in Isiolo County is at a critical level with a GAM prevalence of 18.2 % (14.6 - 22.5 95% CI) and a SAM prevalence of 3.3 % (2.1 - 5.3 95% CI), an increase compared to GAM prevalence of 12.3% (9.6-15.8 95% CI) and SAM prevalence of 1.2% (0.4- 3.4 95% CI) in February 2016, with a significant difference (GAM P=0.000 and SAM P=0.035). The increase was attributed compromised household food security with households embracing more than one coping mechanisms and poor state of dietary diversity as result of limitation to food access and availability, increased food prices and seasonal variations (poor performances of both long and short rain seasons). The main food security driver in the county was poor performance of the short rains that led to near total crop failure, inadequate regeneration of pasture and

browse and below–normal recharge of water facilities. In addition, earlier–than–normal and high numbers of migrating livestock to the reserve grazing areas had increased competition for rangeland resources leading to conflicts and occasioning disruption of access to forage and water[26]. In addition, the high malnutrition levels were attributed to disease incidences, inadequate case finding at household level, stock outs reported for the Supplementary Feeding Program in all health facilities and health workers strike leading to defaulting due to lack of follow up.

[26] Isiolo County Short Rains Assessments Report, Jan 2017

5.0 RECOMMENDATIONS

Nutrition situation in Isiolo County is at critical level. A number of interrelated factors that need intervention are attributable to this increase. Therefore, based on the findings, recommendations were put forward by the county nutrition technical forum (CNTF) and county steering group (CSG) involving government ministries and development partners. The recommendations were made after reviewing the previous survey recommendations implementation status, gaps and opportunities as shown in Table 19 shows the recommendations developed in details

Table 17: Key recommendations developed

SECTOR	FINDINGS (ISSUES)	SHORT TERM RECOMMEMDATIONS	LONG TERM RECOMMENDATIONS	RESPONSIBLE
Health and Nutrition	• Critical Nutrition Status (GAM-18.2% and SAM-3.3%) • Poor VAS coverage; 6-11 months ; Once-77.1% 6-59 months; At least once-70.4% 6- 59 months; more than once-63.9% • Poor Deworming coverage; 12-59 months; once-17.4% 12-59 months; At least once-91.5% 12-59 months; more than once-59.4% • Very low MNP coverage (13.02%) • Poor maternal nutrition status among pregnant and lactating women (MUAC <21.0cm-7.1%) • Low IFAS uptake; below the recommended protocol (0% women consuming IFAS for more than 90 days)	✓ Intensified active case finding across the identified hot spots ✓ Mass MUAC screening across the hot spots ✓ Integrated outreaches to reach population not covered by health facilities ✓ Health education on the importance of micronutrient supplementation (VAS, MNP, IFAS) because findings fall below the stipulated national targets ✓ Continued awareness creation on MNPs and demystifying the negative information that intake causes diarrhea	✓ Strengthening of community health strategy to ensure timely screening and referral of malnourished cases at the community level (incentives, trainings). o Support to CHVs to undertake house to house visit for monitoring MNP supplementation, screening for malnutrition and referral ✓ Strong coordination of Health and Nutrition activities among the stakeholders o Advocacy for the county to prioritize Nutrition activities/issues (not a partner led activity) ✓ Improve VAS and MNP documentation and supplementation through continued Mentorship and OJT to health workers on routine Vit A and MNP supplementation at the health facility level ✓ SBCC messages on maternal nutrition during community level activities including dialogues and mother to mother support group meetings. o Finalization of SBCC strategy to address barriers to adoption of desired behavior for IFAS. Adoption	MOH, ACF, UNICEF, WFP

