[NUTRITION]
[Integrated SMART Survey Report]
[KENYA] [June, 2017]

Integrated SMART Survey Report

WEST POKOT, KENYA

Report compiled by CCRST with technical guidance from ACTION AGAINST HUNGER

Funded by:

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West Pokot County, Integrated SMART Survey, June 2017

ACKNOWLEDGEMENT

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- The communities within the sampled clusters for willingness to take part in the nutrition assessment and allowing their children to be measured

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[1]County Council of Research, Science and Technology

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ABBREVIATIONS

ACF	Action Against Hunger
ACSM	Advocacy communication and Social Mobilization
ANC	Antenatal care
BCG	Bacille Calmette Guerin
DEFF	Design Effect
DHIS	District Health Information System
DQA	Data Quality Audit
C4D	Communication for Development
CIDP	County integrated development plans
CLTS	Community-Led Total Sanitation
CSI	Coping strategy index
CCRST	County Council of Research, Science and Technology
CWC	Child welfare clinic
EBF	Exclusive Breast Feeding
ECDE	Early Childhood Development Education
ENA	Emergency nutrition assessment
FCS	Food consumption score
FGDs	Focus Group Discussions
FSOM	Food security outcome monitoring
FSNS	Food Security and Nutrition Surveillance
GAM	Global acute malnutrition
HAZ	Height-for-Age z-scores
HiNi	High impact nutrition interventions
HH	Household
IFA	Iron-folate
IMAM	Integrated Management of Acute Malnutrition
IMCI	Integrated Management of Childhood Illness
KAP	Knowledge, Attitudes and Practices
KEMSA	Kenya Medical Supplies Agency
KII	Key informative interviews
KNBS	Kenya National Bureau of Statistics
KRCS	Kenya Red Cross Society
MNP	Micronutrient Nutrition Powders
MoALF	Ministry of Agriculture, Livestock and Fisheries
MUAC	Mid Upper Arm Circumference
MoE	Ministry of education

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MoH	Ministry of Health
MoTC	Ministry of Trade and Commerce
NCA	Nutrition Causal Analysis
NDMA	National drought management authority
NITWG	Nutrition Information Technical Working Group
NSO	Nutrition Support Officer
ODK	Open Data Kit
OJT	On job training
OPV	Oral Polio Vaccine
PPS	probability proportional to size
RC	Reserved Cluster
SAM	Severe Acute Malnutrition
SMART	Standardized Monitoring Assessment of Relief and Transitions
SPSS	Statistical Package for Social Science
TEM	Technical Error of Measurement
UNICEF	United nation children education fund
WaSH	Water, Sanitation and Hygiene
WFP	World Food Programme
WHO	world health organization
WHZ	Weight-for-Age z-scores
WAZ	Weight-for-Age z-scores

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Introduction

West Pokot County is in the former Rift Valley province in Kenya with geographical area coverage of 9169 km^2 with a population of 512,690 persons (Census 2009) and a growth rate of 3.1%. West Pokot County has three main livelihood zones namely; Pastoral (All species) comprising 33% of the population, mixed farming comprising 30% and agro-pastoral comprising 37% of the population. The county is further divided into four administrative sub-counties namely; Pokot North, Pokot South, Pokot Central and Pokot West.

The county being majorly an arid and semi-arid region with harsh environment, food and nutrition insecurity has further been exacerbated by the negative impact of climate change coupled with overreliance on rain fed agriculture. This has contributed to unacceptably high levels of stunting rate at 45.9%[2] and global acute malnutrition rate of 15.3%[3] above the sphere emergency threshold of 15% in the county. The Standardized Monitoring and Assessment in Relief and Transitions (SMART) methodology was utilized during the survey. The survey covered the four sub-counties; Pokot North, Pokot South, Pokot Central and Pokot West.

The main objective of the survey was to estimate the prevalence of acute malnutrition amongst children aged 6-59 months in West Pokot County (in all the three livelihood zones), with the following specific objectives:

❑ To determine the prevalence of acute and chronic malnutrition in children aged 6-59 months.
❑ To determine morbidity rates in children aged 6-59 months two weeks prior to the survey.
❑ To determine the immunization coverage for measles (9-59months), Oral Polio Vaccines (OPV type 1 and 3), and vitamin A supplementation in children aged 6-59 months.
❑ To estimate coverage of iron/folic acid supplementation during pregnancy in women of reproductive age.
❑ To determine the nutritional status of women of reproductive age 15-49 years by MUAC
❑ To collect information on possible underlying causes of malnutrition such as household food security and IWDD, water, sanitation, and hygiene practices.

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[2] Kenya Demographic Health Survey, 2014
[3] West Pokot Nutrition SMART Survey, June 2015

1.0. METHODOLOGY

The Integrated SMART survey was conducted in June 2017 with the aim of assessing performance of long rains. The results were also meant to feed into the Long Rains Assessment. The survey utilized the SMART methodology in planning, implementation and reporting. A two-stage cluster sampling was used where the first stage involved selecting 36 clusters (villages) from the entire sampling frame of 1,460 clusters using probability proportionate to size (PPS). The second stage involved selection of 14 households using simple random sampling in each cluster. A total of 539 households were assessed out of 542 households randomly sampled. The survey team reached a total of 627 children under five years.

The survey utilized an updated standardized integrated nutrition SMART survey tool version April, 2017 with the data being collected electronically using Open Data Kit (ODK). Emergency Nutrition Assessment (ENA) for SMART software version [July 9, 2015], SPSS version 21 and excel was used for analysis.

Summary of Results	2017	2016
Global Acute Malnutrition (GAM) based on weight for height z-score	20.4 % (16.5 - 24.9 95% C.I.)	15.3% (12.3-18.9 95%
Severe Acute Malnutrition (SAM) based on weight for height z-score	3.2 % (1.9 - 5.5 95% C.I.)	2.9% (1.9- 4.4 95% CI)
Global Acute Malnutrition (GAM) by middle upper arm circumference	5.7 % (3.9 - 8.4 95% C.I.)	5.0% (3.7- 6.8 95% CI)
Severe Acute Malnutrition (SAM) by middle upper arm circumference	0.4% (0.1- 1.5 95% CI).	1.4% (0.7- 2.8 95% CI)
Stunting based on height for age z-scores	39.9 % (34.8 - 45.3 95% C.I.)	40.6% (35.1-46.3 95% C.I.).
Children less than 5 years were ill 2 weeks prior to the survey.	30.7%	32.6%
Vaccination by card with Oral Polio Vaccine 1 (OPV 1)	59.6%	74.0%
Vaccination by card with Oral Polio Vaccine 3 (OPV 3)	51.9%	65.1%
Measles vaccination at 9 by card	47.8%	53.2%
Measles vaccination at 18 by card	13.6%	2.6%
Bacillus Calmette-Guérin (BCG) vaccination by card	87.0%	96%
Vitamin A 6-11 months supplemented at least once	39.6%.	52.3%
Vitamin A 12-59 months supplemented at least once	38.0%	43.7%
Vitamin A 12-59 months supplemented more than once	10.7%.	26.2%

Children 12-59 months dewormed; once	22.0%	24%
Children 12-59 months dewormed; twice	5.2%.	33.0%
Malnourished women (MUAC <21cm)	3.3%	4%
Women were at risk of malnutrition (MUAC >21cm and <23cm)	13.03%	15.8%
Pregnant and lactating women malnourished	3.6%	4.7%
Pregnant and lactating women at risk of malnutrition	9.44%	15.8%
Women with children aged 24 months and below were supplemented with Iron Folic acid	63.3%	46.9%
Household access had access to safe water	33.1%	36.5%
Handwashing at all critical times	2.2%	3.8%
Open defecation	46.8%	53.1%
Households treating drinking water	11.1%	15.6%
Minimum Women's Dietary Diversity Score based on 24 hours recall (5 food groups and above)	46.1%	
Mean household dietary diversity score	6.9	7.5
Total weighted coping strategy score	17.3%	22.3%

2.0.   Proposed Recommendations

The survey recommendations were derived from various stakeholders' forums at county and sub-county levels.

Findings	Recommendations
High GAM and SAM rates (based on weight for height z-scores) 20.4 % (16.5 - 24.9 95% C.I.) and 3.2 % (1.9 - 5.5 95% C.I.) respectively	❖ Conduct community based nutritional screening and active case finding and referral for malnourished children at community level ❖ Scale up integrated outreach services targeting hard to reach areas from 18 to at least 50 sites ❖ Conduct training of health care workers on IMAM surge mode ❖ Conduct training on IMAM guidelines targeting newly recruited health care workers

	❖ Scale number of health facilities implementing IMAM
Poor Vitamin A supplementation for children 6 -11 months (39.6%) and children aged 12-59 months (once-38.0%, more than once-10.7%). Attributed to Poor linkage between ECDE data and facility data, communication gap between ECDE and caregivers on Vitamin A supplementation and deworming	❖ Scale up vitamin A supplementation targeting 6-59 months from 10.7% to 25.0% ❖ Create demand for Vitamin A and deworming targeting children 6-59 months and 12-59 months respectively through Advocacy Communication and Social Mobilization at community level ❖ Conduct routine monitoring of Vitamin A supplementation and deworming ❖ Conduct Monitoring and support supervision to improve documentation at health facility and community levels. ❖ Conduct on job training on micronutrient supplementation and deworming targeting health workers ❖ Accelerate uptake of Vitamin A supplementation and deworming in ECDE during biannual Malezi bora activities in schools. ❖ Strengthen integration of IMCI to CWC services
❖ Only 33.1% of the household access had access to safe water. Only 2.2% washing hands in all the critical times ❖ Open defecation stood at 46.8%. ❖ Drinking water treatment at 11.1%	❖ Conduct Advocacy Communication and Social Mobilization at community on hygiene and sanitation targeting men, women and children ❖ Scale up latrine coverage through CLTS at the community. ❖ Promote water treatment at household through health education at the health facility and community through community groups. ❖ intensify promotion of hand washing at community level through demonstrations and campaigns ❖ Lobby to the county government and development partners to pursue protection of water sources in community
❖ Poor Minimum Women's Dietary Diversity Score (53.9% of women consumed <5 food groups. ❖ Mean household dietary diversity score at 6.9 ❖ Weighted coping strategy score at 17.3%.	❖ Promote gender equality and equity with focus on mainstreaming gender and undertaking gender targeted actions. County government and development partners to prioritize women economic empowerment programs

1.0. INTRODUCTION

1.1. Background Information

Introduction

WEST POKOT LIVELIHOOD ZONES

District Boundaries
Division Boundaries
Livelihood Zone Types
Agro Pastoral
Mixed Farming
Pastoral - all species
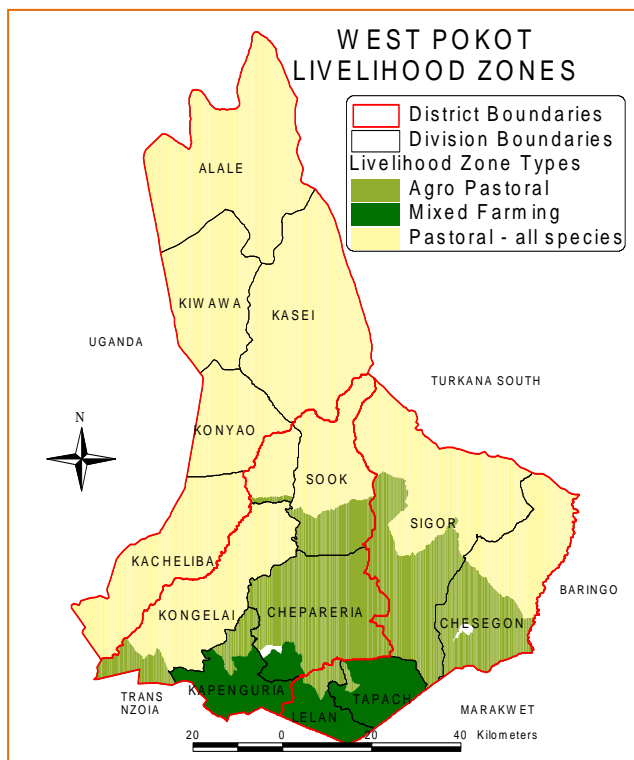
Figure 1: West Pokot County by livelihood zones

West Pokot County is one of the counties located in the Northen part of Rift Valley, Kenya. It covers an estimated area of approximately 9,169.4 square kilometers (km^2) with a population of 512,690 persons[4]. It borders Uganda to the West, Trans-Nzoia to the South West, Elgeyo Marakwet to the South East, Turkana to the North East and Baringo to the South East. The county is characterized by a variety of topographic features. On the Northern and North Eastern parts are the dry plains, with an altitude of less than 900 m above sea level. On the Southeastern part are Cherangani Hills with an altitude of 3,370 m above sea level with this range of altitude include spectacular escarpments of more than 700 m. The rainfall varies from 400mm to 1500mm per annum with tempearture ranges from 10^0C-30^0C.

