STANDARDIZED EXPANDED NUTRITION SURVEY (SENS)

DADAAB REFUGEE CAMPS

Dagahaley, IFO, IFO-2, and Hagadera

28 August-23 September 2017

Final Report

TABLE OF CONTENTS

List of tables

List of figures

ACKNOWLEDGEMENTS

The survey was implemented by nutrition partners in Dadaab (International Rescue Committee-IRC, Kenya Red Cross Society-KRCS, Medicins Sans Frontiers-MSF and Islamic Relief Kenya-IRK) who did a fantastic job in this important exercise. UNHCR could not have led the survey without valuable support from WFP, represented by Albert Mwambonu, who provided key technical support in training as well as supervision of field teams in Ifo as well as Ifo 2. UNHCR Dadaab is also grateful for technical support extended by the Regional Service Centre.

The UNHCR administration and supply colleagues, I particular the transport unit, provided key logistical support to ensure that all supplies were delivered on time and that movement to the field was possible. Many thanks also go to our security team for the coordination of escorts to and from the camps.

UNHCR is also very grateful to the donors for their valuable support in terms of funding for this activity.

EXECUTIVE SUMMARY

The Standardised Expanded Nutrition Survey (SENS) was conducted between 28 August and 23 September 2017 in the 4 Dadaab refugee camps (Dagahaley, Ifo, Ifo 2 and Hagadera) to assess the magnitude and severity of malnutrition and formlate workable actions to improve the situation. Kambioos camp was closed in March 2017.

Methods: The survey was based on the UNHCR Standardised Expanded Nutrition Survey (SENS) guidelines (http://sens.unhcr.org) and Standardised Monitoring and Assessment of Relief and Transitions (SMART) methodology. The 2-stage cluster sampling method was applied, and 30 clusters were selected in each camp using sampling with probability proportional to size (PPS). Systematic random sampling was used to select households at the second stage.

Results: After the increase in the prevalence of GAM observed in 2016 (10.2% weighted prevalence of GAM in all camps from 8.1% in 2015), the 2017 SENS indicated weigthed prevalence of GAM 9.7% which is close to what it was in 2016. The difference between the weighted prevalence of GAM in all the camps in 2016 and 2017 is not statistically significant. However, its to be mentioned that the prevalence of GAM in Dagahaley, Hagdera, and Ifo 2 camp is 8.3%, 8.6%, and 9.4% which is classified as POOR nutrition sitation, while in Ifo camp its 12.7% classified as SERIOUS nutrition sitaition as per the WHO classiciation of the public health significance.

Overall, weighted anaemia prevalence showed a sharp increase among children aged 6-59 months to 60.7%, up from 49.7% in 2016. This is well above the 40% of public health significance (critical threshold) and requires attention. In all camps, anaemia was well above the 40% of public health significance (critical threshold). The children 6-23 age group had the highest prevalence of anaemia; however, the prevalence in the children 24-35 age group was also very concerning as it was above the critical threshold in all camps.

The weighted prevalence of anaemia among non-pregnant women of reproductive age increased from 31.8% in 2016 to 43.6% in 2017. All camps except Ifo 2 were above the critical threshold.

Stunting was classified as acceptable (<20%) in Dagahaley, Hagadera and Ifo but POOR in Ifo 2 (20-29%). The weighted prevalence of stunting was slightly lower in 2016 (20.6%) compared to 2017 (19.6%).

In terms of key IYCF indicators, exclusive breastfeeding showed some improvement from 2016 to 2017. Early initiation of breastfeeding and timely introduction of slid foods still have much room for improvement.

Household dietary diversity score ranged from 4.7 to 9.6, while the average duration of the monthly food ration ranged from 16.9 to 19.7.

Vitamin A supplementation, measles vaccination and deworming were all above 90%, which highlights the impact of routine and periodic supplementation and vaccination in the camps.

Nearly all camps recorded an average water usage above the 20 litres per person per day UNHCR target. Nearly all households reported access to an improved drinking water source. The gap remains in terms of access to safe excreta disposal facilities.

Conclusion: One of the main indicators of the severity of a humanitarian situation in terms of nutrition is the prevalence of global acute malnutrition, which remains below emergency levels in Dadaab camps. However three camps out of 4 presented GAM prevalence between 5-9% classified as POOR nutrition situation, while one camp is 10-14% classified as SERIOUS nutrition sitaition (WHO classification of public health significance). The worrying aspect is the rising prevalence of anaemia, which is now at its highest level since 2011. This is a situation which may be linked with sub-optimal infant and young child nutrition, given that the children 6-23 and 24-35 months age groups are most affected. IYCF results show that there are still gaps with respect to early initiation of breastfeeding, exclusive breastfeeding, introduction of solid foods and continued breastfeeding. Despite the fact that supercereal plus is provided to support anaemia reduction, the consumption is generally low for the target 6-23 months age group.

Recommendations

- Improve infant and young child feeding practices through integrating with existing programmes such as radio programmes, community dialogues, community leaders meetings and mother-to-mother support groups focussing on early initiation of breastfeeding, timely introduction of soild foods, and continued breastfeeding up to at east 2 years.
- Investigate the reasons for low consumption of super cereal plus and formulate a strategy to increase intake in children 6-23 months.
- Expansion of the provision of super cereal plus to the 24-35 months age group given the critical anaemia prevalence in this age group which is not far from the 6-23 months age group.
- Consider the provision of the lipid-based nutrient supplement Nutributter given the demonstrated efficacy and effectiveness in the same context from research findings.
- Engage community health workers in listing all pregnant and lactating women in community-level registers to ensure follow up of all eligible to the blanket supplementary feeding programme.

- Strenghen active case finding for children 6-59 months and include WHZ screening where possible so as to increase programme coverage.

SUMMARY OF RESULTS SENS 2017 REFUGEE CAMPS DADAAB – KENYA

	Dagahaley 4-9 September 2017 % (95% CI)	**Hagadera** 18-23 September 2017 % (95% CI)	**Ifo** 4-9 September 2017 % (95% CI)	**Ifo 2** 18-23 September 2017 % (95% CI)	**Classification of public health significance or target (where applicable)**
CHILDREN 6-59 months					
Acute malnutrition (WHO 2006 standards)					
Number of children surveyed	677	677	545	630	
Global Acute Malnutrition (GAM)	8.3 (5.7-11.8)	8.6 (6.8-10.9)	12.7 (9.4-16.9)	9.4 (6.5-13.5)	Critical if ≥ 15%
Moderate Acute Malnutrition (MAM)	7.2 (4.8-10.7)	7.6 (5.8-9.9)	11.0 (8.1-14.7)	7.5 (5.0-11.1)	
Severe Acute Malnutrition (SAM)	1.1 (0.4-2.6)	1.1 (0.5-2.2)	1.7 (0.8-3.6)	2.0 (1.0-3.8)	
Oedema	0.0	0.0	0.0	0.0	
Children 6-23 months	8.0 (3.0-13.0)	7.1 (4.0-10.1)	14.5 (7.8-21.2)	8.0 (3.7-12.3)	
Children 24-35 months	6.1 (2.6-9.7)	6.7 (2.9-10.5)	10.9 (5.0-16.9)	5.2 (1.0-9.4)	
Children 36-59 months	10.8 (5.9-15.7)	13.4 (9.2-17.6)	13.8 (8.5-19.1)	14.5 (9.0-19.9)	
Mid Upper Arm Circumference (MUAC)					
MUAC <125mm and/or oedema		3.0 (2.0-4.4)	10.6 (7.3-15.3)	3.5 (2.2-5.4)	
MUAC 11.5-12.4 cm, no oedema	2.5 (1.4-4.5)	2.8 (1.8-4.3)	8.8 (6.1-12.5)	3.3 (2.1-5.3)	

	Dagahaley 4-9 September 2017 % (95% CI)	**Hagadera** 18-23 September 2017 % (95% CI)	**Ifo** 4-9 September 2017 % (95% CI)	**Ifo 2** 18-23 September 2017 % (95% CI)	**Classification of public health significance or target (where applicable)**
MUAC <11.5 cm	0.1 (0.0-1.1)	0.1 (0.0-1.2)	1.8 (0.8-4.2)	0.2 (0.0-1.2)	
Stunting					
Total Stunting	18.4 (14.1-23.7)	18.4 (12.4-26.5)	18.7 (13.8-24.9)	29.4 (25.7-33.5)	Critical if ≥ 40%
Severe Stunting	4.8 (3.2-7.2)	4.3 (2.3-7.8)	6.9 (3.9-12.1)	7.7 (5.7-10.3)	
Programme coverage					
Measles vaccination with card or recall (9-59 months)	99.4 (98.5-100.0)	99.4 (98.1-100.0)	100.0	96.3 (94.5-98.1)	Target of ≥ 95%
Vitamin A supplementation within past 6 months with card or recall	96.6 (94.4-98.8)	98.1 (96.4-99.8)	99.6 (99.1-100.0)	96.2 (93.7-98.7)	Target of ≥ 90%
Deworming coverage in the past 6 months (children 24-59 months)	92.2 (87.4-97.0)	90.1 (85.6-94.6)	90.4 (83.1-97.7)	90.4 (85.6-95.2)	
Therapeutic feeding program (based on all admission criteria WHZ, oedema and MUAC)	18.2 (0.0-57.0)	14.3 (0.0-36.0)	34.8 (3.8-65.8)	5.3 (0.0-15.8)	Target >90%
TSFP (based on all admission criteria WHZ and MUAC)	26.3 (17.4-35.2)	12.5 (3.9-21.1)	47.8 (32.3-63.2)	37.9 (27.4-48.4)	Target >90%
BSFP (children aged 6-23 months)	0.0	0.0	21.7 (5.6-37.8)	5.6 (0.1-11.0)	Target >90%

	Dagahaley 4-9 September 2017 % (95% CI)	**Hagadera** 18-23 September 2017 % (95% CI)	**Ifo** 4-9 September 2017 % (95% CI)	**Ifo 2** 18-23 September 2017 % (95% CI)	**Classification of public health significance or target (where applicable)**
Diarrhoea					
Diarrhoea in last 2 weeks	10.2 (5.6-14.7)	6.8 (3.4-10.2)	15.6 (10.0-21.2)	12.7 (8.0-17.4)	
Anaemia (6-59 months)					
Total Anaemia (Hb <11 g/dl)	62.9 (58.1-67.8)	62.8 (57.6-68.1)	55.3 (47.2-63.5)	61.3 (54.5-68.0)	High if ≥ 40%
Mild (Hb 10-10.9)	28.6 (25.3-31.9)	29.0 (25.4-32.6)	26.1 (22.7-29.5)	29.8 (24.9-34.8)	
Moderate (Hb 7-9.9)	33.4 (29.2-37.6)	33.6 (28.5-38.7)	28.9 (22.5-35.2)	30.6 (25.7-35.5)	
Severe (Hb <7)	0.9 (0.1-1.7)	0.1 (0.0-0.5)	0.4 (0.0-0.9)	0.8 (0.0-1.6)	
Mean Hb	10.5 (10.3-10.6)	10.5 (10.3-10.7)	10.7 (10.4-10.9)	10.5 (10.3-10.7)	
CHILDREN 0-23 MONTHS					
IYCF indicators					
Timely initiation of breastfeeding (0-23 months)	64.9 (50.7-79.1)	90.6 (83.7-97.5)	63.1 (47.9-78.3)	76.8 (61.2-92.3)	
Exclusive breastfeeding under 6 months	58.1 (43.7-72.6)	50.6 (30.5-70.7)	75.8 (66.7-90.0)	90.4 (80.5-100.0)	
Continued breastfeeding at 1 year	50.0 (31.8-68.2)	51.1 (29.3-72.9)	47.5 (30.0-65.0)	73.2 (56.4-88.1)	

	Dagahaley 4-9 September 2017 % (95% CI)	**Hagadera** 18-23 September 2017 % (95% CI)	**Ifo** 4-9 September 2017 % (95% CI)	**Ifo 2** 18-23 September 2017 % (95% CI)	**Classification of public health significance or target (where applicable)**
Continued breastfeeding at 2 years	15.2 (4.7-68.2)	23.7 (7.2-40.1)	14.3 (2.8-25.7)	19.2 (2.2-36.2)	
Introduction of solid, semi-solid or soft foods	50.0 (27.8-72.2)	45.0 (38.1-71.9)	38.7 (36.3-86.2)	34.5 (13.3-55.7)	
Consumption of Supercereal plus (CSB++)	36.4 (25.3-47.6)	39.0 (21.4-56.6)	39.0 (23.1-54.9)	70.4 (56.7-84.0)	
Children bottle fed	14.7 (8.4-21.0)	10.3 (1.5-19.1)	5.0 (2.3-7.6)	2.0 (0.0-4.0)	
WOMEN 15-49 YEARS					
Anaemia (non-pregnant)					
Total Anaemia (Hb <12 g/dl)	44.8 (35.6-54.0)	42.4 (34.5-50.3)	46.2 (39.2-53.3)	37.9 (28.0-47.7)	High if ≥ 40%
Mild (Hb 11-11.9g/dl)	29.0 (22.0-36.0)	19.5 (15.1-23.9)	22.6 (16.1-29.0)	18.3 (11.5-25.2)	
Moderate (Hb 8-10.9)	14.9 (8.0-21.9)	22.3 (14.1-30.5)	22.6 (16.1-29.0)	18.3 (11.5-25.2)	
Severe (Hb <8 g/dl)	0.8 (0.0-2.0)	0.6 (0.0-1.5)	1.1 (0.0-2.4)	1.8 (0.0-3.8)	
Mean Hb	12.1 (11.19-12.3)	11.9 (11.7-12.2)	11.9 (11.7-12.1)	12.1 (11.8-12.5)	
Program coverage , pregnant and lactating women					
Pregnant women currently enrolled in the ANC	81.6 (71.1-92.2)	92.9 (84.9-100.0)	77.3 (59.7-94.9)	93.3 (85.6-100.0)	
Pregnant women currently receiving Iron-folic acid pills	81.6 (71.1-92.2)	90.5 (81.2-99.7)	77.3 (59.7-94.9)	91.1 (82.4-99.8)	
Prevalence of undernutrition in Pregnant	2.1 (0.0-5.0)	1.0 (0.0-3.0)	0.0	6.0 (0.9-11.2)	

	Dagahaley 4-9 September 2017 % (95% CI)	**Hagadera** 18-23 September 2017 % (95% CI)	**Ifo** 4-9 September 2017 % (95% CI)	**Ifo 2** 18-23 September 2017 % (95% CI)	**Classification of public health significance or target (where applicable)**
women and Lactating mothers by MUAC (MUAC <210mm)					
FOOD SECURITY					
Coverage of Bamba Chakula sim cards	98.7 (97.4-100.0)	96.3 (93.5-99.1)	99.3 (97.9-100.0)	97.3 (94.8-100.0)	
Average number of days GFR lasts (out of 31 days)	17.4 (14.8-19.9)	17.8 (16.6-19.0)	19.7 (18.6-20.8)	16.9 (14.3-19.4)	
Average HDDS	4.7 (3.4-6.0)	6.5 (5.3-7.7)	8.6 (7.4-9.8)	7.6 (6.8-8.4)	
Proportion of households reporting using the following coping strategies over the past month					
Borrowed cash, food or other items with or without interest	25.0 (12.7-37.3)	54.5 (39.8-69.3)	70.1 (60.0-80.1)	60.7 (46.1-75.3)	
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)	0.7 (0.0-2.1)	6.7 (3.0-10.5)	39.7 (25.6-53.8)	31.9 (19.3-44.5)	
Requested increased remittances or gifts as compared to normal	3.4 (0.9-5.9)	8.8 (3.2-14.3)	44.4 (31.9-56.9)	22.6 (10.5-34.7)	
Reduced the quantity and/or frequency of meals and snacks	2.7 (0.7-4.7)	7.7 (2.2-13.3)	26.4 (12.3-40.5)	3.1 (0.8-5.4)	
Begged	69.6 (57.9-81.2)	36.0 (20.2-51.9)	14.6 (5.7-23.5)	6.0 (1.3-10.7)	
WASH					

	Dagahaley 4-9 September 2017 % (95% CI)	**Hagadera** 18-23 September 2017 % (95% CI)	**Ifo** 4-9 September 2017 % (95% CI)	**Ifo 2** 18-23 September 2017 % (95% CI)	**Classification of public health significance or target (where applicable)**
Water quality					
Proportion of households using improved drinking water source	99.7 (99.0-100.0)	100	100	100	
Average litres per person/day	33.3 (29.1-37.5)	22.6 (19.0-26.1)	26.4 (21.0-31.8)	18.3 (15.2-21.4)	Average quantity of water available per person / day ≥ 20 litres
Water quantity					
≥ 20 lpppd	82.1 (76.1-88.1)	60.8 (48.1-73.6)	53.8 (44.6-63.1)	37.9 (27.1-48.7)	
15-<20 lpppd	9.5 (5.6-13.3)	12.3 (7.2-17.4)	17.5 (12.3-22.6)	11.5 (5.6-17.5)	
<15 lpppd	8.4 (3.8-13.1)	26.9 (13.0-40.8)	28.7 (19.7-37.7)	50.5 (38.1-63.0)	
Safe excreta disposal					
Proportion of households using an improved excreta disposal facility[1]	41.1 (30.5-51.6)	49.5 (40.0-59.0)	72.5 (61.5-83.6)	60.6 (51.1-70.1)	
Proportion of HH using a shared family toilet	29.5 (21.1-37.8)	25.6 (19.6-31.6)	20.1 (11.9-28.3)	15.1 (9.3-20.8)	
Proportion of HH using a communal toilet	9.1 (4.0-14.3)	15.2 (9.9-20.4)	6.3 (2.6-10.1)	10.0 (3.3-16.8)	
Proportion of HH using an	20.4 (6.7-34.0)	9.8 (3.6-16.0)	1.1 (0.0-2.6)	14.3 (6.8-21.7)	

[1] To maintain consistency with other survey instruments (e.g. MICS), UNHCR SENS WASH module classifies **an "improved excreta disposal facility"** as a toilet facility that hygienically separates human excreta from human contact **AND** one that is **not shared** with other families. A single household toilet is not shared and is usually the easiest to keep clean.

	Dagahaley 4-9 September 2017 % (95% CI)	**Hagadera** 18-23 September 2017 % (95% CI)	**Ifo** 4-9 September 2017 % (95% CI)	**Ifo 2** 18-23 September 2017 % (95% CI)	**Classification of public health significance or target (where applicable)**
unimproved toilet					
Proportion of HH with children <3 yrs disposing of faeces safely	100.0	95.3 (91.8-98.8)	99.3 (97.9-100.0)	97.3 (94.4-100.0)	

1 Introduction

The Standardised Expanded Nutrition Survey (SENS) was conducted in the 4 Dadaab refugee camps (Dagahaley, Ifo, Ifo 2 and Hagadera) between 28 August and 23 September 2017 by nutrition partners (MSF-Switzerland, Islamic Relief Kenya, International Rescue Committee and Kenya Red Cross) with overall coordination by UNHCR supported by WFP.

1.1 Background

Dadaab is a semi-arid town in Garissa county in North Eastern Kenya. The first camp in Dadaab was established in 1991, when refugees fleeing the civil war in Somalia started to cross the border into Kenya. A second large influx occurred in 2011, when some 130,000 refugees arrived, fleeing drought and famine in southern Somalia. The four Dadaab camps are Dagahaley, Ifo, Ifo 2 and Hagadera. The first three are located in Lagdera (Dadaab) district while Hagadera is located in the neighbouring Fafi district. There is a considerable difference between the old camps, established 1991 and 1992, and the new camps, established in 2011. A large part of the residents in the old camps (Ifo, Dagahaley, Hagadera) arrived in Dadaab in the 1990s and have children and grandchildren born in the camps. The old camps resemble naturally-grown towns and have developed into commercial hubs connecting north-eastern Kenya and southern Somalia. In contrast, most of the residents in the new camp, Ifo 2, came during the 2011 famine and are mainly pastoralists. In line with the government of Kenya's position on consolidation of Dadaab refugee camps Kambioos camp was closed in April 2017. The population of Dadaab has continued to decline mainly due to the scaling up of voluntary repatriation. As of 31st August, a total of 70,202 individuals from Dadaab were assisted in the framework of voluntary return to Somalia since the launch of voluntary repatriation on 8 December 2014. 30,888 refugees have returned in 2017 alone. The cumulative total number of persons repatriated from Kenya to Somalia currently stood at 72,101, with an additional 17,478 registered refugees who were willing to return to Somalia.

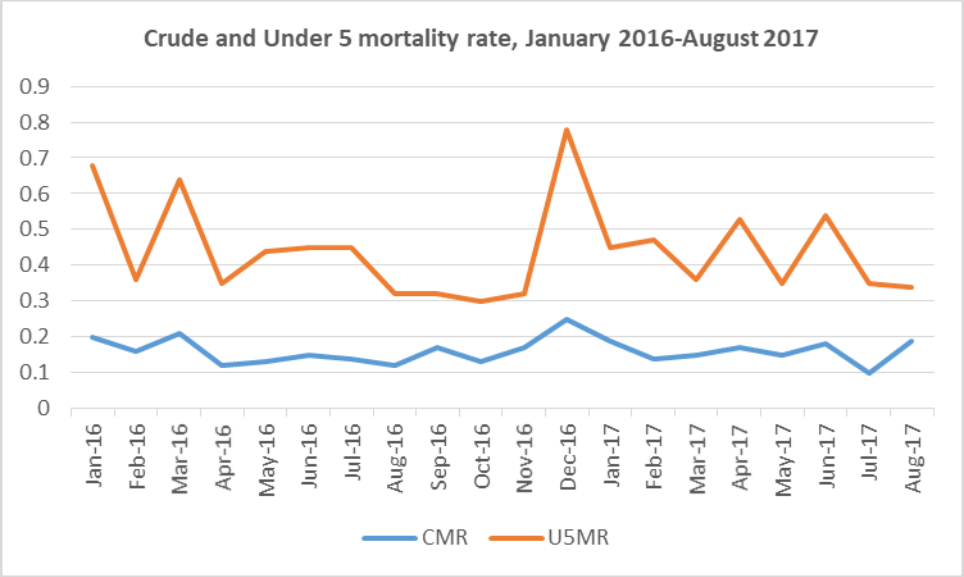
1.1.1 Food security situation

Nearly all available information shows that refugees in Dadaab are mainly dependent on the WFP food ration for their daily food requirements, with limited livelihoods and income earning opportunities. Food is distributed by WFP on a monthly basis in the form of in-kind as well as cash through vouchers. The cash replaced part of the cereal ration, presently 50% of the cereal ration for household size 1 and 30% for household size 2 and above. The remaining items in the food ration are pulses, vegetable oil and CSB+ (supercereal). Additionally, children between 6 and 23 months receive CSB++ (supercereal plus) to provide additional iron given the high level of anaemia in Dadaab camps. Due to funding challenges, there have been some periods of food ration cuts up to 50%, although the situation was improved between April and September 2017, where a full ration was provided for all refugees. However due to recent funding shortfalls since October 2017 there is 30% food ration cuts and removal of CSB+. Refugees have responded positively to the introduction to cash vouchers and it is envisaged that they will be scaled up in future as they provide refugees with choices, which supports their dignity and hence improve their overall protection.

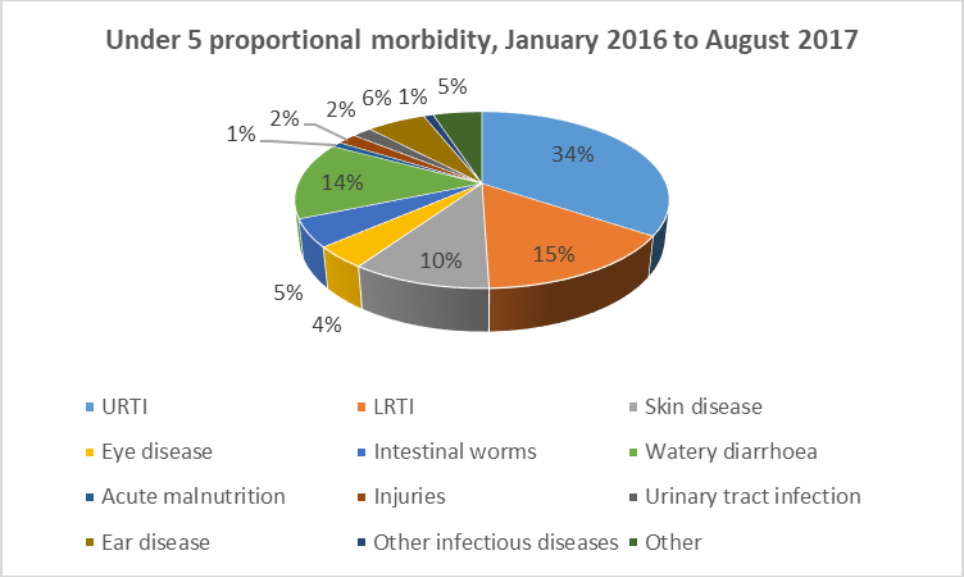
1.1.2 Health situation

All of the refugee camps have hospitals which provide secondary health care, including the treatment of common health problems, outpatient department, antenatal care and post natal care, immunisation and therapeutic and supplementary feeding. Additionally, health posts provide the primary health care and are located in the blocks, close to where refugees live. All health

services are free for all refugees as well as the surrounding host community. The health situation is generally stable and well below emergency thresholds, which has been the picture in the last several years. Crude mortality rates have remained approximately 0.2 deaths per 1,000 per month, whilst under 5 mortality rates have remained around 0.4 deaths per 1,000 per month.



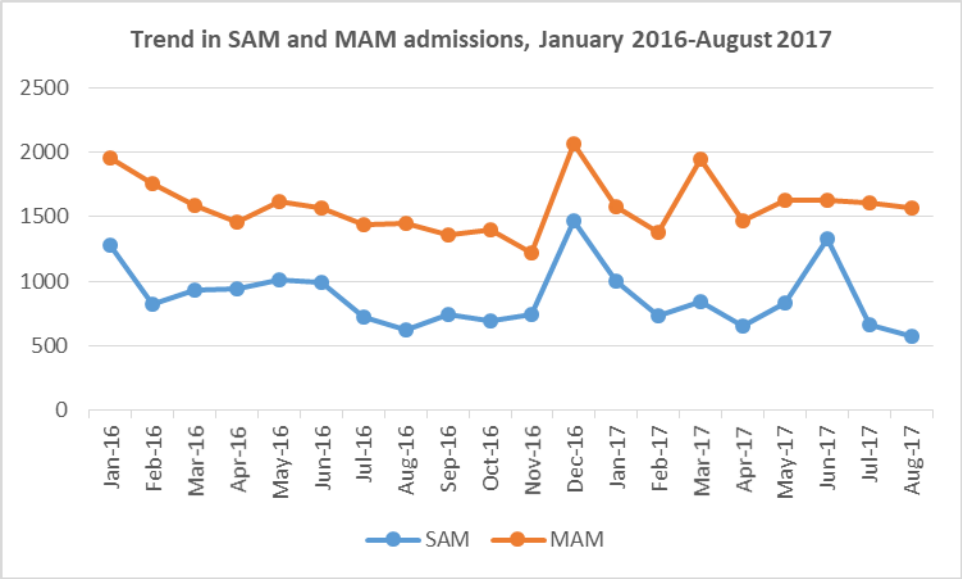
The main cause of morbidity for children below 5 years has been upper respiratory tract infection (34%), followed by lower respiratory tract infection (15%).



1.1.3 Nutrition situation

Comprehensive nutrition programmes are provided in all camps in terms of both treatment and prevention. Treatment of severe acute malnutrition (SAM) is implemented through the outpatient therapeutic care programme (OTP) at the health posts as well as the stabilisation centre (SC) for cases which have medical complications. For treatment of moderate acute malnutrition (MAM), targeted supplementary feeding is implemented in health posts for children as well as pregnant and lactating women. Pregnant and lactating women who are not malnourished are enrolled in the blanket supplementary feeding programme (BSFP). Admissions for SAM are generally around

700-800 whilst MAM admissions hover around 1500-1600 per month. There are always peaks around December/January and May/June, which are the periods in which there is an increase in admissions due to diarrhoea, and also due to the increased case finding during malezi bhora exhaustive screening and supplementation. Routine nutrition screening is implemented through community health workers, and is supported by periodic exhaustive MUAC screening during the bi-annual malezi bhora exercise, which is integrated with Vitamin A supplementation, measles vaccination and deworming.



On the prevention part, all nutrition partners are involved in implementation of various activities which support maternal, infant and young child nutrition (MIYCN) which include mother-to-mother support group meetings, community dialogues family bazaars at community level as well as the baby-friendly hospital initiative (BFHI) at community level.

After a decrease in the weighted prevalence of GAM (9.9% in 2013, 8.9% in 2014, 8.1% in 2015), there was an increase in 2016 to 10.2%. The weighted prevalence of anaemia has also been on the increase.

1.2 Survey Objectives

Primary objectives

1. To determine the prevalence of acute malnutrition among children 6-59 months.
2. To determine the prevalence of stunting among children 6-59 months.
3. To investigate Infant and Young Children Feeding (IYCF) practices among children 0-23 months.
4. To assess the prevalence of anaemia among children 6-59 months and non-pregnant women of reproductive age (15-49 years).
5. To assess the two week period prevalence of diarrhoea among children aged 6-59 months.
6. To determine the coverage of measles vaccination among children 9-59 months.

7. To determine the coverage of deworming among children 24-59 months and vitamin A supplementation among children 6-59 months in the last six months.

8. To assess the coverage of ration cards and Bamba Chakula sim 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 establish recommendations on actions to be taken to address the health and nutrition situation.

Secondary objectives

1. To assess the coverage of selective feeding programmes (OTP, TSFP) for children 6-59 months and BSFP for children 6-23 months.
2. To determine enrolment into Antenatal Care clinic and coverage of iron-folic acid supplementation in pregnant women.
3. To assess the prevalence of under nutrition in pregnant and lactating women using MUAC.

2 Methodology

2.1 Sample size

The survey was conducted in accordance with the UNHCR Standardised Expanded Nutrition Survey (SENS) guidelines for refugee populations (http://sens.unhcr.org) and the Standardized Monitoring and assessment of Relief and Transitions (SMART) methodology (www.smartmethodology.org). The two-stage cluster sampling method was preferred given that the population in the camp is large and households are not arranged in an orderly pattern. In each camp, a representative sample of households and children was selected using ENA-for-SMART, July 9, 2015 version, based on the assumptions shown in Table 1:

Table 1 Assumptions for sample size calculation, Dadaab camps, Kenya, 2017

	Dagahaley	Hagadera	Ifo	Ifo 2
Population	69,086	84,687	64,648	24,577
Estimated GAM prevalence (%) (survey 2016)	12.6	11.4	14.5	16.4
± Desired precision (%)	3.5	3.5	4.0	4.0
Average household size	5.8	5.7	6.0	5.2
Design Effect	1.00	1.00	1.82	1.46
<5 population (%)	20.4	17.7	21.4	21.3
Non response households (NRR) (%)	5%	5%	5%	5%
Children to be included	564	517	537	471
Households to be included for	557	600	590	497
Cluster design (Clusters x Households)	30X19	30X20	30x20	30x17

The estimated prevalence of GAM (Global Acute Malnutrition) was based on the upper confidence interval of the estimated 2016 GAM prevalence. The total population was based on the UNHCR ProGress database (as at 31 July 2017). Note that in Ifo 2, the target population of children below 5 years is below 10,000, therefore, as per SMART guidance, a correction for small sample size was made. The average household size, design effect and proportion of children below 5 years has been taken from the 2016 SENS results.

2.2 Sampling procedure: selecting clusters

The 2-stage cluster sampling method was used to select 30 clusters from each of the 4 camps. At the first stage, a list of blocks was made before the required number were selected using sampling with probability proportional to size (PPS) using ENA softwareIn nearly all cases, a cluster was the equivalent of a block. However, there were exceptions where, for some larger blocks, more than 1 cluster was selected. In this case, the blocks were split further to cater for more than one cluster. In the event that a selected block had more than 250 households, according to SMART guidance, segmentation was done, after which one of the segments was randomly selected to be the cluster.

