STANDARDISED EXPANDED NUTRITION SURVEY (SENS) FINAL REPORT

KAKUMA REFUGEE CAMPS
(Kakuma I, II, III, IV and Kalobeyei settlement)

Survey conducted: 26th November to 8th December 2018

Report finalised: March - 2019

UNHCR

IN COLLABORATION WITH

IRC, KRC, UNICEF and WFP
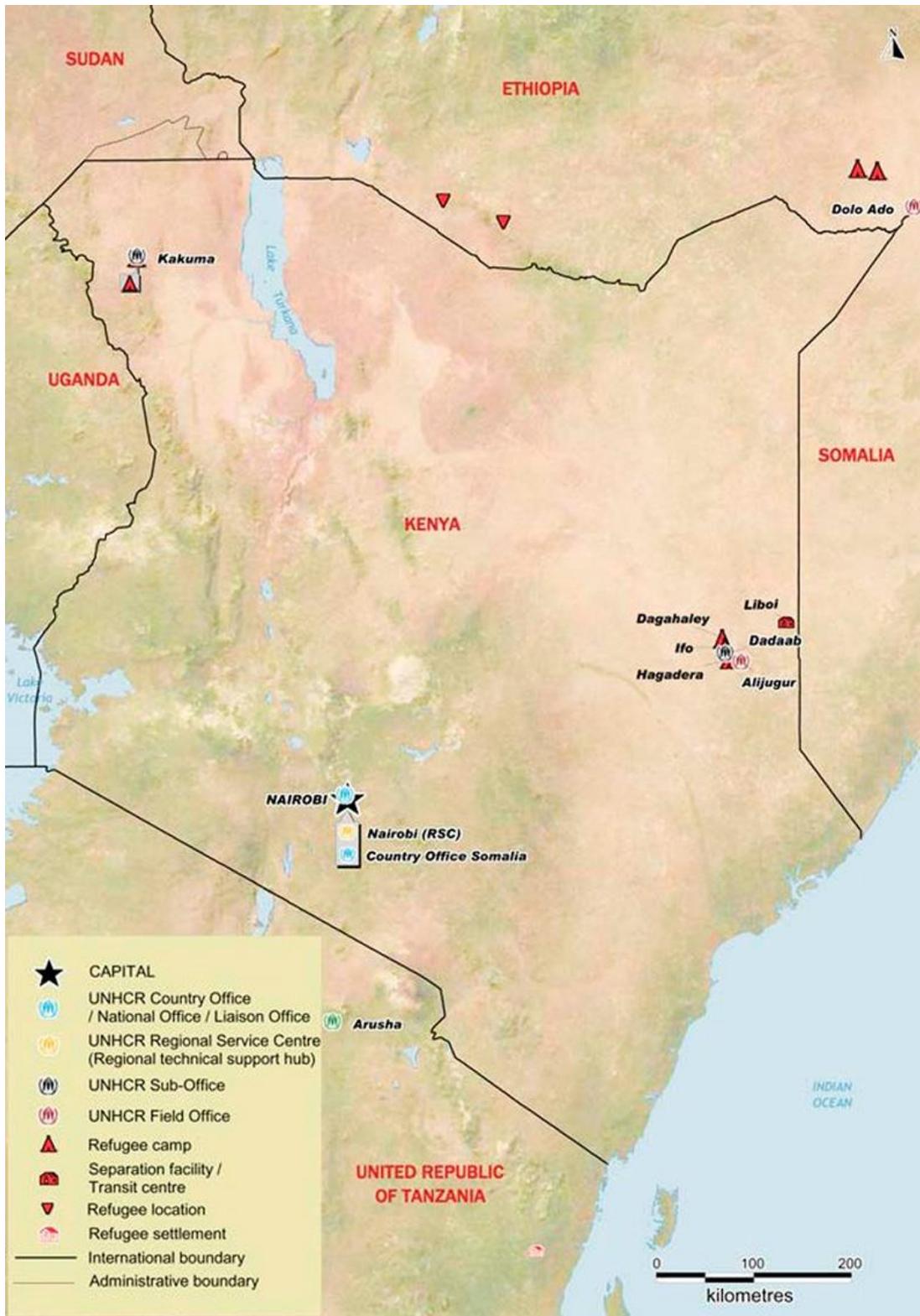
Figure 1: Kenya map showing location of Kakuma Refugee camps

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The survey was a collaborative effort of UNHCR, WFP, UNICEF, IRC and KRCS, to whom we are very grateful for their immense contribution in all stages of this important exercise.

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- The Kakuma team (enumerators, team leaders and supervisors) for ensuring that the survey collected good quality data, and, as well, demonstrating diligence and commitment during the entire survey process. A list of participants is attached.
- The Kakuma logistics team, including drivers for flexibility and dedication during data collection
- All other individuals who may have contributed to the success of this project.

ACRONYMS AND ABBREVIATIONS

ANC	Ante Natal Clinic
BSFP	Blanket Supplementary Feeding Programme
CDR	Crude Death Rate
CI	Confidence Interval
CHP	Community Health Promoter
CSB	Corn-Soya Blend
CTC	Community Therapeutic Care
DEFF	Design effect
ENA	Emergency Nutrition Assessment
ENN	Emergency Nutrition Network
EPI	Expanded Programme on Immunization
Epi Info	CDC software for epidemiological investigations
GAM	Global Acute Malnutrition
GFD	General Food Distribution
GFR	General Food Ration
GIZ	German Development Cooperation
GoK	Government of Kenya
HAZ	Height-for-Age z-score
Hb	Haemoglobin
HH	Household
HIS	Health Information System
IPs	Implementing Partners
IYCF	Infant and Young Child Feeding
IRC	International Rescue Committee
IRS	Indoor Residual Spraying
KAP	Knowledge Attitude and Practice
KRCS	Kenya Red cross Society
LLIN	Long-lasting insecticidal net
Lpppd	Litres per Person per Day
MAM	Moderate Acute Malnutrition
MCH	Maternal and Child Heath
MOH	Ministry of Health
MUAC	Middle Upper Arm Circumference
NCHS	National Centre for Health Statistics
OTP	Out-patient Therapeutic Programme
PDM	Post Distribution Monitoring
PLWHA	Persons Living with HIV/AIDS
PPS	Probability Proportional to Size
ProGres	Registration database for refugee population data
RSC	Regional Service Centre
SAM	Severe Acute Malnutrition
SC	Stabilization Centre

SD	Standard Deviation
SFP	Supplementary Feeding Programme
SMART	Standardised Monitoring and Assessment of Relief and Transitions
TFP	Therapeutic Feeding Programme
U5	Children under 5 years old
U5CDR	Under-5 Crude Death Rate
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
WASH	Water, Sanitation and Hygiene
WAZ	Weight-for-Age z-score
WHZ	Weight-for-Height z-score
WFP	World Food Programme
WHO	World Health Organization

1 EXECUTIVE SUMMARY

1.1 Introduction

The 2018 annual Standardised Expanded Nutrition Survey (SENS) at the Kakuma Refugee Camps and Kalobeyei settlement was conducted from 26th November to 8th December 2018. It was coordinated by the United Nations High Commission for Refugees (UNHCR) with support from World Food Programme (WFP), International Rescue Committee (IRC) and Kenya Red Cross (KRC). The survey used SMART methodology and UNHCR SENS guidelines version 2 (2013) for implementation. Whereas a significant reduction in GAM prevalence in both Kakuma and Kalobeyei in 2017 and the same change in stunting for Kalobeyei and Kakuma was also observed, 2018 indicated a significant increase in GAM prevalence in both Kakuma and Kalobeyei which is similar to the increase in GAM prevalence observe in 2016 in comparison to 2015. The difference was however not statistically significant. Previous years between April 2010 and November 2014 however indicated a steady decline in GAM prevalence.

Anaemia in children 6-59 months remains above the 40% threshold of public health significance for both survey areas but anaemia in non-pregnant women 15-59 years was below 40%. A slight increase was observed in Kakuma while a reduction was observed in Kalobeyei. The November 2018 survey also shows Vitamin A supplementation coverage remained above 90%, and the same is observed for water availability. Mosquito net ownership improved significantly in both Kakuma and Kalobeyei to above the recommended 80% UNHCR target.

This report summarises the results of standardised expanded nutrition survey (SENS) for Kakuma I, II, III, IV and Kalobeyei conducted from 26th November – 8th December 2018, coordinated by UNHCR in collaboration with WFP, IRC and KRC. The overall aim of this survey was to assess the general nutrition and health status of refugee population and formulate workable recommendations for appropriate nutritional and public health interventions. Objectives of the survey were as follows:

Primary Objectives:
1. To determine the prevalence of acute malnutrition amongst children aged 6-59 months.
2. To determine the prevalence of stunting among children aged 6-59 months.
3. To assess the prevalence of anaemia among children aged 6-59 months and non-pregnant women of reproductive age (15-49 years).
4. To assess the two week period prevalence of diarrhoea among children 6-59 months.
5. To assess the coverage of vitamin A supplementation in the last 6 months in children aged 6-59 months and coverage of de-worming among children aged 12 – 59 months.
6. To determine the coverage of measles vaccination in children 9-59 months.
7. To investigate IYCF practices among children 0-23 months.
8. To assess the coverage of ration cards and the duration of the general food ration lasts for the recipient's.
9. To determine the extent to which negative coping strategies are used by the households.
10. To assess household dietary diversity.
11. To determine the population's access to, and use of improved water, sanitation and hygiene facilities.
12. To determine the ownership of mosquito nets (all types and Long-lasting insecticidal (LLINs)) in households.
13. To determine the utilization of mosquito nets (all types and LLINs) by the total population, children 0-59 months, and pregnant women.
14. To determine the household coverage of indoor residual spraying.
15. To identify priority areas in programme implementation and propose informed recommendations for future programming.

Secondary Objectives:
1. To determine enrolment into Antenatal Care clinic and coverage of iron-folic acid supplementation in pregnant women.

METHODOLOGY:
A two-stage cluster sampling was used to select representative sample for both Kakuma and Kalobeyei. First stage entailed dividing the population into smaller units (blocks for Kakuma, neighborhoods for Kalobeyei. Probability Proportion to Size was used to select 36 clusters. On the Second stage, 16 households selected randomly using simple random sampling by way of random number generator.

All children interviewed in each sampled household (children aged 6-59 months for anthropometric, health and anaemia modules, and children 0-23 months for IYCF module). Following SENS recommendation WASH module completed for all households, Food security, Mosquito net coverage and women questionnaire completed for half of households (sub-sample). In total 6 survey teams in each camp completed 16 households each day over a period of 12 days.

Standardized Monitoring and Assessment of Relief and Transitions (SMART) methodology to collect and analyse data on child anthropometry and UNHCR's Standardised Expanded Nutrition Survey (SENS) Guidelines for Refugee Populations (Version 2, 2013) was used to guide data collection and analysis for other indicators.

The sample size for children, 6-59 months, was calculated using ENA for SMART software (version 9th, July 2015) according to UNHCR survey guidelines (Table 2). The calculation was based on the expected prevalence of global acute malnutrition (GAM) in children, 6-59 months. The upper limits of prevalence from SENS November 2017 was 14.3% For Kakuma and 8.9% for Kalobeyei. (95% C.I).

A precision of 3.5 for both Kalobeyei and Kakuma; a design effect (DEFF) of 1.5 for Kakuma and 1 for Kalobeyei; an average household size of 6.6 for Kakuma and 5.2 for Kalobeyei and percentage of children under the age of five years was estimated at 19.5% in Kakuma and 14.9% in Kalobeyei using the UNHCR ProGres data, October 2018. A two-stage cluster survey was conducted using the Standardized Monitoring and Assessment of Relief and Transitions (SMART) methodology to collect and analyse data on child anthropometry. Information on other indicators was collected and analysed using UNHCR's Standardised Expanded Nutrition Survey (SENS) Guidelines for Refugee Populations (Version 2, 2013) (www.sens.unhcr.org).

The questionnaires for all six modules were adopted from SENS guidelines; 3 of these questionnaires were used to collect information on the different population target groups, namely children 6-59 months, infants 0-5 months, women of reproductive age 15-49 years; and 3 questionnaires were used to collect household information on food security, WASH, and mosquito net ownership (see Appendix 5 for all questionnaires). Peripheral blood was obtained in all sampled children, and half of women surveyed, and tested for haemoglobin using a portable HemoCue 301 analyser. The survey used Android mobile phones and Open Data Kit (ODK) software for data collection and submission. A total of eight teams collected data during the survey, each comprising of 6 members.

1.2 Summary of Results

The nutrition situation showed deterioration compared to 2017. The prevalence of global acute malnutrition (GAM) in Kakuma indicated an increased trends (from 10.6% to 12.7%) and Kalobeyei (from 5.6% to 9.3%) in comparison to the results of SENS 2017, classified as Seriouse and Poor levels nutrition situation. The prevalence of severe acute malnutrition (SAM) showed an increased from 0.8% in 2017 to 2.3% and 2.5% in Kakuma and Kalobeyei respectively, classified as Critical level as per UNHCR classification.

The prevalence of stunting remained stable (<20% acceptable level in Kakuma and 27.2% Poor level in Kalobeyei).Data quality for anthropometry in both locations was of very good standard.

The coverage of measles vaccination in both Kakuma (99.4%) and Kalobeyei (99.7%) met expected target standard of >95%. The coverage of Vitamin A supplementation in both camps met the standard of >95% (97.8% in Kakuma, 92.5% in Kalobeyei). The coverage of de-worming reported 84.6% in Kakuma and 81.5% in Kalobeyei.

Around 8.9% and 9% of children aged 6-59 months in Kakuma and Kalobeyei reported have had diarrhoea in the last two weeks prior to survey.

The intake of CSB+ and CSB++ in Kakuma was 84% and 22.7% respectively. In Kalobeyei, the intake of CSB+ and CSB++ was 59.1% and 16.7% respectively.

The prevalence of anaemia among children 6-59 months remained above the critical threshold of 40%, in Kalobeyei 56% whereas in Kakuma it was 46.7% indicated reduced trends compared to 2017. The

prevalence of anaemia is significantly high among children aged 6-23 months group in both the locations 66.7% and 77.3% in Kakuma and Kalobeyei respectively. There is urgent need for targeted support to increase dietary diversification for children under this age category.

The prevalence of anaemia among non-pregnant women decreased in Kalobeyei (27.5%) compared to 24.2% in 2017, but increased slightly in Kakuma (41.8%) compared to 38.5% in 2017.

Very low initiation of breastfeeding within an hour of birth reported in both locations (59.1% in Kalobeyei and 44% in Kakuma). The prevalence of exclusive breastfeeding was high in both Kalobeyei (91.2%) and Kakuma (84.6%). Continued breastfeeding was high in both locations at 1 year, but much lower at 2 years in Kakuma. Introduction of solid foods at 6 months was also low (36.7% in Kalobeyei, 31.6% in Kakuma). Bottle feeding was low. Consumption of CBS++ was very low in both camps (16.7% in Kalobeyei and 16.7% in Kakuma).

The average duration of the food ration lasted was 19.4 days in Kalobeyei and 18 days in Kakuma out of 31 days expected, which is 62.6% and 58.1% of the theoretical duration, respectively. The average household dietary diversity score was 5.4 in Kakuma and 4.8 in Kalobeyei out of 12 food groups. The categories of food most commonly consumed were cereals, vegetables and pulses. 62.4% of households in Kalobeyei and 66.2% in Kakuma consumed a plant or animal source of Vitamin A, and 36.9% of households in Kalobeyei and 49.8% in Kakuma consumed food sources of haem iron. Most of the refugees, 69.3% in Kakuma and 83.6% in Kalobeyei used one or more of the negative coping strategies to fulfill the gap in regards to their food needs.

All households in both locations were using an improved drinking water source. However, the proportion using an improved excreta disposal facility was only 13.3% in Kalobeyei and 67% in Kakuma. The average litres of water used per person per day was 18 in Kalobeyei and 20.5 in Kakuma compared to UNCHR target of >20 lpppd. Only 36.7% of households in Kakuma and 54.6% in Kalobeyei were satisfied with their drinking water source.

The proportion of households with at least one long lasting insecticide treated net (LLIN) was 89.9% in Kalobeyei and 94.9% in Kakuma. Average persons per LLIN were 3 in Kalobeyei and 6.6 in Kakuma. The proportion of respondents who had slept under a LLIN was 80% in Kalobeyei and 88% in Kakuma.

1.3 Recommendations

Immediate

- Strengthen or enhance nutrition education and information dissemination to strengthen active case finding, referral and treatment of SAM and MAM cases. Additionally enhance community sensitization of on diversification of household dietary intake.
- Intensify screening, detection, referral and treatment of severe anaemic cases and in addition to continue with screening and referral for other micronutrients deficiency such as scurvy.
- IRC, KRCS to strengthen MIYCN support at the two maternities and improve timely initiation to breastfeeding and UNHCR to coordinate interventions to support the 1000 days approach through implementation of UNHCR multi-sectoral IYCF framework for action.
- WFP to improve on pipeline of CSB++ for children age between 6 to 23 months in order to provide protective rations with additional kilocalorie and essential micronutrients: Calcium and Iron.
- Provide targeted nutrition support to households with children, adolescents, persons with chronic illnesses, elderly and persons with disabilities to promote intake of nutrient rich foods and address micronutrient deficiencies such as Anemia and Scurvy that is prevalent among this age group

- Ensure increased awareness and sensitization for proper use of Food voucher (BAMBA CHAKULA) to ensure dietary diversity. This can be achieved through household visits, education, and mother-to-mother support groups
- Improvement of prevention and treatment of malaria should be prioritised as there high mortality rates associated with malaria.
- NRC to strongly advocate for malaria prevention activities such as indoor residual spraying (IRS) in order to control the high prevalence of Malaria observed in 2017.
- Peace winds to improve the latrine coverage and continue with health education activities in Kalobeyei in order prevent the occurrence of diarrhea.

Medium term
- Livelihood partners to prioritize target households with children, adolescents, persons with chronic illnesses, elderly and persons with disabilities to develop their skill and capacity that will consequently improve the dietary diversity at household level.
- IRC to continue and scale up MTMSG's to improve infant and young child feeding practices and link growth monitoring to monitor the outcome.
- WASH partners to continue with Knowledge Attitude and Practice (KAP) survey which provides useful information to support nutrition findings.
- NRC to continue with installation, coverage and maintenance of household latrines. Attention needs to be paid to new arrival areas.
- WFP to continue conducting food security Food Security Outcome monitoring and respond to findings

Long term
- Continue to Improve and scale up the livelihood opportunities for the refugees through development-oriented initiatives to improve their economic status
- All partners to improve monitoring of programmes to aid with end-term impact evaluations
- Health partners to maintain integrated approach to programming, and ensure sufficient training for new Community Health Workers and timely re-fresher training where necessary

Table 1: SUMMARY OF RESULTS KAKUMA AND KALOBEYEI SENS November 2018

	Kakuma		Kalobeyei		
	Number of cases/ sample size	% (95% CI)	Number of cases/ sample size	% (95% CI)	
CHILDREN 6-59 months					
Acute Malnutrition (WHO 2006 Growth Standards)					
Global Acute Malnutrition (GAM)	61/480	12.7% (9.1 - 17.4 95% C.I.)	56/605	9.3% (7.0 - 12.2 95% C.I.)	Critical if ≥ 15%
Moderate Acute Malnutrition (MAM)	50/480	10.4% (7.5 - 14.3 95% C.I.)	41/605	6.8% (4.8 - 9.4 95% C.I.)	
Severe Acute Malnutrition (SAM)	11/480	2.3 % (0.9 - 5.6 95% C.I.)	15/605	2.5% (1.5 - 4.1 95% C.I.)	Critical of >2%
Oedema	0/480	0.0%	0/605	0.0%	
Mid Upper Arm Circumference (MUAC)					
MUAC <125mm	10/295	2.0 % (1.0 - 4.1 95% C.I.)	13/611	2.1 % (1.2 - 3.6 95% C.I.)	
MUAC 11.5-12.4 cm	8/295	1.6 % (0.7 - 3.7 95% C.I.)	10/611	1.6 % (0.9 - 3.0 95% C.I.)	
MUAC <11.5 cm	2/295	0.4 % (0.1 - 1.6 95% C.I.)	3/611	0.5 % (0.2 - 1.5 95% C.I.)	
Stunting[1] (WHO 2006 Growth Standards)					
Total Stunting	86/479	18.0 % (14.0 - 22.7 95% C.I.)	159/585	27.2 % (23.6 - 31.0 95% C.I.)	Critical if ≥ 40%
Severe Stunting	8/479	1.7 % (0.9 - 3.1 95% C.I.)	49/585	8.4 % (6.5 - 10.8 95% C.I.)	
Programme coverage / enrolment					
Measles vaccination with card or recall (9-59 months)	471/474	99.4% (98.1–100.7 95% C.I.)	580/582	99.7% (99-100.4 95% C.I.)	Target of ≥ 95%
Vitamin A supplementation within past 6	484/495	97.8% (95.8 – 99.8 95%% C.I)	567/613	92.5% (85.5 – 99.5 95% C.I)	Target of ≥ 90%

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[1] Note that z-scores for height-for-age require accurate ages to within two weeks (CDC/WFP: A manual: Measuring and Interpreting Mortality and Malnutrition, 2005).

	Kakuma		Kalobeyei		Classification of public health significance or target (where applicable)
months with card or recall					
De-worming among children aged 12-59 months	292/345	84.6% (74.8 – 94.4 95% C.I.)	347/426	81.5% (71.4 – 91.5 95% C.I.)	
	Number of cases/ sample size	**% (95% CI)**	**Number of cases/ sample size**	**% (95% CI)**	
Diarrhoea					
Diarrhoea in last 2 weeks	44/495	8.9% (5.4 – 12.4)	55/613	9.0% (4.7 – 12.2 95% C.I.)	
Anaemia					
Total Anaemia (Hb <11 g/dl)	230/492	46.7% (39.3 – 54.2 95% C.I.)	343/612	56.0% (51.6 – 60.5 95% C.I.)	High if ≥ 40%
Mild (Hb 10-10.9)	106/492	21.5% (17.3 – 25.8 95% C.I.)	168/612	27.5% (23.5 – 31.4 95% C.I.)	
Moderate (Hb 7-9.9)	118/492	24.0% (18.2 – 29.8 95% C.I.)	170/612	27.8% (23.5 – 32.0 95% C.I.)	
Severe (Hb <7)	6/492	1.2% (-0.2 – 2.6 95% C.I)	5/612	0.8% (-0.04 – 1.7 95% C.I.)	
Mean hb concentration		10.9 (10.7-11.2)		10.7 (10.5-10.8)	
CHILDREN 0-23 months					
IYCF indicators					
Timely initiation of breastfeeding	80/182	44.0% (28.4 – 59.2 95% C.I.)	148/216	68.5% (55.2 – 81.8 95% C.I.)	
Exclusive breastfeeding under 6 months	55/65	84.6% (74.5 – 94.7 95% C.I.)	52/57	91.2% (83.6 – 98.9 95% C.I.)	
Continued breastfeeding at 1 year	33/35	94.3% (85.6-103 95% C.I)	45/45	100%	
Continued breastfeeding at 2 years	14/21	66.6% (42.3-91.1 95% C.I)	26/30	86.7% (74.1-99.2 95% C.I)	
Introduction of solid, semi-solid or soft foods	6/19	31.6% (1.5-61.6 95% C.I)	11/30	36.7% (14.6-58.7 955 C.I)	

	52/150	34% (21.4 – 48.0 95% C.I.)	42/186	22.6% (11.8 – 33.3 95% C.I.)	
Consumption of iron-rich or iron-fortified foods					
Bottle feeding	3/215	15.3% (8.2 – 22.5 95% C.I.)	25/243	9.5% (4.2 – 14.8 95% C.I.)	

	Kakuma		Kalobeyei		Classification of public health significance or target (where applicable)
	Number of cases/ sample size	% (95% CI)	Number of cases/ sample size	% (95% CI)	
WOMEN 15-49 years					
Anaemia (non-pregnant)					
Total Anaemia (Hb <12 g/dl)	123/294	41.8% (33.7 – 50.0 95% C.I.)	73/265	27.5% (21.0 – 34.1 95% C.I.)	High if ≥ 40%
Mild (Hb 11-11.9)	58/294	19.7% (13.8 – 25.6 95% C.I.)	44/265	16.6% (11.8 – 12.4 95% C.I.)	
Moderate (Hb 8-10.9)	58/294	19.7% (13.8 – 25.6 95% C.I.)	28/265	10.6% (5.5 – 15.7 95% C.I.)	
Severe (Hb <8)	7/294	2.4% (0.5 – 4.3 95% C.I.)	1/265	0.4% (-0.4 – 1.1 95% C.I.)	
Programme coverage					
Pregnant women currently enrolled in the ANC	17/18	94.4% (82.2-106.7 C.I.)	11/16	68.8% (43.7-93.8, 95% C.I)	
Pregnant women currently receiving Iron-folic acid pills	16/18	88.9% (71.8-106 C.I.)	12/16	75% (51.8-98.2, 95% C.I)	
FOOD SECURITY					
Food distribution					
Proportion of HH with a ration card	277/277	100	287/287	100	
Average number of days GFR lasts out of 31 days	18 days	(17.7 – 19.5 95% C.I.)	19.4 days	(18.4 – 20.5 95% C.I.)	
Household coping strategies					
Proportion of HH reporting using none of the coping strategies over the past month	88/287	30.7%(19.7-41.6)	47/287	16.4%(5.7-27.1)	
Borrowed cash, food or other items with	78/278	28.1(17.8-38.3)	117/278	42.1(28.1-56.1)	

	Number of cases/ sample size	% (95% CI)	Number of cases/ sample size	% (95% CI)	Classification of public health significance or target (where applicable)
or without interest					
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)	15/278	5.4(2.2-8.6)	32/277	11.6(3.1-20)	
Requested increased remittances or gifts as compared to normal	27/278	9.7(4-15.5)	24/277	8.7(2.1-15.3)	
Reduced the quantity and/or frequency of meals and snacks	124/278	44.6(30.5-58.8)	173/278	62.2(48.6-75.9)	
Begged	74/278	26.7(16.5-37)	141/277	50.9(36.7-65.1)	
Household dietary diversity					
Average HDDS	5.4	(4.8 – 5.9 95% C.I.)	4.8	(4.4 – 5.1 95% C.I.)	
Proportion of households *not consuming any* vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	30/287	10.5%	26/287	9.1%	
WASH					
Water quality					
Proportion of households using improved drinking water source	555/555	100%	561/561	100%	
Proportion of households that use a covered or narrow necked container for storing their drinking water	412/554	74.4% (62.9-85.8 95% C.I)	410/561	73.1% (61.8-84.3 95% C.I)	

	Kakuma		Kalobeyei		Classification of public health significance or target (where applicable)
	Number of cases/ sample size	% (95% CI)	Number of cases/ sample size	% (95% CI)	
Water quantity					

		Proportion of households that use:			
≥ 20 lpppd	233/556	41.9% (33.9-50.0 95% C.I)	187/561	33.3% (26.0-40.7 95% C.I)	Average quantity of water available per person / day ≥ 20 litres
15 - <20 lpppd	74/556	13.3% (9.5-17.1 95% C.I)	75/561	13.4% (10.0-16.8 95% C.I)	
<15 lpppd	249/556	44.8% (36.5-53.1 95% C.I)	299/561	53.3% (45.5-61.0 95% C.I)	
Average lpppd (95% C.I)	18.5		17.9		
Satisfaction with drinking water supply					
Proportion of households that say they are satisfied with drinking water supply	204/556	36.7% (27.4-46.0 95% C.I)	306/561	54.6% (43.2-65.9 95% C.I)	
Safe excreta disposal					
Proportion of households using an improved excreta disposal facility	177/265	67.0% (58.8-75.3 95% C.I)	24/181	13.3% (5.1-21.5 95% C.I)	
Proportion of HH using a shared family toilet	33/265	12.5% (7.4-17.7 95% C.I)	38/181	21.0% (10.9-31.1 95% C.I)	
Proportion of HH using a communal toilet	35/265	13.3% (6.8-19.7 95% C.I)	53/181	29.3% (19.6-39.0 95% C.I)	
Proportion of HH using an unimproved toilet	19/265	7.2% (2.9-11.5 95% C.I)	66/181	36.5% (24.6-48.4 95% C.I)	
Proportion of HH with children <3 yrs disposing of faeces safely	132/13	98.5% (96.3-100.7 95% C.I)	84/134	62.7% (48.4-77.0 95% C.I)	
MOSQUITO NET					
Mosquito net ownership					
Proportion of HHs owning at least one LLIN	262/276	94.9%	247/276	89.5%	Target of >80
Average number of persons per LLIN	6.6		3		2 persons per LLIN

Mosquito net utilisation					
Total HH members (all ages) who slept under an LLIN	1503/ 1732	87%	1288/ 1292	80%	
Children 0-59 months who slept under an LLIN	288/302	95%	310/330	94%	
Pregnant women who slept under an LLIN	27/27	100%	17/17	100%	
Indoor residual spraying					
Indoor Residual Spraying HH Coverage	13/275	4.7%	47/276	17%	

2   INTRODUCTION

This report is a synthesis of standardized expanded nutrition survey (SENS) carried out from 26th November – 8th December 2018, at the Kakuma Refugee Camp and Kalobeyei settlement, Turkana County in northwestern Kenya. The overall aim of this survey was to assess the general nutrition and health status of refugee population and formulate workable recommendations for appropriate nutritional and public health interventions.