			of the Social Behavior Change Communication (C4D) Strategy to promote behavior change on IFAS uptake by pregnant women	
Food Security and Livelihood	• High Coping Strategy Index (17.4) • Majority of the households purchasing food (>90%); low or lack of household food production (<1.0%) • Poor dietary diversity with high consumption of low nutrient dense foods (high Consumption of Oils, Sweets, Cereals and tubers)	✓ Promote mass livestock offtake to avoid mass loss of livestock and use the money to buy food for consumption at household level ✓ Promotion of kitchen garden(hanging gardens and bucket irrigation with shade nets) re-using water and kitchen waste ✓ Provision of GFD to community members in hot spots ✓ Health education to community members on dietary diversification and support to mothers on preparation of quality diets through recipe modification and cooking demonstrations	✓Isiolo County has 67% of its population being pastoral all species. There is need for selective restocking of goats and camels for pastoralists as the breeds are browsers and hardy hence better suited to cope with the impact of drought ✓ Fodder Production to protect the core breeding stock of the communities, fodder production along riverine and other potential areas would complement this activity and reduce the impact of the recurrent drought on the core breeding stock ✓Improve Own production which currently accounts for less than 1% of food sources • Support community to produce foods through provision of seed subsidy and extension services in areas around Ewaso Nyiro with potential for farming • Promote kitchen garden at household level to provide nutrient (including bucket drip irrigation) • Improve food security and reduce poverty through promotion of utilization of indigenous food (sorghum), provision of farmers with certified seeds, promote planting drought tolerant crops, train on food processing and Preservation e.g. *nyir nyir* through drying of vegetables • Mainstreaming gender in the activities to empower the most vulnerable. Address issues around ownership and control of	County Govt, MOA, MOH, ACF, UNICEF MOH MOA, MOLP, NDMA & Partners

			household resources Promoting IGAS; gives the woman power and control ✓Strengthen linkage of Nutrition sensitive interventions-linking Agriculture to Nutrition; Agriculture and Livestock sectors. Inter-sectoral planning of activities amongst sectors i.e. Nutrition, Water and Agriculture	
Water, Sanitation and Hygiene	• Acute water shortage in some areas; o Increase in utilization of open water shallow well (Cherab, Modogashe). o Observed Sharing of the same water point with livestock o Observed incomplete water project and shallow wells breakdown in Kinna location o Increase in distance to water points (trekking more than 2 km from 7.8% to 22%) • Poor water treatment (only 38.0%) • Open defecation (29%) • Handwashing during at least 3 critical times (47.2%)	✓ Water trucking for both domestic and livestock use ✓ Provision of fast moving spare parts and stand by generators within the boreholes to address break ups ✓ Under take appropriate Continued health education to community members on hygiene and sanitation including water treatment and proper waste disposal at different fora; MtMSGs, Dialogues ✓ Provision of water treatment chemicals at the household level. Identify and Issue the most preferred chemicals to ensure utilization ✓ Undertake an appropriate health and hygiene promotion activities based on the proportion of households practicing handwashing during at least 3 critical times and open defecation	✓ Establishment of new and rehabilitation of existing water sources to increase per capita water consumption and reduce distances to water sources while at the same time maintain access to safe water o Support to rain water harvesting in schools and health facilities o Construction of water troughs within the water pans to separate sharing of water for domestic and livestock o Construction of additional water pans and de-silting of shallow pans ✓ Establishment and strengthening of existing water user committees to be able to handle conflicts arising at various water points. o At a higher level, there is need to capacity build the water user committees to mobilize resources such as funds in future to improve water access and hygiene challenges o Advocacy to the water departments on issues around billing policies hindering kitchen gardening and WaSH practices	County Govt, NDMA, Partners, MOW, MOH

6.0 APPENDICES

6.1 Sampled Clusters

Table 18: List of Sampled clusters

Geographical unit	Population size	Cluster
M.Malle	340	1
Kombola North	311	2
Demo B	208	3
Koticha A	600	4
Manyatta(Town	306	5
Gubadida	412	6
Bulla S	385	7
Didimtu	304	RC
Sericho North	583	8
Bulla Waso	832	9
Bulla Safi	2733	10
Isiolo Town	1435	RC
Marille	1771	11
Kulamawe	7041	12,13
Kampi Ya Juu	4166	14
Kampi Bulle	1537	15
Odha	1197	16
Game	1112	17
Maili-Tano	1184	18
Shambani	1087	19
Kiwanja Ndege	1478	RC
Chechelesi 'A'	1626	20
Tuluroba	5006	21
Acacia	2613	22
Wabera	1723	RC
Kampi Zebra	429	23
Loangila	490	24
Daaba Centre	444	25
Matundai	673	26
Raap	436	27
Kawalash	876	28
Naingura	522	29
Kura	332	30
Biliqi Centre	307	31
Manyatta Dawa	378	32
Sakuye 1	1000	33
Shauri yako 2	370	34
Kambi Juu	700	35
Guyo Sekena	500	36