2.3 Sampling procedure: selecting households and individuals

All households in the selected clusters were labelled before data collection. At the second stage, the required number of households were selected using systematic random sampling from a list of households. A random number was selected between 1 and the sampling interval, which was calculated by dividing the total number of households in the cluster with the required number of households (for example, 19 in Dagahaley). The selected number became the first household to be

surveyed. Subsequent households were selected by adding the sampling interval until the required number of households were completed. All eligible children below 5 years of age from all selected households were surveyed for the Child Anthropometry and Health, and Infant and Young Child Feeding (IYCF) and anaemia modules. Half of the selected households were selected for the Food Security, Water, Sanitation and Hygiene (WASH), and Women questionnaire. The survey respondents were the primary caretakers of children below 5 years. Abandoned households were not included in the sampling frame. Absent households or households where children were absent were re-visited before the end of the day. If they were found to be empty, they were recorded as missing and were not replaced. Children who were in health centres at the time of the survey were recorded as absent.

2.4 Questionnaire and measurement methods

2.4.1 Questionnaire

The questionnaires were prepared in English language and translated to Somali language (Appendix 4). The questionnaires were pre-tested during the pilot test on the 5th day of enumerator training.

Module 1 and 2: Children 6-59 months- Questions and measures for children aged 6-59 months. Information was collected on anthropometric status, oedema, enrolment in selective feeding programmes, immunisation (measles), vitamin A supplementation in the last six months, and morbidity from diarrhoea in past two weeks and haemoglobin measurement.
Module 2*:* ***Women 15-49 years***- Information relating to women's pregnancy status, enrolment in ANC, coverage of iron-folic acid pills and haemoglobin measurement for non-pregnant women.
Module 3*:* ***Children 0-23 months***- Infant and young child feeding practices for children aged 0-23 months.
Module 4*:* ***Food Security***- *Q*uestions on access and use of the general food ration, use of negative coping mechanisms and household dietary diversity.
Module 5*:* ***Water, sanitation and hygiene***- Questions on quality and quantity of drinking water, satisfaction with the drinking water supply, and sanitation facilities.

2.5 Measurement methods

2.5.1 Household-level indicators

Household questionnaires for food security and WASH were based on the UNHCR SENS tool with minor modifications.

2.5.2 Individual-level indicators

Sex of children: sex 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 birth certificates or child health cards. A local calendar of events (Appendix 5) was used in the absence of official documentation, and the age in months was recorded.
Age of women 15-49 years: The reported age was recorded in years.
Weight of children 6-59 months: measurements were taken to the nearest 0.1kg using an electronic scale (SECA scale) with a wooden board to stabilise it on the ground. All children were weighed without clothes.
Height/Length of children 6-59 months: children's height or length was taken to the nearest 0.1cm 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 those greater than or equal to 87cm were measured standing up.

Oedema in children 6-59 months: bilateral oedema was assessed by applying gentle thumb pressure on to the tops of both feet of the child for a period of three seconds and thereafter observing for the presence or absence of an indent.

MUAC of children 6-59 months and women 15-49 years: MUAC was measured at the mid-point of the left upper arm between the elbow and the shoulder and taken to the nearest 0.1cm using a standard tape.

Child enrolment in selective feeding programme for children 6-59 months: selective feeding programme coverage was assessed for the outpatient therapeutic programme and for the supplementary feeding programme. This was verified by showing images of the products given in the different programmes

Measles vaccination in children 6-59 months: measles vaccination was assessed by checking for the measles vaccine on the child health card if available or by asking the caregiver to recall if no child health card was available or if it was not recorded. Results were recorded on all children but were only analysed for children aged 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 the child health card if available or by asking the caregiver to recall if no card was available. Vitamin A capsule were shown to the caregivers when asked to recall.

Deworming-children 24-59 months: whether the child received a deworming tablet over the past six months was recorded from the child health card, if available, or by asking the caregiver to recall if no card was available. A deworming tablet was shown to the caregiver when asked to recall.

Haemoglobin concentration in children 6-59 months and women 15-49 years: Hamoglobin 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: if the surveyed woman was pregnant, she was assessed on whether she was enrolled in the ANC programme and was receiving iron-folic acid pills.

Infant and young child feeding practices in children 0-23 months: infant and young child feeding practices were assessed based on the UNHCR SENS guidelines from primary caregiver recall.

Referrals: Children aged 6-59 months were referred to health centre/post for treatment when MUAC was < 12.5 cm, or when WHZ was below -2, or when oedema was present, or when haemoglobin was < 7.0 g/dL. Women of reproductive age and adolescent girls were referred to the hospital for treatment when haemoglobin was < 8.0 g/dL.

2.6 Case definitions, inclusion criteria and calculations

A household was defined as: a group of people who live together and routinely eat out of the same pot. Where two families share the same pot, they were assessed as one household even if they lived in the same compound.

Nutritional Status: Table i shows the definition and classification of the nutritional indicators used. Main results are reported according the WHO Growth Standards 2006.

Table i. Definitions of acute malnutrition using weight-for-height and/or edema in children 6–59 months

Categories of acute malnutrition	Z-scores (NCHS Growth Reference 1977 and WHO Growth Standards 2006)	Bilateral oedema
Global acute malnutrition	< -2 z-scores	Yes/No
Moderate acute malnutrition	< -2 z-scores and ≥ -3 z-scores	No
Severe acute malnutrition	> -3 z-scores	Yes
	< -3 z-scores	Yes/No

Stunting, also known as chronic malnutrition was defined using height-for-age index values and was classified as severe or moderate based on the cut-offs shown in Table ii. Main results are reported according to the WHO Growth Standards 2006.

Table ii. Definitions of stunting using height-for-age in children 6–59 months

Categories of stunting	Z-scores (WHO Growth Standards 2006 and NCHS Growth Reference 1977)
Stunting	<-2 z-scores
Moderate stunting	<-2 z-score and >=-3 z-score
Severe stunting	<-3 z-scores

Underweight was defined using the weight-for-age index values and was classified as severe or moderate based on the cut-offs shown in Table iii. Main results are reported according to the WHO Growth Standards 2006.

Table iii. Definitions of underweight using weight-for-age in children 6–59 months

Categories of underweight	Z-scores (WHO Growth Standards 2006 and NCHS Growth Reference 1977)
Underweight	<-2 z-scores
Moderate underweight	<-2 z-scores and >=-3 z-scores
Severe underweight	<-3 z-scores

Mid Upper Arm Circumference (MUAC) values in children 6-59 months were used to define malnutrition according to the cut-offs shown in Table iv.

Table iv. Classification of acute malnutrition based on MUAC in children 6-59 months (WHO)

Categories of Malnutrition	MUAC Reading
At risk of malnutrition	≥ 12.5 cm and <13.5 cm
Moderate malnutrition	≥ 11.5 cm and <12.5 cm
Severe malnutrition	< 11.5 cm

Infant and young child feeding practices in children 0-23 months: Infant and young child feeding practices were assessed as follows based on standard WHO recommendations (WHO 2007).

Timely initiation of breastfeeding: Proportion of children born in the last 24 months who were put to the breast within one hour of birth.

$$\frac{\text{Children born in the last 24 months who were put to the breast within one hour of birth}}{\text{Children born in the last 24 months}}$$

Exclusive breastfeeding under 6 months: Proportion of infants 0–5 months of age who are fed exclusively with breast milk.

$$\frac{\text{Infants 0–5 months of age who received only breast milk during the previous day}}{\text{Infants 0–5 months of age}}$$

Continued breastfeeding at 1 year: Proportion of children 12–15 months of age who are fed breast milk.

$$\frac{\text{Children 12–15 months of age who received breast milk during the previous day}}{\text{Children 12–15 months of age}}$$

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

$$\frac{\text{Infants 6–8 months of age who received solid, semi-solid or soft foods during the previous day}}{\text{Infants 6–8 months of age}}$$

Children ever breastfed: Proportion of children born in the last 24 months who were ever breastfed.

$$\frac{\text{Children born in the last 24 months who were ever breastfed}}{\text{Children born in the last 24 months}}$$

Continued breastfeeding at 2 years: Proportion of children 20–23 months of age who are fed breast milk.

$$\frac{\text{Children 20–23 months of age who received breast milk during the previous day}}{\text{Children 20–23 months of age}}$$

Bottle feeding: Proportion of children 0-23 months of age who are fed with a bottle

$$\frac{\text{Children 0–23 months of age who were fed with a bottle during the previous day}}{\text{Children 0–23 months of age}}$$

Consumption of iron-rich or iron-fortified foods: Proportion of children 6-23 months of age who received an Iron-rich food or Iron-fortified food that is specially designed for infant and young children or that is fortified in the home.

Children 6-23 months of age who received an Iron-rich food or Iron-fortified food that

Is specially designed for infant and young children, or that was fortified in the home with a

Product that included Iron during the previous day
Children 6-23 months of age

Diarrhoea: Three or more loose or watery stools in a 24-hour period.

Under nutrition in women of reproductive age: Mid Upper Arm circumference (MUAC) in women was classified according to cut-offs shown in Table v.

Table v. Classification of under nutrition based on MUAC in women of reproductive age

Categories of Malnutrition	**MUAC Reading**
Pregnant and lactating women	
Moderate malnutrition	≥18.5 cm and <21 cm
Severe malnutrition	<18.5 cm
Non-pregnant, non-lactating	
Moderate malnutrition	≥16.0 cm and <18.5 cm
Severe malnutrition	<16.0 cm

Anemia was measured using a HemoCue Hb 301 machine and defined and categorized according to WHO recommended cut-offs shown in Table vi to determine the prevalence of anemia.

Table vi. Definition of anemia (WHO 2000)

Age/Sex groups	**Categories of Anaemia (Hb g/dL)**			
	Total	**Mild**	**Moderate**	**Severe**
Children 6 - 59 months	<11.0	10.9 - 10.0	9.9 - 7.0	< 7.0
Non-pregnant adult females 15-49 years	<12.0	11.9 - 11.0	10.9 - 8.0	< 8.0

According to FANTA (2006), Household dietary diversity (HDDS), the number of different food groups consumed over a given reference period. In the UNHCR SENS, the reference period is 24 hours and the following 12 food groups are assessed: cereals; white roots and tubers; vegetables; fruits; meat; eggs; fish and seafood; legumes, nuts and seeds; milk and milk products; oils and fats; sweets; spices, condiments and beverages. HDDS therefore ranges between 0 and 12. HDDS is important as a more diversified diet is associated with a number of improved outcomes in areas such as birth weight, child anthropometric status, and improved hemoglobin concentrations.

2.7 Classification of public health problems and targets

Anthropometry:

The classification of public health significance for anthropometric results for children aged 6-59 months is shown in Table vii.

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

Prevalence %	Critical	Serious	Poor	Acceptable
Wasting	≥15	10-14	5-9	<5
Stunting	≥40	30-39	20-29	<20

Measles vaccination

UNHCR recommends target coverage of 95% (same as Sphere Standards).

Vitamin A supplementation

UNHCR recommends vitamin A supplementation coverage to be >90% among children aged 6-59 months.

Anaemia

The thresholds for public health significance for anemia prevalence for all groups according to WHO are displayed in Table viii. The Strategic Plan for Nutrition and Food Security (2008-2010) recommends that the prevalence of anemia for all groups must be low (5-19%).

Table viii. Classification of public health significance (WHO 2000)

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

WASH

Relevant UNHCR standards for WASH indicators are shown in Table ix.

Table ix. UNHCR WASH Programme Standards

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

2.8 Training, coordination and supervision

In each camp, a total of 5 survey teams each consisting of 5 team members (anthropometry measurer, anthropometry assistant, haemoglobin measurer, interviewer and team leader) were trained for a total of 3 days, followed by an additional 2 days for the standardisation test and pilot test. Data collection was carried out over 6 days, under the supervision of UNHCR and WFP, in collaboration with nutrition partners in each camp (IRC, KRCS, IRK). Mobile phones were used for data collection, with daily data transfer to an offline server at the end of each day in a decentralised system which was managed by respective partners in the different camps.

2.9 Data analysis

On a daily basis, after synchronizing data from the mobile phones, data quality tests were performed before the next day and feedback was provided to survey teams. In certain instances, this resulted in repeat measurements of children when errors were suspected or re-visiting of households for completion of missing data such as date of birth or sex. Data analysis for anthropometry data was conducted using ENA-for-SMART 9 July, 2015 version, and data analysis for the remaining variables was conducted using EPI INFO 3.5.3. SMART flags (+/- 3 SD from the observed mean) were applied for exclusion of outliers from the final analysis.

3 Results: Dagahaley camp

The demographics of the study populationa are shown in Table 2.

Table 2 Demographic Characteristics of the study population, Dagahaley camp, Kenya, 2017

Total HHs surveyed	*298*
Total population surveyed	*1,953*
Total U5 surveyed	*750*
Average HH size	*6.6*
% of U5	*19.2*

3.1 Children 6-59 months

Sample size and clusters

A total of 677 children between 6-59 months were interviewed compared to a target of 564, representing 120% (Table 3).

Table 3 Target and actual number captured, Dagahaley, Dagahaley Camp, Kenya, 2017

	Target (No.)	**Total surveyed (No.)**	**% of the target covered**
Children 6-59 months	564	677	120
Clusters	30	30	100

The distribution of age and sex (Table 4) shows that there was no bias with respect to selection of different ages as well as boys girls.

Table 4 Distribution of age and sex of sample, Dagahaley camp, Kenya, 2017

	Boys		**Girls**		**Total**		**Ratio**
AGE (mo)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy : girl**
6-17	79	52.3	72	47.7	151	22.3	1.1
18-29	89	53.0	79	47.0	168	24.8	1.1
30-41	74	48.7	78	51.3	152	22.5	0.9
42-53	74	50.7	72	49.3	146	21.6	1.0
54-59	28	46.7	32	53.3	60	8.9	0.9
Total	344	50.8	333	49.2	677	100.0	1.0

Anthropometric results (based on WHO Growth Standards 2006)

The prevalence of global acute malnutrition (GAM) was 8.3% (5.7-11.8), with a much higher prevalence of GAM among boys (9.7%) than girls (6.7%). The prevalence of severe acute malnutrition (SAM) was 1.1% (0.4-2.6). There were no cases of oedema (Table 5). The difference between the 2016 and 2017 prevalence was not statistically significant *(p=0.308)*.

Table 5 Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex, Dagahaley camp, Kenya, 2017

	All n = 666	**Boys** n = 339	**Girls** n = 327
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(55) 8.3 % (5.7 - 11.8 95% C.I.)	(33) 9.7 % (6.4 - 14.5 95% C.I.)	(22) 6.7 % (4.1 - 10.9 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(48) 7.2 % (4.8 - 10.7 95% C.I.)	(30) 8.8 % (5.9 - 13.1 95% C.I.)	(18) 5.5 % (3.1 - 9.6 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(7) 1.1 % (0.4 - 2.6 95% C.I.)	(3) 0.9 % (0.2 - 3.9 95% C.I.)	(4) 1.2 % (0.4 - 4.1 95% C.I.)

The prevalence of oedema is 0.0 %

According to the trend analysis (Figure 1), the prevalence of GAM and SAM decreased in 2017 after having increased between 2014 and 2016.

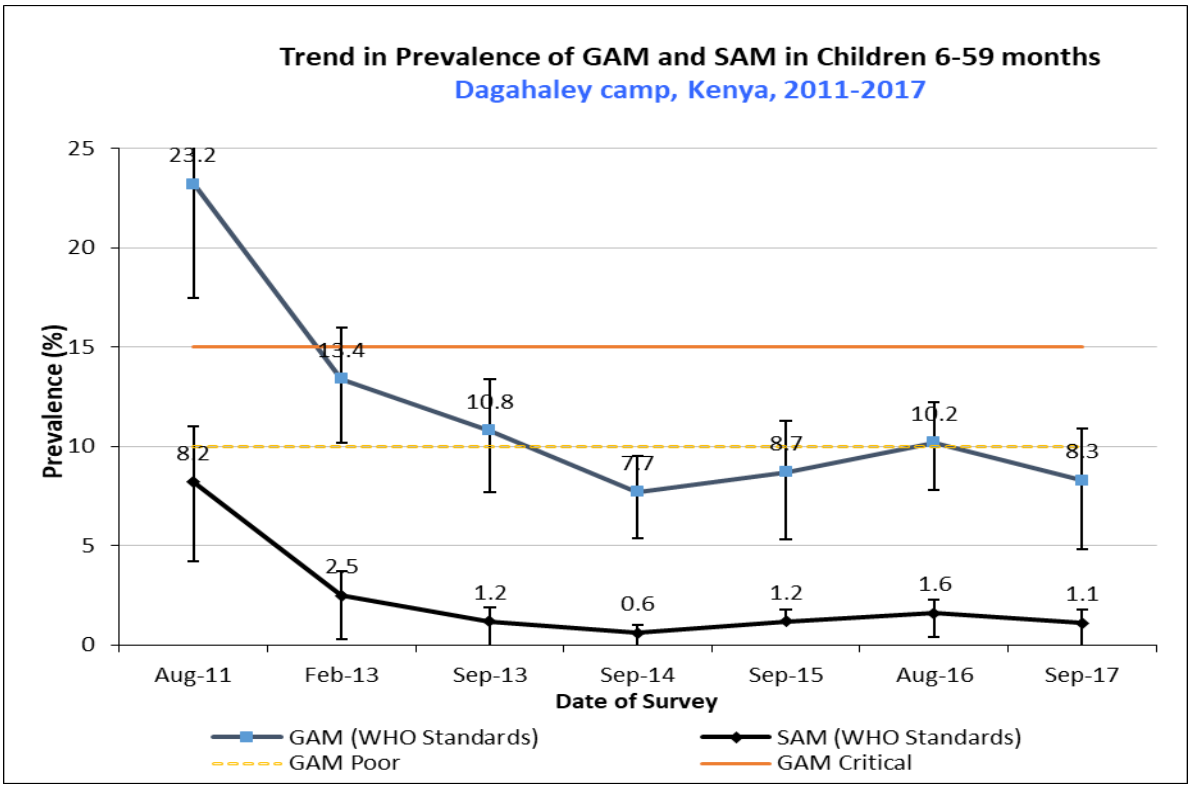


Figure 1 Trend in prevalence of GAM and SAM, Dagahaley camp, Kenya, 2017

Table 6 Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema, Dagahaley camp, Kenya, 2017

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	147	2	1.4	9	6.1	136	92.5	0	0.0
18-29	167	1	0.6	9	5.4	157	94.0	0	0.0
30-41	149	1	0.7	10	6.7	138	92.6	0	0.0
42-53	145	3	2.1	11	7.6	131	90.3	0	0.0
54-59	58	0	0.0	9	15.5	49	84.5	0	0.0
Total	666	7	1.1	48	7.2	611	91.7	0	0.0

The prevalence of moderate wasting was highest in the 54-59 age group while the prevalence of severe wasting was highest in the 42-53 age group (Table 6 and Figure 2).

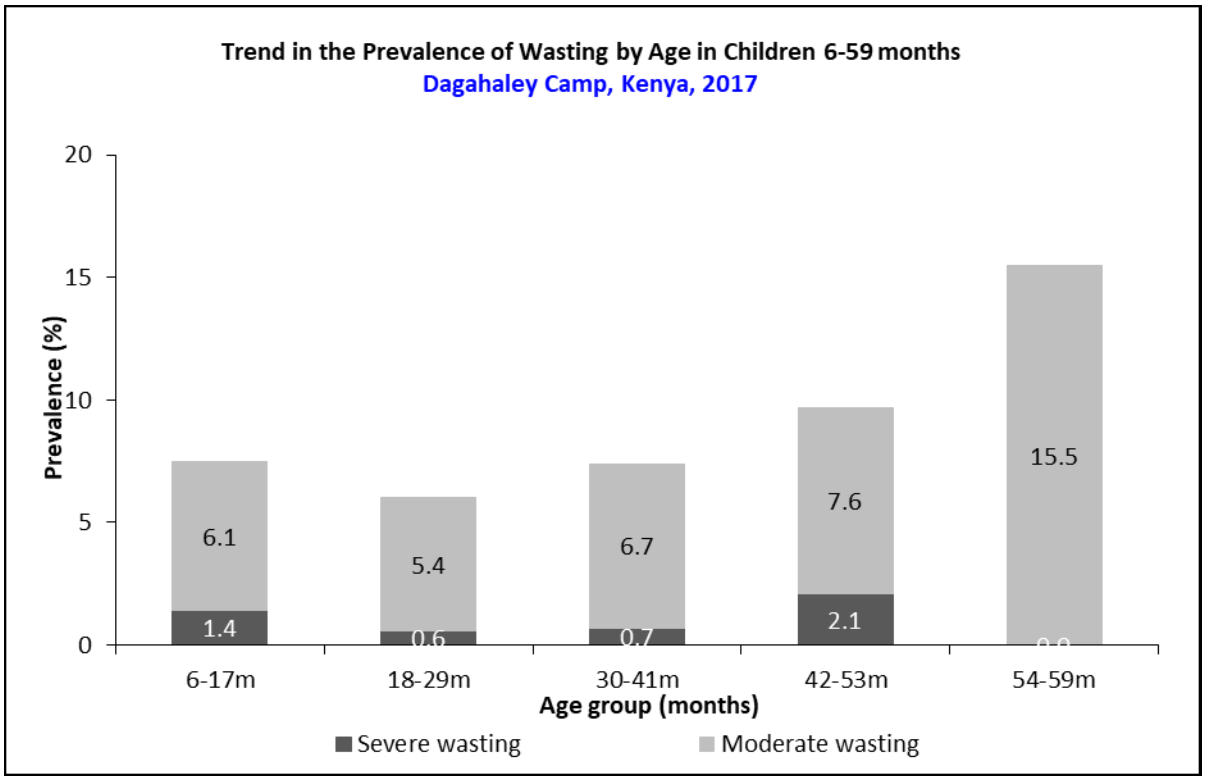


Figure 2 Trend in prevalence of wasting by age, Dagahaley camp, Kenya, 2017

As shown in Table 7, all cases of severe acute malnutrition were due to marasmus.

Table 7 Distribution of acute malnutrition and oedema based on weight-for-height z-scores, Dagahaley camp, Kenya, 2017

	<-3 z-score	**>=-3 z-score**
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 11 (1.6 %)	Not severely malnourished No. 665 (98.4 %)

NB: Flagged records are included

Figure 3 shows the weight-for-height z-scores distribution. The graph closely resembles the standard WHO curve.

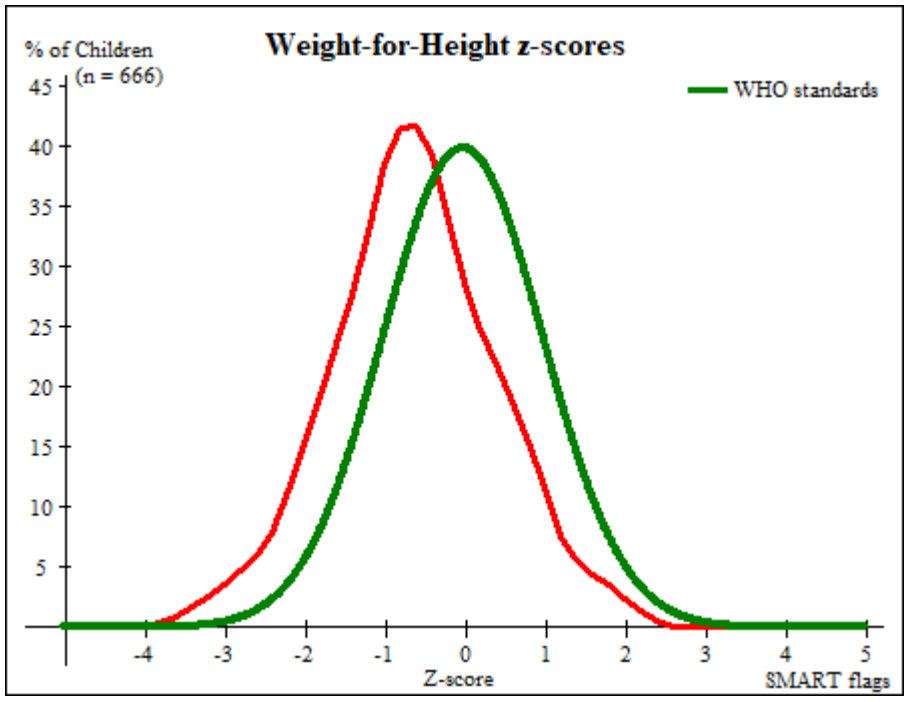


Figure 3 Distribution of weight-for-height z-scores, Dagahaley camp, Kenya, 2017

Table 8 Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex, Dagahaley camp, Kenya, 2017

	All n = 677	**Boys** n = 344	**Girls** n = 333
Prevalence of global malnutrition (< 125 mm and/or oedema)	(18) 2.7 % (1.5 - 4.7 95% C.I.)	(10) 2.9 % (1.5 - 5.7 95% C.I.)	(8) 2.4 % (1.1 - 5.3 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(17) 2.5 % (1.4 - 4.5 95% C.I.)	(9) 2.6 % (1.3 - 5.1 95% C.I.)	(8) 2.4 % (1.1 - 5.3 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(1) 0.1 % (0.0 - 1.1 95% C.I.)	(1) 0.3 % (0.0 - 2.2 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)

Table 9 Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema, Dagahaley camp, Kenya, 2017

		Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	151	1	0.7	14	9.3	136	90.1	0	0.0
18-29	168	0	0.0	2	1.2	166	98.8	0	0.0
30-41	152	0	0.0	0	0.0	152	100.0	0	0.0
42-53	146	0	0.0	1	0.7	145	99.3	0	0.0
54-59	60	0	0.0	0	0.0	60	100.0	0	0.0
Total	677	1	0.1	17	2.5	659	97.3	0	0.0

The prevalence of underweight was 16.0% (12.7-20.1), with 3.0% (2.0-3.0) classified as severely underweight (Table 10).

Table 10 Prevalence of underweight based on weight-for-age z-scores by sex, Dagahaley camp, Kenya, 2017

	All n = 667	**Boys** n = 338	**Girls** n = 329
Prevalence of underweight (<-2 z-score)	(107) 16.0 % (12.7 - 20.1 95% C.I.)	(57) 16.9 % (11.8 - 23.4 95% C.I.)	(50) 15.2 % (12.0 - 19.0 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(87) 13.0 % (10.0 - 16.8 95% C.I.)	(46) 13.6 % (9.3 - 19.4 95% C.I.)	(41) 12.5 % (9.7 - 15.8 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(20) 3.0 % (2.0 - 4.5 95% C.I.)	(11) 3.3 % (1.9 - 5.5 95% C.I.)	(9) 2.7 % (1.3 - 5.8 95% C.I.)

The prevalence of stunting in Dagahaley was 18.4% (14.1-23.7), with a severe stunting prevalence of 4.8% (3.2-7.2) as shown in Table 11. The difference between the 2016 and 2017 prevalence was not statistically significant *(p=0.954)*.

Table 11 Prevalence of stunting based on height-for-age z-scores and by sex, Dagahaley camp, Kenya, 2017

	All n = 646	**Boys** n = 327	**Girls** n = 319
Prevalence of stunting (<-2 z-score)	(119) 18.4 % (14.1 - 23.7 95% C.I.)	(65) 19.9 % (14.8 - 26.2 95% C.I.)	(54) 16.9 % (12.0 - 23.3 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(88) 13.6 % (10.3 - 17.8 95% C.I.)	(46) 14.1 % (10.0 - 19.5 95% C.I.)	(42) 13.2 % (8.8 - 19.3 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(31) 4.8 % (3.2 - 7.2 95% C.I.)	(19) 5.8 % (3.6 - 9.3 95% C.I.)	(12) 3.8 % (2.1 - 6.7 95% C.I.)

The analysis of the trend from 2011 to 2017 shows that stunting has been decreasing since 2015 (Figure 4).

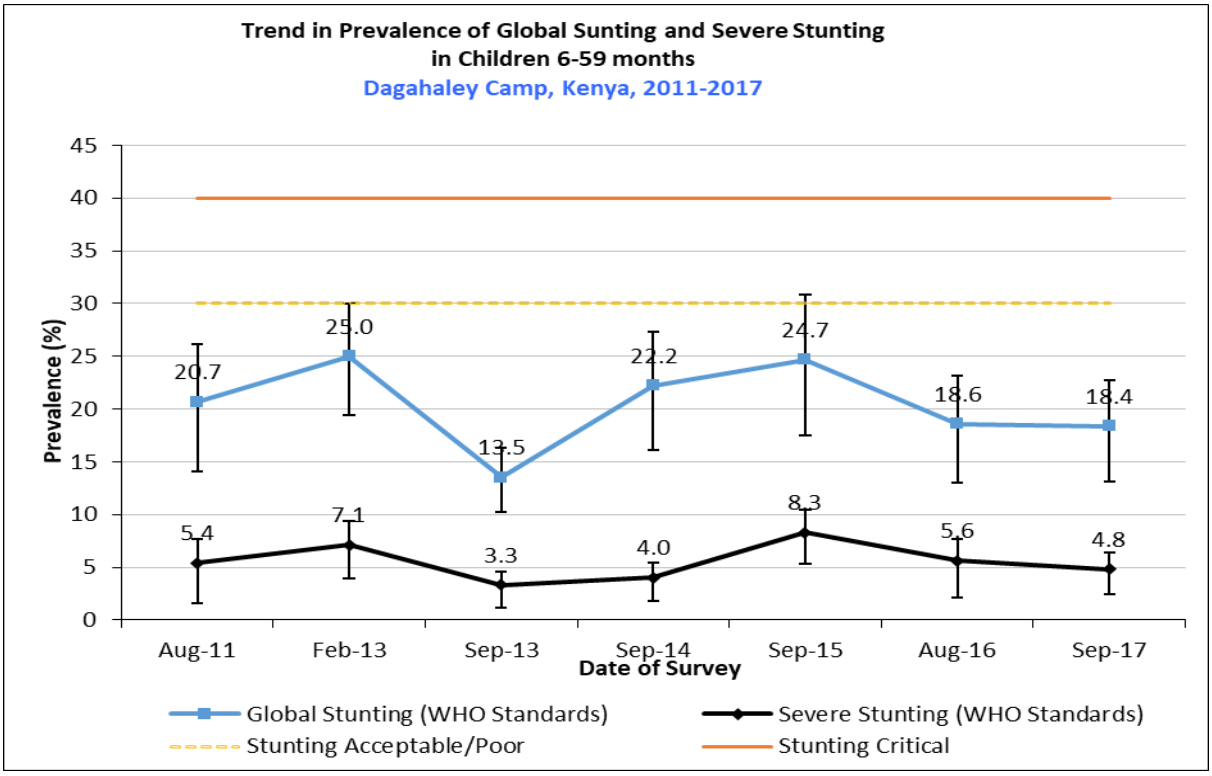


Figure 4 Trend in prevalence of global and severe stunting, Dagahaley camp, 2017

The analysis of stunting by age reveals that stunting was highest in the 18-29 age group, after which it decreased (Table 12 and Figure 5).