1.1 Background

The Kakuma Refugee Camp was established in 1991 in the then Turkana County, formerly Turkana district in Kenya's northwest. The United Nations High Commission for Refugees (UNHCR) is the lead agency coordinating humanitarian affairs at the camp. It works closely with the Government of Kenya through the Department for Refugee Affairs (DRA); which has an overall responsibility for the provision of protection and assistance to refugees in Kenya. The World Food Programme (WFP) is responsible for the provision of food assistance to all refugees, while the International Organization of Migration (IOM) is in charge of refugee movements as part of UNHCR resettlement process to third countries. The main cooperating partners for UNHCR and WFP are national and international Non-Governmental Organizations (NGOs), which support in the implementation of a wide range of programmes: World Vision International works with WFP in food distribution; Norwegian Refugee Council (NRC) provides all water and sanitation related services; and, the Lutheran World Federation (LWF) is tasked with providing primary education, early childhood development, child protection and sustainable livelihoods programmes. The International Rescue Committee (IRC) is the primary healthcare provider in Kakuma camp while Kenya Red Cross (KRC) is mandated to provide primary health care to Kalobeyei settlers; Jesuit Refugee Services (JRS) provides psychological counselling and vocational training; while, the National Council of Churches of Kenya (NCCK), provides services such as advocacy on reproductive health, HIV/AIDS, peace education and girl guiding, sanitation and hygiene promotion and Shelter provision. Windle Trust Kenya (WTK) runs the secondary education programme. Film Aid International runs mobile cinemas that provide critical life

information for refugees and creates opportunities for technical skill development for refugee youth. The Salesians of Don Bosco in Kenya provide vocational training to camp residents.

Kalobeyei camp/settlement established in June 2016 is located 40 km from Kakuma town and along the main highway to Lokichoggio. It measures 3km by 5km (=1,500ha; 600ha for settlement and 900ha for farming) and it will be used to establish a model camp/settlement. The allocation of Kalobeyei site is an initiative between the UNHCR, host community and the County Government of Turkana that was done with a joint vision of breaking from the norm of encampment. The site was established as an integrated settlement (for both refugees and host community) with a broader concept of providing opportunities for diversifying livelihoods, addressing over-reliance on humanitarian aid and promoting refugee self-reliance. The combined population of Kalobeyei is around 36,000 people.

The camp has grown considerably since 1992 and at the time of the survey, the camp was hosting 186,515 refugees originating from 20 countries, comprised of 53.3% (99,320) males and 46.7% (87,195) females. These represented 148,295 from Kakuma and 38,220 from Kalobeyei and originating from 20 nationalities. The number of children under 5 years of age is currently estimated to be 20,468 from Kakuma and 7,576 from Kalobeyei or 15% of the total population. Women of reproductive age were 32,373 from Kakuma and 7,643 from Kalobeyei. According to the United Nations High Commission for Refugees (UNHCR) HIS database (Nov 2018), the main countries of origin are currently South Sudan, 57.8 %, and Somalia, 33.6 %, with the remaining percent originating from various countries in the region including Democratic republic of Congo (6.5%), Ethiopia (5.6%), and Burundi (5.4%) among others.

The surrounding area is inhabited by the Turkana community, a plain Nilotic group of north-western Kenya. The local community and the refugee population intersect at the social and economic levels in many different permutations. For instance, while many locals are employed by the myriad international and local nongovernmental organizations (including United Nations organizations like the UNHCR and the WFP) within the camp, others engage in a wide range of trading activities, both within and outside the refugee camp. As well, in other instances, the interactions have been a source of conflict between the local community and the refugee community.

1.1.1 Food security

The World Food Summit (1996) specifies that food security is achieved when all people at all times have access to food for healthy and active living. Furthermore, such access must entail nutritional value and meet the people's dietary needs (WFP Emergency Food Security Assessment Handbook, 2009.) Analysing food security is premised on four key pillars: food availability, food access, food utilization. And stability Additionally, Sphere (2011) unpacks food access into: Food transfers; Cash and voucher transfers and Livelihoods. In Kakuma and Kalobeyei, food security is handled through mixed modality that entail in-kind food transfers and voucher transfers, with an attempt to scale up livelihoods particularly in Kalobeyei settlement.

The food security situation has deteriorated in varied levels in both camps in May 2018 compared to the same period in 2017. The situation is better in Kalobeyei than in Kakuma. In Kakuma the proportion of households who are food insecure (severe and moderate) has increased from 34 percent in May 2017 to 41 percent in May 2018. However, this is an improvement compared to December 2017 when slightly over half (53%) of the households were moderately (41%) and severely (12%) food insecure. In Kalobeyei food security has improved compared to December 2017 when data was first collected. Currently the proportion

of food insecure households are 22 percent down from 42 percent in December last year. (WFP, Food Security and Outcomes Monitoring report of May 2018).

In Kakuma, those with poor food consumption have slightly increased from 10 to 12 percent while households with borderline food consumption have increased from 19 to 33 percent in 2018. However, the diet is still better compared to December 2017 when 20 percent of households had poor diet. Food consumption in Kalobeyei has improved and those with borderline and acceptable consumption are currently 19 percent and 76 percent respectively compared to 30 and 64 percent in December 2017 respectively.

In May 2018, households in both camps have been facing more food stress compared to May 2017 due to reduced food access. In Kakuma the coping strategies index has increased marginally from 13 last year to 15 this year. Households are still better off compared to December 2017 when the CSI was 19. However, in Kalobeyei, households are employing consumption coping strategies less frequently signifying increased access to food. In December the index was 17 compared to an index of 10 in May 2018.

Kakuma refugee camp recorded a 11 percent decrease in the cost of the Minimum Acceptable Healthy Food Basket (MAHFB). The cost was 4 percent higher in Dadaab, from May 2017 to May 2018.

Over the last three years, household's purchasing power had been on a steady decline in Kakuma. In May 2018, however, there was a marginal drop in the percentage of households that were not able to afford the minimum acceptable healthy food basket, as compared to May 2017. The marginally improved purchasing power indicates a slight reduction in household's economic vulnerability, attributed to the reduced food basket cost, while income from livelihood activities possibly increased, or a likely expansion of income earning opportunities.

Refugees living in Kakuma and Kalobeyie remains entirely dependent on the monthly food assistance, where they are facing food ration cuts and breaks in the food pipeline from 15-30% in the daily recommended 2100 kcal per person with missing fortified foods (super cereals) from time to time.

2.1 Health situation

The 2018 UNHCR HIS database for Kakuma and Kalobeyei indicate that Watery diarrhoea, malaria and acute respiratory infections persist as the highest contributors to morbidity with increased incidences recorded during rainy seasons.

In December 2018, NRC conducted a KAP survey in Kakuma and Kalobeyei where the findings indicated that 93.3% of those sampled had a latrine in their area of residence (communal + household). The survey findings indicate that 33.3% households have hand washing devices and 94.2% households have soap, 5.8% households mentioned that there was no soap in the household. In respect to the source of soap 87.1% got their soap from distribution centers supported by UNHCR, 7.1% got their soap from the shop. The survey points that 4.9% households had members who sometimes defecated in the bush and the main reason for the practice was the presence of full latrines

The Kakuma camp has one level 4 hospital that serves both Kakuma and Kalobeyei population, one health centre (former main hospital) and 5 clinics that provide both curative and preventive services located in

various sections of the camp. In Kalobeyei, one clinic with a maternity under construction is located in village one and one temporary clinic in village 2 that mainly give outpatient health and nutrition services. The health partner at Kakuma is IRC whereas Kenya Redcross Society covers Kalobeyei. Generally, Kakuma indicates a shortage of health personnel that keep reducing every year due to resource constraints. The current ratio of community health workers (CHWs) to refugees stands at 1:3000 in Kakuma and 1:1045 in Kalobeyei, which is way below the required standard of 1:500.

Lower and upper respiratory tract infections, Malaria, Watery diarrhoea, have remained the main causes of morbidity among under 5 children. According to the January to November, 2018 HIS report, the < 5 morbidity rates are as follows: URTI (39%), Watery diarrhoea (17%), LRTI (9%) and skin disease (8%). the mortality rates recorded in Kakuma camp have been fairly low and stable for several years. Throughout 2018, crude mortality rate remained low at approximately 0.1/1000/month. The under-five mortality rate was 0.3/1000/month. The combined infant mortality (IMR) rate was relatively high at 21.3/1000 live births/month. The neonatal mortality rate (NNMR) was 8/100,000 livebirths/month.

2.2   Nutrition

HIS database indicates that the incidence of malnutrition has increased in 2018 due to reduction food ration and pipeline break of preventive ration commodities: CSB+ and CSB ++. Increased market prices of food in comparison to the value of Bamba chakula limits food access and other competing household needs such as firewood, milling also eats on resources meant for food. Seasonal changes are observed in May – June and August - September, resulting in an increase in acute malnutrition associated with the rainy season that trigger upsurge in Malaria and Watery diarrhoeal cases. This implies that there is dire need to scale up disease prevention interventions such as In-door residual spraying, improved latrine coverage and hygiene promotion.

From the annual SENS results, trends in prevalence of global acute malnutrition (GAM) have been on the rising trend over the past three years since 2014 and slight reduction was observed in 2017 then increased in 2018. Though these remains below the 15% emergency threshold, the trend is not encouraging and measures need to be put in place.

Current Nutrition Services and Activities
The International Rescue Committee (IRC) and Kenya Red Cross Society (KRCS) health and nutrition programmes in Kakuma and Kalobeyei respectively run a number of programmes including preventative and curative nutrition interventions such as Integrated Management of Acute Malnutrition (IMAM), Maternal Infant and Young Child Nutrition (MIYCN), Nutrition Surveillance & Assessments, Blanket Supplementary Feeding Programmes (BSFP) and Hospital in-patient therapeutic feeding programme. The therapeutic inpatient services are offered in the Stabilization Centre (SC) located in the IRC main hospital and general hospital. Others include Outpatient Therapeutic Program (OTP) sites; Targeted Supplementary Feeding Programmes (TSFP). Comprehensive care clinics for HIV/AIDS and Tuberculosis patients are at general and the main hospitals. The program also operates the hospital feeding program that provides meals to all in-patients admitted at the IRC general and main hospital.

These activities are supported by UNHCR, UNICEF and WFP.

Community-based Management of Acute Malnutrition (CMAM): The CMAM programme includes the Targeted Supplementary feeding programme (TSFP), outpatient therapeutic feedingProgramme (OTP) and stabilization Centre (SC). The nutrition programme also runs a supplementary feeding programme for

specific chronic medical cases such as HIV and tuberculosis. Community mobilisation and active case finding is conducted in the community by CHPs.

Targeted Supplementary Feeding Programme: Supports moderately acute malnourished children aged 6-59 months, pregnant and lactating women (PLW) and medical cases in need of nutritional support.

Children enrolled receive 14 sachets of Plumpy'sup® twice monthly and 1 sachet is taken daily. Malnourished PLWs receive 3.85kg of CSB+ per cycle (i.e.14 days).

Outpatient Therapeutic Programme: The five outpatient therapeutic feeding centres cater for severely acute malnourished children without medical complications. Enrolled children receive a weekly supply of Plumpy'nut®.

Stabilization Centre: Kakuma camp S.C in the general hospital. IRC provides in-patient feeding for severely acute malnourished children with medical complications, both from the refugee population and from the host community. Children receive F75, F100 and Plumpy'nut® through UNHCR support.

Blanket Supplementary Feeding Programme: for children 6-23 months of age and PLWs: Children 6-23 months are currently receiving 6 kg of CSB++ on a monthly basis from all clinics. Based on the recommendations of JAM 2017 that considered the fast pace in the increase in the number of the beneficiaries served vis- a –vis the receding number of nutrition staffing, BSFP targeting children 6 to 23 months will be provided together the General Food Rations at the respective food distribution centres. PLWs receive 1.61 kgs of CSB+ per cycle (i.e. for 14 days) through the nutrition sites.

Infant and young child feeding (IYCF): Improved knowledge and practice is promoted through the CHP led mother-to-mother and father-to-father support groups, and IYCF counselling in antenatal clinics, postnatal clinics, maternity, paediatric and SC wards.

Vitamin A supplementation and deworming: Mass campaigns are held bi-annually to administer vitamin A and deworming supplementation. In addition, children receive vitamin A supplementation when enrolled in a feeding programme, as do new arrivals to the camp.

Mass MUAC screening of children 6-59 months: All eligible children in the camp are screened four times per year using MUAC. All acute malnourished children identified by the screening are referred to the relevant feeding programme.

Nutrition support for HIV/AIDS (PLWHA), tuberculosis: Provided super cereals plus. Each beneficiary receives 140/10g per person day (CSB and oil).
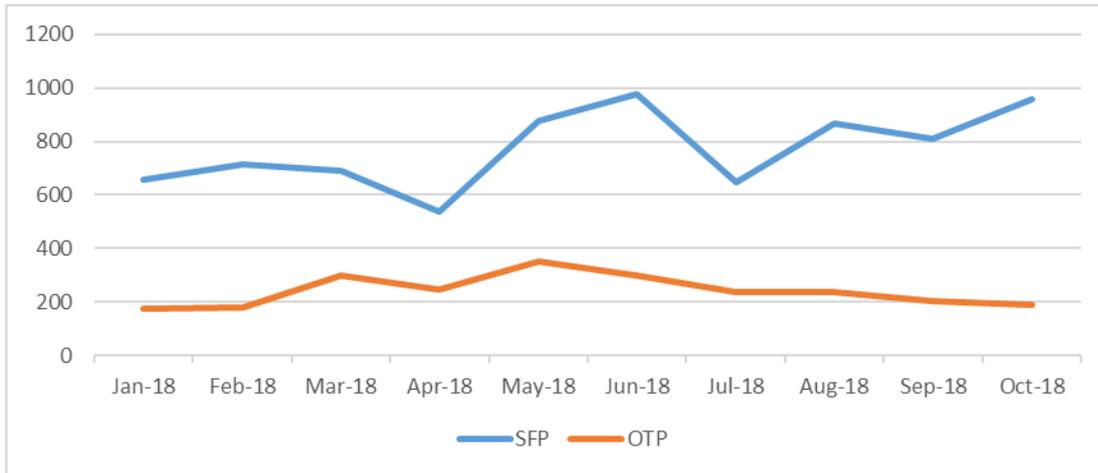
Figure 2: Kakuma Admission trends for the TSFP and OTP, Jan 2018 - October 2018 (UNHCR Health Information system)

The trend of new admissions of Moderate acute malnutrition cases to TSFP and Severe acute malnutrition cases to OTP remained relatively stable over the year in Kakuma with peaks observed May, June and August associated with the seasonal upsurge in Malaria and Watery diarrhoea.
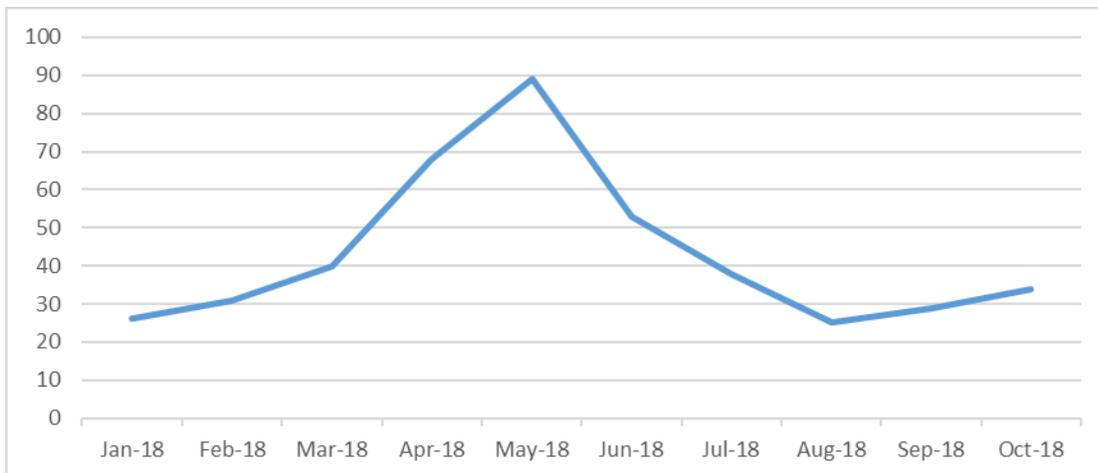
Figure 3: Kakuma Admission trends for the Stabilization Centre Jan 2018 - October 2018 (UNHCR Health Information system)

The stabilization centre located at the IRC General Hospital serves severely malnourished children that present with medical complication from Kakuma, Kalobeyei and the surrounding host community. Peak in admissions was observed in May.
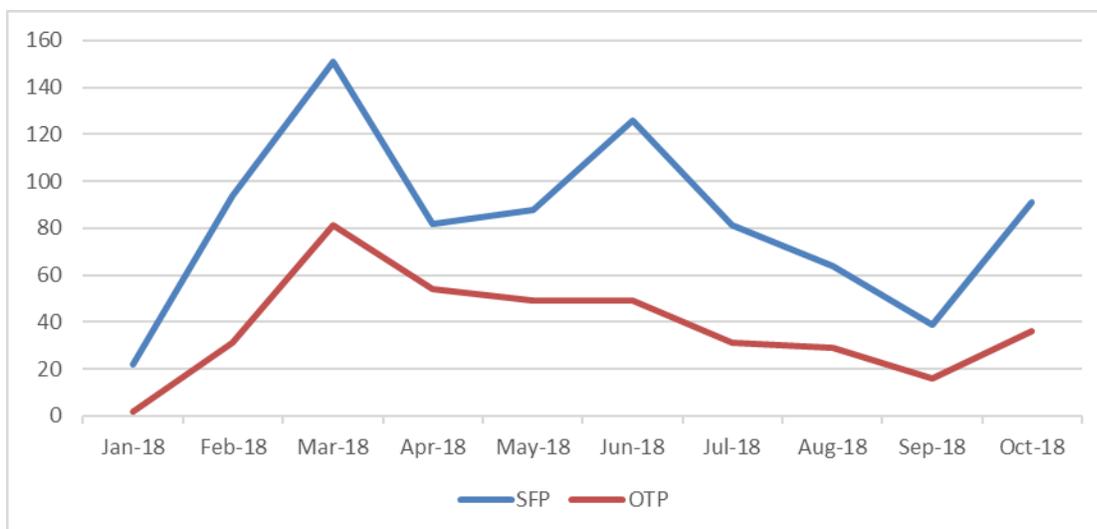
Figure 4: Kalobeyei Admission trends for the SFP and OTP Jan 2018 - October 2018 (UNHCR Health Information system)

Kalobeyei nutrition programme experienced peaks in admissions to TSFP and OTP in February, March and June primarily linked to upsurge in Watery diarrhoeal cases that were observed due extremely low latrine coverage that keeps receding by day due to resource constraint that has been preventing timely replacement of filled up communal latrines.

2.3   Survey Objectives

Primary objectives:

- To measure the prevalence of acute malnutrition in children aged 6-59.

- To measure the prevalence of stunting in children aged 6-59 months.

To determine the coverage of measles vaccination among children aged 9-59 months.
- To determine the coverage of vitamin A supplementation received during the last 6 months among children aged 6-59 months and the coverage of de-worming among children aged 12-59 months

- To assess the two-week period prevalence of diarrhoea among children aged 6- 59 months.

- To measure the prevalence of anaemia in children aged 6-59 months and in women of reproductive age between 15-49 years (non-pregnant).

- To investigate IYCF practices among children aged 0-23 months.

- To determine the coverage of ration cards and the duration the general food ration lasts for recipient households.

- To determine the extent to which negative coping strategies are used by households.

- To assess household dietary diversity.

- To determine the population's access to, and use of, improved water, sanitation and hygiene facilities*.*

- To determine the ownership of mosquito nets (all types and LLINs) in households.

- To determine the utilisation of mosquito nets (all types and LLINs) by the total population, children 0-59 months and pregnant women*.*

- To determine the household coverage of indoor residual spraying.

- To establish recommendations on actions to be taken to address the situation in *[insert refugee setting]*

Secondary objectives:
- To determine the coverage of therapeutic feeding and targeted supplementary feeding programmes for children 6-59 months.

- To determine enrolment into Antenatal Care clinic and coverage of iron-folic acid supplementation in pregnant women.

- To assess the nutritional status of pregnant and lactating women using MUAC.

3 METHODOLOGY

A two-stage cluster survey with probability proportion to size sampling was employed in this survey. Standardized Monitoring and Assessment of Relief and Transitions (SMART) methodology to collect and analyse data on child anthropometry and UNHCR's Standardised Expanded Nutrition Survey (SENS) Guidelines for Refugee Populations was used to guide data collection for other indicators.

3.1 Sample size

Table 1 Sample size calculation, Kakuma, November 2018

	Population	Prevalence upper limits of GAM in 2017	Precision	Design effect	Ave HH size	% <5	NRR	No of children	No of HH
Kakuma	148,295	14.3%	3.5%	1.5	6.6	19.5%	5.0%	**628**	**570**
Kalobeyei	38,220	8.9%	3.5%	1	5.2	14.9%	5.0%	**384**	**570**

[1] Design effect
[2] Non-response rate

The same households sampled by SMART were used in all indicators. Anaemia sample was drawn from

the SMART sample size, as recommended by the UNHCR Standardised Expanded Nutrition Survey (SENS) Guidelines.

For each of the indicators used, households and individuals were sampled as follows:
Household-level indicators:
- WASH: every household
- Food Security: every other household
- Mosquito net: every other household

Individual-level indicators:
- Children 0-59 months: all eligible children in *all* households were assessed (based on the above calculations)
- Women 15-49: all eligible women in every other household were assessed.

3.2 Sampling procedure: selecting clusters

The sample was drawn largely from population data in UNHCR ProGress as of Mid-November 2018. The IRC and KRCS CHP Census data were used for verification and adjustments,

The sample size for children, 6-59 months, was calculated using ENA for SMART software (9th, July 2015) according to UNHCR SENS guidelines (version 2 (2013). The calculation was based on the expected prevalence of global acute malnutrition (GAM) in children, 6-59 months. The prevalence from last SENS conducted in November 2017 was 10.6% (7.8-14.3, 95% CI) for Kakuma and 5.8% (3.8-8.9, 95% CI) for Kalobeyei. The expected prevalence used the upper limit of the prevalence from last SENS conducted in 2017 malnutrition prevalence was expected to change much from previous year based on admission trend for the last one year. A precision of 3.5; a design effect (DEFF) of 1.5 for Kakuma and 1 for Kalobeyei; an average household size of 6.6 in Kakuma and 5.2 in Kalobeyei; and, percentage of children under the age of five was estimated at 19.5% in Kakuma and 14.9% in Kalobeyei, using the UNHCR ProGres data, November 2018. A two-stage cluster survey was conducted using the Standardized Monitoring and Assessment of Relief and Transitions (SMART) methodology to collect and analyse data on child anthropometry. Information on other indicators was collected and analysed using UNHCR's Standardised Expanded Nutrition Survey (SENS) Guidelines for Refugee Populations (Version 2 2013) (see www.sens.unhcr.org).

3.3 Sampling procedure: selecting households and individuals

ENA for SMART selects the clusters (blocks), once done a team was sent to a block to label the households numerically with indelible pens. Population density varies across the blocks at Kakuma. If a block contained 100 households or less, all households in the block were marked. If a Block contained more than 100 households then the team walked around the block to identify a path that divided the block into approximately two halves. One portion of the block was selected randomly. In the selected segment of the block the team proceeded to number all households from the first to the last. If there was more than one household in a particular compound, this was indicated at the entrance of the compound (e.g. 2018 SENS HH1). The numbering and labelling was done two days prior to commencement of the survey.

If there was more than one household in a particular compound, this was indicated at the entrance of the compound (e.g. HH1-HH6). The numbering and labelling was done three days prior to commencement of

the survey.

After the labelling, Microsoft Excel was used to divide the total number of households in the cluster (block) with the number of household required to be sampled: 18 day. The quotient is the interval number. A number was then randomly chosen through lottery between one and the interval number, the chosen number would be the first household to visit in the cluster. Subsequent households would be chosen as appropriate using the interval number.

All teams followed standardised procedures. If an individual or an entire household was absent, the teams were instructed to return to the absent household or revisit the absent individual up to two times on the same survey day. If these subsequent visits were unsuccessful, the individual/household was recorded as absent and was not replaced with another household/individual. If an individual/household refused to participate, then it was considered a refusal and the individual or the household was not replaced with another. If a selected household was abandoned, the household was not replaced by another. If a selected child was disabled with a physical deformity preventing certain anthropometric measurements, the child was still included in the assessment of the other indicators.

3.4   Questionnaires and measurement methods

Questionnaires

Six module specific questionnaires were designed to provide information on the relevant indicators for the different target groups (Appendix **7).** Questionnaires were prepared in English and administered in the language best understood by the household selected by way of translators. All questionnaires were pre-tested. Questionnaires covered all SENS modules and included the following areas and measurements:

1) **Children 6-59 months (SENS Modules 1-2):** Anthropometric status, oedema, enrolment in selective feeding programmes and blanket feeding programmes (CSB++), immunisation (measles), vitamin A supplementation in last six months, de-worming, morbidity from diarrhoea in past two weeks, haemoglobin assessment.
2) **Children 0-23 months (SENS Module 3):** Questions on infant and young children feeding practices.
3) **Women 15-49 years (SENS Module 2):** Pregnancy status, coverage of iron-folic acid pills and post-natal vitamin A supplementation, MUAC measurements for pregnant and lactating women (PLW), and haemoglobin assessment for non-pregnant women.
4) **Food Security (SENS Module 4):** Access and use of the general food ration (GFR), coping mechanisms when the GFR ran out ahead of time and household food dietary diversity using the food consumption score.
5) **Water, sanitation and hygiene (SENS Module 5):** Access to improved drinking water source, storage of water, quantity of water used per household, satisfaction with the water supply, type and quality of excreta disposal facilities in use and safe disposal of young children's stool.
6) **Mosquito Net Coverage (SENS Module 6):** Ownership of mosquito nets, utilization of nets of all types and long-lasting insecticidal net (LLIN), and Indoor Residual Spraying (IRS).

3.5   Measurement methods

Household level indicators
- **Food security, WASH and Mosquito net:** The questionnaire was based on the standard SENS questionnaires.

Individual-level indicators
- **Sex of children:** Gender was recorded as male or female.
- **Birth date or age in months for children 0-59 months:** The exact date of birth (day, month, and year) was recorded from either a child health card or birth notification if available. If no reliable proof of age was available, age was estimated in months using a local event calendar or by comparing the selected child with a sibling whose ages were known, and was recorded in months on the questionnaire. If the child's age could absolutely not be determined by using a local events calendar or by probing, the child's length/height was measured and a cut off, 65-110 cm, was used for inclusion. The UNHCR Manifest was not reliable in determining age therefore it was not used.
- **Age of women 15-49 years**: Reported age was recorded in years.
- **Weight of children 6-59 months:** Measurements were taken to the nearest 100 grams using an electronic scale (SECA scale) with a wooden board to stabilise it on the ground. The double-weighing technique was used to weigh young children unable to stand on their own or unable to understand instructions not to move while on the scale. Clothes were removed during weighing although where necessary, light undergarments were allowed.
- **Height/Length of children 6-59 months:** Children's height or length was taken to the closest millimetre using a wooden height board. A height stick was used to decide on whether a child should be measured lying down (length) or standing up (height). Children less than 87cm were measured lying down, while children ≥ 87cm were measured standing up.
- **Oedema in children 6-59 months:** The presence of bilateral oedema was determined by applying gentle thumb pressure on to the tops of both feet of the child for three seconds. If a shallow indent remained in both feet, oedema was recorded as present. The survey coordinators verified all oedema cases reported by the survey teams.
- **MUAC of children 6-59 months and women 15-49 years (PLWs only):** MUAC was measured at the mid-point of the left upper arm between the elbow and the shoulder and taken to the closest millimetre using standard tapes.
- **Child enrolment in selective feeding programme for children 6-59 months:** This was assessed for the outpatient therapeutic programme and for the supplementary feeding programme using card or recall.
- **Measles vaccination in children 9-59 months:** Measles vaccination was assessed by checking for the measles vaccine on the EPI card or by carers recall if no EPI card was available. For ease of data collection, all children, 6-59 months were assessed for measles but analysis was only done on children, 9-59 months.
- **Vitamin A supplementation in last 6 months in children, 6-59 months*:* Whether the child received a vitamin A capsule over the past six months was recorded from an EPI card or health card if available, or by asking the caregiver to recall if no card was available. A vitamin A capsule was shown to the caregiver when asked to recall.
- **Haemoglobin (Hb) concentration in children 6-59 months and women 15-49 years (non-pregnant):** Hb concentration was taken from a capillary blood sample from the fingertip and recorded to the closest gram per decilitre by using the portable HemoCue Hb 301 Analyser.

- **Diarrhoea in last 2 weeks in children, 6-59 months:** an episode of diarrhoea was defined as three loose stools or more in 24 hours. Caregivers were asked if their child had suffered episodes of diarrhoea in the past two weeks.
- **ANC enrolment and iron and folic acid pills coverage in pregnant women:** Whether the woman was enrolled in the ANC programme and was receiving iron-folic acid pills was assessed by recall. An iron-folic acid pill was shown to the pregnant woman when asked to recall.
- **Infant and young child feeding practices in children, 0-23 months**: Infant and young child feeding practices were assessed based on standard WHO recommendations (WHO 2007). Infant formula feeding was also assessed.
- **Referrals:** Children, 6-59 months were referred to the health post for treatment when MUAC was <12.5cm, and those < -2 z-score; oedema was present; or when haemoglobin was <7.0g/dL. Women of reproductive age were referred to the hospital for treatment if haemoglobin was < 7.0 g/dL. PLW were referred to the health post if MUAC <210mm.

