# SAMBURU COUNTY
# INTEGRATED SMART SURVEY

**May 2014**

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**ACKNOWLEDGEMENT**

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This being a county survey, the planning of the survey was smooth due to the extensive efforts of the County Nutrition Coordinator Samburu County, NSO Samburu County, World Vision Kenya and International Medical Corps. The following parties are highly appreciated for their role in the survey;

- The MOH staff who took an active role in the survey as team leaders during data collection.
- The survey enumerators and data entry clerks for quality data collection and entry.
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- IMC and WVK for their technical support during the entire process.
- UNICEF for the financial support.

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**ACRONYMS**

| | |
|---|---|
| **BCG** | *Bacillus Calmette–Guérin* |
| **CNTF** | County Nutrition Technical Forum |
| **CSG** | County Steering Group |
| **DHIS** | District Health Information Systems |
| **ENA** | Emergency Nutrition Assessment |
| **GAM** | Global Acute Malnutrition |
| **GS** | Growth Standards |
| **HDDS** | Household Dietary Diversity Score |
| **IMC** | International Medical Corps |
| **MOH** | Ministry of Health |
| **MUAC** | Mid-Upper Arm Circumference |
| **NGO** | Non-Governmental Organization |
| **NIWG** | Nutrition Information Working Group |
| **NSO** | Nutrition Support Officer |
| **OPV** | Oral Polio Vaccine |
| **SAM** | Severe Acute Malnutrition |
| **SMART** | Standardized Monitoring and Assessment of Relief and Transitions |
| **SPSS** | Statistical Package for Social Sciences |
| **UNICEF** | United Nations Children's Emergency Fund |
| **WASH** | Water Sanitation and Health |
| **WHO** | World Health organization |
| **WVK** | World Vision Kenya |

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**EXECUTIVE SUMMARY**

International Medical Corps and World Vision Kenya supported the Ministry of Health to carry out an integrated SMART survey in Samburu County. The survey was conducted in the month of May 2014 following recommendations of the NIWG for the results of the survey to feed into either short rains or long rains assessment. All the 36 sampled clusters across the county were visited and all the data collected. The results hereby presented are for the entire county.

| | | | Integrated SMART survey | |
|---|---|---|---|---|
| **INDEX** | **INDICATOR** | | **January 2013 (weighted results)** | **May 2014 (County Results)** |
| **WHO 2006** | WHZ-scores | Global Acute Malnutrition Weight for height <-2 z and/or oedema | (182)12.4 % (10.5 - 14.5 ) | (101) 17.3 % (14.2 - 20.9 95% C.I.) |
| | | Severe Acute Malnutrition; Weight for height <-3 z and/or oedema | (25)1.7 % (1.1 - 2.5 ) | (19) 3.3 % (1.9 - 5.4 95% C.I.) |
| | HAZ-scores | Stunting (<-2 z-score) | (442) 30.6 % (28.0 - 33.3 95% C.I.) | (141) 24.9 % (20.7 - 29.5 95% C.I.) |
| | | Severe stunting (<-3 z-score) | (137) 9.5 % (7.7 - 11.6 95% C.I.) | (39) 6.9 % (4.7 - 10.0 95% C.I.) |
| | WAZ-scores | Underweight (<-2 z-score) | (341)23.0 % (20.4 - 25.8) | (160) 27.4 % (22.9 - 32.3 95% C.I.) |
| | | Severe underweight (<-3 z-score) | (65) 4.4 % (3.4 - 5.6) | (34) 5.8 % (3.9 - 8.7 95% C.I.) |
| | MUAC | Global Acute Malnutrition MUAC <125 mm and/or oedema | (65) 4.4 % (3.3 - 5.8 95% C.I.) | (24) 4.1 % (2.5 - 6.7 95% C.I.) |
| | | Severe Acute Malnutrition MUAC <115 mm and/or oedema | (12) 0.8 % (0.5 - 1.4 95% C.I.) | (4) 0.7 % (0.3 - 1.8 95% C.I.) |
| Measles immunization coverage | | 9 Months by card | 81.5% | 54.5% |
| | | 18 Months by card | | 9.6% |
| Vitamin A coverage | | 6-11 months ; At least once | 64.9% | 80.9% |
| | | 12- 59 months; at least twice | 68.2% | 54.7% |
| Deworming | | 12- 59 months; at least twice | 55.7% | 22.7% |
| Illness in the last 2 weeks | | N=266 | No County data for comparison | 45% |
| | | Fever with chills like malaria | | 32.3% |
| | | ARI /Cough | | 45.1% |
| | | Watery diarrhea | | 20.7% |
| | | Bloody diarrhea | | 1.9% |
| | | Other | | 4.5% |
| | | Zinc Supplementation in diarrhea | | 50.9% |
| Maternal Health | | Iron-folate Supplementation for pregnant mothers | | 67.7% |
| | | PLW with MUAC < 21cm | | 7.3% |

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## 1.0 INTRODUCTION.

### 1.1 Background information

Samburu County, located in the former Rift Valley province borders Marsabit County to the North East, Isiolo County to the East, Laikipia County to the South, Baringo County to the South West and Turkana County to the North. It has an area of approximately 21,000 sq. km with an estimated population of 243,532 (121,790 female, 121,742 male)[1]. Out of this population 47905[2] are under five years. The county is divided into three Sub Counties; Samburu Central, Samburu East and Samburu North

About 85% of the county is rangeland lowland while the rest is highland where rain fed agriculture is practiced.

Pastoral, Agro-pastoral and Formal employment/Business/Petty trade are the three main Livelihood zones in the County.

International Medical Corps (IMC) and World Vision Kenya (WVK) have been supporting the Ministry of health since January 2011 in the implementation of the high impact nutrition interventions in Samburu County, IMC in Samburu East and North Sub Counties and WVK in Samburu Central Sub County. These interventions have been geared towards the improvement of maternal and child health.

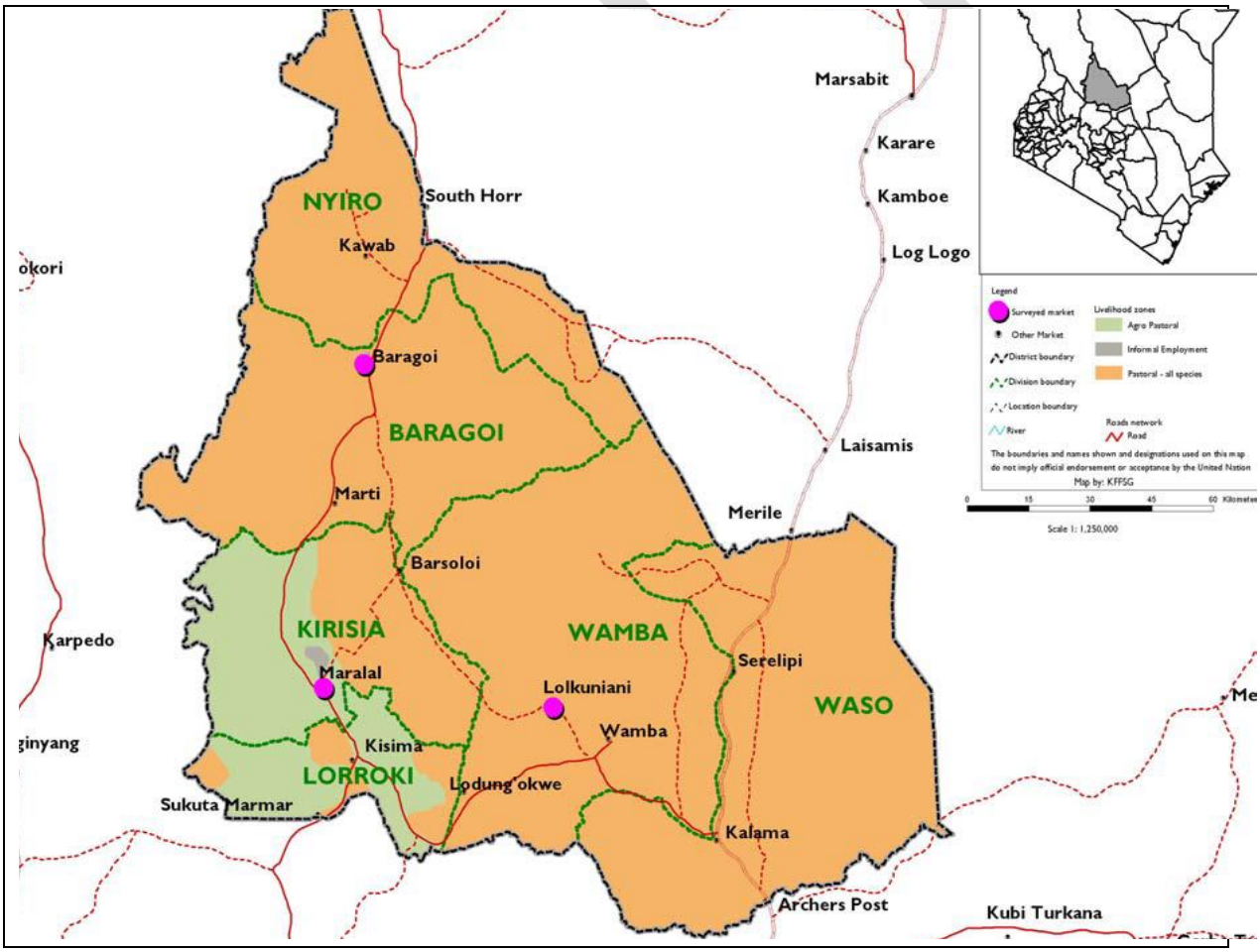


**Figure 1: Map of Samburu County with Livelihood zones**

[1] 2009 population and housing census

[2] 2013DHIS estimates

### 1.2 Rationale for conducting the survey

The Samburu County survey was conducted in the month of May 2014 ($19^{th}$ – $29^{th}$) to assess the current malnutrition rates among children 6-59months in the county as well as amongst pregnant and lactating women. The timing of the survey was also to assess the impact of the long rains in the county. The survey also assessed the performance of the ongoing nutrition interventions in the county by IMC and WVK.