Table 12 Prevalence of stunting by age based on height-for-age z-scores, Dagahaley camp, Kenya, 2017

		Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	144	5	3.5	16	11.1	123	85.4
18-29	158	13	8.2	27	17.1	118	74.7
30-41	146	7	4.8	22	15.1	117	80.1
42-53	141	3	2.1	18	12.8	120	85.1
54-59	57	3	5.3	5	8.8	49	86.0
Total	646	31	4.8	88	13.6	527	81.6

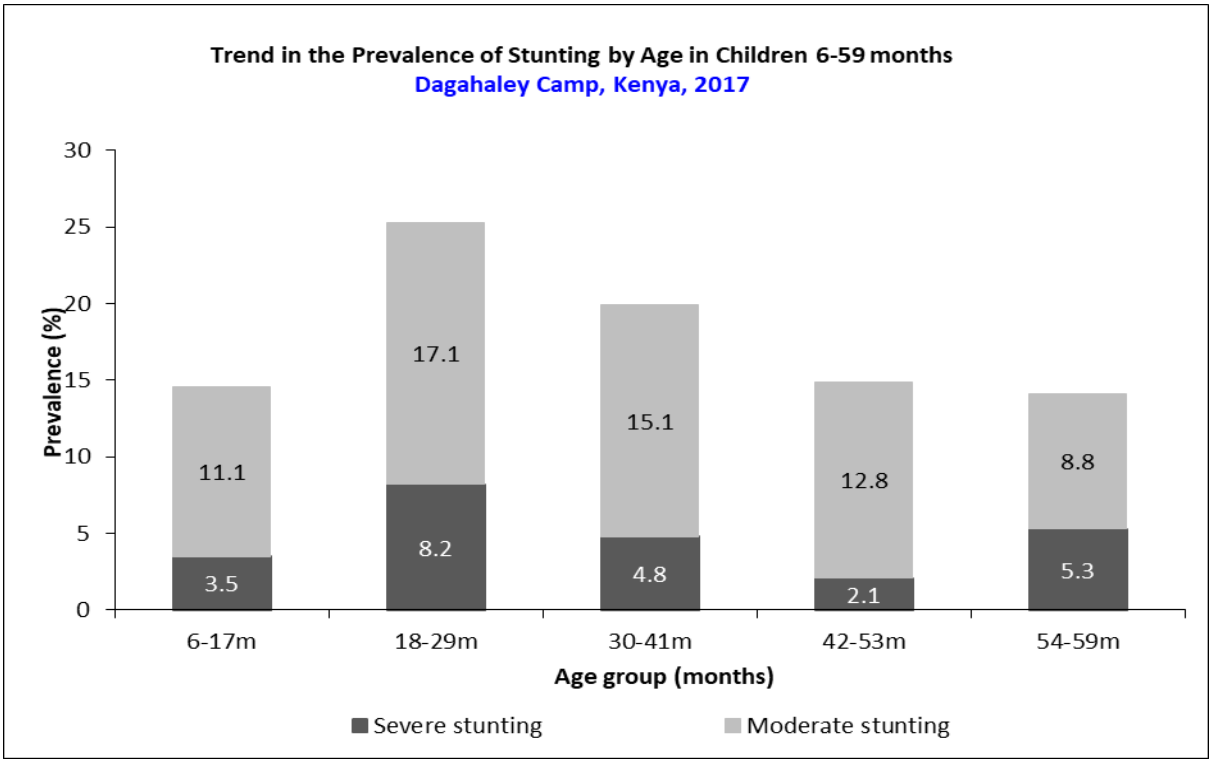


Figure 5 Trend in prevalence of stunting by age, Dagahaley camp, Kenya, 2017

The height-for-age z-scores distribution is compared to the WHO curve in Figure 6. The curve was flatter than the WHO graph.

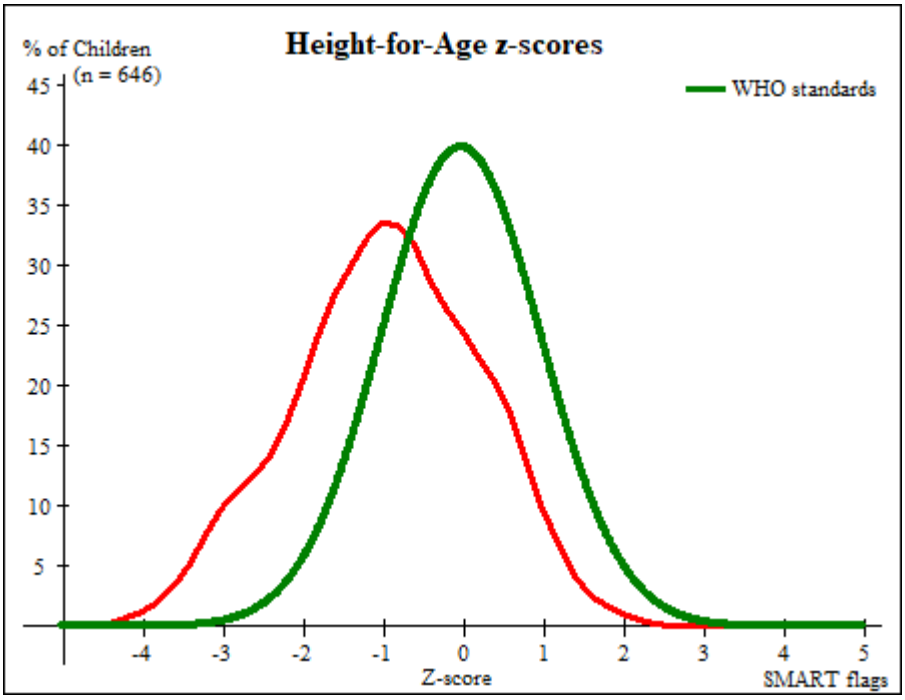


Figure 6 Distribution of height-for-age z-scores, Dagahaley camp, Kenya, 2017

The mean z-scores and design effect for the three indicators is displayed in Table 13.

Table 13 Mean z-scores, Design Effects and excluded subjects, Dagahaley camp, Kenya, 2017

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	666	-0.63±1.02	1.88	1	10
Weight-for-Age	667	-0.95±1.05	1.64	0	10
Height-for-Age	646	-0.95±1.15	2.37	0	31

* contains for WHZ and WAZ the children with edema.

Measles vaccination coverage results

The coverage of both measles vaccination and Vitamin A supplementation were very high based on recall or confirmation from the mother (Table 14 and 15).

Table 14 Measles vaccination coverage for children aged 9-59 months (n=651), Dagahaley camp, Kenya, 2017

	Measles (with card) n=330	**Measles (with card or confirmation from mother) n=647**
YES	50.7% (36.6-64.8, 95% C.I)	99.4% (98.5-100.0, 95% C.I)

Vitamin A coverage results

Table 15 Vitamin A supplementation for children aged 6-59 months within past 6 months (n=677), Dagahaley camp, Kenya, 2017

	Vitamin A capsule (with card) n=110	**Vitamin A capsule (with card or confirmation from mother) n=654**
YES	16.2% (6.4-26.1, 95% C.I)	96.6% (94.4-98.8, 95% C.I)

An analysis of the trend revealed that the coverage of measles and Vitamin A has remained within acceptable levels in comparison with the standard (Figure 7).

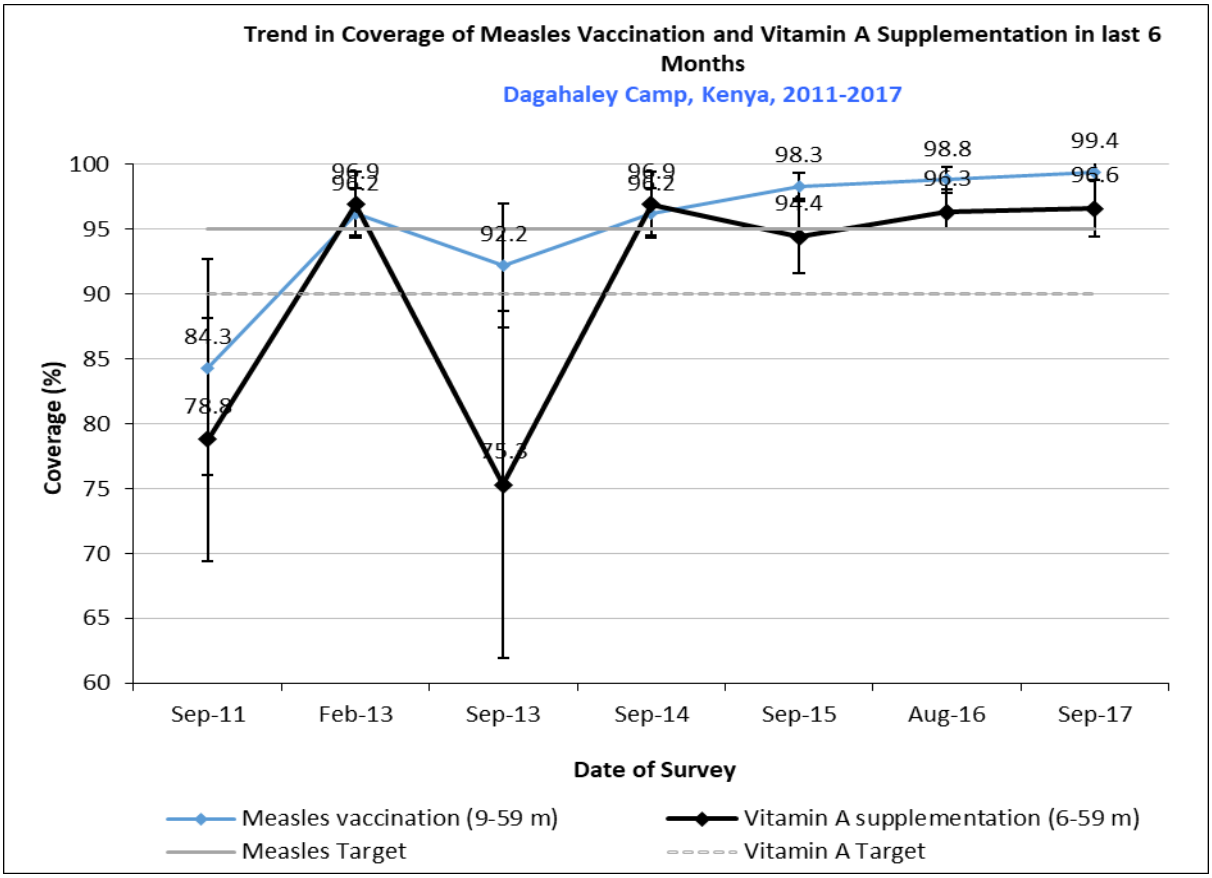


Figure 7 Trend in coverage of measles vaccination and Vitamin A supplementation, Dagahaley camp, Kenya, 2017

Deworming

The coverage of deworming was also very high for the 24-59 months age group (Table 16). The high coverage of Vitamin A, measles and deworming shows the impact of the bi-annual malezi bhora exercise in addition to routine supplementation and vaccination.

Table 16 Deworming for children aged 24-59 months within past 6 months (n=450), Dagahaley camp, Kenya, 2017

	Deworming (with card or confirmation from mother) n=415
YES	92.2% (87.4-97.0, 95% C.I)

Diarrhoea results

Approximately a tenth of sampled children (10.2%, 5.6-14.7) had experienced diarrhoea in the previous two weeks (Table 17).

Table 17 Period prevalence of diarrhoea, Dagahaley camp, Kenya, 2017

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	69/677	10.2 (5.6-14.7)

Anaemia results

Among children 6-59 months, 62.9% (58.1-67.8) were classified as anaemic (Table 18), with a mean Hb level of 10.5. The increase in anaemia in 2017 compared to 2016 was statistically

significant *(p<0.05)*.

Table 18 Prevalence of anaemia in children 6-59 months, Dagahaley camp, Kenya, 2017

Anaemia in Children 6-59 months	**All** n = 674
Total Anaemia (Hb<11.0 g/dL)	(424) 62.9% (58.1-67.8, 95% C.I)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(193) 28.6% (25.3-31.9, 95% C.I)
Moderate Anaemia (7.0-9.9 g/dL)	(225) 33.4% (29.2-37.6, 95% C.I)
Severe Anaemia (<7.0 g/dL)	(6) 0.9% (0.1-1.7, 95% C.I)
Mean Hb (g/dL) **(confidence interval)**	10.5 (10.3-10.6)

Figure 8 shows that anaemia has been increasing since 2014, with an increase in both the mild and moderate anaemia categories and remains well above the 40% critical threshold.

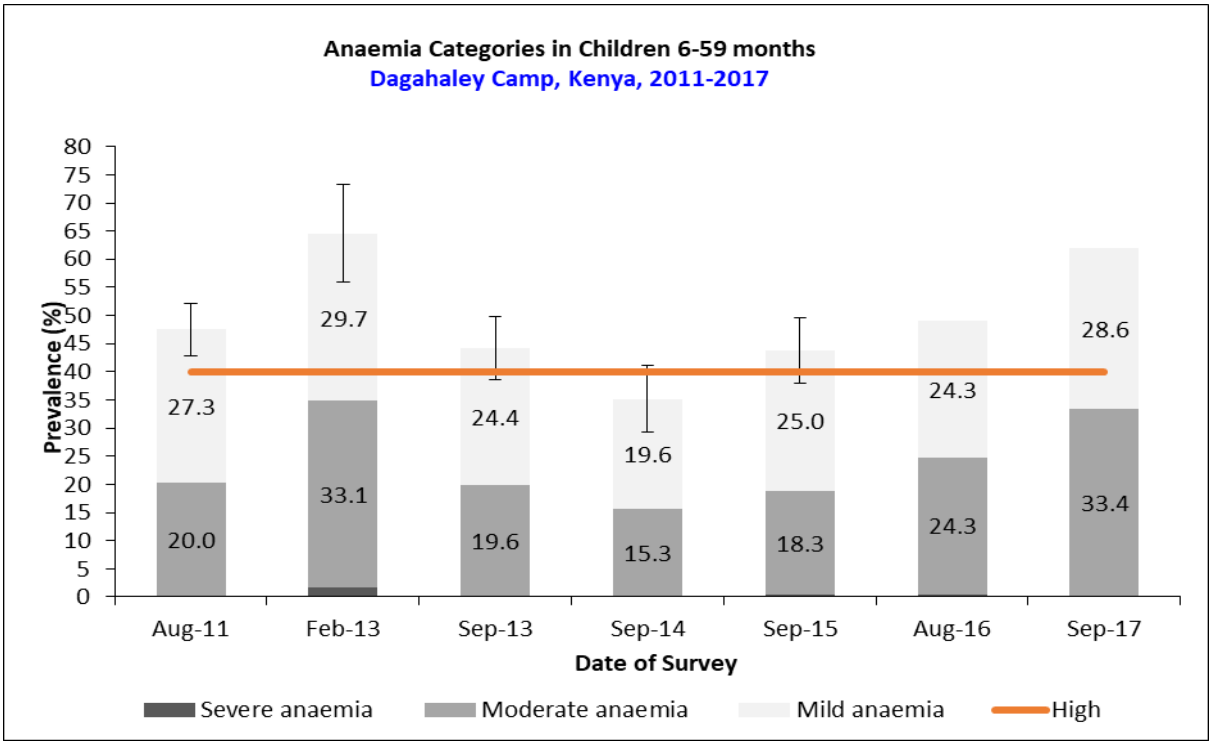


Figure 8 Anaemia categories, Dagahaley camp, Kenya, 2017

The mean haemoglobin concentration has followed the same trend as the prevalence, decreasing from 10.9 in 2016 to 10.5 in 2017 (Figure 9).

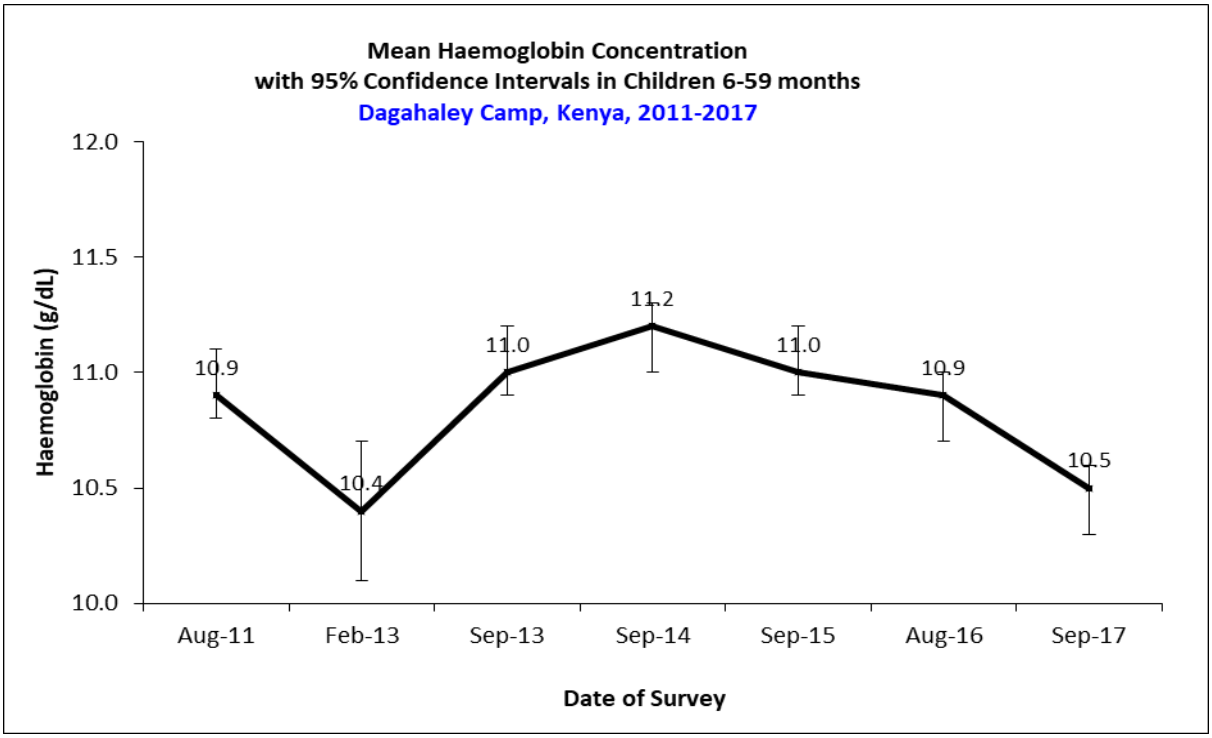


Figure 9 Mean haemoglobin concentration, Dagahaley camp, Kenya, 2017

The prevalence of moderate and severe anaemia by age is analysed in Table 19.

Table 19 Prevalence of moderate and severe anaemia in children 6-59 months by age, Dagahaley camp, Kenya, 2017

	6-23 months n=224	**24-35 months n=162**	**36-59 months n=288**	**Total n=674**
Moderate and Severe Anaemia (Hb < 10g/dl)	(106) 47.3% (41.0-53.7, 95% C.I)	(70) 43.2% (33.6-52.8, 95% C.I)	(55) 19.1% (14.1-24.1, 95% C.I)	(231) 34.3% (30.1-38.5, 95% C.I)

Anaemia was highest in the 6-23 age group, where more than three quarters were anaemic (78.1%, 72.3-84.0). In the 24-35 age group, more than two thirds (71.6%, 4.4-78.8) were anaemic. In the 36-59 age group, less than half (46.2%, 39.2-53.2) were anaemic (Table 20).

Table 20 Prevalence of anaemia by age, Dagahaley camp, Kenya, 2017

		Severe Anaemia (<7.0 g/dL)		Moderate Anaemia (7.0-9.9 g/dL)		Mild Anaemia (Hb 10.0-10.9 g/dL)		Total Anaemia (Hb<11.0 g/dL)		Normal (Hb≥11.0 g/dL)	
Age (mths)	**Total no.**	**No.**	**% (95% CI)**	**No.**	**% (95% CI)**	**No.**	**% (95% CI)**	**No.**	**% (95% CI)**	**No.**	**% (95% CI)**
6-23	226	1	0.4 (0.0-1.4)	105	46.9 (40.7-53.1)	69	30.8 (25.6-36.0)	175	78.1 (72.3-84.0)	49	21.9 (16.0-27.7)
24-35	162	3	1.9 (0.0-3.9)	67	41.4 (31.5-51.2)	46	28.4 (20.8-36.0)	116	71.6 (64.4-78.8)	46	28.4 (21.2-35.6)
36-59	288	2	0.7 (0.0-1.7)	53	18.4 (13.7-23.1)	78	27.2 (21.9-32.3)	133	46.2 (39.2-53.2)	155	53.8 (46.8-60.8)
Total	**674**	**6**	**0.9 (0.1-1.7)**	**225**	**33.4 (29.2-37.6)**	**193**	**28.6 (25.3-31.9)**	**424**	**62.9 (58.1-67.8)**	**250**	**37.1 (32.2-41.9)**

3.2 Children 0-23 months

Infant and Young Child Feeding (IYCF) indicators results are presented in Table 21 and Figure 10. Timely initiation of breastfeeding (initiation of breastfeeding within an hour of birth) was reported by less than two thirds (64.9%, 50.7-79.1) of the sample. Over half (58.1%, 43.7-72.6) of children below 6 months were exclusively breastfed. Only half (50.0%, 27.8-72.2) of children between 6 and 8 months had been introduced to solid food.

Table 21 Prevalence of Infant and Young Child Feeding Practices Indicators, Dagahaley camp, Kenya, 2017

Indicator	Age range	Number/ total	Prevalence (%)	95% CI
Timely initiation of breastfeeding	0-23 months	187/288	64.9	50.7-79.1
Exclusive breastfeeding under 6 months	0-5 months	43/74	58.1	43.7-72.6
Continued breastfeeding at 1 year	12-15 months	19/38	50.0	31.8-68.2
Continued breastfeeding at 2 years	20-23 months	7/46	15.2	4.7-25.7
Introduction of solid, semi-solid or soft foods	6-8 months	13/26	50.0	27.8-72.2
Consumption of iron-rich or iron-fortified foods	6-23 months	136/226	60.2	51.6-68.7
Bottle feeding	0-23 months	44/300	14.7	8.4-21.0

The analysis of trends revealed that timely initiation of breastfeedung has declined over the past 2 years. However, exclusive breastfeeding has improved.

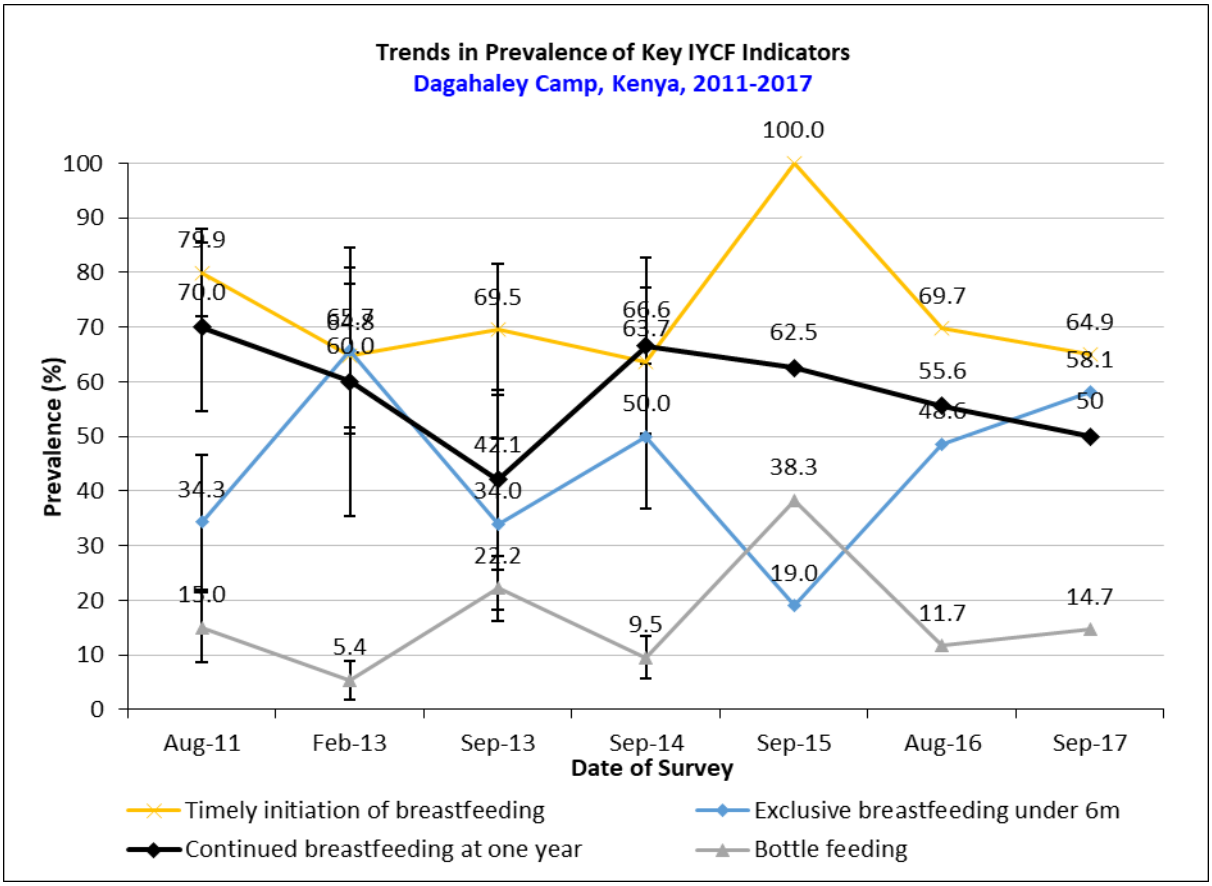


Figure 10 Trends in prevalence of key IYCF indicators, Dagahaley camp, Kenya, 2017

Prevalence of intake

Infant formula

Only 6.7% (0.0-13.5) of children below 2 years had consumed infant formula (Table 22).

Table 22 Infant formula intake in children aged 0-23 months, Dagahaley camp, Kenya, 2017

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who consumed infant formula (fortified or non-fortified)	20/300	6.7 (0.0-13.5)

Fortified blended foods

Only just over a third (36.4%, 25.3-47.6) of children aged 6-23 months had consumed super-cereal plus (CSB++) in the previous day (Table 23).

Table 23 Super-cereal plus (CSB++) intake in children aged 6-23 months, Dagahaley camp, Kenya, 2015

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who consumed Super-cereal plus (CSB++)	82/225	3.4 (25.3-47.6)

3.3 Women 15-49 years

Of the sample of women of reproductive age, 16.9% were pregnant. The mean age was 27, with a minimum of 15 and a maximum of 47 (Table 24).

Table 24 Women's physiological status and age, Dagahaley camp, Kenya, 2017

Physiological status	Number/total	% of sample
Non-pregnant	49/290	16.9
Pregnant	241/290	83.1
Mean age (range)	27 (15-47)	

The prevalence of anaemia among non-pregnant women was 44.8% (35.6-54.0), with a severe anaemia prevalence of 0.8% (0.0-2.0). The mean haemoglobin was 12.1 (Table 25). There was a statisticaly significant increase in anaemia in 2017 compared to 2016 *(p<0.05)*.

Table 25 Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 years), Dagahaley camp, Kenya, 2017

Anaemia in non-pregnant women of reproductive age (15-49 years)	**All** n = 241
Total Anaemia (<12.0 g/dL)	(108) 44.8% (35.6-54.0, 95% C.I)
Mild Anaemia (11.0-11.9 g/dL)	(70) 29.0% (22.0-36.0, 95% C.I)
Moderate Anaemia (8.0-10.9 g/dL)	(36) 14.9% (8.0-21.9, 95% C.I)
Severe Anaemia (<8.0 g/dL)	(2) 0.8% (0.0-2.0, 95% C.I)
Mean Hb (g/dL) **(confidence interval)**	12.1 (11.9-12.3)

Figure 11 and 12 show the increase in both mild and moderate anaemia in 2017 compared to 2016.

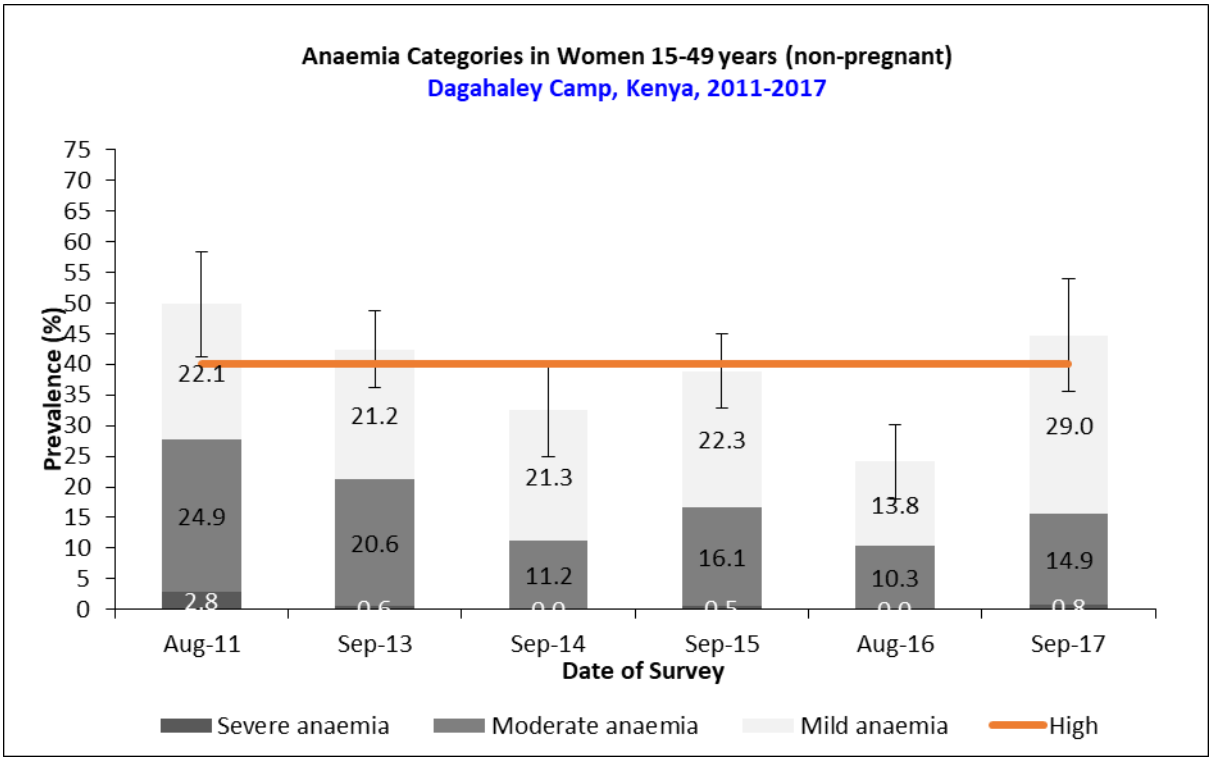


Figure 19 Anaemia categories in women 15-49 years, Dagahaley camp, Kenya, 2017

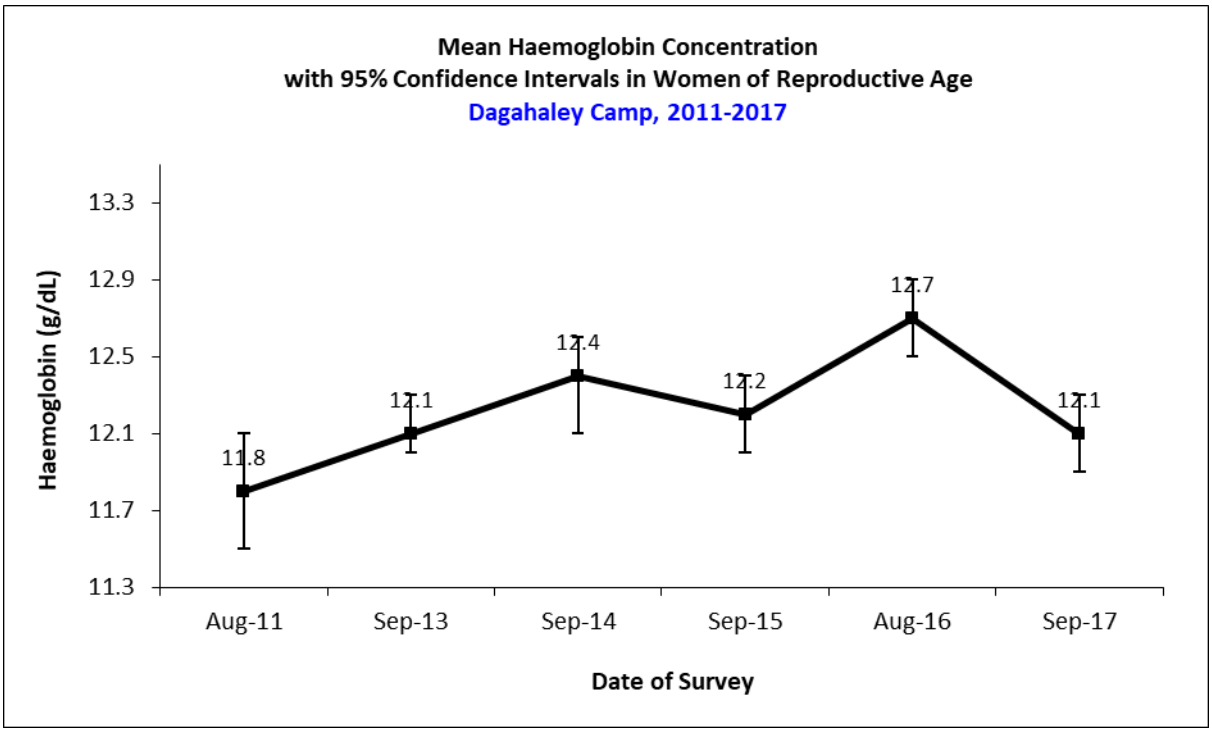


Figure 20 Mean haemoglobin concentration, Dagahaley camp, Kenya, 2017

A high proportion of pregnant women were enrolled in antenatal care and were receiving iron-flic acid tablets (Table 26 and 27).

