INTEGRATED SMART SURVEY ISIOLO COUNTY KENYA-FEBRUARY 2018

Integrated SMART survey report Isiolo, KENYA

Report compiled by (Ministry of Health, Agriculture, Water, Livestock, NDMA among other partners) with technical support from Action Against Hunger

[24th February, 2018]

ACKNOWLEDGEMENT

Isiolo integrated SMART survey of 2018 was made possible due to coordinated efforts by various health stakeholders. The ministry of health acknowledges the following partners due to their contribution in the entire survey process:

- Government ministries including ministry of Agriculture, ministry of health led County Nutrition Coordinator, and national drought management authority (NDMA) for their concerted efforts in planning and Implementation of the survey.
- Development partners including; World Vision, Kenya Red Cross Society and ILRI for their logistical support.
- The survey team leaders and enumerators for their tireless efforts in ensuring quality and reliable data.
- The entire Isiolo county residents for collaborating and making the survey a success.
- Action Against Hunger Kenya mission staff for their technical, administrative and logistical support during the entire survey process and;
- UNICEF Kenya Country office for financial support.

TABLE OF CONTENTS

Table of Contents

ACKNOWLEDGEMENT 2
TABLE OF CONTENTS 3
ABBREVIATIONS 5
EXECUTIVE SUMMARY 6
Objectives 6
Methodology 6
Summary of findings 7
1.0 INTRODUCTION 8
1.1 Background Information 8
1.2 Timing of the Survey 9
1.3 Objectives of the Survey 10
2.0 SURVEY METHODOLOGY 10
2.1 Type of Survey 10
2.2 Sampling Procedures 10
2.3 Training Framework 11
2.4 Survey Teams and Supervision 12
2.5 Case Definitions and Inclusion Criteria 12
2.6 Data Entry and Analysis 14
2.7 Indicators, Guidelines and Formulas used in determining Acute Malnutrition 14
2.8 Referrals 15
3.0 SURVEY FINDINGS 15
3.1 GENERAL CHARACTERISTICS OF STUDY POPULATION AND HOUSEHOLDS 15
3.1.1 Main occupation of the households 15
3.1.2 Literacy levels of the household members 16
3.2 ANTHROPOMETRY 18
3.2.1 Distribution by Age and Sex 18
3.2.2 Nutritional Status of Children 6-59 Months 18
3.3 Child Immunization, Vitamin A Supplementation and Deworming 22

3.4 Micronutrient powders (MNP) among children 6-23 months 24
3.4.1 Coverage of MNP program 24
3.5 Child morbidity 24
3.5.1 Incidence of disease among children 6-59 months and health seeking behavior 24
3.5.2 Therapeutic Zinc supplementation in treatment of watery Diarrhea 25
3.6 Maternal Health and Nutrition 25
3.6.1 Iron folate supplementation during pregnancy 26
3.7 Water Sanitation and Hygiene (WASH) 27
3.7.1: Access to water 27
3.7.2 Hygiene Practices 28
3.7.3 Sanitation Practices 29
3.8 Food Security and Livelihoods 29
3.8.1 Food security Information 29
3.8.2 Household dietary diversity 30
3.8.3Women Dietary Diversity based on 24 hours recall 31
3.8.4 Food Consumption Score 33
3.8.5 Coping Strategy Index 33
3.9 Food Fortification 34
4.0 CONCLUSION 34
5.0 RECOMMENDATIONS 35
6.0 ANNEXES 37
6.1 Age calculation chart 37
6.2 Sampled Clusters 38
6.3 Integrated Smart Survey Questionnaire 39

ABBREVIATIONS

AAH	Action Against Hunger
BCC	Behavior Change Communication
BCG	Bacillus Calmette–Guérin
CI	Confidence Interval
CLTS	Community Led Total Sanitation
CNC	County Nutrition Coordinator
GAM	Global Acute Malnutrition
HFA	Height-for-Age
HHs	Households
HINI	High Impact Nutrition Interventions
ILRI	Integrated Livestock Research Institute
IMAM	Integrated Management of Acute Malnutrition
IPs	Implementing partners
KRCS	Kenya Red Cross Society
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
ODK	Open Data Kit
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

EXECUTIVE SUMMARY

Isiolo County lies within ASALs of Kenya covering 25,336km2 with an estimated population of 185,417(Source: DHIS). It has 3 main livelihood zones; Pastoral, Agro-pastoral and Firewood/Formal employment representing 67%, 26% and 7% respectively[1]. It consists of 3 Sub-counties namely Isiolo, Garbatulla and Merti. The nutrition survey was conducted between 9th and 15th February, 2018. The Standardized Monitoring and Assessment in Relief and Transitions (SMART) methodology was used during the anthropometric survey in planning, training, data collection and analysis. Other data sets including data on nutrition, morbidity, Water, Sanitation and Hygiene (WASH), and food security were also collected during the survey.

Objectives

The Overall objective was to determine the prevalence malnutrition amongst children aged 6-59 months age in Isiolo County

Specific objectives:

i. To determine the prevalence of acute and chronic malnutrition in children aged 6-59 months;
ii. To determine the immunization coverage for Measles, Oral Polio Vaccines (OPV 1 and 3), and vitamin A supplementation in children aged 6-59 months;
iii. To assess coverage and consumption of micronutrients powder in children aged 6-23 months
iv. To establish coverage of iron / folic acid supplementation during pregnancy among pregnant and lactating women
v. To determine the nutritional status of women of reproductive age (15-49 years)
vi. To collect contextual information on possible causes of malnutrition such as household food security, water, sanitation, and hygiene (WASH) practices; Morbidity

Methodology

The survey was conducted in the entire Isiolo County using SMART methodology. The standard SMART survey questionnaire was created using kobo toolbox and downloaded into the smart phones and tablets using open data kit mobile application. Emergency Nutrition Assessment (ENA) software version 2011 updated on 9th July, 2015 was used to calculate the sample size using various parameters giving a sample size of 587 households. Two stage cluster sampling was used whereby 42 clusters were to be sampled to be assessed for 7 days by 6 teams. This based on the previous experience considered the fact that each team can survey a total of 14 households per day. Random number generator mobile application was used to sample the 14 households per village based on the list provided by the village guide. However, two clusters (Manyatta Siribde and Bula Juu) in Garbatulla sub-county, Sericho

[1] NDMA livelihood classification for Isiolo County

ward were not assessed due to emergence of insecurity as a result of two conflicting communities that occurred during data collection period.

Summary of findings

A total of 560 households were visited covering 610 children 6-59 months and 40 clusters. The overall data quality for anthropometric measurements was 10% indicating good performance. *Table 1* show a summary of survey findings based on the set indicators.

Table 1: Summary of Results, Isiolo County; February 2017 to February 2018[2]

			Integrated nutrition survey[3]	
INDEX	**INDICATOR**		**February 2017**	**February 2018**
WHZ[4]-scores	Global Acute Malnutrition Weight for height <-2 z and/or edema		18.2% (14.6-22.5, 95% CI)	13.8 % (10.9 - 17.3 95% C.I.)
	Severe Acute Malnutrition Weight for height <-3 z and/or edema		3.3% (2.1-5.3, 95% CI)	2.6 % (1.6 - 4.2 95% C.I.)
HAZ[5]-scores	Stunting (<-2 z-score)		17.4%	18.0%
WAZ[6]-scores	Underweight (<-2 z-score)		21.1%	19.2%
MUAC[7]	Global Acute Malnutrition MUAC <125 mm and/or edema			4.8 % (3.3 - 6.8 95% C.I.)
	Severe Acute Malnutrition MUAC <115 mm and/or edema			1.8 % (1.0 - 3.2 95% C.I.)
Measles Immunization Coverage	9 Months by card		27.4%	64.1%
	18 Months by card		29.4%	32.4%
Vitamin A coverage	6-11 months ; At least once		77.1%	69.0%
	12-59 months; once		70.4%	65.0%
	12- 59 months; at least twice		67.5%	49.5%
Micronutrient Powders	Coverage of MNP		13%	8.7%
	Main Barriers			Caregivers (86%)do not know about MNP's
Morbidity Patterns for 6-59 months	Ill in the last 2 weeks (yes)			46.5%
	Type of illness	Fever with chills like malaria	19%	27%
		ARI/Cough	47%	54%
		Watery diarrhea	19%	13%
Maternal Nutritional status by MUAC	Pregnant And Lactating women<210MM		7.1%	7.5%
IFAS intake	Over 90 days during pregnancy			8.1%
Water	Water sources (protected sources)		74%	72%

[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] Weight for age Z scores
[6] Weight for age Z scores
[7] Mid upper arm circumference

Sanitation and Hygiene (WASH)	Distance to main water source	≤ 500M	73.4%	63.4%
		>500M-≤2km	22%	23.1%
		>2km	4.8%	13.4%
	Hand Washing Behaviors	Four critical times	47.2%	59.8%
	Latrine coverage	Open defecation	29.0%	22.4%
Food Security and Livelihood (FSL)	Food Consumption Score (FCS)	Poor	3.8%	2.7%
		Borderline	9.3%	9.4%
		Good	87.3%	87.9%
	Coping Strategy index (CSI)	Borrow food	3.0	3.09
		Restrict consumption for children to eat	5.64	5.73
		Total weighted coping strategy score	17.4	17.8

1.0 INTRODUCTION

1.1 Background Information

Isiolo County is among the arid and semi-arid lands of Kenya, located in the Pastoral North East cluster covering 25,336km2 with an estimated population of 185,417(Source: DHIS). It consists of three Sub-counties namely Isiolo, Garbatulla and Merti. The county is characterized by recurrent droughts, hot and dry climate with low and erratic rainfall patterns. It has 3 main livelihood zones; Pastoral, Agro-pastoral and Firewood/Formal employment representing 67%, 26% and 7% respectively as shown in *figure 1.1*.

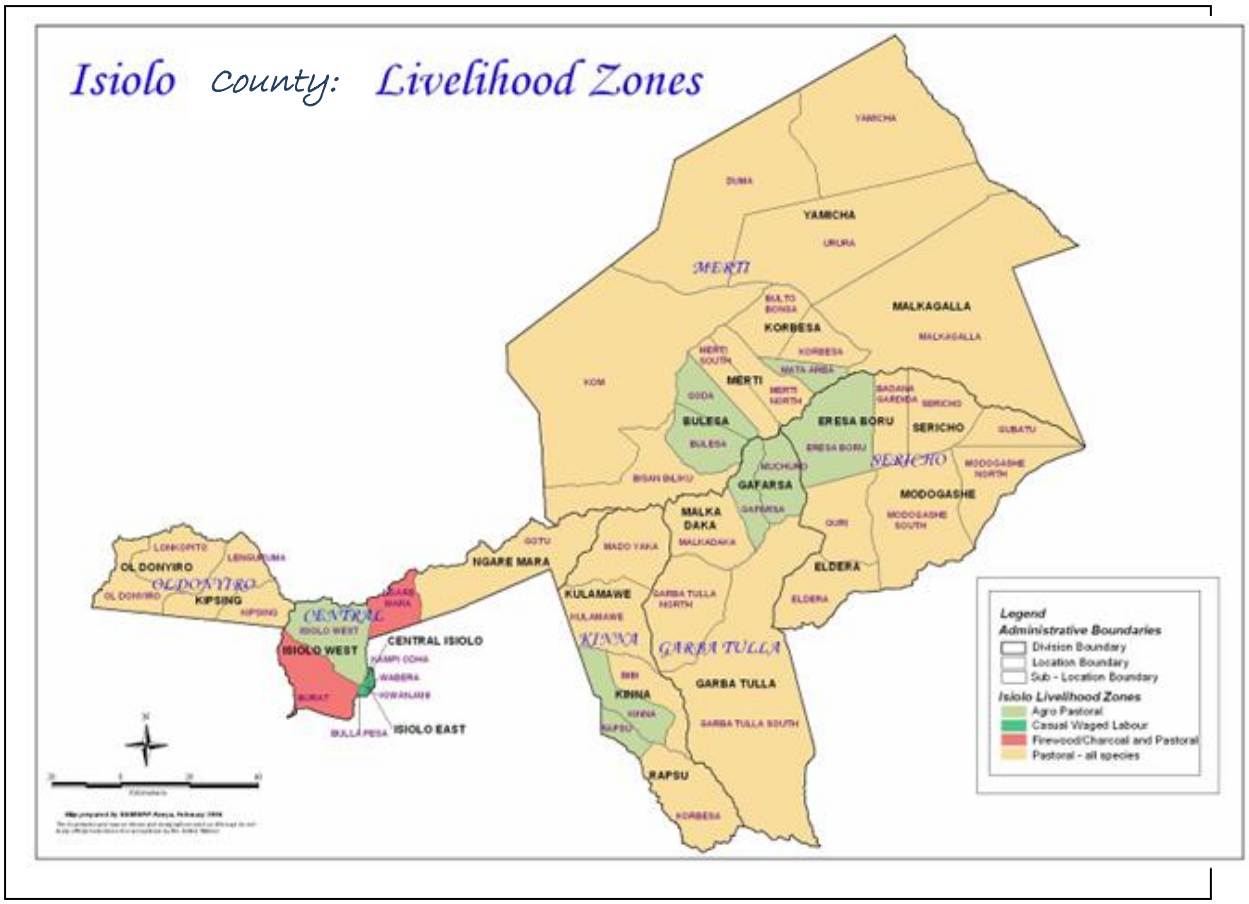


Figure 1.1: A map of Isiolo County livelihood zones.

1.2 Timing of the Survey

Isiolo has two rainfall seasons; long rains (March-may) and short rains; (October-December) season. The seasonal calendar also characterizes dry season into short (January-March) and long; June-October dry season as seen in *figure 1.2.* The county inhabitants depend on short rain season rather than the long season. The integrated nutrition SMART survey was conducted in line to seasonal assessment and survey findings were used to classify and inform on outcome indicators (nutrition status) during short rain assessment in February, 2018.