### 1.3 objectives of the survey

The overall objective of the survey was to determine the nutritional status of the children 6-59 months, pregnant and lactating mothers in Samburu County.

The specific objectives of the survey were;

1. To determine the prevalence of acute and chronic malnutrition in children aged 6-59 months;
2. To determine the immunization coverage for measles, Oral Polio Vaccines (OPV 1 and 3), and vitamin A supplementation in children aged 6-59 months;
3. To estimate coverage of iron / folic acid supplementation during pregnancy in women of reproductive age;
4. To determine deworming coverage for children aged 12 to 59 months;
5. To determine the prevalence of common illnesses;
6. To collect information on possible underlying causes of malnutrition such as household food security, water, sanitation, and hygiene practices.

## 2.0 METHODOLOGY

### 2.1 Type of survey

Standardized Monitoring and Assessment of Relief and Transitions (SMART) methodology was used in conducting the integrated SMART survey in Samburu County. The guidelines provided by the Ministry of Health, which are customized to the Kenyan context were observed in all stages of the survey. The data collected included anthropometric, immunization, morbidity, WASH and household food security.

### 2.2 Sampling Methodology

In determination of the anthropometric sample, a 2 stage sampling was used.

#### 2.2.1 First stage sampling

ENA for SMART (Nov 2013) was used in determination of the sample size. The planning details, which were; prevalence of 12.4% (10.5-14.3 CI)[3], a precision of 3.5%, design effect of 1.4%[4], average household size of 5.9, proportion of under-fives at 18.93%[5] and a non-response rate of 3% were entered into ENA (2013 version) to come up with 519 children and 532 households to be sampled in the survey.

#### 2.2.2 Second stage sampling

This was the stage at which the households to be visited were sampled. Simple random sampling was used to identify the 15 households per cluster. This was done after obtaining the updated list of households from the village leader or local chief.

[3] Weighted results of January 2013 SMART surveys
[4] Due to the slight differences in the county
[5] 2013 DHIS estimates



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**Table 1: Sampling methodology**

| Data entered on ENA software | Anthropometric values | Rationale |
|---|---|---|
| Estimated prevalence | 12.4% | SMART survey 2013 12.4% (10.5-14.3 CL) |
| Desired precision | 3.5% | Based on anticipated prevalence and comparison with previous weighted results |
| Design effect | 1.4% | Due to the slight differences in the county |
| Average household size | 5.9 | 2013 SMART survey |
| % of under five children | 18.93% | DHIS estimates |
| % of non-respondent | 3 | Due to the frequent movements in most parts of the county hence non response anticipated |
| Households to be included | **532** | |
| Children to be included | 519 | |

### 2.3 Survey Schedule and Training

Sensitization of the survey was done within the month of April to the relevant stakeholders through the CSG meeting which has got representation from every department and organization in the county. It was further done at the CNTF meetings. Training of the survey enumerators and data entry clerks (recruited from the local communities) and the team leaders (all MOH staff) was done in Maralal town which is the central point for 4 days ($19^{th}$ – $22^{nd}$ May). The training was done intensively and covered the following areas; survey objectives, sampling, data collection tools, anthropometric measurements, interviewing techniques, field procedures and questionnaire administration. A standardization test was done on all the survey participants to test their precision and accuracy in taking the anthropometric measurements. This involved taking all measurements twice on 10 children. A pretest was done on the fourth day in one non sampled village.

### 2.4 Data collection

The data collection exercise was conducted for 6 days by 6 teams consisting of 3 enumerators and 1 team leader. Supervision of data collection was done by the County nutrition office assisted by the NSO, IMC and WVK staff.

One set of questionnaire, which collected information on household data, anthropometric information, immunization, morbidity, WASH and Food security and livelihood data was used in all the sampled households.

### 2.5 Case definitions and inclusion criteria

**Age:** Information about the age of the child was obtained from the child card, birth certificate or birth notification. In the absence of the key verification documents, a local events calendar developed by the survey team was used by relating the age of the child with a specific event. The age was recorded in months.

**Child's Sex:** This was recorded as either 'f' for female or 'm' for male.

**Weight:** A digital weighing scale was used to measure the children's weight. The teams on daily basis calibrated the electronic scale using a standard weight to ensure accuracy of the measurements. Older children were asked to stand on the scale while double weighing was done for children who couldn't stand on their own. Recording of measurements was done to the nearest 0.1kg.

**Height/Length:** Height was taken for children above 2 years while for children less than 2 years length was taken. The measurements were recorded to the nearest 0.1cm.

**MUAC:** Mid Upper Arm Circumference was measured on the left arm for all the eligible children, with the middle point between the tip of the elbow and the tip shoulder bone while the arm is at right-angle being identified, then the MUAC measurements of the arm while it is relaxed and hanging by the body's side taken with the MUAC strap touching round the hand of the child. MUAC was measured to the nearest 0.1cm. Maternal MUAC tapes were used to measure MUAC in women of reproductive age.

**Bilateral Oedema:** moderate thumb pressure was applied for 3 seconds on both feet to check for the presence of bilateral oedema. If a depression was formed upon pressure application, then presence of bilateral oedema was confirmed and recorded as 'Y' for presence and 'N' for absence.

**Child immunization data:** The immunization data assessed was on BCG (by observing presence or absence of the scar), OPV1/3 and measles vaccination at 9 & 18 months. The card was used as the primary source of verification with the mothers recalling in the absence of the cards.

**Vitamin A supplementation and De-worming:** This was determined by the number of times the eligible child had received Vitamin A and deworming. The number of times was recorded after confirmation from the caregiver. The caregivers were asked to also state the point of issue and avail the child card to confirm if the supplementation was documented.

**Morbidity:** This was obtained by inquiring fro It is worth noting that this was based on the signs and symptoms stated by the mother and not clinically m the mother or the caregiver of the illness the child had suffered using a recall period of 2 weeks. confirmed.

**Other information:** The survey also collected other data which included demographics, socio-economic status, school enrolment, maternal health care information, mosquito net ownership and utilization, household food security, and water, sanitation, and hygiene.

### 2.6 Data entry, quality control and analysis

Data entry was done alongside data collection. This was to ensure that any errors in data collection were rectified in good time and that feedback to the teams was given in time. Plausibility on anthropometric data was done on daily basis and feedback given. Analysis of anthropometric data was done using ENA for SMART 2011(November 2013). Other variables were done using SPSS Version 17.0

### 2.7 Survey Constraints/Limitations

The survey was conducted during the month of May; a different timing from the previous survey, thus comparison of the results should be done cautiously.

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## 3.0 RESULTS AND DISCUSSION

### 3.1 general characteristics of study population and households

The survey involved a total of 2470 persons, 533 households with an average household size of 4.6 persons per household. The average number of children 0-59 months was 3.7 per household. Assessment of the highest level of education in adults showed that majority of them (66.5%) did not have any level of education; while 20.2% and 5.6% had attained primary and secondary education respectively. Others had attained pre-primary education (3.9%) and tertially education (3.5%). The major forms of occupation in the county were livestock herding (48.4%) and waged labor (21.6%). Other forms of occupation were salaried employment (10.7%), petty trade (7.5%), farm labor (6.2%) and firewood/charcoal burning (3.4%).

### 3.2 Anthropometry

#### 3.2.1 Distribution by Age and Sex

The anthropometric survey involved a total of 592 children. The final analysis used 583 children after 9 cases were excluded. This involved 278 boys and 305 girls who attained a boy: girl sex ratio of 0.9 which is within the estimated range of 0.8-1.2 with a p-value of 0.233. This means that the boys and girls were equally represented.

**Table 2: Distribution of age and sex of sample**

| | Boys | | Girls | | Total | | Ratio |
|---|---|---|---|---|---|---|---|
| AGE (mo) | no. | % | no. | % | no. | % | Boy: girl |
| 6-17 | 83 | 45.4 | 100 | 54.6 | 183 | 30.9 | 0.8 |
| 18-29 | 47 | 43.5 | 61 | 56.5 | 108 | 18.2 | 0.8 |
| 30-41 | 77 | 50.3 | 76 | 49.7 | 153 | 25.8 | 1.0 |
| 42-53 | 51 | 52.6 | 46 | 47.4 | 97 | 16.4 | 1.1 |
| 54-59 | 23 | 45.1 | 28 | 54.9 | 51 | 8.6 | 0.8 |
| Total | 281 | 47.5 | 311 | 52.5 | 592 | 100.0 | 0.9 |

**Population age and sex pyramid.**

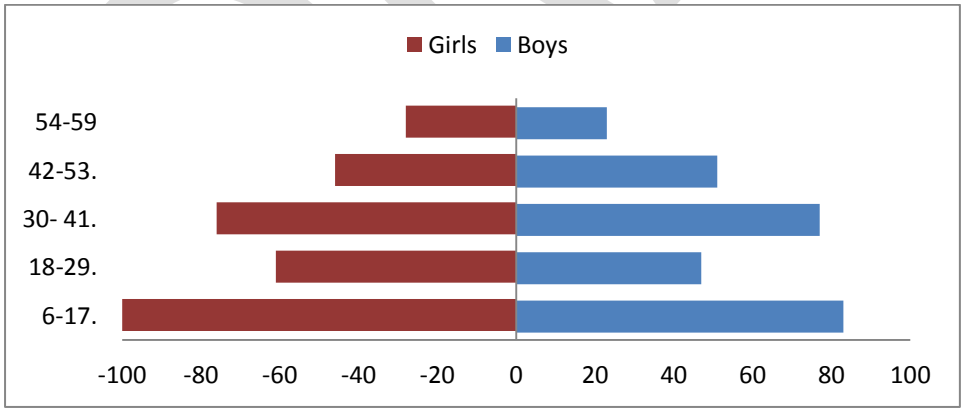


**Figure 2: Population age and Sex pyramid**

### 3.2 NUTRITIONAL STATUS OF CHILDREN 6-59 MONTHS

The survey used the World Health organization (WHO) 2006 growth standards since they included children from widely differing ethnic backgrounds and cultural settings unlike the National Center