The county has four adminstrative boundaries/sub-counties namely; West pokot sub county, South pokot, North Pokot and Central Pokot sub-counties. The county is characterized by three livelihood zones; pastoral (33%), agro-pastoral (37%), mixed farming (30%)[5] as shown in figure 1. The county faces a myriad of challenges which include high poverty level (69.4%), rampant insecurity along the Pokot Turkana and Pokot Marakwet boarder, poor infrastructure as well as effects of climate change. All these challenges have aggrevated on shocks and hazards of drought leading to poor

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[4]KNBS 2009 Census Report

performance of drivers to malnutrition. The county has high levels of all forms of malnutrition, namely stunting 44.9%, acute malnutrition 15.3% and underweight at 36.8%. Similarly the performance of other nutrition indicators are sub optimal, these include; exclusive breastfeeding 39.9%, timely complementary feeding (minimum acceptable diet 26.2%), vitamin A supplementation (26.2%) and deworming (33%)[6]. To increase uptake of nutrition services at the community the county has scaled up the implementation of HiNi services from 68 facilities in 2016 to 79 health facilities in 2017. In addition, the 30 outreaches in the county offer full package of essential health and nutrition services in an effort to address nutrition.

1.2. Survey Objectives

The survey was conducted in the entire county in all the three livelihood zones. The main objective of the survey was to estimate the prevalence of acute malnutrition amongst children aged 6-59 months in West Pokot County, with the following specific objectives:

❑ To determine the prevalence of acute and chronic malnutrition in children aged 6-59 months.

❑ To determine morbidity rates in children aged 6-59 months two weeks prior to the survey.

❑ To determine the immunization coverage for measles (9-59months), Oral Polio Vaccines (OPV type 1 and 3), and vitamin A supplementation in children aged 6-59 months.

❑ To estimate coverage of iron/folic acid supplementation during pregnancy in women of reproductive age.

❑ To determine the nutritional status of women of reproductive age 15-49 years by MUAC

❑ To collect information on possible underlying causes of malnutrition such as household food security and IWDD, water, sanitation, and hygiene practices

1.3. Seasonality of the survey timing

The survey data collection was conducted from 24th to 30th June 2017 led by Ministry of Health (MOH), Action Against Hunger and UNICEF in collaboration with National Drought Management Authority (NDMA), Ministry of Agriculture livestock and Fisheries (MoALF). The seasonality timing of the assessment was at the end of long rains and information collected will fit into the seasonal assessment on food security and nutrition. Figure 2 below illustrated the West Pokot County seasonal calendar. Review calendar of events

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[6] West Pokot MIYCN KABP Survey, April 2017
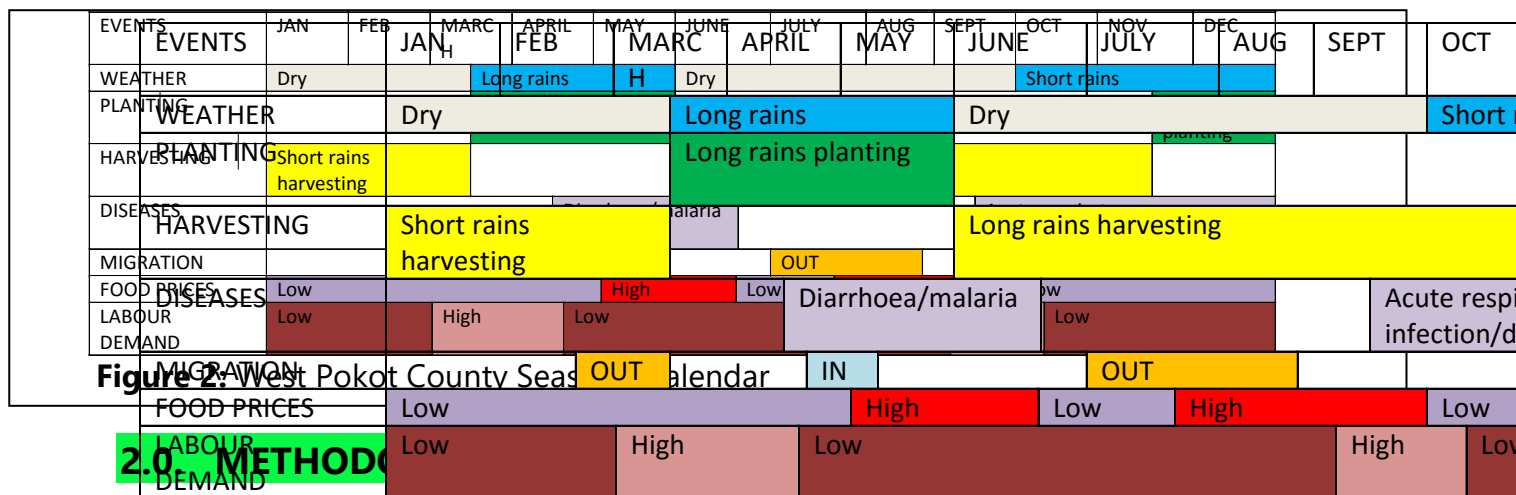
Figure 2: West Pokot County Seasonal Calendar

EVENTS	JAN	FEB	MARC	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT
WEATHER	Dry		Long rains		Dry					Short rains
PLANTING				Long rains planting						
HARVESTING	Short rains harvesting					Long rains harvesting				
DISEASES			Diarrhoea/malaria							Acute respiratory infection/d...
MIGRATION		OUT		IN		OUT				
FOOD PRICES	Low			High	Low		High		Low	
LABOUR DEMAND	Low		High	Low				High		Lo...

2.0. METHODO...

2.1. Type of the Survey and survey timing

The survey was a cross sectional study which employed SMART methodology in planning, data collection and analysis of anthropometric indicators. Data on socio demographic information, immunization, Vitamin A and micronutrients powders (MNP) supplementation, morbidity, food security, water, sanitation and hygiene practices were collected concurrently with the anthropometric data. The integrated nutrition SMART survey was conducted within the seasonal timing in the month of June 2017. Secondary review of various existing surveillance data and information include; NDMA monthly bulletins, Health Information System (DHIS) and previous assessments were undertaken prior to the survey. The actual data collection was conducted from 19th-24th June 2017. The assessment results of the survey feeds into the long rains seasonal assessment.

2.2. Sampling size determination:

ENA for SMART software version 2011 (9th July, 2015) was used to calculate the required sample size based on various indicators as shown in the table below. A total of 36 clusters, 14 households in a cluster, with total of 542 households were proposed for the assessment based on sample size determination parameters as illustrated in table 2.

Table 1: Sample size calculation for anthropometric survey

Sample size calculator for a cross-sectional anthropometric survey

Data entered in ENA for SMART	Anthropometric survey	Rationale
Estimated prevalence	15.3%	From SMART survey report, current reports from NDMA report indicate a worsening situation.
+Desired precision	3.5%	The higher the malnutrition rates the lower the precision; In order to meet the set objectives
Design effect	1.04	Obtained from nutrition SMART survey 2016 results; to cater for heterogeneity within the County
Average household size	6	From previous survey and KNBS census report
Proportion of under-five	16.2%	From previous survey, DHIS
Non-response rate	3.0%	Based on previous SMART survey
Households	**542**	
Children	**460**	

2.3. Selection of villages (clusters)

Two stage cluster sampling was used with the first stage involving selection of clusters (villages) and second stage involved selection of households. 36 clusters were randomly selected from a total of 1460 clusters using probability proportional to population size (PPS).

2.4 Selection of households

In the second stage of cluster sampling involved, random selection of 14 households per clusters from a complete and updated list of households.

2.5. Training

A total of 26 participants were trained on the SMART survey methodology. These included six team leaders from government line ministries [Ministry of Health (MoH), Ministry of Agriculture, Livestock and Fisheries (MoALF) and the National Drought Management Authority (NDMA)] and 18 Survey enumerators were recruited from various parts of the West Pokot County. In addition, 2 survey coordinators supported in the training. The training was facilitated by Action Against Hunger, MoH and UNICEF technical team. The SMART methodology training was conducted from 12th-16th June 2017 and covered the following modules; introduction to nutrition surveys, sampling and sampling procedures, anthropometry, questionnaire design, field

procedures, standardization, ODK and field test. Standardization results were also used to gauge strength and weakness of each enumerator with regards to accuracy and precision in conducting anthropometric measurements.

2.6 Survey team and supervision

The survey comprised of 18 enumerators, 6 team leaders, 3 supervisors and 1 coordinator. The enumerators were recruited from all the 4 sub counties of the County. There were 6 survey teams, each team comprising of 3 enumerators and 1 team leader. The survey also employed 36 village guides sourced from all villages randomly selected, with role of leading the survey team to the community. Data quality checks were maintained by observing the following steps:

- Training of survey team
- Daily support and supervision of teams during data collection
- Daily feedback session, data entry, plausibility and questionnaire check after field data collection

2.7. Case Definitions and Inclusion Criteria

Primary data was gathered from the sampled villages to make inferences with regard to the survey objectives for the entire data collection period.

2.7.1. Anthropometric data

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 was used. 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[7]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 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

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

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. The emphasis was ideal placement of cursor as per instructions on height measurements (SMART/IMAM[8] 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.

2.7.2 Vaccination, immunization and supplementation information

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 was 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.

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.

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[8] Integrated Management of Acute Malnutrition

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 enroll. Those enrolled were probed on adherence.

2.7.3 Other Health and related Information

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.

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 household demographics, health related variables, water availability and accessibility, sanitation and hygiene practices, food sources, dietary diversity and coping strategies.

2.8. 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.

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 children and women of reproductive age (15-49 years) in the sampled households. MUAC cut offs criteria were applied as shown in table 3.