6.2 Age calculation chart

Table 19: Age Calculation Chart

D.O.B	AGE IN MONTHS		D.O.B	AGE IN MONTHS
2012-Feb	59		2015 - May	20
2012-Mar	58		2015 - Jun	19
2012-Apr	57		2015 - Jul	18
2012-May	56		2015- Aug	17
2012-Jun	55		2015 - Sep	16

2012-Jul	54		2015- Oct	15
2012-Aug	53		2015-Nov	14
2012-Sept	52		2015-Dec	13
2012-Oct	51		2016 - Jan	12
2012-Nov	50		2016-Feb	11
2012-Dec	49		2016-Mar	10
2013-Jan	48		2016-Apr	9
2013-Feb	47		2016-May	8
2013-Mar	46		2016-Jun	7
2013-Apr	45		2016-Jul	6
2013-May	44		2016-Aug	5
2013- Jun	43		2016-Sep	4
2013-Jul	42		2016-Oct	3
2013-Aug	41		2016-Nov	2
2013-Sep	40		2016-Dec	1
2013-Oct	39		2017-Jan	0
2013-Nov	38			
2013-Dec	37			
2014-Jan	36			
2014-Feb	35			
2014-Mar	34			
2014- Apr	33			
2014-May	32			
2014-Jun	31			
2014-Jul	30			
2014-Aug	29			
2014-Sep	28			
2014-Oct	27			
2014-Nov	26			
2014-Dec	25			
2015 -Jan	24			
2015 - Feb	23			
2015 - Mar	22			
2015- Apr	21			

6.3 Standardization Test Results

Table 20: Standardization test results

	Subjects	Result	R value	Bias
Weight				
Supervisor	10	TEM reject	R value reject	Bias reject

Enumerator 1	10	TEM acceptable	R value good	Bias reject
Enumerator 2	10	TEM acceptable	R value good	Bias reject
Enumerator 3	10	TEM good	R value good	Bias reject
Enumerator 4	10	TEM reject	R value reject	Bias reject
Enumerator 5	10	TEM reject	R value reject	Bias acceptable
Enumerator 6	10	TEM poor	R value good	Bias reject
Enumerator 7	10	TEM reject	R value reject	Bias reject
Enumerator 8	10	TEM acceptable	R value good	Bias reject
Enumerator 9	10	TEM poor	R value good	Bias reject
Enumerator 10	10	TEM reject	R value reject	Bias reject
Enumerator 11	10	TEM reject	R value reject	Bias good
Enumerator 12	10	TEM acceptable	R value good	Bias reject
Enumerator 13	10	TEM poor	R value good	Bias reject
Enumerator 14	10	TEM acceptable	R value good	Bias reject
Enumerator 15	10	TEM poor	R value good	Bias reject
Enumerator 16	10	TEM acceptable	R value good	Bias reject
Enumerator 17	10	TEM good	R value good	Bias reject
Enumerator 18	10	TEM acceptable	R value good	Bias reject
Height				
Supervisor	10	TEM good	R value good	
Enumerator 1	10	TEM good	R value good	Bias good
Enumerator 2	10	TEM good	R value good	Bias good
Enumerator 3	10	TEM reject	R value reject	Bias acceptable
Enumerator 4	10	TEM reject	R value reject	Bias good
Enumerator 5	10	TEM reject	R value reject	Bias good
Enumerator 6	10	TEM poor	R value good	Bias good
Enumerator 7	10	TEM good	R value good	Bias good
Enumerator 8	10	TEM good	R value good	Bias good
Enumerator 9	10	TEM good	R value good	Bias good
Enumerator 10	10	TEM good	R value good	Bias good
Enumerator 11	10	TEM reject	R value reject	Bias good
Enumerator 12	10	TEM reject	R value acceptable	Bias good
Enumerator 13	10	TEM good	R value good	Bias good
Enumerator 14	10	TEM acceptable	R value good	Bias good
Enumerator 15	10	TEM good	R value good	Bias good
Enumerator 16	10	TEM good	R value good	Bias good
Enumerator 17	10	TEM good	R value good	Bias good
Enumerator 18	10	TEM poor	R value acceptable	Bias acceptable
MUAC				
Supervisor	10	TEM reject	R value reject	Bias good
Enumerator 1	10	TEM reject	R value reject	Bias good
Enumerator 2	10	TEM good	R value acceptable	Bias good
Enumerator 3	10	TEM acceptable	R value acceptable	Bias acceptable
Enumerator 4	10	TEM reject	R value reject	Bias good