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for Health Statistics (NCHS) growth standards which are inadequate because they are based on predominantly formula-fed infants American children.[6]

The prevalence of Global Acute Malnutrition (GAM) was assessed on 583 children after excluding the 4 unavailable z-scores and 5 scores out of range. The analysis results showed a GAM rates of 17.3 %( 14.2 - 20.9 95% C.I.)And a SAM rate of 3.3 %( 1.9 - 5.4 95% C.I.) The survey also reported one oedema case. The GAM prevalence describes a critical nutrition situation in the County. Analysis of GAM by sex shows that boys are more significantly malnourished than the girls. This is as shown in the table below;

**Table 3: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex**

| | **All**<br>n = 583 | **Boys**<br>n = 278 | **Girls**<br>n = 305 |
|---|---|---|---|
| **Prevalence of global malnutrition (<-2 z-score and/or oedema)** | (101) 17.3 %<br>(14.2 - 20.9 95% C.I.) | (56) 20.1 %<br>(15.6 - 25.6 95% C.I.) | (45) 14.8 %<br>(10.7 - 20.1 95% C.I.) |
| **Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)** | (82) 14.1 %<br>(11.7 - 16.8 95% C.I.) | (45) 16.2 %<br>(12.5 - 20.7 95% C.I.) | (37) 12.1 %<br>(9.1 - 16.0 95% C.I.) |
| **Prevalence of severe malnutrition (<-3 z-score and/or oedema)** | (19) 3.3 %<br>(1.9 - 5.4 95% C.I.) | (11) 4.0 %<br>(2.2 - 7.1 95% C.I.) | (8) 2.6 %<br>(1.1 - 6.4 95% C.I.) |

Graphical presentation of the above results showed that the curve has deviated to the left with a mean of -1.07(SD 1.02). This indicated a malnourished population as compared to the reference population.

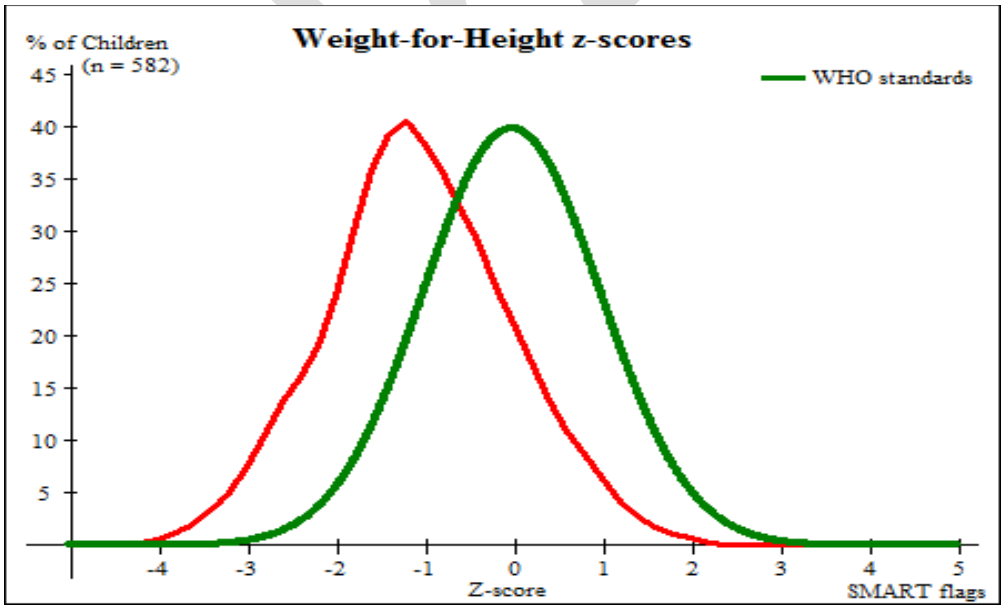


**Figure 3: Frequency distribution of WFH for <5s**

Analysis of the results was further done by age group. The analysis showed that wasting was high in children aged 54-59 months (27.5% and 5.9% for moderately and severely malnourished

[6] The WHO Multicenter Growth Reference Study: planning, study design, and methodology.

respectively). However, the proportion of children in this age group is low and may not depict the real situation of this age group. Further analysis by age group is as shown in the table below.

**Table 4: Prevalence of acute malnutrition (weight-for-height z-scores) by comparison of age groups**

| | | Severe wasting (<-3 z-score) | | Moderate wasting (>= -3 and <-2 z-score ) | | Normal (> = -2 z score) | | Oedema | |
|---|---|---|---|---|---|---|---|---|---|
| **Age (mo)** | **Total no.** | **No.** | **%** | **No.** | **%** | **No.** | **%** | **No.** | **%** |
| **6-17** | 180 | 3 | 1.7 | 19 | 10.6 | 157 | 87.2 | 1 | 0.6 |
| **18-29** | 107 | 2 | 1.9 | 12 | 11.2 | 93 | 86.9 | 0 | 0.0 |
| **30-41** | 151 | 7 | 4.6 | 24 | 15.9 | 120 | 79.5 | 0 | 0.0 |
| **42-53** | 94 | 3 | 3.2 | 13 | 13.8 | 78 | 83.0 | 0 | 0.0 |
| **54-59** | 51 | 3 | 5.9 | 14 | 27.5 | 34 | 66.7 | 0 | 0.0 |
| **Total** | 583 | 18 | 3.1 | 82 | 14.1 | 482 | 82.7 | 1 | 0.2 |

### 3.2.2 Distribution of acute malnutrition and oedema based on weight-for-height z-scores

The survey recorded one oedema case (0.2%) and 21 (3.6%) cases being classified as marasmic. The results are as shown in the table below.

**Table 5: Distribution of acute malnutrition and oedema based on weight-for-height z-scores**

| | **<-3 z-score** | **>=-3 z-score** |
|---|---|---|
| **Oedema present** | Marasmic kwashiorkor<br>No. 1<br>(0.2 %) | Kwashiorkor<br>No. 0<br>(0.0 %) |
| **Oedema absent** | Marasmic<br>No. 21<br>(3.6 %) | Not severely malnourished<br>No. 566<br>(96.3 %) |

### 3.2.3 Prevalence of Acute Malnutrition by MUAC

The main advantage of MUAC compared to other nutritional indices is that it is at least as good or even better to identify children with a high risk of death in need of treatment. MUAC is also simple to use both in the community and in the health facility, and easy for service providers and caretakers of children to understand.[7]

Based on MUAC, Samburu County recorded a GAM rate of 4.1 %( 2.5 - 6.7 95% C.I) and a SAM rate of 0.7 % (0.3 - 1.8 95% C.I.). There was no significant difference after comparison with the previous results (January 2013).

**Table 6: Prevalence of acute malnutrition based on MUAC cut offs (and/or oedema) and by sex**

| | **All**<br>n = 588 | **Boys**<br>n = 280 | **Girls**<br>n = 308 |
|---|---|---|---|
| **Prevalence of global malnutrition (< 125 mm and/or oedema)** | (24) 4.1 %<br>(2.5 - 6.7 95% C.I.) | (12) 4.3 %<br>(2.1 - 8.6 95% C.I.) | (12) 3.9 %<br>(2.2 - 6.8 95% C.I.) |
| **Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no** | (20) 3.4 %<br>(2.0 - 5.8 95% | (10) 3.6 %<br>(1.8 - 7.0 95% | (10) 3.2 %<br>(1.7 - 6.1 95% C.I.) |

[7] www.cmamforum.org

| | | | |
|---|---|---|---|
| **oedema)** | C.I.) | C.I.) | |
| **Prevalence of severe malnutrition (< 115 mm and/or oedema)** | (4) 0.7 % (0.3 - 1.8 95% C.I.) | (2) 0.7 % (0.2 - 2.9 95% C.I.) | (2) 0.6 % (0.2 - 2.7 95% C.I.) |

### 3.2.4 Prevalence of Underweight by Weight-for-age (WFA) Z-scores (WHO-GS)

Underweight is defined as any z-score < -2 while severe underweight is Z-scores <-3. The survey indicated a prevalence of 27.4 % (22.9 - 32.3 95% C.I.) while the prevalence of severely underweight was 5.8 % (3.9 - 8.7 95% C.I.). The results did not show a significant change from the January 2013 result which showed 23.0 % (20.4 - 25.8) for underweight and 4.4 % (3.4 - 5.6) for severe underweight.