3.6   Case definitions, inclusion criteria and calculations

Indicators of Nutritional Status and Anaemia

Table 2 shows the definition and classification of the nutritional indicators used. Main results are reported according the WHO Growth Standards 2006. Results using the NCHS Growth Reference 1977 are reported in **Appendix 4**.

Table 1 Nutritional Status and Anaemia indicators and cut-offs used

Indicator		Children 6-59 months	Women 15-49 years		
			Non-Pregnant	Lactating	Pregnant
Acute Malnutrition[1]	Global acute malnutrition	WHZ <-2 and/or oedema	--	--	--
	Moderate acute malnutrition	WHZ <-2 and ≥-3	--	--	--
	Severe acute malnutrition	WHZ <-3 and/or oedema	--	--	--
Stunting[1]	Total stunting	HAZ <-2	--	--	--
	Moderate stunting	HAZ <-2 and ≥-3	--	--	--
	Severe stunting	HAZ <-3	--	--	--
Underweight[1]	Total underweight	WAZ <-2	--	--	--
	Moderate underweight	WAZ <-2 and ≥-3	--	--	--
	Severe underweight	WAZ <-3	--	--	--
Malnutrition (MUAC)	--	<12.5cm and/or oedema	--	--	--
	--	≥11.5cm and	--	MUAC <210mm[2]	

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[2]Ministry of Medical Services & Ministry of Public Health and Sanitation. National Guideline for the Integrated Management of Acute

		<12.5cm			
	--	<11.5cm and/or oedema	--	--	--
Anaemia	Total anaemia	Hb <11.0 g/dL	Hb <12.0 g/dL	Hb <12.0 g/dL	--
	Mild anaemia	Hb 10.0 - 10.9 g/dL	Hb 11.0 - 11.9 g/dL	Hb 11.0 - 11.9 g/dL	--
	Moderate anaemia	Hb 7.0 - 9.9 g/dL	Hb 8.0 - 10.9 g/dL	Hb 8.0 - 10.9 g/dL	--
	Severe anaemia	Hb <7.0 g/dL	Hb <8.0 g/dL	Hb <8.0 g/dL	--

[1] Calculated using NCHS Growth Reference 1977 and WHO Growth Standards 2006
WHZ: weight-for-height z-score, **HAZ:** height-for-age z-score, **WAZ:** weight-for-age z-score
Selective Feeding Programme Coverage (children, 6-59 months)
Selective feeding programme coverage was assessed using the direct method as follows:

Targeted supplementary feeding programme

Coverage of TSFP programme (%) =

$$\text{100x} \quad \frac{\text{No. of surveyed children with MAM according to SFP Admission criteria who reported being registered in SFP}}{\text{No. of surveyed children with MAM according to SFP admission criteria}}$$

Therapeutic feeding programme

Coverage of OTP programme (%) =

$$\text{100x} \quad \frac{\text{No. of surveyed children with SAM according to OTP Admission criteria who reported being registered in OTP}}{\text{No. of surveyed children with SAM according to OTP admission criteria}}$$

Infant and Young Child Feeding (IYCF) Indicators (children 0-23 months)
Infant and young child feeding practices were assessed based on standard WHO recommendations (WHO, 2007) as follows:

- **Timely initiation of breastfeeding: WHO core indicator 1 -**Proportion of children, 0-23 months of age who were put to the breast within one hour of birth.

$$\frac{\text{Children 0-23 months of age who were put to the breast within one hour of birth}}{\text{Children 0-23 months of age}}$$

Malnutrition (2009).

- **Exclusive breastfeeding under 6 months: WHO core indicator 2 -** Proportion of infants 0–5 months of age who are fed exclusively with breast milk: (including milk expressed or from a wet nurse, ORS, drops or syrups (vitamins, minerals, medicines).

Infants 0–5 months of age who received only breast milk during the previous day
Infants 0–5 months of age

- **Continued breastfeeding at 1 year: WHO core indicator 3 -** Proportion of children 12–15 months of age who are fed breast milk.

Children 12–15 months of age who received breast milk during the previous day
Children 12–15 months of age

- **Introduction of solid, semi-solid or soft foods: WHO core indicator 4 -** Proportion of infants 6–8 months of age who receive solid, semi-solid or soft foods.

Infants 6–8 months of age who received solid, semi-solid or soft foods during the previous day
Infants 6–8 months of age

- **Consumption of iron-rich or iron-fortified foods: WHO core indicator 8 -** Proportion of children 6–23 months of age who receive an iron-rich or iron-fortified food that is specially designed for infants and young children, or that is fortified in the home.
Children 6–23 months of age who received an iron-rich food or a food that was specially
designed for infants and young children and was fortified with iron, or a food that was
fortified in the home with a product that included iron during the previous day
Children 6–23 months of age

- **Continued breastfeeding at 2 years: WHO optional indicator 10 -** Proportion of children 20–23 months of age who are fed breast milk.

Children 20–23 months of age who received breast milk during the previous day
Children 20–23 months of age

- **Bottle feeding: WHO optional indicator 14 -** Proportion of children 0-23 months of age who are fed with a bottle.

Children 0–23 months of age who were fed with a bottle during the previous day
Children 0–23 months of age

Household food security

- **Household dietary diversity score**
  A household dietary diversity score was calculated according to FANTA 2006 and FAO 2011 guidelines (adapted to refugee settings) by summing the number of food groups consumed by any household member in and outside the house over the last 24 hour period, out of a maximum of 12 food groups (below).

  1. Cereals
  2. White roots and tubers
  3. Vegetables (combination of 3 sub-groups: vitamin A rich vegetables and tubers, dark green leafy vegetables and other vegetables).
  4. Fruits (combination of 2 sub-groups: vitamin A rich fruits and other fruits)
  5. Meat(combination of 2 sub-groups: organ meat and flesh meat)
  6. Eggs
  7. Fish and other seafood
  8. Legumes, nuts and seeds
  9. Milk and milk products
  10. Oils and fats
  11. Sweets
  12. Spices, condiments and beverages

WASH

The table below provides an overview of the definitions of drinking water and sanitation (toilet) facilities used in the survey and available in Kakuma refugee camp.

Table 2 WASH Indicators

Drinking Water	Improved source	Unimproved source
	Public tap	Small water vendor (cart with small tank or drum)
	Protected dug well with hand pump	
		Bottled water*
		Surface water (river, dam, lake, pond, stream, canal, irrigation channels). Rainwater collection from surface run off.
*Bottled water is considered improved only when the household uses it by choice rather than because they are obliged to or when it can be guaranteed that this water is not contaminated.		
Sanitation facility definition		
	Improved category	**Unimproved category**
	Pit latrine with slab	Pit latrine without slab (slab with holes) /open pit
		No facilities or bush or field
Sanitation facility classification based on definition and sharing		

Improved excreta disposal facility	A toilet in the above "improved" category **AND** one that is **not shared** with other families*,**
Shared family toilet	A toilet in the above "improved" category **AND** one used by 2 families / households only (for a maximum of 12 people)**
Communal toilet	A toilet in the above "improved" category **AND** one used by 3 families / households or more
Unimproved toilet	A toilet in the above "unimproved" category **OR** a **public toilet** which any member of the public can use e.g. in hospitals or markets

*To maintain consistency with other survey instruments (e.g. the multiple indicator cluster survey), UNHCR SENS WASH module classifies an **"improved excreta disposal facility"** as a toilet in the above "improved" category **AND** one that is **not shared** with other families / households.

According to UNHCR WASH monitoring system, an **"improved excreta disposal facility" is defined differently than in other survey instruments and is defined as a toilet in the above "improved" category **AND** one that is shared by a *maximum* of 2 families / households or with no more than *12 individuals*. Therefore, the following two categories from the above SENS survey definitions are considered "improved excreta disposal facility" for UNHCR WASH monitoring system: "improved excreta disposal facility" and "shared family toilet".

Safe excreta disposal for children aged 0-3 years: The safe disposal of children's faeces is of particular importance because children's faeces are the most likely cause of faecal contamination to the immediate household environment. It is also common for people to think that children's faeces are less harmful than adult faeces. "Safe" is understood to mean disposal in a safe sanitation facility or by burying. This is the method that is most likely to prevent contamination from faeces in the household.

3.7   Classification of public health problem and targets

Anthropometric data: UNHCR states that the target for the prevalence of global acute malnutrition (GAM) for children 6-59 months of age by camp, country and region should be <10% and the target for the prevalence of severe acute malnutrition (SAM) should be <2%. **Table 3** below shows the classification of public health significance of the anthropometric results for children under-5 years of age.

Table 3 Classification of public health significance for children under 5 years of age (WHO 1995, 2000)

Prevalence %	Critical	Serious	Poor	Acceptable
Low weight-for-height	≥15	10-14	5-9	<5
Low height-for-age	≥40	30-39	20-29	<20
Low weight-for-age	≥30	20-29	10-19	<10

Selective feeding programmes: UNHCR Strategic Plan for Nutrition and Food Security 2008-2012 includes the following indicators:

Table 4 Performance indicators for selective feeding programmes (UNHCR Strategic Plan for Nutrition and Food Security 2008-2012)*

	Recovery	Case fatality	Defaulter rate	Coverage		
				Rural areas	Urban areas	Camps
SFP	>75%	<3%	<15%	>50%	>70%	>90%
SC/OTP	>75%	<10%	<15%	>50%	>70%	>90%

* Also meet SPHERE standards for performance

Measles vaccination and vitamin A supplementation in last 6 months coverage: UNHCR recommends the following target:

Table 5 Recommended targets for measles vaccination and vitamin A supplementation in last 6 months (UNHCR SENS Guidelines)

Indicator	Target Coverage
Measles vaccination coverage (9-59m)	95% (also SPHERE)
Vitamin A supplementation in last 6 months coverage	90%

Anaemia data: The UNHCR Strategic Plan for Nutrition and Food Security (2008-2010) states that the targets for the prevalence of anaemia in children 6-59 months of age and in women 15-49 years of age should be low i.e. <20%. The severity of the public health situation for the prevalence of anaemia should be classified according to WHO criteria as shown in the Table below.

Table 6 Classification of public health significance (WHO, 2000)

Prevalence %	High	Medium	Low
Anaemia	≥40	20-39	5-19

WASH: Diarrhoea caused by poor water, sanitation and hygiene accounts for the annual deaths of over two million children under five years old. Diarrhoea also contributes to high infant and child morbidity and mortality by directly affecting children's nutritional status. Refugee populations are often more vulnerable to public health risks and reduced funding can mean that long term refugee camps often struggle to ensure the provision of essential services, such as water, sanitation and hygiene. Hygienic conditions and adequate access to safe water and sanitation services is a matter of ensuring human dignity and is recognised as a fundamental human right. The following standards apply to UNHCR WASH programmes:

Table 7 UNHCR WASH Programme Standard

UNHCR Standard	Indicator
Average quantity of water available per person/day	> or = 20 litres

Mosquito nets: WHO defines a long-lasting insecticidal net as a factory-treated mosquito net made with netting material that has insecticide incorporated within or bound around the fibres. The net must retain its effective biological activity without re-treatment for at least 20 WHO standard washes under laboratory conditions and three years of recommended use.

Table 8 UNHCR Mosquito Net Programme Standards

UNHCR Standard	Indicator
Proportion of households owning at least one Long-Lasting Insecticide treated bed net (LLIN)	>80%
Average number of persons per LLIN	2 persons per LLIN

3.8 Training, coordination and supervision

Survey teams and supervision

The survey was coordinated by the UNHCR nutritionists Blessing Mureverwi and Breege Erukudi.

A total of six teams were recruited for data collection during the survey. Each team comprised 6 members: a supervisor, a team leader; assistant team leader; two measurers; and one for taking haemoglobin measurements testing. For effective communication during the study, teams were constituted to reflect language differentials in the camp. The team leader was responsible for administering individual level questionnaires while the assistant team leader responsible for the household level questionnaires. Both worked alongside the rest of the team. One team member was responsible for taking all haemoglobin measurements, two members took anthropometric measurements, and the final member assisted with sampling, age determination and reading of health/vaccination cards or birth certificates, etcetera.

Team leaders were from IRC and KRCS of national national staff cadre. Other team members were CHPs with basic education (primary or secondary education certificates) with the ability to read and write in the English language. Supervisors came from UNHCR, WFP, Ministry of Health, IRC nutrition coordinator and KRCS nutrition coordinator and the main role of a supervisor was to provide onsite technical support during the entire survey process and ensure quality of the data collected.

Training

A five-day standardised training was conducted by the coordination team. Four days were allocated for the standardised survey training and one day for training on the android phones used for data collection. Topics covered included anthropometric and haemoglobin measurements (including a practical standardisation test for both), interview techniques, sampling and questionnaire administration procedures. This was followed by a one-day pilot test during which teams visited a minimum of 4 households (in blocks not included in the final cluster selection) to administer questionnaires and perform measurements. After the pilot an assessment session was held to identify and rectify point of weakness and to review data collection tools.

3.9 Data collection

The data collection exercise took 10 days, 26th November – 8th December 2018. The survey teams explained the purpose and objectives of the survey, assured confidentiality and obtained verbal consent. All teams were supported by six supervisors who were present at different points of data collection: team supervisors from WFP, UNICEF, IRC, KRCS and two UNHCR nutritionists.

3.9.1 Android Phones

The use of mobile phones using the Android operating system, and Open Data Kit (ODK) software for data collection and entry was applied to this survey. Questionnaires were first developed and adapted on paper and then coded in ODK.

3.10 Data validation and analysis

During supervision in the field, and at the end of each day, supervisors manually checked the phone questionnaires for completeness, consistency and accuracy. This check was also used to provide feedback to the teams to improve data collection as the survey progressed. At the end of each day, and once supervisors had completed their checks, the phones were each synchronised to the server and the data collected was downloaded; once all data was uploaded, there was no need for any further data entry. Any questionnaires with discrepancies / mistakes however were temporarily left on the phone in order to verify the data with the relevant team. The SMART plausibility report was generated daily in order to identify any problems with anthropometric data collection such as flags and digit preference for age, height and weight, to improve the quality of the anthropometric data collected as the survey was on-going. Teams needing the most support from the supervision and coordination team were identified; mistakes were corrected before start of data collection the next day.

All data files were cleaned before analysis, android phones reduced the amount of cleaning needed due to restrictions programmed to reduce data entry errors. Anthropometric data for children 6-59 months was cleaned and analysed using ENA for SMART software (version July 9th, 2015) by the coordination team.

The nutritional indices were cleaned using flexible cleaning criterion (+/- 3 SD from the observed mean; also known as SMART flags in the ENA for SMART software). This flexible cleaning approach is one that is recommended in the UNHCR SENS (Version 2, 2013) in accordance with SMART recommendations. A summary of the key quality criteria from the anthropometric data is shown in **Appendix 1**.

Additional data for children aged 6-5 months, data for infants aged 0-5 months, women aged 15-49 years, WASH and food security indicators were cleaned using excel and analysed using Epi Info 7 Software (Centres for Disease Control).

4   RESULTS KAKUMA CAMP

The demographic characteristics of the population are presented in **Table 9**.

A total of 573 households were surveyed, translating to a population of 3,875, giving an average household size of 6.8.

Table 9: Demographic characteristics of the study population

Total households surveyed	573
Total population surveyed	3875
Total U5 surveyed (0-59)	495
Average household size	6.8
% of U5	7.8%
Total number of clusters	36

- The NRR rate was 9.0%

4.1   Children 6-59 months

4.1.1   Sample size and clusters

495 children between 6-59 months were interviewed, compared to the planned 628 (Table 10).

Table 10 Target and actual number captured

	Target (No.)	Total surveyed (No.)	% of the target
Children 6-59 months	628	495	78.8%
Clusters	36	36	100%

Table 11 shows the distribution of age and sex in the sample, which was almost equal, with an acceptable ratio of boys and girls.

Table 11 Children 6-59 months - distribution of age and sex of sample

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:girl
6-17	51	50.5	50	49.5	101	20.4	1.0
18-29	42	42.4	57	57.6	99	20.0	0.7
30-41	56	49.1	58	50.9	114	23.0	1.0
42-53	65	55.1	53	44.9	118	23.8	1.2
54-59	33	52.4	30	47.6	63	12.7	1.1
Total	247	49.9	248	50.1	495	100.0	1.0

Boys and girls are equally presented in the survey.
The prevalence of global acute malnutrition (GAM) was 12.7% (9.1 - 17.4 95% C.I.), with a severe acute malnutrition (SAM) prevalence of 2.3 % (0.9 - 5.6 95% C.I.) as shown in Table 12.

Table 12 Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex

	All n = 480	Boys n = 236	Girls n = 244
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(61) 12.7 % (9.1 - 17.4 95% C.I.)	(31) 13.1 % (8.7 - 19.3 95% C.I.)	(30) 12.3 % (8.2 - 18.0 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(50) 10.4 % (7.5 - 14.3 95% C.I.)	(27) 11.4 % (7.5 - 17.1 95% C.I.)	(23) 9.4 % (6.2 - 14.0 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(11) 2.3 % (0.9 - 5.6 95% C.I.)	(4) 1.7 % (0.6 - 4.4 95% C.I.)	(7) 2.9 % (1.0 - 8.3 95% C.I.)

The prevalence of oedema is 0.0 %

As Figure 5 shows, the prevalence of GAM and SAM increased in 2018 compared to 2017 after having reduced 2017 in comparison to 2016. However, the increase was not statistically significant.
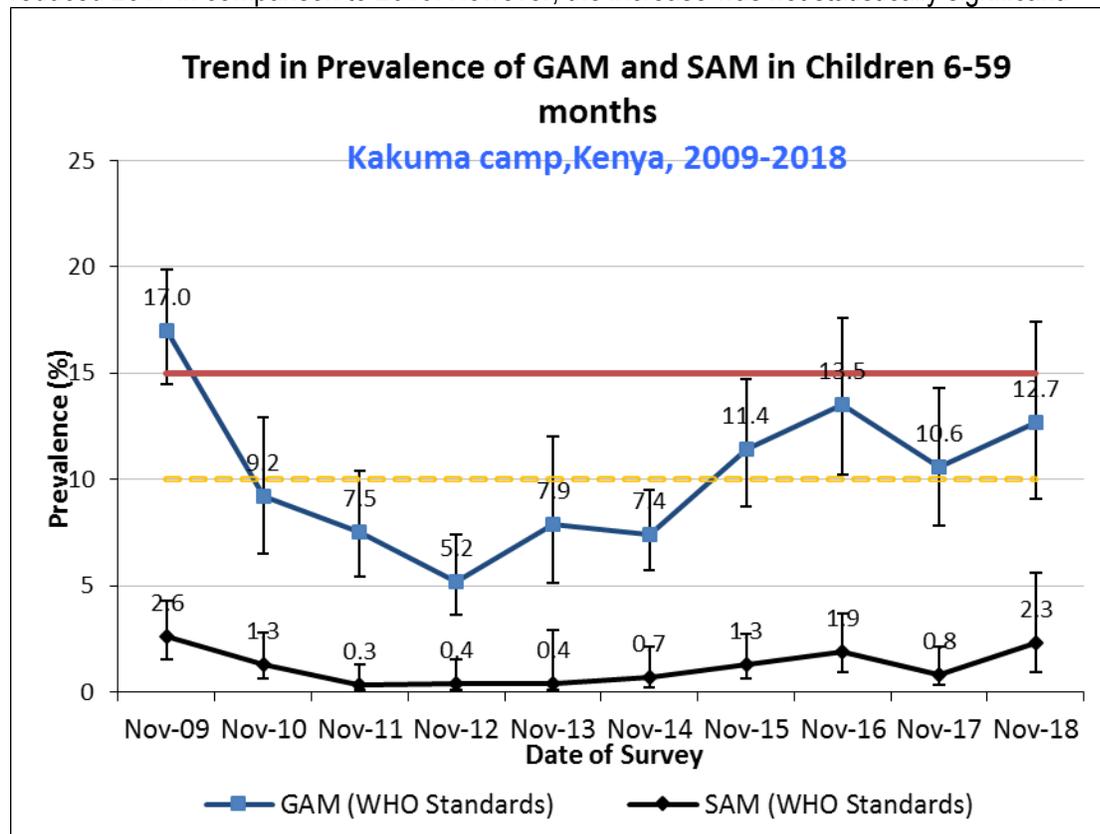
Figure 5: Trends in the prevalence of global and severe acute malnutrition based on WHO growth standards in children, 6-59 months, from 2009-2018

Table 13 shows the prevalence of moderate and severe wasting by age. Moderate wasting was highest in the 54-59 months age group, while severe wasting was highest in 18-29 months age group.

Table 13 Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	96	2	2.1	11	11.5	83	86.5	0	0.0
18-29	97	4	4.1	10	10.3	83	85.6	0	0.0
30-41	111	1	0.9	7	6.3	103	92.8	0	0.0
42-53	116	3	2.6	13	11.2	100	86.2	0	0.0
54-59	60	1	1.7	9	15.0	50	83.3	0	0.0
Total	480	11	2.3	50	10.4	419	87.3	0	0.0

The analysis of prevalence of wasting by age is displayed in Figure 6.
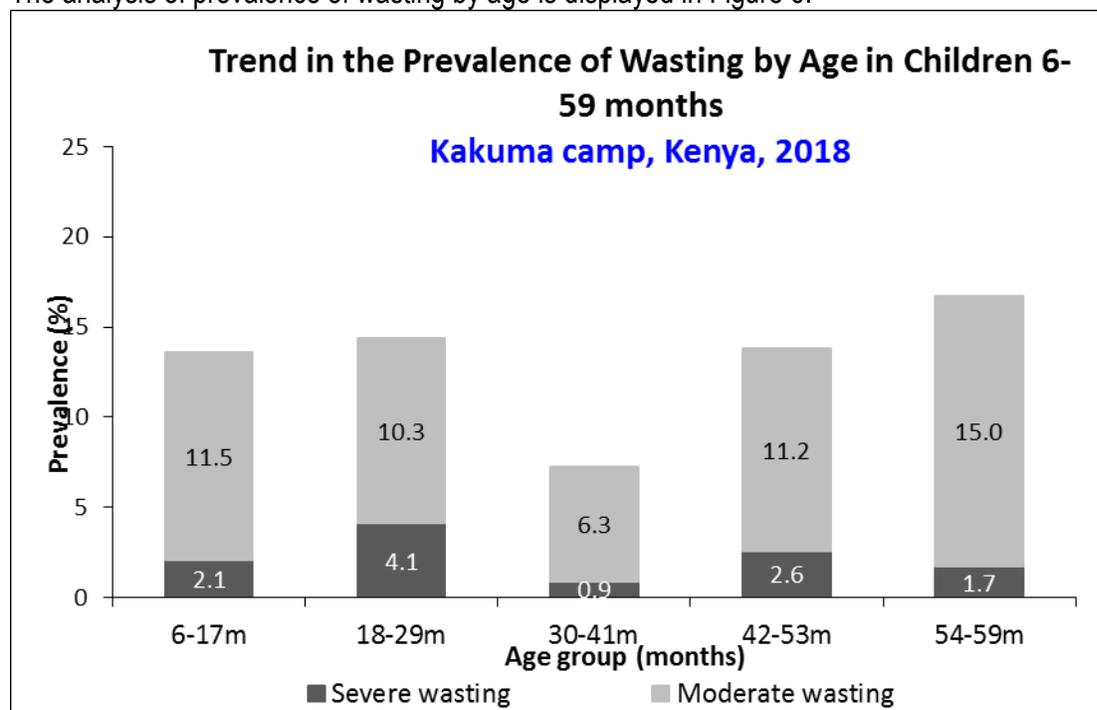
Figure 6: Trends in prevalence of moderate and severe wasting by age in children 6-59 months
All cases of acute malnutrition were due to marasmus (Table 15).

Table 15 Distribution of severe acute malnutrition and oedema based on weight-for-height z-scores

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 17 (3.4 %)	Not severely malnourished No. 477 (96.6 %)

The prevalence of MUAC malnutrition was 2.0% **(1.0 - 4.1 95% C.I.),** with 2 SAM cases (Table 16).

Table 16: Prevalence of MUAC Malnutrition

	All n = 495	Boys n = 247	Girls n = 248
Prevalence of global malnutrition (< 125 mm and/or oedema)	(10) 2.0 % (1.0 - 4.1 95% C.I.)	(2) 0.8 % (0.2 - 3.3 95% C.I.)	(8) 3.2 % (1.5 - 6.7 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(8) 1.6 % (0.7 - 3.7 95% C.I.)	(2) 0.8 % (0.2 - 3.3 95% C.I.)	(6) 2.4 % (1.0 - 6.0 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(2) 0.4 % (0.1 - 1.6 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(2) 0.8 % (0.2 - 3.3 95% C.I.)

As Table 17 shows acute malnutrition was higher among children age 42 to 53 months.

Table 17 Prevalence of MUAC malnutrition ranges by age, based on MUAC cut off and/or oedema

Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	101	1	1.0	2	2.0	98	97.0	0	0.0
18-29	99	1	1.0	5	5.1	93	93.9	0	0.0
30-41	114	0	0.0	1	0.9	113	99.1	0	0.0
42-53	118	0	0.0	0	0.0	118	100.0	0	0.0
54-59	63	0	0.0	0	0.0	63	100.0	0	0.0
Total	495	2	0.4	8	1.6	485	98.0	0	0.0

The prevalence of underweight (Table 18) was 16.0 %**(12.2 - 20.6 95% C.I.)**, with a severe underweight prevalence of 2.7 %**(1.3 - 5.2 95% C.I.)**.

Table 18 Prevalence of underweight based on weight-for-age z-scores by sex

	All n = 489	Boys n = 244	Girls n = 245
Prevalence of underweight (<-2 z-score)	(78) 16.0 % (12.2 - 20.6 95% C.I.)	(46) 18.9 % (14.0 - 24.8 95% C.I.)	(32) 13.1 % (8.6 - 19.3 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(65) 13.3 % (10.3 - 17.0 95% C.I.)	(39) 16.0 % (11.6 - 21.6 95% C.I.)	(26) 10.6 % (7.0 - 15.8 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(13) 2.7 % (1.3 - 5.2 95% C.I.)	(7) 2.9 % (1.3 - 6.3 95% C.I.)	(6) 2.4 % (1.0 - 6.0 95% C.I.)

The prevalence of stunting (Table 19) was **18.0 % (14.0 - 22.7 95% C.I.)**, with a severe stunting prevalence of **1.7 % (0.9 - 3.1 95% C.I.)**.

Table 19 Prevalence of stunting based on height-for-age z-scores and by sex

	All n = 479	Boys n = 234	Girls n = 245
Prevalence of stunting (<-2 z-score)	(86) 18.0 % (14.0 - 22.7 95% C.I.)	(43) 18.4 % (13.9 - 23.9 95% C.I.)	(43) 17.6 % (12.0 - 24.9 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(78) 16.3 % (12.6 - 20.8 95% C.I.)	(38) 16.2 % (12.1 - 21.5 95% C.I.)	(40) 16.3 % (11.1 - 23.5 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(8) 1.7 % (0.9 - 3.1 95% C.I.)	(5) 2.1 % (0.9 - 5.1 95% C.I.)	(3) 1.2 % (0.4 - 3.6 95% C.I.)

As Figure 8 shows, stunting increase slightly from 2017 to 2018. Previously it has been on a declining trend since 2015.
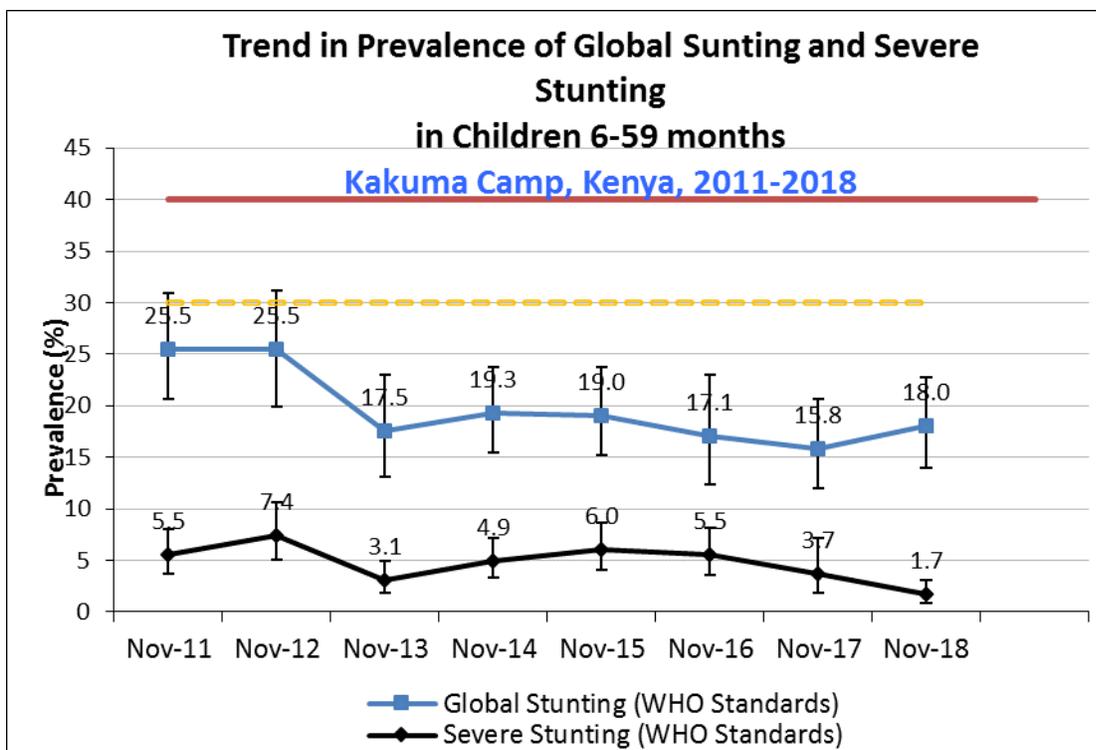
Figure 8: Trends in the prevalence of global and severe stunting based on WHO growth standards in children, 6-59 months from 2011-2018.