Table 2: MUAC thresholds

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 23cm->21cm	At Risk of malnutrition
MUAC <21cm	Moderate Acute Malnutrition

2.9 Ethical considerations

Information on the purpose and objectives of the survey, the nature of the data collection procedures, the target group, and survey procedures was given to both local authorities and survey participants. Verbal consent was obtained from all adult participants and parents of all eligible children in the survey. The decision of caregiver to participate in the survey or otherwise was respected. Privacy and confidentiality of survey respondent and data was protected.

2.10 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/outreach. Pregnant and lactating women with MUAC <21cm were also referred.

2.11 Data Entry and Analysis

Open data Kit (ODK), which ensures real time data was used for data collection. Data was uploaded to the main server on daily basis to ensure optimal monitoring of data collected is done that result to quality data. Anthropometric data was analyzed in ENA for SMART software version 2011 (9th July 2015). All other data sets were entered and analyzed using Microsoft Excel (Version 2007) and SPSS (Version 17).

3.0.   SURVEY FINDINGS

3.1. General characteristics of the study populations and households

The average household size as derived from 2,820 household members from the 539 randomly selected households was approximate 6 persons per household. In regards

to the age cohort surveyed 636 (307f, 329m) where aged 6-59 months, 1032 (533f 499m) ranged between 5-18 years while 1152(551f 601m) were above 18 years of age. 86% of adult were married, 6% widowed, 5% single and 2% separated. Notably 99.8 % of the households were Residents, 0.2 % are Refugee, with no IDPs reported in the County. The main occupation of the household heads was farming was (39.5%) followed by livestock keeping (18.6%), petty trade (11.7%), waged labour (11.1%), salaried/wages (7.2%) and the rest (merchant trader, fire wood and charcoal burning and others) accounting for 11.9%. The illiteracy level among adults in the county was at 36% with only 21% of the adults had attained compulsory primary education. The assessment showed that majority **(63.8%)** of the children aged between 5-17 years was enrolled in school. Some of the main sited reasons for the rest of the children (36.2%) not attending were their involvement in household chores (example herding and fetching water/firewood).
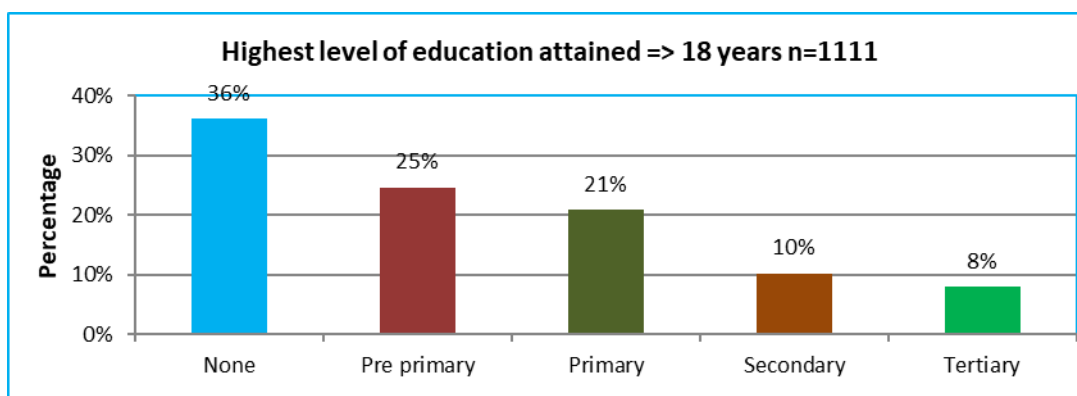
Figure 3: Education Status among the adults –review the figures for n=1111 to be n=1152 as indicated above.

3.2. Anthropometry

3.2.1 Distribution by Age and Sex

The anthropometric measurements covered 540 children aged between 6 to 59 months. Both boys and girls were equally represented with p-value of (0.931). The Age ratio among children aged 6-29 months and 30-59 months was at 1.01 with p-value of (0.039) indicating significant difference. Statistical evaluation of sex and age ration using chi-squared statistics had a p-value of 0.017 indicating significant difference. Table 4 shows distribution by age and sex of the sampled children. The overall data quality score of the anthropometric survey results was at 5% (interpreted as excellent score).

Table 3: Distribution of age and sex of sample

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy: girl

6-17	64	46.7	73	53.3	137	25.4	0.9
18-29	71	52.6	64	47.4	135	25.0	1.1
30-41	56	47.1	63	52.9	119	22.0	0.9
42-53	60	53.6	52	46.4	112	20.7	1.2
54-59	18	48.6	19	51.4	37	6.9	0.9
Total	269	49.8	271	50.2	540	100.0	1.0

3.2.2 Nutritional status of children 6-59 months

a) Prevalence of acute malnutrition based on weight-for height Z-scores

The survey results recorded a GAM prevalence based on weight for height z-scores of 20.4% (16.5 - 24.9 95%C.I.) classified as critical based on WHO classification of acute malnutrition. The severe acute malnutrition (SAM) was at 3.2% (1.9 - 5.5 95% C.I.). There was notable increase in GAM point prevalence from 15.3% (12.3-18.9 95% CI) to 20.4% (16.5 - 24.9 95% C.I.) with a p value of 0.054 when compared to June 2016 findings. There is no significant different in global acute malnutrition (GAM) for boys in 2017 compared to 2016. However, there is a significant different in global acute malnutrition for girls in 2017 when compared to 2016 (p=0.02). The survey revealed girls being more malnourished compared to boys with global acute malnutrition (GAM) of 24.3% and 16.4% for girls and boys respectively with a p value of 0.0294. This can be attributed to acute food insecurity situation at household level with girls worse affected. Household food security has been exacerbated by inadequate availability of milk and milk products at household level due to movement of livestock away from household. Further with depletion of pasture and browse, men and boys have migrated with livestock to riverine region looking for pastures and browse, thus boys are able to access milk from livestock.

Table 4: Prevalence of acute malnutrition based on WHZ by sex

	All n = 529	**Boys** n = 263	**Girls** n = 266	
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(107) 20.4 % (16.5 - 24.9 95% C.I.)	(43) 16.4 % (11.5 - 22.9 95% C.I.)	(64) 24.3 % (19.3 - 30.2 95% C.I.)	0.0294
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(90) 17.1 % (13.9 - 21.0 95% C.I.)	(37) 14.1 % (9.8 - 20.0 95% C.I.)	(53) 20.2 % (15.9 - 25.1 95% C.I.)	0.0713
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(17) 3.2 % (1.9 - 5.5 95% C.I.)	(6) 2.3 % (1.1 - 4.8 95% C.I.)	(11) 4.2 % (2.1 - 8.0 95% C.I.)	0.23

The Gaussian curve as illustrated in figure 3 shows the survey curve (colored in red)

deviating to the left of the WHO reference curve (green color) meaning that majority of children assessed were categorized within poor nutritional status.
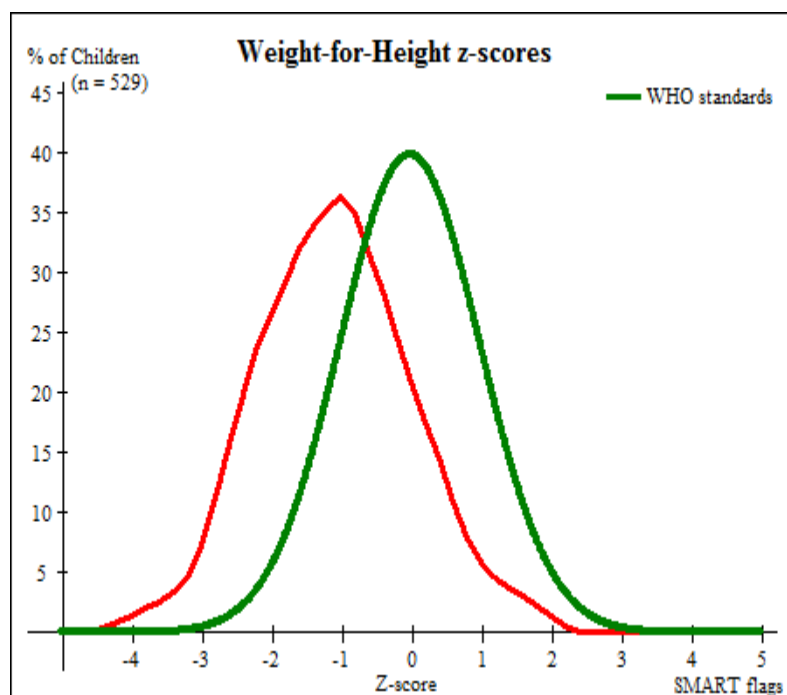
Figure 4: Gaussian curve

b) Prevalence of Acute Malnutrition by Mid upper arm circumference (MUAC)

MUAC is a simple and low-cost method that can be applied easily by one person after minimum training and is less susceptible to measurement error than WHZ. However, MUAC admission criteria to community-based therapeutic programmes may result in missed opportunities to treat severe condition[9]. The GAM and SAM prevalence by MUAC was 5.7 % (3.9 - 8.4 95% C.I.) and 0.6 % (0.2 - 1.7 95% C.I.) respectively. There was no statistical difference (p=0.588) when compared to June 2016 results. Girls were more malnourished than boys as illustrated in table 6 with a p value of 0.5919 statistically insignificant.

Table 5: Prevalence of acute malnutrition based on MUAC

	All n = 540	Boys n= 269	Girls n = 271	P Value
Prevalence of global malnutrition (<125 mm and/ or oedema)	(31) 5.7 % (3.9 - 8.4 95% C.I.)	(14) 5.2 % (3.0 - 8.8 95% C.I.)	(17) 6.3 % (4.0 - 9.7 95% C.I.)	0.5919
Prevalence of moderate malnutrition (<125 mm and >=115 mm, no	(28) 5.2 % (3.5 - 7.7 95% C.I.)	(14) 5.2 % (3.0 - 8.8 95% C.I.)	(14) 5.2 % (3.2 - 8.2 95% C.I.)	1.000

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[9] Comparison of Mid-Upper Arm Circumference and Weight-for-Height to Diagnose Severe Acute Malnutrition: A Study in Southern Ethiopia, 11th March 2017

oedema)				
Prevalence of severe malnutrition (<115 mm and/ or oedema)	(3) 0.6 % (0.2 - 1.7 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(3) 1.1 % (0.4 - 3.3 95% C.I.)	0.0931

c) Prevalence of underweight based on weight for age z-scores.

Underweight is a composite of acute and chronic malnutrition that occurs when a child fails to achieve sufficient weight in relative to age. The survey established underweight rates of 40.6% (35.1-46.6%, 95% CI) as shown in table 7. There was no significant difference (P value = 0.25) in current underweight prevalence compared to June, 2016. Equally there was no significant difference in underweight between boys and girls.