Enumerator 5	10	TEM reject	R value reject	Bias good
Enumerator 6	10	TEM poor	R value poor	Bias good
Enumerator 7	10	TEM reject	R value reject	Bias good
Enumerator 8	10	TEM good	R value good	Bias poor
Enumerator 9	10	TEM good	R value acceptable	Bias good
Enumerator 10	10	TEM poor	R value poor	Bias good
Enumerator 11	10	TEM reject	R value reject	Bias good
Enumerator 12	10	TEM acceptable	R value acceptable	Bias poor
Enumerator 13	10	TEM acceptable	R value acceptable	Bias good
Enumerator 14	10	TEM acceptable	R value acceptable	Bias good
Enumerator 15	10	TEM poor	R value poor	Bias acceptable
Enumerator 16	10	TEM good	R value good	Bias acceptable
Enumerator 17	10	TEM good	R value good	Bias good
Enumerator 18	10	TEM good	R value good	Bias good

6.4 Survey Quality

Table 21: Overall survey quality

Criteria	Score	Interpretation
Missing/flagged data	1.7% **(0)**	Excellent
Overall sex ratio	P=0.693 **(0)**	Excellent
Overall age distribution	P=0.004 **(4)**	Acceptable
Digit Preference weight	4 **(0)**	Excellent
Digit preference height	7 **(0)**	Excellent
Digit preference MUAC	7 **(0)**	Excellent
Standard deviation WHZ	1.05 **(0)**	Excellent
Skewness WHZ	-0.10 **(0)**	Excellent
Kurtosis WHZ	-0.12 **(0)**	Excellent
Poisson distribution WHZ	P=0.077 **(0)**	Excellent
Overall score WHZ	**4%**	Excellent

6.5 Smart Survey Questionnaire

1.IDENTIFICATION	**1.1 Data Collector**_____	**1.2 Team Leader**_____	**1.3 Survey date (dd/mm/yy)----------**					
1.4 County	1.5 Sub County	1.6 Division	1.7 Location	1.8 Sub-Location	1.9 Village	1.10 Cluster No	1.11 HH No	1.12 Team No.

2. Household Demographics

2.1	**2.2**	**2.3**		**2.4**	**2.5**	**2.6**	**2.7**	**2.8**	**2.9**
Age Group	**Please give me the names of the persons who usually live in your household.**	**Age (Record age in MONTHS for children <5yrs and YEARS for those ≥ 5 years's)**		**Childs age verified by** 1=Health card 2=Birth certificate/ notification 3=Baptism card 4=Recall	**Sex** 1= Male 2= Female	**If 3 yrs and under 18 years, Is the child enrolled in school?** 1 = Yes 2 = No (If yes go to 2.8; If no go to 2.7)	**Main Reason for not attending School (Enter one code from list)** 1=chronic Sickness 2=Weather (rain, floods, storms) 3=Family labour responsibilities 4=Working outside home 5=Teacher absenteeism 6=Too poor to buy school items e.t.c 7=Household doesn't see value of schooling 8 =No food in the schools 9 = Migrated/ moved from school area 10=Insecurity 11-No school Near by 12=Married 13=others (specify)……..	**What is the highest level of education attained?(level completed) From 5 yrs and above** 1 = pre primary 2= Primary 3=Secondary 4=Tertiary 5= None 6=others(specify)	**If the household owns mosquito net/s, who slept under the mosquito net last night? (***Probe-enter all responses mentioned (Use 1 if "Yes" 2 if "No and 3 if not applicable)*
		YRS	MTH						
< 5 YRS	1								
	2								
	3								
	4								
>5 TO <18 YRS	5								
	6								
	7								
	8								
	9								
	10								
	11								
	12								
ADULT (18 years and above)	13**(HH)**								
	14)								
	15								
	16								

2.10	**How many mosquito nets does this household have?** _____ **(Indicate no.)**	
2.11	**Main Occupation of the Household Head – HH.** **(enter code from list)** 1=Livestock herding 2=Own farm labour 3=Employed (salaried) 4=Waged labour (Casual)	**2.12.** What is your **main** current source of income 1. =No income 2. = Sale of livestock 3. = Sale of livestock products 4. = Sale of crops 5. = Petty trading e.g. sale of firewood