Table 20 is an analysis of stunting by age. Moderate and severe stunting were highest in the 18-29 and then 6-17 months age group.

Table 20: Prevalence of stunting by age based on height-for-age z-scores

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
		No.	%	No.	%	No.	%
6-17	98	4	4.1	17	17.3	77	78.6
18-29	93	1	1.1	25	26.9	67	72.0
30-41	111	2	1.8	14	12.6	95	85.6
42-53	115	1	0.9	12	10.4	102	88.7
54-59	62	0	0.0	10	16.1	52	83.9
Total	479	8	1.7	78	16.3	393	82.0

Table 21 further breaks down stunting in terms of 6-11, 12-23, 24-35, 3-47 and 48-59 months. Moderate and Severe stunting was highest in the 12-23 and 24-35 months age group (Table 21).

Table 21: Prevalence of stunting by age based on height-for-age z-scores (WHO IYCF age category Indicators)

		Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
Age (mo)	Total no.	No.	%	No.	%	No.	%
6-11	51	1	2.0	4	7.8	46	90.2
12-23	111	6	5.4	14	12.6	91	82.0
24-35	101	5	5.0	17	16.8	79	78.2
36-47	106	2	1.9	13	12.3	91	85.8
48-59	117	4	3.4	11	9.4	102	87.2
Total	486	18	3.7	59	12.1	409	84.2

Figure 9 shows that stunting increased from18-29 then decreased.
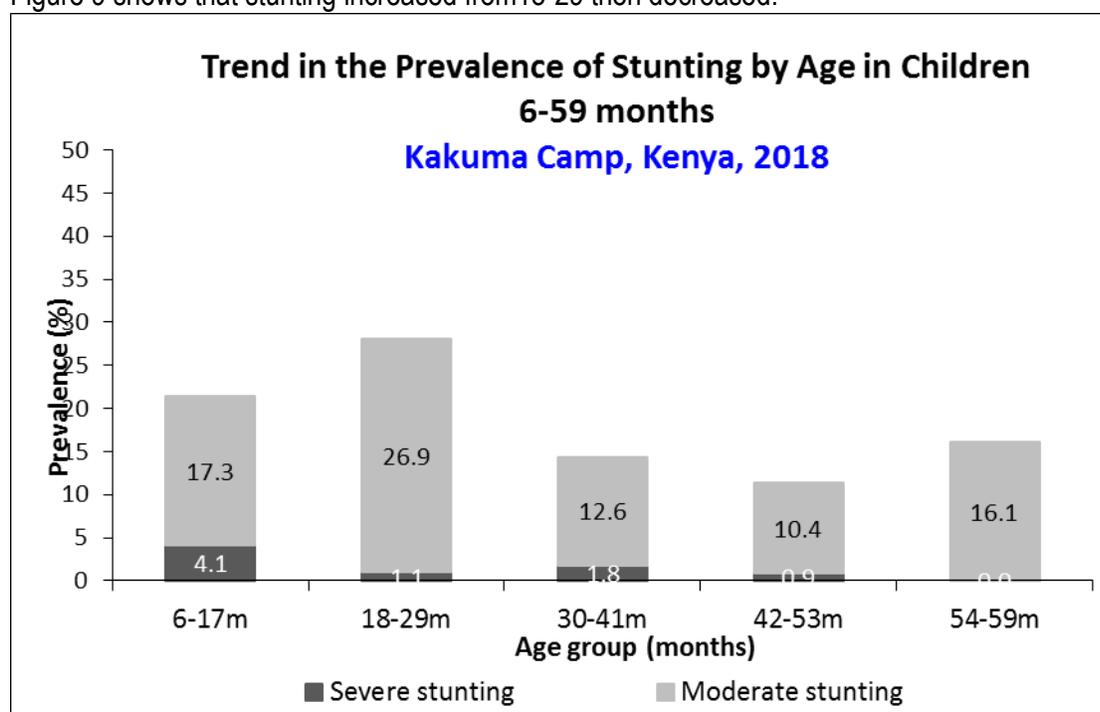
Figure 9: Trends in the prevalence of stunting by age in children, 6-59 months

Figure 10: Distribution of height-for-age z-scores of survey population (red) compared to reference population (green)

The mean z-scores and design effect are shown in Table 22. The weight-for-height SD was within an acceptable range (0.8-1.03).

Table 22: Mean z-scores, design effects and excluded subjects

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	480	-0.82±1.03	1.78	1	14
Weight-for-Age	489	-1.02±0.97	1.57	0	6
Height-for-Age	479	-0.87±1.15	1.50	0	16

4.2 Vaccination and supplementation programmes

4.2.1 Measles vaccination coverage results

The coverage of measles was **99.4%(65.8 – 89.5 95% C.I.)**, which achieved the >95% target. The coverage of Vitamin A was **97.8% (95.8 – 99.8, 95% C.I)** met the target of >90% as shown in Table 25 and 26.

Table 25: Measles vaccination coverage for children aged 9-59 (n=474)

	Measles (with card) n=368	Measles (with card or confirmation from mother) n= 471
YES	77.6% (65.8-89.5, 95% C.I)	99.4% (65.8 – 89.5 95% C.I.)

4.2.2 Vitamin A supplementation coverage results

Table 26: Vitamin A supplementation for children, 6-59 months within past 6 months (*or other context-specific target group*) (n=495)

	Vitamin A capsule (with card) n=251	Vitamin A capsule (with card or confirmation from mother) n=484
YES	50.7% (34.8-66.6, 95% C.I)	97.8% (95.8 – 99.8, 95% C.I)

Figure 11: Trends in the coverage of measles vaccination and Vitamin A supplementation in children, 6-59 months from 2011-2018
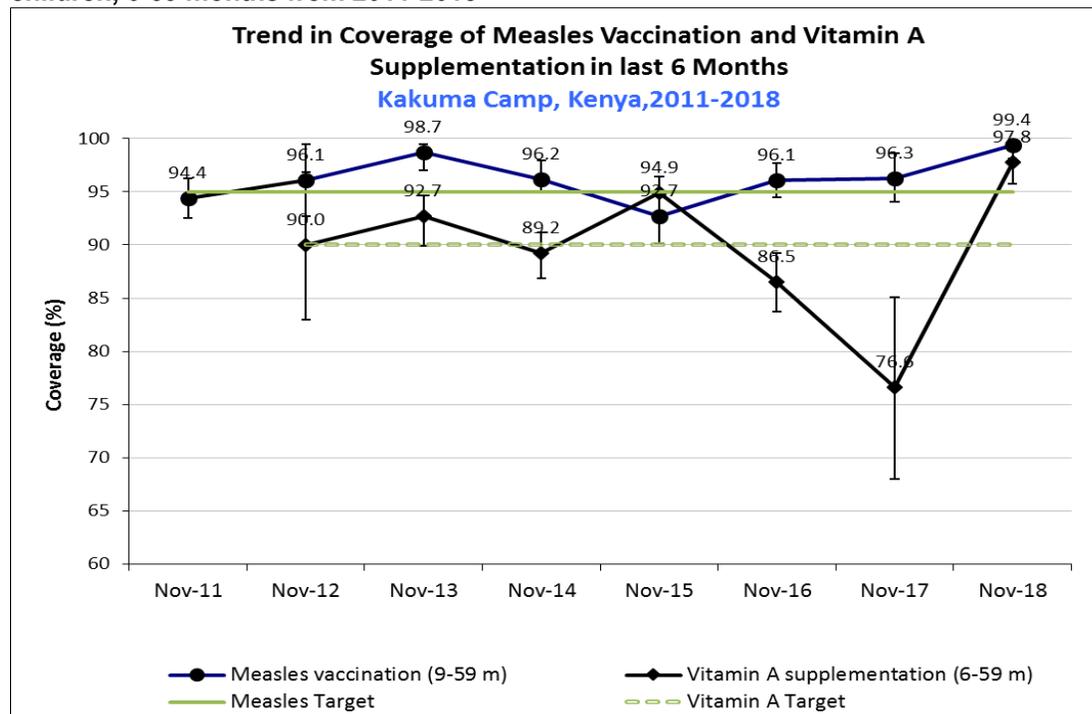
About a fifth of sampled children reported having experienced diarrhoea (Table 27).

4.3 Diarrhoea results

Table 27: Period prevalence of diarrhea

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	44/495	8.9% (5.4 -12.4, 95% C.I)

4.4 Anaemia in children, 6-59 months

The prevalence of anaemia for children 6-59 months (Table 28) was 46.7% (39.3 – 54.2, 95% C.I). The prevalence was highest in the 6-23 months age group and decreased with age.

Table 28: Prevalence of total anaemia, anaemia categories, and mean haemoglobin concentration in children 6-59 months of age and by age group

	6-59 months n = 492	6-23 months n = 150	24-35 months n = 102	36-59 months n = 243
Total Anaemia (Hb<11.0 g/dL)	(230) 46.7% (39.3-54.2, 95% C.I.)	(98) 66.7% (56.8-76.5, 95% C.I)	(49) 48% (35.9-60.2, 95% C.I)	(83) 34.2% (25.9-42.4 , 95% C.I)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(106) 21.5% (17.3 – 25.8 95% C.I.)	(46) 31.3% (22-40.6, 95%C.I)	(18) 17.6% (10.1- 25.2, 95% C.I)	(42) 17.3% (11.3- 23.2, 95% C.I)
Moderate Anaemia (7.0-9.9 g/dL)	(108) 24.0% (18.2 – 29.8 95% C.I.)	(51) 34.7 % (23.6-45.8, 95% C.I)	(29) 28.4% (19.6- 37.2, 95% C.I)	(38) 15.6% (10.4- 20.9, 95% C.I)
Severe Anaemia (<7.0 g/dL)	(6) 1.2% (-0.2 – 2.6 95% C.I)	(1) 0.7% (-0.7-2.0 %, 95% C.I)	(2) 2% (1.968-2.0, 95% C.I)	(3) 1.2% (-0.1 -2.6, 95% C.I)
Mean Hb (g/dL) (SD / 95% CI)	10.9(10.7- 11.2)			

The prevalence of moderate and severe anaemia (Hb <10g/dl) is shown in Table 29.

The prevalence of anaemia is the highest 66.7% among children aged 6-23 months.

Table 29: Prevalence of moderate and severe anaemia in children, 6-59 months of age and by age group

	6-23 months n=170	24-35 months n = 108	36-59 months n=232	All n=510
Moderate and Severe Anaemia (Hb<10.0 g/dL)	(52) 35.4% (24.4-46.3, 95% C.I)	(31) 30.4% (20.6-40.2, 95% C.I)	(41) 16.9% (11.2-22.6, 95% C.I)	(124) 25.2% (19.2-31.2, 95% C.I)

Figure 12 and 13 reveal that the prevalence of anaemia has been increasing since 2014 but reduced in 2018.
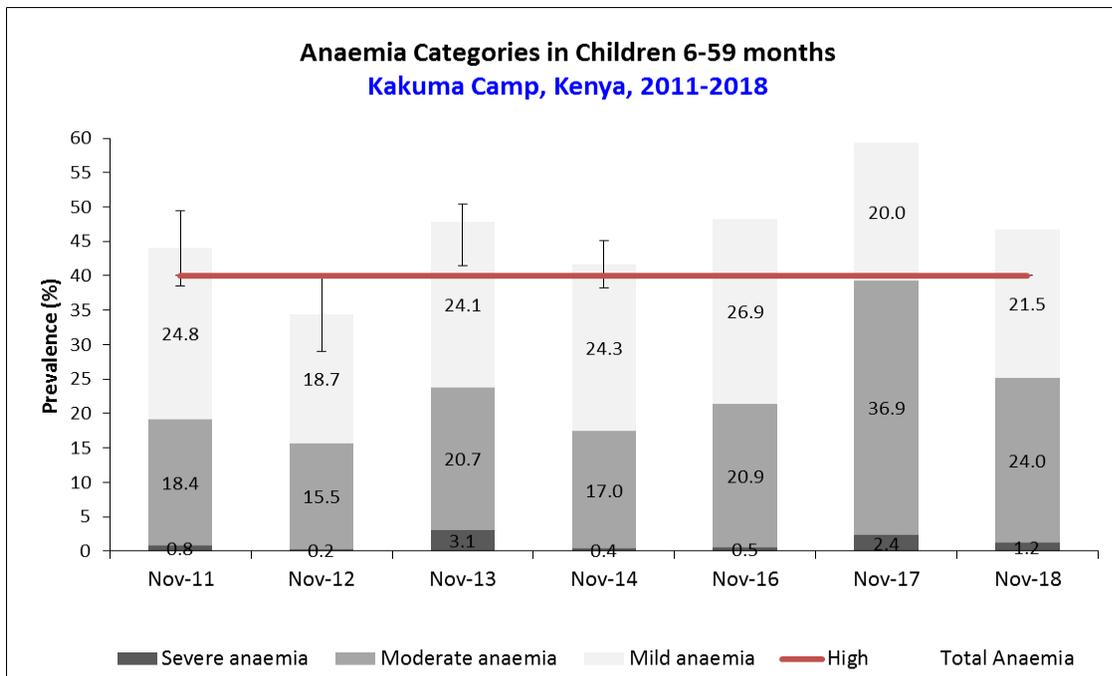
Figure 12: Trends in anaemia categories in children 6-59 months from 2011-2018.
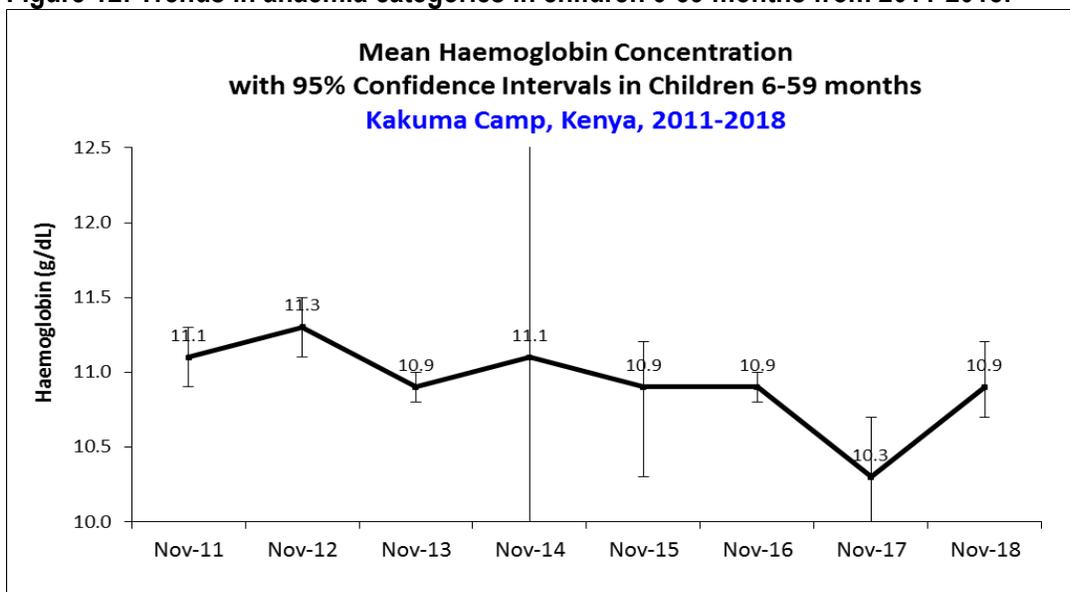
Figure 13: Trend in mean haemoglobin concentration in children, 6-59 months from 2011-2018.

4.5   Children 0-23 months

More than three quarters of sampled children had been introduced to the breastfeeding within the first hour, which is low The rate of exclusive breastfeeding was   high at 84.6% (74.5-94.7, 95% C.I). Continued breastfeeding at 1 year was very high at 94.3% (85.6-103, 95% C.I). However, at 2 years, 66.6% of children continued to breastfeed. Introduction of solid, semi-solid or soft foods was low only 31.6%. The

consumption of iron-rich foods was only above one third, mainly due to consumption of CSB. 54% (8.2-22.5, 95% C.I) were bottle fed (Table 30).

Table 30: Prevalence of Infant and Young Child Feeding Practices Indicators

Indicator	Age range	Number/total	Prevalence (%)	95% CI
Timely initiation of breastfeeding	0-23 months	80/182	44	28.4-59.5
Exclusive breastfeeding under 6 months	0-5 months	55/65	84.6	74.5-94.7
Continued breastfeeding at 1 year	12-15 months	33/35	94.3	85.6-103
Continued breastfeeding at 2 years	20-23 months	14/21	66.6	42.3-91.1
Introduction of solid, semi-solid or soft foods	6-8 months	6/19	31.6	1.5-61.6
Consumption of iron-rich or iron-fortified foods	6-23 months	52/150	34.6	40.1-67.9
Bottle feeding	0-23 months	33/215	15.3	8.2-22.5

The analysis of the trend in IYCF indicators (Figure 14), shows generation deterioration.
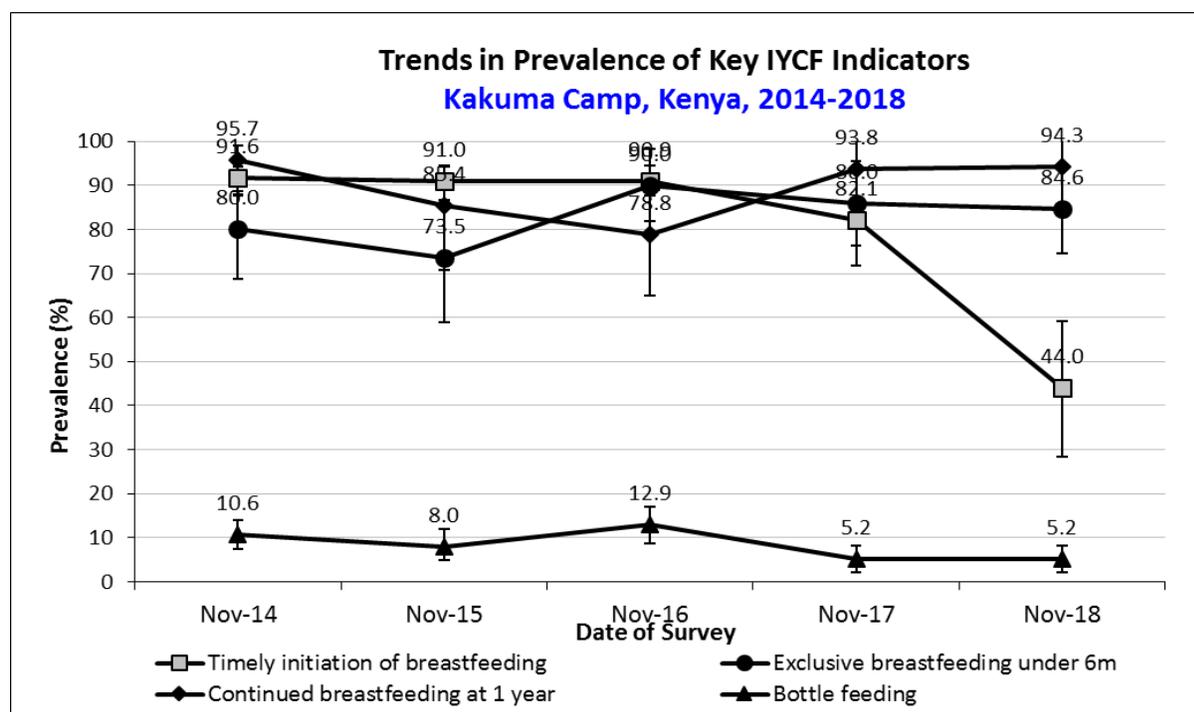
Figure 14: Nutrition survey results (IYCF indicators) since 2014

4.6 Prevalence of intake

4.6.1 Prevalence of Blanket Supplementary Feeding Programme

Fortified blended foods

Table 31 and 32 show the intake of CSB+ and CSB++.

Table 31: CSB+ (super cereal) intake in children aged 6-23 months

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB+	81/150	54 (40.1-67.9)

Table 32: CSB++ (super cereal plus) intake in children aged 6-23 months

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB++	34/150	22.7 (8.9-36.4)

4.7 Women 15-49 years

In the sample of women of reproductive age, 5.8% (3.1-8.4, 95% C.I) were pregnant, with a mean age of 27.9 (Table 34).

Table 33: Women physiological status and age

Physiological status	Number/total	% (95% CI)
Non-pregnant	294/312	93.6 (90.7-96.5)
Pregnant	18/312	5.8 (3.1-8.4)
Mean age (range)	27.9 (26.8-29)	

4.7.1 Anaemia in non-pregnant women (15-49 years)

The prevalence of anaemia among non-pregnant women was 41.8% (33.7- 50, 95% C.I), with a mean Hb of 12.1 (Table 34).

Table 34: Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 years)

Anaemia in non-pregnant women of reproductive age (15-49 years)	All n = 294
Total Anaemia (<12.0 g/dL)	(123) 41.8% (33.7- 50, 95% C.I)
Mild Anaemia (11.0-11.9 g/dL)	(58) 19.7% (13.9- 25.6, 95% C.I)
Moderate Anaemia (8.0-10.9 g/dL)	(58) 19.7% (14.6- 24.8, 95% C.I)
Severe Anaemia (<8.0 g/dL)	(7) 12.4% (0.5- 4.3, 95% C.I)
Mean Hb (g/dL) (confidence interval)	12.1 (11.8-12.3)

As Figure 15 shows, anaemia has been on a decreasing trend since 2013.
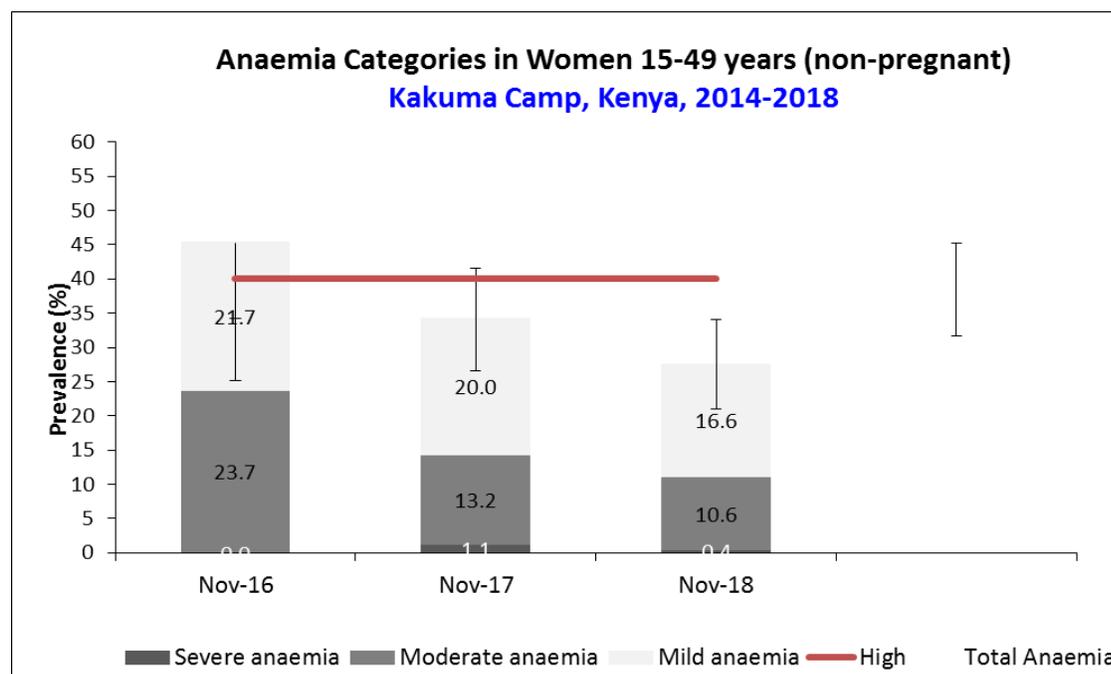
Figure 15: Trends in anaemia categories in women of reproductive age (non-pregnant) from 2014-2018.

A high proportion of pregnant women were enrolled in ANC and also receiving iron-folic acid pills (Table 36).

Table 35: ANC enrolment and iron-folic acid pills coverage among pregnant women (15-49 years)

	Number /total	% (95% CI)
Currently enrolled in ANC programme	17/18	94.4 (82.2-106.7)
Currently receiving iron-folic acid pills	16/18	88.9 (71.8-106)

4.8   Food security

The table below shows the proportion of the population surveyed for Food Security.

Table 36: Food security information

Household data	Planned	Actual	% of target
Total households surveyed for Food Security	285	277	97.2%

4.8.1   Access to food assistance results

The period for general food distribution covered was the month of October - 2018.

Ration card coverage

	Number/total	% (95% CI)
Proportion of households with a ration card	277/277	100%

The average duration of the food ration was 18.6 days, which translates to 60% of the theoretical ration (Table 37).

Table 37: Reported duration of general food ration

Average number of days the food ration lasts (Standard deviation or 95% CI)	Average duration (%) in relation to the theoretical duration of the ration*
18.6 (17.7-19.5)	60%

**Intended duration =31 days

4.8.2   Negative coping strategies results

The main negative coping strategy was reducing the quantity and/or frequency of meals (44.6%, 30.5-58.8, 95% C.I). A significant proportion also reported borrowing and begging. About a fifth (10.7%, 19.7-41.6, 95% C.I) reported none of the coping mechanisms (Table 38).

Table 38: Coping strategies used by the surveyed population over the past month

	Number/total	% (95% CI)
Proportion of households reporting using the following coping strategies over the past month*:		
Borrowed cash, food or other items *with or without interest*	78/278	28.1 (17.8-38.3)
Ask more	27/278	9.7 (4-15.5)
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)	15/278	5.4 (2.2-8.6)
Reduced the quantity and/or frequency of meals	124/278	44.6 (30.5-58.8)
Begged	74/278	26.7 (16.5-37)
Proportion of households reporting using none of the coping strategies over the past month	88/287	30.7 (19.7-41.6)

4.8.3   Household dietary diversity results

The average household dietary diversity score was 4.0 (3.5-4.5, 95% C.I) out of 12 food groups (Table 39).

Table 39: Average HDDS

	Mean (95% C.I)
Average HDDS*	5.4 (4.8-5.9)

* Maximum HDDS is 12.

The consumption of cereals was highest, followed by vegetables and pulses, which reflects the items included in the general food distribution and purchased using Bamba chakula food voucher (Figure 16).
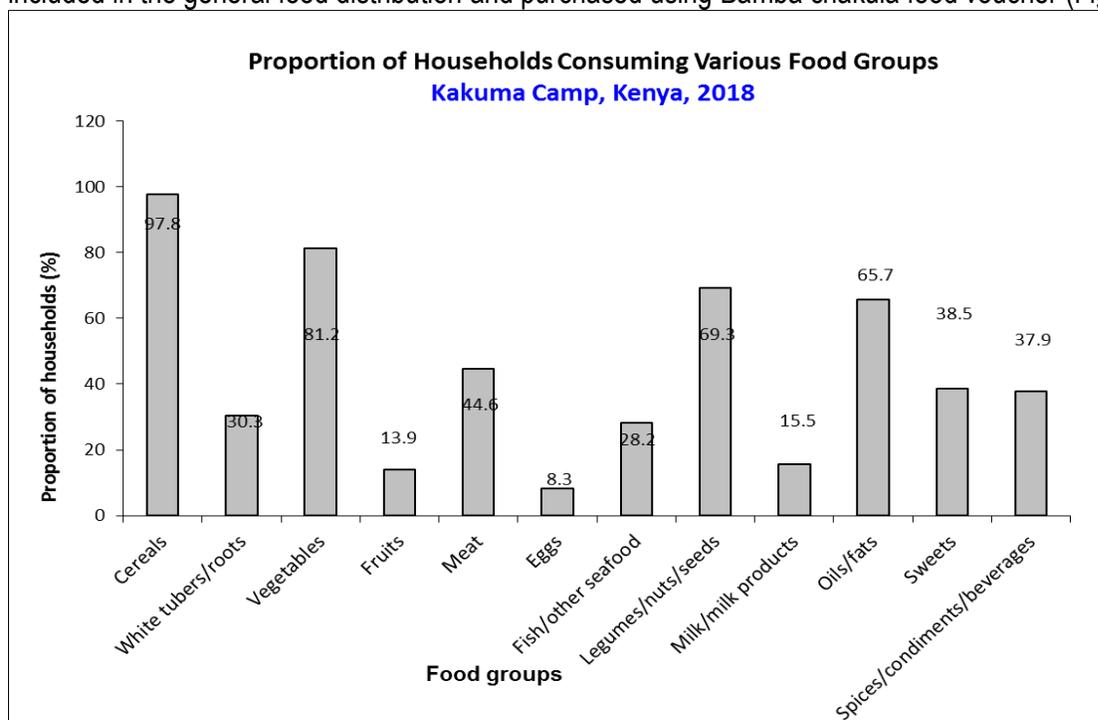
Figure 16: Proportion of households consuming different food groups within last 24 hours

Above two thirds 66.2% (55.7-76.7), 95% C.I) of households consumed either plant or animal sources of Vitamin A, whilst 49.8% (38.4-61.3, 95% C.I) consumed food sources of haem haem iron. 10.5 (5.7-15.2), 95% C.I) of households did not consume any vegetables, fruits, meat, eggs, fish/seafood or milk/milk products (Table 43).