Table 6: Prevalence of underweight based Weight for Age Z-scores (WAZ) by sex

	All (N = 537)	Boys (n = 259)	Girls (n = 278)	P Value
Prevalence of underweight (<-2 z-score)	(211) 40.6 % (35.1 - 46.3 95% C.I.)	(104) 40.0 % (32.8 - 47.6 95% C.I.)	(107) 41.2 % (34.7 - 47.9 95% C.I.)	0.7822
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(143) 27.5 % (23.6 - 31.8 95% C.I.)	(74) 28.5 % (23.2 - 34.4 95% C.I.)	(69) 26.5 % (21.6 - 32.1 95% C.I.)	0.6127
Prevalence of severe underweight (<-3 z-score)	(68) 13.1 % (10.0 - 16.9 95% C.I.)	(30) 11.5 % (7.8 - 16.7 95% C.I.)	(38) 14.6 % (10.4 - 20.1 95% C.I.)	0.2983

d) Prevalence of stunting based on height-for-age z-scores

Stunting refers to being too short for one's age. Stunting diminishes mental abilities and limits physical work capacity, resulting in continued economic hardships for families and the county. The causes of stunting are multiple and cuts across different sectors. To address stunting there is need to embrace multi-sectoral approaches which recognize the role of other sectors such as agriculture, water, sanitation, social protection and education in addressing malnutrition. Further there's need to support efforts such as Scaling Up Nutrition which has a multi-sectoral vision

The SMART Survey 2017 revealed a point decline in stunting to 39.9% (34.8 - 45.3, 95% C.I.) as illustrated in table 8. The stunting prevalence as reflected to WHO classification on chronic malnutrition indicates the current prevalence is slightly below emergency levels of 40%. There was no significant difference in stunting levels in 2016 compared to 2017 (p=0.18). Analysis by gender revealed that boys were more stunted than girls (p=0.004). This can be attributed to cultural perceptions that

girls are more fragile to disease and malnutrition than boys and hence given more attention and better care practices (feeding, hygiene and healthcare)[10].

Table 7: Prevalence of stunting based on Height for Age Z-scores (HAZ) by sex

	All (N = 532)	**Boys** (n = 258)	**Girls** (n= 274)	**P value**
Prevalence of stunting (<-2 z-score)	(206) 39.9 % (34.8 - 45.3 95% C.I.)	(120) 46.3 % (38.6 - 54.2 95% C.I.)	(86) 33.5 % (26.8 - 40.9 95% C.I.)	0.004
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(138) 26.7 % (22.6 - 31.4 95% C.I.)	(78) 30.1 % (24.7 - 36.2 95% C.I.)	(60) 23.3 % (17.5 - 30.5 95% C.I.)	0.0862
Prevalence of severe stunting (<-3 z-score)	(68) 13.2 % (10.5 - 16.3 95% C.I.)	(42) 16.2 % (11.9 - 21.6 95% C.I.)	(26) 10.1 % (6.6 - 15.2 95% C.I.)	0.0449

Analysis by age group revealed that children aged 18-29 months and 30-41 months were most stunted among other age group assessed as reflected in table 9. These could be attributed to early cessation of breastfeeding and poor dietary diversity[10].

Table 8: Prevalence of stunting by age

		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	134	11	8.2	38	28.4	85	63.4
18-29	125	26	20.8	41	32.8	58	46.4
30-41	121	15	12.4	49	40.5	57	47.1
42-53	107	10	9.3	32	29.9	65	60.7
54-59	45	2	4.4	15	33.3	28	62.2
Total	532	64	12.0	175	32.9	293	55.1

3.2.3 Overview of trends in under nutrition over time in West Pokot County

The general trend of under nutrition in West Pokot County from May 2011 to June 2017 is as illustrated in figure 4. The County faces food and nutrition insecurity

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[10] Nutrition Causal Analysis, West Pokot County, June 2015

attributed to poor performance of rains over time, endemic human and livestock diseases, sub optimal food and livestock production, high food prices in markets coupled with overreliance on market for household food. Food consumption score in majority of household have deteriorated (KFSM May 2017). The nutrition situation has further been exacerbated by poor child care practices, unhygienic practices and low access to basic services (health and safe water).
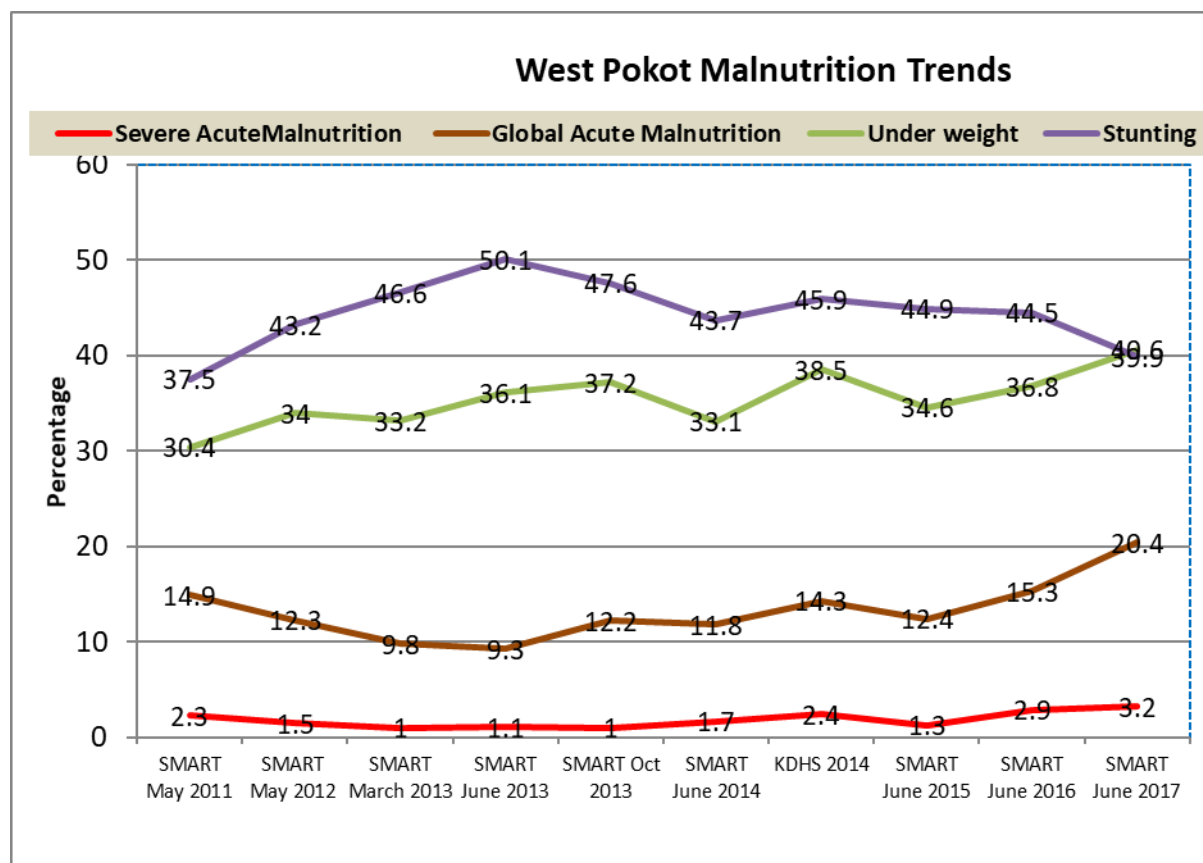
Figure 5: Malnutrition trend among under-fives over time

3.3. Child Morbidity

Morbidity was assessed among children aged 6-59 months by cross-checking the mother and child health booklet if the child was sick in the last 2 weeks. Where the booklet was missing inquiry was made to the caregivers if they could recall whether the child was ill or not in last 14 days. 30.7% (166) of children less than 5 years were ill 2 weeks prior to the survey which is a slight decline from 32.6%. This can be attributed to accelerated outreach services, increased number of health facilities in the county and improvement in health seeking behavior. The survey revealed acute respiratory infection/ cough as the most common ailment among children 6-59 months at 51% followed by fever with chills like malaria at 34%, watery diarrhea at 14% and bloody diarrhea at 1%. Notably 54.5% of children with watery diarrhea were supplemented with zinc for management of diarrhea.
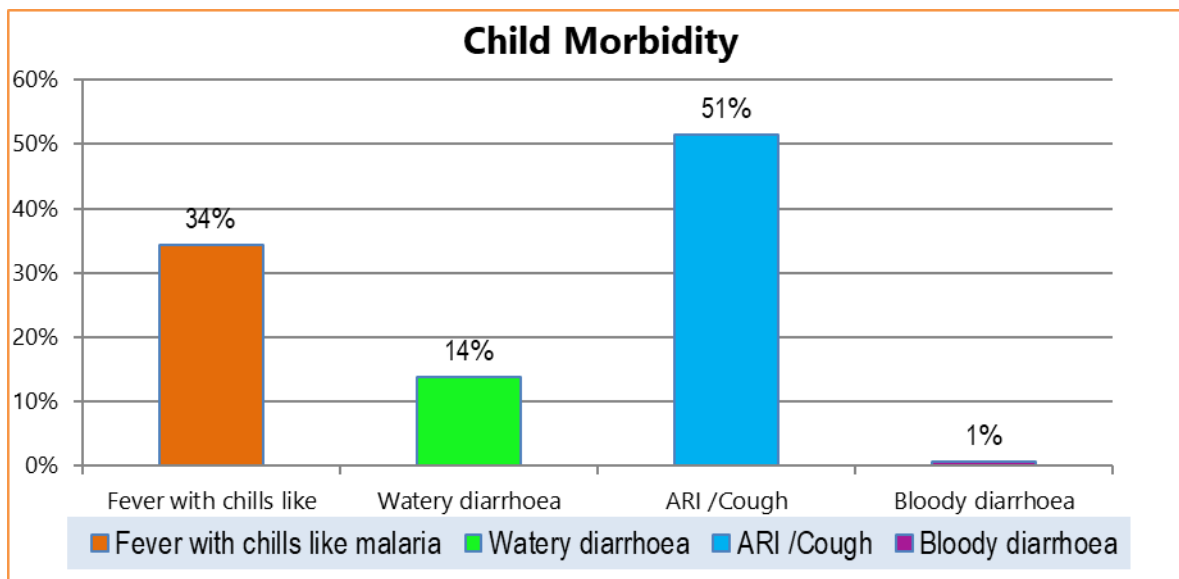
Figure 6: Under five illnesses

The survey revealed 76.4% of caregivers sought appropriate health assistance when their children were ill: Public at 47.2%, private health facilities/ Pharmacies at 29.2%. This is an improvement from 58.1% recorded by the same survey last year. Others cases sought treatment from community health workers at 9.7%, shops/kiosks, local herbs, relatives or friends and traditional healers representing 9.0%, 2.8%, 1.4% and 0.7% respectively. Poor health seeking behavior could be attributed to long distances from households to health facilities and high transport costs.

3.4. Child Immunization, supplementation and deworming

3.4.1. Immunization

The ministry of health under the Kenya expanded programme on immunization aims to increase access to immunization services in order to reduce morbidity and mortality due to vaccine preventable diseases[11]. The immunization coverage in county is as shown in table 10. Measles vaccination at 18 months was remained at extremely low level attributed to lack of awareness of the caregivers on second dose of measles vaccination.

Table 9: Child immunization package

Vaccination	2016	2017
OPV 1 by card	74.0%	59.6%
OPV 1 by recall	15.9%	33.1%
OPV 3 by card	65.1%	51.9%
OPV 3 by recall	15.5%	31.1%
Measles at 9 months by Card	53.2%	47.6%

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[11]Kenya comprehensive multiyear plan for 2011-2015

Measles at 9 months by recall	15.2%	27.8%
Measles at 18 months by card	2.6%	13.6%
Measles at 18 months by recall	0.6%	11.1%
BCG by presence of left hand scar	96%	87.0%

There was slight increase in immunization coverage for both OPV and measles. This could be attributed to increase awareness campaign done in health centers and outreach.