Table 26 ANC enrollment and iron-folic acid pills coverage among pregnant women (15-49 years), Dagahaley camp, Kenya, 2017

	Number /total	% (95% CI)
Currently enrolled in ANC programme	40/49	81.6 (71.1-92.2)
Currently receiving iron-folic acid pills	40/49	81.6 (71.1-92.2)

Acute malnutrition was very low among pregnant and lactating women according to MUAC classification, with only 2.1% (0.0-0.5) below 210mm, which is the admission criteria for supplementary feeding (Table 27).

Table 27 Prevalence of malnutrition among pregnant and lactating women (15-49 years) based on MUAC, Dagahaley camp, Kenya, 2017

MUAC <210mm in pregnant and lactating women (15-49 years)	Number/total	% (95% CI)
	2/97	2.1 (0.0-5.0)

Just over half (58.8%, 43.7-73.8) of sampled pregnant women were enrolled in the blanket supplementary feeding programme (BSFP).

Table 28 BSFP coverage for pregnant and lactating women (15-49 years), Dagahaley camp, Kenya, 2017

BSFP coverage for pregnant and lactating women (15-49 years)	Number/total	% (95% CI)
	57/97	58.8 (43.7-73.8)

3.4 Food security

298 households were sampled for food security against a planned 298. The target number of households were exceeded due to the sampling method in which every other household was sampled, whereby in cases where the total number of households was an odd number, an extra household resulted from some clusters (Table 29).

Table 29 Food security information, Dagahaley camp, Kenya, 2017

Household data	Planned	Actual	% of target
Total households surveyed for Food Security	285	298	105%

Food distribution results

The average duration of the food ration was reported as 17.4 against the theoretical duration of 31, which is 56.0% of the expeted duration (Table 30).

Table 30 Reported duration of general food ration, Dagahaley camp, Kenya, 2017

Average number of days the food ration lasts (Standard deviation or 95% CI)	Average duration (%) in relation to the theoretical duration of the ration
17.4 (14.8-19.9)	56.0%

The main reason for the food ration not lasting the planned duration was “ration not enough” (68.4%). Interestingly, nearly a third (30.6%) of households reported “food sold/exchanged” as the main reason (Figure 13).

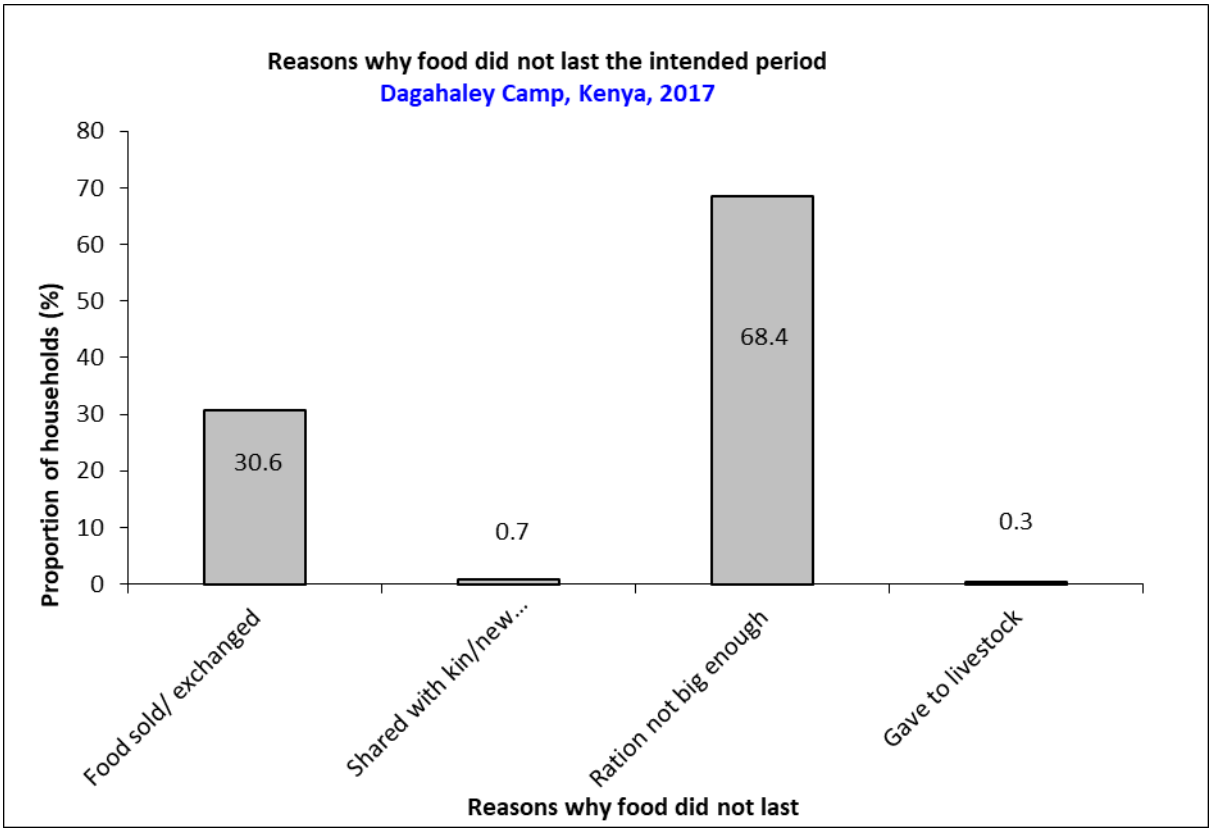


Figure 21 Reasons why food did not last the intended period, Dagahaley camp, Kenya, 2017

Negative coping strategies results

The main household coping mechanism was borrowing (25.0%). Nearly a third (30.4%) of households did not use any of the coping mechanisms (Figure 14).

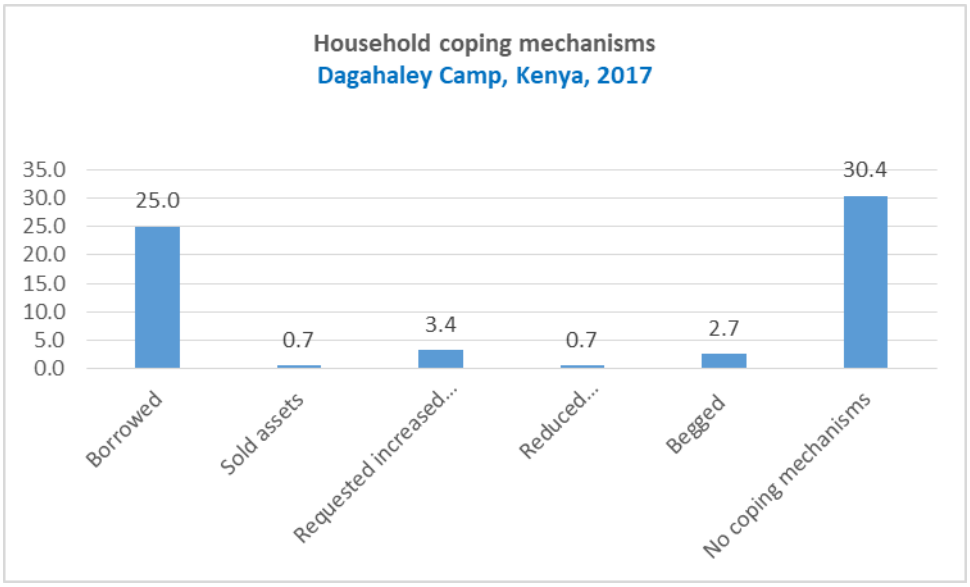


Figure 22 Household coping mechanisms, Dagahaley camp, Kenya, 2017

Household dietary diversity results

The average household dietary diversity score (HDDS) was 4.7 for Dagahaley (Table 31).

Table 31 Average HDDS, Dagahaley camp, Kenya, 2017

Average HDDS	95% CI
4.7	3.4-6.0

The proportion of households consuming different food groups is displayed in Figure 15. Consumption of cereals was very high, followed by vegetables, pulses, and spices. Consumption of fruits, meat and eggs was low.

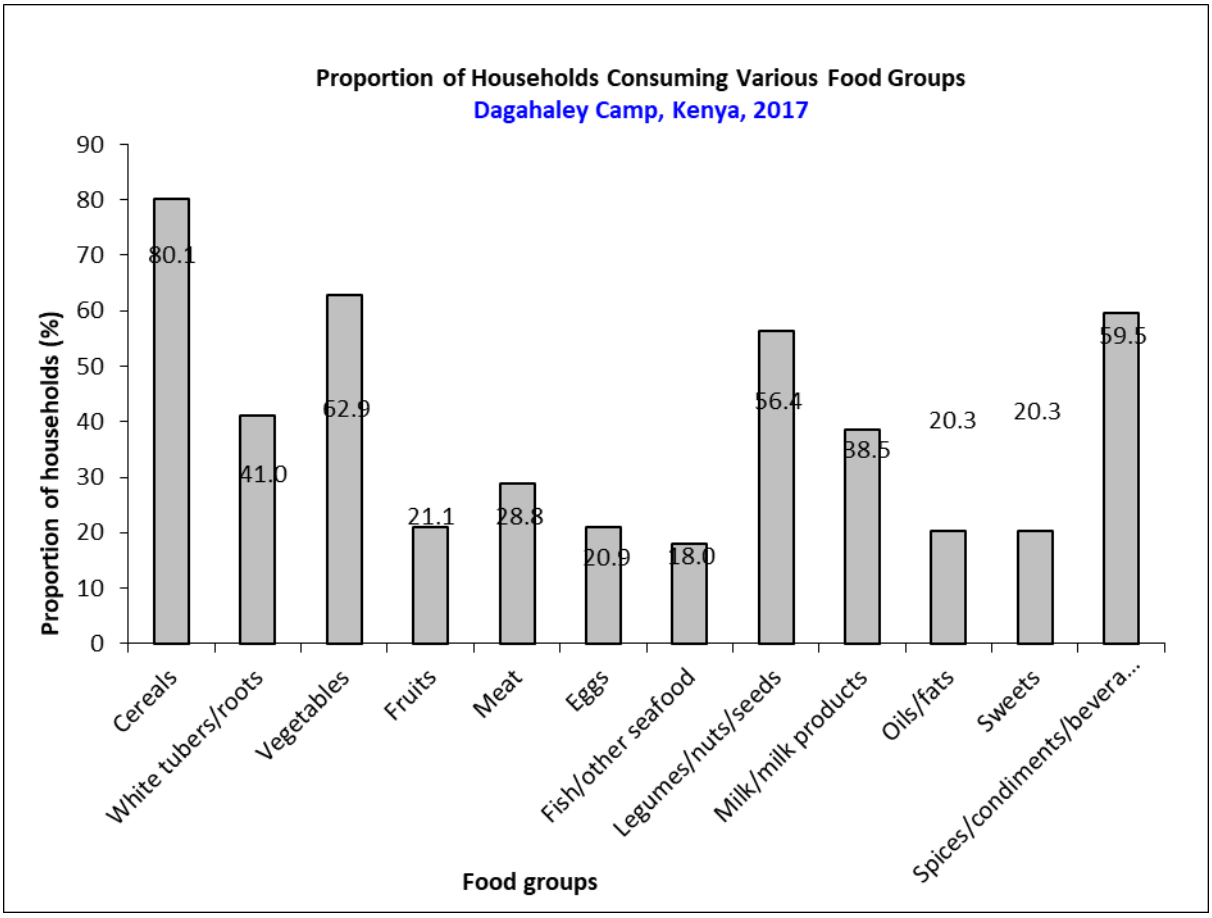


Figure 23 Proportion of households consuming various food groups, Dagahaley camp, Kenya, 2017

Nearly a third (28.4%, 15.9-41.0) of households had not consumed any vegetables, fruits, meat, eggs, fish/seafood and milk/milk products. About half (57.9%, 43.5-72.2) had consumed either a plant or animal source of Vitamin A. Less than a third (29.4%, 15.2-43.7) had consumed food sources of haem iron (Table 32).

Table 32 Consumption of food aid commodities and micronutrient rich foods by households, Dagahaley camp, Kenya, 2017

	Number/total	% (95% CI)
Proportion of households *not consuming any* vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	85/299	28.4 (15.9-41.0)
Proportion of households consuming either a plant or animal source of vitamin A	173/299	57.9 (43.5-72.2)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	88/299	29.4 (15.2-43.7)

The main food items purchased using the Bamba Chakula food voucher are shown in Figure 16. The main preferences were to buy sugar (85.5%), followed by fruits (78.4%), milk (71.3%), and cereals (64.9%). The proportion who purchased meat, milk and eggs was low.

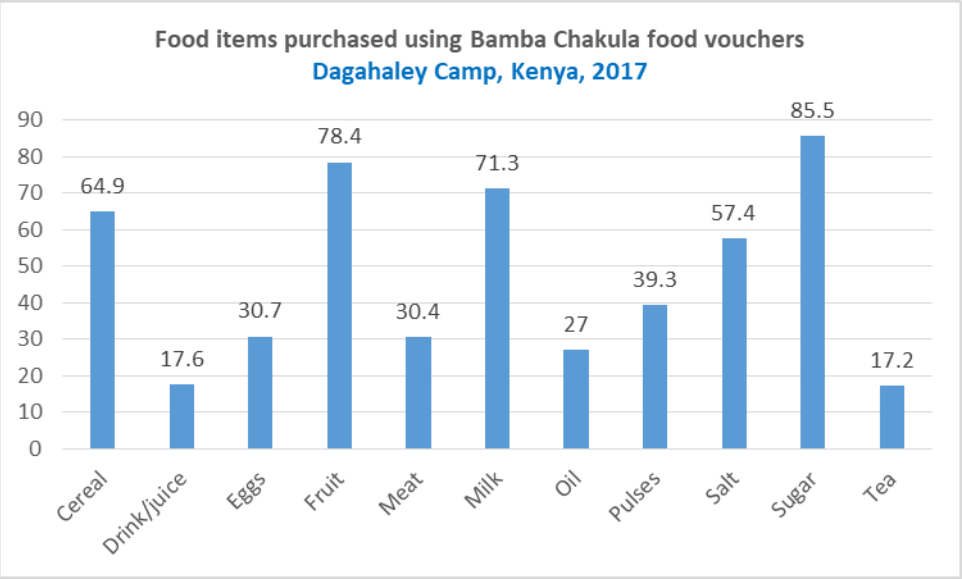


Figure 24 Food items purchased using Bamba Chakula food vouchers, Dagahaley camp, Kenya, 2017

3.5 WASH

298 households were interviewed compared to a planned 285. The reasons for the higher than planned number were explained in section 3.3.

Table 33 WASH information, Dagahaley camp, Kenya, 2017

Household data	Planned	Actual	% of target
Total households surveyed for WASH	285	298	105%

All except one household were using an improved drinking water source (Table 34). The proportion of households with covered or narrow necked containers were 73.0% (59.2-86.7).

Table 34 Water Quality, Dagahaley camp, Kenya, 2017

	Number/total	% (95% CI)
Proportion of households using an improved drinking water source	295/296	99.7 (99.0-100.0)
Proportion of households that use a covered or narrow necked container for storing their drinking water	216/296	73.0 (59.2-86.7)

A high proportion of households (82.1%, 76.1-88.1) had used at least the standard 20 litres per person per day, with a mean of 33.3 (29.1-37.5).

Table 35 Water Quantity: Amount of litres of water used per person per day, Dagahaley camp, Kenya, 2017

Proportion of households that use:	Number/total	% (95% CI)
≥ 20 lpppd	243/296	82.1 (76.1-88.1)
15 – <20 lpppd	28/296	9.5 (5.6-13.3)
<15 lpppd	25/296	8.4 (3.8-13.1)
Mean (95% CI)	33.3 (29.1-37.5)	

Nearly all households were satisfied with the water supply (Table 36).

Table 36 Satisfaction with water supply, Dagahaley camp. Kenya, 2017

	Number/total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	276/296	93.2 (88.0-98.4)

The main reason for lack of satisfaction was 'not enough' (85.0%) A few (5%) reported 'long distance' and 'inadequate water storage' (Figure 17).

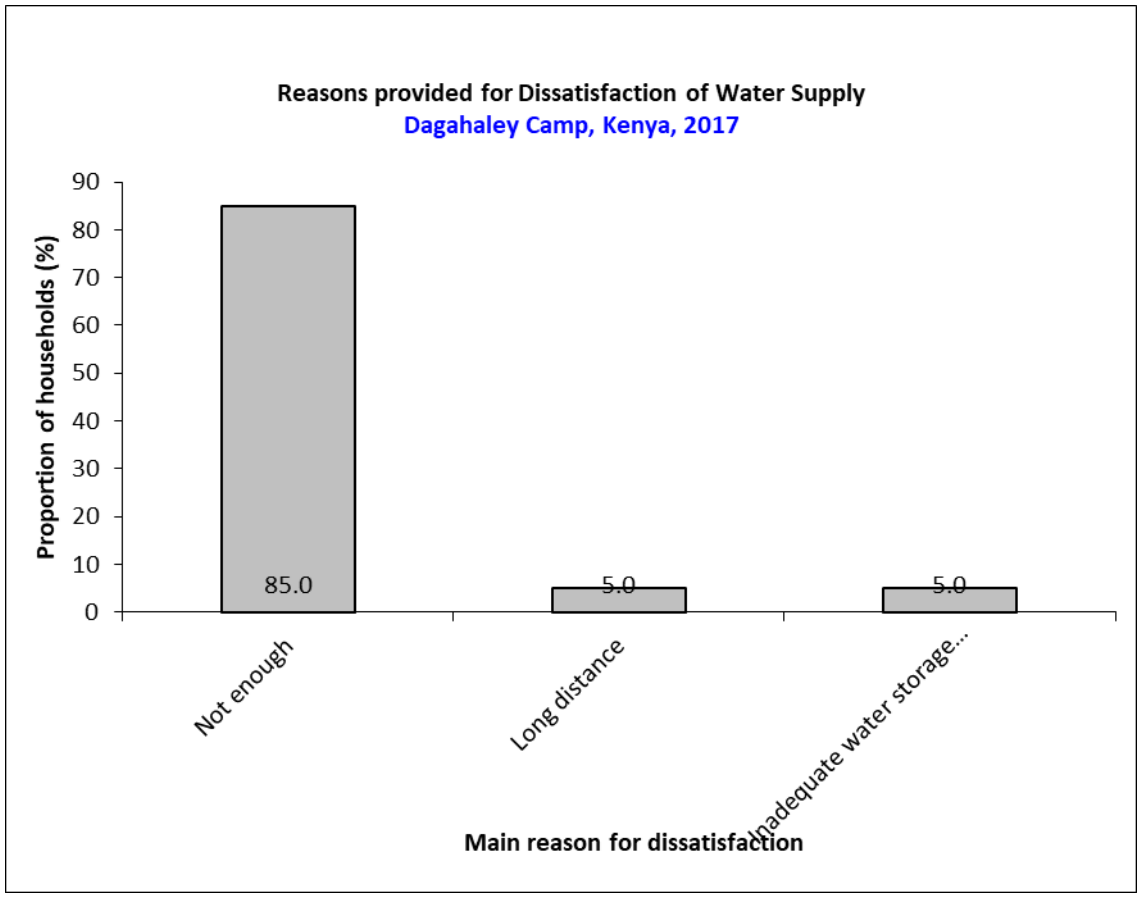


Figure 17 Reasons provided for dissatisfaction of water supply, Dagahaley camp, Kenya, 2017

Less than half (41.1%, 30.5-51.6) of households were using an improved excreta disposal facility. About a fifth (20.4%, 6.7-34.0) of households were using an unimproved toilet. All households reported safe disposal of child faeces (Table 37).

Table 37 Safe Excreta disposal, Dagahaley camp, Kenya, 2017

	Number/total	% (95% CI)
Proportion of households using an improved excreta disposal facility (improved toilet facility, not shared)	117/285	41.1 (30.5-51.6)
Proportion of households using a shared family toilet	84/285	29.5 (21.1-37.8)
Proportion of households using a communal toilet	26/285	9.1 (4.0-14.3)
Proportion of households using an unimproved toilet	58/285	20.4 (6.7-34.0)
The proportion of households with children under three years old that dispose of faeces safely.	189/189	100.0

4 Results: Hagadera camp

A total population of 1,844 was surveyed, giving an average household size of 6.2. The proportion of children below 5 years in the sample was 20.4% (Table 38).

Table 38 Demographic Characteristics of the study population, Hagadera camp, Kenya, 2017

Total HHs surveyed	*297*
Total population surveyed	*1,844*
Total U5 surveyed	*754*
Average HH size	*6.2*
% of U5	*20.4*

4.1 Children 6-59 months

Sample size and clusters

A total of 677 children aged 6-59 months were interviewed compared to the target of 517. The number may have been exceeded due to the higher proportion of chidren in households than estimated (Table 39).

Table 39 Target and actual number captured, Hagadera Camp, Kenya, 2017

	Target (No.)	**Total surveyed (No.)**	**% of the target**
Children 6-59 months	517	677	131
Clusters	30	30	100

The distribution of children within different ages was as expected, and the sex ratio of 0.9 was acceptable (Table 40).

Table 40 Distribution of age and sex of sample, Hagadera camp, Kenya, 2017

	Boys		**Girls**		**Total**		**Ratio**
AGE (mo)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy:girl**
6-17	97	56.4	75	43.6	172	25.4	1.3
18-29	73	48.0	79	52.0	152	22.5	0.9
30-41	66	43.4	86	56.6	152	22.5	0.8
42-53	60	44.8	74	55.2	134	19.8	0.8
54-59	31	46.3	36	53.7	67	9.9	0.9
Total	327	48.3	350	51.7	677	100.0	0.9

Anthropometric results (based on WHO Growth Standards 2006)

The prevalence of global acute malnutrition (GAM) was 8.6% (6.8-10.9), with a severe acute malnutrition (SAM) prevalence of 1.1% (0.5-2.2). There were no cases of oedema (Table 41).

-

Table 41 Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex, Hagadera camp, Kenya, 2017

	All n = 659	**Boys** n = 316	**Girls** n = 343
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(57) 8.6 % (6.8 - 10.9 95% C.I.)	(30) 9.5 % (6.6 - 13.4 95% C.I.)	(27) 7.9 % (5.5 - 11.2 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(50) 7.6 % (5.8 - 9.9 95% C.I.)	(27) 8.5 % (5.9 - 12.2 95% C.I.)	(23) 6.7 % (4.4 - 10.0 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(7) 1.1 % (0.5 - 2.2 95% C.I.)	(3) 0.9 % (0.3 - 2.6 95% C.I.)	(4) 1.2 % (0.5 - 2.9 95% C.I.)

The prevalence of oedema is 0.0 %

The trend analysis (Figure 18) reveals that there was a slight decline in GAM from 2016 to 2017 after it had increased in 2016 from 2015. The decrease in GAM was, however, not statistically significant *(p=0.834)*.

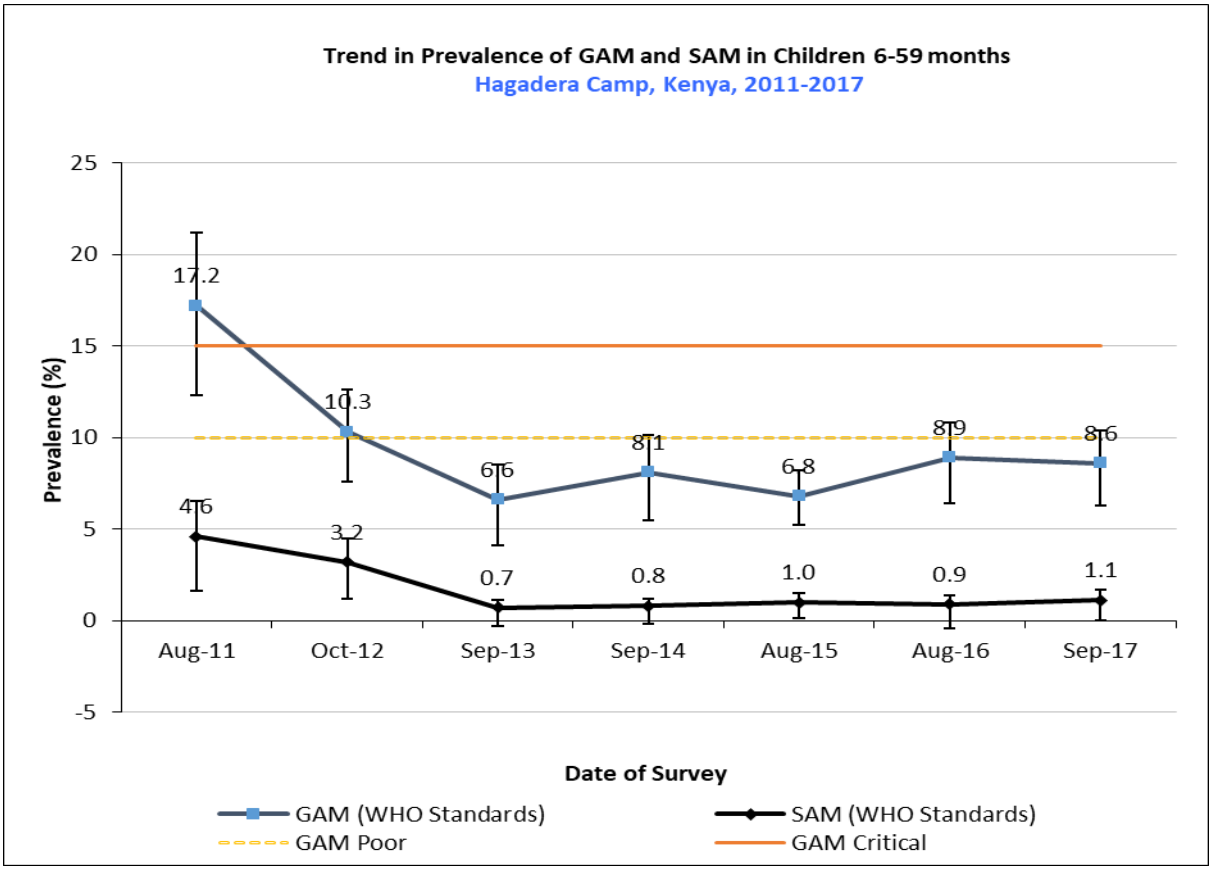


Figure 18 Trend in prevalence of GAM and SAM, Hagadera camp, Kenya, 2017

Table 42 Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema, Hagadera camp, Kenya, 2017

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	168	0	0.0	12	7.1	156	92.9	0	0.0
18-29	148	1	0.7	5	3.4	142	95.9	0	0.0
30-41	148	2	1.4	6	4.1	140	94.6	0	0.0
42-53	129	3	2.3	17	13.2	109	84.5	0	0.0
54-59	66	1	1.5	10	15.2	55	83.3	0	0.0
Total	659	7	1.1	50	7.6	602	91.4	0	0.0

Acute malnutrition was highest in the 42-53 and 54-59 age groups (Table 42 and Figure 19).

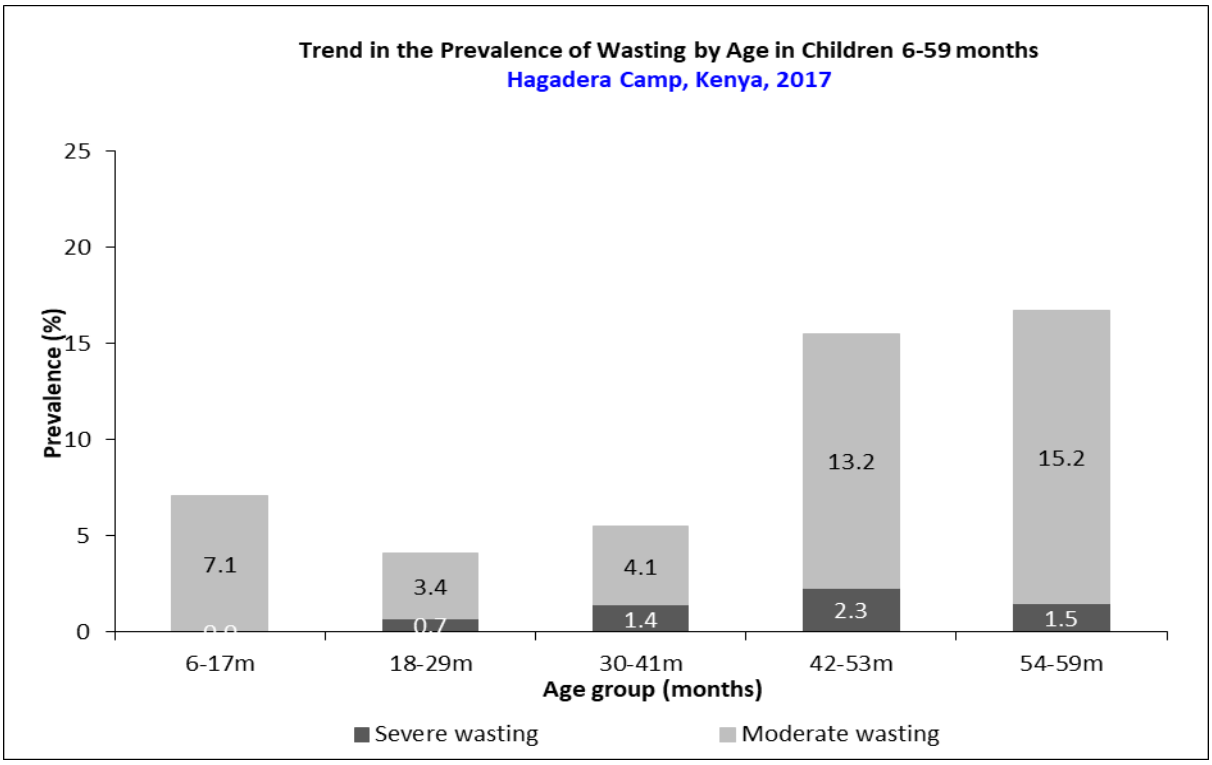


Figure 19 Trend in prevalence of wasting by age, Hagadera camp, Kenya, 2017

All cases of severe malnutrition were due to marasmus (Table 43).

Table 43 Distribution of acute malnutrition and oedema based on weight-for-height z-scores, Hagadera camp, Kenya, 2017

	<-3 z-score	**>=-3 z-score**
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 14 (2.1 %)	Not severely malnourished No. 660 (97.9 %)

NB: flagged records are included

Figure 20 is a comparison of the weight-for-height z-scores distribution with the WHO standard.

The distribution followed a normal distribution and closely resembled the WHO curve.

