INTEGRATED SURVEY

WEST POKOT COUNTY

March 2013

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ABBREVIATIONS

ACF-USA	Action Contre la Faim- USA (Action Against Hunger-USA)
ALRMP	Arid Lands Resource Management Project
ASAL	Arid and Semi-Arid Land
CI	Confidence Interval
CLTS	**Community Led** Total Sanitation
DHIS	District Health Information System
DHMT	**District** Health Management Team
EBF	Exclusive Breastfeeding
ENA	Emergency Nutrition Assessment
EPI	Expanded Program on Immunization
GAM	Global Acute Malnutrition
GOK	Government of Kenya
HINI	High Impact Nutrition Interventions
HDDS	Household Dietary Diversity Score
IGA	Income Generating Activities
HDDS	Household Dietary Diversity Score
IDDS	Individual Dietary Diversity Score
NGO	Non-Governmental Organization
IYCN	Infant and Young Child Nutrition
KEMSA	Kenya Medical Supply Agency
KDHS	Kenya Demographic Health Survey
MAM	Moderate Acute Malnutrition
MOMS	Ministry of Medical Services
MOPHS	Ministry of Public Health and Sanitation
MTMSGs	Mother to Mother Support Groups
MUAC	Mid Upper Arm Circumference
OPV	Oral Polio Vaccine
PPS	Population Proportion to Size
RC	Reserve Cluster
SAM	Severe Acute Malnutrition
SMART	Standardized Monitoring and Assessment of Relief and Transitions
UNICEF	United Nations Children's Fund
W/H	Weight for Height
WHO	World Health Organization

1. EXECUTIVE SUMMARY

West Pokot County consists of four districts namely; Central, South, West and North Pokot. The county borders Uganda to the West, Trans Nzoia and Marakwet to the South and Turkana to the East.

1.1. OBJECTIVES

The main objective of the survey was to determine the prevalence of acute and chronic malnutrition amongst children aged 6-59months with the following specific objectives:

- To determine the morbidity rates amongst children aged 0-59 months over a two week recall period
- To estimate the coverage of immunization *(measles, OPV1&3),* micronutrient supplementation *(Vitamin A, Therapeutic Zinc),* deworming amongst children aged 0-59 months
- To estimate the nutritional status of female caregivers *(aged 15-49 years)*using MUAC measurements
- To assess possible underlying causes of malnutrition such as household food security, Maternal and Child Health care practices, and water sanitation and hygiene practices affecting the nutritional status of the population in West Pokot County.

1.2. METHODOLOGY

SMART methodology was employed during the anthropometric survey in planning, training, data entry and analysis. Other data sets were also gathered concurrently during this survey to include data on WASH, food security and livelihood. 34 clusters of 12 households each were sampled.

The timings for this survey are also different from the past. This change was based on survey objectives as well as to the need to minimise logistical challenges that hamper access during the rainy seasons. The March 2013 t findings are therefore not necessarily comparable to past survey findings but will however be used as a proxy to compare 2011/2012 findings and trends.

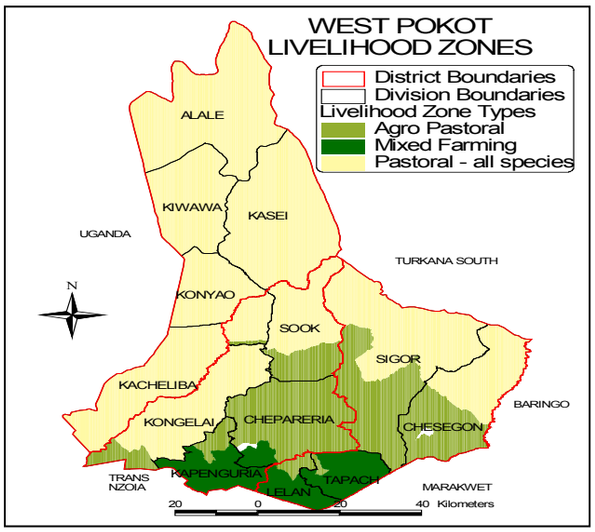
1.3. RESULTS

A total of 362 households were sampled with 399 children aged 6-59 months assessed for nutritional status. Table 1 summarises the key findings from the study.

Table 1: Summary of results in West Pokot County, 2011- 2013

INDEX	INDICATOR		RESULTS		
			MAY 2011	**MAY 2012**	**MARCH 2013**
WHO 2006	WHZ-Scores	Global Acute Malnutrition W/H <-2 z and /or Oedema	14.9% CI(13.9-18.8)	12.3% CI(9.3-16.0)	**9.8% CI(6.8-12.8)**
		Severe Acute Malnutrition W/H <-3 z and /or Oedema	2.3% CI(1.3-4.2)	1.5% CI(0.7-3.2)	**1.0% CI(0.3-3.3)**
WHO 2006	Z-Score	Stunting	37.5% CI(33.0-42.3)	43.2% CI(38.5-48.0)	**46.6% CI(41.4-51.8)**
WHO 2006	Z-Score	Underweight	30.4% CI(26.3-34.9)	36.1% CI (31.6-40.9)	**33.2% CI (28.3-38.2)**
Measles Immunisation coverage	Card		53.0%	54.0%	**42.2%**
	Recall		29.0%	24.8%	**34.6%**
Vitamin A coverage	6-11	At least once		41.2%	**52.3%**
	12-59	At least once		39.2%	**66.7%**
		At least twice		27.0%	**35.7%**
		At least thrice		5.1%	**9.6%**

2. INTRODUCTION



West Pokot County is an ASAL[1]area located in Rift Valley Province of Kenya. It borders Uganda to the west, Trans Nzoia and Marakwet districts to the south, Turkana district to the north and east and Baringo district to the south east.

It is relatively rugged with an altitude ranging from 900min the plains of Turkana in north-east to over 3000 m in Cherangani Hills in the south-eastern parts of the county. The district has a total area of 9,100 square kilometres with an estimated population of 512,690[2].

The county comprises of four main districts namely West, Central, South and North Pokot with three major livelihood zones of pastoralism, agro-pastoral and mixed farming for North, Central, West and South Pokot districts respectively.

Figure 1: West Pokot County Map

3. OBJECTIVES

The main objective of the survey was to determine the prevalence of acute and chronic malnutrition amongst children aged 6-59 months with the following specific objectives:

- To determine the morbidity rates amongst children aged 0-59 months over a two week recall period.
- To estimate the coverage of immunization *(measles, OPV1&3),* micronutrient supplementation *(Vitamin A, Therapeutic Zinc),* de worming amongst children aged 0-59 months.
- To estimate the nutritional status of female caregivers *(aged 15-49 years)* using MUAC measurements
- To assess possible underlying causes of malnutrition such as household food security, Maternal and Child Health care practices, and water sanitation and hygiene practices affecting the nutritional status of the population in West Pokot County.

4. METHODOLOGY

4.1. Type of Survey

A nutrition survey was undertaken in West Pokot County using SMART methodology in March 2013. Secondary data review of various existing data (*FEWSNET, LRA[3], SRA[4], NDMA[5] monthly bulletins, DHIS and KAP February 2013 survey results*) was undertaken prior to the survey. As such, only relevant data was gathered during the actual data collection exercise as per the national survey guidelines.

[1] Arid and Semi-Arid lands
[2] West Pokot District Vision and strategy: 2005-2015.
[3]Long Rains assessment
[4]Short Rain assessment
[5]National Drought Management Authority

4.2. Sampling methodology

A two-stage sampling methodology was employed for the survey. The first stage involved the selection of clusters using population proportional to size(PPS) sampling methodology. ENA for SMART software, November 2012 version was used with the various variables and rationale for use are listed in Table 3.