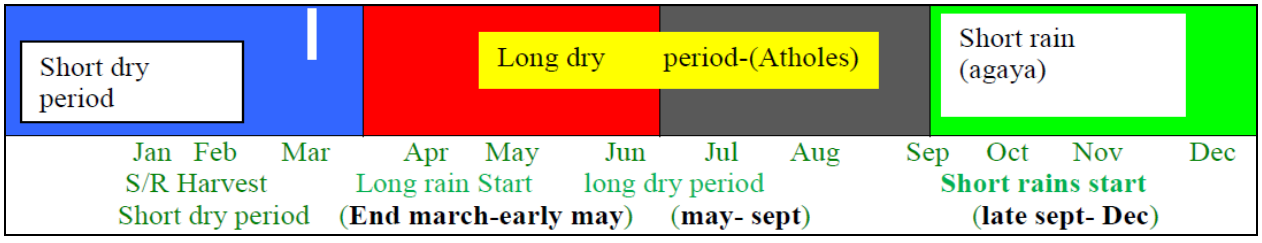


Figure 1.2: Isiolo County seasonal calendar

The integrated SMART survey conducted in January 2017 indicated a serious Global Acute Malnutrition (GAM) prevalence of 18.2% (14.6-22.5, 95% CI) and Severe Acute Malnutrition (SAM) prevalence of 3.3% (2.1-5.3, 95% CI). The National Drought Management Authority (NDMA) early warning indicators for Isiolo County showed a

worsening trend from May to December 2017. The rains received were poorly distributed both spatially and temporarily. A greater percentage of the county did not receive any rainfall during October to December short rains. The February 2018 integrated nutrition SMART survey was conducted in the county to further monitor the food security and nutrition situation. The County Nutrition Technical Working Group guided by Ministry of Health (MOH) took the lead of the assessment activities (planning, training, data collection and dissemination) with Action Against Hunger providing technical support.

1.3 Objectives of the Survey

Overall objective:

- ❑ To determine the prevalence malnutrition amongst children aged 6-59 months age in Isiolo County.

Specific objectives:

- ❑ To determine the prevalence of acute and chronic malnutrition in children aged 6-59 months.
- ❑ To determine the immunization coverage for Measles, Oral Polio Vaccines (OPV 1 and 3), and vitamin A supplementation in children aged 6-59 months.
- ❑ To assess coverage and consumption of micronutrients powder in children aged 6-23 months.
- ❑ To establish coverage of iron / folic acid supplementation during pregnancy among pregnant and lactating women.
- ❑ To determine the nutritional status of women of reproductive age (15-49 years).
- ❑ To collect contextual information on possible causes of malnutrition such as household food security, water, sanitation, and hygiene (WASH) practices; Morbidity.

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 February, 2018 using the SMART methodology in planning, training, data collection, analysis and reporting. Review of Secondary information from various existing surveillance data to include; NDMA monthly bulletins, Health Information System (DHIS) and previous assessments was undertaken prior to the survey. 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

Two stage cluster sampling was used whereby the first Stage involved selection of cluster in the entire county from the population data (Census 2009) generated from ENA for SMART software version 2011 (9th July 2015). Probability proportional to size (PPS) was be applied in stage one.

The second stage on the other hand involved selection of households (simple random sampling) in a cluster using random number generator mobile application where village names (clusters), their respective population sizes and the required number of clusters were be entered into ENA for SMART software.

Table 2.1: Sampling Methodology for Anthropometric Survey

Data entered in ENA for SMART	**Anthropometric survey**	**Rationale**
Estimated prevalence	18.2%	• From contextual data (DHIS, NDMA EWS) it was showing a worsening trend
±Desired precision	3.6%	• SMART Survey Rule of thumb. Lower confidence interval from previous survey • In order to meet the set objectives
Design effect	1.1	• Obtained from nutrition SMART survey 2017 results; to cater for heterogeneity within the County because clusters and populations had not changed significantly
Average household size	6	• From previous survey (2017)
Proportion of U5s	17.2%	• From DHIS
Non-response rate	3.0%	• Based on previous assessments continuous community mobilization was expected to create awareness of upcoming assessment. In addition, there was likely low migration of populations
Households	**587**	
Children	**528**	

ENA for SMART software was used to select a sample size of 587 households and 528 children as shown in *table 2.1*. This was then used to determine the number of clusters based on the number of households which a team could comfortably achieve per day. A total of **42 clusters** were randomly sampled in stage one in regards to the previous survey's experience that shows that each team can cover 14 households per day **(587/14=41.9).** In this stage the primary sampling unit was villages. An updated list of households was obtained at the village from community leaders in stage two; then **14 households** were randomly selected using simple random sampling for anthropometry. At the time of planning for the survey no village was left out of the sampling frame because no insecurity or related tension had been reported. The villages constituted the primary sampling units while the households constituted the basic sampling units. 14 households per cluster were selected through simple random sampling from an updated list of households.

2.3 Training Framework

The entire training took four days from 5th to 8th February 2018 with standardization test and pilot test as part of the training package. The survey teams were taken through; introduction

to SMART survey, survey objectives, sampling, mobile based data collection tool (Open data Kit), anthropometric measurements, interviewing techniques, field procedures and data quality assurance. The training participants were subjected Pretest at the start of the training as a means of measuring how much they already know about the SMART Survey and Posttest at the conclusion of the SMART methodology training to measure their ability to apply knowledge and skills learned in the course. Comparing the participants' post-test results to their pre-test results enabled the training facilitators to see whether the training was successful in increasing participant knowledge and skills.

2.4 Survey Teams and Supervision

The survey had a total of six team leaders each manning a team of three enumerators eventually forming six teams. The team leaders were obtained from county government ministries. Eighteen enumerators were recruited on competitive basis after call for application, short listing and interviews. 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 survey methodology by the National and County Nutrition information working group.
- Training of survey team as per SMART methodology including undertaking both standardization and pilot test.
- Daily supervision and support of the team during data collection.
- Daily feedback sessions through plausibility and questionnaire checks.
- Continuous data monitoring and primary analysis of all data sets on kobo toolbox server.

2.5 Case Definitions and Inclusion Criteria

Primary data was collected from the sampled villages to make inferences with regard to the survey objectives for a period of 7 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 6.1).*
- **Child's Sex:** This was recorded as either '***m***' for male or '***f***' for female.
- **Weight:** A seca digital weighing scale was used to measure the children's weight. The electronic scales were calibrated on daily basis using a standard weight (5kg calibrated weight stone) 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, minimal clothing, taking repeated weight (at least twice) to achieve a difference of not more than 0.2kgs and accurate recording of measurements to the nearest 0.1kg.

- **Height:** length was taken for children less than 2 years of age while those children above 2 years of age were measured while standing. A height board was used to measure length/height. Of emphasis was ideal placement of cursor as per instructions on height measurements (SMART/IMAM 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 Edema:** This was assessed by the application of moderate thumb pressure for at least 3 seconds (1001, 1002, and 1003) on both feet. Forming of depression on both feet upon pressure application indicated bilateral pitting edema.
- **Measles vaccination:** The mother and child health booklet was used as a source of verification. In circumstances where it 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 whether it was given in a health-facility, outreach sites or elsewhere and the number of times recorded in the card).
    - **Micronutrient powders**: The eligible children for this information were 6-23 months. The respondent was asked whether the child was enrolled in the program. Those who said no were probed for reasons why were not enrolled. Those enrolled were probed on frequency of consumption and adherence.
    - **Morbidity:** this information was gathered by asking the caregiver whether the child had been ill in the past two weeks. Those who reported that the child was sick were probed to specify the type of illness.

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 Livelihoods).

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

2.6 Data Entry and Analysis

The survey adopted on mobile technology in data collection in and submission. The standard SMART questionnaire form was developed on KOBO toolbox 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 January 2015 version (Updated on 7th July 2015) while all other data sets were entered and analyzed using Microsoft Excel and SPSS.

2.7 Indicators, Guidelines and Formulas used in determining Acute Malnutrition

Weight for height (WFH) index

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

Z-Score:

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

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 2.2: MUAC Guidelines: Children 6-59 months and PLWs MUAC Cut-offs

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

2.8 Referrals

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

3.0 SURVEY FINDINGS

3.1 GENERAL CHARACTERISTICS OF STUDY POPULATION AND HOUSEHOLDS

A total of 560 randomly selected households were assessed during the survey making a total of 2,509 persons with an average household size of 4.5 persons. 40 out of 42 randomly selected clusters were visited by the survey teams. Most of the respondents (86.6%) reported to be married. Two clusters (4.8% of the sampled cluster) in Sericho Ward were not assessed due to emergence of insecurity as a result of 2 conflicting communities. Security advisory warned the survey teams against visiting the affected area.

Table 3.1: Survey Coverage: planned vs Achieved Households and Sample size

Planned			**Achieved**		
No. of HHs	No. of Children (Sample Size)	No. of Clusters	No. of HHs	No. of Children (Sample Size)	No. of Clusters
587	528	42	560	610	40

3.1.1 Main occupation of the households

Livestock herding was the main source of income followed by casual labor and the least common being merchant/trader as shown in *figure 3.*

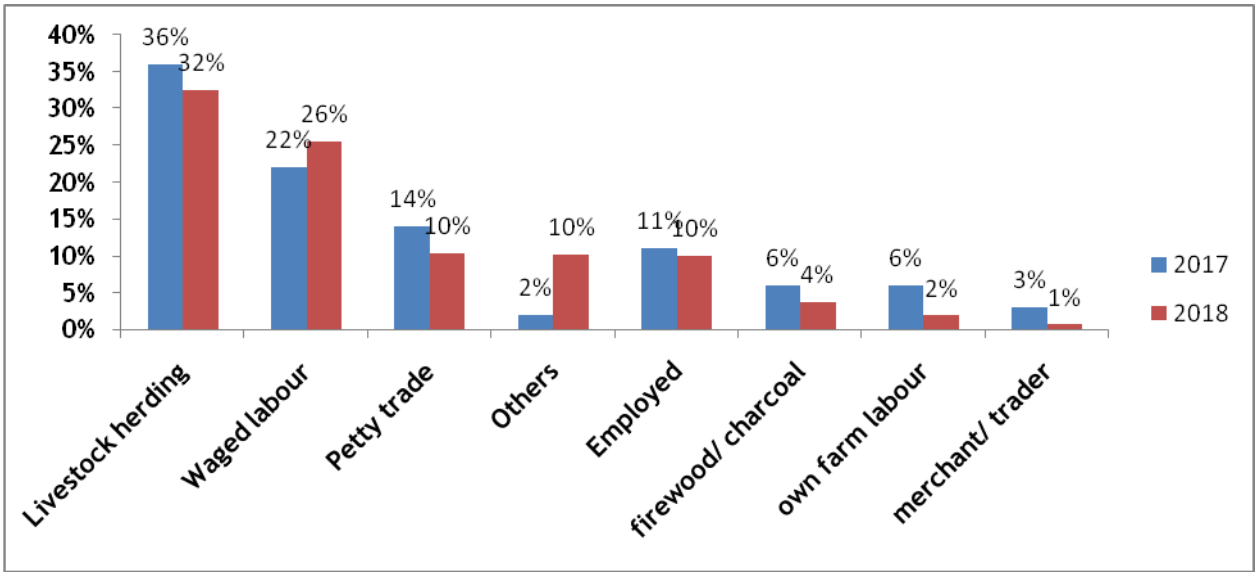


Figure 3.1: Main occupation of the household head

Livestock herding remained the main occupation of Isiolo residents at 32% (n=191) with a noted slight decrease in the proportion of people herding livestock and slight increase in the

proportion of people doing waged labor as shown in *figure 3.1*. This was attributed to prevailing drought in the previous year that led to loss of livestock leading to household head relying on casual waged labor. This is also evident in *Figure 3.2* where, despite sale of livestock and livestock products being the main source of income in most households (34%, n=189), there was a noted increase in proportion of households relying on casual labor as a source of income.

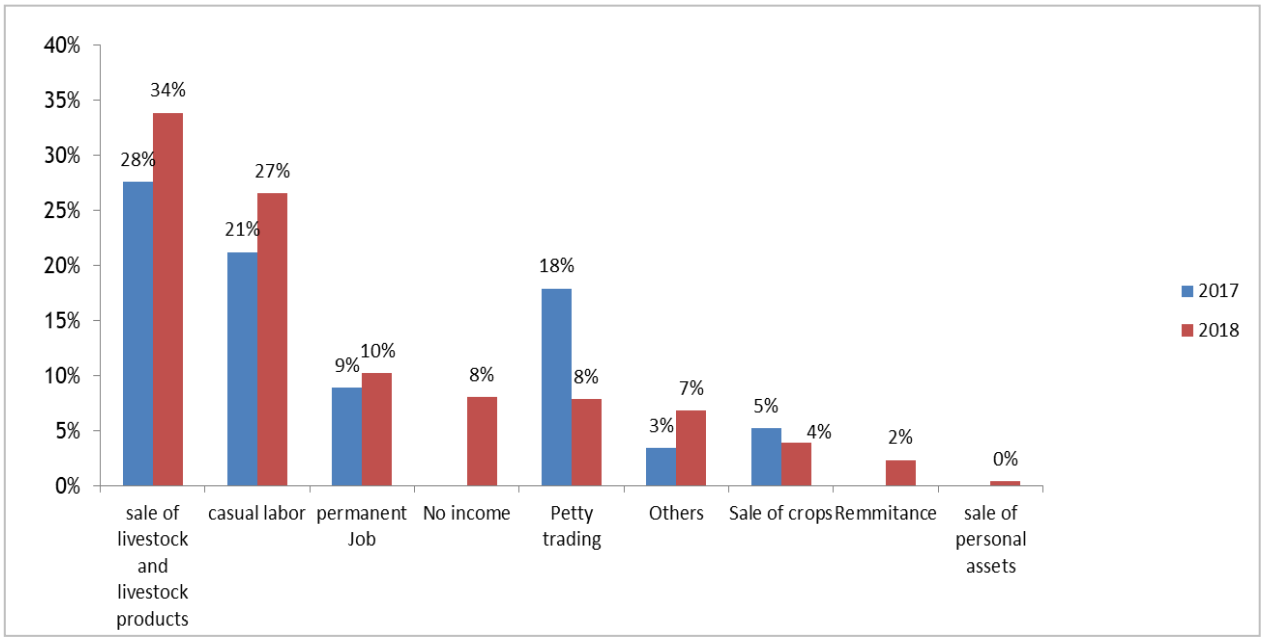


Figure 3.2: Current Main Income source

3.1.2 Literacy levels of the household members

Literacy levels among adults in Isiolo County remained the same compared to the previous year with 45.6% of the respondents having no formal education *(figure 3.3)*. Assessment of 742 children aged 5-18 years showed that 87.7% were enrolled in school with boys to girls' ratio of 1.05:1.