Table 40: Consumption of micronutrient rich foods by households

	Number/total	% (95% CI)
Proportion of households *not consuming any* vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	30/287	10.5 (5.7-15.2)
Proportion of households consuming either a plant or animal source of vitamin A	190/287	66.2 (55.7-76.7)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	143/287	49.8 (38.4-61.3)

4.9 WASH

The table below shows total number of household visited in WASH.

Table 41: WASH information

Household data	Planned	Actual	% of target
Total households surveyed for WASH	570	555	97.4%

All households reported use of an improved drinking water source

Table 42: Water Quality

	Number/total	% (95% CI)
Proportion of households using an improved* drinking water source	555/555	100
Proportion of households that use a covered or narrow necked container for storing their drinking water	412/583	74.4 (62.9- 85.8)

*According to UNHCR's SENS Improved drinking water sources are; public tap/standpipe, protected dug well or rain-water collection. All other sources were considered un-improved.

The average amount of water used per person per day was 18.5 (16.0-21.0, 95% C.I), which is below the UNHCR standard target of 20 (Table 46).

Table 43: Water Quantity: Amount of litres of water used per person per day

Proportion of households that use:	Number/total	% (95% CI)
≥ 20 lpppd	233/556	41.3 (33.9-49.9)
15 – <20 lpppd	74/556	13.3 (9.5-17.1)
<15 lpppd	249/556	44.8 (36.5-53.1)
Average water usage per Lpppd mean (95% C.I)	18.5	

The proportion of households who were satisfied was way below half (36.7% (27.4- 46), 95% C.I) as shown in Table 47.

Table 44: Satisfaction with water supply

	Number/total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	204/556	36.7 (27.4- 46)

The main reasons for lack of satisfaction (Figure 17) were: not enough (74.8%), Water tastes bad (17.7%) and Long queue at tap stands (4.1%)
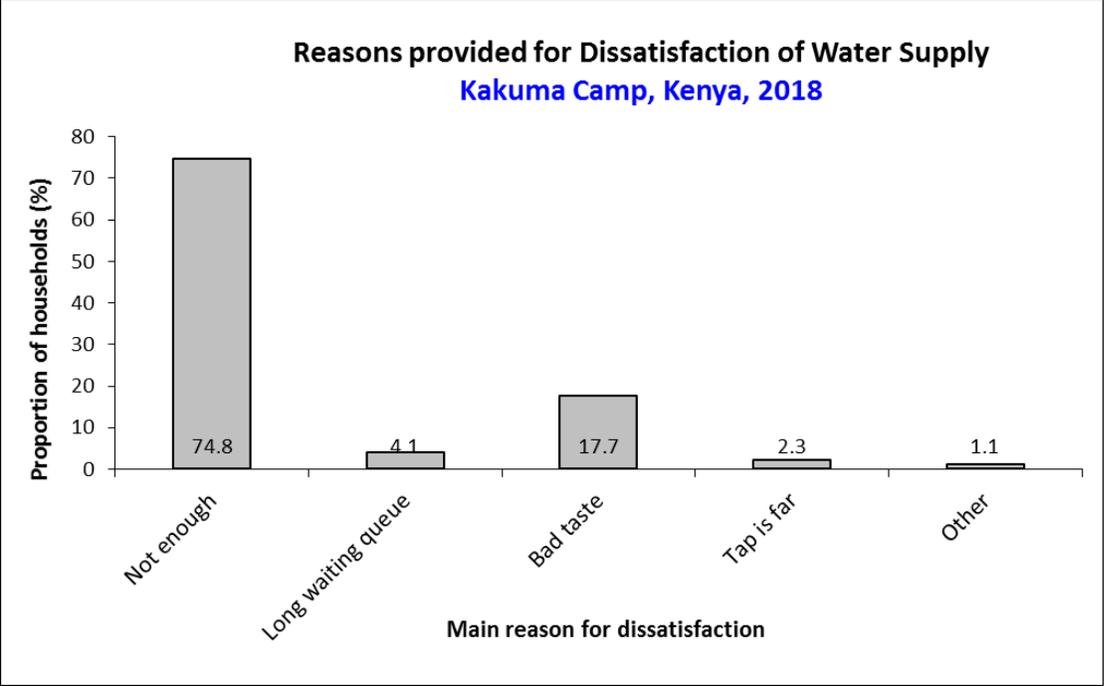
Figure 17: Main reason for dissatisfaction among households not satisfied with water supply

Over half of households (67%, 58.8-75.3, 95% C.I) were using an improved excreta disposal facility (Table 47). Nearly all households (98.5%, 96.3-100.7, 95% C.I) disposed the faeces of children below 3 years of age safely.

Table 45: Safe excreta disposal

	Number/total	% (95% CI)
Proportion of households that use:		
An improved excreta disposal facility (improved toilet facility, 1 household)*,	177/264	67 (58.8-75.3)
A shared family toilet (improved toilet facility, 2 households)	33/264	12.5 (7.4-17.7)
A communal toilet (improved toilet facility, 3 households or more)	35/264	13.3 (6.8-19.7)
An unimproved toilet (unimproved toilet facility or public toilet)	19/264	7.2 (2.9-11.5)
Proportion of households with children under three years old that dispose of faeces safely	132/142	98.5 (96.3-100.7)

4.10 Mosquito Net Coverage

The table below shows the total number of households covered in the mosquito net coverage.

Table 46: Mosquito net coverage information

Household data	Planned	Actual	% of target
Total households surveyed for mosquito net coverage	285	276	96.8%

As Table 47 and Figures 18 and 19 show, the proportion of the sampled households with at least one mosquito net of any type was 95.7%, whilst 94.6% owned at least one long lasting insecticide treated net (LLIN).

Table 47: Household mosquito net ownership

	Number/total	% (95% CI)
Proportion of total households owning at least one mosquito net of any type	264/276	95.7
Proportion of total households owning at least one LLIN	262/276	94.9
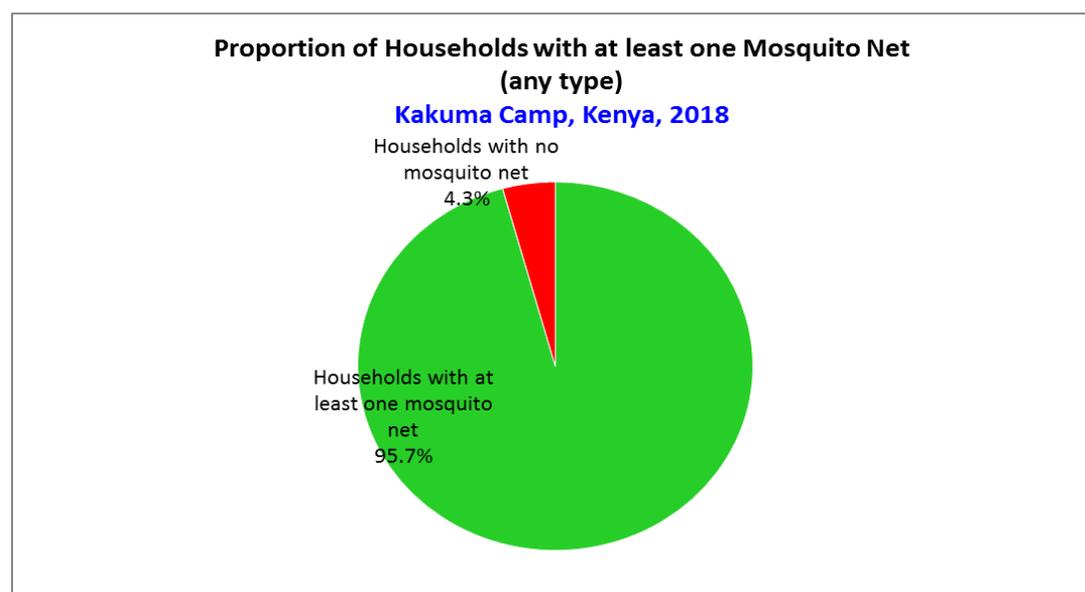
Figure 18: Household ownership of at least one mosquito net (any type)
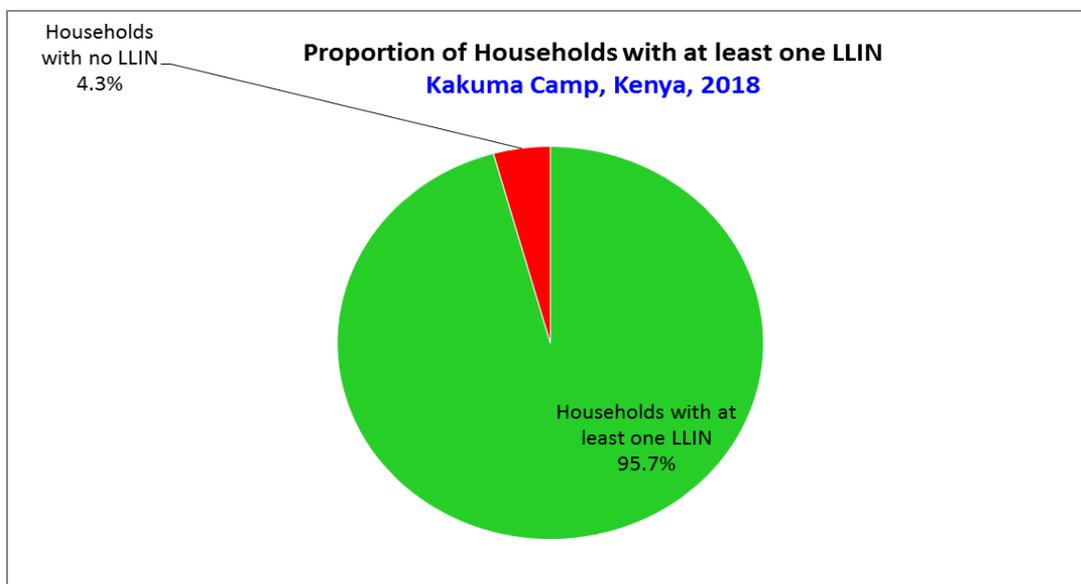
Figure 19: Household ownership of at least one Long-Lasting Insecticide Net (LLIN)

There was an average number of LLINs per household was 2.8, whilst the average number of persons per LLIN was 6.6, which did not meet the UNHCR target of 2 persons per LLIN (Table 51).

Table 48: NUMBER of nets

Average number of LLINs per household	Average number of persons per LLIN
2.8	6.6

In terms of mosquito net utilisation (Table 51 and Figure 20), 88% of all household members slept under a net of any type, and 87% under a LLIN. The proportion of children and pregnant women who slept under a LLIN were 95% and 100%, respectively.

Table 49: Mosquito net utilisation.

	Proportion of total population (all ages)		Proportion of 0-59 months		Proportion of pregnant women	
	Number/total	%	Number/total	%	Number/total	%
Slept under net of any type	1525 /1732	88%	295/302	98%	27/27	100%
Slept under LLIN	1503/1732	87%	288/302	95%	27/27	100%
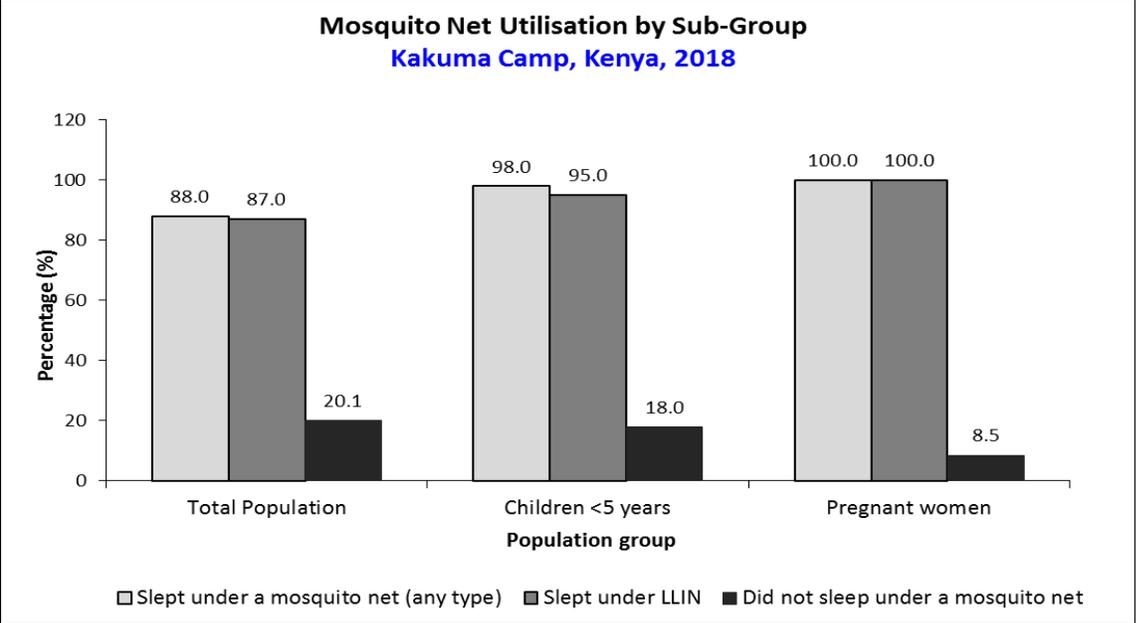
Figure 20: Mosquito net utilisation by sub-groups

Indoor residual spraying had not been done in 2018. The proportion of households who reported indoor residual spraying (Table 52) was 4.7% (100%, 95% C.I).

Table 50: Indoor Residual Spraying

	Number/total	% (95% CI)
Proportion of households covered by IRS	13/275	4.7

5   RESULTS KALOBEYEI SETTLEMENT

The demographic characteristics of the population are presented in Table 51. A total of 612 U5 children in 598 households, with a population of 2,973, giving an average household size of 5 In the sample, 20.6% were children below 5 years.

Table 51: Demographic characteristics of the study population

Total households surveyed	598
Total population surveyed	2,973
Total U5 surveyed (0-59)	612
Average household size	5
% of U5	20.6%
Total number of clusters	36

- The NRR rate was 2.0%

5.1   Children 6-59 months

5.1.1   Sample size and clusters

A total of 612 children 6-59 months were surveyed, which represents 159.4% of the target of 384 (Table 52).

Table 52: Target and actual number captured

	Target (No.)	Total surveyed (No.)	% of the target
Children 6-59 months	384	612	159.4%
Clusters	36	36	100%

The ratio of different age groups, as well as boys to girls, was acceptable (Table 53).

Table 53: Children 6-59 months - distribution of age and sex of sample

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:girl
6-17	70	55.1	57	44.9	127	20.8	1.2
18-29	76	58.5	54	41.5	130	21.2	1.4
30-41	64	48.9	67	51.1	131	21.4	1.0
42-53	65	49.2	67	50.8	132	21.6	1.0
54-59	46	50.0	46	50.0	92	15.0	1.0
Total	321	52.5	291	47.5	612	100.0	1.1

The ratio of boys to girl is the same.

The prevalence of GAM in Kalobeyei was 9.3% (7.0 - 12.2 95% C.I.) with a SAM prevalence of 2.5 % (1.5 - 4.1 95% C.I.) based on WHO standards (Table 57).

5.1.2 Anthropometric results (based on WHO Growth Standards 2006; NCHS Growth Reference 1977 shown in Appendix)

Table 54: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex

	All n = 605	Boys n = 316	Girls n = 289
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(56) 9.3 % (7.0 - 12.2 95% C.I.)	(36) 11.4 % (8.5 - 15.1 95% C.I.)	(20) 6.9 % (4.2 - 11.3 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(41) 6.8 % (4.8 - 9.4 95% C.I.)	(27) 8.5 % (5.8 - 12.5 95% C.I.)	(14) 4.8 % (2.7 - 8.6 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(15) 2.5 % (1.5 - 4.1 95% C.I.)	(9) 2.8 % (1.6 - 4.9 95% C.I.)	(6) 2.1 % (0.8 - 5.1 95% C.I.)

The prevalence of oedema is 0.0 %
The prevalence of GAM was higher in boys compared to girls.

The analysis of the trend shows an increase in 2018 compared to 2017 (Figure 21).
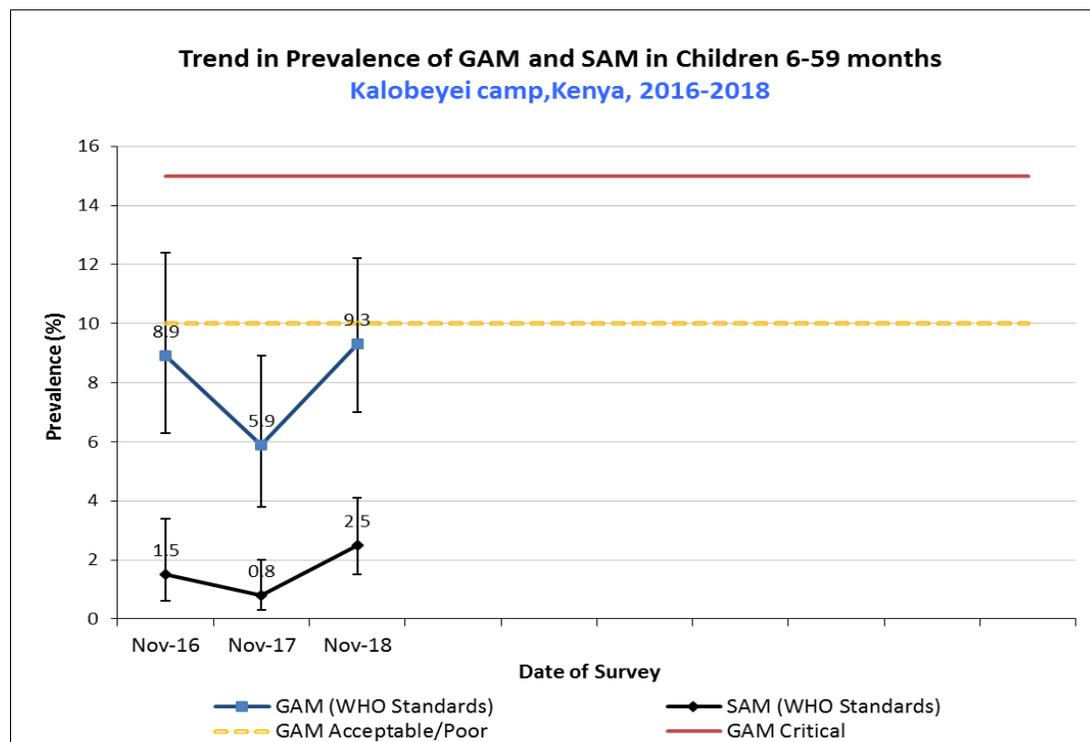
Figure 21: Trends in the prevalence of global and severe acute malnutrition based on WHO growth standards in children, 6-59 months, from 2016-2018

The prevalence of severe wasting was higher among younger children and moderate wasting was higher in older children (Table 58 and 59).

Table 55: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	125	6	4.8	11	8.8	108	86.4	0	0.0
18-29	128	0	0.0	10	7.8	118	92.2	0	0.0
30-41	131	3	2.3	3	2.3	125	95.4	0	0.0
42-53	131	3	2.3	7	5.3	121	92.4	0	0.0
54-59	90	3	3.3	10	11.1	77	85.6	0	0.0
Total	605	15	2.5	41	6.8	549	90.7	0	0.0

Table 56: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema (WHO IYCF age category indicators)

Age (mo)	Total no.	Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	124	9	7.3	17	13.7	98	79.0	0	0.0
18-29	129	9	7.0	23	17.8	97	75.2	0	0.0
30-41	130	4	3.1	22	16.9	104	80.0	0	0.0
42-53	131	3	2.3	19	14.5	109	83.2	0	0.0
54-59	91	6	6.6	11	12.1	74	81.3	0	0.0
Total	605	31	5.1	92	15.2	482	79.7	0	0.0

Wasting was high among children of age 18-29 months (Figure 22).
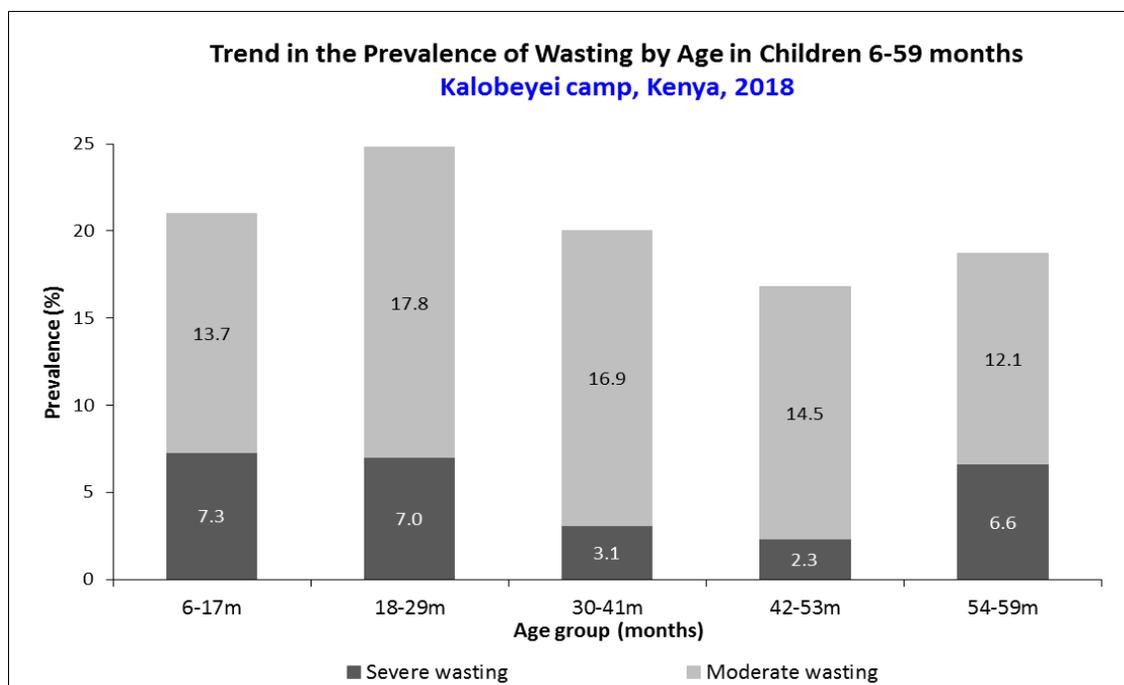
Figure 22: Trends in prevalence of moderate and severe wasting by age in children 6-59 months

All cases of SAM were due to marasmus (Table 57).

Table 57: Distribution of severe acute malnutrition and oedema based on weight-for-height z-scores

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 17 (2.8 %)	Not severely malnourished No. 591 (97.2 %)

The survey and WHO WHZ curves are compared in Figure 23.

The prevalence of acute malnutrition based on MUAC was very low (Table 61), with a GAM prevalence of 0.2% (0.0-1.4, 95% C.I) and a SAM prevalence of 0.0%.

Table 58: Prevalence of MUAC Malnutrition

	All n = 611	Boys n = 320	Girls n = 290
Prevalence of global malnutrition (< 125 mm and/or oedema)	(13) 2.1 % (1.2 - 3.6 95% C.I.)	(11) 3.4 % (1.9 - 6.0 95% C.I.)	(2) 0.7 % (0.2 - 2.8 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(10) 1.6 % (0.9 - 3.0 95% C.I.)	(9) 2.8 % (1.4 - 5.5 95% C.I.)	(1) 0.3 % (0.0 - 2.6 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(3) 0.5 % (0.2 - 1.5 95% C.I.)	(2) 0.6 % (0.2 - 2.5 95% C.I.)	(1) 0.3 % (0.0 - 2.6 95% C.I.)

Table 59: Prevalence of MUAC malnutrition ranges by age, based on MUAC cut off's and/or oedema

Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	128	2	1.6	6	4.7	120	93.8	0	0.0
18-29	129	0	0.0	3	2.3	126	97.7	0	0.0
30-41	131	1	0.8	0	0.0	130	99.2	0	0.0
42-53	131	0	0.0	0	0.0	131	100.0	0	0.0
54-59	92	0	0.0	1	1.1	91	98.9	0	0.0
Total	611	3	0.5	10	1.6	598	97.9	0	0.0

The prevalence of underweight (Table 62) was 20.3% (16.7-24.5 95% C.I.), with a severe underweight prevalence of 5.1 % (3.6 - 7.3 95% C.I.),

Table 60: Prevalence of underweight based on weight-for-age z-scores by sex

	All n = 605	Boys n = 316	Girls n = 289
Prevalence of underweight (<-2 z-score)	(123) 20.3 % (16.7 - 24.5 95% C.I.)	(81) 25.6 % (20.8 - 31.1 95% C.I.)	(42) 14.5 % (10.3 - 20.0 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(92) 15.2 % (12.2 - 18.8 95% C.I.)	(60) 19.0 % (14.5 - 24.5 95% C.I.)	(32) 11.1 % (7.8 - 15.4 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(31) 5.1 % (3.6 - 7.3 95% C.I.)	(21) 6.6 % (4.3 - 10.2 95% C.I.)	(10) 3.5 % (1.9 - 6.2 95% C.I.)

The stunting prevalence (Table 61) was 27.2% (23.6-31.0 95% C.I.), with a severe stunting prevalence of 8.4% (6.5 - 10.8 95% C.I.).

Table 61: Prevalence of stunting based on height-for-age z-scores and by sex

|	All n = 585	Boys n = 309	Girls n = 276
Prevalence of stunting (<-2 z-score)	(159) 27.2 % (23.6 - 31.0 95% C.I.)	(98) 31.7 % (27.2 - 36.6 95% C.I.)	(61) 22.1 % (17.5 - 27.5 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(110) 18.8 % (16.1 - 21.9 95% C.I.)	(64) 20.7 % (16.9 - 25.1 95% C.I.)	(46) 16.7 % (12.9 - 21.3 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(49) 8.4 % (6.5 - 10.8 95% C.I.)	(34) 11.0 % (8.0 - 14.9 95% C.I.)	(15) 5.4 % (3.4 - 8.5 95% C.I.)

Figure 24: Trends in the prevalence of global and severe stunting based on WHO growth standards in children, 6-59 months from 2016-2018.
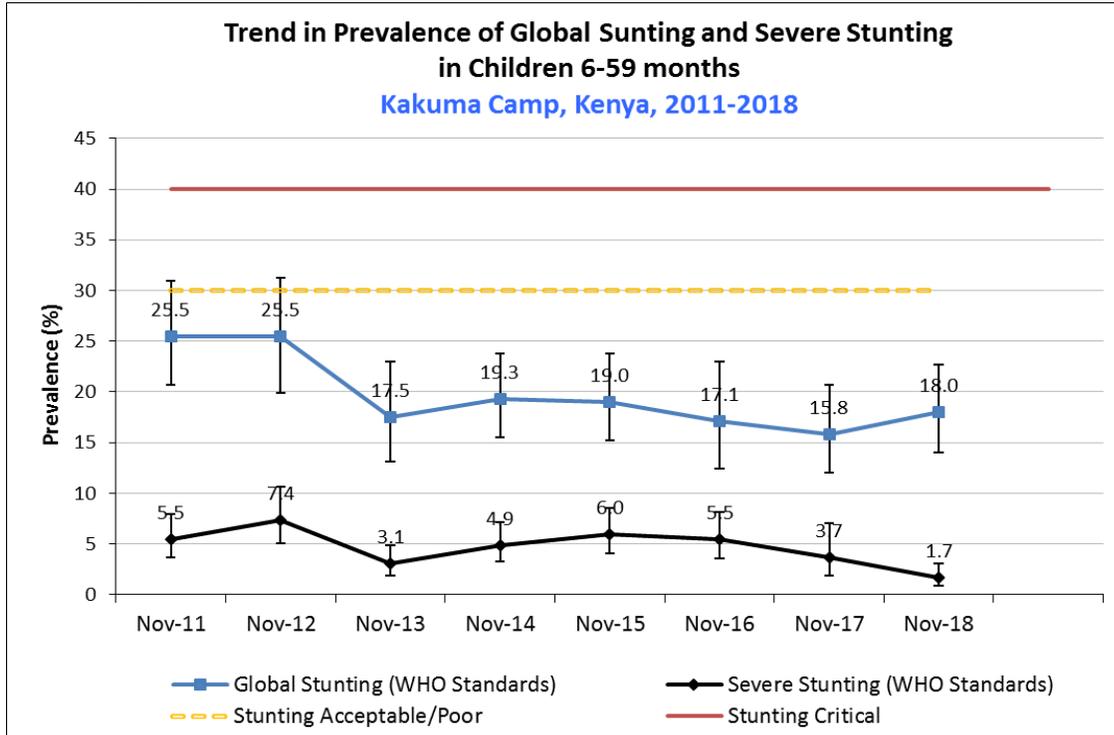
Table 62: Prevalence of stunting by age based on height-for-age z-scores

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
		No.	%	No.	%	No.	%
6-17	121	6	5.0	26	21.5	89	73.6
18-29	123	15	12.2	32	26.0	76	61.8
30-41	128	12	9.4	18	14.1	98	76.6
42-53	125	9	7.2	19	15.2	97	77.6
54-59	88	7	8.0	15	17.0	66	75.0
Total	585	49	8.4	110	18.8	426	72.8

Prevalence of stunting by age based on height-for-age z-scores (WHO IYCF age category Indicators)

Trend in the Prevalence of Stunting by Age in Children 6-59 months
Kakuma Camp, Kenya, 2018
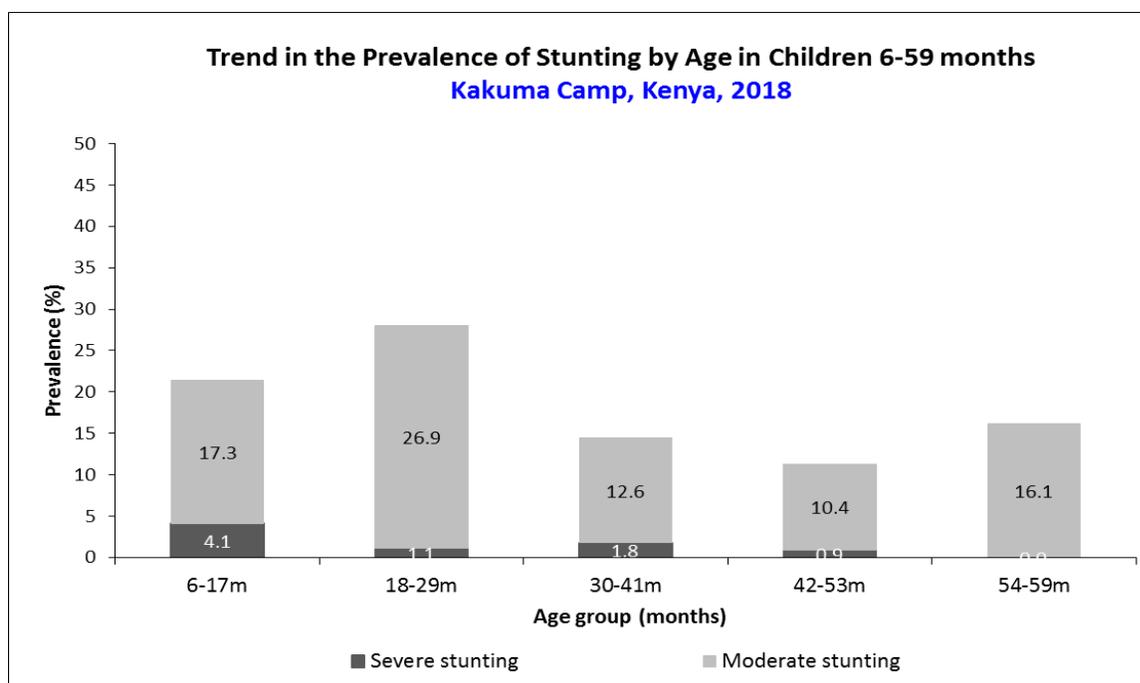
The mean z-scores, design effects and excluded subjects are shown in Table 63.