Table 2: Parameters for sampling calculation

Data entered on ENA software	Anthropometric Survey	RATIONALE
Estimated prevalence of GAM	16	Highest GAM C.I in May 2012 SMART
Desired precision	4.4	High malnutrition level that does not warrant high precision as well as survey objectives
Design effect	1.4	May 2012 unveiled a design effect of 1.21. However, the survey timing and the vastness of the area necessitated the need to increase this to cater for any heterogeneity
Average household size	6	Finding from May 2012 SMART
Percent of under five children	19	Population estimate from DHIS and Census 2010
Percent of non-respondent	3	To cater for any unforeseen/anticipated circumstances for children to be absent from households e.g. insecurity, political instability, migrations especially in the North for gold mining
Households to be included	**408**	
Children to be included	**406**	

A total number of 34 villages were thus randomly selected from the sampling frame based on the number of households (12) that could be covered in a day.

The second stage included selection of 12 households from each of the 34 villages through simple random sampling. A complete and updated list of households was obtained from the focal person/village elder in each of the sampled villages prior to the data collection process.

In the sampled households, nutritional status of female caretakers was assessed by use of MUAC.

4.3. Organization of the survey

The training package included an intense exercise of 4 days at the *Evangelistical Lutheran Church Kapenguria* premises from 15th to 18th March 2013. A total number of 40 persons were trained in the aforementioned as follows: 24 enumerators /community members, 6 team leaders from various ministries to include Ministry of Health, Ministry of Agriculture, National Drought Management Authority (NDMA) and 10 ACF staff.

4.4. Data quality assurance process

A number of steps were undertaken to ensure the data collected during the survey process was up to standard for both internal and external utilization. The summary of data quality steps employed included:

- Validation of the survey planning and methodology at the Nutrition Information Working Group (NIWG)
- Training, standardization and pilot test
- Continuous daily data entry and primary analysis of all datasets
- Daily supervision and feedback given/debriefs to the teams

The overall survey data quality is as indicated in table 3.

Table 3: Overall data quality from plausibility check

CRITERIA	Missing /flagged data	Overall sex ratio	Overall Age distribution	Digit preference score weight	Digit preference score height	Standard deviation WHZ	Skewness WHZ	KurtosisWHZ	Poisson distribution WHZ	Overall score WHZ
Score	**0(0.8)**	**P=0.652**	**0(p=0.112)**	**0(4)**	**2(6)**	**0(0.98)**	**-0.5**	**-0.13**	**pvalue=0.082**	**2%**
Interpretation	Excellent	Equally represented	Excellent	Excellent	Good	Excellent	Symmetrical	Normal distribution	Excellent	Excellent

4.5. Data Collection

Primary data was gathered from the sampled villages to make inferences with regard to the survey objectives between 19th and 24th March 2013. The following information was gathered:

4.5.1. Anthropometric indicators

The following information was gathered from all eligible children aged 6-59 months

- **Age**: The child's immunization card, birth certificate or birth notification was the primary source for this information. In the absence of these documents, a local calendar of events (Appendix 3) developed with community members, enumerators and child's caretakers were used to estimate these.
- **Sex:** This was recorded as either 'f' for female or 'm' for male.
- **Weight:** A bathroom secca *"digital"* scale was used to measure the children's weight. These were calibrated using a standard weight to ensure accuracy
- **Height:** A height board was used to measure height while length was taken for children less than 2 years of age with heights measurements taken for those aged two years and above.
- **MUAC:** measured on the left arm, at the middle point between the elbow and the shoulder, while the arm was relaxed and hanging by the body's side. MUAC was measured to the nearest mm. In the event of a disability the right arm was used or for those who are left-handed, MUAC was taken on the right arm.
- **Bilateral Oedema:** This was assessed by the application of moderate thumb pressure for at least 3 seconds to both feet. Only children with bilateral oedema were recorded as having nutritional oedema.
- **Measles vaccination:** The child's vaccination card was used as a source of verification. In circumstances where this was not available, the caretaker was probed to determine whether the child had been immunized against measles or not. All children with confirmed immunization (by date) on the vaccination card, the status were recorded as "1" (Card) otherwise as "0" (Not immunized). Oral confirmation from the mother without proof of card was recorded as "2" (Recall). *However, only children greater than or equal to 9 months were used to determine coverage of this in the final analysis*.
- **Maternal nutrition**: Mothers or caretakers of reproductive age (15-49) years in the sampled household were taken a MUAC measuring to determine their nutritional status. This was then analysed to determine malnutrition levels amongst mothers and caretakers.

4.5.2. Anthropometric indicators interpretations:

WEIGHT FOR HEIGHT INDEX

This was estimated from a combination of the weight for height (WFH) index values combined with the presence of oedema. This index was expressed in WFH indices in Z-scores, according to WHO 2006 reference standards.

Z-Score:

- Severe malnutrition is defined by WFH < -3 SD and/or existing bilateral oedema on the lower limbs.
- Moderate 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 targeted children. During the survey, all severe and moderately malnourished children as per MUAC cut offs referred to nearby facilities. The MUAC criteria used are listed in table 4.

Table 4: MUAC Guidelines

MUAC Guideline	Interpretation
MUAC<115mm and/or bilateral oedema	Severe acute malnutrition with high risk of malnutrition
MUAC >=115mm and <125mm	Moderate acute malnutrition with risk of mortality
MUAC >=125mm and <135mm	Risk of malnutrition
MUAC > 135mm	Adequate nutritional status
Maternal MUAC Cut-Offs	
MUAC < 21cm	Malnourished
MUAC ≥21cm≤21.5cm	At risk
MUAC >21.5cm	Normal

4.6. Data Entry and Analysis

Anthropometric data was analysed in ENA for SMART software November 2012 version. Daily data entry was undertaken for all data sets so as to ensure close supervision and quality of data as the survey progressed. Extreme values flagged by the software were excluded from the final analysis. The household questionnaire data set was entered and analysed using SPSS Version 16.0 and Microsoft Excel.

5. SURVEY FINDINGS

5.1. CHILD HEALTH AND NUTRITION

5.1.1. Age and sex composition of children

Anthropometric data was collected from 399 children between 6-59 months. The overall boy to girl ratio was 1.0 indicating that sampling was unbiased and within expected range values of (0.8 – 1.2, Table 5). The age distribution on the other hand showed under representation in some age groups such as that of 54-59 months. This could probably be approximation of ages amongst 29.0% of the sampled children.

Table 5: Distribution by age and sex of sample

	BOYS		GIRLS		TOTAL		RATIO
Age in months	**n**	**%**	**n**	**%**	**n**	**%**	**Boy: girl**
06-17	53	52.5	48	47.5	101	25.3	1.1
18-29	47	45.6	56	54.4	103	25.8	0.8
30-41	42	48.3	45	51.7	87	21.8	0.9
42-53	40	50.6	39	49.4	79	19.8	1.0
54-59	13	44.8	16	55.2	29	7.3	0.8
Total	195	48.9	204	51.1	399	100.0	1.0

5.1.2. Prevalence of wasting (weight-for-height z-scores (WHO Standards 2006)

A poor nutrition situation was unveiled in March 2013 as illustrated in table 6. As indicated, the prevalence of wasting was slightly higher among boys (12.4%) as compared to girls (7.4%). This was however not significantly different (*chi square p value=0.13*). There were no edematous cases.

Table 6: Prevalence of acute malnutrition based on Weight for height z-score (and /or oedema) and by sex

	ALL n = 396	**Boys** n = 193	**Girls** n = 203
Prevalence of global malnutrition (<-2 z-score and/or oedema)	9.8 % (6.8 - 14.0 95% C.I.)	12.4 % (8.0 - 18.8 95% C.I.)	7.4 % (4.2 - 12.6 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	8.8 % (6.0 - 12.8 95% C.I.)	10.4 % (6.7 - 15.7 95% C.I.)	7.4 % (4.2 - 12.6 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	1.0 % (0.3 - 3.3 95% C.I.)	2.1 % (0.6 - 6.9 95% C.I.)	0.0 % (0.0 - 0.0 95% C.I.)