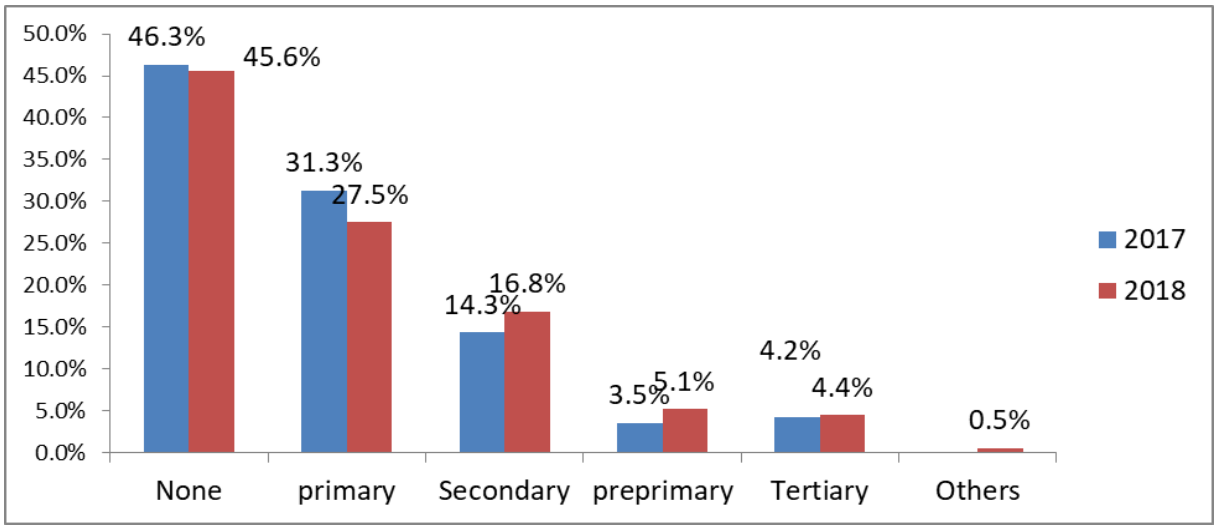


Figure 3.3: Highest Level of education attained by adult members

Family labor responsibilities (40%), lack of school nearby (22%), household poverty (8%), lack of value for school (3%) and children working outside home at 3% were among others were some of the reasons for some of the children 5-18 (12.4%) years not attending school as shown in *figure 3.4.*

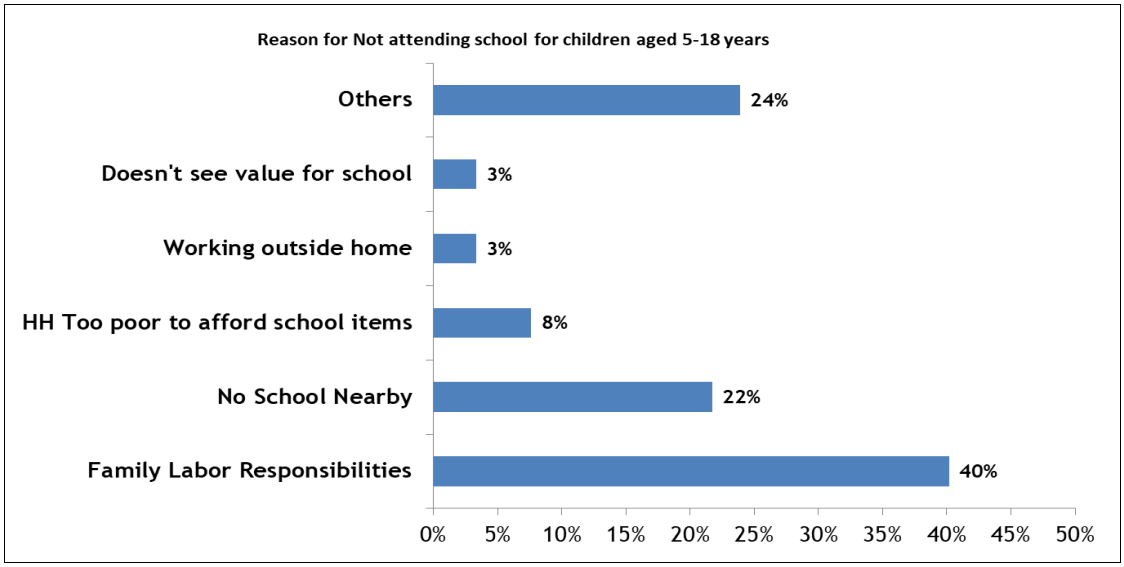


Figure 3.4: Reasons for not attending school for children aged 5-18 years

At the time of the survey, only 5% (n=30) of households reported to be living with children from other households with 27% of those reporting that the children orphaned and 15% living with relatives in order to access school *(figure 3.5).*

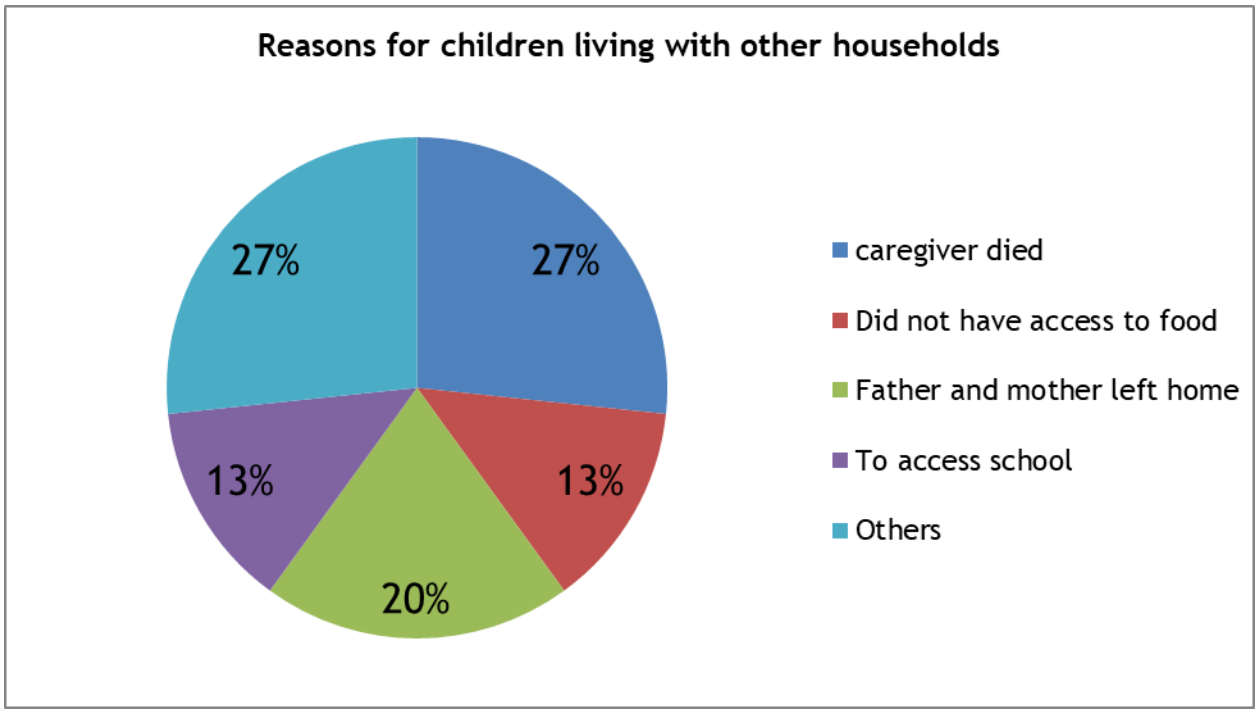


Figure 3.5: Reasons for children living with other households

Majority of the assessed households (59.9%) owned a mosquito net with 60.9% of children under five years and 64.1% of pregnant and lactating women reporting to have slept under mosquito net in the previous night.

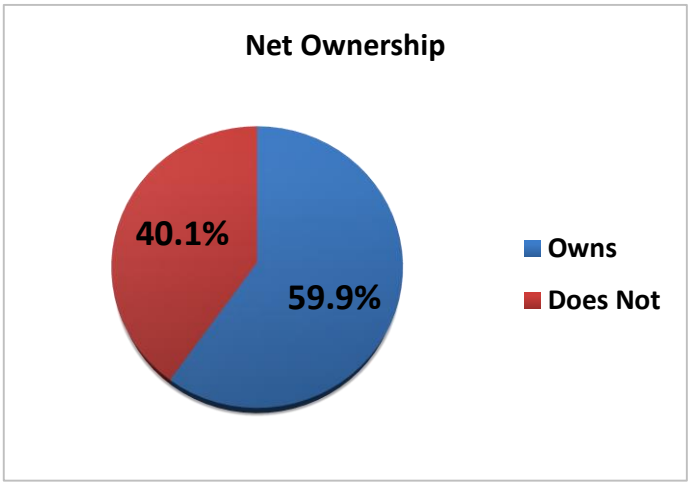


Figure 3.6: Mosquito net ownership

3.2 ANTHROPOMETRY

3.2.1 Distribution by Age and Sex

The survey assessed 610 children 6-59 months for acute malnutrition. 321 boys and 289 girls were assessed representing a ratio of 1.1:1 respectively as shown in *table 3.2*with a P=0.195 indicating that boys and girls were equally represented. The P value for age ratio (6-29 vs 30-59 months) was 0.000 indicating a significant difference in the age ratio. The sampling bias revealed in the age ratio is as a result of older children not at home during the survey attributed to migration or movement of families or children moving in with other relatives when their families have migrated especially in the pastoral areas of Cherab and Oldonyiro Wards.

Table 3.2: Distribution by age and sex

	Boys		Girls		Total		Ratio
AGE (mo)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy:girl**
6-17	92	54.4	77	45.6	169	27.7	1.2
18-29	87	52.1	80	47.9	167	27.4	1.1
30-41	75	53.2	66	46.8	141	23.1	1.1
42-53	47	45.2	57	54.8	104	17.0	0.8
54-59	20	69.0	9	31.0	29	4.8	2.2
Total	321	52.6	289	47.4	610	100.0	1.1

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

A total of 609 children aged 6-59 months were included in the final analysis for global acute malnutrition (GAM) by weight-for-height, MUAC and edema. The survey established a

GAM and SAM prevalence of 13.8 % (10.9 - 17.3 95% C.I.) and 2.6% (1.6 - 4.2 95% C.I.) respectively by weight for height z-score. Prevalence of edema was 0.0%

Table 3.2: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex

	At 95% Confidence Interval		
	All n = 609	**Boys** n = 320	**Girls** n = 289
Prevalence of global malnutrition (<-2 z-score and/or edema)	(84) **13.8 %** (10.9 - 17.3)	(48) 15.0 % (10.7 - 20.6)	(36) 12.5 % (9.1 - 16.8)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no edema)	(68) **11.2 %** (8.7 - 14.2)	(39) 12.2 % (8.7 - 16.9)	(29) 10.0 % (6.9 - 14.3)
Prevalence of severe malnutrition (<-3 z-score and/or edema)	(16) **2.6 %** (1.6 - 4.2)	(9) 2.8 % (1.4 - 5.6)	(7) 2.4 % (1.2 - 4.7)

Table 3.3: 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)		Edema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	169	4	2.4	18	10.7	147	87.0	0	0.0
18-29	167	4	2.4	11	6.6	152	91.0	0	0.0
30-41	141	3	2.1	15	10.6	123	87.2	0	0.0
42-53	103	3	2.9	17	16.5	83	80.6	0	0.0
54-59	29	2	6.9	7	24.1	20	69.0	0	0.0
Total	609	16	2.6	68	11.2	525	86.2	0	0.0

3.2.2.2 Prevalence of acute malnutrition based on MUAC cut off's

Prevalence of acute malnutrition by MUAC was 4.8 % (3.3 - 6.8 95% C.I.) with SAM of 1.8% (1.0 - 3.2 95% C.I.).

Table 3.4 Prevalence of acute malnutrition by MUAC

	All n = 610	**Boys n = 321**	**Girls n = 289**
Prevalence of global malnutrition (< 125 mm and/or oedema)	(29) 4.8 % (3.3 - 6.8 95% C.I.)	(15) 4.7 % (2.7 - 8.0 95% C.I.)	(14) 4.8 % (3.0 - 7.8 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(18) 3.0 % (1.7 - 5.0 95% C.I.)	(9) 2.8 % (1.3 - 6.1 95% C.I.)	(9) 3.1 % (1.6 - 6.1 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(11) 1.8 % (1.0 - 3.2 95% C.I.)	(6) 1.9 % (0.9 - 4.0 95% C.I.)	(5) 1.7 % (0.7 - 4.0 95% C.I.)

Table 3.5: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema

		Severe wasting (< 115 mm)	**Moderate wasting (>= 115 mm and < 125 mm)**	**Normal (> = 125 mm)**	**Edema**

Age (mo)	Total no.	No.	%	No.	%	No.	%	No.	%
6-17	169	6	3.6	13	7.7	150	88.8	0	0.0
18-29	167	3	1.8	2	1.2	162	97.0	0	0.0
30-41	141	1	0.7	2	1.4	138	97.9	0	0.0
42-53	104	1	1.0	1	1.0	102	98.1	0	0.0
54-59	29	0	0.0	0	0.0	29	100.0	0	0.0
Total	610	11	1.8	18	3.0	581	95.2	0	0.0

The Current GAM indicates a serious situation compared to **previous year** same period which indicated critical situation.There was a noted decline in GAM rates by weight for height z-score compared to February 2017 prevalence of 18.2% (14.6-22.5, 95% CI) and SAM of 3.3% (2.1-5.3, 95% CI) despite the prevailing worsening drought situation. This is attributed to health and nutrition interventions targeting vulnerable households (Children under 5 years and PLWs): Cash Transfers, Food Vouchers, Integrated Outreach activities and Blanket Supplementary Feeding Program (BSFP) citing recommendations from the Long Rains Assessments Report.