Table 63: Mean z-scores, design effects and excluded subjects

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	605	-0.71±1.01	1.16	5	3
Weight-for-Age	605	-1.16±1.02	1.36	2	6
Height-for-Age	585	-1.22±1.22	1.00	3	25

* contains for WHZ and WAZ the children with oedema.

5.2   Vaccination and supplementation programmes

5.2.1   Measles vaccination coverage results
The coverage of measles vaccination met the standard of >95% target (Table 64).

Table 64: Measles vaccination coverage for children aged 9-59 (n=525)

	Measles (with card) n= 475	Measles (with card or confirmation from mother) n= 580
YES	81.6% (71.8-91.4, 95% C.I)	99.7% (99-100.4, 95% C.I)

5.2.2 Vitamin A supplementation coverage results

The coverage of Vitamin A supplementation, also met the standard of >90% target (Table 65).

Table 65: Vitamin A supplementation for children, 6-59 months within past 6 months (*or other context-specific target group*) (n= 537)

	Vitamin A capsule (with card) n=359	Vitamin A capsule (with card <u>or</u> confirmation from mother) n=567
YES	58.6% (44.1-73,95% C.I)	92.5% (85.5-99.5, 95% C.I)

Both the coverage of measles vaccination and Vitamin A supplementation increased in 2018 compared to previous years (Figure 27).
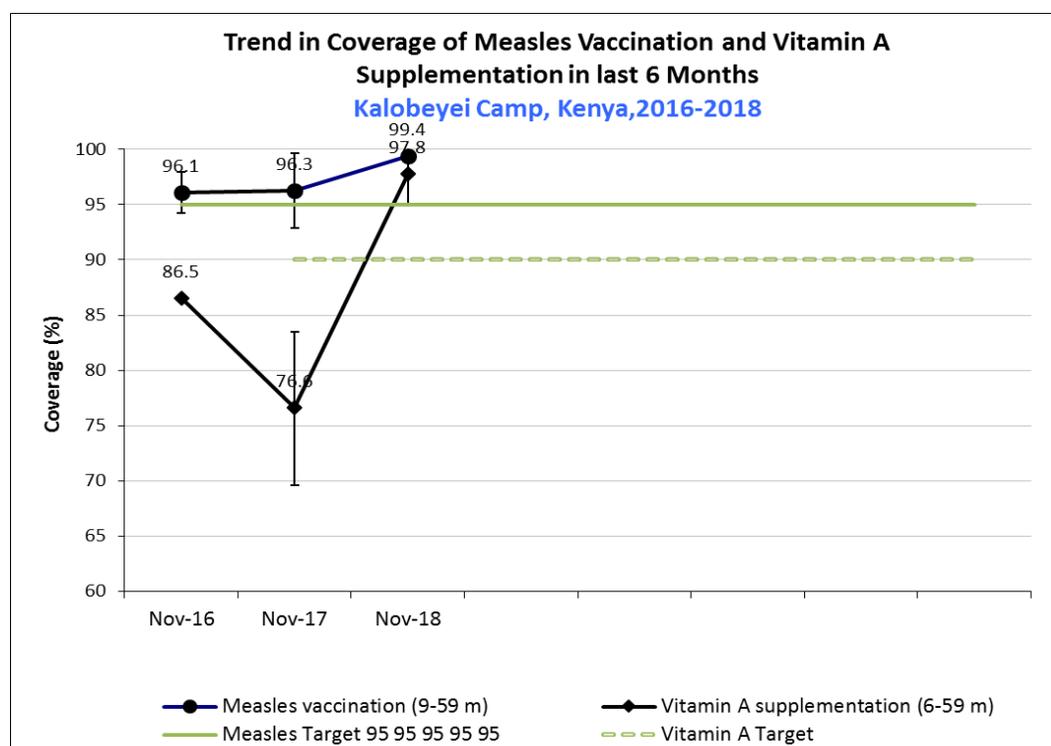
Figure 27: Trends in the coverage of measles vaccination and Vitamin A supplementation in children, 6-59 months from 2016-2018

5.3 *Diarrhoea results*

The proportion of children who reported having experienced diarrhooea in the last 2 weeks (Table 66) was 9% (4.7- 13.3 C.I.).

Table 66: Period prevalence of diarrhea

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	55/613	9 (4.7- 13.3)

5.4 Anaemia in children, 6-59 months

The prevalence of anaemia among children 6-59 months was 56% (51.6- 60.5, 95% C.I), with a mean Hb of 10.6 (10.5-10.8, 95% C.I). The prevalence of anaemia was highest in the 6-23 months age group and then decreased with age (Table 67).

Table 67: Prevalence of total anaemia, anaemia categories, and mean haemoglobin concentration in children 6-59 months of age and by age group

	6-59 months n = 612	6-23 months n=185	24-35 months n=154	24-35 months n=273
Total Anaemia (Hb<11.0 g/dL)	(343) 56% (51.6-60.5,95% C.I)	(143) 77.3% (70.5- 84.1, 95% C.I)	(88) 57.1% (47.6-66.7, 95% C.I)	(112) 41% (33.8-48.3, 95% C.I)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(168) 27.5% (23.5-31.5,95% C.I)	(64) 34.6% (26.6- 42.6, 95% C.I)	(44) 28.6% (21.5-35.7, 95% C.I)	(60) 22% (17.3-26.7, 95% .C.I)
Moderate Anaemia (7.0-9.9 g/dL)	(170) 27.8% (23.6- 32, 95% C.I)	(77) 41.6% (33- 50.3, 95% C.I)	(43) 27.9% (19.7-36.2, 95% C.I)	(50) 18.3% (12.8-23.9, 95% C.I)
Severe Anaemia (<7.0 g/dL)	(5) 0.8% (-0.04-1.7, 95% C.I)	(2) 1.1% (-0.5-2.6, 95% C.I)	(1) 0.7% (-0.7-2.0, 95% C.I)	(2) 0.7% (-0.3-1.8, 95% C.I)
Mean Hb (g/dL) (95% CI)	10.6 (10.5- 10.8)			

The prevalence of anaemia is highest 77.3% among children aged 6-23 months.

The analysis of moderate and severe anaemia prevalence (Hb <10g/dl) is shown in Table 68.

Table 68: Prevalence of moderate and severe anaemia in children, 6-59 months of age and by age group

	6-23 months n = 185	24-35 months n=154	36-59 months n=273	All n=612
Moderate and Severe Anaemia (Hb<10.0 g/dL)	(79) 42.7% (34.1- 51.3, 95% C.I)	(44) 28.6% (20-37.2, 95% C.I)	(52) 19.1% (13.3-24.8, 95% C.I)	(175) 28.6% (26.6-40.3, 95% C.I)

Anaemia was lower in 2017 compared to 2016 as Figure 28 and 29 show.
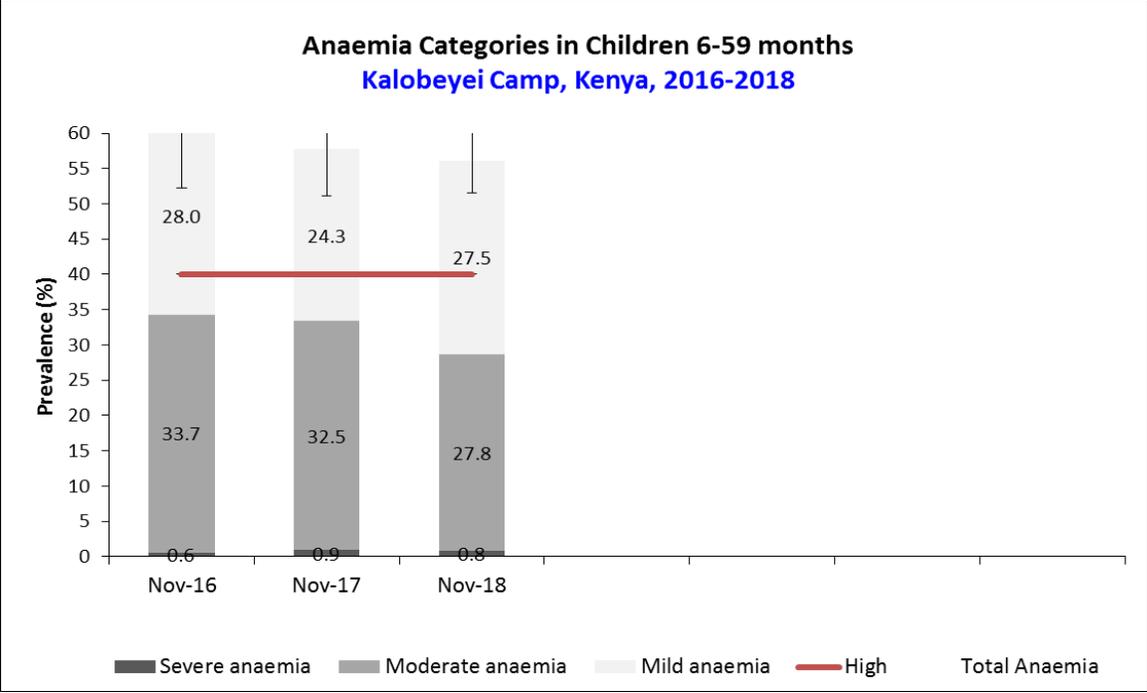
Figure 28: Trends in anaemia categories in children 6-59 months from 2016-2018.
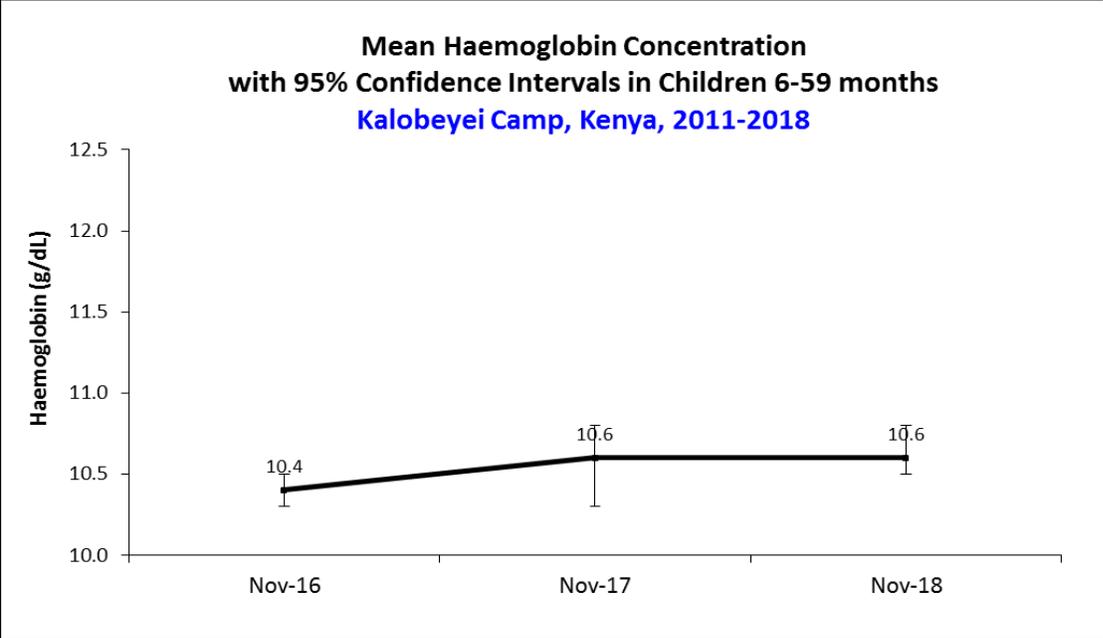
Figure 29: Trend in mean haemoglobin concentration in children, 6-59 months from 2016-2018.

5.5   Children 0-23 months

IYCF indicators are shown in Table 69. A high proportion of children were introduced to the breastfeeding within the first hour of birth and the proportion of children exclusively breastfed was 91.2% (83.6-98.9, 85% C.I). All children continued to breastfeed at 1 year, whilst 86.7 quarters continued to breastfeed up to 2 years. However, less than half of children 6-8 months had been introduced to solid foods.

Table 69: Prevalence of Infant and Young Child Feeding Practices Indicators

Indicator	Age range	Number/ total	Prevalence (%)	95% CI
Timely initiation of breastfeeding	0-23 months	148/216	68.5	55.2-81.8
Exclusive breastfeeding under 6 months	0-5 months	52/57	91.2	83.6-98.9
Continued breastfeeding at 1 year	12-15 months	45/45	100	100
Continued breastfeeding at 2 years	20-23 months	26/30	86.7	74.1-99.2
Introduction of solid, semi-solid or soft foods	6-8 months	11/30	36.7	14.6-58.7
Consumption of iron-rich or iron-fortified foods	6-23 months	42/186	22.6	11.8-33.3
Bottle feeding	0-23 months	23/243	9.5	4.2-14.8

There was a marked improvement in exclusive breastfeeding, continued breastfeeding until 1 year, bottle feeding in 2018 compared to 2017. However, the timely initiation to breastfeeding showed reduction (Figure 30).
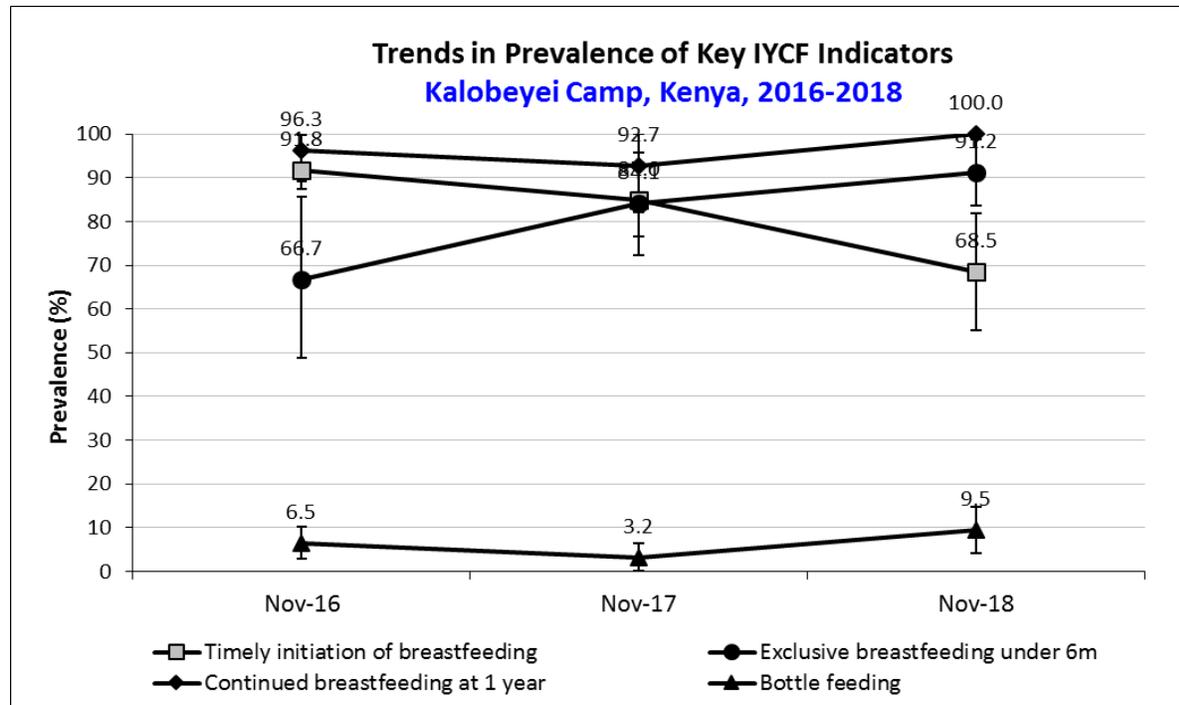
Figure 30: Nutrition survey results (IYCF indicators) since 2016

5.6   Prevalence of intake

5.6.1   Prevalence of Blanket Supplementary Feeding Programme

5.6.2   Only 1.9% (0.0-4.8%, 95% C.I) had consumed infant formula (Table 70).

Table 70: Infant formula intake in children aged 0-23 months

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	4/216	1.9 (0.0-4.8)

Fortified blended foods
59.1 (45.5-72.8, 95% C.I) had consumed CSB+, whilst only 16.7 (6.5-26.8, 95% C.I) had consumed CSB++ (Table 71 and 72).

Table 71: CSB+ (super cereal) intake in children aged 6-23 months

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB+	110/186	59.1 (45.5-72.8)

Table 72: CSB++ (super cereal plus) intake in children aged 6-23 months

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB++	31/186	16.7 (6.5-26.8)

5.7   Women 15-49 years
Out of the total of 208 women of reproductive age, 7.7% (4.0-11.3, 95% C.I) were pregnant, with a mean age of 28.3 (Table 73).

Table 73: Women physiological status and age

Physiological status	Number/total	% (95% CI)
Non-pregnant	264/281	94 (91.4-96.6)
Pregnant	16/281	5.7 (3.1-8.3)
Mean age (range)	27 (26.2-27.8)	

5.7.1   Anaemia in non-pregnant women (15-49 years)
The prevalence of anaemia among non-pregnant women was 27.5% (21-34.1, 95% C.I). The mean Hb was 12.7 (Table 74).

Table 74: Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 years)

Anaemia in non-pregnant women of reproductive age (15-49 years)	All n = 265
Total Anaemia (<12.0 g/dL)	(73) 27.5% (21-34.1, 95% C.I)
Mild Anaemia (11.0-11.9 g/dL)	(44) 16.6% (11.8-21.4, 95% C.I)
Moderate Anaemia (8.0-10.9 g/dL)	(28) 10.6% (5.5-15.7, 95% C.I)
Severe Anaemia (<8.0 g/dL)	(1) 0.4% (-0.4-1.1, 95% C.I)
Mean Hb (g/dL) (95% C.I)	12.7 (12.5-13)

The prevalence of anaemia was lower in 2018 than in 2017 (Figure 31).
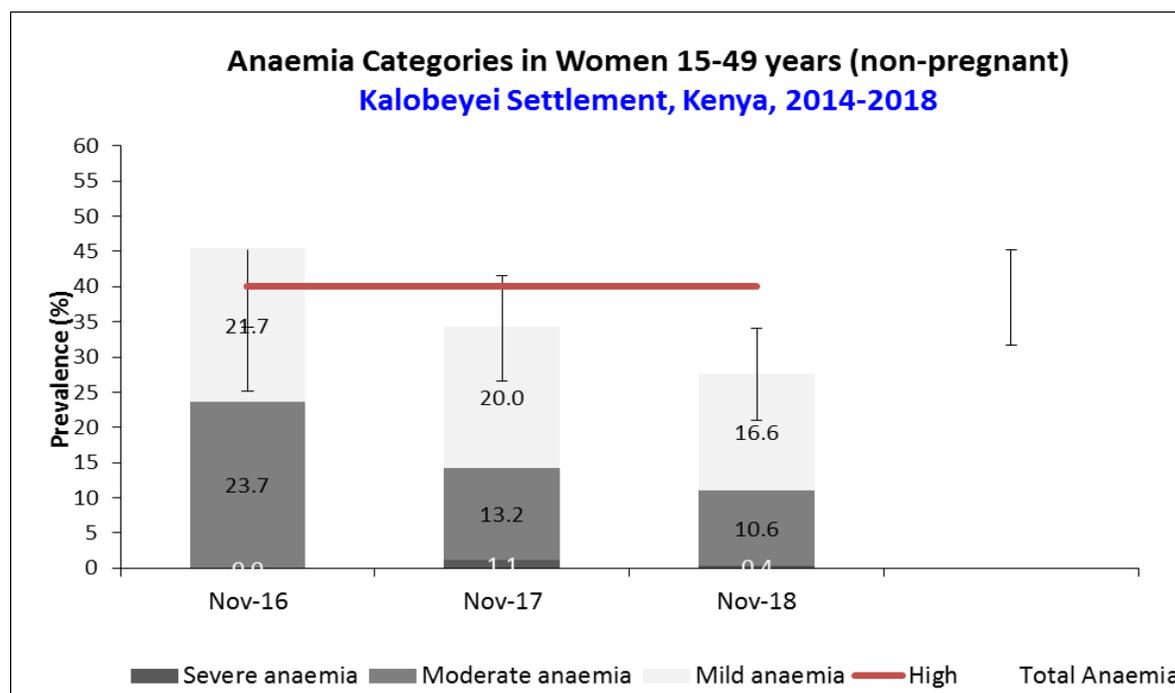
Figure 31: Trends in anaemia categories in women of reproductive age (non-pregnant) from 2016-2018.

Around 68.8% of the sampled pregnant women were enrolled in ANC and among them 75% were receiving iron-folic acid pills (Table 75).

Table 75: ANC enrolment and iron-folic acid pills coverage among pregnant women (15-49 years)

	Number /total	% (95% CI)
Currently enrolled in ANC programme	11/16	68.8% (43.7-93.8, 95% C.I)
Currently receiving iron-folic acid pills	12/16	75% (51.8-98.2, 95% C.I)

5.8 Food security

The table below shows the proportion of the population surveyed for food security.

Table 76: Food security information

Household data	Planned	Actual	% of target
Total households surveyed for Food Security	289	287	99.3%

5.8.1 Access to food assistance results

The period for general food distribution covered was the month of October - 2018.

Table 77: Ration card coverage

	Number/total	% (95% CI)
Proportion of households with a ration card	287/287	100

The average duration of Bamba chakula food voucher and CSB provided in-kind was 19.4, which translates to 62.6% of the theoretical duration (Table 78).

Table 78: Reported duration of general food ration 1

Average number of days the food ration lasts (Standard deviation or 95% CI)	Average duration (%) in relation to the theoretical duration of the ration*
19.4 (18.4-20.5)	62.6%

**Intended duration =31 days

Negative coping strategies are shown in Table 78. The main coping mechanism was reduction of frequency/quantity of meals, with a much lower proportion of households reporting begging and much fewer reporting selling of assets and increased remittances.

5.8.2 Negative coping strategies results

Table 78: Coping strategies used by the surveyed population over the past month

	Number/total	% (95% CI)
Proportion of households reporting using the following coping strategies over the past month*:		
Borrowed cash, food or other items *with or without interest*	117/278	42.1 (28.1-56.1)
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)	32/277	11.6 (3.1-20)
Requested increased remittances or gifts as compared to normal	24/277	8.7 (2.1-15.3)
Reduced the quantity and/or frequency of meals	173/278	62.2 (48.6-75.9)

Begged	141/277	50.9 (36.7-65.1)
Proportion of households reporting using none of the coping strategies over the past month	47/287	16.4 (5.7-27.1)

5.8.3   Household dietary diversity results

The average household dietary diversity (Table 79) score was 4.8 (4.4-5.1, 95% C.I).

Table 79: Average HDDS

	Mean (95% C.I)
Average HDDS*	4.8 (4.4-5.1, 95% C.I)

* Maximum HDDS is 12.

The proportion of households consuming cereals, vegetables and pulses was high.
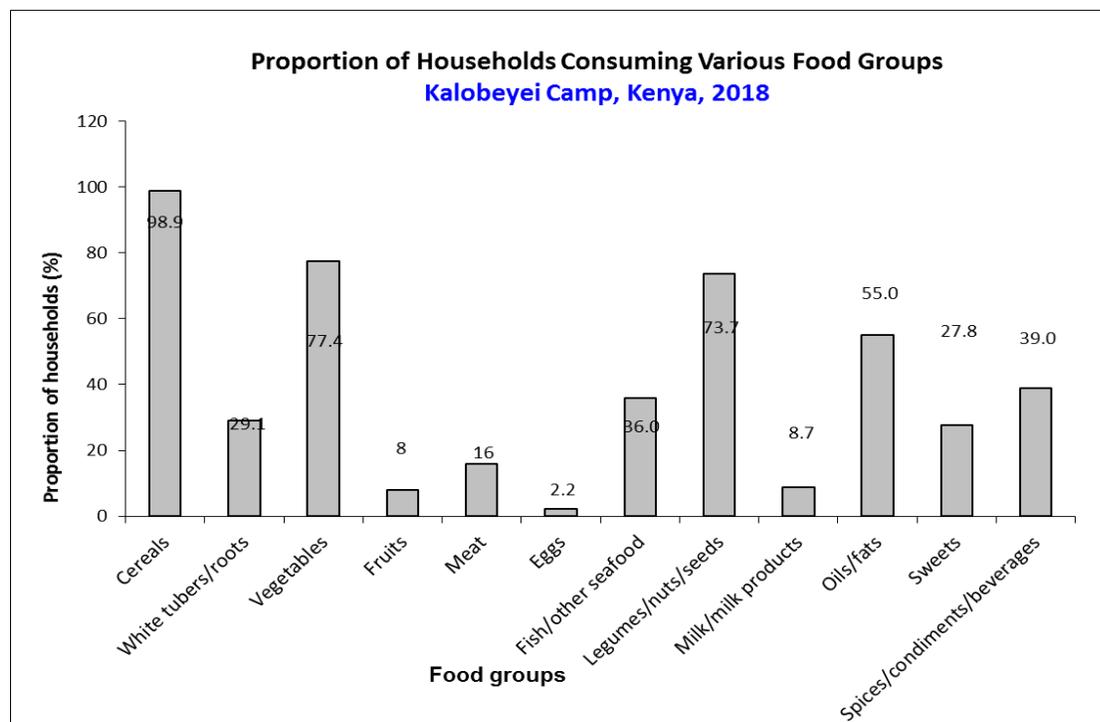
Figure 32: Proportion of households consuming different food groups within last 24 hours

Less than a quarter of households consumed plant or animal sources of Vitamin A, and just under a fifth consumes food sources of haem iron (Table 80).

Table 80: Consumption of micronutrient rich foods by households

	Number/total	% (95% CI)
Proportion of households *not consuming any* vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	26/287	9.1 (3.7-14.4)
Proportion of households consuming either a plant or animal source of vitamin A	179/287	62.4 (50.3-74.4)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	106/287	36.9 (23.6-50.3)

5.9 WASH

The table below shows total number of household interviewed for the WASH module (Table 81).

Table 81: WASH information

Household data	Planned	Actual	% of target
Total households surveyed for WASH	579	561	96.9%

All households reported use of an improved drinking water source (Table 82).

Table 82: Water Quality

	Number/total	% (95% CI)
Proportion of households using an improved* drinking water source	561/561	100%
Proportion of households that use a covered or narrow necked container for storing their drinking water	412/554	73.1% (62.9-85.8)

*According to UNHCR's SENS Improved drinking water sources are; public tap/standpipe, protected dug well or rain-water collection. All other sources were considered un-improved.

The average number of litres used per person per day was 16.7 (14.8-18.6, 95% C.I), which falls below the target of 20 (Table 83).

Table 83: Water Quantity: Amount of litres of water used per person per day

Proportion of households that use:	Number/total	% (95% CI)
≥ 20 lpppd	187/556	33.3 (26.0-40.7)
15 – <20 lpppd	75/556	13.4 (10-16.8)
<15 lpppd	299/556	53.3 (45.6-61.1)
Average water usage per Lpppd mean (95% C.I)	17.9	

Only 54.6% (43.2-65.9, 95% C.I) of households were satisfied with the water supply (Table 84).