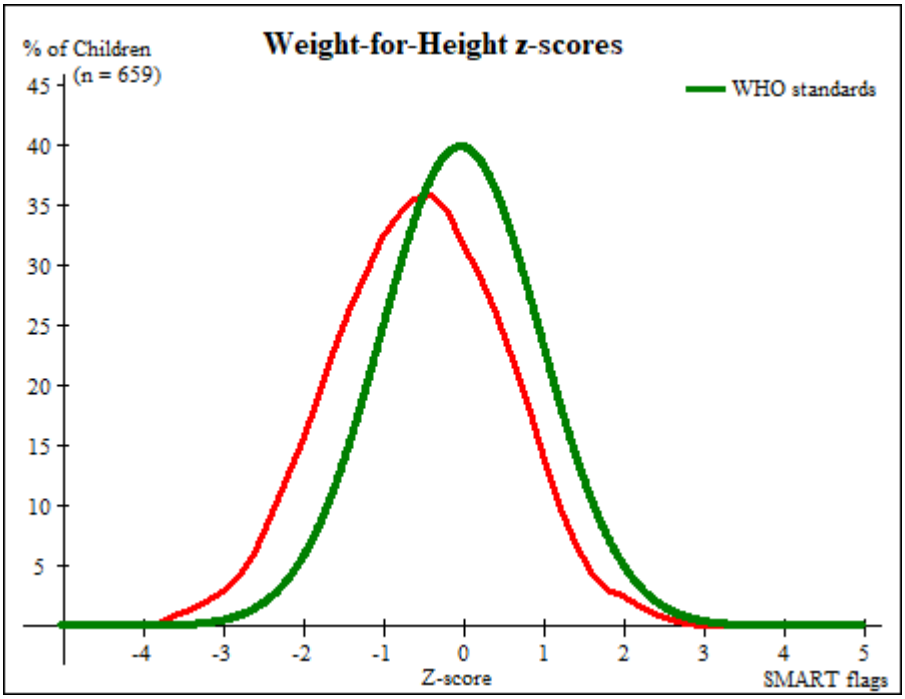


Figure 20 Distribution of weight-for-height z-scores, Hagadera camp, Kenya, 2017

The prevalence of global malnutrition based on MUAC was 3.0% (2.0-4.4). The prevalence was much higher based on MUAC than weight-for-height due to the influence of body size in this population (Table 44).

Table 44 Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex, Hagadera camp, Kenya, 2017

	All n = 677	**Boys** n = 327	**Girls** n = 350
Prevalence of global malnutrition (< 125 mm and/or oedema)	(20) 3.0 % (2.0 - 4.4 95% C.I.)	(9) 2.8 % (1.6 - 4.7 95% C.I.)	(11) 3.1 % (1.8 - 5.5 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(19) 2.8 % (1.8 - 4.3 95% C.I.)	(8) 2.4 % (1.4 - 4.3 95% C.I.)	(11) 3.1 % (1.8 - 5.5 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(1) 0.1 % (0.0 - 1.2 95% C.I.)	(1) 0.3 % (0.0 - 2.4 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)

Table 45 Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema, Hagadera camp, Kenya, 2017

		Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	172	1	0.6	15	8.7	156	90.7	0	0.0
18-29	152	0	0.0	2	1.3	150	98.7	0	0.0
30-41	152	0	0.0	2	1.3	150	98.7	0	0.0
42-53	134	0	0.0	0	0.0	134	100.0	0	0.0
54-59	67	0	0.0	0	0.0	67	100.0	0	0.0
Total	677	1	0.1	19	2.8	657	97.0	0	0.0

13.0% (9.5-17.5) of children were underweight, with 2.2% (1.2-4.2) severely underweight (Table 46).

Table 46 Prevalence of underweight based on weight-for-age z-scores by sex, Hagadera camp, Kenya, 2017

	All n = 668	**Boys** n = 321	**Girls** n = 347
Prevalence of underweight (<-2 z-score)	(87) 13.0 % (9.5 - 17.5 95% C.I.)	(55) 17.1 % (12.4 - 23.2 95% C.I.)	(32) 9.2 % (5.8 - 14.3 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(72) 10.8 % (8.0 - 14.4 95% C.I.)	(44) 13.7 % (10.2 - 18.2 95% C.I.)	(28) 8.1 % (4.9 - 13.0 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(15) 2.2 % (1.2 - 4.2 95% C.I.)	(11) 3.4 % (1.7 - 6.8 95% C.I.)	(4) 1.2 % (0.5 - 2.8 95% C.I.)

18.4% (12.4-26.5) of children in the sample were classified as stunted, with 4.3% (2.3-7.8) severely stunded (Table 47).

Table 47 Prevalence of stunting based on height-for-age z-scores and by sex, Hagadera camp, Kenya, 2017

	All n = 657	**Boys** n = 316	**Girls** n = 341
Prevalence of stunting (<-2 z-score)	(121) 18.4 % (12.4 - 26.5 95% C.I.)	(64) 20.3 % (14.6 - 27.4 95% C.I.)	(57) 16.7 % (9.5 - 27.7 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(93) 14.2 % (9.9 - 19.9 95% C.I.)	(47) 14.9 % (10.9 - 20.0 95% C.I.)	(46) 13.5 % (7.9 - 22.2 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(28) 4.3 % (2.3 - 7.8 95% C.I.)	(17) 5.4 % (2.8 - 9.9 95% C.I.)	(11) 3.2 % (1.4 - 7.3 95% C.I.)

As shown in Figure 21, stunting has been on a decreasing trend since 2014. The decrease in stunting from 2016 to 2017 was, however, not statistically significant *(p=0.867)*.

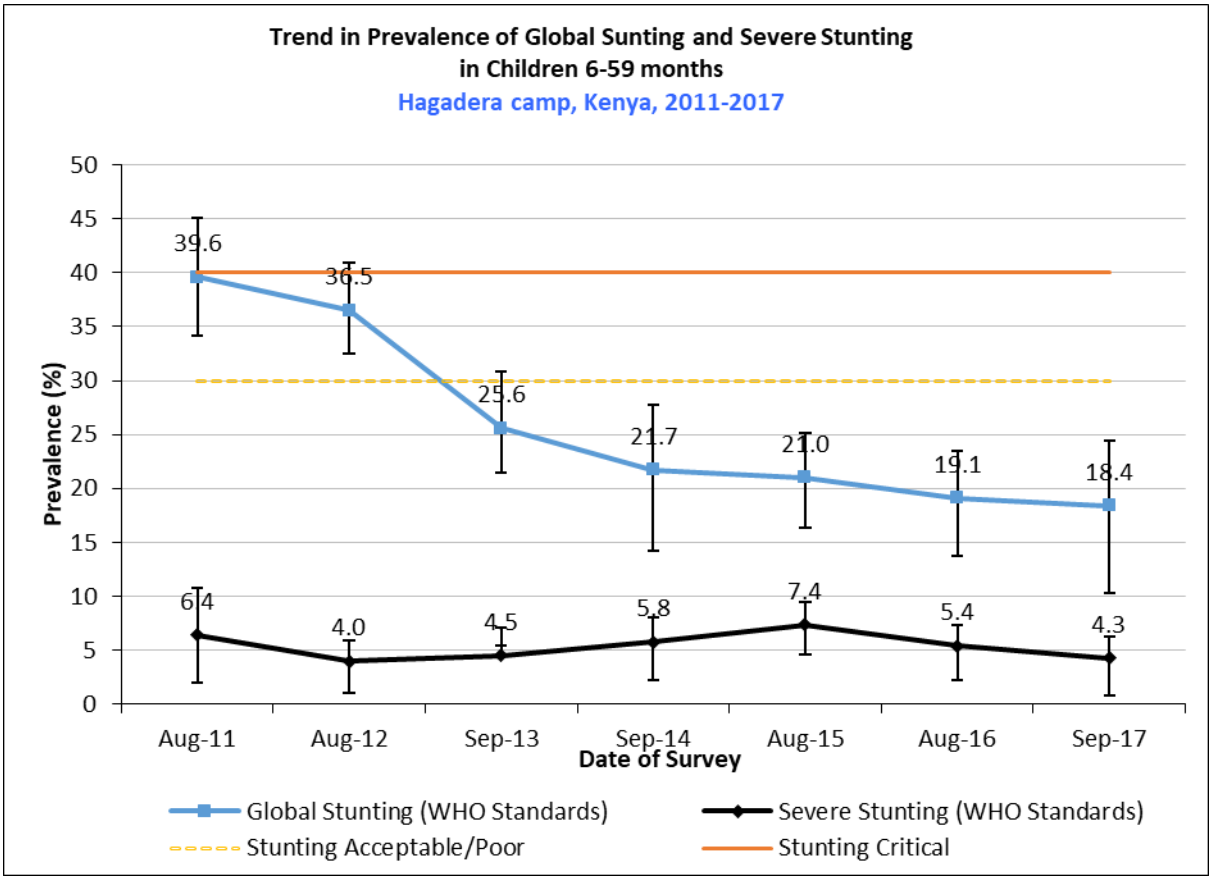


Figure 21 Trend in prevalence of global and severe stunting, Hagadera camp, 2017

Table 48 Prevalence of stunting by age based on height-for-age z-scores, Hagadera camp, Kenya, 2017

		Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	167	4	2.4	24	14.4	139	83.2
18-29	143	7	4.9	30	21.0	106	74.1
30-41	149	12	8.1	13	8.7	124	83.2
42-53	133	3	2.3	14	10.5	116	87.2
54-59	65	2	3.1	12	18.5	51	78.5
Total	657	28	4.3	93	14.2	536	81.6

Stunting was highest in the 18-29 age group (Figure 22).

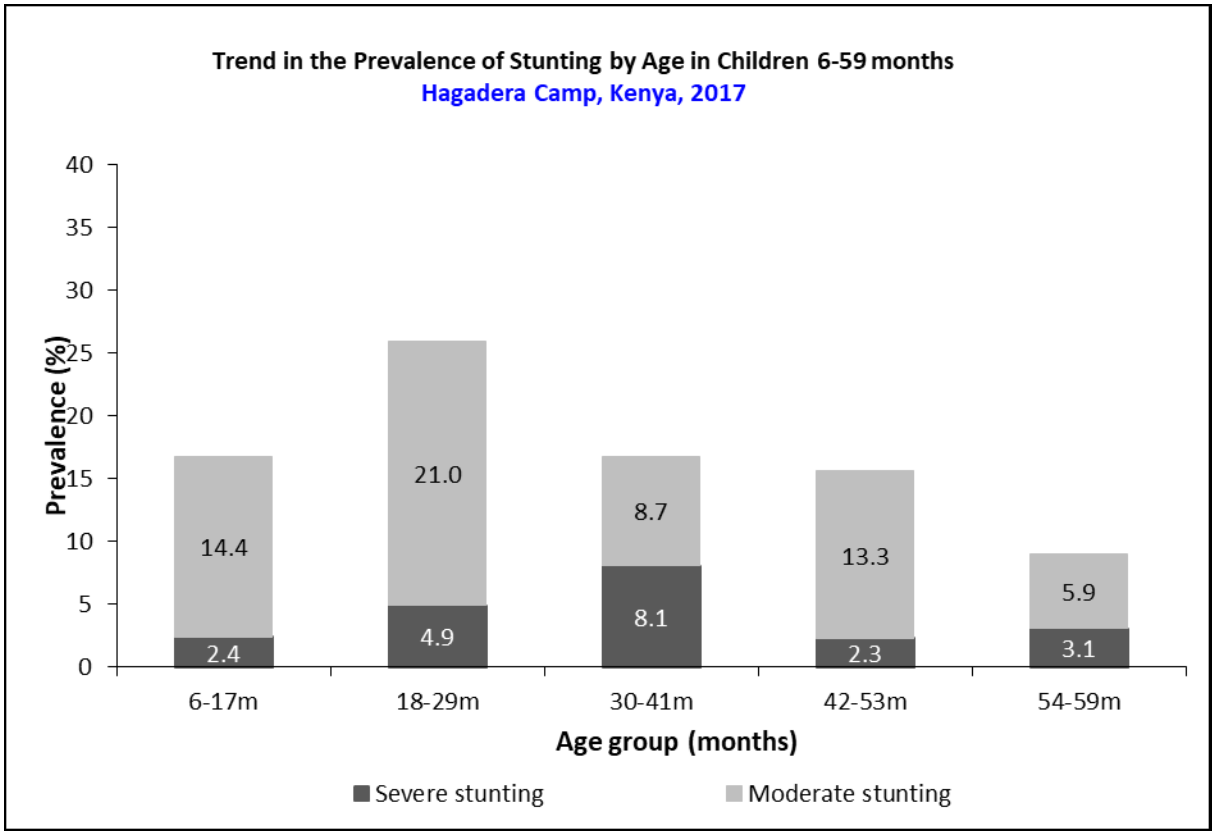


Figure 22 Trend in prevalence of stunting by age, Hagadera camp, Kenya, 2017

A comparison of the survey and WHO distribution is shown in Figure 23.

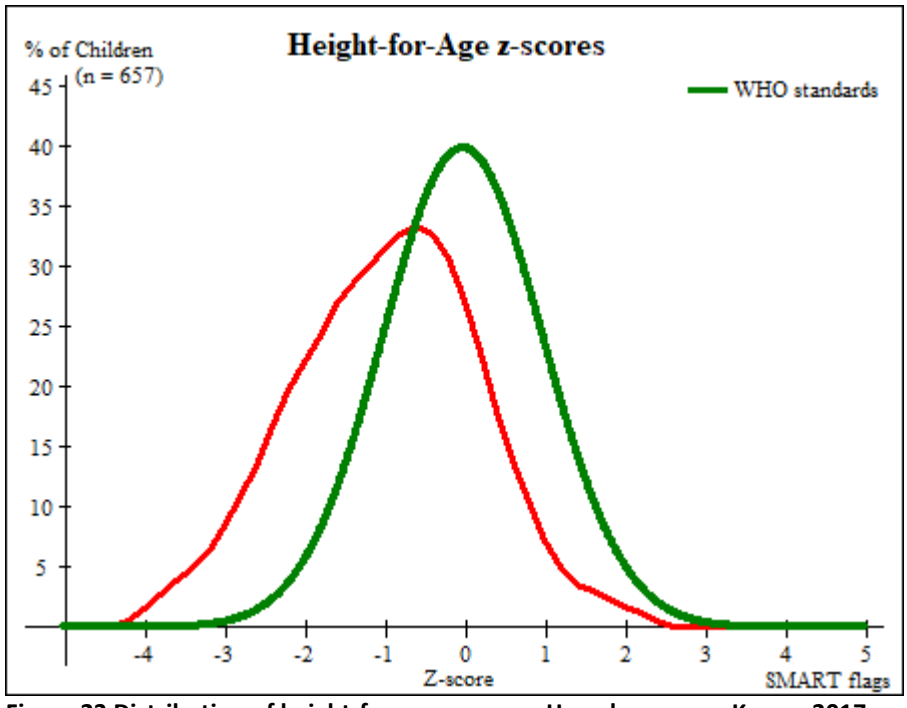


Figure 23 Distribution of height-for-age z-scores, Hagadera camp, Kenya, 2017

The mean z-scores, design effects and excluded subjects are shown in Table 49.

Table 49 Mean z-scores, Design Effects and excluded subjects, Hagadera camp, Kenya, 2017

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	659	-0.54±1.06	1.00	3	15
Weight-for-Age	668	-0.89±1.00	2.22	1	8
Height-for-Age	657	-0.97±1.15	5.11	2	18

* contains for WHZ and WAZ the children with edema.

Measles vaccination coverage results

The coverage of both Vitamin A and measles were very high, which is expected given that there is both routine and periodic supplementation and vaccination in the context (Table 50 and 51).

Table 50 Measles vaccination coverage for children aged 9-59 months, Hagadera camp, Kenya, 2017

	Measles (with card) n=508	**Measles (with card or confirmation from mother) n=631**
YES	80.0% (71.0-89.0, 95% C.I)	99.4% (98.1-100.0, 95% C.I)

Vitamin A coverage results

Table 51 Vitamin A supplementation for children aged 6-59 months within past 6 months, Hagadera camp, Kenya, 2017

	Vitamin A capsule (with card) n=507	**Vitamin A capsule (with card or confirmation from mother) n=662**
YES	75.1% (66.8-83.5, 95% C.I)	98.1% (96.4-99.8, 95% CI)

The coverage of both has been increasing since 2014 (Figure 24).

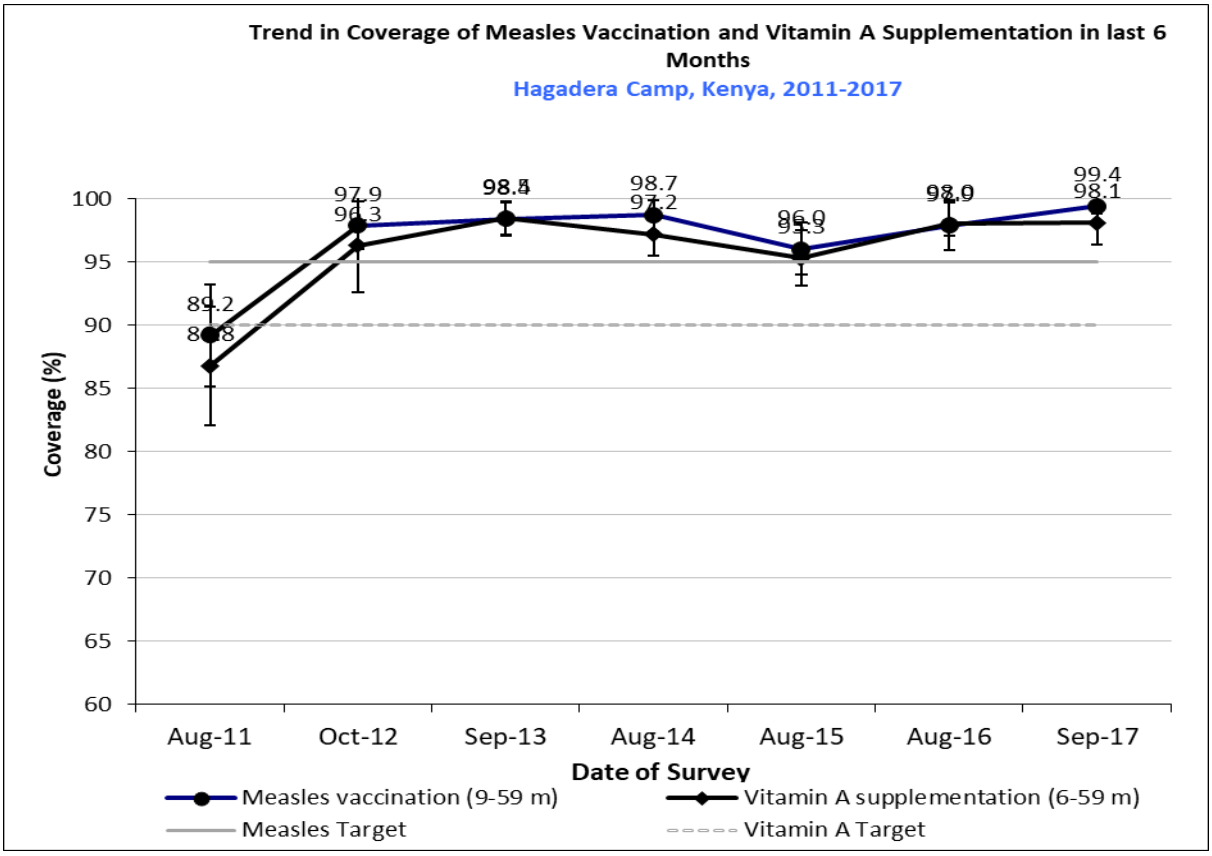


Figure 24 Trend in coverage of measles vaccination and Vitamin A supplementation, Hagadera camp, Kenya, 2017

Deworming

The coverage of deworming for children 24 to 59 months was also very high (Tabe 52).

Table 52 Deworming for children aged 24-59 months within past 6 months, Hagadera camp, Kenya, 2017

	Deworming (with card or confirmation from mother) n=418
YES	90.1% (85.6-94.6, 95% C.I)

Diarrhoea results

Of the children 6-59 months in the sample, 6.8% (3.4-10.2) had experienced diarrhoea in the previous two weeks (Table 53).

Table 53 Period prevalence of diarrhoea, Hagadera camp, Kenya, 2017

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	46/675	6.8 (3.4-10.2)

Anaemia results

A total of 62.8% (57.6-68.1) of children 6-59 months in the sample were anaemic, with a mean haemoglobin level of 10.5 (10.2-10.7). The prevalence was well above the critical threshold of 40%.

Table 54 Prevalence of anaemia in children 6-59 months, Hagadera camp, Kenya, 2017

Anaemia in Children 6-59 months	All n = 675
Total Anaemia (Hb<11.0 g/dL)	(424) 62.8% (57.6-68.1, 95% C.I)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(196) 29.0% (25.4-32.6, 95% C.I)
Moderate Anaemia (7.0-9.9 g/dL)	(227) 33.6% (28.5-38.7, 95% C.I)
Severe Anaemia (<7.0 g/dL)	(1) 0.1% (0.0-0.5, 95% C.I)
Mean Hb (g/dL) (confidence interval)	10.5 (10.2-10.7)

Figure 25 further reveals that anaemia increased further in 2017 after having increased in both 2015 and 2016. The increase in anaemia from 2016 to 2017 was statistically significant *(p<0.05*).

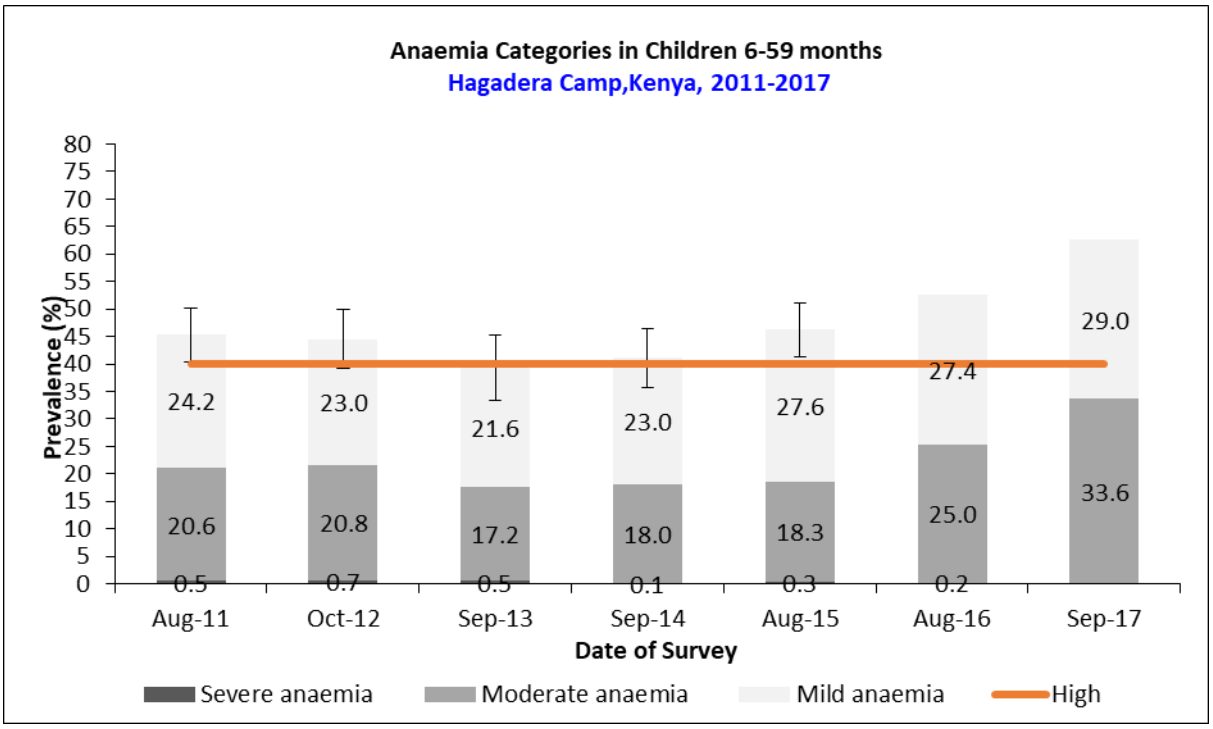


Figure 25 Anaemia categories, Hagadera camp, Kenya, 2017

Mean haemoglobin concentration has also been on a decreasing trend due to the decrease in anaemia (Figure 26).

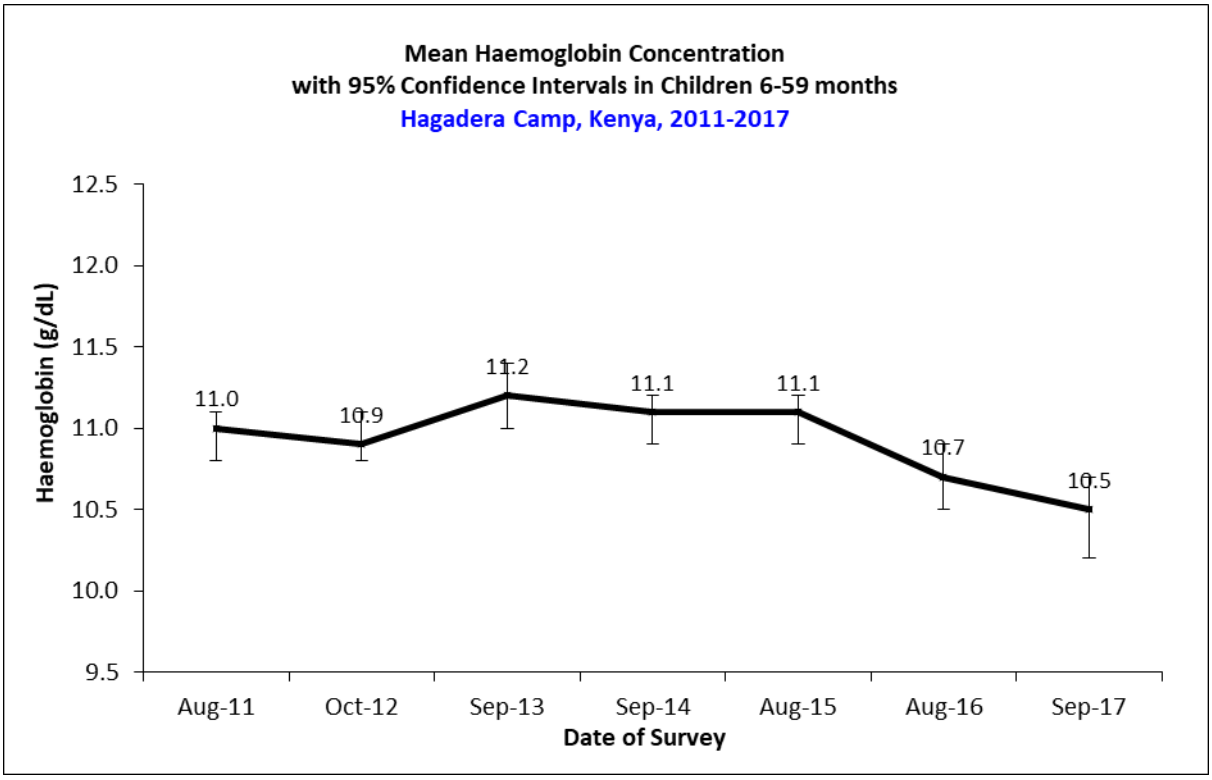


Figure 26 Mean haemoglobin concentration, Hagadera camp, Kenya, 2017

The analysis of moderate and severe anaemia by age group is displayed in Table 55.

Table 55 Prevalence of moderate and severe anaemia in children 6-59 months by age, Hagadera camp, Kenya, 2017

	6-23 months n=241	**24-35 months n=165**	**36-59 months n=269**	**Total n=675**
Moderate and Severe Anaemia (Hb < 10g/dl)	(126) 52.3% (44.3-60.2, 95% C.I)	(54) 32.7% (23.9-41.5, 95% C.I)	(48) 17.8% (12.8-22.9%, 95% C.I)	(228) 33.8% (28.6-39.0, 95% C.I)

An analysis of anaemia by age group revealed that anaemia was highest in the 6-23 months age group and decreased but was also very high in the 24-35 month age group (Table 56).

Table 56 Prevalence of anaemia by age, Hagadera camp, Kenya, 2017

		Severe Anaemia (<7.0 g/dL)		Moderate Anaemia (7.0-9.9 g/dL)		Mild Anaemia (Hb 10.0-10.9 g/dL)		Total Anaemia (Hb<11.0 g/dL)		Normal (Hb≥11.0 g/dL)	
Age (mths)	**Total no.**	**No.**	**% (95% CI)**	**No.**	**% (95% CI)**	**No.**	**% (95% CI)**	**No.**	**% (95% CI)**	**No.**	**% (95% CI)**
6-23	241	0	0.0	126	52.3 (44.3-60.2)	65	27.0 (21.4-32.6)	191	79.3 (72.9-85.6)	50	20.7 (14.4-27.1)
24-35	165	1	0.6 (0.0-1.9)	53	32.1 (23.7-40.5)	49	29.7 (22.6-36.8)	103	62.4 (54.5-70.3)	62	37.6 (29.7-45.5)
36-59	269	0	0.0	48	17.8 (12.8-22.9)	82	30.5 (25.0-36.0)	130	48.3 (42.3-54.4)	139	51.7 (45.6-57.7)
Total	**675**	**1**	**0.1 (0.2-0.5)**	**227**	**33.6 (28.5-38.7)**	**196**	**29.0 (25.4-32.6)**	**424**	**62.8 (57.6-68.1)**	**251**	**37.2 (31.9-42.4)**

4.2 Children 0-23 months

IYCF results for children between 0-23 months are summarised in Table 57. Timely initiation of breastfeeding was very pleasing, while exclusive breastfeeding was reported by approximately half of children below 6 months. Continued breastfeeding at 2 years was particularly low, as was introduction to solid foods at 6 months.

Table 57 Prevalence of Infant and Young Child Feeding Practices Indicators, Hagadera camp, Kenya, 2017

Indicator	Age range	Number/ total	Prevalence (%)	95% CI
Timely initiation of breastfeeding	0-23 months	183/202	90.6	83.7-97.5
Exclusive breastfeeding under 6 months	0-5 months	40/79	50.6	30.5-70.7
Continued breastfeeding at 1 year	12-15 months	23/45	51.1	29.3-72.9
Continued breastfeeding at 2 years	20-23 months	9/38	23.7	7.2-40.1
Introduction of solid, semi-solid or soft foods	6-8 months	18/40	45.0	28.1-61.9
Consumption of iron-rich or iron-fortified foods	6-23 months	141/241	58.5	44.6-72.5
Bottle feeding	0-23 months	33/320	10.3	1.5-19.1

Exclusive breastfeeding improved from 2016 to 2017, while timely initiation of breastfeeding was lower in 2017 than in 2016 (Figure 27).