3.4.2 Vitamin A Supplementation

Vitamin A coverage was assessed for the past one year (June 2016 to June 2017) and the results were as shown in table 11. Coverage was done through recall, only 44.5% had vitamin A supplementation indicated on their mother child booklet.

Table 10: Vitamin A supplementation coverage

		2016	2017
6-11 Months	At least once	52.3%	39.6%
	One time	43.7%	38.0%
12-59 Months	At least twice	26.2%	10.7%

Vitamin A supplementation for children aged 6-11 months and 12-59 months was below 80% target however slight reduction was observed in June 2017 compared to 2014 same period. Major factors attributed to low coverage were poor documentation of all children supplemented vitamin A, low awareness among caregivers, inadequate documentation at the health facility and Poor linkage between community supplementation data (ECDE, outreach) to facility data.

3.4.3. Micronutrient Powder supplementation

The Ministry of Health, Action Against Hunger and World Food Program (WFP) have initiated a home fortification program to provide micronutrients powders (MNPs) targeting children aged 6-23 months. MNPs are low cost and effective supplements in addressing child's micronutrient requirements thus reducing the risk of developing deficiencies among the children age 6-23 months. The MNPs coverage among children aged 6-23 months (N=197) was at 7.1% (n=15). Out of the enrolled children (N=15), 2% consumed the MNP within 7 days prior to the survey

Table 11: Reasons for non-enrolment

Reason for Non-Enrolment	n	%
Do not know about MNPs	154	78.2%
The child has not fallen ill, so have not gone to the health facility	32	16.2%
Discouraged from what I heard from others	0	0%
Child receiving therapeutic or supplementary foods	1	0.5%
Health facility or outreach is far	1	0.5
Others	9	4.6%

3.4.4. Deworming

Deworming of children routinely helps to combat helminthes that worsen child nutritional status through intestinal bleeding, loss of appetite, and malabsorption of micronutrients. Periodic treatment (deworming) of children supported by with improvement of water and sanitation, and health education can reduce the transmission of Schistosoma and soil-transmitted helminth infections. The percentage of children aged 12-59 months dewormed once was at 22.0%. However, those that were dewormed twice in the past one year in line with WHO recommendation were at 5.2%. The Ministry of health has established an initiative to provide dewormers to school going children. The low coverage on deworming could be attributed to recall bias among caregivers, poor documentation and care giver information.

3.5. Maternal Health and Nutrition

3.5.1 Iron folate supplementation during pregnancy

Iron folic acid supplementation is recommended as part of antenatal care to reduce risk of low birth weight, maternal anaemia and iron deficiency and hence improve maternal and perinatal health. WHO recommends routine intake of iron and folate supplements (IFAS), for all pregnant women together with appropriate dietary advice. A total of 173 women (63.3%) confirmed through retrospective inquiry on consumption of iron folate in their last pregnancy. The percentage of pregnant women who consumed IFAS in the recommended over 90 days was at 6.9% as illustrated in figure 6. The mean number of days IFAS was consumed by women was recorded at 18 days.

Table 12: Frequency of consumption of iron folate supplements

Categories of IFA Consumption (In Days)	No of women	Proportion (%)
< 90 Days	161	93.1%
90≥180 Days	12	6.9%

> 180 Days	0	0.0%

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

Maternal mid upper arm circumference is a potential indicator of maternal nutritional status. Nutritional status of 761 women aged 15-49 years was assessed using MUAC. 10.9% and 47.1% were pregnant and lactating respectively. 3.3% of all women were malnourished (MUAC <21 cm) while 13.03% of women were at risk of malnutrition (MUAC >21cm and <23cm). Among pregnant and lactating women, 3.6% were malnourished while 9.44% were at risk of malnutrition. The high rate of malnutrition among pregnant and lactating women could be attributed to poor, household food insecurity, birth spacing and heavy workload.

3.6. Water, Sanitation and Hygiene (WaSH)

3.6.1. Water Sources

The County experienced rainfall of low intensity and most areas along the lowland had a temporal distribution of 2-4 days. Cumulative rainfall for the six month period (January –June 2017) amounts to 406.3mm against the cumulative thirteen-year rainfall average for the same period that amounts to 502.5%. Compared to the same amount of cumulative rainfall recorded during the same season the previous year (January-June 2016), the current cumulative rainfall is less by 36% (NDMA June2017). However, some areas located in the lowland areas recorded the lowest amount of rainfall. These include Alale, Sigor, Mtembur and Mariny recorded 15.9mm, 4.3mm, 27.1mm and 8.6mm of rainfall respectively[12]. The survey established that 36.4% of household got their drinking water from safe sources compared to 37.6% established in 2017 as shown in figure 7. The proportion of household consuming <15 litres per day was 2.8% while those consuming >15 liters per day 97.2%. Mean water consumption per person/day was 46.7 liters.

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[12]NDMA Early Warning Bulletins for June 2015, West Pokot County
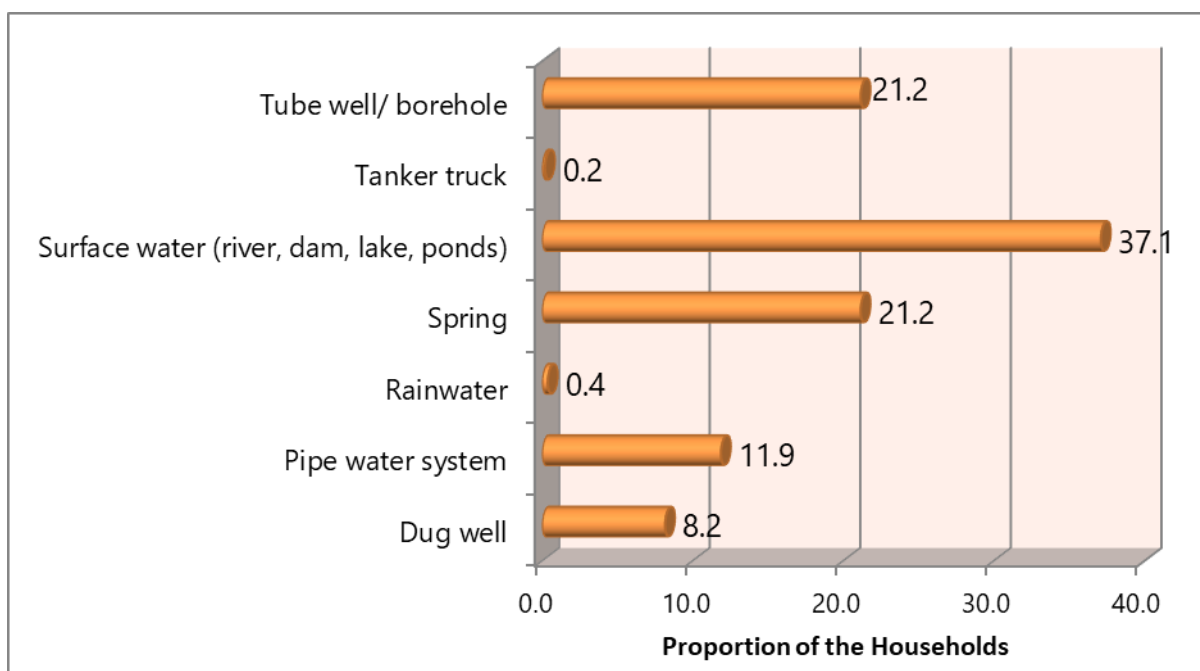
Figure 7: Main source of drinking water

Overall the distribution of households with regard to distance to water point and queuing time shifted to shorter distance and less time as compared to last year. Trekking for long distance (more than one hour) reduced from 16.1% to 10.9% while queuing for long time (more than one hour) reduced from 32.1% to 6.5% as shown in table 14.

Table 13: Trekking distance and queuing time

Trekking distance to the current water	Percentage of households	
	SMART 2016	SMART 2017
Less than 500m (less than 15 min)	52.4%	51.4%
More than 500 m to less than 2km (15min to 1 hour)	36.1%	32.1%
More than 2 km (1hr to 2hrs)	10.9%	16.1%
other (3 hours)	0.2%	0.4%
Queuing time		
Household queuing for water	15.1%	30.6%
Less than 30 minutes	31.6%	10.0%
30-60 minutes	36.9%	14.1%
More than 1 hour	32.1%	6.5%

The drastic reduction of distance to water points and queuing time can be attributed to the county's contribution to supporting interventions towards increasing access to water sources through digging of boreholes, de-silting and water tracking.

The survey also indicated that 6.9% of households pay for water. Households buying water per 20 litres jelly can pay an average of KES 20 per jelly can while those paying per month paying an average of KES 352.9 per month.

3.6.2. Water storage and treatment

Household water treatment and safe storage (HWTS) interventions can lead to dramatic improvements in drinking water quality and reductions in diarrheal disease making an immediate difference to the lives of those who rely on water from polluted rivers, lakes and, in some cases, unsafe wells or piped water supplies13. 54.5% of household stores their water in open containers exposing it to contamination. Only 11.1% of households treated their water before drinking a reduction from 15.6% in 2016. Boiling and use of chemicals were the main water treatment method used at 72% and 25% respectively while use of pot filters only 3.3%.

3.6.3. Hygiene practices

Hand washing, especially with soap and water, is one of the most effective and inexpensive methods in reducing diarrhea and pneumonia which are the major causes of child death and under nutrition. Hand washing in critical times such as before eating or preparing food could reduce diarrhea by up to 40%[14]. Table 15 shows the percentage of caregivers assessed who washed their hands in various critical times. Only 2.2% washed their hand in all the 4 critical times. Less than half of the caregivers (42.7%) used soap and water to wash their hands while 38.2% used only water.

Table 14: Hand washing during critical times

Times of hand washing	Percentage
After toilet	2.6%
Before cooking	66.6%
Before eating	92.2%
After taking children to the toilet	6.1%
Hand washing in all 4 critical times	2.2%

There was a significant drop in the proportion of households washing hands at 4 critical times which can be attributed to acute shortage of water with an average of amount water for household use (excluding for animals) recorded at 48 liters per household. The poor hand washing practices can be attributed to decreased interventions on hygiene and sanitation in the community due to funding from both county government and development agencies.

3.6.4. Sanitation Practices

Proper sanitation practices are crucial in reducing food and water borne diseases. Poor sanitation such as open defecation has been linked to increase in child stunting

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[13]WHO "Household water treatment and safe storage" <http://www.who.int/household_water/en>
[14]UNICEF "Fast Facts And Figures About Hand washing"

rate[15]. The survey established that 46.8% of the household practiced open defecation, 52.7% used latrine while 0.2% used flash toilet. Open defecation reduced very slightly from 46.9% to 46.8%. This is still high and could be attributed to migration and cultural practices making the practice socially acceptable in some parts of the county especially the pastoral community (North Pokot).

3.7 Food Security and livelihoods

3.7.1 Food security information

The July Long rains assessment conducted by the Kenya food security steering group classified the Pastoral and Agro-pastoral Livelihood zones of the county under crisis IPC phase three and Mixed farming zones under IPC phase 1. The IPC nutrition classified the county under critical phase with a GAM rate of 20.4 percent.