Table 84: Satisfaction with water supply

	Number/total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	306/561	54.6 (43.2-65.9)

The reason for lack of satisfaction for 66.3% of those who were not satisfied was "not enough", followed by "bad taste" (Figure 33).
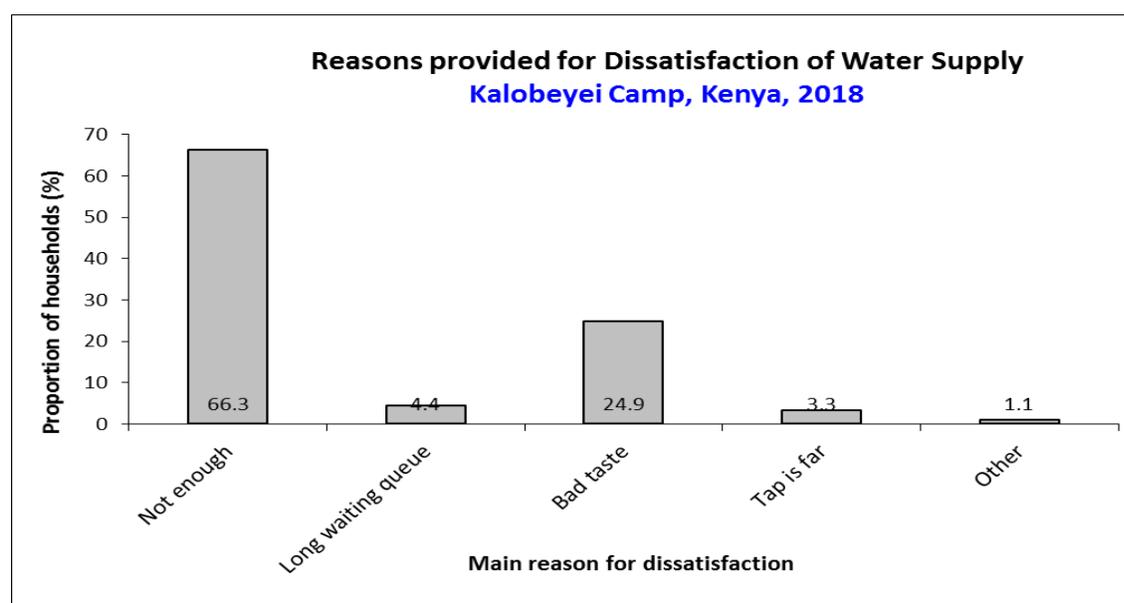
Figure 33: Main reason for dissatisfaction among households is not satisfied with water supply

Only 62.7% (0.5-5.2, 95% C.I) of households were using an improved excreta disposal facility, as about one third were using a communal toilet (3 or more households sharing). 62.7% (48.4-77) of households safely disposed the faeces of children below 3 years (Table 85).

Table 85: Safe excreta disposal

	Number/total	% (95% CI)
Proportion of households that use:		
An improved excreta disposal facility (improved toilet facility, 1 household)*,**	24/181	13.3 (5.1-21.5)
A shared family toilet (improved toilet facility, 2 households)**	38/181	21 (10.9-31.1)
A communal toilet (improved toilet facility, 3 households or more)	53/181	29.3 (19.6-39)

An unimproved toilet (unimproved toilet facility or public toilet)	66/181	36.5 (24.6-48.4)
Proportion of households with children under three years old that dispose of faeces safely	84/134	62.7 (48.4-77)

5.10 Mosquito Net Coverage

The table below shows the total number of households covered in the mosquito net coverage.

Table 86: Mosquito net coverage information

Household data	Planned	Actual	% of target
Total households surveyed for mosquito net coverage	289	276	95.5%

Table 87: Household mosquito net ownership

	Number/total	% (95% CI)
Proportion of total households owning at least one mosquito net of any type	248/276	89.9 (82.8-96.9)
Proportion of total households owning at least one LLIN	247/276	89.5 (82.4-96.6)

Of the sampled households, 89.9% (82.8-96.9, 95% C.I) owned at least one mosquito net of any type, and 89.5% (82.4-96.6, 95% C.I) owned at least one LLIN (Table 87, and Figure 34 and 35).

Proportion of Households with at least one Mosquito Net (any type)
Kalobeyei Camp, Kenya, 2018

Households with no mosquito net
10.1%

Households with at least one mosquito net
89.9%
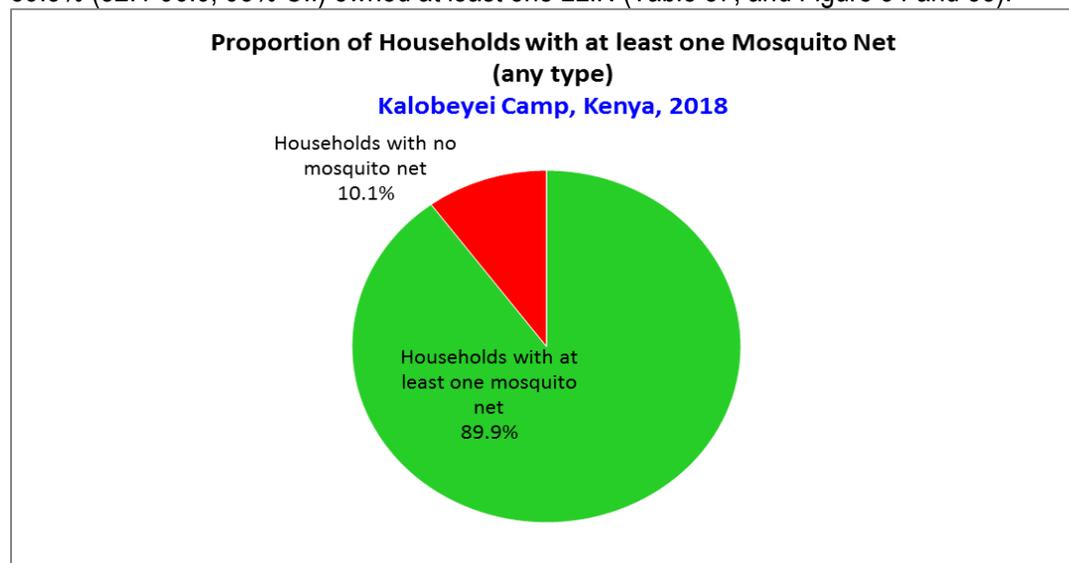
Figure 34: Household ownership of at least one mosquito net (any type)
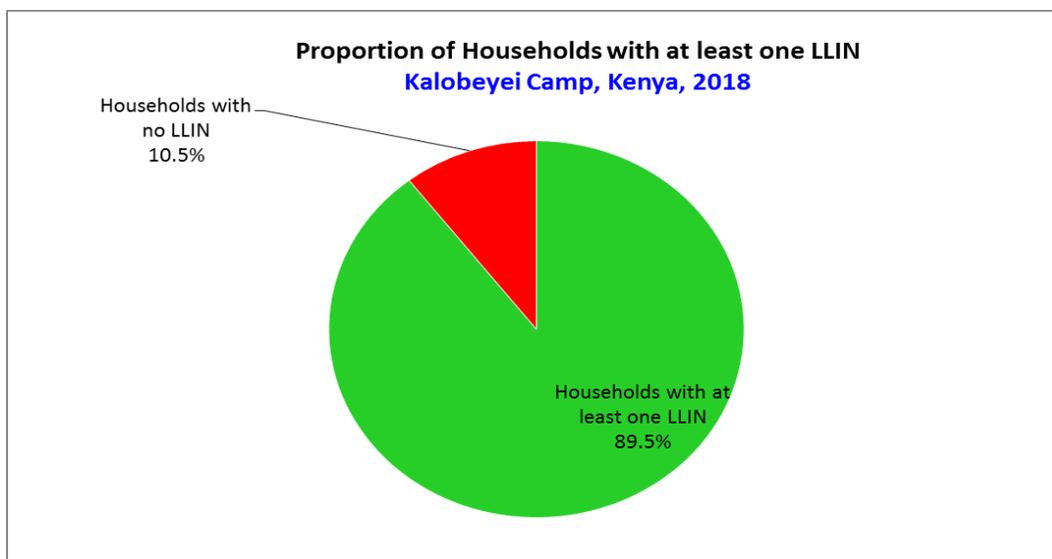
Figure 35: Household ownership of at least one Long-Lasting Insecticide Net (LLIN)

There was an average of 2.2 LLIN per household and 3 persons per LLIN, which was above the recommended 2 per househols (Table 88).

Table 88: Number of nets

Average number of LLINs per household	Average number of persons per LLIN
2.2	3.0

Mosquito net utilisation is shown in Table 93 and Figure 36. Out of the total population, 47.1% had slept under a net of any type, with 45.2% sleeping under a LLIN. For children below 5 years and pregnant women, 59.6% and 71.0% slept under a LLIN, respectively.

Table 89: Mosquito net utilisation.

	Proportion of total population (all ages)		Proportion of 0-59 months		Proportion of pregnant women	
	Number /total	%	Number /total	%	Number /total	%
Slept under net of any type	1292/1605	80%	310/330	94%	17/17	100%
Slept under LLIN	1288/1292	80%	310/330	94%	17/17	100%
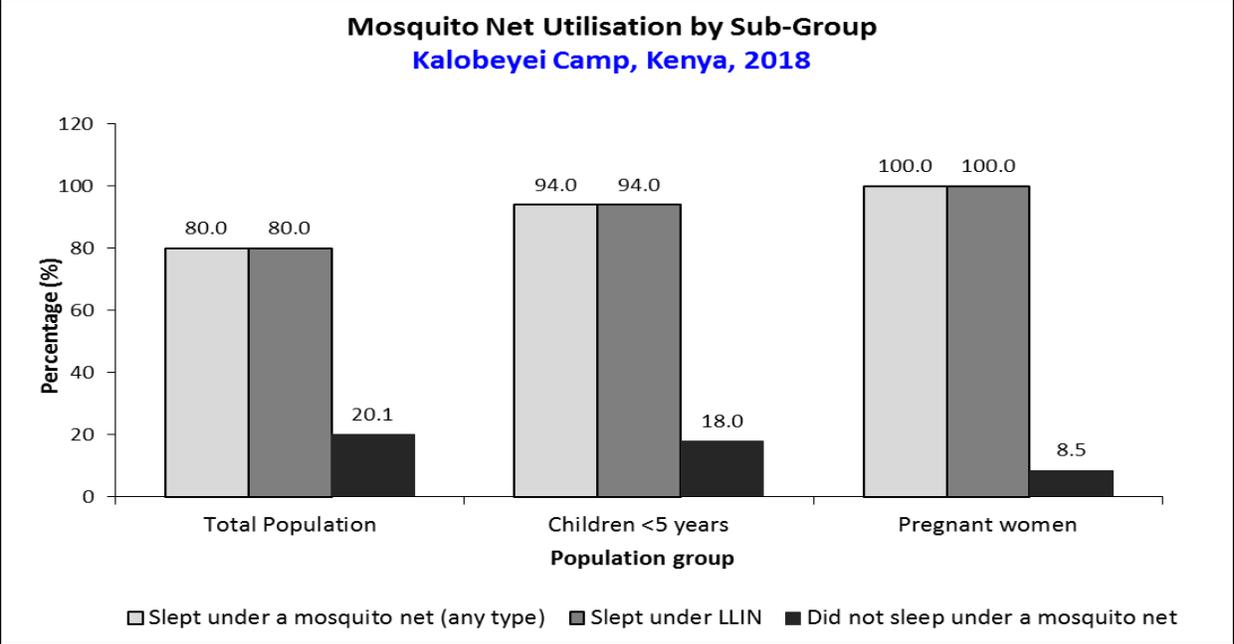
Figure 36: Mosquito net utilisation by sub-groups

Only 17% (5.4-28.7, 95% C.I) of households reported indoor residual spraying.

Table 94Indoor Residual Spraying

	Number/total	% (95% CI)
Proportion of households covered by IRS	47/276	17 (5.4-28.7)

6 LIMITATIONS

- **Data quality:** The overall quality of the data collected was good as indicated by the ENA plausibility score of 4% (see **Annex 1)**. The majority of negative points were due to the overall age distribution. There were considerably less children in the 54-59 month age group as frequently seen in Kakuma nutrition surveys.

- **Accuracy of population data:** UNHCR's ProGres data was used for planning and cluster selection. Specific to Kalobeyei, Census data that was conducted by KRCS was used to give actual population and number of households in each neighbourhood.

- **Programme coverage for women:** The coverage of ANC enrolment of and iron and folic acid supplementation to pregnant women should be interpreted with caution due to the small number of beneficiaries that were sampled during the survey.

- **Languages:** Efforts were made to ensure that each team was made up of individuals who could speak each of the languages within the Kakuma Refugee Camp. In some rare cases, none of the team spoke the household language, and were instead reliant on the block leaders within the daily survey clusters for translation which may have introduced inaccuracies in interpretation.

18   DISCUSSION

18.1   *Nutritional status of young children*

- The prevalence of GAM in Kakuma was 12.7 % (9.1– 17.4 95% C.I.) with 2.3% severe acute malnutrition (SAM) in 2018 compared to GAM prevalence of 10.6% (7.8-14.3 95% C.I.) with SAM prevalence of 0.8% in 2017 which shows an increase in GAM and significant rise in SAM from 2017 though not statistically significant. Trends analysis shows that the prevalence of GAM in Kakuma in 2015 -2016 has been between 10 -14 percent indicating serious nutrition situations as per WHO classification, whereas in previous years 2010-2014, the prevalence of GAM has been 5-9 percent classified as poor nutrition situation. Kalobeyei GAM prevalence was 9.3% (7.0- 12.2 95% C.I.) classified as poor nutrition situation an increase from 2017 GAM prevalence of 5.8% (3.8 -8.9 95% C.I.) may attributed to the pipeline break of the protective rations to children of age category 6 to 23 months and Corn Soya blend for the entire population. In addition, an upsurge in morbidity: Malaria, Watery diarrhoea and cholera was experienced during the year. The acceptable level for GAM prevalence is lower than 5% which is the acceptable range as per WHO classification.

- In Kakuma the highest prevalence of severe wasting was seen in the 18 - 29 months age group at 4.1 %. This is different from the results of the previous survey where highest prevalence was seen in the 54 - 59 months age group at 3.1% of children affected.

- In Kalobeyei the highest prevalence of severe wasting was seen in the 6 - 17 months age group at 4.8%.

- Oedema cases was absent in both Kakuma and Kalobeyei this likely shows timely interventions were in place to prevent children deteriorating to severe acute malnutrition with oedema (Kwashiorkor cases).

- The prevalence of stunting in Kakuma was 18% (14.0 – 22.7 95% C.I.), there is slight increase although no statistically significant different compared to 2017 with 15.8% (12.0 – 20.7 95% C.I.).

- In Kalobeyei prevalence of stunting had not significant difference at 27.2% (23.6 – 31.0 95% C.I.) in 2018 compared to 26.2% (21.6 – 31.4 95% C.I) in 2017.

- Stunting could be attributed to inadequate consumption of a nutritious diet, over the years most survey results show limited consumption of fruits, vegetables and animal source food. This year for example only 19.6% consumed animal source foods. Although children 6-23 months are provided with supplements CSB++, it is know that this food is shared among family members therefore may not benefit the child.

- The prevalence of Diarrhoea in past two weeks was 8.9% (5.4 -12.4) in Kakuma and 9.0% (4.7-12.2) in Kalobeyei compared to last year's prevalence in Kakuma was 21.5% (15.5 -27.5) and 13.8% (9.6-18.0) in Kalobeyei. The difference for Kakuma is statistically significant but the reduction in Kalobeyei is not statistically significant. Diarrhoea is often associated with poor sanitation practices and the quality and coverage of water and sanitation resources. There has been an improvement in water access as compared to previous years. 96.2% of the households use water from the borehole (protected water source) as their main source of drinking water. A small minority 3.8% households responded to be fetching water from the dry bed. This indicates that the beneficiaries with access to adequate water surpassed 95% target against a baseline of 90% (NRC WASH KAP survey December 2018)

18.2 Prevalence of intake

Prevalence of Blanket Supplementary Feeding Programme

- In Kakuma 54% of children aged 6 -23 months consumed CSB+ whereas 22.7% of the same age group consume CSB++ compared to 8.7% and 78.7% consumed CSB+ and CSB++ respectively in 2017. In Kalobeyei about 59.1% consumed CSB+ and 16.7% consumed CSB++ compared to quarter of this age group in 2017 consumed CSB+ and 84.9% consumed CSB++. Reduction in consumption of CSB++ is attributed to pipeline break of this commodity for almost the whole of 2018.

- The coverage of measles vaccination in both Kakuma (99.4%) and Kalobeyei (81.6%) in comparison to 2017 when Measles coverage was 96.3% in Kakuma and 77.6% in Kalobeyei. the standard of >95%. The coverage of Vitamin A supplementation in both was 97.8% in Kakuma and 92.5% in Kalobeyei. Improvement has been made on documentation of measles vaccination in 2018; 77.6% in Kakuma and 81.6% was verified by a card compared to Kakuma 41% and Kalobeyei 47.8% in 2017. Vitamin A has also improved in documentation: 50.7% in Kakuma and 58.6% in Kalobeyei could be verified by card up from Kakuma 15.9% and Kalobeyei 21.4% in 2017.

- The coverage for ANC enrolment remain unchanged in Kakuma at 94.4% as compared to 95.7% in 2017. Significant drop was observed in Kalobeyei at 68.8% from 100% in 2017, for iron folic acid pills is 88.9% for Kakuma and 75%% for Kalobeyei. In 2017 the Iron folic acid pills coverage was 82.6% for Kakuma and 100% for Kalobeyei.

Anaemia in young children and women

- Prevalence of anemia in children 6-59 months was 46.7 %(39.3 – 54.2 95% C.I) in Kakuma and 56% (51.6 - 60.5 95% C.I) in Kalobeyei compared to 59.2 % and 57.8% in Kakuma and Kalobeyei respectively in 2017. The difference is not statistically significant for Kakuma however the increase is significant for Kakuma. Anaemia prevalence levels are above the critical public health threshold of >40% which indicate that anaemia continues to be a major public health problem in Kakuma refugee camp and Kalobeyei Refugee settlement which uncovers the existing problem with micronutrient deficiency as Anaemia is used as a proxy indicator for micronutrient situation. However, the vitamin C deficiency (scurvy) outbreak among South Sudanese adolescent boys who are living as a group in Kakuma during early 2018 is an indication that there are other micronutrient deficiencies as well among refugee population. Low dietary diversity minimizes the intake of nutrients such as iron and Vitamins, additionally diseases such as Malaria affect iron absorption. The prevalence of anaemia is significantly high among children aged 6-23 months group in both the locations 66.7% in Kakuma and 77.3% in Kalobeyei. There is urgent need for targeted support in ideally, food vouchers to enhance dietary for this age group and increase the coverage and utilization of fortified food (CSB++). Micronutrient supplementation for children and adolescents need to be considered
- Anaemia prevalence among non-pregnant women aged 15-49 years was 41.8% for Kakuma and 27.5% for Kalobeyei. Compared to November 2017 results that observed 38.5% in Kakuma and 34.2%. The difference was not statistically significant. The results are below the 40% of

WHO/UNHCR threshold for critical prevalence, but still between the 20-39% for medium public health significance.

- There is need for nutrition sensitive interventions in order to address the micronutrient deficiency problem in Kakuma and Kalobeyei. Households use food voucher primarily for buying cereals, as a result the purpose of the food voucher to enable dietary diversity is diluted.

18.3 IYCF indicators

- Children 0-23 months are most vulnerable to the detrimental effects of malnutrition, at this age there is a rapid growth spurt and lack of adequate nutrition may result in growth retardation. As shown in this survey, the stunting rate was at 18% and 27.2% in Kakuma and Kalobeyei respectively a slight increase in both sites. Proper infant and young child feeding practices goes a long way in preventing this.

- It is important to note that the IYCF sample for this survey was drawn from ENA for SMART sample size calculation for acute malnutrition. In order to calculate prevalence of IYCF indicators, each age group should have a representative sample size. The surveys main objective was to determine the rate of malnutrition. Time constraints and numerous indicators assessed in the survey would not have allowed for this type of sampling to be done. The IYCF sample is therefore underrepresented. As such these results will give us a general overview of the situation but not an accurate assessment.

- Timely initiation of breastfeeding is important as, the first milk, colostrum, contains antibodies which help to build a child's immune status. In November2018, timely initiation was 44% and 68.5% in Kakuma and Kalobeyei and this was deterioration as compared to the November 2017 at 82.4% and 85% in Kakuma and Kalobeyei respectively. These results are indicative of weak integration of MIYCN in maternity wards and limited training of mid wives to support initiation immediately after birth. There is also reduced awareness by mothers on importance of early start to breastfeeding and barriers to practicing the knowledge acquired by the mothers. There are Mother to Mother Support Groups in existence, although it does not cover the entire camp, this results should encourage scale up of this type of intervention.

- The rate of exclusive breastfeeding was 84.6% and 91.2% for Kakuma and Kalobeyei respectively which is a reduction for Kakuma from 86% and increase for Kalobeyei from 84.1% in 2017. The confidence intervals however overlap therefore the difference is not statistically significant. Exclusive breastfeeding should be highly encouraged as it helps to build a child's immunity. It is also a cheap, highly nutritious and hygienic way of feeding a child.

- Consumption of iron rich foods was 49.8% for Kakuma and 36.9% for Kalobeyei, a significant reduction as compared to the previous survey which had 80.6% for Kakuma and 86.6% for Kalobeyei. CSB++ was the biggest contributor to the iron rich food as the food security and dietary diversity data show low consumption of protein and micronutrient rich foods.

- There was huge increase in respondents that bottle-fed their children 15.3% in Kakuma and 9.5% in Kalobeyei deterioration as compared to 2017 which had 5.2% for Kakuma and 3.2% for Kalobeyei. This is trends requires immediate intervention to reverse it at both facility and community levels.

18.4 Food security

- The average number of days that the food ration lasted was 18 days for Kakuma and 19.4 days for Kalobeyei out of the 31 days. This meant that 12 - 13 days were spent without food from GFD. In the November 2016 survey the food ration lasted for 16.4 days in Kakuma and 18.4 days for Kalobeyei. Market prices of food is quite high in this region in comparison to the value of Bamba chakula food voucher. Additionally, food is sold off to meet other needs such as buying fuel or non-food items.
- A small proportion of the population did not consume micronutrient rich foods in Kalobeyei at 9.1% as compared to Kakuma where 10.5% did not consume micronutrient rich foods as compared to 2017, In Kakuma, 15.7% and Kalobeyei 40.6% consumed micro nutrients rich foods
- The proportion of the households that did not use any negative coping strategy was 30.7% in Kakuma and 16.4% in Kalobeyei as compared to 20.7% for Kakuma and 15.7% for Kalobeyei in 2017. This could possible indicates that there is an improvement in food availability in household levels as more families are not practicing coping mechanism. The most common negative coping strategies are reduced quantity and frequency of meals at 62.2% in Kakuma and 44.6% in Kalobeyei followed by begged at 50.9% in kakuma and 26.7% in Kalobeyei.
- For household dietary diversity, the average diversity was 5.4/12 foods for Kakuma and 4.8/12 foods for Kalobeyei. This was higher than in 2017 where HDDS score for Kakuma was 4/12 foods and Kalobeyei 4.5/12 foods. The most commonly consumed food were cereals, followed by vegetables and pulses. Least consumed were fruits, eggs and milk/milk products. This could be due to increased prices of these products in Kakuma and Kalobeyei markets and also explain the low consumption of micronutrients observed among children and women.

18.5 WASH

- Adequate water, good sanitation and hygiene practices are essential for health. Nutritional status deteriorates with poor sanitation. Diarrhoea is mainly caused by contaminated water sources and poor sanitary practices.
- The proportion of households with access to an improved drinking water source was at 100% in both Kakuma and Kalobeyei.
- The proportion of households with a Narrow necked container was 74.4%% in Kakuma and 73.1% in Kalobeyei, a reduction as compared to at 86.6% and 81% for Kakuma and Kalobeyei respectively in 2017.
- The proportion of household with less than 15 lpppd was 44.8% and 53.3% in Kakuma and Kalobeyei respectively which is a slight reduction in Kakuma from 51.6% and a slight improvement in Kalobeyei from 54.3% in 2017.
- In Kakuma, only 36.7% and 54.6% in Kalobeyei reported being satisfied with water supply compared to 37.9% and 30.6% in Kakuma and Kalobeyei respectively in 2017. Those dissatisfied with water supply cited the main reason as insufficiency (74.8% and 66.3% for Kakuma and Kalobeyei) and water having bad taste. In 2017 this same reason was reported in Kakuma thus shows that problems associated with inadequate water supply still persist in the camps.
- The proportion of households that used an improved excreta facility was 67% and 13.3% in Kakuma and Kalobeyei respectively compared to 56.4% and 2.8% in Kakuma and Kalobeyei respectively 2017. There is improvement in both sites. About 12.5% in Kakuma and 21% in Kalobeyei shared family toilet with two other households compared to 21% in Kakuma and 17.6% in Kalobeyei in 2017.

- The proportion of households that had an unimproved toilet facility was 7.2% in Kakuma and 36.5% in Kalobeyei a significant increase from 3.8% and 4% in Kakuma and Kalobeyei respectively in 2017. This is a strong an indication of overstretched facilities.
- Safe disposal of excreta is an important preventative measure against the contamination of water supplies or the food chain. The safe disposal of children's faeces is of particular importance because children's faeces are the most likely cause of faecal contamination to the immediate household environment. "Safe" is understood to mean disposal in a safe sanitation facility or by burying. In 2018 the proportion of households that safely disposed the faecal waste of children under 3 was: in Kakuma 98.5% and 62.7% in Kalobeyei as compared to the previous survey that had 96.5% in Kakuma and 98.9% in Kalobeyei. NRC is responsible for solid and liquid waste management, vector and pest control, sanitation, food quality monitoring hygiene promotion. The design of latrines in Kakuma and Kalobeyei which has a narrow pit to support the slab without using additional reinforcement materials limits the volume of the pit and a serious latrines fill up at a faster rate than they get replaced.

18.6 Mosquito net coverage

- A total of 94.9% in Kakuma and 89.5% in Kalobeyei owned at least one LLIN mosquito net in 2018 as compared to 73.3% and 53.6% respectively in 2017. Additionally, in Kakuma 88%, 98% and 100% of all households, children 0-59 months and pregnant women respectively slept under an insecticide treated mosquito net compared to 58.6%, 74.7% and 96.2% in 2017. In Kalobeyei, 80%, 94% and 100% of all households, children 0-59 months and pregnant women respectively slept under an insecticide treated mosquito net compared to 45.2%, 59.6% and 71% in 2017. This results is below the >80% recommended by UNHCR and a significant improvement due to a blanket distribution of core relief Items to the general population in 2018.
- Additionally, there was an average of 2.8 and 2.2 mosquito nets per household in Kakuma and Kalobeyei respectively in comparison to 1.8 and 1 mosquito nets per household in Kakuma and Kalobeyei respectively in 2017. Average number of persons per LLIN was 6.6 and 3 for Kakuma and Kalobeyei respectively. This was below the UNHCR target of <2 people per mosquito net. The incidence of malaria as well as mortality associated with malaria continued being high in 2018, during the rainy season in particular.

19 CONCLUSION

The results of the survey shows there has been no significant change in the public health and nutrition situation at the Kakuma Refugee Camp but   increased trends in the prevalence of global acute malnutrition with an increase in the prevalence of severe acute malnutrition, the prevalence of anaemia remains above 40% of public health significance among children aged 6-59 months, and non-pregnant women aged 15-49 years in Kakuma. However, the increased trends in GAM prevalence and anaemia are public health concerns and requires to the addressed through inter-agency multi-secroral intervaentions.

Dietary diversity is higher in Kalobeyei as compared to Kakuma and has improved in the two survey sites as compared to 2016.

There is noted areas of deterioration mainly associated with strain of resources, this mostly affected WASH and Mosquito net and food Security. Given the situation in 2016, intervention put in by agencies in ground

seem to have worked otherwise the situation would have been worse. More efforts will be required to maintain and strengthen existing programmes and activities; and to reduce under nutrition to acceptable levels (according to WHO classifications this is <5% for wasting, <20% for stunting and <20% for anaemia), whilst continuing to protect the nutritional well-being and health of the general population.

Documentation process for this should be improved, there is a high percentage of children whose vaccination, vitamin A supplementation could not be confirmed by card. To ensure adequate coverage good records should be maintained. There need for continued screening and active case finding of malnourished children, as shown the coverage is not up to the recommended standard.

Anaemia prevalence among children aged 6-59 months remains at the above 40% threshold for critical, more specifically significantly high among children aged 6-23 months (66.7% and 77.3% in Kakuma and Kalobeyei). Women anaemia status increased to above 40% of public health significance in Kakuma, while lowers than 40% in Kalobeyie but still relatively high. Although a number of intervention are in place to combat malnutrition such as providing CSB++ to children and CSB to pregnant and lactating women, check and balances should be in place to ensure that this products are consumed by intended persons. Additionally a scale up of kitchen gardening programmes to ensure they reach all parts of the camp. One of the major setbacks for this programme is lack of land and inadequate water supply, more support should be provided to the kitchen gardening programme.

IYCF indicators showed a poor timely initiation of breastfeeding, continued breastfeeding and timely introduction of solid and semisolid foods. However exclusive breastfeeding rates and consumption of iron rich foods was high. Continuation of and scaling up of programmes such as MTMSG, hygiene promotion, ANC and other education related programmes would be beneficial. Focus should be on improving infant and young child feeding indicators.
 There was poor dietary diversity as shown in previous surveys and the population primarily consumed cereals due to affordability. Continued provision of GFD and BSFP will prevent the situation from deteriorating.