	5=Petty trade 6=Merchant/trader 7=Firewood/charcoal 8=Fishing **9=Others (Specify)** |____|	6. =Casual labor 7. =Permanent job 8. = Sale of personal assets 9. = Remittance 10. Other-Specify |____|
2.13	Marital status of the respondent 1. = Married 2. = Single 3. = Widowed 4. = separated 5. = Divorced. |____|	**2.14. What is the residency status of the household**? 1. IDP 2.Refugee 3. Resident |____|

Fever with Malaria: High temperature with shivering	**Cough/ARI:** Any episode with severe, persistent cough or difficulty breathing	**Watery diarrhoea:** Any episode of three or more watery stools per day	**Bloody diarrhoea:** Any episode of three or more stools with blood per day

3. CHILD HEALTH AND NUTRITION (ONLY FOR CHILDREN 6-59 MONTHS OF AGE; IF N/A SKIP TO SECTION 3.6)

Instructions: *The caregiver of the child should be the main respondent for this section*

3.1 CHILD ANTHROPOMETRY

(***Please*** *fill in* ***ALL REQUIRED*** *details below. Maintain the same child number as part 2)*

A **Child No.**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**3.2**	**3.3**
	what is the relationship of the respondent with the child/children 1=Mother 2=Father 3=Sibling 4=Grandmother 5=Other (specify)	SEX Female……F Male ……..M	Exact Birth Date	Age in months	Weight (KG) XX.X	Height (CM) XX.X	Oedema Y= Yes N= No	MUAC (cm) XX.X	Has your child (NAME) been ill in the past two weeks? 1.Yes 2. No If No, skip part K and proceed to 3.4)	If YES, what type of illness (multiple responses possible) 1 = Fever with chills like malaria 2 = ARI /Cough 3 = Watery diarrhoea 4 = Bloody diarrhoea 5 = Other (specify) *See case definitions above*	If the child **had watery diarrhoea** in the last TWO (2) WEEKS, did the child get THERAPEUTIC zinc supplementation ? *Show sample and probe further for this component* *check the remaining drugs(confirm from mother child booklet)* 1 = Yes 2 = No 3 = Do not know	**When the child was sick did you seek assistance ?** 1.Yes 2. No	**If the response is yes to question # 3.2 where did you seek assistance? (More than one response possible-** 1. Traditional healer 2.Community health worker 3. Private clinic/ pharmacy 4. Shop/kiosk 5.Public clinic 6. Mobile clinic 7. Relative or friend 8. Local herbs 9.NGO/FBO
01													

02													
03													
04													

3.4 Maintain the same child number as part 2 and 3.1 above

	A1	**A2**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Child No.	How many times has child received Vitamin A in the past year? (show sample)	Has the child received vitamin A supplement in the past 6 months?	How many times did you receive vitamin A capsules from the facility or out reach	If Vitamin A received how many times verified by **Card?**	**FOR CHILDREN 12-59 MONTHS** How many times has child received drugs for worms in the past year? *(show Sample)*	Has the child received BCG vaccination? **1 = scar 2=No scar**	Has child received OPV1 vaccination **1=Yes, Card 2=Yes, Recall 3 = No 4 = Do not know**	Has child received OPV3 vaccination? **1=Yes, Card 2=Yes, Recall 3 = No 4 = Do not know**	Has child received measles vaccination at 9 months *(On the upper right shoulder)?* **1=Yes, Card 2=Yes, Recall 3 = No 4 = Do not know**	Has child received the second measles vaccination (18 to 59 months) *(On the upper right shoulder)?* **1=Yes, Card 2=Yes, Recall 3 = No 4 = Do not know**
01										
02										
03										
04										

3.5 MNP Programme Coverage. ***Maintain the same child number as part 2 and 3.1 above. Ask all the relevant questions (3.5.1 to 3.6.4) before moving on to fill responses for the next child.***