The main contributing factor to the deteriorating food security nutrition situation in the county includes household food insecurity, caused by low milk availability and food stocks and high food prices. Other factors include common illnesses such as diarrhea, disease outbreaks, low coverage of supplementation programs, poor child feeding practices, and poor water and hygiene practices

7.2 Household Dietary Diversity

Household dietary diversity is used as a proxy measure of the socio-economic level of the household. Dietary diversity was assessed by 7 days recall period. A total of 16 food groups later aggregated to 12 were assessed. The mean household dietary diversity score deteriorated to 6.9 from 7.5 recorded in June 2016. This could be attributed to low milk production and consumption attributed to poor indicating a worsening trend across the Pastoral and Agro Pastoral livelihood zones. Notably Nyangaita, Marich, Wakorr and Sarmach had poor quality pasture. Incidents of insecurity in some sites within the county such as Chesegon remain the major constraint to pasture access.

The high market prices could have contributed to the poor household consumption. The market price in the county was 51 percent above the three year short term average in the month of June 2017.This was also worsened by the limited supply of cereals from external sources bordering the county coupled with stock outs are the main factors that resulted in the Pastoral areas recording a higher price in comparison to other areas (KFSSG, LRA, July 2017). The SMART survey results indicated that 70 percent of households purchased food with poor terms of trade meant that households received less of cereals with a sale of a goat.

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[15] Spears D, Ghosh A, Cumming O (2013) Correction: Open Defecation and Childhood Stunting in India: An Ecological Analysis of New Data from 112 Districts. PLoS ONE 8(9)

3.7.3 Food consumption score (FCS)

Food consumption score (FCS) is a proxy indicator of household food security that combines measurements of dietary diversity, the frequency with which different foods are consumed and the relative nutritional importance of various food groups. The classification on FCS for poor and borderline food consumption was at 6.7 % and 24.8% respectively as shown in table 17. There was a general decline in poor and borderline FCS when compared to the same period 2016 where the score was 5% and 14.4 % respectively.

Table 15: Food Consumption Score

Main Threshold	Nomenclature	Percentage of Households
0-21	Poor food consumption - cereal and sugar	6.7%
21.5-35	Borderline food consumption - Cereal, legumes, milk, oil, sugar	24.8%
>35.5	Good food consumption - cereal, legumes, milk, condiment, flesh meat, vegetable, oil, sugar	68.5%

This poor food consumption score can be attributed to the high food prices and poor terms of trade experience in the county during the period under review.
There was also low household milk consumption attributed to poor pastures for livestock among other contributing factors.

Women Dietary Diversity

Women dietary diversity is a proxy to individual dietary diversity. The survey results indicated a mean Women Dietary Diversity of 3.5 which is lower than 5. The result further showed that 53.9 percent of women consumed from less than five food groups. The foods mostly consumed by women are shown in figure 8.
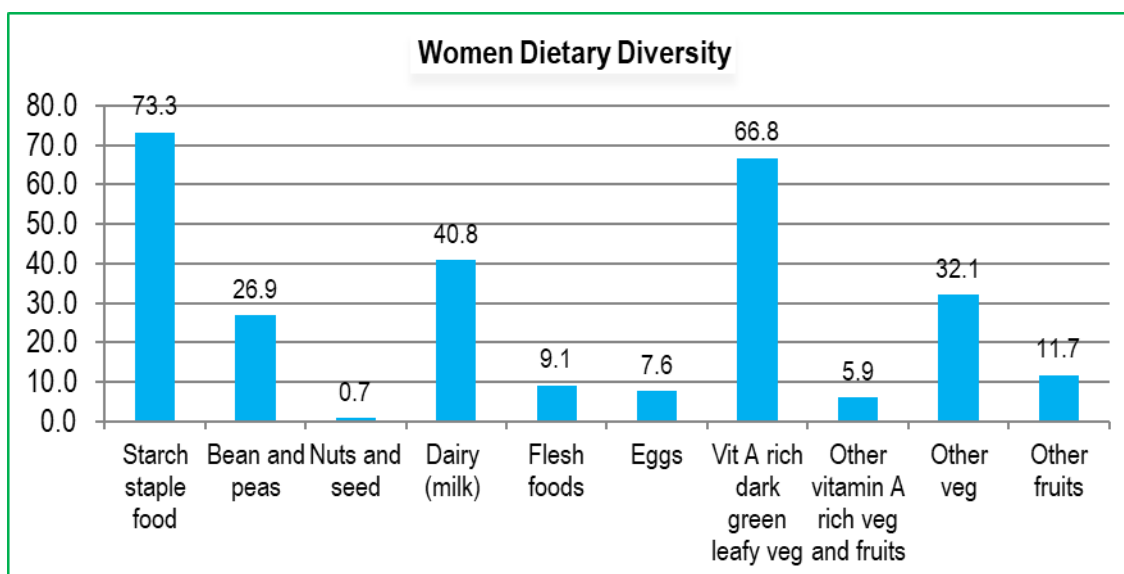
Figure 8: Women Dietary Diversity (Food Consumed by Women)

3.7.4 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 53.4% of the households reported not to have had enough money to buy foods or enough food in 2017 compared to 42.7% in 2016.The most utilized form of coping strategy by households were; rely on less preferred & less expensive food, limit portion sizes and reduce number of meals, however 23.8 percent of households employed the most severe strategy of restricting consumption of food by adults for young children to eat.

Table 16: Coping strategy index

Coping strategy	% HHs (N=470)	Frequency score (0-7)	Severity score (1-3)	Weighted score (Freq*weight)	
				2016	2017
Rely on less preferred & less expensive food	26.1%	1.9	1	2.8	2.6
Borrow food	25.5%	1.8	2	3.8	3
Limit portion sizes	26.8%	1.5	1	3.3	2.9
Restrict consumption of food by adults for young children to eat	23.8%	1.6	3	8.7	5.4
Reduced number of meals	26.6%	3.6	1	3.7	3.4
Total weighted Coping Strategy Score				**22.3**	**17.3**

4.0. CONCLUSION

The prevalence of acute malnutrition both GAM and SAM based on survey result was at 20.4 and 3.2% respectively. The prevalence remained at critical levels of WHO classification attributed to worsening food and nutrition security situation due to poor performance of short and long rains. There was significant increase in GAM from 15.3% with a p value of 0.057. This can be attributed to poor food and nutrition security situation with a FCS for poor and borderline recorded at 6.7% and 24.8% respectively as compared to 5% and 14.4% for poor and borderline respectively in 2016 SMART survey. The survey highlights women dietary diversity of 3.5 which is lower than 5. The result further showed that 53.9 percent of women consumed from less than five food groups. Other attributing factors to malnutrition among under-fives are: child morbidity (30.7%) and household food insecurity (53.4%). Of importance to note is the measles coverage of 47.6% and 11.1% at 9 months and 18 months respectively below the recommended 80%. There is also need to identify and address bottlenecks to optimal Vitamin A and deworming coverage which were recorded below 80% target. The survey also highlights 6.9% of pregnant women consumed IFAS in the recommended over 90 days. Further poor nutrition situation among children under 5 years can also be linked to increased morbidity resulting from poor hygiene and sanitation. The survey highlights 36.4% of household access water from safe water sources which is a slight decrease from 37.6%. The poor access to potable water can be attributed to poor performance of rains resulting to overstretching of existing boreholes and long distances to water points. In order to address the deteriorating food and nutrition security situation there is need to strengthen multi-sectoral collaboration and partnership geared towards addressing the basic, underlying and immediate causes of malnutrition.

5.0. RECOMMENDATION

To come up with recommendations aimed at improving food and nutrition security situation, improve health and nutrition indicators, improve hygiene and sanitation and address other cross cutting issues that impacts on the wellbeing of children under 5 years and women of reproductive age, the team leverage on county steering group (CSG) and county nutrition technical forum (CNTF) to first review status of implementation of previous recommendation from the 2016 Integrated SMART survey and develop recommendation/ interventions action plan . Table 18 shows recommendations that were identified based on the survey results and other secondary information.

Table 17: Recommendations

Finding	Recommendations	Activities	Target	Timeline	Estimated Budget (KES)	Actors
Increased prevalence of under nutrition; a) Acute malnutrition rate at emergency level GAM rate (20.4%)	Conduct exhaustive and accelerated mass screening and active case finding and referral for malnourished children at community level	• Hold planning meeting for the exhaustive mass screening at county and sub county level • Conduct socio mobilization at the community level to create awareness on the activity • Conduct mass screening at the community at identified points • Analysis data and share with stakeholders	90% of the villages in each sub county have been reached	June 2018	3,000,000	MoH, ACF, KRCS, World Vision,)

SAM (3.2%) b) stunting 39.9%	Conduct Blanket Supplementary Feeding for all boys and girls under 5 years of age for pastoral and agro pastorals	• Hold planning meeting for BSFP with county and sub county teams to prepare for implementation of the program • Map out sites for BSFP • Conduct social mobilization to community leaders and the community leaders • Carry out BSFP activities in the mapped sites • Analyze data and share with stakeholders • Conduct monitoring and evaluation	Over 80% 0f children under five and pregnant and lactating	June, 2018	134,000,000	MoH, ACF, KRCS, World Vision
	Accelerate vitamin A supplementation targeting 6-59 months and deworming of children 12-59 months at health	• Conduct growth monitoring for all the children < 5 years attending health facilities • Administer Vitamin A and dewormers to all children attending IMCI as per guidelines	40% VAS coverage and 50% deworming coverage among children 6-59 months	By June 2018	100,000	MoH, ACF, KRCS, World Vision

		Conduct utilization campaign and demonstration on how to prepare nutritious meals for different cohorts	• Teach community peer groups on how to prepare nutrition foods at household levels at different level • Hold community demonstrations on preparation of nutritious foods	Increase minimum acceptable diet to for children aged 6-23 months from 25% to 35%	June, 2018	500,000	MoH, ACF, KRCS, World Vision
		Promote production and consumption of diversified foods at household level	• Educate farmers on the benefits of crop diversification • Educate households on benefits of consuming diversified diets • Hold demonstrations on food preparations	30% of households consume diversified diets	By June 2018	500,000	MoH, ACF, KRCS, World Vision
		Promote fruit tree planting and utilization	• Promote production of fruit tress through the peer groups at the community • Conduct health education on the importance of fruits in the body.	30% of MTMSG do plant fruit trees as a group or individuals	By Dec 2018	300,000	MoALF, MoH, MoW, MoE, MoTC, ACF, KRCS, World Vision

	Promotion of keeping of dairy goats in agro-pastoral and pastoral for milk consumption at household level	• Conduct health education on the importance of consuming goat's milk. • Promote keeping of the dairy goats at the community through community peer support groups	20% of households have dairy goats that increases consumption of milk for children under five	By June 2018	12,000,000	MoALF, ACF, KRCS, World Vision
	Establishment and promotion of kitchen gardening applying different technologies	• Educate the importance of kitchen gardens at the peer support groups • Promote production of different vegetables that will promotes diversified diets	40% of MtMSG have kitchen gardens in their groups/households	June,2018	500,000	MoALF, ACF, KRCS, World Vision

	Conduct advocacy, communication and social mobilization (ACSM) utilization various channels of communication (community dialogues, radio talk shows, market advocacy, peer support groups) for positive behavior change towards optimal MIYCN	• -Develop messages for radio talk show, market advocacy, community engagements and advocacy workshop. • -Conduct radio talks and spots to inform the community on the current practices and get to understand their barriers to adoption of the recommended behaviors • -Hold community peer group meetings to discuss community infant feeding practices and devise strategies to improve uptake of the recommended practices • -Conduct market advocacy through role plays to increase the uptake of the behavior • Accelerate ACSM on MCH activities on during nutrition weeks (World Breastfeeding and Malezi bora weeks)	4 radio talk shows held, 20 kokwo groups established	June,2018	2,000,000	MOH, ACF, KRCS