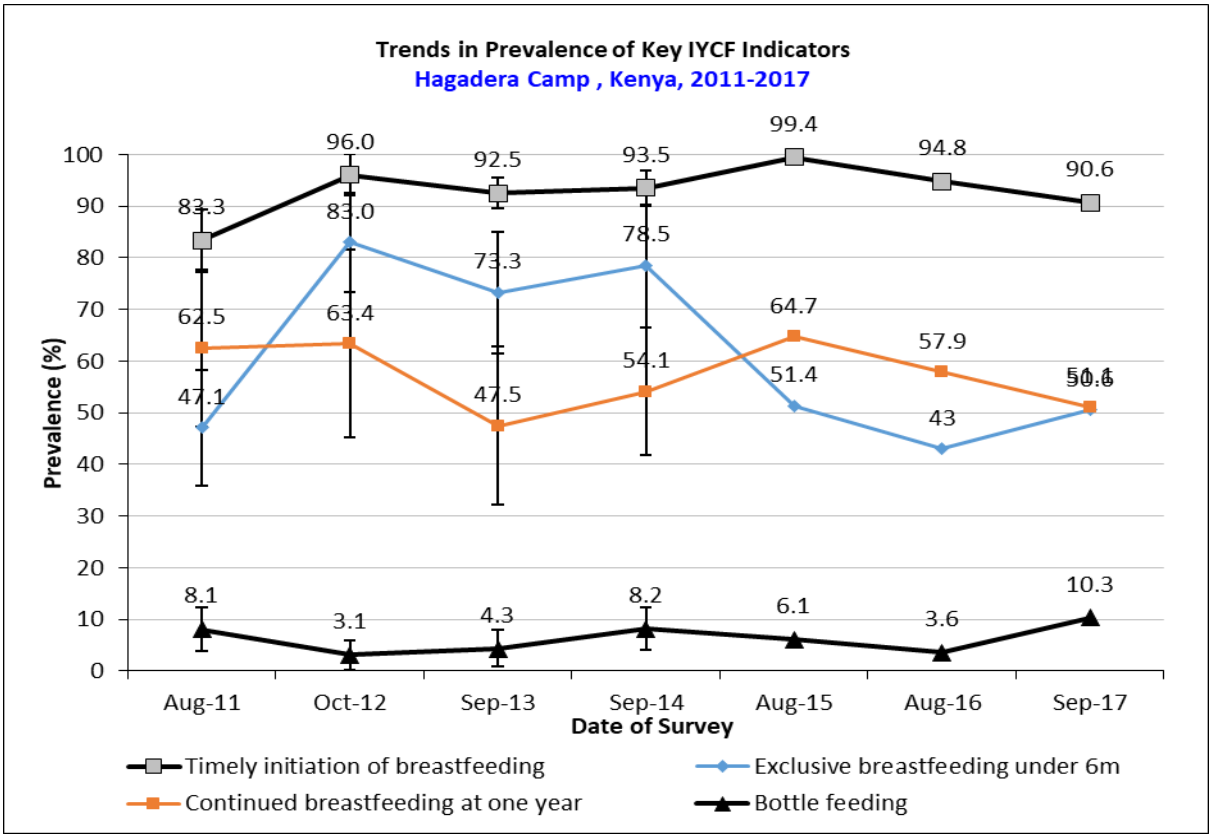


Figure 27 Trends in prevalence of key IYCF indicators, Hagadera camp, Kenya, 2017

Prevalence of intake

About a tenth of children had consumed infant formula (Table 58).

Infant formula

Table 58 Infant formula intake in children aged 0-23 months, Hagadera camp, Kenya, 2017

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who consumed infant formula (fortified or non-fortified)	33/319	10.3 (4.9-15.7)

Fortified blended foods

Less than half of children of the eligible age had consumed super cereal plus (Table 59).

Table 59 Super-cereal plus (CSB++) intake in children aged 6-23 months, Hagadera camp, Kenya, 2017

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who consumed Super-cereal plus (CSB++)	94/241	39.0 (21.4-56.6)

4.3 Women 15-49 years

Slightly over a tenth (11.5%) of sampled women of reproductive age were pregnant, with a mean age of 28, wih minimum of 15, and a maximum of 49 (Table 60).

Table 60 Women's physiological status and age, Hagadera camp, Kenya, 2017

Physiological status	Number/total	% of sample
Non-pregnant	42/365	11.5
Pregnant	323/365	88.5
Mean age (range)	28 (15-49)	

42.4% (34.5-50.3) of non-pregnant women were anaemic in the sample (Table 61). The prevalence exceeded the 40% critical threshold.

Table 61 Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 years), Hagadera camp, Kenya, 2017

Anaemia in non-pregnant women of reproductive age (15-49 years)	**All** n = 323
Total Anaemia (<12.0 g/dL)	(137) 42.4% (34.5-50.3, 95% C.I)
Mild Anaemia (11.0-11.9 g/dL)	(63) 19.5% (15.1-23.9, 95% C.I)
Moderate Anaemia (8.0-10.9 g/dL)	(72) 22.3% (14.1-30.5, 95% C.I)
Severe Anaemia (<8.0 g/dL)	(1) 0.6% (0.0-1.5, 95% C.I)
Mean Hb (g/dL) **(confidence interval)**	11.9 (11.7-12.2)

Figure 28 and 29 show that anaemia has been on an increasing trend since 2015. The increase in anaemia in 2017 compared to 2016 was, however, not statistically significant *(p=0.182)*.

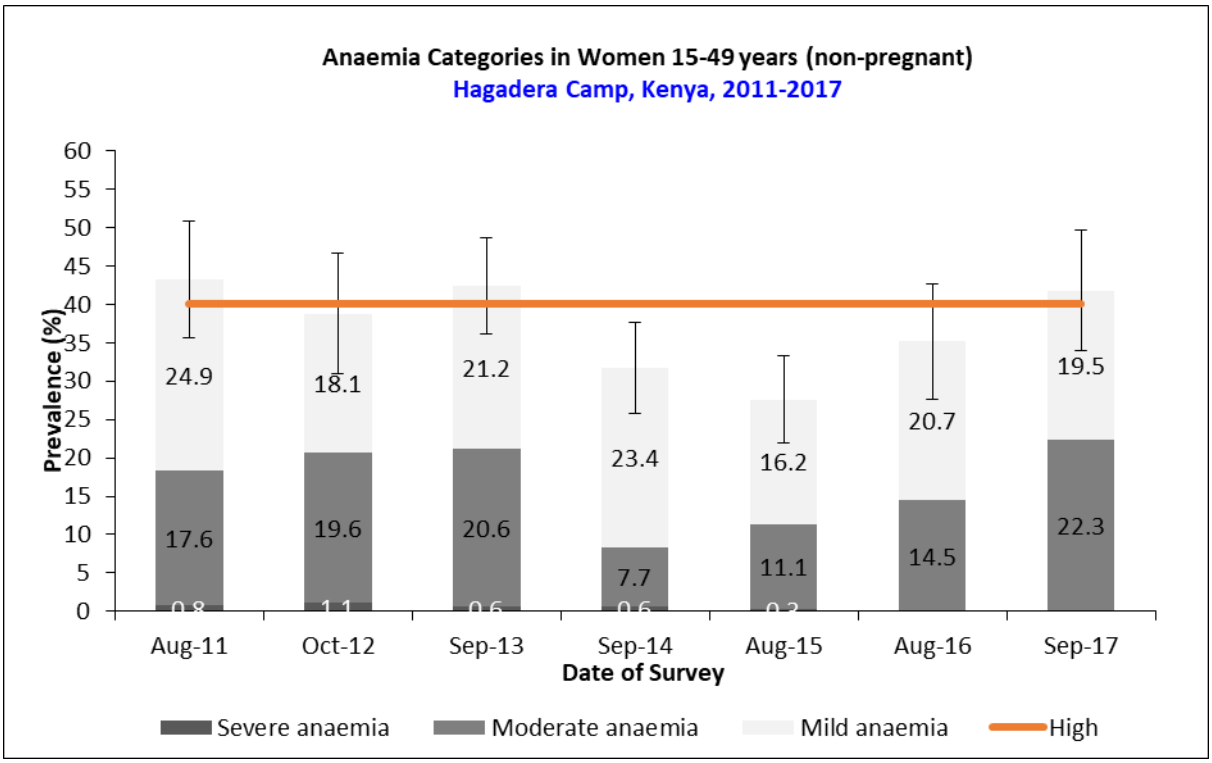


Figure 28 Anaemia categories in women 15-49 years, Hagadera camp, Kenya, 2017

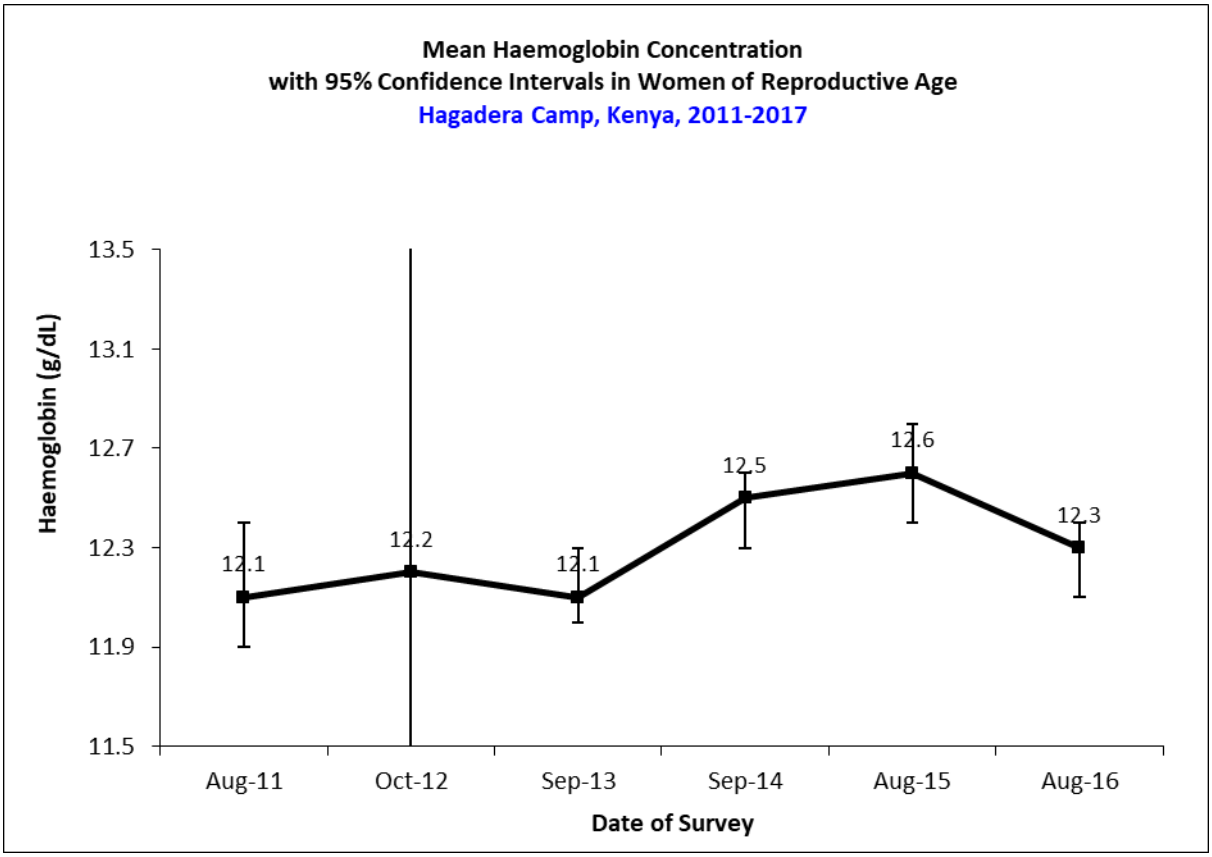


Figure 29 Mean haemoglobin concentration, Hagadera camp, Kenya, 2017

The coverage of both ANC and iron-folic acid pills was very high (Table 62 and 63).

Table 62 ANC enrollment and iron-folic acid pills coverage among pregnant women (15-49 years), Hagadera camp, Kenya, 2017

	Number /total	% (95% CI)
Currently enrolled in ANC programme	39/42	92.9 (84.9-100.0)
Currently receiving iron-folic acid pills	38/42	90.5 (81.2-99.7)

Only 1.0% (0.0-3.0) of pregnant and lactating women were malnourished according to the 210mm cut-off level (Table 63).

Table 63 Prevalence of malnutrition among pregnant and lactating women (15-49 years) based on MUAC, Hagadera camp, Kenya, 2017

MUAC <210mm in pregnant and lactating women (15-49 years)	**Number/total**	**% (95% CI)**
	1/101	1.0 (0.0-3.0)

The coverage of BSFP was 71.3% (58.4-84.2) for pregnant and lactating women (Table 64).

Table 64 BSFP coverage for pregnant and lactating women (15-49 years), Hagadera camp, Kenya, 2017

BSFP coverage for pregnant and lactating women (15-49 years)	**Number/total**	**% (95% CI)**
	72/101	71.3 (58.4-84.2)

4.4 Food security

297 out of 300 of the target households were reached (Table 65).

Table 65 Food security information, Hagadera camp, Kenya, 2017

Household data	Planned	Actual	% of target
Total households surveyed for Food Security	300	*297*	*99*

Food distribution results

The reported mean duration of the general food ration was 17.4, which is 56.0% of the theoretical duration (Table 66).

Table 66 Reported duration of general food ration, Hagadera camp, Kenya, 2017

Average number of days the food ration lasts (Standard deviation or 95% CI)	Average duration (%) in relation to the theoretical duration of the ration
17.4 (14.8-19.9)	56.0%

The main reason for the ration not lasting the entire duration was "ration not big enough" (Figure 30).

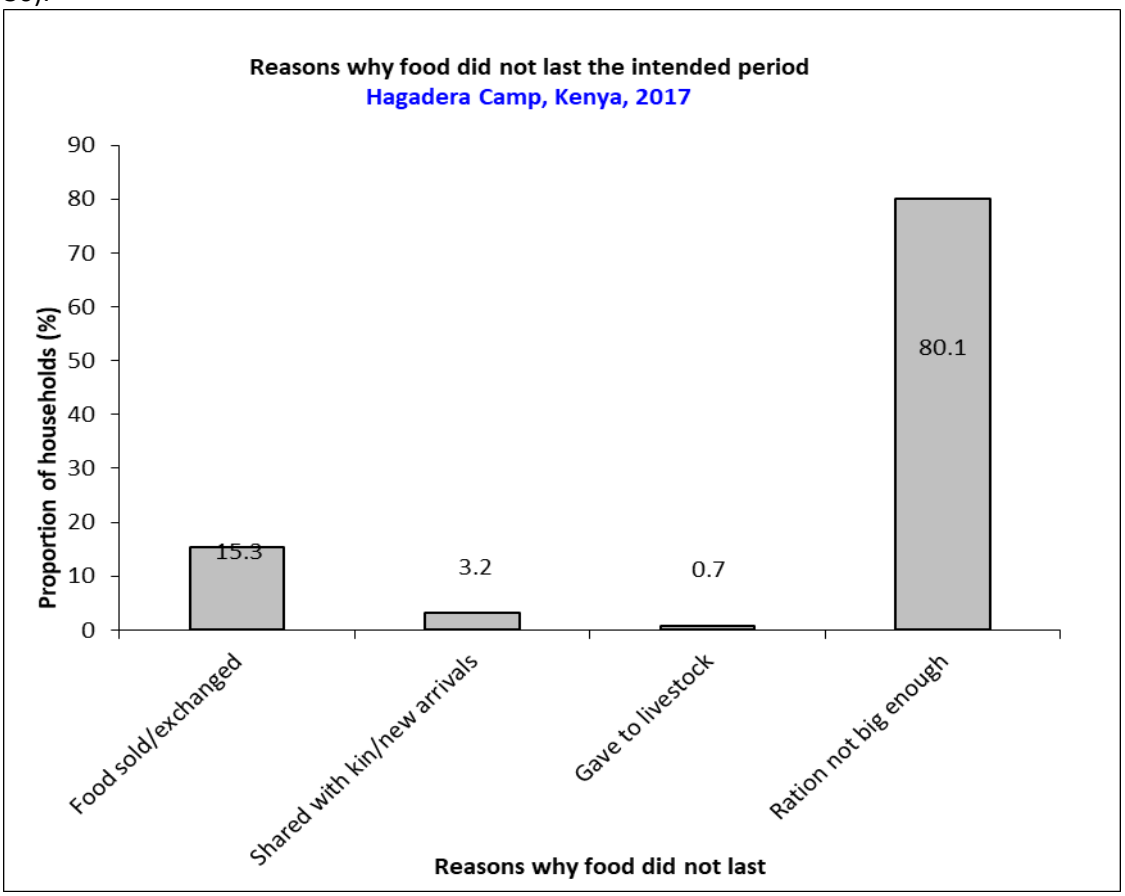


Figure 30 Reasons why food did not last the intended period, Hagadera camp, Kenya, 2017

Negative coping strategies results

The main household coping mechanism was borrowing (54.5%) followed by reducing meal frequency and quantity (39.1%). 64% of households did not use any of the coping mechanisms.

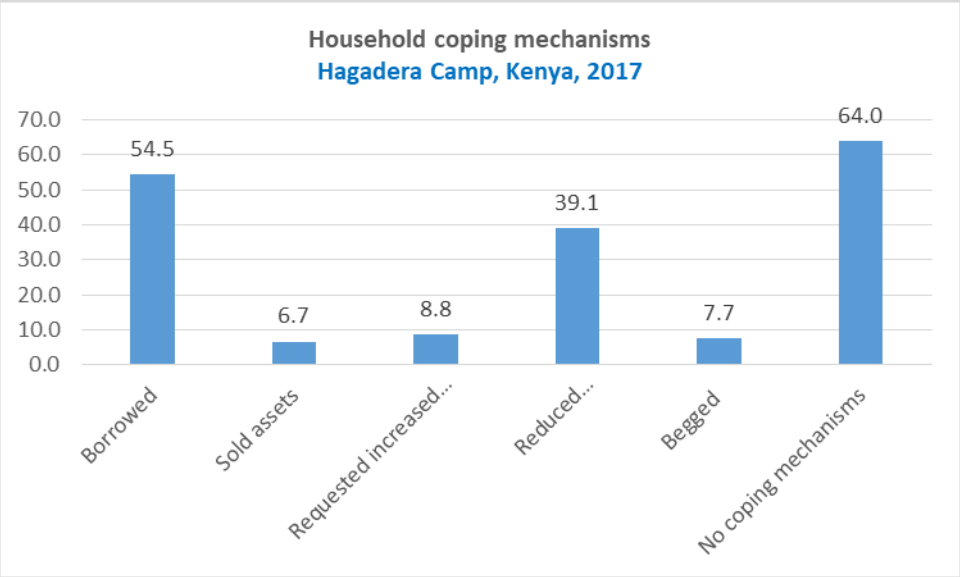


Figure 31 Household coping mechanisms, Dagahaley camp, Kenya, 2017

Household dietary diversity results

The average household dietary diversity score was 6.5 (Table 67).

Table 67 Average HDDS, Hagadera camp, Kenya, 2017

Average HDDS	95% CI
6.5	5.3-7.7

The main food categories consumed were cereals (85.7%), vegetables (75.6%), pulses (67.2%) and spices (62.2%). Consumption of mmilk, meat and eggs was relatively low (Figure 32).

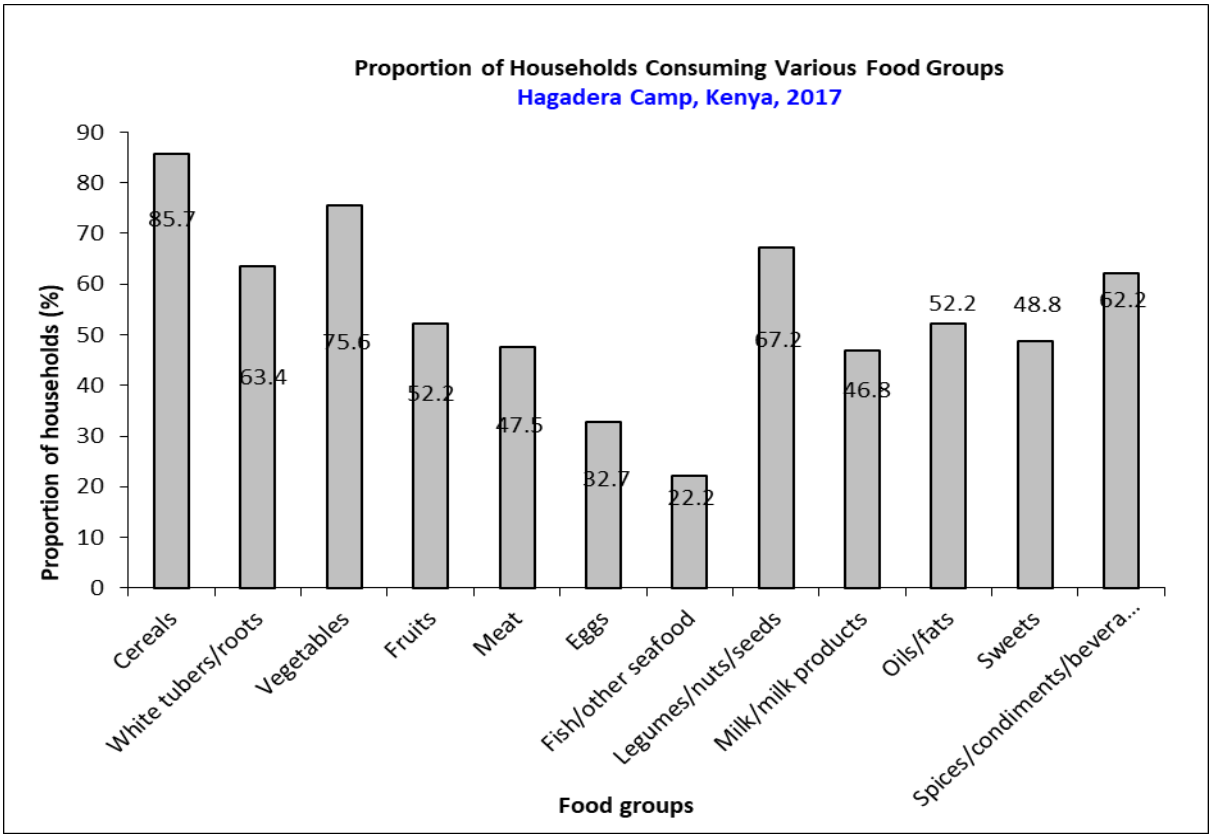


Figure 32 Proportion of households consuming various food groups, Hagadera camp, Kenya, 2017

About a fifth of households had not consumed any vegetables, fruits, meat, eggs, fish/seafood and milk/milk products. Nearly three quarters had consumed an animal or plant source of Vitamin A. About half had consumed food sources of haem iron (Table 68).

Table 68 Consumption of food aid commodities and micronutrient rich foods by households, Hagadera camp, Kenya, 2017

	Number/total	% (95% CI)
Proportion of households *not consuming any* vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	57/297	19.2 (6.9-31.5)
Proportion of households consuming either a plant or animal source of vitamin A	221/297	74.4 (59.7-89.2)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	157/297	52.9 (39.5-66.2)

Fruits were the main food item purchased using the Bamba Chakula food voucher (91.0%). Cereals, pulses, oil, salt, sugar, and milk were also purchased by a relatively high number of households. The purchase of meat and eggs was low (Figure 33).

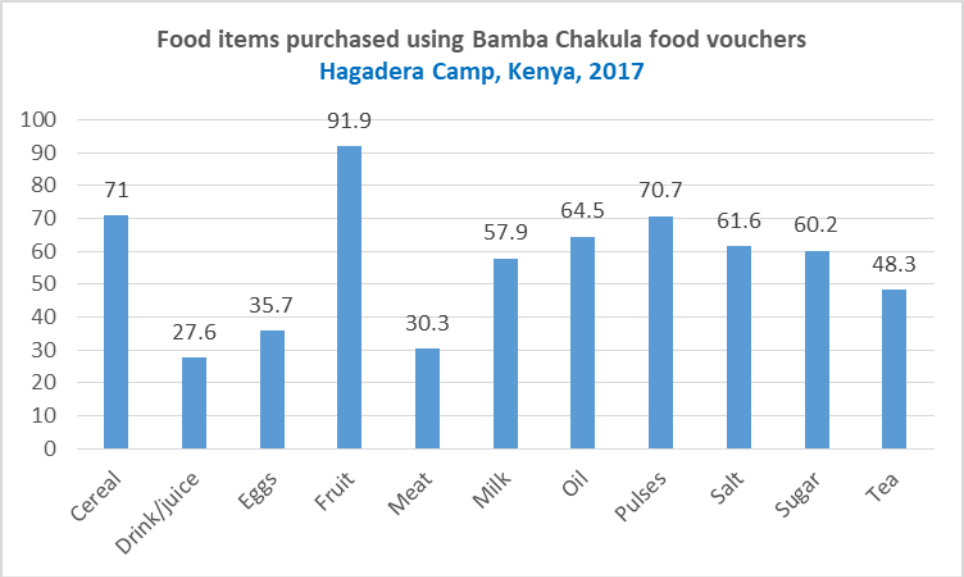


Figure 33 Food items purchased using Bamba Chakula food vouchers, Hagadera camp, Kenya, 2017

4.5 WASH

297 households were interviewed for WASH, compared to a target of 300 (Table 69).

Table 69 WASH information, Hagadera camp, Kenya, 2017

Household data	Planned	Actual	% of target
Total households surveyed for WASH	300	*297*	*99*

All households in the sample reported having access to an improved drinking water source. 63.6% (52.8-74.4) of households'containers were either narrow necked or covered (Table 70).

Table 70 Water Quality, Hagadera camp, Kenya, 2017

	Number/total	% (95% CI)
Proportion of households using an improved drinking water source	297/297	100.0
Proportion of households that use a covered or narrow necked container for storing their drinking water	189/297	63.6 (52.8-74.4)

Nearly two thirds (64.0%, 52.1-75.9) of households used at least 20 litres per person per day (Table 71). The mean was 23.7 (20.2-27.2).

Table 71 Water Quantity: Amount of litres of water used per person per day, Hagadera camp, Kenya, 2017

Proportion of households that use:	Number/total	% (95% CI)
≥ 20 lpppd	190/297	64.0 (52.1-75.9)
15 – <20 lpppd	34/297	11.4 (7.3-15.6)
<15 lpppd	73/297	24.6 (11.5-37.7)
Mean (95% CI)	23.7 (20.2-27.2)	

79.8% (66.1-93.5) of households were satisfied with the water supply (Table 72). Of those who were not satisfied (Figure 34), the main reason was "not enough".

Table 72 Satisfaction with water supply, Hagadera camp. Kenya, 2017

	Number/total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	237/297	79.8 (66.1-93.5)

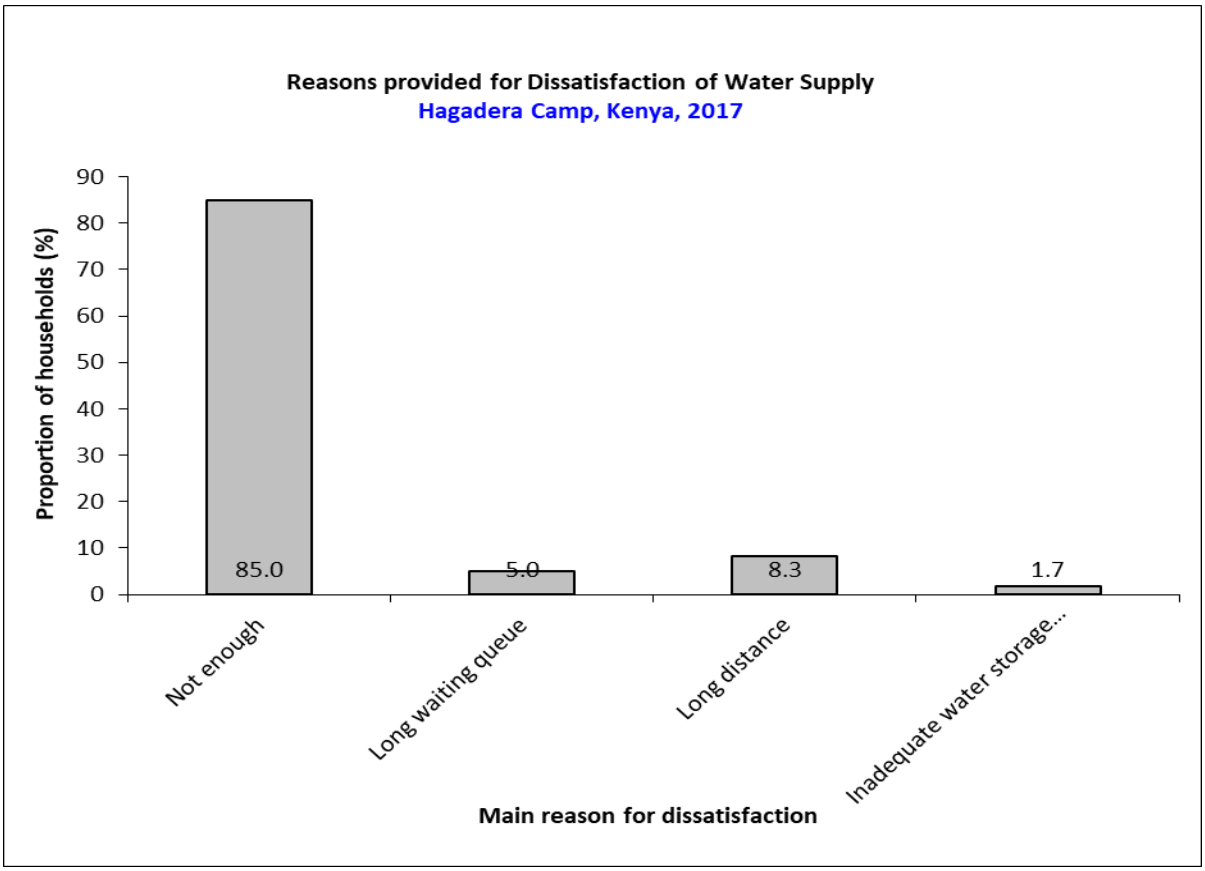


Figure 34 Reasons provided for dissatisfaction of water supply, Hagadera camp, Kenya, 2017

Slightly less than half of households were usign an improved excreta disposal facility (Table 73).

Table 73 Safe Excreta disposal, Hagadera camp, Kenya, 2017

	Number/total	% (95% CI)
Proportion of households using an improved excreta disposal facility (improved toilet facility, not shared)	147/297	49.5 (40.0-59.0)
Proportion of households using a shared family toilet	76/297	25.6 (19.6-31.6)
Proportion of households using a communal toilet	45/297	15.2 (9.9-20.4)
Proportion of households using an unimproved toilet	29/297	9.8 (3.6-16.0)
The proportion of households with children under three years old that dispose of faeces safely.	163/171	95.3 (91.8-98.8)

5 Results: Ifo camp

A total of 1,702 people were surveyed, with an average household size of 6.0 and 17.8% children below 5 years (Table 74).

Table 74 Demographic Characteristics of the study population, Ifo camp, Kenya, 2017

Total HHs surveyed	*287*
Total population surveyed	*1,702*
Total U5 surveyed	*607*
Average HH size	*6.0*
% of U5	*17.8*

5.1 Children 6-59 months

Sample size and clusters

545 children 6-59 months were interviewed compared to the target 537, which shows that population estimates used were very accurate (Table 75).

Table 75 Target and actual number captured, Ifo camp, Kenya, 2017

	Target (No.)	Total surveyed (No.)	% of the target
Children 6-59 months	537	545	101
Clusters	30	30	100

Boys and girls, as well as age groups, were distributed fairly in the sample (Table 76).

Table 76 Distribution of age and sex of sample, Ifo camp, Kenya, 2017

	Boys		Girls		Total		Ratio
AGE (mo)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy:girl**
6-17	69	50.7	67	49.3	136	25.0	1.0
18-29	73	51.4	69	48.6	142	26.1	1.1
30-41	52	46.4	60	53.6	112	20.6	0.9
42-53	66	54.5	55	45.5	121	22.2	1.2
54-59	16	47.1	18	52.9	34	6.2	0.9
Total	276	50.6	269	49.4	545	100.0	1.0

Anthropometric results (based on WHO Growth Standards 2006)

The prevalence of GAM was 12.7% (9.4-16.9), with a SAM prevalence of 1.7% (0.8-3.6). There were no cases of oedema (Table 77).

Table 77 Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex, Ifo camp, Kenya, 2017

	All n = 520	**Boys** n = 264	**Girls** n = 256
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(66) 12.7 % (9.4 - 16.9 95% C.I.)	(38) 14.4 % (10.6 - 19.2 95% C.I.)	(28) 10.9 % (6.9 - 16.9 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(57) 11.0 % (8.1 - 14.7 95% C.I.)	(32) 12.1 % (8.8 - 16.5 95% C.I.)	(25) 9.8 % (6.0 - 15.4 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(9) 1.7 % (0.8 - 3.6 95% C.I.)	(6) 2.3 % (1.1 - 4.7 95% C.I.)	(3) 1.2 % (0.4 - 3.7 95% C.I.)

The prevalence of oedema is 0.0 %

Fiure 35 clearly shows that GAM has been increasing since 2015. The increase in GAM from 2016 to 2017 was, however, not statistically significant *(p=0.457)*.