WASH indicators, especially those associated with excreta disposal showed a decline. It shows that the high population as a results of the refugee influx has strained existing resources and there is need for a scale up of resources to meet the needs of the growing population.

Mosquito net coverage continues to deteriorate, as no nets have been distributed in the last two year most household did not have adequate coverage except for pregnant women who are provided with nets. This is important as malaria continues to be one of the leading causes of morbidity. Mosquito net coverage needs to be addressed as the available nets are old and worn out with no replacement.

20   RECOMMENDATIONS AND PRIORITIES

Immediate

- Strengthen or enhance nutrition education and information dissemination to strengthen active case finding, referral and treatment of SAM and MAM cases. Additionally enhance community sensitization of on diversification of household dietary intake.
- Intensify screening, detection, referral and treatment of severe anaemic cases and in addition to continue with screening and referral for other micronutrients deficiency such as scurvy.
- Health partners to strengthen MIYCN support at the two maternities and improve timely initiation to breastfeeding and UNHCR to coordinate interventions to support the 1000 days approach through implementation of UNHCR multi-sectoral IYCF framework for action.
- WFP to improve on pipeline of CSB++ for children age between 6 to 23 months in order to provide protective rations with additional kilocalorie and essential micronutrients: Calcium and Iron.
- Provide targeted nutrition support to households with children, adolescents, persons with chronic illnesses, elderly and persons with disabilities to promote intake of nutrient rich foods and address micronutrient deficiencies such as Anemia and Scurvy that is prevalent among this age group
- Ensure increased awareness and sensitization for proper use of Food voucher (BAMBA CHAKULA) to ensure dietary diversity. This can be achieved through household visits, education, BSFPand mother-to-mother support groups
- Improvement of prevention and treatment of malaria should be prioritised as there high mortality rates associated with malaria.
- NRC to strongly advocate for malaria prevention activities such as indoor residual spraying (IRS) in order to control the high prevalence of Malaria observed in 2017.
- Peace winds to improve the latrine coverage and continue with health education activities in Kalobeyei in order prevent the occurrence of diarrhea.

Medium term

- Livelihood partners to prioritize target households with children, adolescents, persons with chronic illnesses, elderly and persons with disabilities to develop their skill and capacity that will consequently improve the dietary diversity at household level.
- Health and nutrition partners to continue and scale up MTMSG's to improve infant and young child feeding practices and link growth monitoring to monitor the outcome.
- WASH partners to continue with Knowledge Attitude and Practice (KAP) survey which provides useful information to support nutrition findings.
- NRC to continue with installation, coverage and maintenance of household latrines. Attention needs to be paid to Kalobeyei village 3.

Long term

- Continue to Improve and scale up the livelihood opportunities for the refugees through development-oriented initiatives to improve their economic status
- All partners to improve monitoring of programmes to aid with end-term impact evaluations
- Health partners to maintain integrated approach to programming, and ensure sufficient training for new Health Workers and timely re-fresher training where necessary

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Annex 1: SMART Plausibility check report
Overall data quality :Kakuma

```
Criteria                 Flags* Unit  Excel. Good    Accept  Problematic  Score

Flagged data             Incl    %    0-2.5 >2.5-5.0 >5.0-7.5   >7.5
(% of out of range subjects)            0     5       10         20       5 (2.8 %)

Overall Sex ratio        Incl    p    >0.1  >0.05    >0.001    <=0.001
(Significant chi square)                0     2        4         10       0 (p=0.964)

Age ratio(6-29 vs 30-59) Incl    p    >0.1  >0.05    >0.001    <=0.001
(Significant chi square)                0     2        4         10       4 (p=0.013)

Dig pref score - weight  Incl    #    0-7   8-12     13-20      > 20
                                        0     2        4         10       0 (3)

Dig pref score - height  Incl    #    0-7   8-12     13-20      > 20
                                        0     2        4         10       0 (4)

Dig pref score - MUAC     Incl    #    0-7   8-12     13-20      > 20
                                        0     2        4         10       0 (7)

Standard Dev WHZ         Excl    SD   <1.1  <1.15    <1.20     >=1.20
.                                      and   and      and        or
.                        Excl    SD   >0.9  >0.85    >0.80     <=0.80
                                        0     5       10         20       0 (1.03)

Skewness  WHZ            Excl    #    <±0.2 <±0.4    <±0.6     >=±0.6
                                        0     1        3          5       0 (-0.14)

Kurtosis  WHZ            Excl    #    <±0.2 <±0.4    <±0.6     >=±0.6
                                        0     1        3          5       0 (-0.09)

Poisson dist WHZ-2       Excl    p    >0.05 >0.01    >0.001    <=0.001
                                        0     1        3          5       1 (p=0.012)

OVERALL SCORE WHZ =                   0-9   10-14    15-24      >25       10 %
```

The overall score of this survey is 10 %, this is good.

Overall data quality: Kalobeyei

```
Criteria                 Flags* Unit  Excel. Good    Accept  Problematic  Score

Flagged data             Incl    %    0-2.5 >2.5-5.0 >5.0-7.5   >7.5
(% of out of range subjects)            0     5       10         20       0 (0.5 %)

Overall Sex ratio        Incl    p    >0.1  >0.05    >0.001    <=0.001
(Significant chi square)                0     2        4         10       0 (p=0.225)

Age ratio(6-29 vs 30-59) Incl    p    >0.1  >0.05    >0.001    <=0.001
(Significant chi square)                0     2        4         10       2 (p=0.055)

Dig pref score - weight  Incl    #    0-7   8-12     13-20      > 20
                                        0     2        4         10       0 (4)

Dig pref score - height  Incl    #    0-7   8-12     13-20      > 20
                                        0     2        4         10       0 (4)

Dig pref score - MUAC     Incl    #    0-7   8-12     13-20      > 20
                                        0     2        4         10       0 (5)

Standard Dev WHZ         Excl    SD   <1.1  <1.15    <1.20     >=1.20
.                                      and   and      and        or
.                        Excl    SD   >0.9  >0.85    >0.80     <=0.80
                                        0     5       10         20       0 (1.01)

Skewness  WHZ            Excl    #    <±0.2 <±0.4    <±0.6     >=±0.6
                                        0     1        3          5       0 (-0.18)

Kurtosis  WHZ            Excl    #    <±0.2 <±0.4    <±0.6     >=±0.6
                                        0     1        3          5       0 (0.11)

Poisson dist WHZ-2       Excl    p    >0.05 >0.01    >0.001    <=0.001
                                        0     1        3          5       0 (p=0.243)

OVERALL SCORE WHZ =                   0-9   10-14    15-24      >25       2 %
```

The overall score of this survey is 2 %, this is excellent.

Calendar of events 2018

Religious holiday	Local event /Other event	Somali Calendar	Month/ year	Age
	Malezi bora/ mass MUAC screening	Zako	November 2018	0
		Arafa	October 2018	1
End of Ramadhan		Sigalal	September 2018	2
Beginning of Ramadhan		Soon fur	August 2018	3
		Soon	July 2018	4
	World Refugee day	Shaba'an	June 2018	5
	Malezi bora/ mass MUAC screening	Rajab	May 2018	6
		Jamadul akhir	April 2018	7
		Jamadul awal	March 2018	8
		Malmadone	February 2018	9
		Mowlid	January 2018	10
		Safar	December 2017	11
	Malezi bora/ mass MUAC screening	Zako	November 2017	12
	Kenya election 2	Arafa	October 2017	13
End of Ramadhan		Sigalal	September 2017	14
Beginning of Ramadhan	Kenya election 1	Soon fur	August 2017	15
		Soon	July 2017	16
	World Refugee day	Shaba'an	June 2017	17
	Malezi bora/ mass MUAC screening	Rajab	May 2017	18
		Jamadul akhir	April 2017	19
		Jamadul awal	March 2017	20
		Malmadone	February 2017	21
		Mowlid	January 2017	22
		Safar	December 2016	23
	U.S general elections: Trump won	Zako	November 2016	24
	Mass mosquito net distribution; Verification of population	Arafa	October 2016	25
End of Ramadhan	Bamba chakula event	Sigalal	September 2016	26
Beginning of Ramadhan	Electric poles installed in Kakuma	Soon fur	August 2016	27
	Fight breaks in	Soon	July 2016	28

	Sudan; Obama visit to Kenya			
	Kenya red-cross start health services in Kalobeyei; World Refugee day	Shaba'an	June 2016	29
	Opening of Kalobeyei camp; -World refugee day; - Refugee settlement in Kalobeyei camp; -Fights between Turkana and Somali.	Rajab	May 2016	30
	Opening of IRC general hospital	Jamadul akhir	April 2016	31
		Jamadul awal	March 2016	32
	Protests of Oromo against the Ethiopian government	Malmadone	February 2016	33
		Mowlid	January 2016	34
		Safar	December 2015	35
	South Sudan fighting	Zako	November 2015	36
		Arafa	October 2015	37
End of Ramadhan		Sigalal	September 2015	38
Beginning of Ramadhan		Soon fur	August 2015	39
		Soon	July 2015	40
	World Refugee day	Shaba'an	June 2015	41
	Malezi bora/ mass MUAC screening	Rajab	May 2015	42
		Jamadul akhir	April 2015	43
		Jamadul awal	March 2015	44
		Malmadone	February 2015	45
		Mowlid	January 2015	46
		Safar	December 2014	47
	Malezi bora/ mass MUAC screening	Zako	November 2014	48
		Arafa	October 2014	49
End of Ramadhan		Sigalal	September 2014	50
Beginning of Ramadhan		Soon fur	August 2014	51
		Soon	July 2014	52
	World Refugee day	Shaba'an	June 2014	53
	Malezi bora/ mass	Rajab	May 2014	54

		MUAC screening		
		Jamadul akhir	April 2014	55
		Jamadul awal	March 2014	56
		Malmadone	February 2014	57
		Mowlid	January 2014	58
		Safar	December 2013	59

Nutrition Survey Questionnaires November 2018

UNHCR Standardized Expanded Nutrition Survey (SENS) Questionnaire
Kakuma Nutrition Survey, November 2018

Greeting and reading of rights:

This statement is to be read to the head of the household or, if they are absent, another adult member of the house before the interview. Define a household as a group of people who live together and routinely eat out of same pot. Define head of household as member of the family who manages the family resources and is the final decision maker in the house.

Hello, my name is _____ and I work with *[IRC/KRCS]*. We would like to invite your household to participate in a survey that is looking at the nutrition and health status of people living in this camp.

- UNHCR is sponsoring this nutrition survey.
- Taking part in this survey is totally your choice. You can decide to not participate, or if you do participate you can stop taking part in this survey at any time for any reason. If you stop being in this survey, it will not have any negative effects on how you or your household is treated or what aid you receive.
- If you agree to participate, I will ask you some questions about your family and I will also measure the weight and height of all the children in the household who are older than 6 months and younger than 5 years In addition to these assessments, I will test a small amount of blood from the finger of the children and women to see if they have anaemia.
- Before we start to ask you any questions or take any measurements, we will ask you to state your consent on this form. Be assured that any information that you will provide will be kept strictly confidential.
- You can ask me any questions that you have about this survey before you decide to participate or not.
- If you do not understand the information or if your questions were not answered to your satisfaction, do not declare your consent on this form. Thank you.

1A. Kakuma Nutrition Survey, November 2018, Household Questionnaire- FOOD SECURITY: 1 questionnaire per household (This questionnaire is to be administered to the Main Caretaker WHO IS RESPONSIBLE FOR COOKING THE MEALS).

Kakuma 1/2/3/4/ Kalobeyei:_____   Zone: _____   Block number: _____

Date of interview (dd/mm/yyyy)	Cluster Number	Team Number
|__|__|/|__|__|/ 2017	|__|__|	|__|
Household Number		
|__||__||__|		

No	QUESTION	ANSWER CODES	
SECTION FS1			
FS1	**Consent:**	Yes 1 No 2 Absent …………………….....................3	
FS2	How many people Belong to this Household?		|__|
FS3	Does your household have a Bamba Chakula sim card?	Yes 1 No…. 2	If 1 go to FS8 If 2, go to FS7
FS4	Why does your household not have a sim card?	Not given one at registration 1 Lost card 2 Traded card 3 Not registered but eligible 4 Not eligible 5 Other 98	|__| **GO TO FS 11**
FS5	How many days did your food ration last from the October distribution cycle (general ration and Bamba Chakula)?		|__|__| **IF ANSWER IS 15 DAYS OR MORE GO TO SECTION FS 2**
FS6	What was the main reason the general ration/Bamba Chakula did not last until the end of the month? (for FS5 <31)	Food was sold or exchanged……………1 Shared with kin .2 Ration not big enough, .3 Gave to livestock .4 Lost due to theft….…..………………...5 Lost due to poor storage…………………6 Challenges with using Bamba Chakula…7 Others……………………………98	|__| **IF ANSWER IS 1 GO TO FS 10**
FS7	Now I would like to ask about the food items you bought using Bamba Chakula. Did you buy the following food items?	Cereals (maize, wheat, sorghum, rice, spaghetti, pasta)…………………….…...1 Pulses (peas, beans, lentils) .2 Oil (Vegetable oil etc).3 Sugar .4 Fruits/vegetables…….………….…...5 Milk………………………………….6 Meat, fish………………………7 Tea…………………………………8 Salt……………………………….9 Eggs…………………………10 Drinks/juice………………………11	
FS8	Which other items did you buy using *Bamba Chakula*?		
FS9	In the last month, have you or anyone in your household borrowed cash, food or other items with or without interest? **BRW**	Yes 1 No 2	|__|
FS10	In the last month, have you or anyone in your household sold any assets (furniture, seed stocks, tools, other NFI, livestock etc.)? **SOLD**	Yes 1 No 2	|__|
FS11	In the last month, have you or anyone in your household requested	Yes 1	

		No 2	|__|
FS12	In the last month, have you or anyone in your household reduced the quantity and/or frequency of meals? **LESSMEAL**	Yes 1 No 2	|__|
FS13	In the last month, have you or anyone in your household engaged in potentially risky or harmful activities such as: [e.g **charcoal burning, cutting trees, cross border smuggling**] **RISKYACT**	Yes 1 No 2	|__|
FS14	Do you have one or more children 18 years of age or younger currently living in the household? **CHILD**	Yes 1 No 2	|__| **IF ANSWER IS 2 GO TO SECTION FS2**
FS15	In the last month, have you or anyone in your household sent your child or children of 18 years of age or younger to work outside the household in order to get cash or in-kind goods or services? **CHWORK**	Yes 1 No 2 Don't know 8	|__|
	SECTION FS2		

Now I would like to ask you about the types of foods that you or anyone else in your household ate yesterday during the day and at night. I am interested in whether you or anyone else in your household had the item even if it was combined with other foods.

READ THE LIST OF FOODS AND DO NOT PROBE. PLACE A *ONE* IN THE BOX IF ANYONE IN THE HOUSEHOLD ATE THE FOOD IN QUESTION, PLACE A *ZERO* IN THE BOX IF NO ONE IN THE HOUSEHOLD ATE THE FOOD.

FS16	**1**. **Cereals**: Any wheat, corn/maize, sorghum, rice or any foods made from these (e.g. bread, porridge) *(bread, porridge, chapatti, anjera/kisra, ugali, mandazi, muffo, walwal, dura, azerif, deguk fina, geme,manyiap, laap, bei tin ciw uji, mchele,mandazi,Dabo, kita,gonfo,baso,kiniche, morot,msere, usafu, Canjeero, Camb uulo, Basto, Baris; rooti,Iyo boorash, sarin,* ugali/sor*)*	1………………………......…|__|
	2. **White roots and tubers**: Any green bananas, lotus root, parsnip, plantains, irish potatoes, white yam, white cassava, or other foods made from roots**.***(maboko, mihogo,virungu,magimboi,barada,muth,moos ceyriin, baradho)* **WHTRT**	2………………………......…|__|
	3A. **Vitamin A rich vegetables and tubers**: Any carrot, pumpkin, squash, or sweet potato that are orange inside + other locally available vitamin A rich vegetables (e.g. red sweet pepper) *(karoot nyiwar, kolom, tacmankuar)* **VITAVEG**	3A………………….……|__|
	3B. Dark green leafy vegetables: Any dark green leafy vegetables, including wild forms + locally available vitamin A rich leaves such as amaranth, arugula, cassava leaves, *spinach (Caleen Ambogi/sular, moxogta caleenteeda, cagaaran sida kosta gooman cagaar, sukuma wiki)* **GREENVEG**	3B…………………….……|__|
	3C. **Other vegetables**: Any other vegetables (e.g., cabbage, green pepper, tomato, onion, eggplant, zucchini, okra/) *vegetables (cabbage, biringanya, avocado, okra, sweetcorn, bandol, batho, tamata, basal, kabash, basbas cagaar ton, Baamiye, barbarooni, nyanyo)* **OTHVEG**	3C…………………….……|__|
	4A. **Vitamin A rich fruits**: Any mango (ripe, fresh and dried), cantaloupe melon (ripe), apricot (fresh or dried), ripe papaya, passion fruit (ripe), dried peach, and 100% fruit juice made from A rich fruits*(canbo kartay, cambe,, papaya,)* **VITAFRT**	4A………………….……|__|
	4B. **Other fruits**: Any other fruits such as apple, avocados, banana, coconut flesh, lemon, , including wild fruits and 100% fruit juice made from these *(ananas, tufax, afkadho, moos, liin- iwm)*	4B…………………......…|__|

OTHFRT

5A. **Organ meat**: Any liver, kidney, heart or other organ meats or blood-based foods**.*(cuany,rujk, rok, piu, ber, kilyo, wadna iwm)*

ORGMT

5A……………………..…|___|

5B. Flesh meats: Any beef, goat, lamb, mutton, chicken, duck, doves
or other small wild bush meat *(del,roam,kolombo, riin thok, riin ajith, riim bath hilib xoola sida ari, lo' geel, ida, digaag ama hilib cidood ,hilib qooley-gaaleed).*

FLSHMT

5B……………………..…|__|

6. **Eggs**: Any eggs from chicken, duck, guinea fowl or any other egg *(manpelk, bet/ukun noc kasta)*

EGGS

6……………………….…|___|

7. Fish and seafood: Any fresh or dried fish, canned fish (anchovies, tuna, sardines), or shellfish *(kambale, tuna, omena, chiel, zamak,liec mi kot, makayabo, reec tiop, rec cie rier kaluun, kaluun laqalajijay,, tuna/kaluunka gasacadaha, iwm).*

FISHSF

7……………………......…|___|

8A. Any dried beans, split peas, lentils or foods made from these

PULSGFD

8A……………………..…|___|

8. **8B**.: Any dried peas, lentils, nuts, ground nuts, cowpeas, green grams or foods made from these (eg. hummus, peanut butter), soya beans, kunde seeds

PULSNGFD

8B……………………..…|___|

9. **Milk and milk products**: Any milk, infant formula, cheese, yogurt or other milk products (e.g. goat, camel, cow, fermented milk/yoghurt, powdered milk kiefer, *caano dhamaan, cano fadhi, garoor, susac*)

MILK

9……………………......…|___|

10A.: Vegetable oil

FATSGFD

10A………………….....…|___|

10B.: Any other cooking fat or oil, butter, ghee, fat from camel hump, margarine, oil, added to food or used for cooking

FATSNGFD

10B………………….....…|___|

11. **Sweets**: Any sugar, honey, sweetened soda or sweetened juice drinks, sugary foods such as chocolates, candies, cookies, sweet biscuits and cakes. *(macmacaanka (sokor, malab, soda, cabitaan lamacaaneyay, nacnac, buskut, doolsha halwa)*

SWTS

11..……………..……......…|___|

12. **Spices, condiments, beverages**: Any spices (black pepper, salt), condiments (soy sauce, hot sauce), coffee, tea, alcoholic beverages**.(chili, garlic / kitunguu saum, pilipili hoho, baribari, iliki, royco, dhania, cinnamon / dalasini, angawizi, ginger, cardamom, cloves / kuramtud, coffee, tea, alcoholic beverages, chai masala**
 (*filfil madoow, cusba,heel, basbaas, shah, bun*)

SPICE

12…………………….....…|___|

Food aid fortified blended food: Have you or anyone else in your household eaten CSB or any food made from these yesterday during the day and at night**?***(Boorash)* **CSB IS FROM GFD AND PLW SFP**

Yes………………….1
No…………………..2

| FBFGFD | DK…………………..8 |

1B. Kakuma Nutrition Survey, November 2018, Household Questionnaire- WASH: 1 questionnaire per household (This questionnaire is to be administered to the Main Caretaker or, if they are absent, another adult member of the household)

Kakuma 1/2/3/4/Kalobeyei:_____ Zone: _____ Block number: _____

Date of interview (dd/mm/yyyy)		Cluster Number	Team Number
|___|___|/|___|___|/|___|___||___|___|		|___|___|	|___|
Household Number		Consent	
|___||___||___|		Consent : yes =1/ no=2 / absent=3 |___|	

No	QUESTION	ANSWER CODES	
SECTION WS1			
WS1	How many people live in this household and slept here last night? **HHSIZE**	|___|___|___|	
WS2	What is the *main* source of drinking water for members of your household? **SOURCE** **DO NOT READ THE ANSWERS** **MORE THAN ONE ANSWER POSSIBLE**	Public tap/standpipe ………..01 Small water vendor 03 Surface water (e.g. river, pond) 04 Other 98 Don't know 99	|___|___|
WS3	Are you satisfied with the water supply? THIS RELATES TO THE DRINKING WATER SUPPLY **SATISFY**	Yes 1 No 2 Other 6	|___| **IF ANSWER IS 1 GO TO WS7**|
WS4	What is the *main* reason you are not satisfied with the water supply? **REASON**	Amount is not enough 1 Long queue at the tap stand 2 Water point is far 3 Water tastes bad 4 Other 98	
WS5	What kind of toilet facility does this household use? **TOILET** **DO NOT READ THE ANSWERS** **SELECT ONE ONLY**	Simple pit latrine with floor/slab 02 Pit latrine without floor/slab 03 No facility, field, bush, plastic bag……04	|___|___| **IF ANSWER IS 04 GO TO WS9**
WS6	How many *households* share this toilet? **(THIS INCLUDES THE SURVEYED HOUSEHOLD)**	RECORD NUMBER OF HOUSEHOLDS IF KNOWN (RECORD 96 IF PUBLIC TOILET OR 98 IF UNKNOWN)	|___|___| Households
		SUPERVISOR SELECT ONE ONLY Not shared (**1 HH**) 1 Shared family (**2 HH**) 2 Communal toilet (**3 HH or more**) 3 Public toilet (**in market or clinic etc**.) 4 Don't know 8	
WS7	Did you receive soap within the last two distribution cycles	**Yes 1** **No 2** **Don't know ……………………........99**	**IF ANSWER IS 2 GO TO WS11**

WS8	Why did you not receive soap in the last two distribution cycles	**No soap distribution …………………………1** **HH not registered …………………………….2** **HH members did not collect from FDP ….3** **Other …………………………………………...98** **Don't Know………………………………………99**	
WS9	Do you have children under three years old? **CHILD**	Yes 1 No 2	|___| **IF ANSWER IS 2 GO TO WS13**
WS10	The last time [NAME OF YOUNGEST CHILD] passed stools, what was done to dispose of the stools? **STOOL** DO NOT READ THE ANSWERS SELECT ONE ONLY	Child used toilet/latrine 01 Put/rinsed into toilet or latrine 02 Buried 03 Thrown into garbage 04 Put/rinsed into drain or ditch 05 Left in the open 06 Other 96 Don't know 98	|___|___|

WS11	CALCULATE THE TOTAL AMOUNT OF WATER USED BY THE HOUSEHOLD PER DAY THIS RELATES TO ALL SOURCES OF WATER (DRINKING WATER AND NON-DRINKING WATER SOURCES)	Please show me the containers you used yesterday for collecting water ASSIGN A NUMBER TO EACH CONTAINER	Capacity in litres	Number of journeys made with each container	Total litres **SUPERVISOR TO COMPLETE HAND CALCULATION**
		1 E.g. jerry can	20 L	1 x	25
		2 E.g. jerry can	10 L	2 x	20
		3 E.g. jerry can	5 L	2 x	10
		4 E.g Jerry can	3 L	1 x	5
		5 E.g. bucket	50 L	1 x	50
		Total litres used by household			**110**

WS12	Please show me where you store your drinking water. *(ARE THE DRINKING WATER CONTAINERS COVERED OR NARROW NECKED?)*	All are 1 Some are 2 None are…………………………………3	|___|___|

2. Kakuma Nutrition Survey, November 2018, Questionnaire for reproductive women aged 15 - 49 years IN EVERY OTHER HOUSEHOLD

Kakuma 1/2/3/4/Kalobeyei:_____ Zone: _____ Block number: _____

	Cluster Number:	|____|____|			Team Number: |____|

	Consent : yes =1/ no=2 / absent=3 |____|

WM1	WM2	WM3	WM5	WM6	WM7	WM8	WM9	WM10	WM11
ID	HH	Consent given 1=yes 2=no 3=absent	Age (years)	If breastfeeding, what is the age of your child? 1= 0-5 months 2= 6-24 months 3= 25-36 months	Are you pregnant? 1=yes 2=no (GO TO HB) 8=DK (GO TO HB)	Are you currently enrolled in the ANC programme? 1=yes 2=no 8=DK	Are you currently receiving iron-folate pills (SHOW PILL)? 1=yes (STOP NOW) 2=no (STOP NOW) 8=DK (STOP NOW)	Hb (g/L or g/dL)	MUAC (cm) If WM10 Is 1or 2
01									
02									
03									
04									
05									

For MUAC <21 refer to clinic   **For Hb <6 refer to clinic*

3. Kakuma Nutrition Survey, November 2018, Questionnaire for Children Aged 6-59 months

Kakuma 1/2/3/4/ Kalobeyei:_____ Zone: _____ Block number: _____

Team Number: |____|

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
Child No.	HH No.	Name of child	Consent 1=yes 2=no 3=absent	Sex (m/f)	Birthdate (dd/mm/yyyy)	Age (months) If child is 0-5moths, GO TO IF1	Weight (kg)	Height (cm)	Bilateral oedema (y/n)	MUAC (cm)	IS CHILD ENROLED IN NUTRITION PROGRAMME? 1 = SC/OTP; 2 = SFP; 3 = None
1											
2											
3											
4											
5											

Child No.	HH No.	C13	C14	C15	C16	C17	C20	C21	
		Measles Vaccination 1=Yes with card 2=Yes by recall 3=No or don't know	Vit. A in past 6 months (SHOW CAPSULE) 1=Yes card 2=Yes recall 3=No or don't know	Dewormed in past 6 months (SHOW PILL) 1=Yes recall 2=No or don't know	Diarrhoea in last 2 weeks (3 or more loose or liquid stools/24hrs) 1 = yes 2 = no 99 = don't know	When [name] had diarrhoea did you feed [name]: 1=less 2= the same 3=more 4=no food	Hb (g/dL)	Child referred for severe anaemia 1=yes 2=no	IS THIS CHILD AGED 6-23 MONTHS? 1=yes 2=no IF 1 GO TO C25
1									
2									
3									
4									
5									
6									

Child No.	HH No.	23B	23C	23D	23E	23F	23G
		CSB+	CSB++/Super cereal +(SHOW SACHET)	Plumpy'Nut® (SHOW SACHET)	Plumpy'Sup® (SHOW SACHET	Infant formula: for example; *(caano boodhe, sahha (Nan, mamex, S26 ,saha ,cow and gate)*		List any iron fortified solid, semi-solid or soft foods designed specifically for infants and young children available in the local setting that are different than distributed commodities.*(Weetabix Serifam , Cerelac)*
1							
2							
3							
4							
5							
6							

Cluster Number:		|_____|_____|		Team Number: |_____|

Consent : yes =1/ no=2 / absent=3

\|___\|

Child No.	HH No.	Consent 1=yes 2=no 3=absent	Birthdate (dd/mm/yyyy)	Age (months)	IF1 Ethnic group 1=South Sudanese 2=Somali 98=Others	IF2 Was [name] ever breastfed? 1=yes 2=no <u>GO TO IF7</u> 99= don't know <u>GO TO IF7</u>	IF3 How long after birth did you first put [name] to the breast? 1 = within 1 hr 2 = >1hr-<24 hrs 3 = 24 hrs or more 99 = don't know	IF4 Was [name] breastfed yesterday during the day or at night? 1 = yes 2 = no 99 = don't know
1								
2								
3								
4								
5								

Child No.	HH No.	6A Yesterday during the day or at night, did (name) eat solid or semi-solid (soft, mushy) food? 1 = yes 2 = no 99 = don't know	6B	6C	6F	6G	6H	6I Did [name] drink anything from a bottle with a nipple yesterday during the day or night? 1 = yes 2 = no 99 = don't know	6J	IF6	IF7
		Plain water	Infant formula: for example Mamex, Sahar, Nan, S26	Clear broth	Sour milk or yogurt	Thin porridge made from CSB+ or CSB++	Tea or coffee white or black	Any other water based liquids (sodas, other sweet drinks, Sweetened water, herbal infusion, gripe water, clear tea with no milk, black coffee, ritual fluids)			
1											
2											
3											
4											
5											

4. Kakuma Nutrition Survey, November 2018, Questionnaire for Infants Aged 0-5 months

Kakuma 1/2/3/4/Kalobeyei:_____ Zone: _____ Block number: _____