Table 3.6: Distribution of acute malnutrition and oedema based on weight-for-height z-scores

	<-3 z-score	>=-3 z-score
Edema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Edema absent	Marasmic No. 16 (2.6 %)	Not severely malnourished No. 593 (97.4 %)

There was no Edema cases identified during the survey. However, 2.6% of children (n=16) were considered to be marasmic as indicated in *table 3.6*.

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

Underweight is a proximate indicator of both acute and chronic malnutrition based on weight for age Z-scores (WAZ). The prevalence of underweight was 19.2% (15.7 - 23.3 95% C.I.) while the prevalence of severe underweight was 3.8 % (2.3 - 6.0 95% C.I.) as shown in *table 3.7*.

Table 3.7: Prevalence of underweight based on weight-for-age z-scores by sex

	All n = 610	**Boys** n = 321	**Girls** n = 289
Prevalence of underweight (<-2 z-score)	(117) 19.2 % (15.7 - 23.3 95% C.I.)	(74) 23.1 % (18.3 - 28.6 95% C.I.)	(43) 14.9 % (10.9 - 19.9 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(94) 15.4 % (12.5 - 18.9 95% C.I.)	(60) 18.7 % (14.9 - 23.2 95% C.I.)	(34) 11.8 % (8.2 - 16.6 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(23) 3.8 % (2.3 - 6.0 95% C.I.)	(14) 4.4 % (2.3 - 8.1 95% C.I.)	(9) 3.1 % (1.6 - 6.0 95% C.I.)

Table 3.8: Prevalence of underweight by age, based on weight-for-age z-scores

		Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Edema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	169	5	3.0	23	13.6	141	83.4	0	0.0
18-29	167	9	5.4	19	11.4	139	83.2	0	0.0
30-41	141	4	2.8	21	14.9	116	82.3	0	0.0
42-53	104	3	2.9	23	22.1	78	75.0	0	0.0
54-59	29	2	6.9	8	27.6	19	65.5	0	0.0
Total	610	23	3.8	94	15.4	493	80.8	0	0.0

Prevalence of underweight is higher among older children than younger children as indicated in *table 3.8* above.

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

Stunting is an indicator of chronic malnutrition through comparing height of and index child with standard height of children of the same age and sex. The survey results indicated stunting prevalence of 18.0% (14.4 - 22.4 95% C.I.) with severe stunting at 4.8 % (3.1 - 7.2 95% C.I.) as indicated in *table 3.9* below.

Table 3.9: Prevalence of stunting based on height-for-age z-scores and by sex

	All n = 610	**Boys** n = 321	**Girls** n = 289
Prevalence of stunting (<-2 z-score)	(110) 18.0 % (14.4 - 22.4 95% C.I.)	(66) 20.6 % (15.3 - 27.1 95% C.I.)	(44) 15.2 % (10.9 - 20.8 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(81) 13.3 % (10.4 - 16.8 95% C.I.)	(48) 15.0 % (11.0 - 20.1 95% C.I.)	(33) 11.4 % (7.8 - 16.3 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(29) 4.8 % (3.1 - 7.2 95% C.I.)	(18) 5.6 % (3.4 - 9.2 95% C.I.)	(11) 3.8 % (2.1 - 6.7 95% C.I.)

Further analysis indicated that stunting is higher among children 6-17 months than other age groups as indicated in the *table 3.10*. This can be attributed to poor complementary feeding practices as indicated in a KAP survey done in October 2017 which indicated only 24% of children 6-23 months of age were receiving a minimum acceptable diet.

Table 3.10: 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 (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	169	5	3.0	25	14.8	139	82.2
18-29	167	12	7.2	21	12.6	134	80.2
30-41	141	6	4.3	18	12.8	117	83.0

42-53	104	5	4.8	13	12.5	86	82.7
54-59	29	1	3.4	4	13.8	24	82.8
Total	610	29	4.8	81	13.3	500	82.0

3.3 Child Immunization, Vitamin A Supplementation and Deworming

Immunization is the process in which a person is made immune or resistant to an infectious disease by the administration of a vaccine[8]. Vaccines stimulate the body's own immune system to protect the person against subsequent infection or disease. 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 supports scales up of immunization through Expanded Programme on Immunization (EPI) vaccination service delivery, supply management, awareness campaigns through mass media and advocacy.

Bacillus Calmette–Guérin (BCG) vaccination against tuberculosis coverage verified by presence of scar in the lower left arm was at 93%. Oral Polio vaccine 1 (OPV 1) coverage was 74% by card and 22% by recall while Oral polio vaccine 3 was at 72% and 22% by card and recall respectively as indicated in *figure 3.7*. Measles at 9 months was at 64.1% and 24.2% by card and recall respectively. The second measles vaccine at 18 months was at 32.4% and 18.8% by card and recall respectively. However, there is an increase in proportion of children who have not received measles vaccines at 18 months from 3.8% in 2017 to 45.7% in 2018 as indicated in *figure 3.8*. This can be attributed to health workers strike that affected service delivery for the last two quarters of 2017.

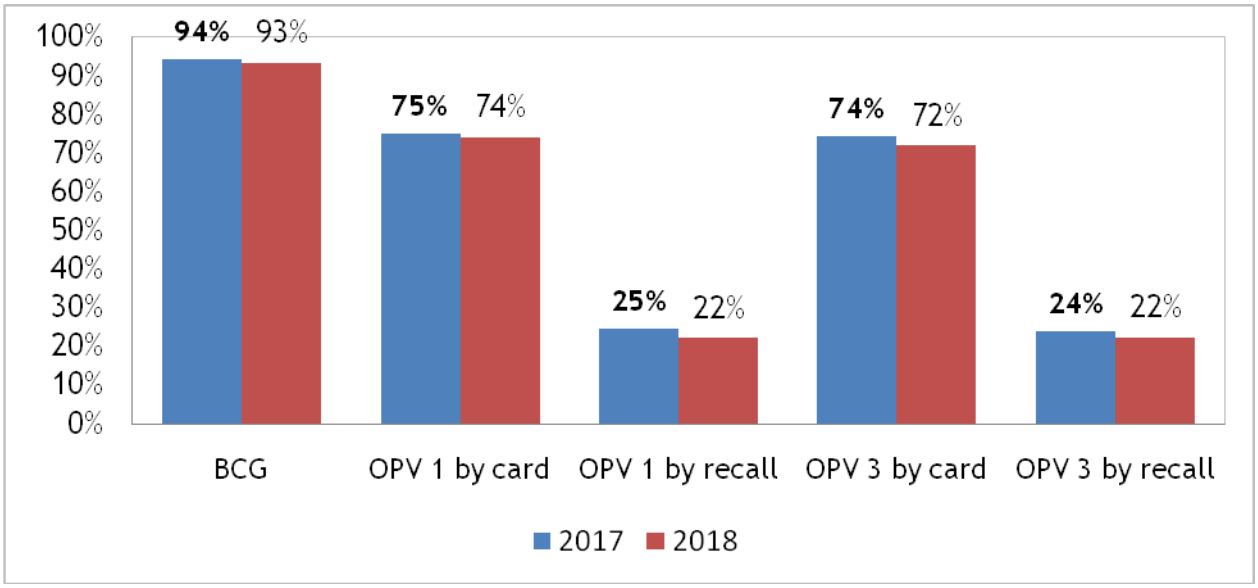


Figure 3.7: Immunization coverage for OPV 1 and 3

[8] WHO definition

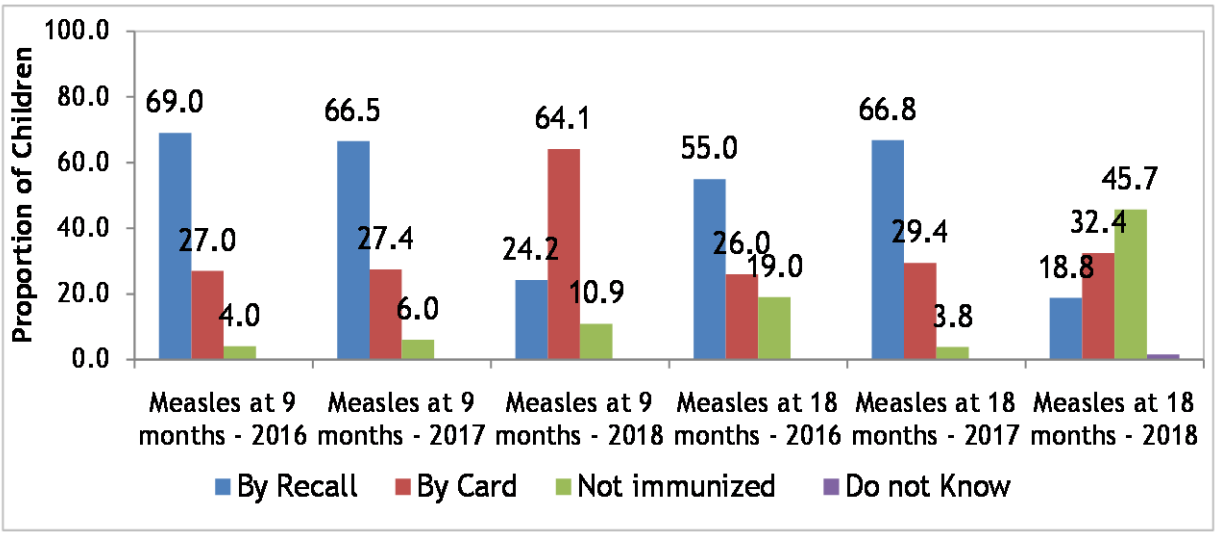


Figure 3.8: Immunization coverage for measles

Vitamin A supplementation among children 6-59 months improves their vitamin A status which 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 key element of the child survival agenda[9]. The county vitamin A coverage remained below the national target with 65% of children having received vitamin A at least once in the previous year. This is a decline from the previous year's coverage of 70.4% which is attributed to health workers strike that affected service delivery for the last two quarters of 2017.

Table 3.11: vitamin A supplementation and deworming coverage in Isiolo County

	Age group	Coverage 2017	Coverage 2018
Vitamin A supplementation	6-11 months once	77.1%	69.0%
	12-59 months once	70.4%	65.0%
	12-59 more than once	67.5%	49.5%
Deworming	12-59 months once	91.5%	60.5%
	12-59 At least twice	59.4%	29.2%

Deworming coverage also decreased with 60.5% of children 12-59 months receiving deworming tablets once compared to 91.5% in the previous survey. This is below the national target of 80%. Decline in deworming and vitamin A supplementation is attributed to health workers strike and disrupted malezi bora campaigns.

[9] Vitamin A Supplementation: A decade of progress © The United Nations Children's Fund (UNICEF), 2007

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

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

Ministry of health has been implementing micronutrient powders home fortification program since 2014. Children aged 6-23 months are issued with monthly ration of 10 sachets of MNP to be mixed with child's food every other day. The delivery points of MNP's are health facilities, outreach sites and at the village level by the CHV's. Enrolment into MNP program has remained low with only 8.7% of children 6-23 months being in the MNP program. Queries on reasons for children not being enrolled into the program indicated that majority of the caregivers (86%) don't know about MNP's thus necessitating need for awareness creation at the community level.

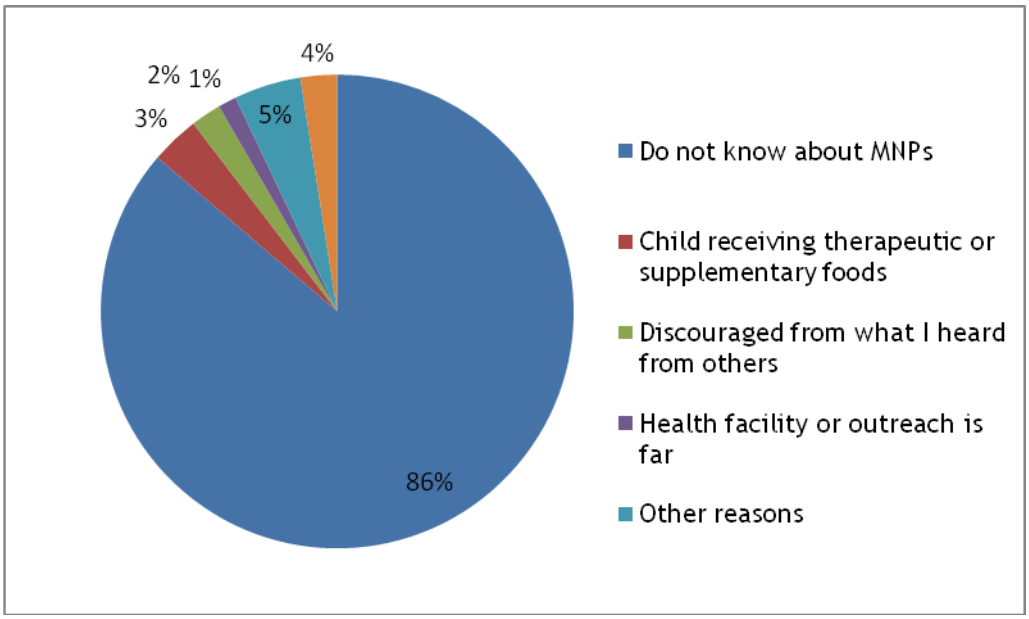


Figure 3.9: Reasons for children not being enrolled into the MNP program

3.5 Child morbidity

3.5.1 Incidence of disease among children 6-59 months and health seeking behavior

Diseases increase individuals' susceptibility to malnutrition which further worsens the immunity thus worsening the disease. The survey assessed disease incidence among children 6-59 months in the past two weeks. It also asked on the presenting symptoms and whether and where the caregiver sort health services when the child was ill. The survey findings indicated that 46.5% of children were reported to have been ill in the past two weeks and 76% of those had sought for health services. Most of the caregivers of the children who had been ill (71%) sought for help from Public Clinics followed by private clinics (23%) in 2018. The leading incidence of illnesses was ARI/Cough at 54% as indicated in *figure 3.11*. This is a slight increase from the previous year due to windy and dusty conditions.