There is a slight shift of the sampled population to the left of the reference curve; indicating a poor nutrition status (Figure 2).

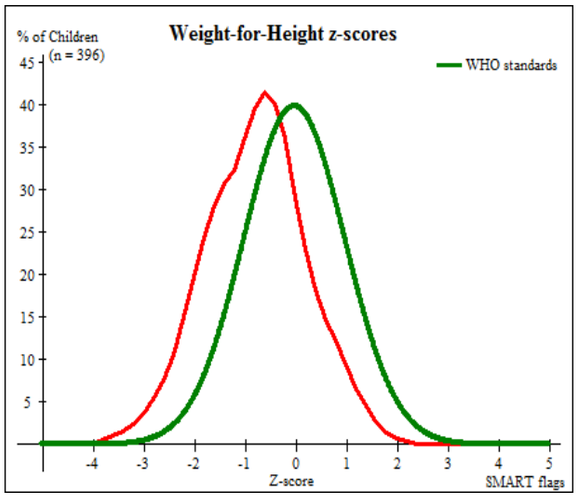


Figure 2: Gaussian curve on weight for height z-score

5.1.3. Prevalence of acute malnutrition and oedema based on WHZ scores

There were no cases of marasmic-kwashiokor or kwashiorkor (Table 7).

Table 7: Distribution of acute malnutrition and oedema based on WHZ scores

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 4 (1.0 %)	Not severely malnourished No. 392 (99.0 %)

5.1.4. Prevalence of Acute Malnutrition based on MUAC

The prevalence of acute malnutrition based on mid upper arm circumference is much lower than global acute malnutrition based on weight for height Z-scores as illustrated in table 8. There was no significant difference between the nutrition status of boys and girls.

Table 8: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex

	All n = 399	BOYS n = 195	GIRLS n = 204
Prevalence of global malnutrition *(< 125 mm and/or oedema)*	4.3 % (2.8 - 6.5 95% C.I.)	5.6 % (3.3 - 9.4 95% C.I.)	2.9 % (1.4 - 6.1 95% C.I.)
Prevalence of moderate malnutrition *(< 125 mm and >= 115 mm, no oedema)*	3.3 % (1.9 - 5.6 95% C.I.)	4.1 % (2.1 - 7.9 95% C.I.)	2.5 % (1.1 - 5.6 95% C.I.)
Prevalence of severe malnutrition *(< 115 mm and/or oedema)*	1.0 % (0.4 - 2.6 95% C.I.)	1.5 % (0.5 - 4.6 95% C.I.)	0.5 % (0.1 - 3.7 95% C.I.)

5.1.5. Prevalence of Underweight by Weight-for-age Z-scores

Low weight-for-age which arises from insufficient weight gain relative to age is a function of short stature, thinness or both. Because of its simplicity, it has been used nationally as the indicator to assess nutritional status in children under five on a routine basis through health facilities.

Based on the findings of the survey, the prevalence of global underweight was 33.2% and severe underweight 9.6% (Table 9). The prevalence of underweight among boys was higher (37.5%) compared to

girls (29.2%) as shown in table below. However, there was no statistical difference on the prevalence of underweight among boys and girls (chi square P value =0.165). The underweight prevalence is also higher compared to national averages of 16% and Rift Valley 19%based on KDHS[6] 2008/2009.

Table 9: Prevalence of underweight

	All n = 394	**Boys** n = 192	**Girls** n = 202
Prevalence of underweight (<-2 z-score)	(131) 33.2 % (28.3 - 38.6 95% C.I.)	(72) 37.5 % (31.8 - 43.6 95% C.I.)	(59) 29.2 % (22.5 - 37.0 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(93) 23.6 % (19.5 - 28.2 95% C.I.)	(45) 23.4 % (19.1 - 28.5 95% C.I.)	(48) 23.8 % (18.1 - 30.6 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(38) 9.6 % (6.7 - 13.8 95% C.I.)	(27) 14.1 % (9.5 - 20.4 95% C.I.)	(11) 5.4 % (2.7 - 10.6 95% C.I.)

5.1.6. Prevalence of stunting by Height-for-age Z-scores

Stunting (low height-for-age) results from extended periods of inadequate food intake, poor dietary quality, increased morbidity, or a combination of these factors. The prevalence of stunting in West Pokot County in March 2013 lies at **46.6% (41.5-51.8, 95% CI)** and is higher than both the national and Rift Valley province averages of 35.0% and 35.7% respectively[7].

Figure 3 illustrates the levels of stunting by the various age groups with levels of global stunting being highest amongst the 18-29 month age group while the highest levels of severe stunting were found in the 30-41-month age group.

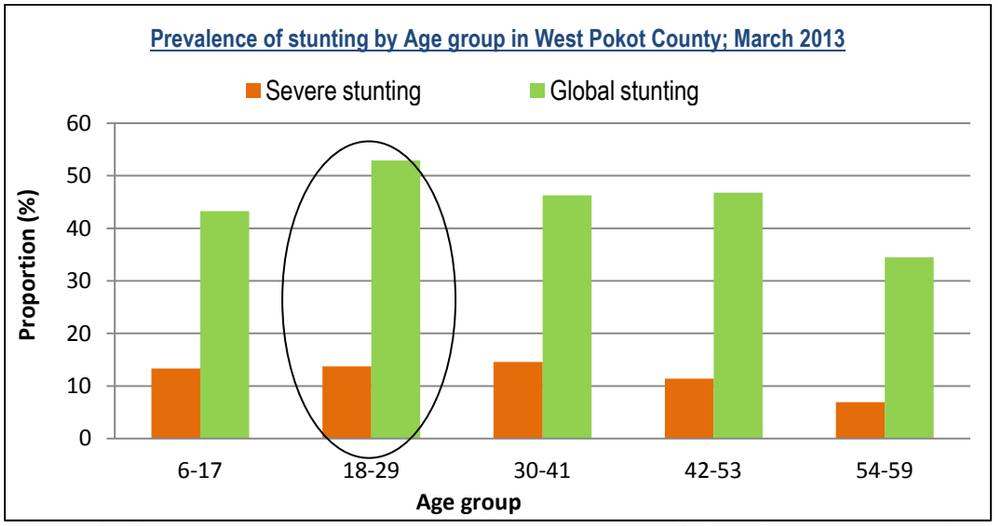


Figure 3: Prevalence of stunting by age group in West Pokot County, March 2013

5.1.7. Vitamin A supplementation and deworming coverage

The WHO guideline 2011 on vitamin A supplementation for infants and children 6-59 months recommends that a child should be supplemented with vitamin A at least once every (4-6) months. The dosage offers

[6]Kenya Demographic and Health Survey.
[7]KDHS 2008/2009

protection against common childhood infections and substantially reduces mortality. From the survey findings 65.0% of children 6-59 months had received vitamin A at least once (Table 10), which is below the WHO and Kenya National target of 80%.

Those children who received thrice are attributed to receiving during illness, mass campaigns like polio and measles and routine calendar activities such as *Malezi bora*[8]. Stratification by age of those who received Vitamin A is summarized in table 10.

Table 10: Vitamin A supplementation by age group

AGE GROUP	NUMBER OF TIMES	RESULTS 2012 %	RESULTS 2013 %
06-11 months	At least once	**41.2**	**52.3**
12-59 months	At least once	**39.2**	**66.7**
	At least twice	**27.0**	**35.7**
	At least thrice	**5.1**	**9.6**

Deworming is an important practice that rids off worms that compete for nutrients in the body and causes iron deficiency anemia. WHO recommends that children in developing countries exposed to poor sanitation and poor availability of clean safe water be dewormed once in a 6-month period for children who are 12 months old or above.The survey results unveiled a low rate of deworming among children 12-59 months at 23.4%. Even though this is a significant improvement from the 2012 findings of 10.3%, it should be noted that 2013 results are not comparable to 2012 due to the format of the question, and that current results lie way below the national target of 80.0%.