**Table 7: Prevalence of underweight based on weight-for-age z-scores by sex**

| | **All** n = 585 | **Boys** n = 277 | **Girls** n = 308 |
|---|---|---|---|
| **Prevalence of underweight (<-2 z-score)** | (160) 27.4 % (22.9 - 32.3 95% C.I.) | (78) 28.2 % (22.3 - 34.8 95% C.I.) | (82) 26.6 % (21.1 - 33.0 95% C.I.) |
| **Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)** | (126) 21.5 % (18.0 - 25.6 95% C.I.) | (60) 21.7 % (17.1 - 27.1 95% C.I.) | (66) 21.4 % (16.9 - 26.8 95% C.I.) |
| **Prevalence of severe underweight (<-3 z-score)** | (34) 5.8 % (3.9 - 8.7 95% C.I.) | (18) 6.5 % (3.9 - 10.7 95% C.I.) | (16) 5.2 % (2.8 - 9.4 95% C.I.) |

### 3.2.5 Stunting

Stunted growth is a reduced growth rate in human development. It is a primary manifestation of malnutrition in early childhood, including malnutrition during fetal development brought on by the malnourished mother.[8]

The stunting rates in Samburu County are as shown in the table below from the survey results. It is worth noting that there was a significant drop in the stunting rates (24.9 % (20.7 - 29.5 95% C.I.) as compared to 30.6 % (28.0 - 33.3 95% C.I.) in January 2013.

**Table 8: Prevalence of stunting based on height-for-age z-scores and by sex**

| | **All** n = 567 | **Boys** n = 272 | **Girls** n = 295 |
|---|---|---|---|
| **Prevalence of stunting (<-2 z-score)** | (141) 24.9 % (20.7 - 29.5 95% C.I.) | (77) 28.3 % (22.7 - 34.6 95% C.I.) | (64) 21.7 % (16.9 - 27.4 95% C.I.) |
| **Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)** | (102) 18.0 % (15.0 - 21.4 95% C.I.) | (50) 18.4 % (14.1 - 23.6 95% C.I.) | (52) 17.6 % (13.5 - 22.7 95% C.I.) |
| **Prevalence of severe stunting (<-3 z-score)** | (39) 6.9 % (4.7 - 10.0 95% C.I.) | (27) 9.9 % (6.6 - 14.7 95% C.I.) | (12) 4.1 % (2.4 - 6.9 95% C.I.) |

### 3.2.6 Child Immunization, Vitamin A Supplementation and Deworming

The Ministry of Health through the Division of Vaccines and Immunization aims to increase access to immunization services nationwide in order to reduce morbidity and mortality due to vaccine

[8] UNICEF/WHO- World Bank Joint Child Malnutrition Estimates. (UNICEF, New York; WHO, Geneva; The World Bank, Washington, DC; 2012)

preventable diseases. This is in acknowledgement of the proven benefits of immunization in the prevention, control and even eradication of life threatening diseases over the years. Of particular importance is the reduction of infant and child morbidity and mortality in line with the United Nations Millennium Development Goals (MDG)[9]

Results from the Samburu survey showed high immunization coverage above the national target of 80% with exception of measles at 18 months. BCG vaccination confirmed by the presence of a scar was at 90%. A considerable proportion of the children however did not have health cards hence verification of the immunization was done by recall.

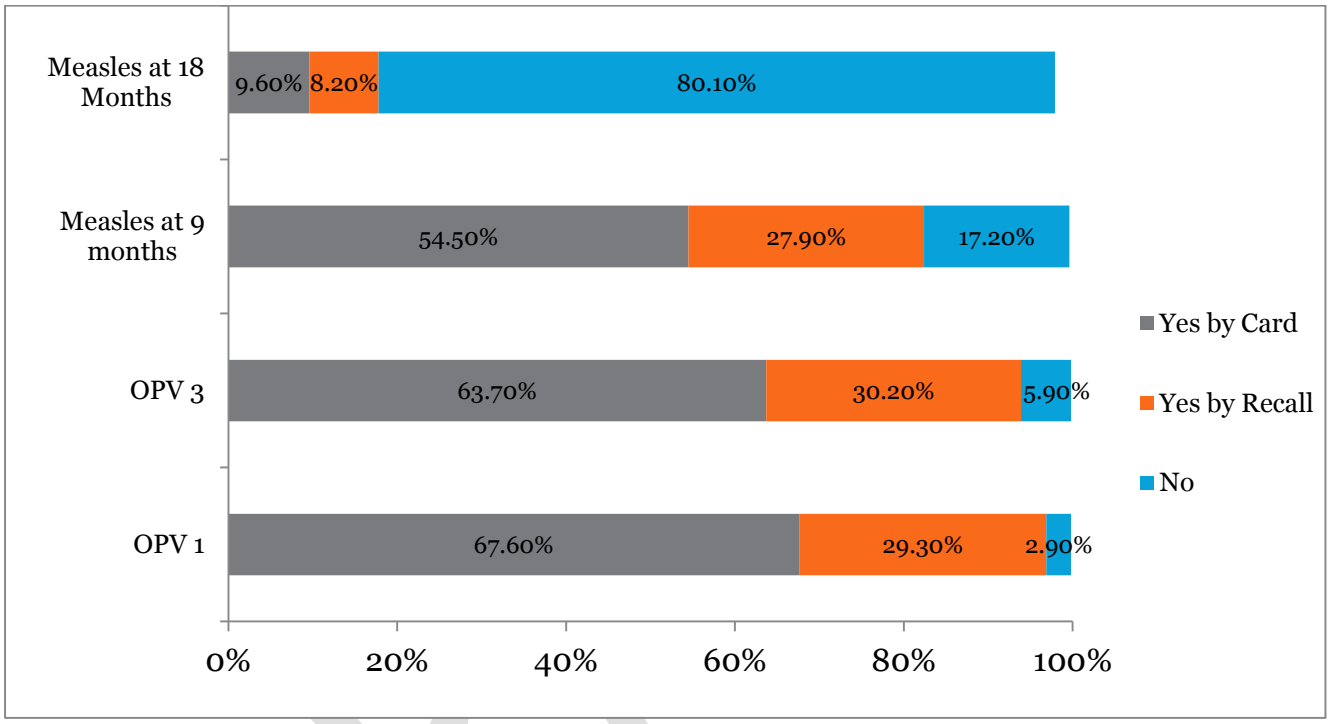


**Figure 4: Immunization coverage**

Infants and children have increased vitamin A requirements to promote rapid growth and to help combat infections. Inadequate intake of vitamin A at this age could lead to vitamin A deficiency, which, when severe, may cause visual impairment (night blindness) or increase the risk of illness and mortality from childhood infections such as measles and those causing diarrhea. Vitamin A supplementation is recommended in infants and children 6–59 months of age as a public health intervention to reduce child morbidity and mortality.[10]

In Samburu County, Vitamin A supplementation for children 6-11months (once) was at 80.9% while for 12-59 months, it was at 54.7%. Vitamin A supplementation at Health facility/outreach site was at 77.5% and 44.7% for 6-11 months and 12-59 months respectively.

The survey also assessed deworming rates for children 12-59 months, with the results showing only 22.7% had anti-helminthes administered to them twice in the past one year which is the recommended frequency for low risk communities. [11]

[9] Kenya DVI Comprehensive Multi-Year Plan 2011-2015

[10] WHO. Guideline: Vitamin A supplementation in infants and children 6–59 months of age. Geneva, World Health Organization, 2011.

[11] The Campbell Collaboration | www.campbellcollaboration.org

### 3.2.7 Child morbidity

Child morbidity was assessed based on a two weeks recall period prior to the survey date. Less than half of the children (45%) were reported to have been sick. The illnesses reported were ARI (45.1%), fever with chills like malaria (32.3%), watery diarrhea (20.7%), bloody diarrhea (1.9%) and other illnesses (4.5%).

### 3.2.8 Health Seeking Behavior

The survey assessed the health seeking behaviour of the caregivers when their children were sick. A significant proportion of caregivers (22.6%) did not seek any assistance when their children fall sick. More than two thirds (77.4%) of the care givers had sought assistance when their children were sick. Majority of the caregivers took their children to public health facilities (62.1%). Other areas from where assistance was sought included; local herbs (18.7%), private clinic/pharmacy (10.3%), traditional healer (3.3%), shop/kiosk (2.3%), mobile clinic (1.4%), CHW and NGO/FBO both at 0.9%.

### 3.2.9 Therapeutic Zinc Supplementation

Zinc supplementation has been found to reduce the duration and severity of diarrheal episodes and likelihood of subsequent infections for 2–3 months. Supplementary zinc benefits children with diarrhea because it is a vital micronutrient essential for protein synthesis, cell growth and differentiation, immune function, and intestinal transport of water and electrolytes[12]. In the survey results, 50.9% of the children with watery diarrhea were supplemented with zinc. This was below the national target of 80%.

### 3.2.10 Maternal Health Care

Information on maternal health was analyzed due to its importance both to the mother and the unborn baby. The consequences of poor nutritional status and inadequate nutritional intake for women during pregnancy not only directly affects women's health status, but may also have a negative impact on birth weight and early development.[13]

The survey assessed iron folic supplementation in pregnancy and maternal nutrition based on MUAC for pregnant and lactating women (PLW). With a reference to the child less than 2 years, the mothers were asked to state if they had received the iron folate pills during the pregnancy of the reference child and the duration they took them. More than half (67.7%) of the eligible mothers reported that they had received the iron folate pills. However, only 8% of the mothers took the pills for the recommended 90 days and above. The nutritional status of the mothers was analyzed based on the physiological status as shown in the table below;

**Table 9: Maternal health**

| MUAC | n | <21CM |
|---|---|---|
| All women (15-49 yrs.) 484 | 34 | 7.0% |
| PLW 317 | 23 | 7.3% |

### 3.2.11 Mosquito net ownership and utilization

The biggest proportion of households in the survey did not own mosquito nets (68.7%). Analysis of mosquito net utilization was based on the vulnerability of the population. An appreciable proportion of children less than five years (84.9%) were reported to have slept under a mosquito net the night prior to the survey date. Only 28.1% of the pregnant and lactating mothers reported to

[12] e-Library of Evidence for Nutrition Actions (eLENA)

[13] Nutrition for Health and Development/Making Pregnancy Safer/ Evidence and Information for Policy

have used the mosquito nets with almost two thirds of the PLW not utilizing them despite their vulnerability as a result of their physiological status.