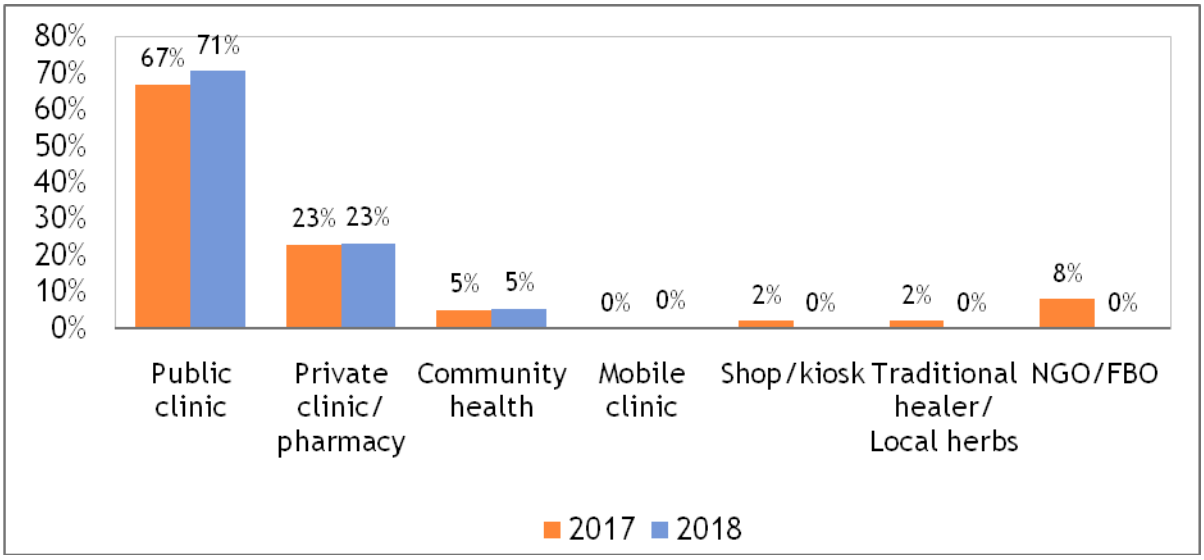


Figure 3.10: Health seeking behavior

3.5.2 Therapeutic Zinc supplementation in treatment of watery Diarrhea

Watery diarrhea is one of the leading causes of child mortality. The ministry of health advocates for prompt treatment of diarrhea with oral rehydration salts and zinc supplements to enhance child survival. Only 71.2% the children who had watery diarrhea were supplemented with zinc. The proportion is below the national targets of 80% due to stock out of the supplements reported during the month of January 2018 and had not been replenished at the time of the assessment.

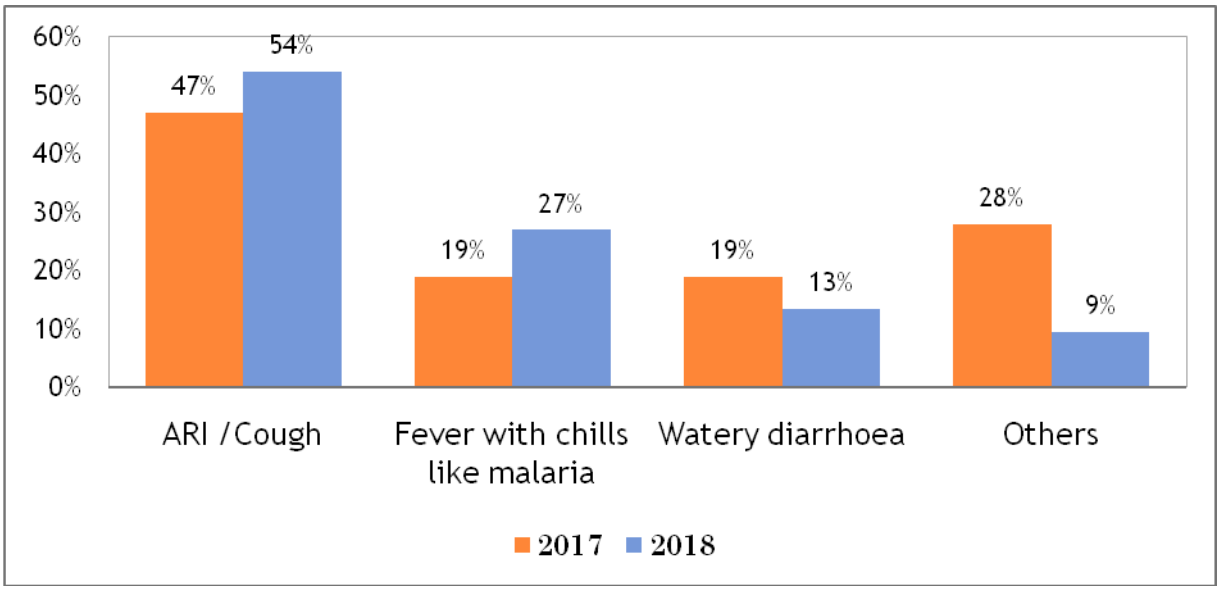


Figure 3.11: Morbidity patterns in Isiolo County

3.6 Maternal Health and Nutrition

Maternal health is defined as the wellbeing of a woman during pregnancy, childbirth and 42 days after delivery. Maternal nutrition was assessed for all women of reproductive age (15-49 years) based on MUAC. From the findings, 8% of women of reproductive age were pregnant, 55% were lactating and 37% were neither pregnant nor lactating. Maternal malnutrition

slightly increased from 7.1% in 2017 to 7.5% in 2018. In addition there was an increase in the proportion of PLWs at risk of malnutrition. The increase was attributed to increased workload due to water and pasture shortage as indicated by increase in distance to water points.

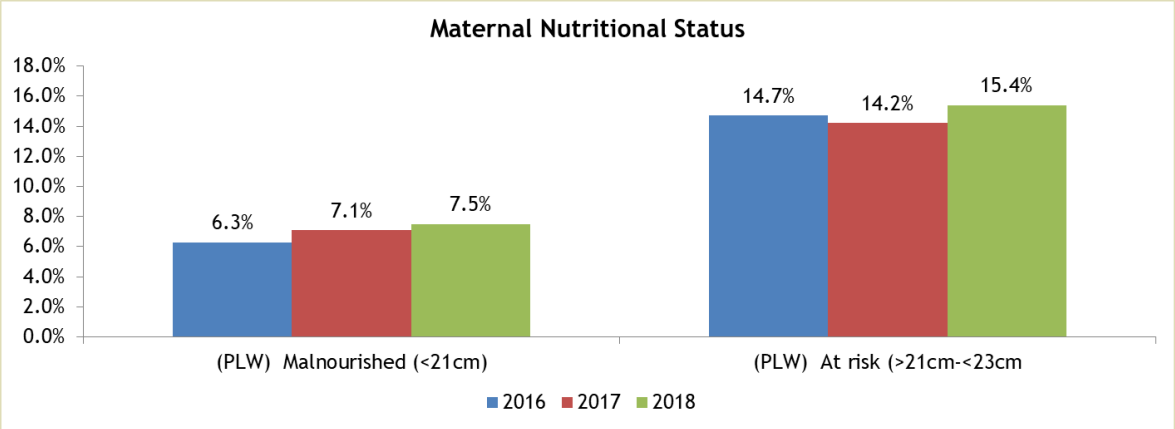


Figure 3.12: maternal malnutrition in Isiolo County

3.6.1 Iron folate supplementation during pregnancy

Iron folic acid supplementation during pregnancy helps in prevention of anemia and improves the overall birth outcomes. National policy guideline on combined iron and folic acid (IFA) for pregnant mothers in Kenya recommends consumption of IFAS from conception to delivery[1]. The survey assessed consumption of Iron and folic acid supplements during pregnancy among women with children below 24 months. During the survey, 86.7% (n=209) of women with children aged 24 months and below were reported to have taken IFAS during their previous pregnancy with only 8.1% taking for more than 90 days. There is a slight improvement compared to the previous year attributed continued education of caregivers on the benefits of IFAS during pregnancy.

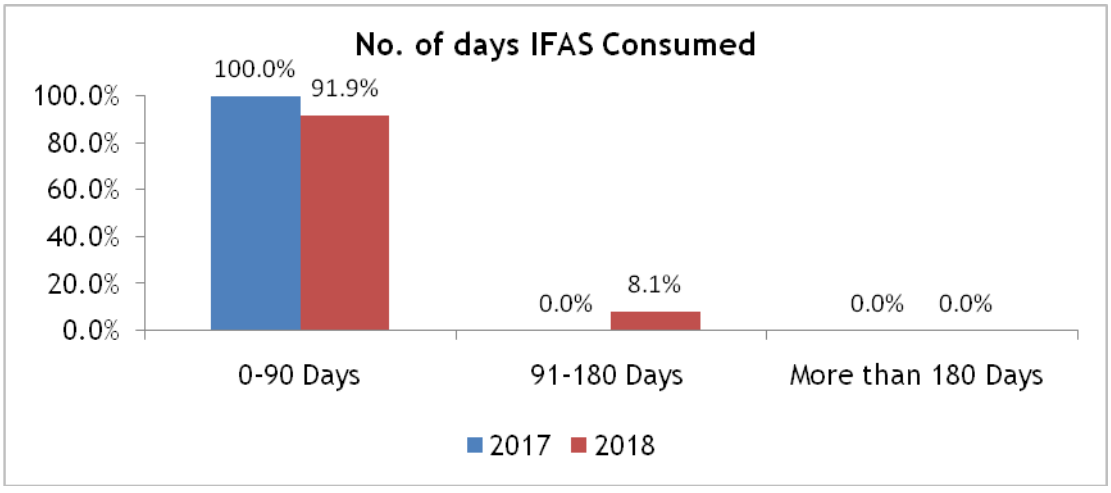


Figure 3.13: Consumption period of iron folic acid supplementation

3.7 Water Sanitation and Hygiene (WASH)

3.7.1: Access to water

Isiolo County has two rain seasons with the short rains being the main season.The county received an average of 5.8mm and 5.9mm of rainfall in the first and second dekads of December. The showers received were poorly distributed both spatially and temporarily. A greater percentage of the county did not receive any rainfall in the month of December. With reference to the long-term average, rainfall performance was below normal in comparison to a normal year[10]. The survey indicated that 72% of the population relies on piped water for household consumption, 15% from rivers and springs, 10% from unprotected shallow wells and 1% from water tracking. There was a slight decrease in proportion of population using piped water from 74% in the previous year and subsequent increase in the proportion of population using water from unprotected shallow wells from 9% in 2017 to 10% in 2018. This is attributed to long dry period and failed short rains that left the population with no option but consume water from unprotected sources.

Distance to main water source also increased with significant increase in the proportion of households walking for more than two kilometers to access drinking water from 4.8% in 2017 to 13.4% in 2018 as shown in *figure 3.14*. This is attributed to long dry spell that left water pans and rivers dry forcing people to walk long distances in search of water. Women (97%), among other household members, were the ones who mainly went to fetch water.

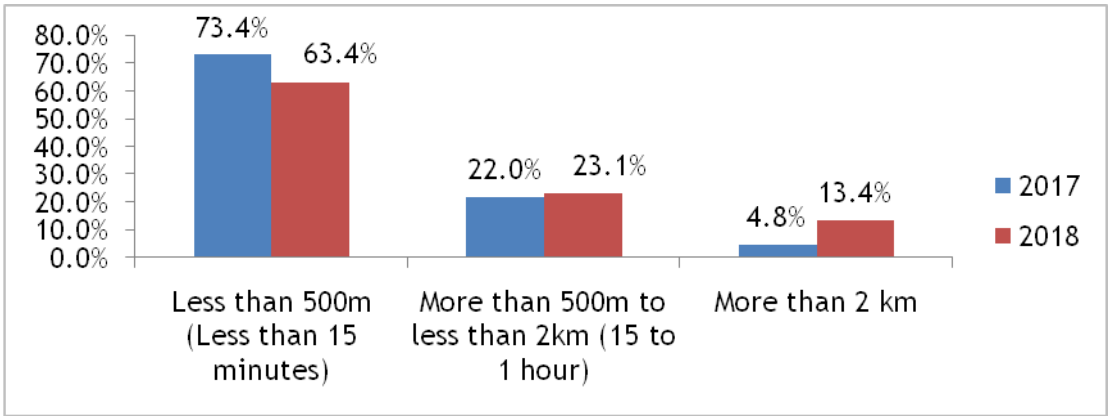


Figure 3.14: Distance to main water source

From the survey 20.6% of the assessed households reported to be queueing for water with majority queueing for 30-60 minutes. 13.4% of households consumed less than 15 liters of water per person per day with per capita water consumption being 14.0litres/person/day which indicates a deteriorating situation compared to the previous year's 15.1 liters/person/day as shown in *figure 3.15*. This is below the sphere standards with a deteriorating situation. This is attributed to acute water shortage in the county following the October to December 2017 short rains failure.