5.2. CHILD MORBIDITY

A two-week recall was used to determine morbidity amongst children less than five years of age. 36.7% of the households reported to have children ill in the two weeks preceding the survey with trends in these illustrated in Figure 4.

[8] Annual Nutrition Campaigns involving educating and sensitization of the community on a range of issues Including: Exclusive breastfeeding, complementary feeding, deworming, vitamin A supplementation and hygiene practices

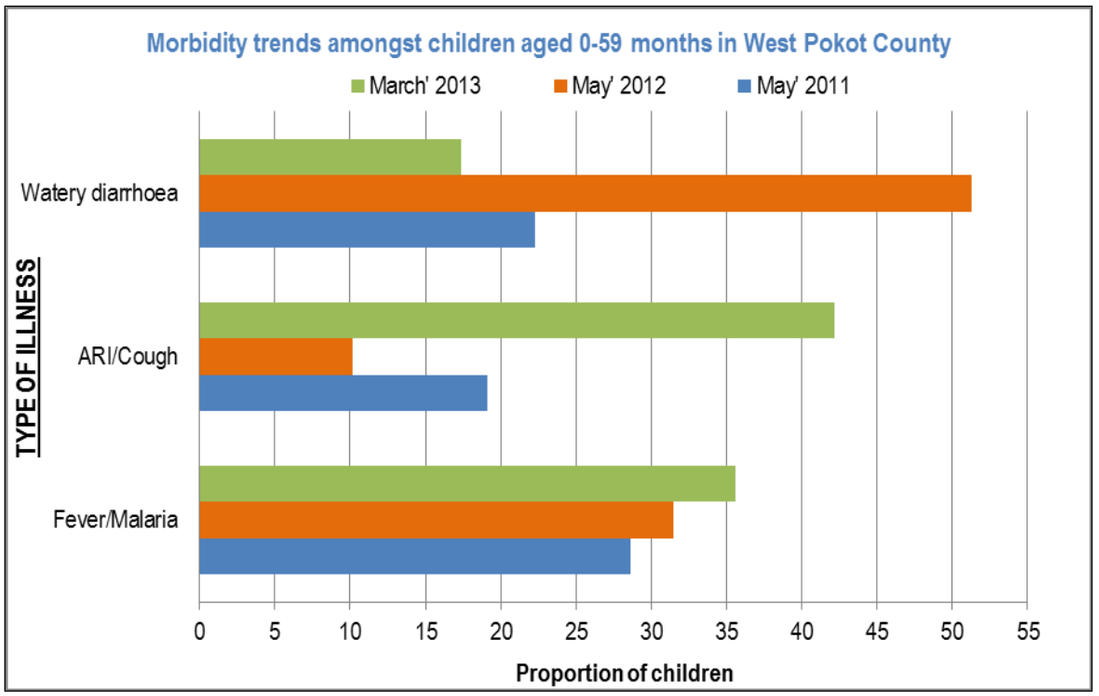


Figure 4: Trends in Morbidity amongst children 0-59 months

An increase in prevalence of cough/acute respiratory infections (ARI) and decrease in watery diarrhoea was noticed in March 2013 (Figure 4).

Management of diarrhoea cases was of interest and caregivers/mothers were asked whether the child got therapeutic zinc. There was a major improvement in the utilization of therapeutic zinc by those children who had diarrhoea and sought help from 1.6% in May 2012 to 39.1% in March 2013. However this still lies below the national target of 80%.

The increase in zinc supplementation could mainly be attributed to the change of system from push to pull where facilities order their supplies from KEMSA[9] based on their demand. This in turn improves availability unlike the previous system where medical supplies were distributed using the kit system without factoring in the specific facility demand. It should be noted that the low uptake of therapeutic zinc in 2012 was because it was lacking in the KEMSA kit in the last 2 supplies *(January and March 2012)*. Improvement in use of therapeutic zinc and change of survey timing could therefore be associated with the reduced number of diarrheal cases reported.

5.3. IMMUNIZATION COVERAGE

The survey used three antigens as proxies for immunization coverage. These were Oral Polio Vaccine (OPV type 1 and 3) and measles vaccine. Trends in these are illustrated in Tables 11 and 12. The measles immunization coverage lies slightly below the WHO bench mark of 80.0%. It should also be noted that there was a measles outbreak in September 2012. Informal interviews cited lack of adequate facilities offering immunization due to lack of storage capacity, cold chain breakdown and staff shortage as contributing factors to the low coverage.

[9]Kenya Medical Supplies Agency

Table 11: Measles immunisation coverage, May 2011- March 2013

		MAY 2011 (%)	MAY 2012 (%)	MARCH 2013 (%)
Measles immunization coverage ***(>=9 months old = 379)***	Card	53.0	54.0	42.2
	Recall	29.0	24.8	34.6

Table 12: Trends in Oral Polio Vaccine (OPV); May 2011 – March 2013

	MAY 2011 %	MAY 2012 %	MARCH 2013 %
OPV 1: VERIFIED BY CARD	61.8	71.5	56.5
OPV 1: VERIFIED BY RECALL	31.1	25.0	34.7
OPV 3: VERIFIED BY CARD	57.4	64.4	47.3
OPV 3: VERIFIED BY RECALL	29.7	23.6	32.9

From the findings shown in table 12 coverage by card and recall of OPV1 stood at 91.2%, while OPV3 was at 80.2%. Though there is some decline compared to the year 2012, the finding are above the WHO threshold though much needs to be done to further increase the coverage.

5.4. MATERNAL NUTRITION

A total of 296 women were surveyed; of them 51.0% were breastfeeding, 21.6% were pregnant with 27.4% were neither breastfeeding nor pregnant. Trends in the nutritional status of this are illustrated in table 13.

Table 13: Maternal nutrition status

Category of mothers	MUAC< 21.0 cm	
	MAY 2012 (%)	MARCH 2013 (%)
All mothers	4.5	1.7
Pregnant and lactating	5.8	4.4

The survey findings show that 29.5% of women had received iron pills for a period of 90 days during their last pregnancy which was a decline from findings of SMART 2011 which stood at 47.8%.This could be due to giving inadequate dosage and/or most of the women failing to complete their dosage as given.

Findings from a KAP survey conducted in February 2013 paint a different picture with slightly over half *(55.1%)* of the women reported to have received iron/folate supplementation during the most recent pregnancy. Further analysis indicates that the majority (75.1%) only took the supplement for a period of one month or less with only 8.1% having taken the supplement for 3 months. This could be due to the variation of the target groups interviewed in the survey. The target group for SMART survey was mothers who had children 0-59 months while for KAP survey was mothers 0-23 months. Secondly, the difference in the target groups also poses a recall bias.

5.5. WATER, SANITATION AND HYGIENE

The survey was implemented during the dry season, just before the onset of long rains. Important to note is that during the survey, some parts of the County experienced flash floods. Also, due to some changes in the data collection tool, most of the indicators collected here and described in this section are not compared with the surveys previously conducted.

5.5.1. Access to Water

5.5.1.1. Householdwater sources and treatment

Majority of the households in the county (61.4 %) were found to use unsafe water sources with the specific sources illustrated in Figure 5. No significant difference with findings from 2012 was noted in the trends of water sources as shown in table 14.