### 3.3 Water sanitation and hygiene practices

#### 3.3.1 Main Water Sources and Distance/Time

The main source of drinking water reported in the County survey was unprotected shallow wells accounting for 38.1% of the households. More than a third (35.3%) of the households used water from a piped system/borehole/ protected spring/protected shallow well which is a safe water source. Other water sources reported were; river/spring (19.1%), earth pan/dam 6.9% and earth pan/dam with infiltration well (0.6%). More than half of the households (64.1%) got their water from potentially unsafe sources.

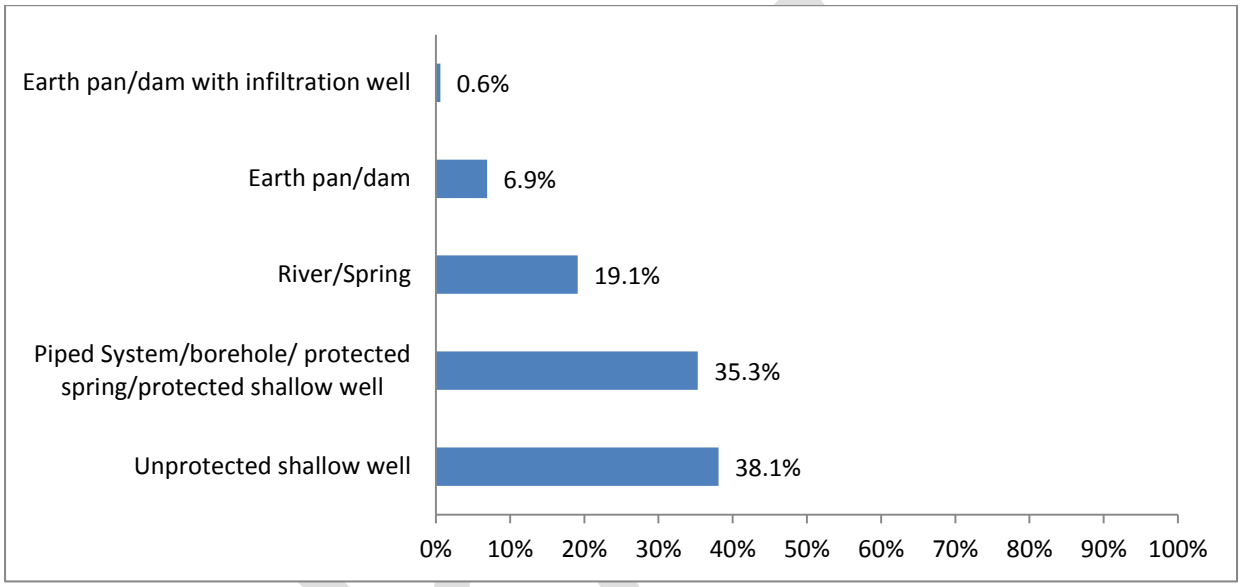


**Figure 5: Main Water Sources**

Majority of the households (53.7%) reported to walk more than 500m to the water source with 46.3% living within 500m (less than 30 minutes) to the water source. Most of the households (80.3%) do not queue for the water, with only 16.1% paying for their water at an average of kshs 7 per 20 liter Jerrican. Villages situated in towns with piped water pay an average of 280 Kshs per month.

#### 3.3.2 Water Treatment Methods for Drinking Water

Even if most of the households get their drinking water from unsafe sources, 80.1% of the households did not treat their water before drinking. Only 15.8% boiled their water with 4.5% and 1.3% using chemicals and pot filters respectively.

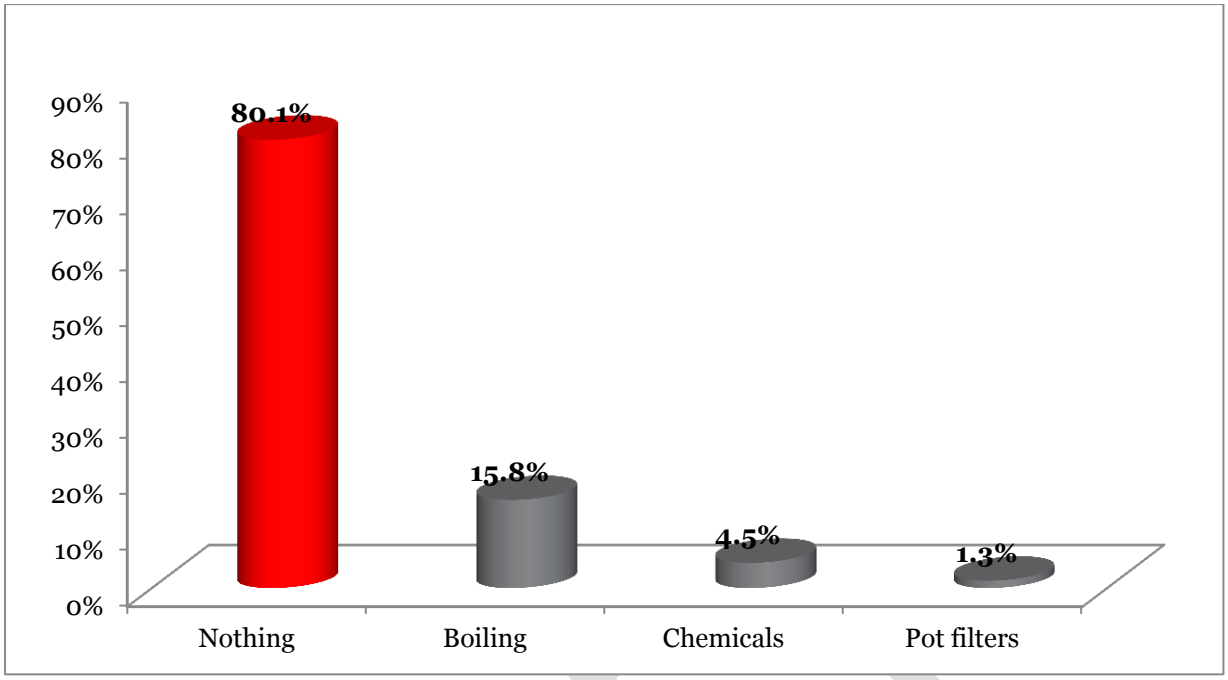


**Figure 6: Water treatment**

### 3.3.3 Latrine coverage and relieving points

Inadequate sanitation is a major cause of disease world-wide and improving sanitation is known to have a significant beneficial impact on health both in households and across communities. The survey reported only 14% of the households owning latrines with 14% using either a neighbor or shared latrine. It is worrying that 72% of the households practice open defecation.

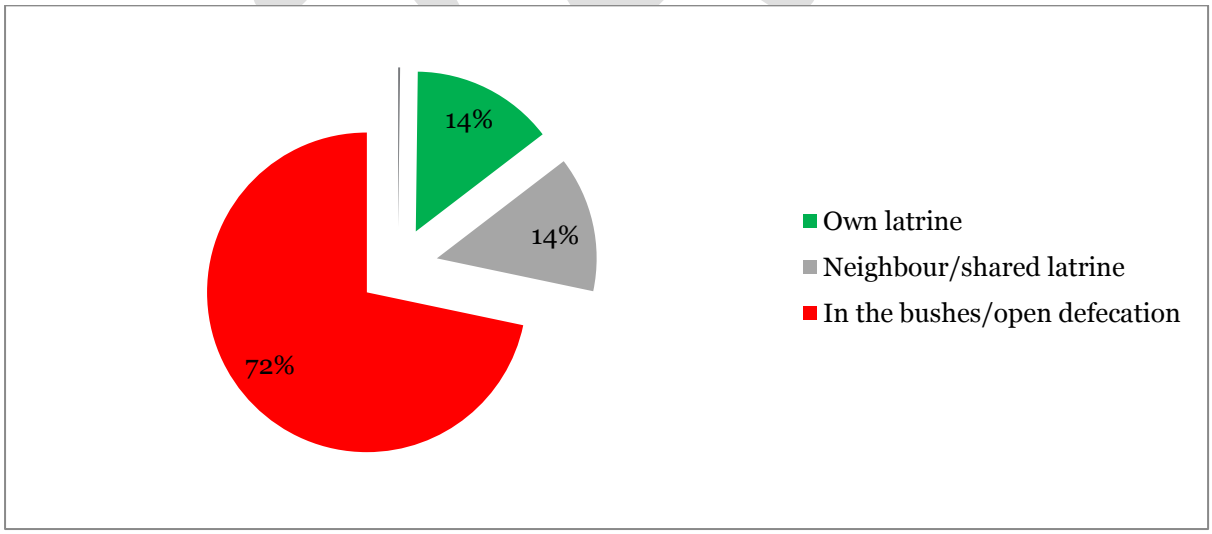


**Figure 7: Latrine Coverage and relieving points**

### 3.3.4 Hygiene Practices- Hand Washing

Hygienic behaviour, in particular hand-washing with soap at critical times: after defecating and before eating or preparing food. Hand-washing with soap can significantly reduce the incidence of diarrhea, which is the second leading cause of death amongst children under five years old. Good hand-washing practices have also been shown to reduce the incidence of other diseases, notably

pneumonia, trachoma, scabies, skin and eye infections and diarrhea-related diseases like cholera and dysentery. [14]

Most of the caregivers (87.6%) reported to wash their hands with soap and water which is commendable. Hand washing at the four critical times is as shown in the figure below.