[10] Isiolo NDMA bulletin- December, 2017

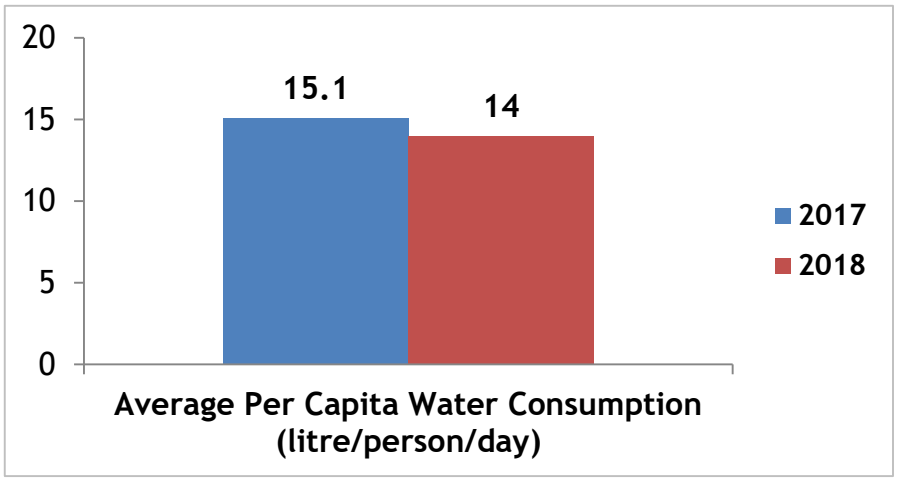


Figure 3.15: Per capita water consumption

3.7.2 Hygiene Practices

Optimal hygiene practices such as safe storage of water, treating water before drinking and hand washing reduce the risk of food and water borne diseases. The consequences for children are severe, as high occurrences of diarrhea, skin disease, respiratory illnesses such as pneumonia, intestinal and other waterborne diseases affects child survival and in many cases, result to death[11]. During the survey 59.8% (n=335) of the population were aware of the hand washing practice, an increase from 47.2% in 2017. A detailed analysis on the critical instances of handwashing showed an improved practice in households with children less than 24 months after taking children to the toilet from 16% in 2017 to 56% in 2018.

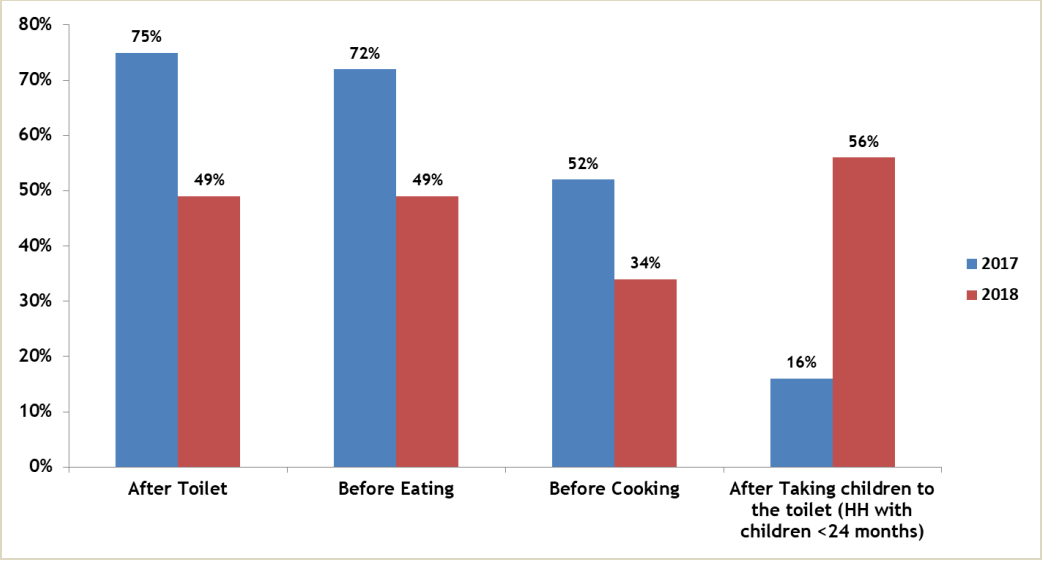


Figure 3.16: Critical instances for handwashing

[11] water , sanitation and hygiene, UNICEF Cambodia

There was also an increase in proportion of population using soap and water for hand washing from 55.1% in 2017 to 87.4% in 2018. Intensified Hygiene promotion activities to caregivers in the county have led to improved practice of washing hands after taking children to toilet. Households attributed water shortage to decrease in other hand washing practices. Intensified Hygiene promotion activities to caregivers by programmers led to improved practice of washing hands after taking children to toilet. However, majority of the households attributed the prevailing acute water shortage to the general decrease in other critical handwashing practices as shown in *figure 3.16.*

3.7.3 Sanitation Practices

Sanitation is the hygienic means of promoting health through prevention of human contact with the hazards of wastes as well as the treatment and proper disposal of sewage or wastewater. Poor sanitation is one of the leading causes of child illnesses such as respiratory infections and diarrhea and improving sanitation is known to have a significant beneficial impact on health of the community. Significant latrine usage was also observed in 2018 with Open defecation being at 22.4%, a slight decline from 29.0% in 2017 as highlighted in *figure 3.17*. The decline could be attributed to continued CLTS and public health promotion activities by the department of public health in collaboration with a number of partners supporting water, sanitation and hygiene promotion in the county such as KRCS, Caritas Isiolo and World Vision Kenya.

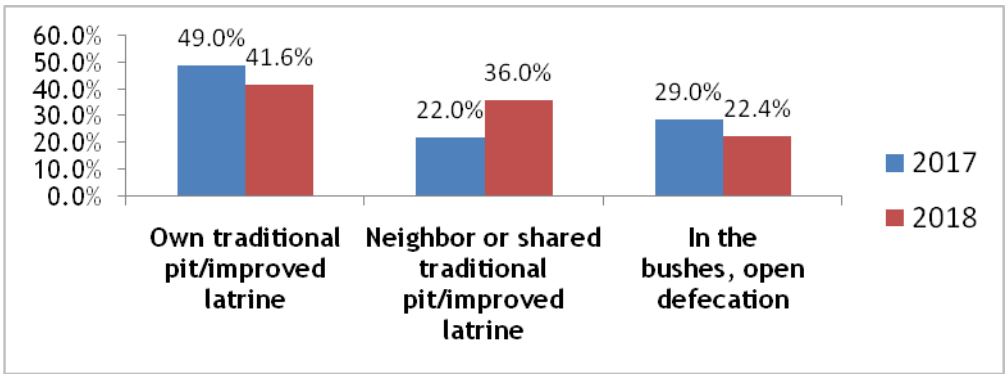


Figure 3.17: Latrine usage in Isiolo County

3.8 Food Security and Livelihoods

3.8.1 Food security Information

The short rains assessment results classified most of the Pastoral livelihood zone particularly Merti, Sericho and Oldonyiro wards as Crisis (IPC 3) while some parts of Kinna and Central wards in the Agro pastoral livelihood zone are classified as Stressed (IPC Phase 2)[12]. The main factor affecting the food security is the cumulative effect of previous poor rainfall performances. Other factors affecting food security are low terms of trade (ToT) and deteriorating pastures. Resource based conflicts occurring within the county and with neighboring counties are restricting movements of livestock. There is also increased distance to water sources following dried shallow wells and Ewaso Nyiro River. The

[12] Isiolo County SRA 2018 report

prevalence of households with poor and borderline food consumption provides essential information on people's current diets and is helpful in deciding the most appropriate type and scale of food security intervention as well as the right target group for the assistance[13]. The main source of food in Isiolo County at the time of the survey was purchase.

3.8.2 Household dietary diversity

Household dietary diversity was assessed based on 24 hour recall. Majority of the households consumed low energy dense foods (oils, sweets and condiments) with consumption of fresh plant based foods decreasing compared to the previous years survey. There is also decreased and low consumption of meats and eggs owing to the prolonged drought that led to loss of livestock and crop failure. Food taboos, lack of purchasing power and unavailability of certain foods in the local markets also affected consumption.

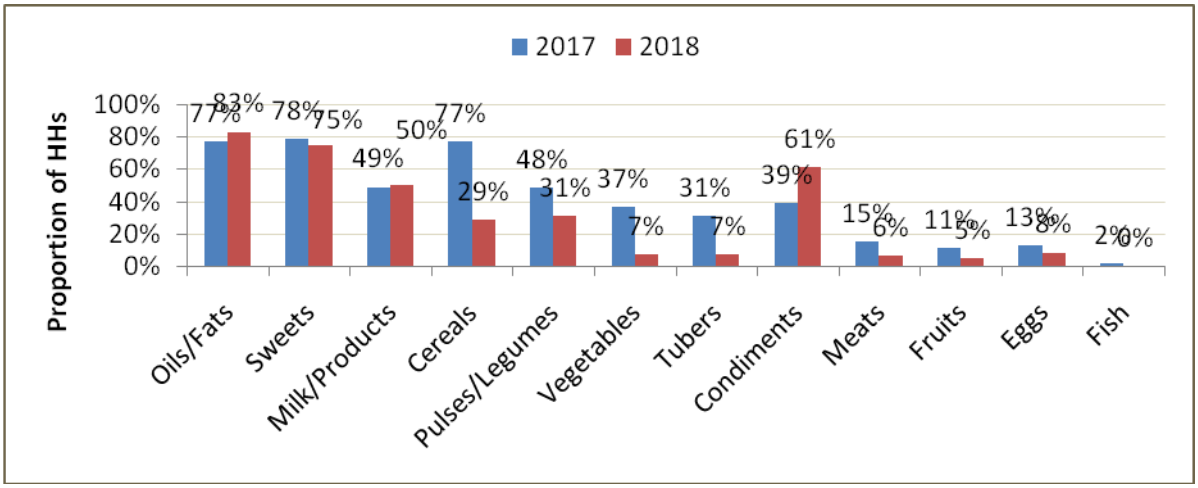
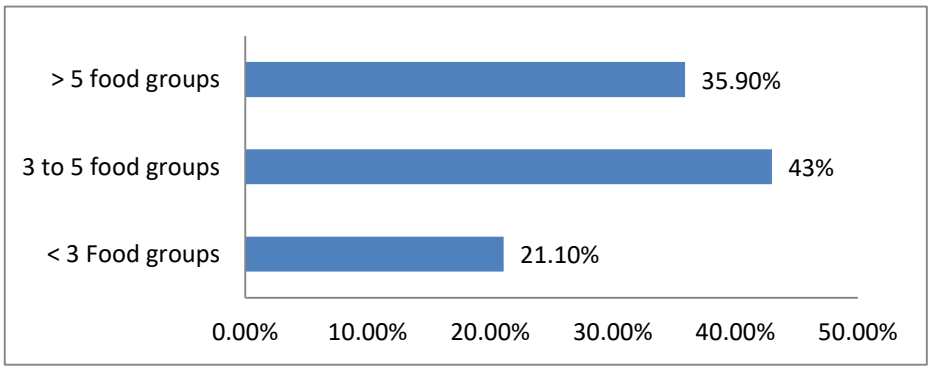


Figure 3.18: household dietary diversity based on 24 hour recall

Further analysis showed that majority of households (43%) consumed 3-5 food groups per day indicating a medium tercile of dietary diversity. 21.1% of the population consumed less than three food groups indicating lowest tercile while 35.9% consumed more than 5 food groups. This indicates inadequate dietary diversity at the household level.



[13] Food Consumption Score Nutritional Analysis (FCS-N) Guidelines, August 2015

Figure 3.19: Food groups consumed by >50% of households by dietary diversity tercile (24 hour recall)

Analysis of micronutrient consumption from household dietary diversity indicated that majority of the households consumed staples as highlighted in *figure 3.20*. Upon further analysis of the average days that the major food groups consumption the most frequently consumed source of micronutrients were staples (6.3) while vitamin A and Iron reach foods were the least consumed as indicated in *figure 3.21*.