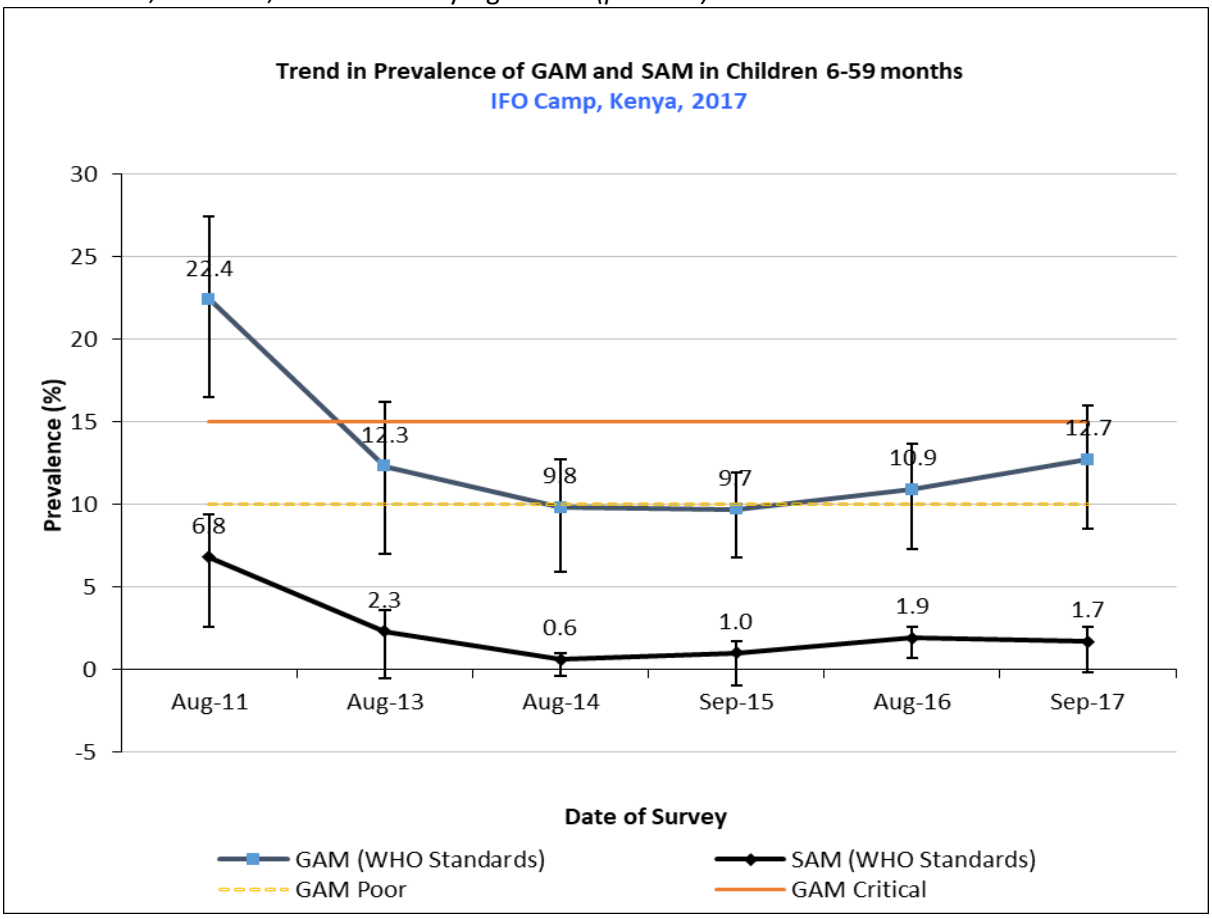


Figure 35 Trend in prevalence of GAM and SAM, Ifo camp, Kenya, 2017

Table 78 Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema, Ifo camp, Kenya, 2017

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	129	3	2.3	14	10.9	112	86.8	0	0.0
18-29	138	1	0.7	16	11.6	121	87.7	0	0.0
30-41	106	2	1.9	11	10.4	93	87.7	0	0.0
42-53	114	3	2.6	11	9.6	100	87.7	0	0.0
54-59	33	0	0.0	5	15.2	28	84.8	0	0.0
Total	520	9	1.7	57	11.0	454	87.3	0	0.0

The prevalence of wasting was not very different between the 6-17, 18-29 and 42-53 age groups (Figure 36).

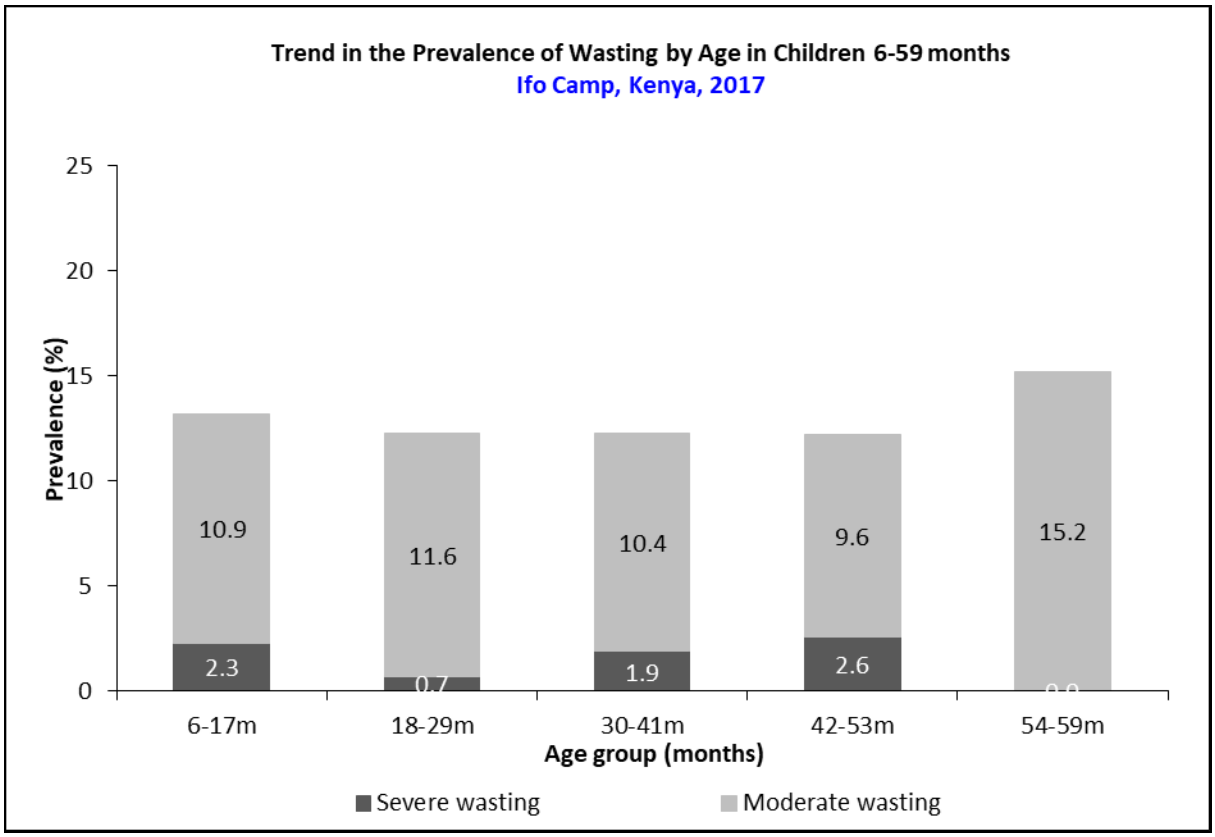


Figure 36 Trend in prevalence of wasting by age, Ifo camp, Kenya, 2017

Table 79 Distribution of acute malnutrition and oedema based on weight-for-height z-scores, Ifo camp, Kenya, 2017

	<-3 z-score	**>=-3 z-score**
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 16 (2.9 %)	Not severely malnourished No. 529 (97.1 %)

NB: flagged records are included

The weight-for-height distribution followed a similar shape to the WHO normal distribution (Figure 37).

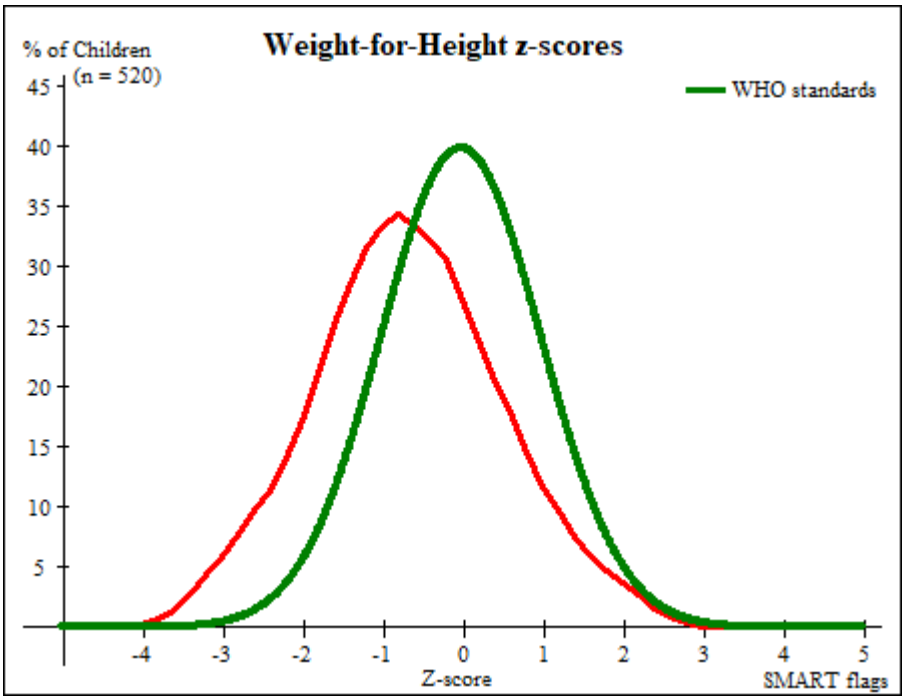


Figure 37 Distribution of weight-for-height z-scores, Ifo camp, Kenya, 2017

The prevalence of global malnutrition by MUAC was 10.6% (7.3-15.3), which is lower than the GAM prevalence using weight-for-height (Table 80).

Table 80 Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex, Ifo camp, Kenya, 2017

	All n = 545	**Boys** n = 276	**Girls** n = 269
Prevalence of global malnutrition (< 125 mm and/or oedema)	(58) 10.6 % (7.3 - 15.3 95% C.I.)	(31) 11.2 % (7.3 - 16.8 95% C.I.)	(27) 10.0 % (6.1 - 16.1 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(48) 8.8 % (6.1 - 12.5 95% C.I.)	(27) 9.8 % (6.2 - 15.0 95% C.I.)	(21) 7.8 % (4.8 - 12.4 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(10) 1.8 % (0.8 - 4.2 95% C.I.)	(4) 1.4 % (0.4 - 5.7 95% C.I.)	(6) 2.2 % (0.9 - 5.3 95% C.I.)

As expected, the prevalence of wasting based on MUAC was highest in the 6-17 age group followed by the 18-29 age group. MUAC is known to identify a higher proportion of younger children (Table 81).

Table 81 Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema, Ifo camp, Kenya, 2017

		Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	136	7	5.1	29	21.3	100	73.5	0	0.0
18-29	142	3	2.1	15	10.6	124	87.3	0	0.0
30-41	112	0	0.0	3	2.7	109	97.3	0	0.0
42-53	121	0	0.0	1	0.8	120	99.2	0	0.0
54-59	34	0	0.0	0	0.0	34	100.0	0	0.0
Total	545	10	1.8	48	8.8	487	89.4	0	0.0

The proportion of children who were underweight was 19.5% (14.3-26.1) based on weight-for-age z-scores (Table 82).

Table 82 Prevalence of underweight based on weight-for-age z-scores by sex, Ifo camp, Kenya, 2017

	All n = 527	**Boys** n = 267	**Girls** n = 260
Prevalence of underweight (<-2 z-score)	(103) 19.5 % (14.3 - 26.1 95% C.I.)	(67) 25.1 % (18.4 - 33.2 95% C.I.)	(36) 13.8 % (9.1 - 20.6 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(70) 13.3 % (10.3 - 16.9 95% C.I.)	(44) 16.5 % (12.4 - 21.6 95% C.I.)	(26) 10.0 % (6.7 - 14.6 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(33) 6.3 % (3.3 - 11.5 95% C.I.)	(23) 8.6 % (4.8 - 14.9 95% C.I.)	(10) 3.8 % (1.6 - 8.9 95% C.I.)

18.7% (13.8-24.9) of sampled children were stunted (Table 83).

Table 83 Prevalence of stunting based on height-for-age z-scores and by sex, Ifo camp, Kenya, 2017

	All n = 475	**Boys** n = 237	**Girls** n = 238
Prevalence of stunting (<-2 z-score)	(89) 18.7 % (13.8 - 24.9 95% C.I.)	(44) 18.6 % (13.2 - 25.5 95% C.I.)	(45) 18.9 % (13.0 - 26.6 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(56) 11.8 % (8.9 - 15.4 95% C.I.)	(30) 12.7 % (9.1 - 17.3 95% C.I.)	(26) 10.9 % (6.8 - 17.0 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(33) 6.9 % (3.9 - 12.1 95% C.I.)	(14) 5.9 % (2.9 - 11.8 95% C.I.)	(19) 8.0 % (4.0 - 15.3 95% C.I.)

Stunting was higher in 2017 compared to 2016 (Figure 38). However, the difference was not statistically significant (*p=0.497*).

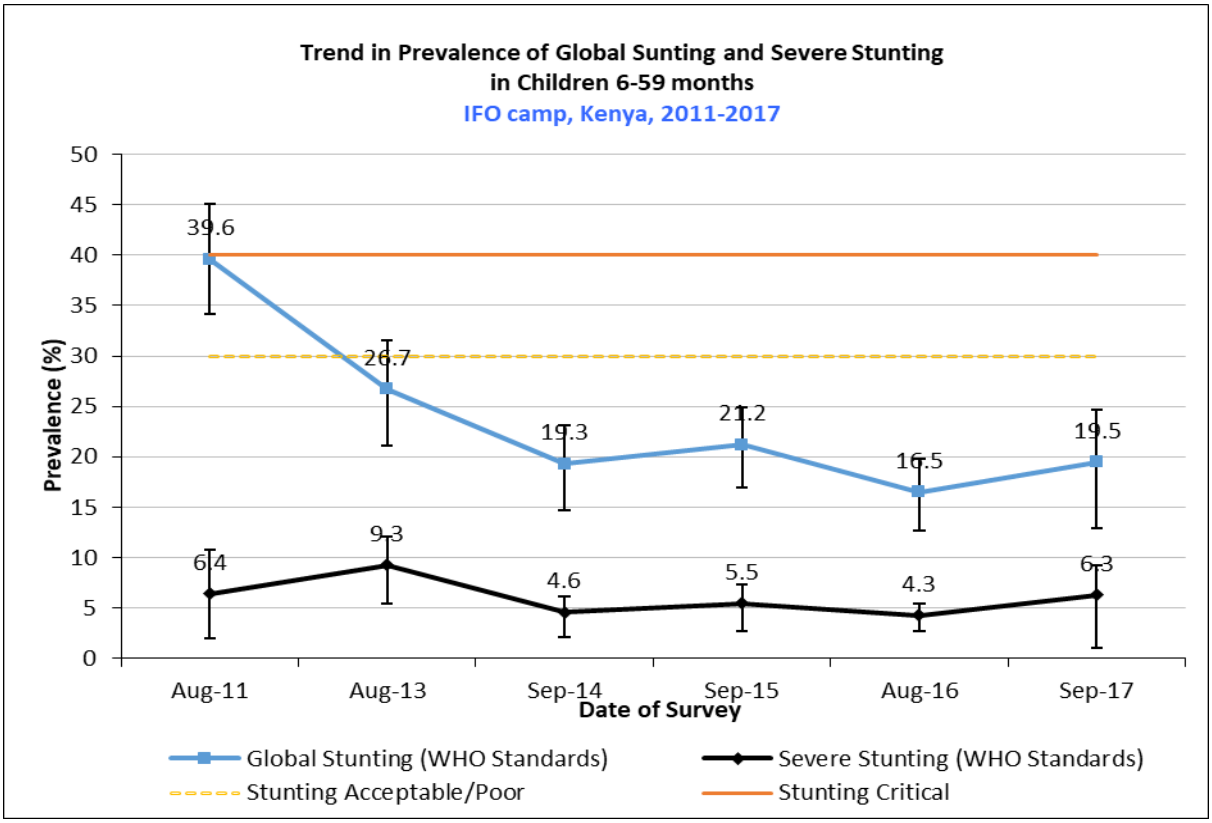


Figure 38 Trend in prevalence of global and severe stunting, Ifo camp, 2017

Table 84 Prevalence of stunting by age based on height-for-age z-scores, Ifo camp, Kenya, 2017

		Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	116	6	5.2	18	15.5	92	79.3
18-29	127	10	7.9	19	15.0	98	77.2
30-41	92	13	14.1	12	13.0	67	72.8
42-53	108	4	3.7	6	5.6	98	90.7
54-59	32	0	0.0	1	3.1	31	96.9
Total	475	33	6.9	56	11.8	386	81.3

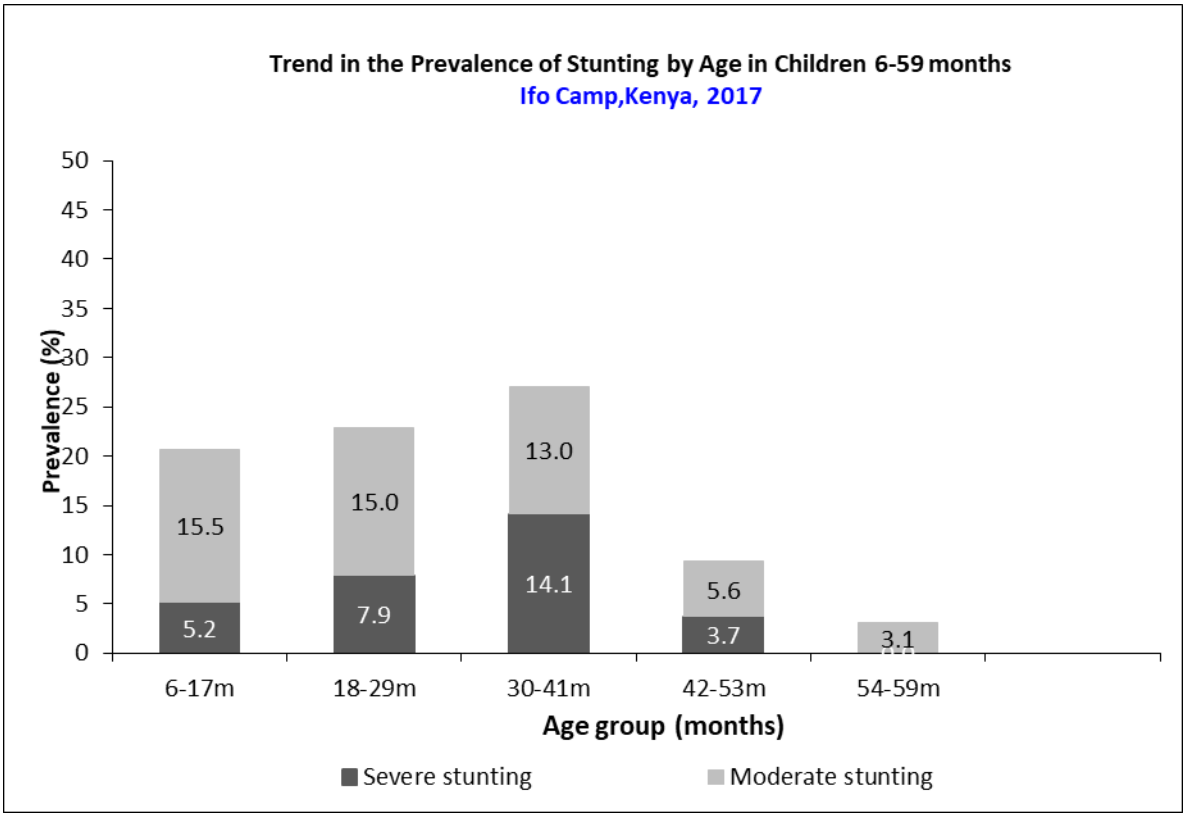


Figure 39 Trend in prevalence of stunting by age, Ifo camp, Kenya, 2017

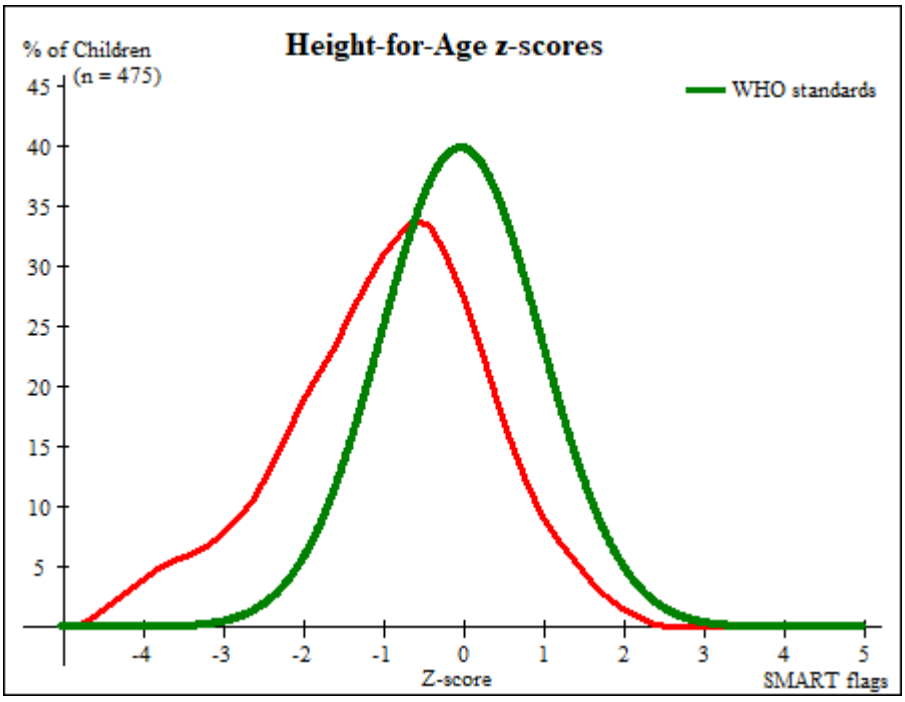


Figure 40 Distribution of height-for-age z-scores, Ifo camp, Kenya, 2017

Table 85 Mean z-scores, Design Effects and excluded subjects, Ifo camp, Kenya, 2017

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	520	-0.68±1.16	1.54	0	25
Weight-for-Age	527	-1.01±1.18	2.76	0	18
Height-for-Age	475	-0.94±1.24	2.27	0	70

* contains for WHZ and WAZ the children with edema.

Measles vaccination coverage results

All sampled children had received measles vaccination, and nearly all had received Vitamin A supplementation (Table 86 and 87).

Table 86 Measles vaccination coverage for children aged 9-59 months, Ifo camp, Kenya, 2017

	Measles (with card) n=158	Measles (with card or confirmation from mother) n=514
YES	30.7% (21.0-40.5, 95% C.I)	100.0%

Vitamin A coverage results

Table 87 Vitamin A supplementation for children aged 6-59 months within past 6 months, Ifo camp, Kenya, 2017

	Vitamin A capsule (with card) n=156	Vitamin A capsule (with card or confirmation from mother) n=543
YES	28.6% (20.0-37.3, 95% C.I)	99.6% (99.1-100.0, 95% C.I)

The coverage of both Vitamin A supplementation and measles vaccination have been improving (Figure 41).

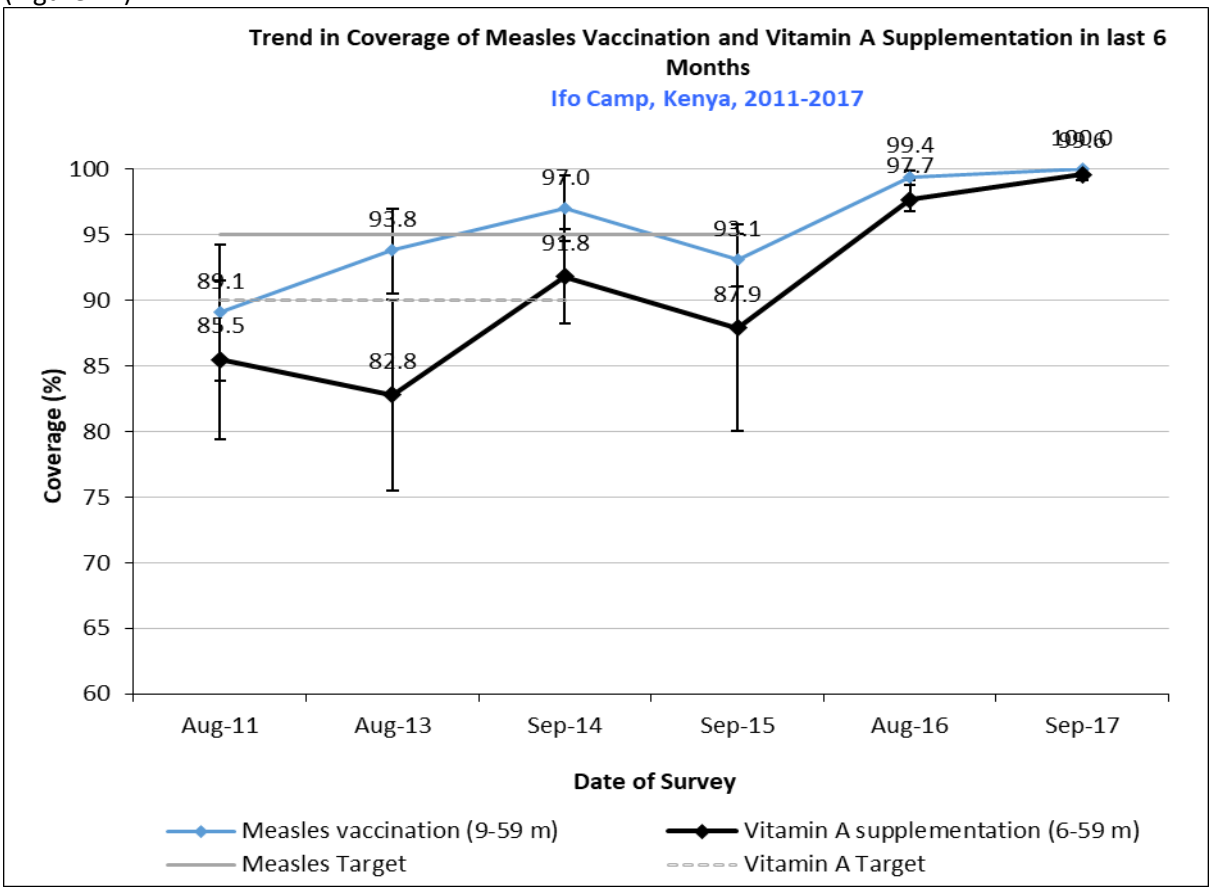


Figure 41 Trend in coverage of measles vaccination and Vitamin A supplementation, Ifo camp, Kenya, 2017

Deworming

The coverage of deworming was also very high for children 24-59 months (Table 88).

Table 88 Deworming for children aged 24-59 months within past 6 months, Ifo camp, Kenya, 2017

	Deworming (with card or confirmation from mother) n=311
YES	90.4% (83.1-97.7, 95% C.I)

Diarrhoea results

Table 89 Period prevalence of diarrhoea, Ifo camp, Kenya, 2017

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	85/545	15.6 (10.0-21.2)

Anaemia results

55.3% (47.2-63.5) of children 6-59 months were classified as anaemic (Table 90), with a mean haemoglobin concentration of 10.7 (10.4-10.9).

Table 90 Prevalence of anaemia in children 6-59 months, Ifo camp, Kenya, 2017

Anaemia in Children 6-59 months	All n = 544
Total Anaemia (Hb<11.0 g/dL)	(301) 55.3% (47.2-63.5, 95% C.I)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(142) 26.1% (22.7-29.5, 95% C.I)
Moderate Anaemia (7.0-9.9 g/dL)	(157) 28.9% (22.5-35.2, 95% C.I)
Severe Anaemia (<7.0 g/dL)	(2) 0.4% (0.0-0.9, 95% C.I)
Mean Hb (g/dL) (confidence interval)	10.7 (10.4-10.9)

Figure 42 and 43 clearly indicate that anaemia further increased in 2017 as it had increased in 2016. The increase in anaemia from 2016 to 2017 was statisticaly significant (*p<0.05).*

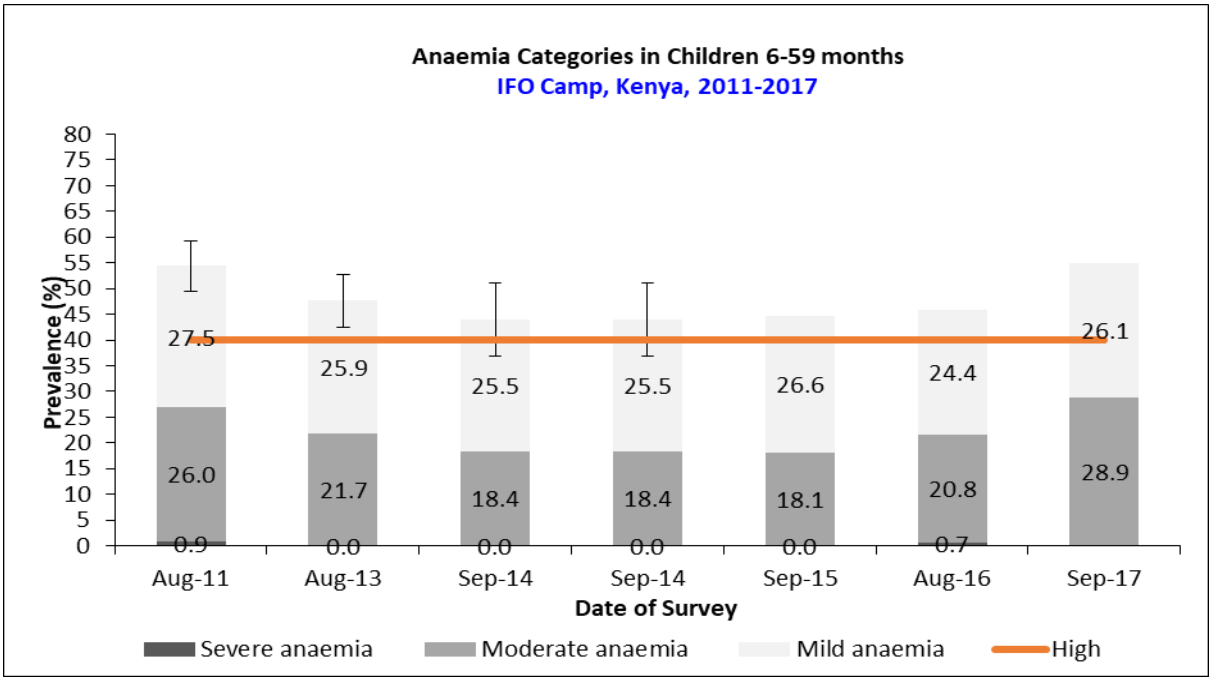


Figure 42 Anaemia categories, Ifo camp, Kenya, 2017

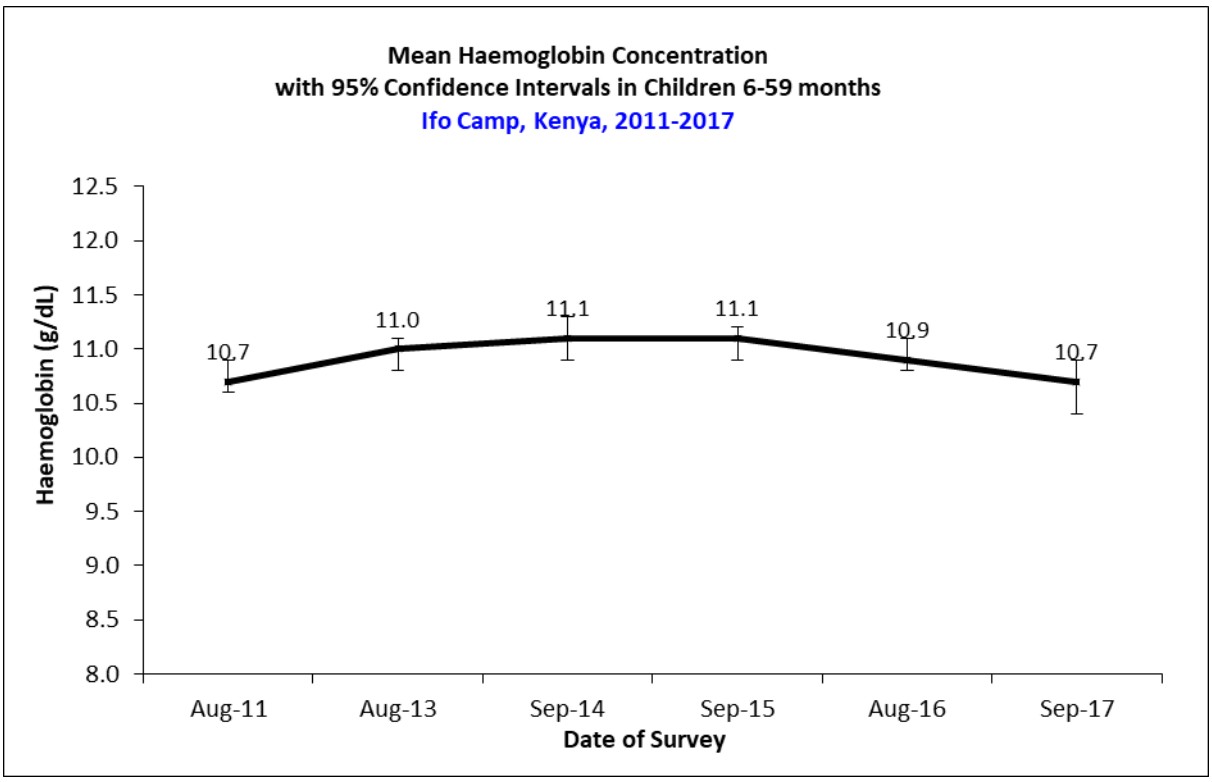


Figure 43 Mean haemoglobin concentration, Ifo camp, Kenya, 2017

An analysis of the prevalence of moderate and severe malnutrition is shown by Table 91.