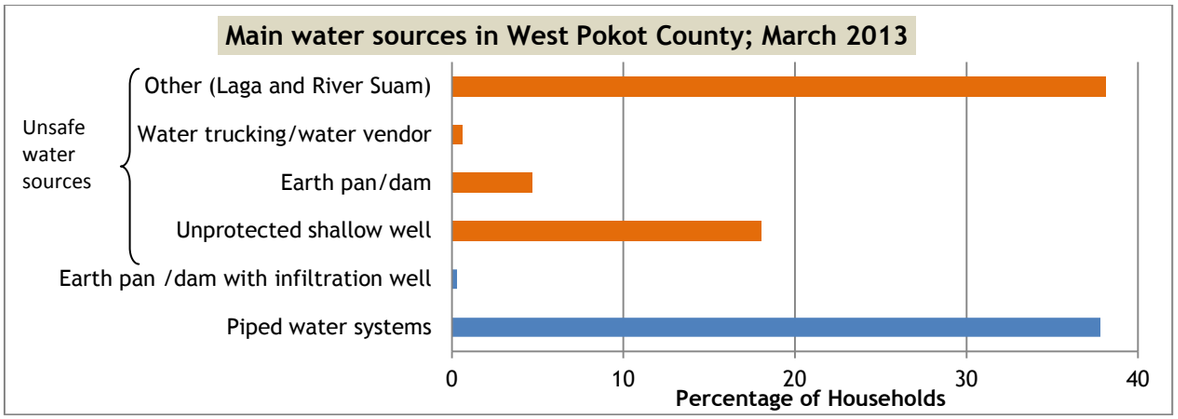


Figure 5: Water sources in West Pokot County (blue bars correspond to safe water sources)

Table 14: Trends in water consumption

Water sources	May'2012 (%)	March' 2013 (%)
Unsafe	64.8	61.4
Safe	34.4	38.1

Analysis of water treatment methods by households relying on unsafe water sources indicated that the majority (75.5%) did not treat water prior to consumption. This predisposes households to water related illnesses such as diarrhoea.

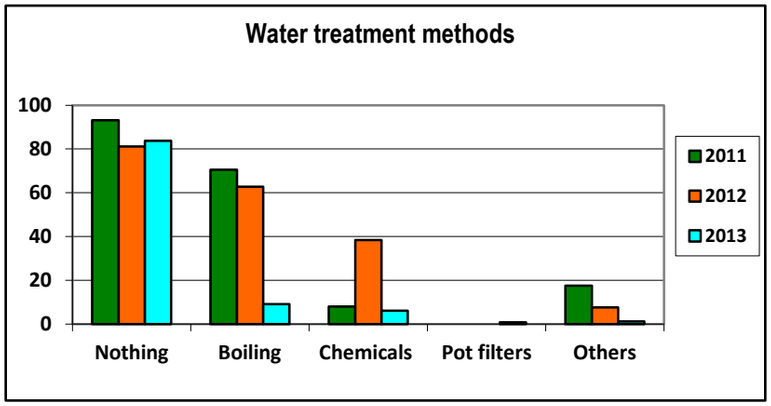


Figure 6: Water treatment methods

As shown in Figure 6, a significant drop in boiling and use of chemicals was noted in March 2013. Informal discussions with teams on the ground indicated inconsistency in supplies of water treatment chemicals from government and lack of energy (firewood) to boil water as probable contributing factors.

5.5.1.2. Distance to water source, queuing time and consumption of water

The minimum SPHERE standards stipulate that the water point should be less than 500 meters away from the household as well as queuing time of less than 30 minutes at the water point. As shown in table 15, the majority of the sampled households did not meet the above standards compared to May 2012. This could be attributed to a change of survey timing.

Table 15: Trend of distance and queuing at water source

	MAY 2012 (%)	MARCH 2013 (%)
Distance to water source		
Less than 500 Meters	68.6%	37.5%
More than 500 Meters	31.4%	62.5%
Queuing time at water point		
Less than 30 Minutes	55.0%	36.1%
30 -60 Minutes	45.0%	63.9%

Household water consumption was at average of 9.5 litres per person per day excluding that of animals which is below the recommended SPHERE and national standards of 15 and 20 litres perperson per day respectively. Due to change of seasonality, there was an increase in proportion of households whose members did not meet the minimum SPHERE and national standards for water consumption.

Most of the households stored water in closed containers as tabulated in table below. This indicates a slight improvement from the previous year and could probably be attributed to the on-going WASH interventions in the county by various actors such as *World Vision, Acted and Yanga't* community based organisation. Additionally, hygiene promotion messages have continued to be shared across the county by the government and it is assumed that these could have had an impact.

Table 16: Water storage

Type of Container	May 2012	March 2013
Closed container	65.1	75.4
Open container	34.9	24.6

5.5.2. Access to sanitation facilities

Open defecation is still predominant in West Pokot with the survey results at 59.9 % and 57.4% in May 2012 and March 2013 respectively (figure 7). This is confirmed by the February 2013 KAP survey results which revealed that nearly half (48.7%) of the households had access to toilet facilities. Use of the bush and dry river bed should be strongly discouraged because inappropriately disposed faeces are a source of microbial contamination which leads to among others diarrheal diseases especially for children. A few villages in West Pokot have been declared Open Defecation Free (ODF) and achieving this calls for community sensitization and strengthening capacity building on CLTS[10] e.g. North Pokot and some parts of Central.

Through observations, 85.1% and 42.2% of the latrines were clean and had cemented slab respectively which was an improvement as compared to the 2012 results which showed 62.8% and 46.2% respectively.

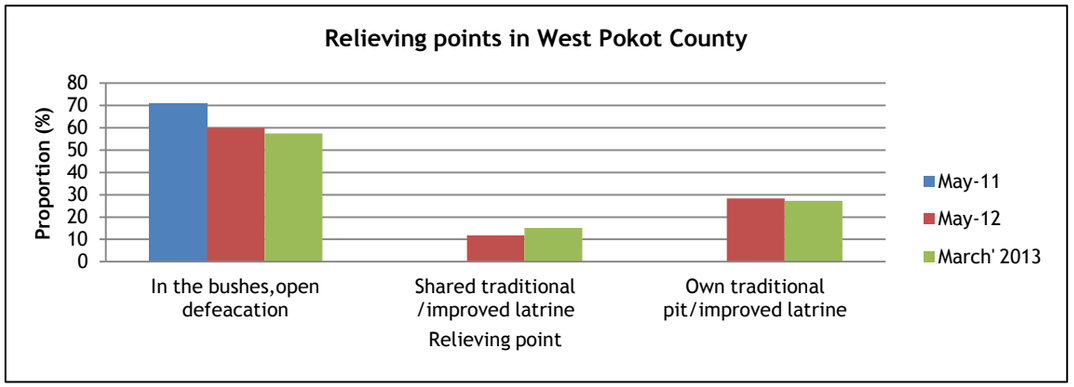


Figure 7: Household access to sanitation facilities

5.5.3. Hygiene practice

Hand Washing

Appropriate hand washing is a general measure that contributes to the prevention and control of communicable diseases. Figure 8 illustrates hand washing at three (3) critical points in time with the majority of sampled caregivers (93.6%) washing their hands before eating.

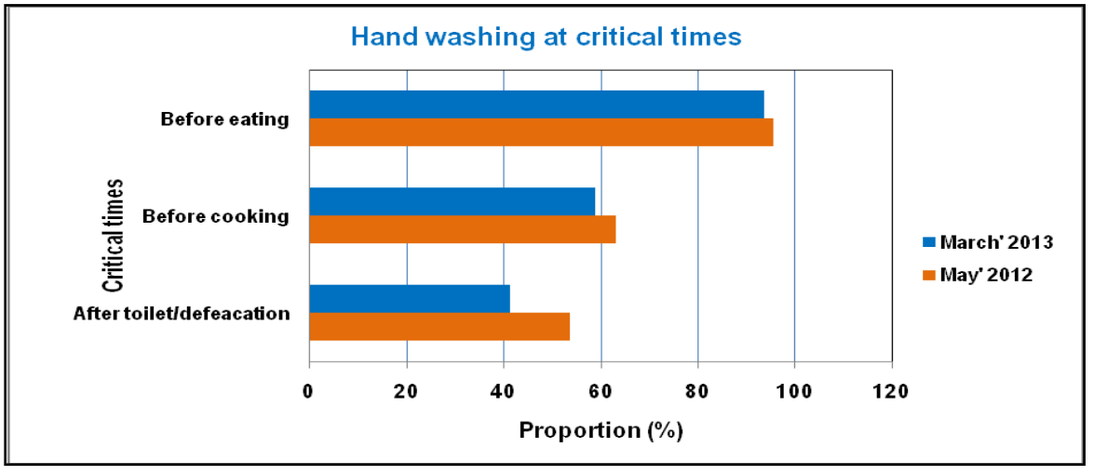


Figure 8: Hand washing at critical points

[10] Community led total sanitation

Table 17: Hand washing practices

Washes hands with:	2012 %	2013 %
Only water	39.0	24
Soap	43.5	53
Inconsistent use of soap	16.9	22
Traditional Herb	0.2	0.5
Ash	0.4	0.5

Generally, there is no significant difference in appropriate hand washing practices compared to the 2012 SMART survey results (Table 17). The proportion of caregivers washing hands consistently with soap was noted to increase compared to May 2012 data.