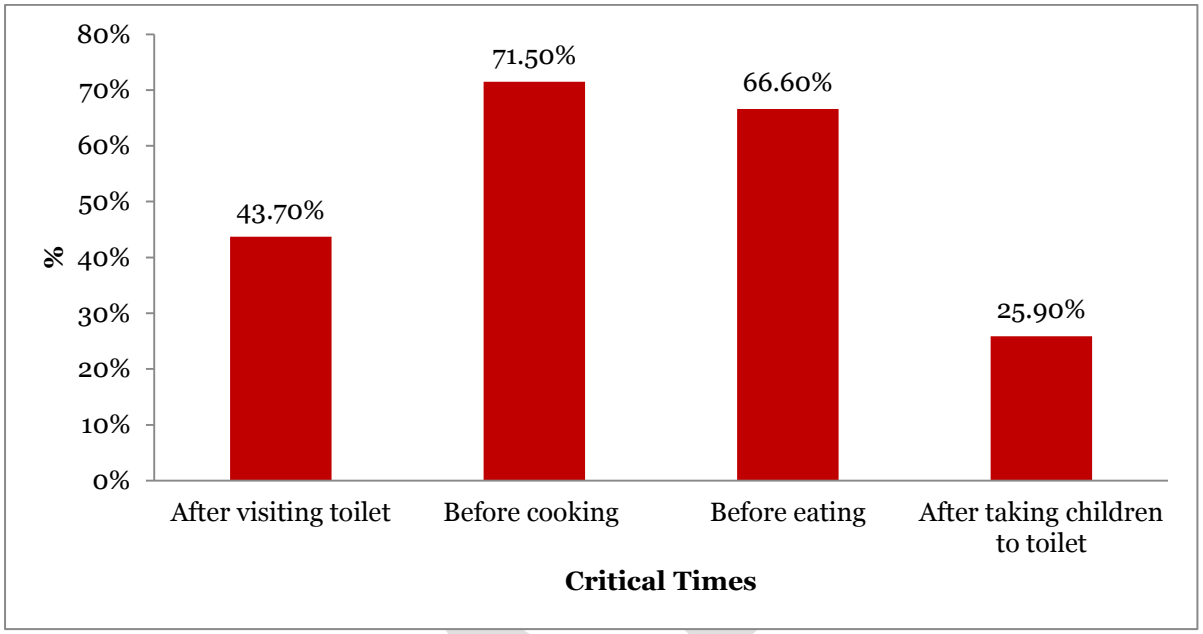


**Figure 8: Hand washing at critical moments**

### 3.4 FOOD SECURITY AND LIVELIHOODS

#### 3.4.1 Source of Household Income

The respondents were probed of their households main source of income in the past 3 months prior to the survey. Most of the households reported to rely on sale of livestock for their income (45.8%) with 22% relying on casual labor and 13.7% on petty trading. Other sources of income reported were permanent job (8.4%), sale of crops (3.2%), sale of livestock products at (2.4%), remittances at 1.1% with 0.4% selling their personal assets. Some households (2.4%) however reported not to have any form of income.

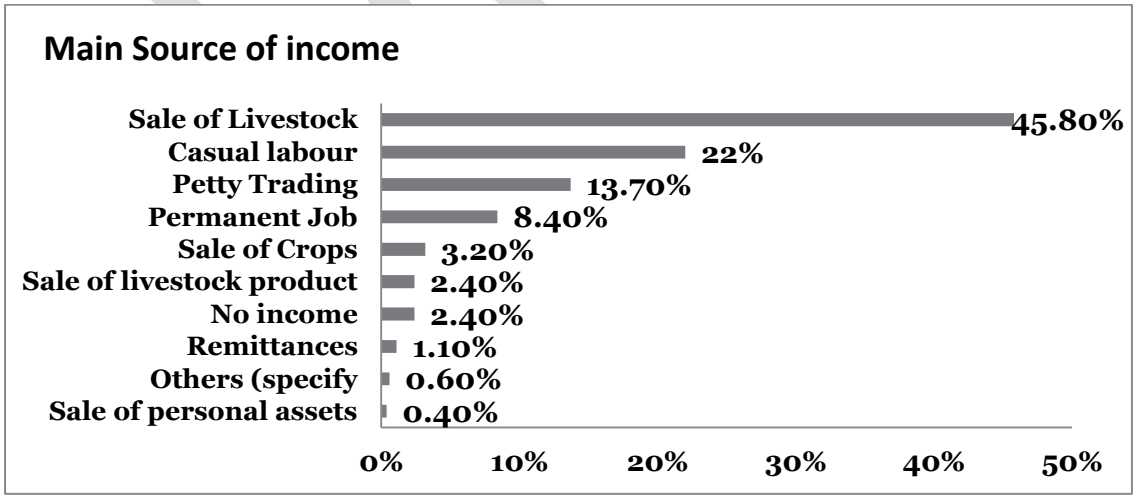


**Figure 9: Main Source of income**

[14] WELL FACTSHEET: Jeroen Ensink

### 3.4.2 Household Dietary Diversity

Dietary diversity is a qualitative measure of food consumption that reflects household access to a variety of foods, and is also a proxy for nutrient adequacy of the diet of individuals.[15] The household dietary diversity score (HDDS) is meant to reflect, in a snapshot form, the economic ability of a household to access a variety of foods. Studies have shown that an increase in dietary diversity is associated with socio-economic status and household food security.[16]

The HDDS data was collected based on 7 days food frequency recall with each food group being given a score of 1. And the summation of all food groups consumed by the household. The survey noted most of the households (46.3%) having a medium dietary diversity (4-5 food groups) with 44.5% having a high dietary diversity (>6 food groups). Only a small proportion of the households (9.2%) recorded a low dietary diversity (3 food groups or less). This is as shown in the table below.

**Table 10: Household dietary diversity**

| HDDS | MAY 2014 |
|---|---|
| Low Dietary Diversity (3 Food Groups) | 9.2% |
| Medium Dietary Diversity (4-5 Food Groups) | 46.3% |
| High Dietary Diversity (>6 Food groups) | 44.5% |

The food groups predominantly consumed at the households were cereals and cereal products (98.3%), Sugars/honey/sweeteners (90.8%), oils & fats (84.1%) and milk and milk products (73.9%). Fish &sea foods (2.6%), fruits (8.6%) and eggs (10.9%) were the least consumed food groups. The source of the dominant food group was majorly purchase (92.1%)

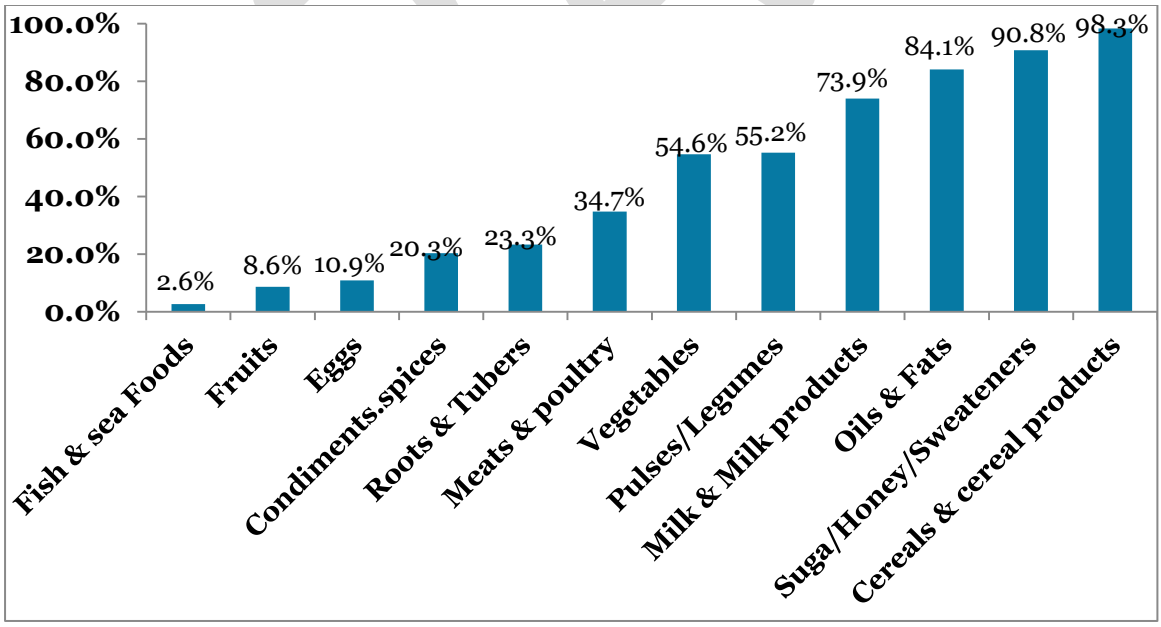


**Figure 10: Food groups consumed by households**

[15] Food and Agriculture Organization of the United Nations-Guidelines for measuring household and individual dietary diversity

[16] Hoddinot and Yohannes, 2002; Hatloy et al., 2000

### 3.4.3 Coping Strategy weighted Index

About a third of the households (34.5%) had experienced food shortage 7 days prior to the survey. Information on how they managed the food shortage was collected. The coping strategies assessed were as shown in the table above, with the survey recording a Coping Strategy Index (CSI) of 11.9

**Table 11: Coping Strategies**

| Coping Strategy | No. of HHDs employing the strategy | Frequency score (0-7) | Severity score (1-3) | Weighted Score = Frequency x Weight |
|---|---|---|---|---|
| Rely on less preferred and less expensive foods? | 184 | 1.5 | 1 | 1.5 |
| Borrow food, or rely on help from a friend or relative? | 184 | 1.3 | 2 | 2.6 |
| Limit portion size at mealtimes? | 184 | 1.7 | 1 | 1.7 |
| Restrict consumption by adults in order for small children to eat? | 184 | 1.4 | 3 | 4.2 |
| Reduce number of meals eaten in a day? | 184 | 1.9 | 1 | 1.9 |
| **TOTAL HOUSEHOLD SCORE** | | | | **11.9** |

## 4.0 DISCUSSION

The survey recorded a GAM rate of 17.3 % (14.2 - 20.9) and a SAM rate of) 3.3 % (1.9 - 5.4 95% C.I.). The GAM rate depicts a critical nutrition situation in the County while the SAM is moderate. This shows a deterioration form January 2013 when the situation was serious with GAM and SAM rates of 12.4 % (10.5 - 14.5) and 1.7 % (1.1 - 2.5) respectively.