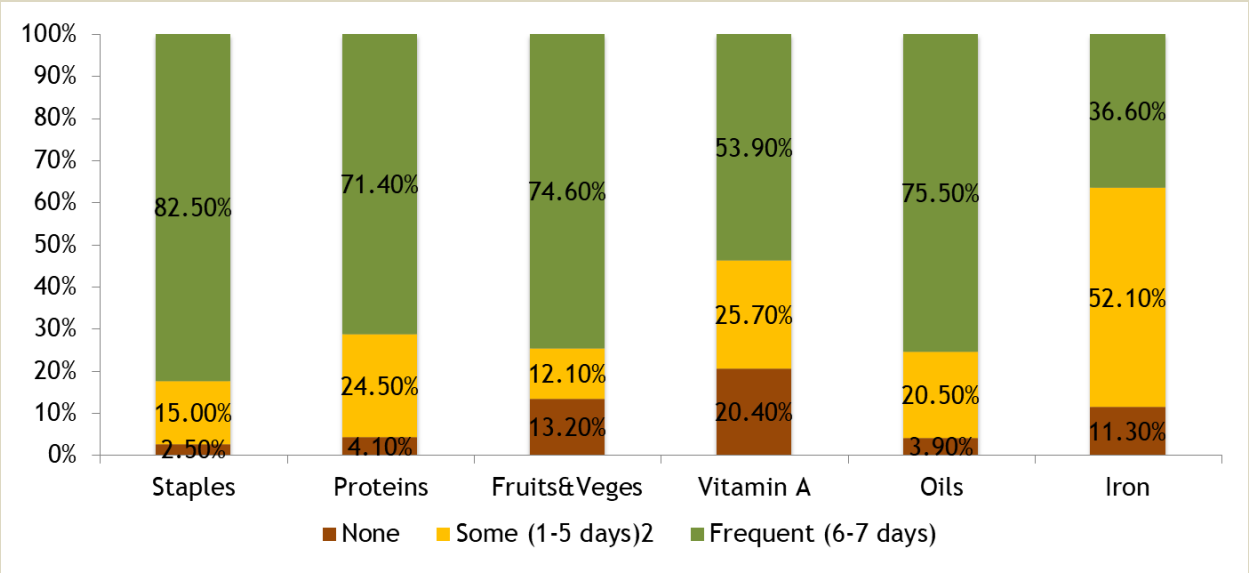


Figure 3.20: Micronutrient Consumption from Household Dietary Diversity

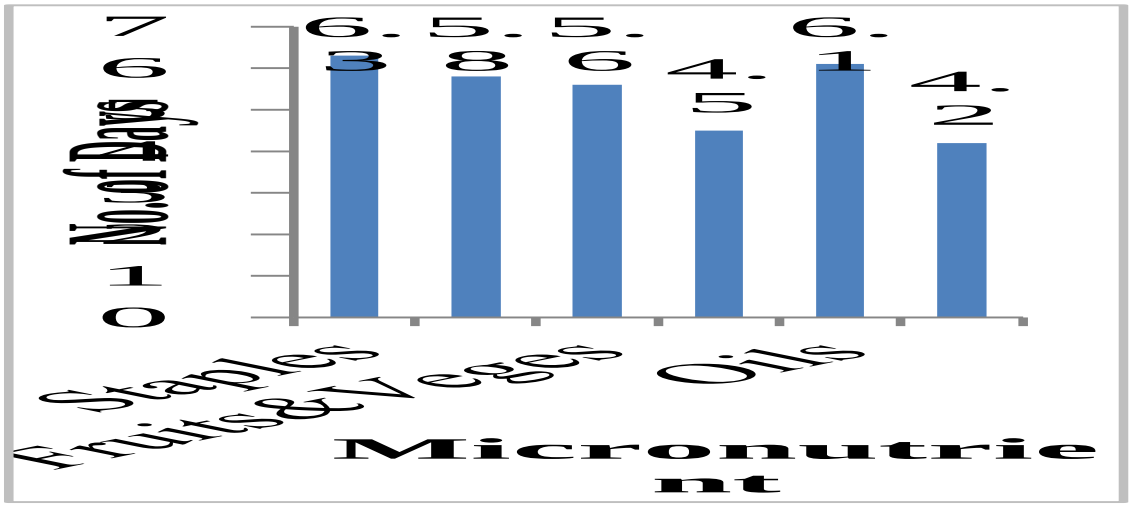


Figure 3.21: Micronutrient food grouping

3.8.3Women Dietary Diversity based on 24 hours recall

Dietary diversity score is a useful indicator of specific nutrient adequacy in diet consumed by women. Minimum Dietary Diversity-Women (MDD-W) is a dichotomous 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 reflects one important dimension of diet quality. Even though the indicator is measured by asking questions of individual women, it is a **population-level indicator**, i.e. it is designed to tell something about micronutrient adequacy of groups of women. 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[14].

There was a slight improvement on consumption of dairy products, flesh foods, vegetables (dark green, vitamin A rich and others) and fruits attributed to the continued nutrition education on dietary diversification as highlighted in *figure 3.22.* Most Women of Reproductive Age (65.5%) consumed 5 or more food groups as indicated in *figure 3.23.*

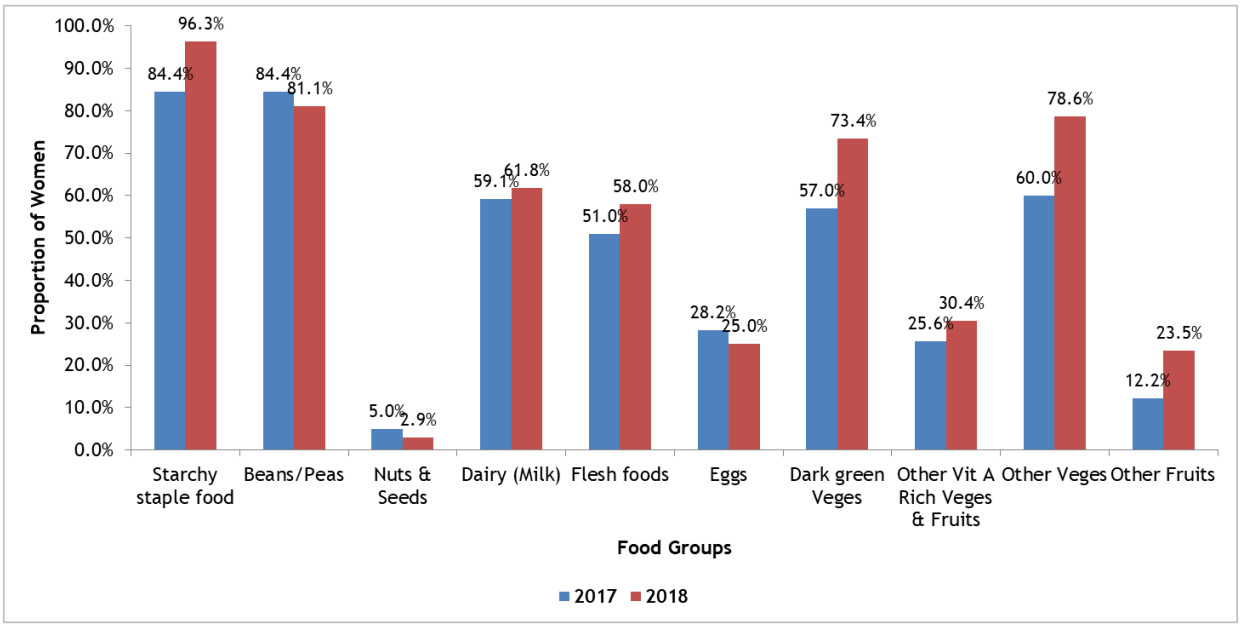


Figure 3.22: Women Dietary Diversity based on 24 hours recall

[14] http://www.fao.org/3/a-i5486e.pdf

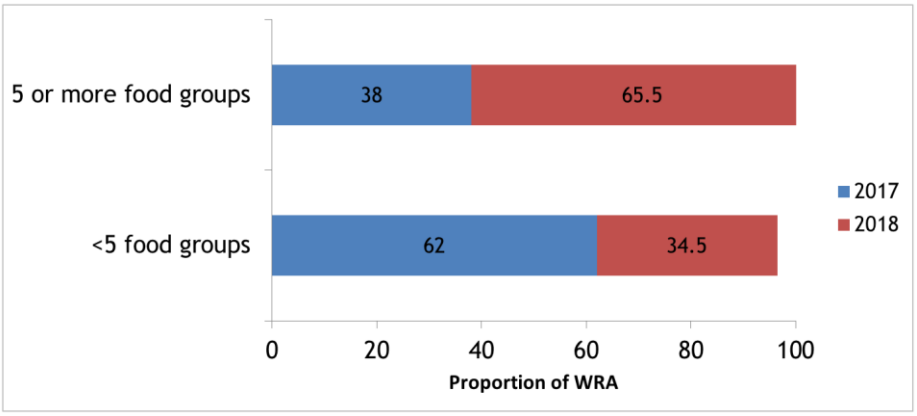


Figure 3.23: Minimum Dietary Diversity- Women based on 24 hours recall

3.8.4 Food Consumption Score

The Isiolo FCS, which combines frequency of food intake and relative importance of each food, indicated that a majority of the Households (87.9%) were within good food consumption. This has not changed compared to the previous year.

Table 3.12: Food Consumption Score

Main threshold	Nomenclature	2017 findings	2018 findings
0-21	Poor food consumption score	3.8%	2.7%
21.5-35	Borderline food consumption score	9.3%	9.4%
>35	Good food consumption score	87.3%	87.9%

3.8.5 Coping Strategy Index

The coping strategy index assesses how a household responds to food shortage or lack of money to buy food. Household were assessed based on five coping strategies which were then weighted based on their severity. 39.1% of all the HHs employed one or more Coping Strategy. The CSI employed weighted the same as the previous year; despite the worsening drought condition, the interventions targeting household food security have contributed the lack of deterioration in the CSI.

Table 3.13: Coping Strategy Index

Coping Strategy	Proportion of HHs (N=219)	Mean	Severity score (1-3)	Weighted Score=Freq*Weight	
				2017	2018
Rely on less preferred and less expensive foods?	213HH (38%)	3.09	1	3	3.09
Borrow food, or rely on help from a friend or relative?	174HH (30.7%)	1.58	2	3.94	3.16
Limit portion size at mealtimes?	203HH (36.3%)	2.77	1	1.82	2.77
Restrict consumption by adults in order for small children to eat?	210HH (26.4%)	1.91	3	5.64	5.73

Reduce number of meals eaten in a day?	148HH (37.5%)	3.02	1	3	3.02
Total Weighting Coping Strategy Score				**17.4**	**17.8**

3.9 Food Fortification

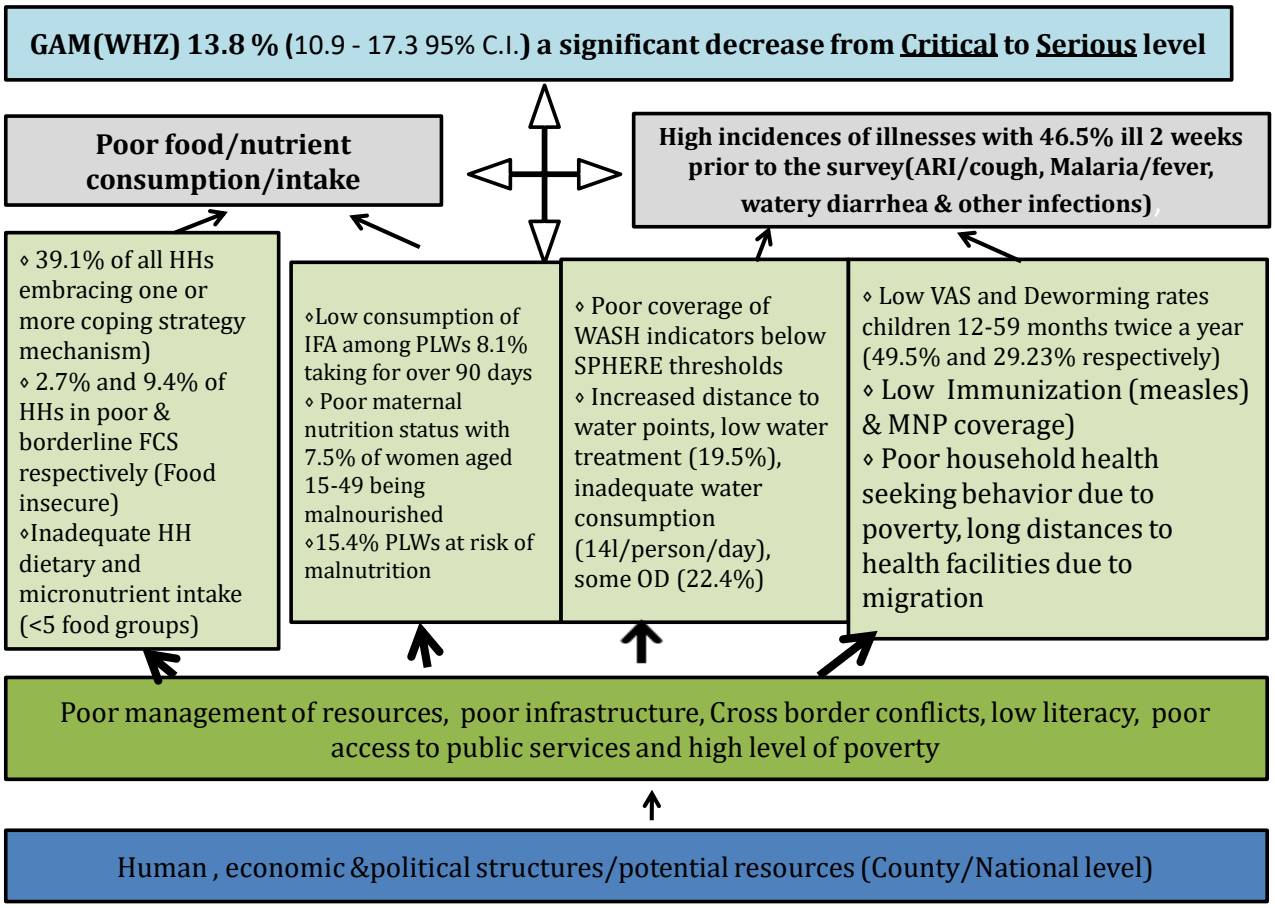
According to the World Health Organization (WHO), deficiencies in iron, vitamin A and zinc rank among the top ten leading causes of death through disease in developing countries. Increasing access to and consumption of foods rich in micronutrients, particularly fortified foods, has been identified as one of the top strategies for reducing the 'hidden hunger' of micronutrient malnutrition, particularly for vulnerable households where dietary diversity is poor. Micronutrient intake in Kenya is poor, with only 22 percent of children consuming a minimum acceptable diet, and as low as 2.7 percent in the northeast arid regions (2014 Kenya Demographic and Health Survey). Food fortification is included in the Government of Kenya's National Food Security and Nutrition Policy as an important strategy for addressing national food and nutrition security. In 2005, stakeholders from industry, government and non-governmental organizations (NGOs) and UN agencies were mobilized to form the Kenya National Food Fortification Alliance (KNFFA).

Low access to fortified products, in rural areas and particularly in the arid lands, remains a huge constraint to meeting the populations' micronutrient needs. Although Kenya enacted fortification of all milled flours, and most of the large scale millers have complied, more than 70 percent of the population purchases flour or grinds grain through small and medium scale mills. This presents a true gap in terms of access to micro-nutrients, especially in food insecure areas, where diversifying the diet remains a challenge.

In Isiolo County, only 14.3% of the surveyed households had ever heard about food fortification at the time of the survey. In addition, only 10.4% had knowledge of the food fortification logo and 13.9% knew that they had consumed fortified foods. Majority (31.4%) consumed a combination of maize flour, wheat flour, oils and sugars with the major brands consumed being *Dola* (46.2%), *Maisha* (65.6%), *Salit* Oil (46.5%) and *Local* unpacked sugar (89.1%) respectively.