5.5.4. Mosquito bed ownership and usage

Mosquito bed net ownership significantly declined from 86% in May 2012 to 69.8% in March 2013 (Figure 9).This can be attributed to wearing out of nets supplied in September/October 2011during the mass net distribution campaign and the observed inappropriate utilisation of bed nets e.g. caging chicken.

However there is a noted increase in utilisation of bed nets by children under five and women from 43.9% and 40.8% in May 2012 to 67.5% and 74.3% in March 2013 respectively. This high utilisation by children and mothers can be attributed to mosquito bed nets distributed during antenatal and postnatal clinics[11]as well as proper utilization of bed nets due to health campaign done through the mass media unlike the in 2012 where the distributed bed nets were used inappropriately.

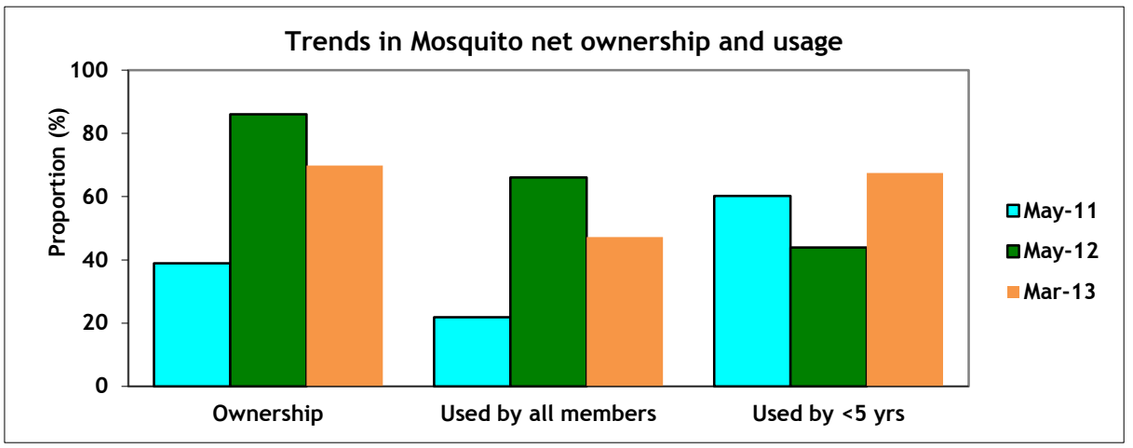


Figure 9: Mosquito bed net utilization

5.6. FOOD SECURITY AND LIVELIHOODS

5.6.1. Demographic Information in relation to livelihoods

The majority of the sampled households (78.5%) were male headed with their main source of livelihood being farming (39.5%),livestock herding (17.7%), daily labour wage (16%), salaried (12.4%) and petty business

[11] Mass distribution of mosquito bed net took place in in Nov 2011, as well as at central stores in 2012. In 2013, distribution via all ANC / PNC clinics so that throughout the past few year there was an increase in coverage

(10.5%). According to the 2012-2013 SRA[12]assessment, substantial improvements to food security was expected as a result of three successive good seasons in the agro-pastoral zone leading to above average crop production and livestock productivity across the pastoral due to sustained availability of grazing resources. Some of the food security indicators are not compared with 2012 results due to a change in data collection tools, thus analysed differently.

5.6.2. Sources of Food

The survey findings indicate that 69.8% and 24.6% of food consumed at households in West Pokot County was obtained through purchase and own production respectively. Other sources included gifts from friends, food aid, borrowing and gathering from the wild which accounted for a total of 5.6%. This overreliance on markets for food predisposes households to food shortages should the market equilibrium be disturbed. This calls for improvement of terms of trade to favour the larger pastoral population. According to the SRA February 2013, terms of trade are more favourable for farmers as compared to pastoralists and there is a likelihood they will deteriorate further as pasture diminishes and goats' body conditions deteriorate.

5.6.3. Dietary diversity and food frequency

An assessment of dietary diversity was calculated using HDDS which was a 7 day recall period. This captured food consumption by members of the sampled households except children 6-59 months and 24 hour recall for individual dietary diversity (IDDS) for young children (6-59) months for food groups consumed. The results reveals mean household dietary diversity score (HDDS) of 7.3 with 78.7% of households. The mean Individual dietary diversity score (IDDS) which referred to consumption of food group by children (6-59) months reveals a score of 4.6, falling at the medium dietary diversity.

The results further points out that cereals, vegetables, legumes and milk were mostly consumed while fruits, fish and organ meat were rarely consumed. Findings from informal interviews revealed that fish is not frequently consumed because of the perception that it resembles a lizard and also is not easily available while some parts of animal meat like liver and tongue are culturally not eaten by women. Eggs are less consumed though available at the household level because they are sold in order to purchase other food items like sugar. One of the respondents during the KAP survey said, *"We are told to give children a variety of foods such as oranges and carrots. These foods are only available at the markets. Walking to the markets is a challenge because of the long distances. We are also told to give fish to our children and yet fish is not available here"*.

Low consumption of flesh meat, offal and organ meat is due to the fact that household consume animal products as milk and only slaughter their animals during severe droughts or disease outbreak which has not experienced in the county during survey period. Most of the livestock are sold to get money for other activities like buying cereals and paying school fees among other household expenditures. These then limit the consumption of flesh meat, offal and organ meat.

A further analysis of foods consumed by households falling under different dietary diversity group show that household in higher dietary diversity consume milk and milk products, other vegetables, pulses and legumes unlike households in lower and medium dietary diversity as shown in table 18.

[12]Short RainsAssessment.

Table 18: Food Groups consumed by > 50% of households' dietary diversity tercile

Lowest Dietary Diversity (≤ 3 food groups) *(3.3%)*	**Medium Dietary Diversity (4 and 5 food groups)** *(17.9%)*	**High Dietary Diversity (≥ 6 food groups)** *(78.7%)*
Cereals and cereal products	Cereals and cereal products	Cereals and cereal products
Oil and fats	Oil and fats	Oil and fats
Dark green leafy vegetables	Dark green leafy vegetables	Dark green leafy vegetables
	Sweets, sugar, honey	Sweets, sugar, honey
	Condiments and spices, beverages	Condiments and spices, beverages
		Milk and milk products
		Other vegetables
		Pulses and Legumes

It is worth noting that this cannot be compared to May 2012 (4.0), which was based on a 24-hour recall period.

According to the 2012-2013 SRA[13] report, improved food access was reflected in the general improvement to household FCS[14] with 60- 90% of the households having acceptable FCS in the agro-pastoral areas. However, nearly 55 % of households had poor FCS in the pastoral zones in Turkana and West Pokot, where livestock holdings were significantly below average and households had limited income and food sources. The FCS was expected to substantially improve after the start of harvesting in February 2013.