Immunization coverage for most antigens in the County was above the national target of 80% with measles at 9 months being at 82.3%, OPV1&3 at 93.9% and 96.9% respectively. Vitamin A supplementation for 6-11 months was at 80.9% (slightly above the national target) while for 12-59 months was at 54.7% which is below the national target. Deworming for 12-59 months performed poorly with only 22.7% reporting to have been dewormed twice in the past one year. Zinc supplementation was at 50.9% meeting the county targets of 50% but below the national target of 80%.

More than half of the households (64.1%) get their water from potentially unsafe sources. This is despite the fact that 80.1% of the households did not treat their water before drinking. Hand washing after changing the baby and after visiting the toilet is low at 25.9% and 43.7% respectively. The biggest proportion of the households still practice open defecation (72%).

### 4.1 Potential factors triggering malnutrition

There has been a low coverage of integrated outreaches in the entire county hence lack of intensified screening at hard to reach villages to identify and refer the malnourished children. The lack of community screening and active case finding is further worsened by the lack of incentives for CHWs. The county has got a total of 18 community units with most of them not trained on the

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nutrition module. Referral of malnourished cases is therefore low with some progressing to severe malnutrition.

The potential failure of the long rains has impacted negatively to the community with movements of livestock within and outside the county. A decline in milk production and consumption at the household level indicates a deteriorating drought situation in the county.

**5.0 RECOMMENDATIONS**

Based on the survey results, a County team led by the Chief Officer of Health came up with recommendations, most of which can be acted upon with the available resources and capacities;

1. The wasting trends in the county can be reduced by focusing on Long term measures rather than the short term. There is need to; Improve staffing at health facilities especially the nutrition staff, scale up outreach sites and open up more facilities for IMAM.
2. There is a need by the CHMT to do an evaluation of the performance and effectiveness of the community Units. This will be to identify the missing link between the health facilities and the health community units.
3. The Community units need to undergo On the Job training on the nutrition technical module developed for community units. This will be coordinated by the Community Strategy Focal person.
4. To improve screening and referral of malnourished cases, there is need to link each community unit to a health facility.
5. To ensure concerted efforts in the fight against malnutrition, there will be need to involve other sectors in the fight against malnutrition. These other sectors include the Ministry of Agriculture, Ministry of Education, Ministry of Water, the business community and the media. This shall involve the activation of the SUN movement in the county.
6. There is a need to intensify the ongoing men involvement in support of nutrition education in the community as key decision makers.
7. A forum involving heads of sectors, chief officers and NGOs need to be formed. This shall be an avenue to pool resources together and prioritizing interventions.
8. There is an urgent need for integrated outreaches in the county which shall be monitored by the MOH MOH shall monitor and ensure that the outreaches supported by the County government are integrated for effective management of malnourished children.
9. Due to the high GAM rates, there is a need to put in place short term measures to prevent further deterioration of the situation. Mass screening at identified hotspots for identification and referral of malnourished cases needs to be conducted. With the availability of funds, a Blanket Supplementary Feeding Programme (BSFP) shall be necessary as a short term measure.
10. There is a need for the county to identify a key person(s) who shall champion nutrition needs in the county.
11. Efforts to implement the activities stated in the County Nutrition Action Plan need to be concentrated to ensure a healthy population in the county.

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## APPENDICES

Appendix I: Sampled Clusters

| Sub County | Sub Location | CLUSTER NAME | Cluster Number | Population size |
|---|---|---|---|---|
| East | Lerata | kalama | 1 | 155 |
| | Lengei | Lpus | 2 | 221 |
| | Laresoro | Ntilal | 3 | 900 |
| | Resim | Marti | 4 | 336 |
| | Wamba | Lkisin | 5 | 1564 |
| | Ngutuk Engiron | Remote | 6 | 1237 |
| | Ngilai | Nchok | 7 | 397 |
| | Sessia | Mabati | 8 | 515 |
| | Lpashie | Soito A & B | 9 | 732 |
| | Lorok Onyokie | Ngwe entome | 10 | 360 |
| north | Baragoi | Mnanda | 11 | 655 |
| | Loikumkum | Lpakenyua | 12 | 414 |
| | Ngilai | Lturoto | 13 | 1768 |
| | South Horr | Anderi | 14 | 726 |
| | Lonjorin | Lonjorin | 15 | 2149 |
| | Illaut | Illaut trading centre | 16 | 354 |
| | Nchola | Nachola | 17 | 1485 |
| | Ngurunit | Ntepes | 18 | 407 |
| Central | Angata nanyukie | Angata | 19 | 1142 |
| | Loibashae | Lbaa sapuk | 20 | 427 |
| | Loosuk | Longoben | 21 | 1114 |
| | Barsaloi | Jogoo/huruma | 22 | 472 |
| | Maralal | Allamano | 23 | 1122 |
| | Lpartuk | Upper Nomotio | 24 | 328 |
| | Maralal town | Stadium | 25 | 901 |
| | Shabaa | Soit pus | 26 | 411 |
| | Ng'ari | Nkutoto | 27 | 335 |
| | Nkuroto | Lareobor | 28 | 869 |
| | Milimani | Forest | 29 | 389 |
| | Seketet | serentotoi | 30 | 453 |
| | Malaso | Poro Town | 31 | 381 |
| | Opiroi | Opiroi | 32 | 978 |
| | Suguta marmar | Suguta Town | 33 | 1728 |
| | Lolmolog | Kitabor | 34 | 583 |
| | Mugur | Ngoisigi/Murgur | 35 | 401 |
| | Langatolia | Lpetpet | 36 | 584 |

## Appendix II: Events Calendar

| SAMBURU EVENTS CALENDER MAY 2014 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **MONTH** | **SEASONS** | **2009** | **2010** | **2011** | **2012** | **2013** | **2014** |
| **JANUARY** | | | 52 New Year Celebrations | 40 New Year Celebrations | New year celebrations/ 28 | New year celebrations 16 | 4 |
| **FEBRUARY** | | | Ewaso Nyiro floods (East)peeye ndama 51 | 39 | BSFP 27 | Form 1 Reporting15 | 3 |
| **MARCH** | | | 50 | 38 | BSFP 26 | General Elections 14 | 2 |
| **APRIL** | Long rains | | 49 | Easter Holidays 37 | BSFP, Easter holidays 25 | Easter holidays 13 | 1 |
| **MAY** | | | End of BSFP Opening of schools/labour day,Death of general Lengees 48 | Preparation for end of world 36 | 24 | 12 | 0 |
| **JUNE** | | Immigration of Rendile to north Madaraka Day 59 | Madaraka Day 47 | Madaraka Day 35 | Madaraka Day , Death of Saitoti Mass trachoma campaign 23 | Madaraka Day Mass trachoma campaign 11 | |
| **JULY** | | Immigration of Rendile to north 58 | 46 | 34 | 22 | 10 | |
| **AUGUST** | | Census Carmel Derby 57 | Referendum voting Carmel Derby 45 | School holiday Carmel Derby 33 | Ramadhan /School holidays Carmel Derby, Muget 21 | Carmel Derby 9 | |
| **SEPTEMBER** | | Kanampio massacre 56 | 44 | Opening of schools 2nd term32 | 20 | Tetanus Campaign(central and East) 8 | |
| **OCTOBER** | Short rains | 55 | 43 | 31 | Tribal Clashes in Baragoi Mashujaa day 19 | Maralal Demonstrations 7 | |
| **NOVEMBER** | | KCPE 54 | KCPE 42 | Polio Capmaign 30 | Baragoi massacre 18 | peeye ndama Polio Campaign 6 | |
| **DECEMBER** | | 53 Christmas | 41 Christmas | 29 Christmas | 17 | 5 | |

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Appendix III: Age calculation Chart

| AGE CALCULATION CHART FOR UNDER 5 (*record Age in Months)* | | | |
|---|---|---|---|
| **Adequately Verify the age of the child. Accurate as at MAY 2014:Please cross- check against date of birth of child and date of survey to establish actual age)** | | | |
| **DATE OF BIRTH** | **AGE IN MONTHS** | **DATE OF BIRTH** | **AGE IN MONTHS** |
| 2009-Jun | 59 | 2012-Jan | 28 |
| 2009-Jul | 58 | 2012-Feb | 27 |
| 2009-Aug | 57 | 2012-Mar | 26 |
| 2009-Sep | 56 | 2012- Apr | 25 |
| 2009-Oct | 55 | 2012-May | 24 |
| 2009-Nov | 54 | 2012-Jun | 23 |
| 2009-Dec | 53 | 2012-Jul | 22 |
| 2010-Jan | 52 | 2012-Aug | 21 |
| 2010-Feb | 51 | 2012-Sep | 20 |
| 2010-Mar | 50 | 2012-Oct | 19 |
| 2010-Apr | 49 | 2012-Nov | 18 |
| 2010-May | 48 | 2012-Dec | 17 |
| 2010-Jun | 47 | 2013 -Jan | 16 |
| 2010-Jul | 46 | 2013 - Feb | 15 |
| 2010-Aug | 45 | 2013 - Mar | 14 |
| 2010-Sept | 44 | 2013- Apr | 13 |
| 2010-Oct | 43 | 2013 - May | 12 |
| 2010-Nov | 42 | 2013 - Jun | 11 |
| 2010-Dec | 41 | 2013 - Jul | 10 |
| 2011-Jan | 40 | 2013 - Aug | 9 |
| 2011-Feb | 39 | 2013 - Sep | 8 |
| 2011-Mar | 38 | 2013- Oct | 7 |
| 2011-Apr | 37 | 2013-Nov | 6 |
| 2011-May | 36 | 2013-Dec | 5 |
| 2011- Jun | 35 | 2014 - Jan | 4 |
| 2011-Jul | 34 | 2014-Feb | 3 |
| 2011-Aug | 33 | 2014-Mar | 2 |
| 2011-Sep | 32 | 2014-Apr | 1 |
| 2011-Oct | 31 | 2014-May | 0 |
| 2011-Nov | 30 | | |
| 2011-Dec | 29 | | |