4.0 CONCLUSION

Below are the conclusions based on UNICEF's conceptual framework for malnutrition:



5.0 RECOMMENDATIONS

The recommendation were developed 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 for the implementation status, gaps and opportunities. *Table 5.1* shows the recommendations developed in details

Table 5.1: Recommendations

Findings	Short term recommendations	Medium and long term recommendations	Responsible
GAM rates at 13.8%	• Continued/extension of Blanket	• Sensitizing the political class and	MoH, WFP,

	Supplementary Feeding Program intervention to cycle 6-8 now that it has contributed to the reduction of acute malnutrition	other county departments e.g. water and livestock on health and nutrition issues. • Multi-sectoral interventions to address food insecurity at household level	ACF, KRCS, NDMA
Low vitamin A coverage at 65%	• Routine Vitamin A Supplementation during integrated outreaches • Documentation of the VAS in the MCH Booklet for monitoring • Taking advantage of the Mass campaign for VAS and Deworming	• Feeding programs and vitamin A supplementation interventions in Schools (ECDE and schools).	MoH, MoE
Low hand washing instances attributed to water shortage. Noted decrease from the previous survey.	• Water tracking to vulnerable households and affected health facilities and schools. • Provision of spare parts and Repair of broken boreholes	• Deliberate efforts to call for county departments to allocate more resources to water and sanitation	MoW, NDMA, MoE, MoH
Household dietary diversity score at 7.9. Main source of food is purchase.	• Food Vouchers and Cash Transfers to improve household food access and utilization	• Establishing junior farmer field schools in ECDE centers and schools. • Establishing school health programs with integrated curriculum. • Continue promoting Income Generating Activities (IGAs)	MoA, MoE, MoH
Low vitamin A and deworming coverage. 47% of children were reported to have fallen sick in the last two weeks with 5% seeking health services from the CHV's.	• Prepositioning of essential drugs in schools such as Vitamin A, deworming tablets and basic antibiotics.	• Involving ECDE teachers in the community health strategy and teaching them on administering essential drugs.	MoH, MoE
Stunting at 17.4%	• Intensify food Fortification at household level with Micronutrient supplementation	• Investing in Agri-nutrition to address underlying causes of malnutrition • Involving other line ministries and departments in nutrition coordination meetings e.g. CNTF, IWG. • Lobby for recruitment of nutrition and home economics officers.	MoA, MoE, MoH
34% of the population relaying on livestock	• Slaughter destocking and	• Training of charcoal burning	MoH, MoE

herding as the main occupation and 4% of the population relying on charcoal burning as the main occupation.	commercial off take when the body condition of livestock is okay.	populations on alternative sources of livelihoods. • Involving forestry department in addressing charcoal burning as a source of income.	

6.0 ANNEXES

6.1 Age calculation chart

Table 6.1: Age calculation chart

AGE CALCULATION CHART FOR UNDER 5 (*record Age in Months)*			
Adequately Verify the age of the child. Accurate as at FEBRUARY 2018:Please cross- check against date of birth of child and date of survey to establish actual age)			
DATE OF BIRTH	**AGE IN MONTHS**	**DATE OF BIRTH**	**AGE IN MONTHS**
2013-March	59	2016 - June	20
2013-April	58	2016 - July	19
2013-May	57	2016 - Aug	18
2013-June	56	2016- Sep	17
2013-July	55	2016 - Oct	16
2013-Aug	54	2016- Nov	15
2013-Sep	53	2016-Dec	14
2013-Oct	52	2017 - Jan	13
2013-Nov	51	2017 - Feb	12
2013-Dec	50	2017-March	11
2014 - Jan	49	2017-April	10
2014-Feb	48	2017-May	9
2014-March	47	2017-June	8
2014-April	46	2017-July	7
2014-May	45	2017-Aug	6
2014-June	44	2017-Sep	5
2014- July	43	2017-Oct	4
2014-Aug	42	2017-Nov	3
2014-Sep	41	2017-Dec	2
2014-Oct	40	2018-Jan	1
2014-Nov	39	2018-Feb	0
2014-Dec	38		
2015 - Jan	37		
2015-Feb	36		
2015-March	35		
2015-April	34		
2015- May	33		
2015-June	32		
2015-July	31		
2015-Aug	30		
2015-Sep	29		
2015-Oct	28		
2015-Nov	27		
2015-Dec	26		

2016 - Jan	25
2016 -Feb	24
2016 - March	23
2016 - April	22
2016- May	21

6.2 Sampled Clusters

Table 6.2: List of Sampled clusters

SUB-COUNTY	Geographical unit	Population size	Cluster No.
MERTI	Skuli	267	1
	Goda 'B'	414	2
	Mataarba	241	3
	Malkagalla Town B	606	4
	Sakuye 2	800	5
	Shauri yako 2	370	6
	Manyatta Funan	550	7
GARBA	M.Gabra	328	8
	M.Dathey	470	9
	Boji North	559	10
	Daawa	305	11
	Koticha A	600	12
	Manyatta(Town Centre)	306	13
	Darajani	625	RC
	Taqwa	426	14
	Siribde	669	15
	Bulla Juu	306	16
	Iresagolompo(Gubatu)	580	RC
ISIOLO CENTRAL	Bulla Safi	2733	17
	Bulla Mbao	1013	18
	Town	1435	19
	Marille	1771	20
	Kulamawe	7041	21,RC
	Kampi Ya Juu	4166	22
	Olla Jarole	1195	23
	Slaughter	560	24
	Kampi Garba	964	25
	Kilimani LMD/Kilimani	1338	26
	Maili-Tano	1184	27
	Oldonyiro Sarge	330	28
	Shambani	1087	29
	Kiwanja Ndege	1478	30
	Chechelesi 'A'	1626	31
	Tuluroba	5006	32
	Acacia	2613	33
	Kariakor/Soweto	855	34
	Bulla Shariff	650	35
	Ngaremara 'B'	958	36
	Kiwanja	477	RC
	Daaba Centre	444	37
	Namelok	587	38
	Shangauni	292	39
	Nantundu	1213	40
	Kililio	197	41
	Lemorijo	400	42

6.3 Integrated Smart Survey Questionnaire

Table 6.3: Integrated 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 Ward	1.7 Location	1.8 Sub-Location	1.9 Village	1.10 Cluster No	1.11 HH No	1.12 Team No.
1.13 Household geographical coordinates	**Latitude**	_____ _	**Longitude**	_____ _				

		2. Household Demographics									
2.1	**2.2a**	**2.2b**	**2.3**		**2.4**	**2.5**	**2.6**	**2.7a**	**2.7b**	**2.8**	**2.10**
Age Group	**Please give me the names of the persons who usually live in your household.**	**Please indicate the household head (write HH on the member's column)**	**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 5. other _____ _ specify	**Sex** 1= Male 2= Female	**If between 3 and 18 years old, Is the child attending school?** 1 = Yes 2 = No (If yes go to 2.8; If no go t o 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/ lack of teachers 6= Fees or costs 7=Household doesn't see value of schooling 8 =No food in the schools 9 = Migrated/ moved from school area (including displacements) 10=Insecurity/violence 11-No school Near by 12=Married 13. Pregnant/ taking care of her own child 13=others (specify)……	**2.7a, What is the child doing when not in school?** **1**=Working on family farm 2=Herding Livestock 3=Working for payment away from home 4=Left home for elsewhere 5=Child living on the street 6: Other 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) Go to question to 2.9 ↓	**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) go to question 2.11*
			Years	Months							

< 5 YRS	1										
	2										
	3										
	4										
>5 TO <18 YRS	5										
	6										
	7										
	8										
	9										
	10										
	11										
	12										
ADULT (18 years and above)	13										
	14)										
	15										
	16										

2.9	**How many mosquito nets does this household have? _____ (Indicate no.) go to question 2.10 before proceeding to question 2.11**	
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) 5=Petty trade 6=Merchant/trader 7=Firewood/charcoal 8=Fishing **9=** Income earned by children **10=Others (Specify)** |____|	**2.12.** What is the **main** current source of income **of the household?** 1. =No income 2. = Sale of livestock 3. = Sale of livestock products 4. = Sale of crops 5. = Petty trading e.g. sale of firewood 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 |____|
2.15	Are there children who have come to live with you recently? 1. YES 2. NO	2.15b If yes, why did the child/children come to live with you? 1= Did not have access to food 2=Father and Mother left home 3=Child was living on the street, 4=Care giver died 5= Other specify _____

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.	4.	5. 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 3.2 and 3.3 CHILD MORBIDITY*** *(**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**	**3.2 a**	**3.2 b**	**3.3 a**	**3.3 b**	**3.3 c**
	what is the relationship of the respondent with the child/childr en 1=Mother 2=Father 3=Sibling 4=Grandmot her 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	Is the child in any nutrition program 1. Yes 2. No If no skip to questions 3.2	If yes to questio n J. which nutritio n progra m? 1.OTP 2.SFP 3.BSFP Other Specify _____	Has your child (NAME) been ill in the past two weeks? 1.Yes 2. No <u>If No, skip to 3.4</u>	If YES, which 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*	**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	If the child **<u>had watery diarrhoea</u>** in the last TWO (2) WEEKS, did the child get: 1. ORS 2. Zinc supplementatio n? *Show sample and probe further for this component check the remaining drugs(confirm from mother child booklet)*
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 the child receive vitamin A capsules from the facility or out reach	If Vitamin A received how many times in the past one year did the child receive 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? Check for BCG scar. **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. THIS SECTION SHOULD ONLY BE ADMINISTERED IF MNP PROGRAM IS BEING IMPLEMENTED OR HAS BEEN IMPLEMENTED***

	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 WOMEN 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** **4. Pregnant and lactating**	Mother/ caretaker's MUAC reading: **____.__cm**	During the pregnancy of the (name of the youngest biological child below 24 months) did you take the following supplements? indicate **1. Yes** **2. No** **3. Don't know** **4. N/A**			If Yes, for how many days did you take? (***probe and approximate the number of days***)			
			Iron tablets syrup	Folic acid	Combined iron and folic acid supplements	Iron tablets syrup	Folic acid	Combined iron and folic acid supplements	

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>?**

piped water
- piped into dwelling 11
- piped to yard / plot 12
- piped to neighbour 13
- public tap / standpipe 14

tube well / borehole 21

dug well
- protected well 31
- unprotected well 32

spring
- protected spring 41
- unprotected spring 42

rainwater 51
tanker-truck 61
cart with small tank 71
water kiosk 72
surface water (river, dam, lake, pond, stream, canal, irrigation channel) 81

packaged water
- bottled water 91
- sachet water 92

1.

4.2 a 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)
|____|

4.2b – Who MAINLY goes to fetch water at your current main water source?

1=Women,
2=Men,
3=Girls,
4=Boys

4.2.2a **How long do you queue for water?**
1. Less than 30 minutes
2. 30-60 minutes
3. More than 1 hour
4. Don't que for water

1.

.3 Do you do anything to your water before drinking? (*MULTIPLE RESPONSES POSSIBLE) (Use 1 if YES and 2 if NO)*. |____|
1. Nothing
2. Boiling…… ……. |____|
3. Chemicals (*Chlorine,Pur,Waterguard*)…… |____|
4. Traditional herb……... |____|
5. Pot filters…….. |____|

5.

4.3a |____|

6.

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 |____|

<table>
<tr>
<td>4.7.1a</td>
<td>We would like to learn about where members of this household wash their hands.
Can you please show me where members of your household <u>most often</u> wash their hands?
Record result and observation.

OBSERVED
FIXED FACILITY OBSERVED (SINK / TAP)
IN DWELLING.....1
IN YARD /PLOT.....2
MOBILE OBJECT OBSERVED
(BUCKET / JUG / KETTLE).....3

NOT OBSERVED
NO HANDWASHING PLACE IN DWELLING / YARD / PLOT.....4
NO PERMISSION TO SEE.....5</td>
<td>4.7.1b Is soap or detergent or ash/mud/sand present at the place for handwashing?

YES, PRESENT 1
NO, NOT PRESENT ..... ……2</td>
</tr>
<tr>
<td>4.7.1</td>
<td colspan="2">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…….</td>
</tr>
<tr>
<td>4.7.2</td>
<td>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 |____|</td>
<td>4.8 What kind of toilet facility do members of your household usually use?

If ‘Flush’ or ‘Pour flush’, probe:
Where does it flush to?
|____|
If not possible to determine, ask permission to observe the facility.

flush / pour flush
flush to piped sewer system 11
flush to septic tank 12
flush to pit latrine 13
flush to open drain 14
flush to DK where 18
pit latrine
ventilated improved pit latrine 21
pit latrine with slab 22
pit latrine without slab / open pit 23

composting toilet 31

bucket 41
hanging toilet / hanging latrine 51

no facility / bush / field 95

1. OTHER (specify) 96</td>
</tr>
</table>

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)**	**<u>WOMEN DIETARY DIVERSITY</u>** **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, egg plant, 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)?*														
5.10 Eggs?														
5.11 Fish: Fresh or dries fish or shellfish														
5.12 Pulses/legumes, nuts *(e.g. beans, lentils, green grams, cowpeas)*?														
5.13 Milk and milk products *(e.g. goat/camel/ fermented milk, milk powder)?*														
5.14 Oils/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**	

	4.1 FOOD FORTIFICATION (FF)/- *Please ask the respondent and indicate the appropriate number in the space provided*	
1.1	**Have you heard about food fortification?** 1. Yes 2. No 3. Don't know	
1.1.1	**If yes, where did you hear or learn about it? (MULTIPLE RESPONSE ARE POSSIBLE-** (Use 1 if "Yes" and 2 if "No") 6. Radio…… |____| 7. Road show…….. |____| 8. In a training session attended……. |____| 9. On a TV show……. |____| 10. Others…… |____|	
1.2	**Respondent's knowledge on the food fortification logo (Show the food fortification logo to the respondent and record the response). Do you know about this sign?** 1. Yes 2. No 3. Don't know	|____|
1.3	**What is the MAIN source of Maize flour for the household <u>NOW</u>?** 2. Bought from the shops, supermarket e.t.c 3. Maize is taken for milling at a nearby Posho Mill 4. Bought from a nearby Posho Mill 5. Other *(Please specify)* |_____|	**1.1b Do you know if the maize flour you consume is fortified or not?** 1. Yes 2. No 3. Don't know
1.4	**What brands of the following foods does your household consume?** 1. Maize flour 2. Wheat flour 3. Margarine 4. Oils 5. Fats 6. Sugar	|_____| |_____| |_____| |_____| |_____| |_____|