	3.5 Enrolment in an MNP program		**3.6 Consumption of MNPs**			
	3.5.1. Is the child enrolled in the MNP program?(show the example of the MNP sachet) ***(record the code in the respective child's number)*** Yes =1 No=0 **If no go to 3.5.2,** **If yes go to section 3.6.1**	3.5.2 If the child, 6-23months, is not enrolled for MNP, give reason. (***Multiple answers possible. Record the code/codes in the respective child's number. DO NOT READ the answers)*** Do not know about MNPs ……1 Discouraged from what I heard from others ……2 The child has not fallen ill, so have not gone to the health facility …. ……3 Health facility or outreach is far ……4 Ch ild receiving therapeutic or supplementary foods ……5 Other reason, specify ……6 ***Skip to 3.7***	3.6.1 Has the child consumed MNPs in the last 7 days?(shows the MNP sachet) ***(record the code in the respective child's number)*** YES = 1 N0= 0 ***If no skip to 3.6.3***	3.6.2 If yes, how frequent do you give MNP to your child? ***(record the code in the respective child's number)*** Every day ……1 Every other day ……2 Every third day ……3 2 days per week at any day ….4 Any day when I remember…..5	3.6.3 If no, since when did you stop feeding MNPs to your child? ***(record the code in the respective child's number)*** 1 week to 2 weeks ago ….1 2 week to 1 month ago ….2 More than 1 month ……3	3.6.4 What are the reasons to stop feeding your child with MNPs? (***Multiple answers possible. Record the code/codes in the respective child's number. DO NOT READ the answers)*** Finished all of the sachets ……1 Child did not like it ……2 Husband did not agree to give to the child ……3 Sachet got damaged ……4 Child had diarrhea after being given vitamin and mineral powder ……5 Child fell sick……6 Forgot ……7 Child enrolled in IMAM program …8 Other (Specify)_____ ..9
Child 1						
Child 2						
Child 3						
Child 4						

MATERNAL NUTRITION FOR MOTHERS OF REPRODUCTIVE AGE (15-49 YEARS)*(Please insert appropriate number in the box)*				
3.7	**3.8**	**3.9**	**3.10**	**3.11**
Woman ID. **(all women in the HH aged 15-49 years from the household demographics – section 2)**	What is the mother's / caretaker's physiological status **1. Pregnant** **2. Lactating** **3. not pregnant and not lactating**	Mother/ caretaker's MUAC reading: **____.__cm**	During the pregnancy of the (name of the youngest biological child below 24 months) did you take iron pills, sprinkles with iron, iron syrup or iron-folate tablets? **1. Yes** **2. No** **3. Don't know** **4. N/A**	If Yes, for how many days did you take iron pills, sprinkles with iron, iron syrup or iron-folate tablets? (***probe and approximate the number of days***)

4.0 WATER, SANITATION AND HYGIENE (WASH)/- *Please ask the respondent and indicate the appropriate number in the space provided*

4.1 **What is the MAIN source of drinking water for the household <u>NOW</u>?**

1. Piped water system/ borehole/ protected spring/protected shallow wells
2. Unprotected shallow well
3. River/spring
4. Earth pan/dam
5. Earth pan/dam with infiltration well |____|
6. Water trucking /Water vendor
7. Other *(Please specify)*

4.2 What is the trekking distance to the current main water source?

1=less than 500m (Less than 15 minutes)
2=more than 500m to less than 2km (15 to 1 hour)
3=more than 2 km (1 – 2 hrs)
4=Other(specify) |____|

4.2.2a **Do you queue for water?**

1. Yes
2. No **(If No skip to question 4.3)** |____|

4.2.2b. If yes how long?

1. Less than 30 minutes |____|
2. 30-60 minutes
3. More than 1 hour

4.3a **Is anything done to your water before drinking *(Use 1 if YES and 2 if NO)*. if No skip to 4.4** |____|

4.3b If yes what do you do? (*MULTIPLE RESPONSES POSSIBLE) (Use 1 if YES and 2 if NO)*.