Table 19: 7-day household food frequency

Food Group	No of Households out of 362	Average number of days consumed.
Cereals and cereal products	360	**6.7**
Vitamin A rich Vegetables	91	**4.6**
White tubers and plantains	103	**3.6**
Dark green leafy vegetables	330	**5.8**
Other vegetables	248	**5.9**
Vitamin A rich fruits	101	**3.1**
Other fruits	54	**3.9**
Organ meat	27	**2**
Flesh Meat and ovals	140	**1.8**
Eggs	120	**1.9**
Fish	40	**1.3**
Pulses and Legumes	205	**3.1**
Milk and milk products	256	**6**
Oil and fats	345	**6.4**
Sweets, sugar, honey	311	**6.2**
Condiments and spices, beverages	293	**6.3**

5.6.4. Coping Strategies

The findings show that sources of food for most of households in West Pokot County are from purchase and with poverty levels high in the county at 69.8% (KIHBS)[15], households employ coping strategies. This is worsened by

[13] Short Rains Assessment
[14] Food Consumption Scores
[15] Kenya Household and Integrated Budget Survey

the large household size of an average 6.2 persons per household. The findings were summarized in table 20 with a quarter of the sampled households employing the most severe strategy (restricting consumption by adults for small children to eat).

Table 20 : Coping Strategies Index

Coping strategy	No of HHDS Employing the strategy	Frequency Score (0-7)	Severity Score (1-3)	Weighted Score (*Frequency×Weight)*
Less preferred food	135	4.4	1	4.4
Borrow food	127	2.3	2	4.6
Limit Portion Size	130	3.4	1	3.4
Restrict consumption for small children to eat	102	2.8	3	8.4
Reduce No. of Meals	125	4.5	1	4.5
Total Weighted coping strategy Score				25.3

6. CONCLUSIONS

There is a general decline in malnutrition levels (GAM and SAM) rates from 12.3% (9.3-16.0) in May 2012 to 9.3% (6.8-12.8) in March 2013.The surveys were done in different seasons and the decline is not statistically significant. Chronic malnutrition trends in West Pokot county is worrying with a slight increase in stunting from 43.2% in May 2012 to 46.6% in March 2013. This calls for long term nutrition interventions in infant young child nutrition (IYCN) and scaling up deworming practices as well as encouraging timely health seeking behaviour during illness to be put in place to reverse this trend.

ARI/Cough was the predominant type of illness with 41.3%. It should be noted that unlike the previous survey when diarrhoea was the leading cause of morbidity with 51.3%, the 2013 results show a significant decline to 17.4%.This is attributed to seasonality change.

Open defecation still remains predominant at 57.4%. In addition, the majority (64.4%) of households were using unsafe water sources with 75.5%not treating water before drinking. Uptake of soap was encouraging with 75% using it on a regular basis (53%) and an occasional basis (22%), but it was of concern that of the critical moments for washing hands, the moment that was least adhered to was after defecation, even lower than in March 2013. A combination of these factors predispose households to water related ailments, however it was noted that prevalence of watery diarrhoea in U-5 children had significantly decreased since May 2012.

Household dietary diversity score of 7.3 is encouraging. However, 68.9% of these foods are purchased, making households in West Pokot County vulnerable to changes in commodity prices and other market forces. Important to note is that a quarter of the sampled households were employing the most severe strategy for coping.

7. RECOMMENDATIONS

The survey findings indicate that humanitarian interventions are needed to prevent further deterioration of the situation in West Pokot County. Table 21 is a summary of the findings, possible causes and recommendations.

Table 21 : Summary of findings, possible causes and recommendations

SURVEY FINDINGS MARCH 2013	POSSIBLE CAUSES	RECOMMENDATIONS	BY WHO
NUTRITION			
Stunting (46.6%)-KAP survey	Poor IYCN Practices:- -Low EBF rates at 43.5 % which is below national target of 50% -Poor minimum dietary diversity and meal frequency	Implement the following as recommended in the KAP survey: • Advocate for sensitising male partners on mother to mother support groups (MTMSG's) activities so as to improve on IYCN. • Sensitise CHWS attached to community units on IYCN. • Increase MTMSGS attached to community units rather than those linked to facility. • Integration of Nutrition into other-related health services to include WASH, HEALTH and AGRICULTURE. • Strengthening of community component in line with MOH community strategy • Strengthen and widen collaboration of various stakeholders to widen coverage of dissemination of IYCN messages.	ACF,MOH, MOA
Low Micronutrient supplementation and immunization - Vitamin A (65.0%) -Therapeutic zinc supplementation (39.1%) -Iron-Folic acid (29.5%) -De-worming (23.6%) -OPV 3- 47.3%, -Measles- 42.2%	-Limited outreach services and community units present in the County. -Access to facility is challenging due to vastness of the County -Competing activities i.e. gold mining, farming cash crops (onions), cattle herding. -Management of vaccines cold chain to ensure their potency.	• Strengthen and support existing outreach sites as well as increasing the number of outreach sites • Strengthen community strategy through community support supervision which is different from the current facility support supervision. • Community sensitization on importance of micronutrient supplementation and immunization	ACF/MOH
High disease burden: -ARIs /cough (42.2%) -Malaria /fever (35.6%) -watery diarrhoea (17.4%)	-Environmental conditions are harsh/change in climatic conditions. -Bed net ownership has declined from 86% in 2012 to 69.8% in 2013.Though there is an increase in net use by mothers and children due to	• Recommend for massive distribution of LLITNS and Sensitization and education on the proper utilization of mosquito nets (BCC). • Promotion of good hygiene practices • Promotion of good health-seeking behaviours to encourage utilization of health and nutrition services	ACF/MOH

	proper utilization of the existing nets due to campaigns done through mass media and supplies through antenatal care clinics.		
WASH			
High percentage of households using unsafe water sources while significant number of households (75.5%)are not treating drinking water	Low practice of water treatment	• Community sensitisation on available means of water treatment. • Education of school children on water treatment and link to safe water. This will have ripple effect at the community. • Support of improvement of unsafe water sources to provide safe water • Exploration of ways to increase water access and availability in communities	MOH,ACF,MOW
Open defecation still predominant at 57.4% of households relieving themselves in the bushes and limited practice of handwashing after defecation	-Low latrine coverage	• Strengthen and scale up CLTS and utilization of the community strategy to increase community awareness on hygiene practices. • Reinforce hygiene messaging around the importance of hand washing and the associated risks if hand washing is not routinely practiced	MOH,ACF,
FOOD SECURITY AND LIVELIHOODS			
High dependency on purchases at 68.9% of foods purchased	Most of the foods other than cereals and vegetables are purchased from the markets Purchasing power is low and also based on priority of items to buy.	• Take up the matter to respective information groups (County steering group) for the relevant ministries to intervene. • Encourage formation and registration of groups to facilitate loan borrowing from microfinance institutions to reduce poverty levels. • Conducting further market analysis aimed at improving terms of trade for pastoralists	ACF/MOA