	Promote and support appropriate breastfeeding and complementary feeding practices at community level	• Conduct health education on the appropriate infant and young child feeding practices at community • Hold cooking demonstration on appropriate complementary cooking methods and food variety • Train health workers on MIYCN • Support 0ne hospital to be accredited BFHI • Promote BFCI in the community • Promote men involvement in child care activities through men conversation (Kokwo meetings) • Hold cooking competition at community level for MtMSG • Promote infant feeding practices through community activities such as sports	Promote EBF to 45%	June,2018	5,000,000	MoH, ACF, KRCS, World Vision

	Develop and promote local recipes for complementary feeding at community level Convene and sustain regular multi-sectoral coordination and collaboration	• Conduct baseline assessment to understand the recipe that community uses for children aged 6-23months • Analyze the data to inform planning and share with relevant actors • Work with community peer groups to develop complementary feeding recipes based on livelihood • Promote the utilization of developed recipes	At least 3 recipes developed; one for each livelihood	June,2018	2000,000	MoH, ACF, KRCS, World Vision
	Conduct accelerated integrated outreach services in pastoral and agro pastoral livelihood zones Scale up the number of integrated outreach sites from29 to 50 sites	• Conduct resource mobilization to scale up outreach services • Map hard to reach populations and outreach sites • Conduct outreaches in hard to reach areas • Integrate outreach data to facility data	Increase IMA coverage 40%	By June 2018	1,000,000	MoALF, MoH, ACF, KRCS, World Vision
	Promote enhanced	• Sensitize CHVs on the importance of efficient referral system	50% of functional CU refer	June, 2018	500,000	MoH, ACF,

	community referral system	• Provide referral slip to CHVs • Provide MUAC tapes for community identification, screening and referral of malnourished children • Enhance defaulter tracing at community • Scale up IGA to other CU and ensure the sustainability of the activities	malnourished children to the health facility			KRCS, World Vision
	Strengthen coordination at all levels	• Hold regular coordination meetings at county and sub county level	6 CNTF meetings held at county and 12 at SCNTF held	June, 2018	1,000,000	MoH, ACF, KRCS, World Vision
	Strengthen information management system	• Strengthen weekly surveillance • Strengthen monthly reporting of nutrition information • Conduct data review meetings on nutrition data • Conduct DQA to improve the quality of data • Ensure adequacy of data tools	Reliable data and 80% reporting rates for nutrition data	June,2018	1,500,000	MoH, ACF, KRCS, World Vision
	Improve the quality of service delivery and ensure IMAM protocol is adhered	• Hold trainings to health workers through classroom and OJT • Conduct surge model in the health facilities to monitor IMAM admissions at community level	Two IMAM trainings conducted One health management meeting Two meetings for	June, 2018	6000,000	MoH, ACF, KRCS, World Vision

			health workers			
Low Micro nutrient supplementation and deworming Vitamin A supplementation *- 6-11 months – 39.6%* *- 12-59 months once 38.0%, Twice 10.7%* - Deworming *12-59 months – 5.2%* Low Iron and folic acid supplementation <90 days 93.1% *≥90-180 days –* 6.9%	Increase uptake of vitamin A and de wormers	• Conduct Advocacy Communication and Social Mobilization for Vitamin A at community leaders and ECDE teachers • Strengthen documentation of VAS at the facility • Conduct refresher training to the health workers on VAS and deworming uptake • Conduct monthly monitoring and quarterly support supervision for Vitamin A supplementation and deworming at health facility and community level. • Request for VAS commodity • Conduct DQA for VAS data • Conduct bi-annual Vitamin A supplementation and deworming in ECDE and ensure communication with the caregivers • Document Vitamin A supplementation and deworming in MCH booklet at ECDE • Support and accelerate nutrition activities during Malezi Bora Weeks	40% VAS coverage and 50% deworming coverage among children 6-59 months	By June 2018	3,000,000	MoH, ACF, KRCS, World Vision

	Increase uptake of iron folic supplementation	• Conduct health education to mothers on the importance of IFAS to the mother and fetus • Hold nutrition education to mothers to overcome barriers to uptake of IFAS at household level • Hold refresher trainings to health work workers on IFAS • Strengthen IFAS documentations at the health facility • Work closely with the facilities to request for IFAS commodities to avoid stock outs • Provide feedback on IFAS uptake through the monthly in charges meetings	20% of pregnant women consume IFAs at Household level	June, 2018	1,200,000	MoH, ACF, KRCS, World Vision
	Conduct bottleneck analysis for evidence based advocacy and resource allocation for micronutrients supplementation	• Hold planning meeting with CCRST for bottle neck analysis • Develop the protocol for implementation of the analysis • Conduct bottle neck analysis • Compile report and disseminate to partners		June,2018	2,000,000	MoH, ACF, KRCS, World Vision

	Promote and distribute MNPs to all children aged between 6-23 months	• Conduct health education to mothers and caregivers on the importance of MNPS to children 6-23months. • Request and order for MNPS from KEMSA to ensure no stock outs. • Strengthen documentation and reporting of MNPS reports	80% of children aged 6-23months receive MNPS	June, 2018	200,000	MoH, ACF, KRCS, World Vision
Poor maternal health and nutrition with 3.6% of pregnant and lactating women malnourished (MUAC <210mm) and 15.3% at risk (≥210mm MUAC <230mm) Very Low Iron and folic acid supplementation (6.9%)	Improve maternal nutrition through diversified strategies	• Conduct maternal nutrition education leveraging on peer support groups and other community groups e.g. merry go rounds, MtMSGs and church groups • Screen pregnant and breastfeeding mothers for acute malnutrition and refer appropriately • Manage and treat malnourished P&L mothers at the health facilities • Conduct advocacy, communication and social mobilization utilizing Kokwo model at community level targeting men to support maternal nutrition. • Link mothers to economic empowerment programs to improve access to diversified income for household utility to improve access and utilization of diversified diet	Improved maternal nutritional status	June, 2018	200,000	MoH, ACF, KRCS, World Vision

	Conduct advocacy communication and social mobilization aimed at addressing key barriers and misconceptions to IFA demand and utilization at community level.	• Hold meetings with community leaders to promote uptake of IFAS among pregnant mothers • Conduct health education to pregnant mothers on importance of IFAS	Improve uptake of IFAS	By June 2018	1,200,000	MoTC, MoALF, ACF, KRCS, World Vision,
Poor Hygiene and sanitation Open defections (46.8%) inappropriate hand washing practices, hand washing at 4 critical times (2.2%) HHs not treating Water-88.9%, hand washing	Promote appropriate hand washing practices	• Conduct health education on the importance of hand washing during the 5 critical times • conduct demonstrations on appropriate hand washing to caregivers at health facility and community level • conduct community dialogue on appropriate hand washing practices • hold radio talk shows on promotion of appropriate hygiene practices • Promote water sanitation and hygiene in schools • Accelerate WASH activities during	15% of individual washing hands in all the 5 critical times	By June 2018	500,000	MoW, MoH, MoE, ACF, KRCS, World Vision

without using soap and water (57.3%)		commemoration of Global Hand washing Day				
	Scale up CLTS through community strategy	• Conduct health education on the importance of using toilet for fecal disposal • Hold sensitization meetings with community leaders on importance of using toilets for fecal disposal • Conduct community triggering on toilets • Support communities to have construct toilets	60% of household use toilets for fecal disposal	June,2018	1,200,000	MoH, ACF, KRCS, World Vision
	Promote consumption of safe drinking water at household level	• Conduct health education on the importance of consuming safe water • Create awareness in the community on the need to store drinking water in closed containers • Promote different methods of water treatment and water storage facilities at household level • Procure and distribute water treatment chemicals to households • Sensitization of community on consumption of potable water • Protection of water sources in community	55% of households consume safe water	June, 2018	2000,000	MoW, MoH, ACF, KRCS, World Vision

6.0. ANNEX

Annex 1: Status of previous recommendation –June, 2016 integrated SMART survey

Key Findings	Possible Causes	Recommendations	Status of implementation
Increased prevalence of under nutrition; a) Acute malnutrition rate at emergency level GAM rate (15.3%) SAM (2.9%) b) stunting 44.5%	• Poor case finding and referral for acute malnutrition at the community level • Inadequate food at household (42.7%) • Poor Household dietary diversity (7.5) • Poor minimum dietary diversity and acceptable diet at 16.4% and 12.6% respectively (KAP/C4D February 2014) • The most consumed food is cereals at 99.3% and the least consumed food is organ meat at 4.7%.) • Poor child care practices; low EBF at 37.9% • Low	• Conduct mass screening and active case finding and referral for malnourished children at community level ▪ Increase crop and livestock production ▪ Increase crop and livestock diversification ▪ Develop and promote local recipes for complementary feeding • Promote consumption of diversified foods at household level • Continue linkage of MtMSGs to livelihood programs. • Create demand for nutrition services at community level through advocacy, communication and social mobilization ▪ Promote and support maternal infant and young child nutrition at community level ▪ Strengthen multi-sectoral collaboration	Done, supported by KRCS, ACF and NDMA. Ongoing: national, county governments and partners supported the MoALF in provision of variety seeds and livestock breeds to farmers, promotion of Multi-storey farming Ongoing- baseline survey on local foods given to children done, awaiting report Ongoing through health education at health facility and at MtMSG Ongoing- MoALF, NDMA, MoT Ongoing- radio, health education, national days Ongoing- training of CHV on nutrition technical module to strengthen

	diversified sources of income (NCA 2015) • Decreased vitamin A supplementation (6-11 months -52.3% and 12-59 months 26.3%)	▪ Scale up VAS targeting 6-59 months from 26.2% to 30% ▪ Scale up integrated outreach services targeting hard to reach areas from 18 to 25 sites	implementation Ongoing- ECDE, malezi bora and routine health facility Done- scale up to 48
Low Micro nutrient suppleme ntation and dewormin g Vitamin A suppleme ntation - *6-11 months – 55.3%* *- 12-59 months 26.2%* *-* Dewormin g 12-59 months – 24.2% Low Iron and folic acid suppleme ntation – 16.0%	▪ Low attendance to CWC and/low demand for Vitamin A after 1 year of age ▪ Weak linkage of reports from ECDE and outreaches to link facilities ▪ Lack of information by caregivers on ECDE supplementatio n ▪ Low follow up and referral of eligible children for vitamin A supplementatio n and deworming ▪ Inadequate staff at health facilities ▪ Late attendance of pregnant women to ANC	▪ Create demand for Vit A through Advocacy Communication and Social Mobilization at community level ▪ Conduct monitoring of Vitamin A supplementation and deworming documentation at health facility and community. ▪ Conduct on the job training targeting health workers on micronutrients supplementation and deworming ▪ Integrate nutrition in school health programs ▪ Conduct bi-annual Vitamin A supplementation and deworming in ECDE ▪ Link IMCI to CWC services ▪ Lobby for recruitment of	▪ Ongoing at the health facilities, health workers, ECDE teachers and community leaders' sensitization and radio talk show- Malezi Bora campaigns ▪ Ongoing- through routine monitoring and supportive supervision ▪ Ongoing at health facilities based on identified needs such documentation, capacity ▪ Ongoing; done by health promotion department in conjunction with relevant departments ▪ Ongoing- twice a