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Appendix IV: SMART Questionnaire

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

**2. Household Demographics**

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

| **2.10** | **How many mosquito nets does this household have?** _____ **(Indicate no.)** | |
|---|---|---|
| **2.11** | **Main Occupation of the Household Head – HH.** **(enter code from list)** 1=Livestock herding 2=Own farm labour 3=Employed (salaried) 4=Waged labour (Casual) 5=Petty trade 6=Merchant/trader 7=Firewood/charcoal 8=Fishing **9=Others (Specify)** \|____\| | **2.12.** What is your **main** current source of income 1. =No income 2. = Sale of livestock 3. = Sale of livestock products 4. = Sale of crops 5. = Petty trading e.g. sale of firewood 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 \|____\| |

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

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

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

***3.1 CHILD ANTHROPOMETRY***

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

| A<br>Child No. | B | C | D | E | F | G | H | I | J | K | L | 3.2 | 3.3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **what is the relationship of the respondent with the child/children**<br>1=Mother<br>2=Father<br>3=Sibling<br>4=Grandmother<br>5=Other (specify) | SEX<br>F/m | Exact Birth Date | Age in months (**To be filled only if the exact date cannot be obtained)** | Weight (KG)<br>XX.X | Height (CM)<br>XX.X | Oedema<br>Y= Yes<br>N= No | MUAC (cm)<br>XX.X | Has your child (NAME) been ill in the past two weeks?<br>If No, please skip part K and proceed to 3.4)<br><br>1.Yes<br>2. No | If YES, what type of illness (multiple responses possible)<br>1 = Fever with chills like malaria<br>2 = ARI /Cough<br>3 = Watery diarrhoea<br>4 = Bloody diarrhoea<br>5 = Other (specify)<br>*See case definitions below* | If the child **had watery diarrhoea** in the last TWO (2) WEEKS, did the child get THERAPEUTIC zinc supplementation ?<br>*Show sample and probe further for this component*<br>*check the remaining drugs(confirm from mother child booklet)*<br><br>1 = Yes<br>2 = No<br>3 = Do not know | **When the child was sick did you seek assistance ?**<br>1.Yes<br>2. No | **If the response is yes to question # 3.2 where did you seek assistance? (More than one response possible-**<br>1. Traditional healer<br>2.Community health worker<br>3. Private clinic/ pharmacy<br>4. Shop/kiosk<br>5.Public clinic<br>6. Mobile clinic<br>7. Relative or friend<br>8. Local herbs<br>9.NGO/FBO |
| **01** | | | | | | | | | | | | | |
| **02** | | | | | | | | | | | | | |
| **03** | | | | | | | | | | | | | |
| **04** | | | | | | | | | | | | | |

| *3.4 Kindly maintain the same child number as part 2 and 3.1 above* | | | | | | | | | | **MATERNAL NUTRITION FOR MOTHERS OF REPRODUCTIVE AGE (15-49 YEARS)***(Please insert appropriate number in the box)* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **A** | **B** | **C** | **D** | **E** | **F** | **G** | **H** | **I** | **3.5** | **3.6** | **3.7** | **3.8** | **3.9** |
| Child No. | How many times has child received Vitamin A in the past year? (show sample) | How many times did you receive vitamin A capsules from the facility or out reach | If Vitamin A received how many times verified by **Card?** | How many times has child received drugs for worms in the past year? **(12-59 Months)** *(show Sample)* | Has the child received BCG vaccination? **1 = scar 2=No scar** | Has child received OPV1 vaccination **1=Yes, Card 2=Yes, Recall 3 = No 4 = Do not know** | Has child received OPV3 vaccination ? **1=Yes, Card 2=Yes, Recall 3 = No 4 = Do not know** | Has child received measles vaccination at 9 months *(On the upper right shoulder)?* **1=Yes, Card 2=Yes, Recall 3 = No 4 = Do not know** | Has child received the second measles vaccination (18 to 59 months ) *(On the upper right shoulder)?* **1=Yes, Card 2=Yes, Recall 3 = No 4 = Do not know** | Woman ID. **(all ladies in the HH aged 15-49 years from the demographics page)** | What is the mother's / caretaker's physiological status **1. Pregnant 2. Lactating 3. None of the above** | Mother/ caretaker's MUAC reading: **____.__cm** | During the pregnancy of the (name of child below 24 months) did you take iron pills, sprinkles with iron, iron syrup or iron-folate tablets? (name that appears in HH register) **1. Yes 2. No 3. Don't know 4. N/A** | If Yes, for how many days? (approximate the number of days) |
| 01 | | | | | | | | | | | | | | |
| 02 | | | | | | | | | | | | | | |
| 03 | | | | | | | | | | | | | | |
| 04 | | | | | | | | | | | | | | |

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| 5. | **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>?**<br>1. Piped water system/ borehole/ protected spring/protected shallow wells<br>2. Unprotected shallow well<br>3. River/spring<br>4. Earth pan/dam<br>5. Earth pan/dam with infiltration well \|____\|<br>6. Water trucking /Water vendor<br>7. Other *(Please specify)* | **4.2 What is the trekking distance to the current main water source?**<br>1=less than 500m (Less than 15 minutes)<br>2=more than 500m to less than 2km (15 to 1 hour)<br>3=more than 2 km (1 – 2 hrs)<br>4=Other(specify) \|____\| |
| **4.2.2a** | **Do you queue for water?**<br>1. Yes<br>2. No **(If No skip to question 4.3)** \|____\| | **4.2.2b. If yes how long?**<br>1. Less than 30 minutes \|____\|<br>2. 30-60 minutes<br>3. More than 1 hour |
| **4.3a** | **Is anything done to your water before drinking *(Use 1 if YES and 2 if NO)*. if No skip to 4.4**<br>\|____\| | **4.3b If yes what do you do? (*MULTIPLE RESPONSES POSSIBLE) (Use 1 if YES and 2 if NO)*.**<br>1. Boiling…… …….. \|____\|<br>2. Chemicals (*Chlorine,Pur,Waterguard*)…… \|____\|<br>3. Traditional herb…….... \|____\|<br>4. Pot filters…….. \|____\|<br>**5.** Other (specify_____)…… \|____\| |
| **4.4** | **Where do you store water for drinking?**<br>1. Open container / Jerrican<br>2. Closed container / Jerrican \|____\| | **4.5 How much water did your household use YESTERDAY (excluding for animals)?**<br>*(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?**<br>1. Yes<br>2. No **(If No skip to Question 4.7.1**)<br>\|____\| | **4.6.1 If yes, how much per 20 liters jerrican _____ KSh/20ltrs** / **4.6.2 If paid per month how much** \|____\| |
| **4.7.1** | **Yesterday (within last 24 hours) at what instances did you wash your hands? (MULTIPLE RESPONSE-** (Use 1 if "Yes" and 2 if "No")<br>1. After toilet…… \|____\|<br>2. Before cooking…….... \|____\|<br>3. Before eating…… \|____\|<br>4. After taking children to the toilet…… \|____\|<br>5. Others…… \|____\| | |
| **4.7.2** | **If the caregiver washes her hands, then probe further; what did you use to wash your hands?**<br>1. Only water<br>2. Soap and water<br>3. Soap when I can afford it<br>4. traditional herb<br>5. Any other specify \|____\| | **4.8 Where do members of your household Mainly relieve themselves?**<br>1. In the bushes, open defecation<br>2. Neighbor or shared traditional pit/improved latrine<br>3. Own traditional pit/improved latrine<br>4. Others Specify \|____\| |

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## 5.0: Food frequency and Household Dietary Diversity

| | **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)*<br><br>***1=Yes***<br>***2=No*** | **If** *yes*, **mark days the food was consumed in the last 7 days?** | | | | | | | | What was the **main** source of the **dominant food item** consumed in the HHD?<br>**1.Own production**<br>**2.Purchase**<br>**3.Gifts from friends/families**<br>**4.Food aid**<br>**5.Traded or Bartered**<br>**6.Borrowed**<br>**7.Gathering/wild fruits**<br>**8.Other (specify)** |
|---|---|---|---|---|---|---|---|---|---|---|
| ***Type of food**** | | **D1** | ***D2*** | **D 3** | **D 4** | **D5** | **D 6** | **D7** | **TOTAL** | |
| 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: | | | | | | | | | | |

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| 6. | COPING STRATEGIES INDEX | |
|---|---|---|
| 6.0 | **In the past 7 DAYS, have there been times when you did not have enough food or money to buy food?**<br>If No; END THE INTERVIEW AND THANK THE RESPONDENT<br>1=Yes<br>2=No<br>\|____\| | **Frequency score:**<br>**Number of days out of the past seven (0 -7).** |
| | **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:**<br>**END THE INTERVIEW AND THANK THE RESPONDENT** | |

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