Appendix 1: LIST OF SAMPLED VILLAGES

Geographical unit/Village	CLUSTER	DIVISION	LOCATION	SUB LOCATION	DISTRICT
KAIBOS(B)	RC	KAIBOS	KAIBOS	KAIBOS	West Pokot
SIYOI(B)	1	KAPENGURIA	KAISIKAT	SIYOI	West Pokot
TANGI MOJA(I)	2	KAPENGURIA	KAPENGURIA	MWOTOT	West Pokot
ROPONYWO	RC	KAPENGURIA	KAPKORIS	KAPROM	West Pokot
KACHEPKAI	3	KAPENGURIA	KISHAUNET	KISHAUNET	West Pokot
LUTHERAN(I)	4	KAPENGURIA	KISHAUNET	LITYEI	West Pokot
ACHAM	5	KAPENGURIA	MNAGEI	PSIGIRIO	West Pokot
TULWET	6	KAPENGURIA	TALAU	KAPSURUM	West Pokot
NAKWANG'AMORU	7	KONGELAI	KANYARKWAT	KRESWO	West Pokot
KONGELAI CENTRE	8	KONGELAI	RIWO	KONGELAI	West Pokot
KAMARAK	9	SOOK	CHEPKOMOS	CHEPKOMOS	West Pokot
KASOIPO	10	SOOK	PTOYO	KETYAM	West Pokot
KACHEPKOYOW	11	SOOK	TAMUGH	LETWA	West Pokot
KATIRES	12	CHEPARARIA	CHEPKOPEGH	CHESRA	West Pokot
KAPKIRWOK	13	CHEPARARIA	CHEPKOPEGH	SHALPOGH	West Pokot
CHEMONGES	14	CHEPARARIA	KIPKOMO	TAMPALAL	West Pokot
KANGORIO	15	CHEPARARIA	YWALATEKE	MONGORION	West Pokot
CHEMOMUL	16	LELAN	KAPTABUK	KAPTABUK	Central Pokot
TOROTWO	RC	LELAN	KAPYONGEN	SIMOTWO	Central Pokot
CENTRE	17	LELAN	LELAN	MBAYA	Central Pokot
PTALAM	18	SIGOR	MWINO	PTALAM	Central Pokot
MOTONG	19	SIGOR	SEEKER	MBARA	Central Pokot
TIKIT	20	SIGOR	WEIWEI	SANGAT	Central Pokot
TAKAR	21	SIGOR	WEIWEI	TAKAR	Central Pokot
CHEPKOLOY	22	BATEI	PARUA	CHEPKORIONG	Central Pokot
MISTIN	23	BATEI	PARUA	SEBIT	Central Pokot
SIKOWO	24	TAPACH	CHEBON	TANGASIA	Central Pokot
KAPTUKONY	25	TAPACH	SONDANY	NYARPAT	Central Pokot
CHEMUKWO	26	CHESOGON	CHEPKOKOGH	SUKUK	Central Pokot
KAMARIL	27	CHESOGON	MOSOP	AMALER	Central Pokot
OTUKO	28	ALALE	ALALE	AMAKURIAT	North Pokot
KIMPUR	29	ALALE	KASES	PCHOLI	North Pokot
KAPOGWOTUO	30	ALALE	LOKITANYALA	LOKITANYALA	North Pokot

CHEPKALAL	31	KACHELIBA	KAPCHOK	KONYAO	North Pokot
KALAS	32	KACHELIBA	KODICH	KODICH	North Pokot
SAMAKEN	33	KACHELIBA	SUAM	KACHELIBA	North Pokot
CHEMNYARAT	34	KASEI	KASEI	KAMKETO	North Pokot

Appendix 2: CALENDER OF EVENTS

MONTH	SEASONS	2008	2009	2010	2011	2012	2013
JANUARY 'MUU'			New Year's celebration 50	New year's celebration 38	New year's celebration 26	New year celebration/Snake swallowed 1 person in Kadam North Pokot 14	New Year's/ Party's preliminary nominations*(mchucho)*/Measles outbreak in Ortum -7children admitted ,1 died /Anaemia & malaria outbreak in Miskwony/Serrewo/Adurkoit/ Poole for U5's & PLW 2
FEBRUARY 'TIRTIR'			Mangoes harvest-Central 49	Mangoes harvest central 37	Mangoes harvest - central 25	Mangoes harvest -Central/ Snake bites 7 children at school in Lengorot village 13	Campaigns for major election Trachoma campaign 1
MARCH 'POPOKWO'	*DRY SEASON;LONG RAINS BEGIN END OF MARCH*		Killing of witches in Lelan 48	Simat in Central 36	TJRC & NTV County edition in West Pokot County Elections in Uganda 24	Trachoma campaign 12	Major Elections in Kenya President elect Uhuru Kenyatta 0
APRIL 'RAKSA'		Maize planting season 59	Maize planting season 47	Maize planting season 35	Maize planting 23	Maize planting season/ Killing of poachers in Chepararia 11	
MAY 'POROWO'	*'PENGAT' LONG RAINS*	Labour day celebration 58	Labour day celebration 46	Labour day celebration 34	Labour day celebration/death of Mayor Rotino/ Disarmaments of guns and bullets in Alale 22	Labour day celebration/Malezi bora campaign /Polio campaign 10	
JUNE 'MELWON'		Madaraka day celebrations 57	Madaraka day celebrations 45	Madaraka day celebration/ Cholera outbreak-Sigor 33	Madaraka day/landslide in Sigor 21	Measles outbreak / Bus crash in Kamatira-15 killed 9	
JULY 'SIKUKU'	*DRY SEASON*	Beans harvesting/rural electrification in Lelan 56	Harvesting of beans 44	Harvesting of beans 32	Beans harvesting/Conflicts between the Marakwet and Pokot in July-1 death	8	

					20		
AUGUST 'MKEYON'		Girls circumcision 55	National Census/ Girls circumcision 43	Referendum& Promulgation of new constitution/ FGM 31	Girls circumcision 19	Polio campaign/ World Breastfeeding week /Nutrition day August 15th 7	
SEPTEMBER 'TAPACH'		'Naleyo' dance 54	'Naleyo' dance 42	Naleyo' dance 30	Naleyo' dance 18	6	
OCTOBER 'KPSUCH'		Mangoes harvest- Central 53	Mangoes harvest 41	Mangoes harvest- Central 29	Mangoes harvest - Central 17	5	
NOVEMBER 'KOKELYAN'	*'ARUPE' SHORT RAINS*	TeclaLorupe race 52	TeclaLorupe race 40	Tecla Lorupe race 28	'Sapana' in central Pokot/By-election in Sioyi ward/TeclaLorupe race 16	Malezi bora /Measles campaign /Obama's re-election Start of voters registration 4	
DECEMBER 'PKEGHE'	*'KEMEI' DRY SEASON*	Christmas Masol night 51	Christmas/ Boy's circumcision Masol night 39	Christmas Masol night 27	Christmas/boys circumcision Masol night 15	Christmas day /Landslide in Sondany (15killed)/families displaced 18th-Masol night 3	

Appendix 3: PLAUSIBILITY CHECK; WEST POKOT COUNTY, MARCH 2013

Plausibility check for: WP MARCH 2013 (2).as

Overall data quality

Criteria	Flags	* Unit	Excel.	Good	Accept	Problematic	Score
Missing/Flagged data (% of in-range subjects)	Included	%	0-2.5	>2.5-5.0	>5.0-10	>10	
			0	5	10	20	**0** (0.8 %)
Overall Sex ratio *(Significant chi square)*	Included	p	>0.1	>0.05	>0.001	<0.000	
			0	2	4	10	**0** (p=0.652)
Overall Age distribution *(Significant chi square)*	Included	p	>0.1	>0.05	>0.001	<0.000	
			0	2	4	10	**0** (p=0.112)
Dig preference score - WEIGHT	Included	#	0-5	5-10	10-20	>20	
			0	2	4	10	**0** (4)
Dig preference score - HEIGHT	Included	#	0-5	5-10	10-20	>20	
			0	2	4	10	**2** (6)
Standard Deviation WHZ	Excluded	SD	<1.1	<1.15	<1.20	>1.20	
			0	2	6	20	**0** (0.98)
Skewness WHZ	Excluded	#	<±1.0	<±2.0	<±3.0	>±3.0	
			0	1	3	5	**0** (-0.05)
Kurtosis WHZ	Excluded	#	<±1.0	<±2.0	<±3.0	>±3.0	
			0	1	3	5	**0** (-0.13)
Poisson Distribution WHZ-2	Excluded	p	>0.05	>0.01	>0.001	<0.000	
			0	1	3	5	**0** (p=0.082)
OVERALL SCORE WHZ =			0-5	5-10	10-15	>15	**2.0%**

At the moment the overall score of this survey is 2%, this is excellent.
There were no duplicate entries detected.
Percentage of children with no exact birthday: 29%