	(at least 4 visit) at 18% ▪ Low adherence for iron folic acid supplementation among pregnant women	more qualified health workers	year in all the four sub counties, at health facilities and ECDE. ▪ Ongoing-sick children are seen at CWC first before seen by clinician. ▪ Done; submitted staffing gap for nutrition officers and considerations are underway
Poor Hygiene and sanitation Open defecations (46.9%) inappropriate hand washing practices, hand washing at 4 critical times (53.2%) HHs not treating Water- 85.5%, hand washing without using soap and water (46.2%)	▪ Retrogressive cultural practices/ beliefs ▪ Pastoral lifestyle of communities ▪ Unsafe drinking water at household ▪ Low CLTS coverage ▪ Poor safe water sources (63. 4%)	▪ Advocacy Communication and Social Mobilization at community on hygiene and sanitation. ▪ Scale up CLTS through community strategy ▪ Promote water treatment at household and community levels ▪ Intensify hand washing promotions through demonstrations and campaigns ▪ Promote water sanitation and hygiene in schools ▪ Protection of water sources in community	▪ Ongoing through health education, barazas, kokwo as well as development of communication strategy to strengthen this. ▪ Ongoing; with support from world vision and Fred Hollow's foundation ▪ Ongoing-through health education and water treatment chemicals were purchased and distributed at community with NDMA support ▪ Ongoing-through health education,

			community dialogue and action days, commemoration at national days, UNICEF support with soap + water jerricans
			▪ Ongoing-integrated in bring back out of school children program implemented by WVI, MoW distributed water tanks to schools, water trucking.
			▪ Ongoing-supported by MoW
Poor maternal health and nutrition with 4.7% of pregnant and lactating women malnourished (MUAC <210mm) and 15.8 % at risk (<210mm	▪ Heavy maternal workload (low men involvement) ▪ Low Individual Women Dietary Diversity (IWDD) with cereals mostly consumed (86.9%) and organ meats least consumed (3.2%) and mean WDD 3.8 ▪ Cultural beliefs	▪ Conduct Advocacy Communication and Social Mobilization at community level targeting men support. ▪ Conduct maternal nutrition education through mother to mother support groups and other community groups ▪ Promote women economic empowerment programs ▪ Promote consumption of diversified diet	▪ Ongoing; kokwo meetings established and meetings held at community. ▪ Ongoing- at MtMSG ▪ collaboration with social support services, MoT, MOALFD, MtMSG IGA ▪ Promotion through health education, MtMSG

MUAC >230mm) Low Iron and folic acid supplementation (16.0%)	▪ Low and late attendance of pregnant women for Antenatal Care (ANC) services				

Annex 2: Sampled Clusters

Sub-County	Location	Sub-Location	Village	Livelihood Zone	Cluster No
West Pokot	Miskwony	Chesra	Kariwo	Pastoral	1
West Pokot	Riwo	Kongelai	Rikamoi	Pastoral	2
West Pokot	Serewo	Serewo	Adado	Pastoral	Reserved cluster
West Pokot	Endugh	Krich	Klan	Pastoral	3
West Pokot	Kishaunet	Kishaunet	Simitoi	Agro-pastoral	4
West Pokot	Talau	Chepkoti	Charok(B)	Agro-pastoral	5
West Pokot	Chepkomos	Tompul	Chesitoi	Agro-pastoral	6
West Pokot	Sook	Mungit	Maraka	Agro-pastoral	7
West Pokot	Chepkomos	Cheptram	Chewarany	Agro-pastoral	Reserved cluster
West Pokot	Kaisakat	Siyoi	Kamariny(B)	Mixed farming	Reserved cluster
West Pokot	Mnagei	Mwotot	Saint Mary's (Iii)	Mixed farming	8

West Pokot	Kapkoris	Tilak	Bondeni(li)	Mixed farming	9
West Pokot	Kishaunet	Lityei	Lutheran(l)	Mixed farming	10
West Pokot	Talau	Kapsurum	Kapkeno Tea Centre	Mixed farming	11
North Pokot	Kalapata	Kalatapata	Kapowuoto	Pastoral	12
North Pokot	Alale	Alale	Karorok	Pastoral	13
North Pokot	Kiwawa	Kiwawa	Kiwawa'a'	Pastoral	Reserved cluster
North Pokot	Kapchok	Kapyen	Nasakam	Pastoral	14
North Pokot	Kodich	Karameri	Karameri	Pastoral	15
North Pokot	Lokichar	Lokichar	Cheptepesha	Pastoral	16
North Pokot	Suam	Ngechecwa	Chesiriko	Pastoral	17
North Pokot	Akoret	Akoret	Chepchirkarar	Pastoral	18
North Pokot	Kaptolomwo	Kaptolomwo	Chesuswoni	Pastoral	19
South Pokot	Chepkobegh	Shalpogh	Pusian	Agro-pastoral	Reserved cluster
South Pokot	Chepkobegh	Chesra	Totil	Agro-pastoral	20
South Pokot	Senetwo	Korellach	Parkaswa	Agro-pastoral	21
South Pokot	Kipkomo	Kosulol	Ririmboi	Agro-pastoral	22
South Pokot	Kapyongen	Simotwo	Korpu	Agro-pastoral	23
South Pokot	Batei	Morpus	Chepnoyon	Agro-pastoral	24
South Pokot	Kaptabuk	Kapsangar	Kogmuu	Mixed farming	25
South Pokot	Lelan	Kapkanyar	Chepororwo	Mixed farming	26
South Pokot	Tapach	Kamelei	Psitonu	Mixed farming	27
South Pokot	Sondany	Nyerkulian	Lulwoi	Mixed farming	28
South Pokot	Chebon	Sina	Ktaima	Mixed farming	Reserved cluster
South Pokot	Sondany	Nyarpat	Kaptukony	Mixed farming	29
Central Pokot	Kopro	Kokwatendwo	Tosikirio	Agro-pastoral	30

Central Pokot	Chepkokogh	Sukuk	Kasamogh	Agro-pastoral	31
Central Pokot	Mosop	Kapkatet	Sotot	Agro-pastoral	32
Central Pokot	Kopro	Soka	Iyoon	Agro-pastoral	33
Central Pokot	Sekerr	Chepkondol	Simotwo	Agro-pastoral	Reserved cluster
Central Pokot	Masol	Tikit	Kiwawa	Pastoral	34
Central Pokot	Weiwei	Ptokou	Chesikiro	Pastoral	35
Central Pokot	Lomut	Mogho	Kasasiran	Pastoral	36
Central Pokot	Parkoyu	Parek	Chorwa	Pastoral	Reserved cluster

Annex 3: Plausibility report

CRITERIA	Flags	unit	Excel	Good	Accept	Problematic	SCORE
Missing/ flagged data	Incl	%	% 0-2.5 **(0)**	>2.5-5.0 **(5)**	>5.0-7.5 **(10**)	>7.5 **(20)**	**0 (1.9 %)**
Overall sex ratio	Incl	P	>0.1 (0)	>0.05 (2)	>0.001 (4)	<=0.001 (10)	**0 (p=0.931)**
Overall age distribution	Incl	P	>0.1 **(0)**	>0.05 **(2)**	>0.001 **(4)**	<=0.001 **(10)**	**4 (p=0.039)**
Digit pref. score Weight	Incl	#	0-7 **(0)**	8-12 **(2)**	13-20 **(4)**	>20 **(10)**	**0 (5)**
Digit pref. score Height	Incl	#	0-7 **(0)**	8-12 **(2)**	13-20 **(4)**	>20 **(10)**	**0 (7)**
Digit pref. score MUAC	Incl	#	0-7 **(0)**	8-12 **(2)**	13-20 **(4)**	>20 **(10)**	**0 (3)**

Standard deviation WHZ	Excl	SD	<1.1 and >0.9 **(0)**	<1.15 and >0.85	<1.20 and >0.80	>=1.20 or <=0.80	**0 (1.09)**
Skewness WHZ	Excl	SD	<±0.2 **(0)**	<±0.4 **(5)**	<±0.6 **(10)**	>=±0.6 **(20)**	**0 (0.11)**
Kurtosis WHZ	Excl	#	<±0.2 **(0)**	<±0.4 **(1)**	<±0.6 **(3)**	>=±0.6 **(5)**	**0 (-0.08)**
Poisson distribution WHZ	Excl	P	>0.05 **(0)**	>0.01 **(1)**	>0.001 **(3)**	<=0.001 **(5)**	**1 (p=0.015)**
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**5 %**
The overall score of this survey is **5 %,** this is excellent.							

Annex 4: Standardization Report

	OUTCOME		
	Subjects	**Precision**	**Accuracy**
Weight			
Supervisor	10	TEM acceptable	Bias good
Enumerator 1	10	TEM acceptable	Bias good
Enumerator 2	10	TEM acceptable	Bias good
Enumerator 3	10	TEM poor	Bias good
Enumerator 4	10	TEM acceptable	Bias good
Enumerator 5	10	TEM acceptable	Bias good
Enumerator 6	10	TEM acceptable	Bias good
Enumerator 7	10	TEM poor	Bias good
Enumerator 8	10	TEM acceptable	Bias good
Enumerator 9	10	TEM reject	Bias good
Enumerator 10	10	TEM acceptable	Bias good
Enumerator 11	10	TEM acceptable	Bias good
Enumerator 12	10	TEM reject	Bias good
Enumerator 13	10	TEM poor	Bias good
Enumerator 14	10	TEM poor	Bias good
Enumerator 15	10	TEM poor	Bias good
Enumerator 16	10	TEM acceptable	Bias good
Enumerator 17	10	TEM poor	Bias good
Enumerator 18	10	TEM poor	Bias good

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

Annex 5: Integrated SMART Survey Questionnaire

1.IDENTIFICATION (dd/mm/yy)-------------------------				1.1 Data Collector_____		1.2 Team Leader_____			1.3 Survey date	
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 Age Group	**2.2a** Please give me the names of the persons who usually live in your household.	**2.2b** Please indicate the household head (write HH on the member's column)	**2.3** Age (Record age in MONTHS for children <5yrs and YEARS for those ≥ 5 years's)	**2.4** Childs age verified by 1=Health card 2=Birth certificate/ notification 3=Baptism card 4=Recall 5. other _____ specify	**2.5** Sex 1= Male 2= Female	**2.6** 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 to 2.7)	**2.7a** 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)……………………..	**2.7b** 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 _____	**2.8** 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 ↓	**2.10** 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
< 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/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	Is the child in any nutrition program 1. Yes 2. No If no skip to questions 3.2	If yes to question J. which nutrition program? 1.OTP 2.SFP 3.BSFP Other Specify _____	Has your child (NAME) been ill in the past two weeks? 1.Yes 2. No If No, skip to 3.4	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 **had watery diarrhoea** in the last TWO (2) WEEKS, did the child get: 1. ORS 2. Zinc supplementation? *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

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

4.2.2 a	**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	**4.5 How much water did your household use YESTERDAY (excluding for animals)?**	

	2. Closed container / Jerrican |____|	*(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 _____ KES/20ltrs**	**4.6.2 If paid per month how much** |____|

4.7.1 a	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
		4.7.1b Is soap or detergent or ash/mud/sand present at the place for handwashing?
		
		YES, PRESENT 1
		NO, NOT PRESENT................. ……………………**2**	

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 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**

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, 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 NOW?**
	     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	|_____|