1. Boiling…… …… |____|
2. Chemicals (*Chlorine,Pur,Waterguard*)…… |____|
3. Traditional herb…….. |____|
4. Pot filters…….. |____|
5. Other (specify_____)…… |____|

4.4 **Where do you store water for drinking?**

1. Open container / Jerrican
2. Closed container / Jerrican |____|

4.5 How much water did your household use YESTERDAY (excluding for animals)? |____|

(Ask the question in the number of 20 liter Jerrican and convert to liters & write down the total quantity used in liters)

4.6 **Do you pay for water?**

1. Yes
2. No **(If No skip to Question 4.7.1**) |____|

4.6.1 If yes, how much per 20 liters jerrican _____ KSh/20ltrs

4.6.2 If paid per month how much |____|

4.7.1 **Yesterday (within last 24 hours) at what instances did you wash your hands? (MULTIPLE RESPONSE-** (Use 1 if "Yes" and 2 if "No")

|____|

1. After toilet…… |____|
2. Before cooking…….. |____|
3. Before eating…… |____|
4. After taking children to the toilet…… |____|
5. Others…… |____|

|____|

4.7.2 **If the caregiver washes her hands, then probe further; what did you use to wash your hands?**

1. Only water
2. Soap and water
3. Soap when I can afford it
4. traditional herb
5. Any other specify |____|

4.8 Where do members of your household Mainly relieve themselves?

1. In the bushes, open defecation
2. Neighbor or shared traditional pit/improved latrine |____|
3. Own traditional pit/improved latrine
4. Others Specify

5.0: Food frequency and Household Dietary Diversity

Type of food*	**Did members of your household consume any food from these food groups in the last** *7 days?(food must have been cooked/served at the household)* ***0-No*** ***1-Yes***	**If** *yes*, **mark days the food was consumed in the last 7 days?** ***0-No*** ***1-Yes***								What was the **main** source of the dominant food item consumed in the HHD? **1.Own production** **2.Purchase** **3.Gifts from friends/families** **4.Food aid** **5.Traded or Bartered** **6.Borrowed** **7.Gathering/wild fruits** **8.Other (specify)**	**WOMEN DIETARY DIVERSITY** **ONLY FOR WOMEN AGE 15 TO 49 YEARS. REFER TO THE HOUSEHOLD DEMOGRAPHICS SECTION Q2.3 AND Q2.5** **Please describe the foods that you ate or drank yesterday during day and night at home or outside the home (start with the first food or drink of the morning)** ***0-No*** ***1-Yes***			
		D1	***D2***	**D 3**	**D 4**	**D5**	**D 6**	**D7**	**TOTAL**		Woman ID……	Woman ID……..	Woman ID …….	Woman ID……..
5.1. Cereals and cereal products *(e.g. sorghum, maize, spaghetti, pasta, anjera, bread*)?														
5.2. Vitamin A rich vegetables and tubers: Pumpkins, carrots, orange sweet potatoes														
5.3. White tubers and roots: White potatoes, white yams, cassava, or foods made from roots														
5.4 Dark green leafy vegetables: Dark green leafy vegetables, including wild ones + locally available vitamin A rich leaves such as cassava leaves etc.														

5.5 Other vegetables *(e.g., tomatoes, eggplant, onions)?*														
5.6. Vitamin A rich fruits: + other locally available vitamin A rich fruits														
5.7 Other fruits														
5.8 Organ meat (iron rich): Liver, kidney, heart or other organ meats or blood based foods														
5.9. Flesh meats and offals: Meat, poultry, offal *(e.g. goat/camel meat, beef; chicken/poultry)?*														
5.10Eggs?														
5.11Fish: Fresh or dries fish or shellfish														
5.12Pulses/legumes, nuts *(e.g. beans, lentils, green grams, cowpeas)*?														
*5.13*Milk and milk products *(e.g. goat/camel/ fermented milk, milk powder)?*														
5.14Oils/fats *(e.g. cooking fat or oil, butter, ghee, margarine)?*														
5.15 Sweets: Sugar, honey, sweetened soda or sugary foods such as chocolates, sweets or candies														
5.16 Condiments, spices and beverages:														

6. COPING STRATEGIES INDEX		
		Frequency score: Number of days out of the past seven (0 -7).
	In the past 7 DAYS, have there been times when you did not have enough food or money to buy food? If No; END THE INTERVIEW AND THANK THE RESPONDENT **If YES, how often has your household had to:** *(INDICATE THE SCORE IN THE SPACE PROVIDED*)	
1	Rely on less preferred and less expensive foods?	
2	Borrow food, or rely on help from a friend or relative?	
3	Limit portion size at mealtimes?	
4	Restrict consumption by adults in order for small children to eat?	
5	Reduce number of meals eaten in a day?	
	TOTAL HOUSEHOLD SCORE:	
	END THE INTERVIEW AND THANK THE RESPONDENT	