Table 91 Prevalence of moderate and severe anaemia in children 6-59 months by age, Ifo camp, Kenya, 2017

	6-23 months n=200	24-35 months n=127	36-59 months n=217	Total n=545
Moderate and Severe Anaemia (Hb < 10g/dl)	(77) 38.5% (28.9-48.1, 95% C.I)	(43) 33.9% (22.4-45.3, 95% C.I)	(39) 18.0% (12.7-23.3, 95% C.I)	(159) 29.2% (22.7-35.7, 95% C.I)

Anaemia was highest in the 6-23 age group, although it was also very high in the 24-35 age group (Table 92).

Table 92 Prevalence of anaemia by age, Ifo camp, Kenya, 2017

		Severe Anaemia (<7.0 g/dL)		Moderate Anaemia (7.0-9.9 g/dL)		Mild Anaemia (Hb 10.0-10.9 g/dL)		Total Anaemia (Hb<11.0 g/dL)		Normal (Hb≥11.0 g/dL)	
Age (mths)	**Total no.**	**No.**	**% (95% CI)**	**No.**	**% (95% CI)**	**No.**	**% (95% CI)**	**No.**	**% (95% CI)**	**No.**	**% (95% CI)**
6-23	200	0	0.0	77	38.5 (28.9-48.1)	56	28.0 (22.3-33.7)	133	66.5 (54.8-78.2)	67	33.5 (21.8-45.2)
24-35	128	1	0.8 (0.0-2.4)	42	33.1 (22.0-44.2)	33	26.0 (19.4-32.6)	76	59.8 (48.2-71.5)	51	28.5-51.8)
36-59	217	1	0.5 (0.0-1.4)	38	17.5 (12.6-22.4)	53	24.4 (19.1-29.7)	92	42.4 (34.7-50.1)	125	57.6 (49.9-65.3)
Total	**544**	**2**	**0.4 (0.0-0.9)**	**157**	**28.9 (22.5-35.2)**	**142**	**26.1 (22.7-29.5)**	**301**	**55.3 (47.2-63.5)**	**243**	**44.7 (36.5-52.8)**

5.2 Children 0-23 months

IYCF indicators are shown in Table 93. Timely initiation of breastfeeding was relatively low. Exclusive breastfeeding was quite high. Continued breastfeeding at 2 years was very low. Introduction to solid foods at 6 months was also quite low.

Table 93 Prevalence of Infant and Young Child Feeding Practices Indicators, Ifo camp, Kenya, 2017

Indicator	Age range	Number/ total	Prevalence (%)	95% CI
Timely initiation of breastfeeding	0-23 months	152/241	63.1	47.9-78.3
Exclusive breastfeeding under 6 months	0-5 months	47/62	75.8	61.7-90.0
Continued breastfeeding at 1 year	12-15 months	19/40	47.5	30.0-65.0
Continued breastfeeding at 2 years	20-23 months	6/42	14.3	2.8-25.7
Introduction of solid, semi-solid or soft foods	6-8 months	12/31	38.7	13.8-63.7
Consumption of iron-rich or iron-fortified foods	6-23 months	100/200	50.0	35.8-64.2
Bottle feeding	0-23 months	13/261	5.0	2.3-7.6

Most of the IYCF indicators worsened between 2016 and 2017 (Figure 44).

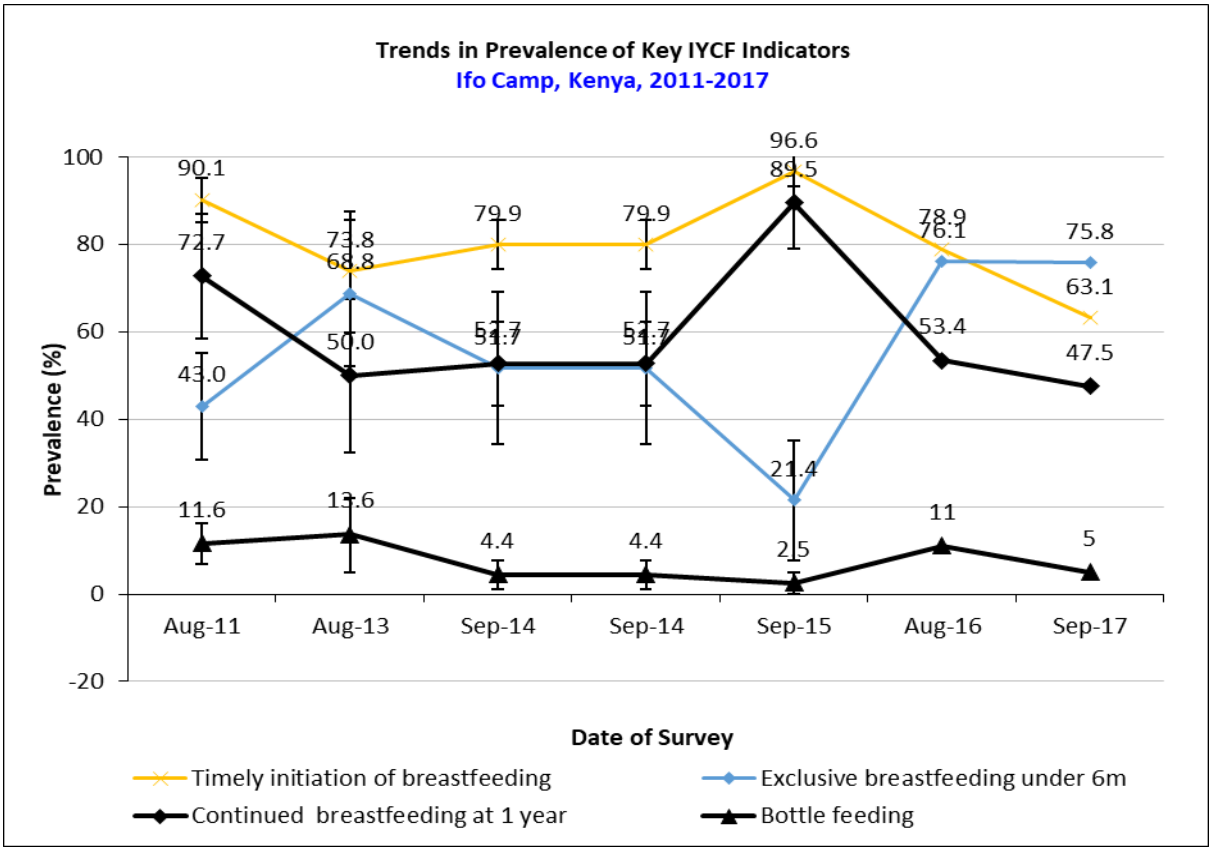


Figure 44 Trends in prevalence of key IYCF indicators, Ifo camp, Kenya, 2017

Prevalence of intake

Infant formula

The proportion who consumed infant formula was quite high (28.4%, 15.1-41.6) for children 0-23 months (Table 94).

Table 94 Infant formula intake in children aged 0-23 months, Ifo camp, Kenya, 2017

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who consumed infant formula (fortified or non-fortified)	74/261	28.4 (15.1-41.6)

Fortified blended foods

A relatively high proportion of children 6-23 months reported consumption of super-cereal plus (CSB++).

Table 95 Super-cereal plus (CSB++) intake in children aged 6-23 months, Ifo camp, Kenya, 2017

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who consumed Super-cereal plus (CSB++)	78/200	61.0 (45.1-76.9)

5.3 Women 15-49 years

Of the sample of pregnant and lactating women, 7.6% were pregnant. The mean age was 27, with a minimum of 15 and a mximum of 49 (Table 96).

Table 96 Women's physiological status and age, Ifo camp, Kenya, 2017

Physiological status	Number/total	% of sample
Non-pregnant	22/288	7.6
Pregnant	266/288	92.4
Mean age (range)	27 (15-49)	

46.2% (39.2-53.3) of non-pregnant women of reproductive age were anaemic (Table 97).

Table 97 Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 years), Ifo camp, Kenya, 2017

Anaemia in non-pregnant women of reproductive age (15-49 years)	All n = 266
Total Anaemia (<12.0 g/dL)	(123) 46.2% (39.2-53.3, 95% C.I)
Mild Anaemia (11.0-11.9 g/dL)	(60) 22.6% (17.6-27.5, 95% C.I)
Moderate Anaemia (8.0-10.9 g/dL)	(60) 22.6% (16.1-29.0, 95% C.I)
Severe Anaemia (<8.0 g/dL)	(3) 1.1% (0.0-2.4, 95% C.I)
Mean Hb (g/dL) (confidence interval)	11.9 (11.7-12.1)

Anaemia has been increasing since 2014 and followed the same trend in 2017 (Figure 45 and 46). The increase in anaemia in 2017 was statistically significant (*p<0.05).*

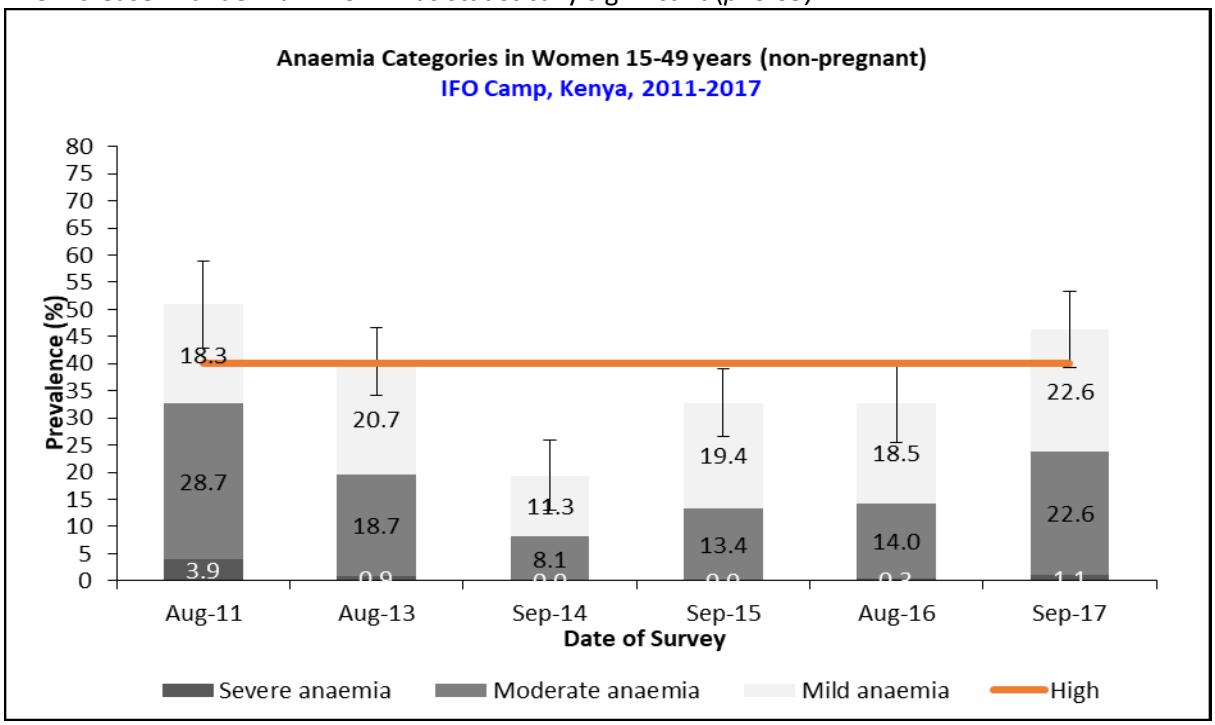


Figure 45 Anaemia categories in women 15-49 years, Ifo camp, Kenya, 2017

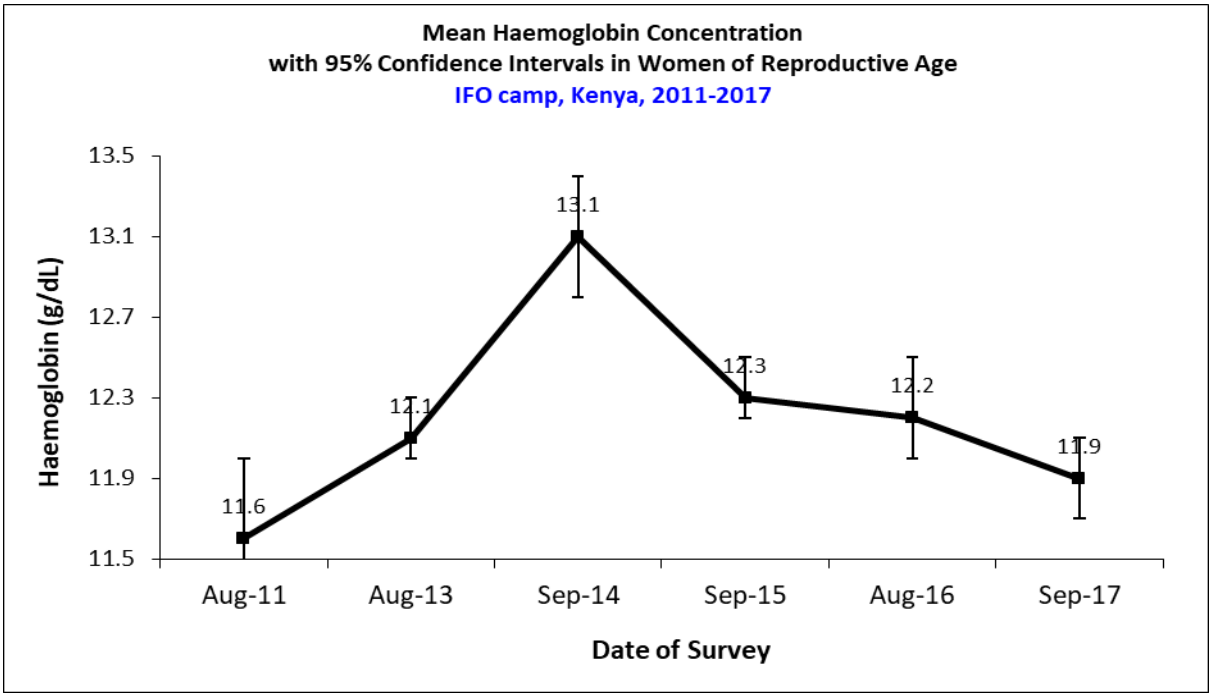


Figure 46 Mean haemoglobin concentration, Ifo camp, Kenya, 2017

ANC enrollment and iron-folic acid tablets coverage was slightly above three quarters (Table 98).

Table 98 ANC enrollment and iron-folic acid pills coverage among pregnant women (15-49 years), Ifo camp, Kenya, 2017

	Number /total	% (95% CI)
Currently enrolled in ANC programme	17/22	77.3 (59.7-94.9)
Currently receiving iron-folic acid pills	17/22	77.3 (59.7-94.9)

None of the pregnant and lactating women in the sample were malnourished according to the 210mm cut-off (Table 99).

Table 99 Prevalence of malnutrition among pregnant and lactating women (15-49 years) based on MUAC, Ifo camp, Kenya, 2017

MUAC <210mm in pregnant and lactating women (15-49 years)	**Number/total**	**% (95% CI)**
	0/74	0.0

The coverage of BSFP was 54.2% (37.0-71.3).

Table 100 BSFP coverage for pregnant and lactating women (15-49 years), Ifo camp, Kenya, 2017

BSFP coverage for pregnant and lactating women (15-49 years)	**Number/total**	**% (95% CI)**
	39/72	54.2 (37.0-71.3)

5.4 Food security

287 out of the planned 300 households were interviewed for food security (Table 101).

Table 101 Food security information, Ifo camp, Kenya, 2017

Household data	Planned	Actual	% of target
Total households surveyed for Food Security	300	*287*	*96%*

Food distribution results

The average duration of the food ration was 19.7 days, which is 59.95 of the theoretical duration (Table 102).

Table 102 Reported duration of general food ration, Ifo camp, Kenya, 2017

Average number of days the food ration lasts (Standard deviation or 95% CI)	Average duration (%) in relation to the theoretical duration of the ration
19.7 (18.6-20.8)	59.9%

The main reason for the ration not lasting the entire duration was “ration not big enough” (Figure 47).

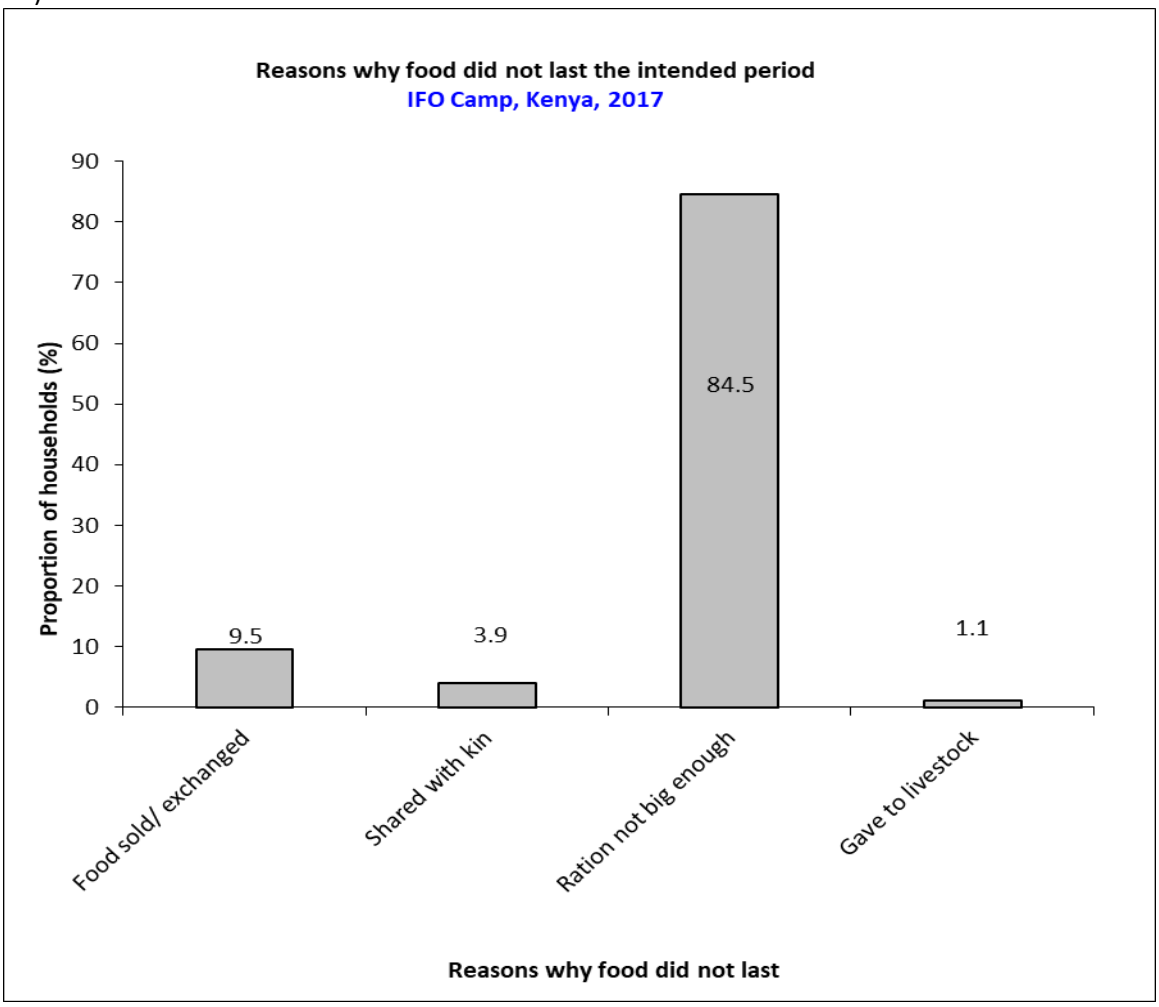


Figure 47 Reasons why food did not last the intended period, Ifo camp, Kenya, 2017

Negative coping strategies results

Begging (73.6%) Borrowing (70.1%), and reducing meal frequency/quantity (58.0%) were the main coping mechanisms (Figure 48).

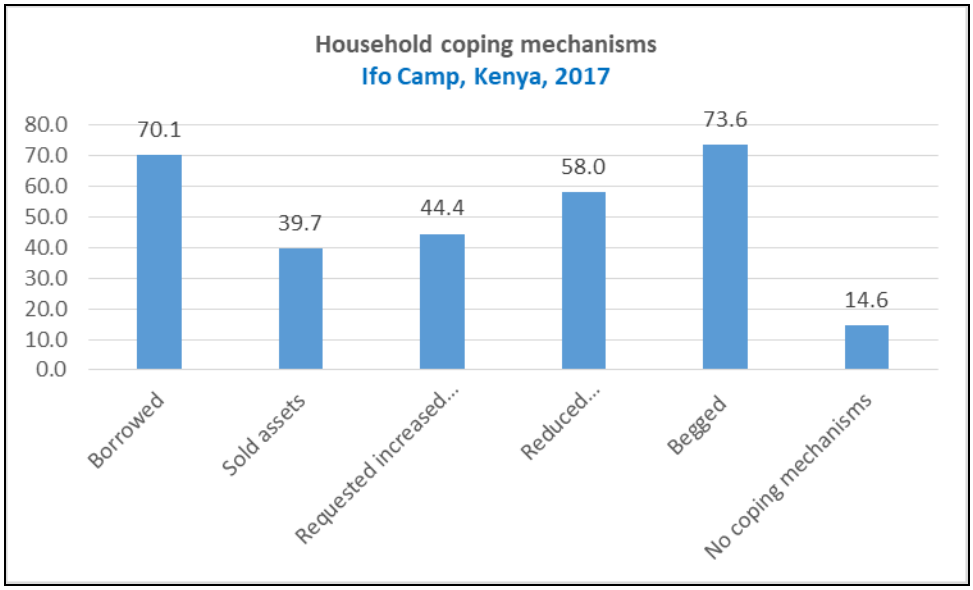


Figure 48 Household coping mechanisms, Ifo camp, Kenya, 2017

Household dietary diversity results

The average household dietary diversity score of 8.6 was quite high (Table 103).

Table 103 Average HDDS, Ifo camp, Kenya, 2017

Average HDDS	95% CI
8.6	7.4-9.8

The consumption of vegetables (94.8%), white roots and tubers (94.0%), cereals (86.9%) and oils/fats (82.0%) was very high (Figure 49).

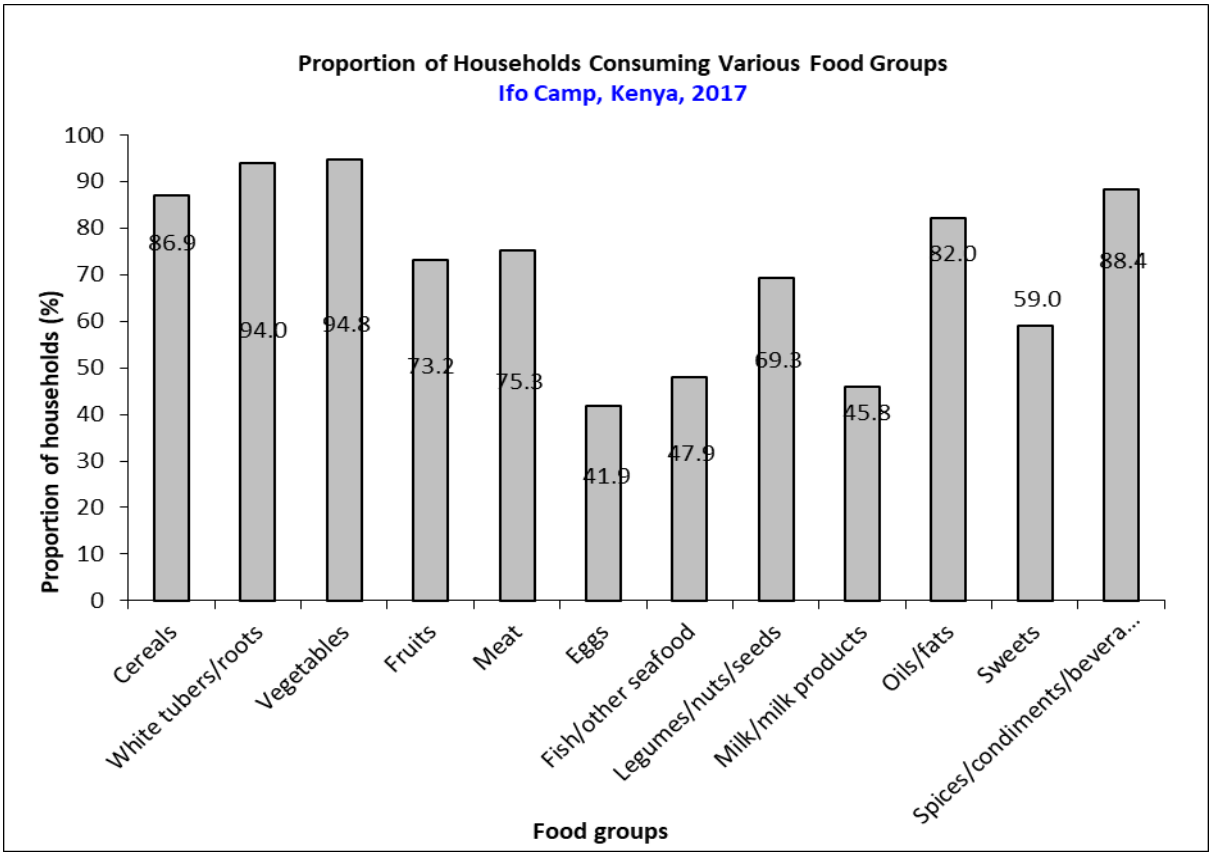


Figure 49 Proportion of households consuming various food groups, Ifo camp, Kenya, 2017

3.5% (0.7-6.3) of households did not consume any vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products. A high proportion (81.9%, 70.2-93.5) consumed either a plant or animal source of Vitamin A. 76.3% (63.4-89.3) consumed food sources of haem iron (Table 104).

Table 104 Consumption of food aid commodities and micronutrient rich foods by households, Ifo camp, Kenya, 2017

	Number/total	% (95% CI)
Proportion of households *not consuming any* vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	10/287	3.5 (0.7-6.3)
Proportion of households consuming either a plant or animal source of vitamin A	235/287	81.9 (70.2-93.5)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	219/287	76.3 (63.4-89.3)

The items most frequently purchased with the Bamba Chakula food voucher were sugar (85.5%), frits (78.4%), and milk (71.3%). Purchase of meat, eggs and oil were low (Figure 50).

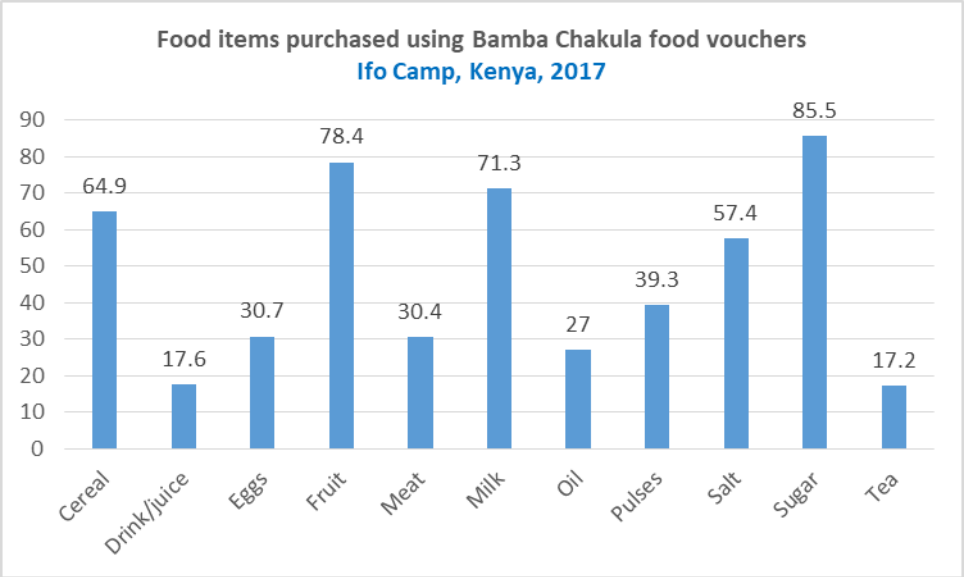


Figure 50 Food items purchased using Bamba Chakula food vouchers, Ifo camp, Kenya, 2017

5.5 WASH

287 households were interviewed for the WASH module, 96% of the target 300 (Table 105).

Table 105 WASH information, Ifo camp, Kenya, 2017

Household data	Planned	Actual	% of target
Total households surveyed for WASH	300	*287*	*96%*

All households reported having access to an improved drinking water source (Table 106).

Table 106 Water Quality, Ifo camp, Kenya, 2017

	Number/total	% (95% CI)
Proportion of households using an improved drinking water source	284/284	100.0
Proportion of households that use a covered or narrow necked container for storing their drinking water	128/284	45.1 (33.7-56.4)

62.7% (56.1-69.2) of sampled households used at least 20 litres per person per day (Table 107). The mean was 27.0 (23.2-30.8) litres per person per day.

Table 107 Water Quantity: Amount of litres of water used per person per day, Ifo camp, Kenya, 2017

Proportion of households that use:	Number/total	% (95% CI)
≥ 20 lpppd	178/284	62.7 (56.1-69.2)
15 – <20 lpppd	38/284	13.4 (9.2-17.6)
<15 lpppd	68/284	23.9 (17.4-30.5)
Mean (95% CI)	27.0 (23.2-30.8))	

A high proportion (83.8%, 78.2-89.4) were satisfied with thei drinking water source (Table 108).

Table 108 Satisfaction with water supply, Ifo camp. Kenya, 2017

	Number/total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	238/284	83.8 (78.2-89.4)

For those who were not satisfied, the main reason was “not enough” (61.4%), followed by “long waiting queue” (22.7%).

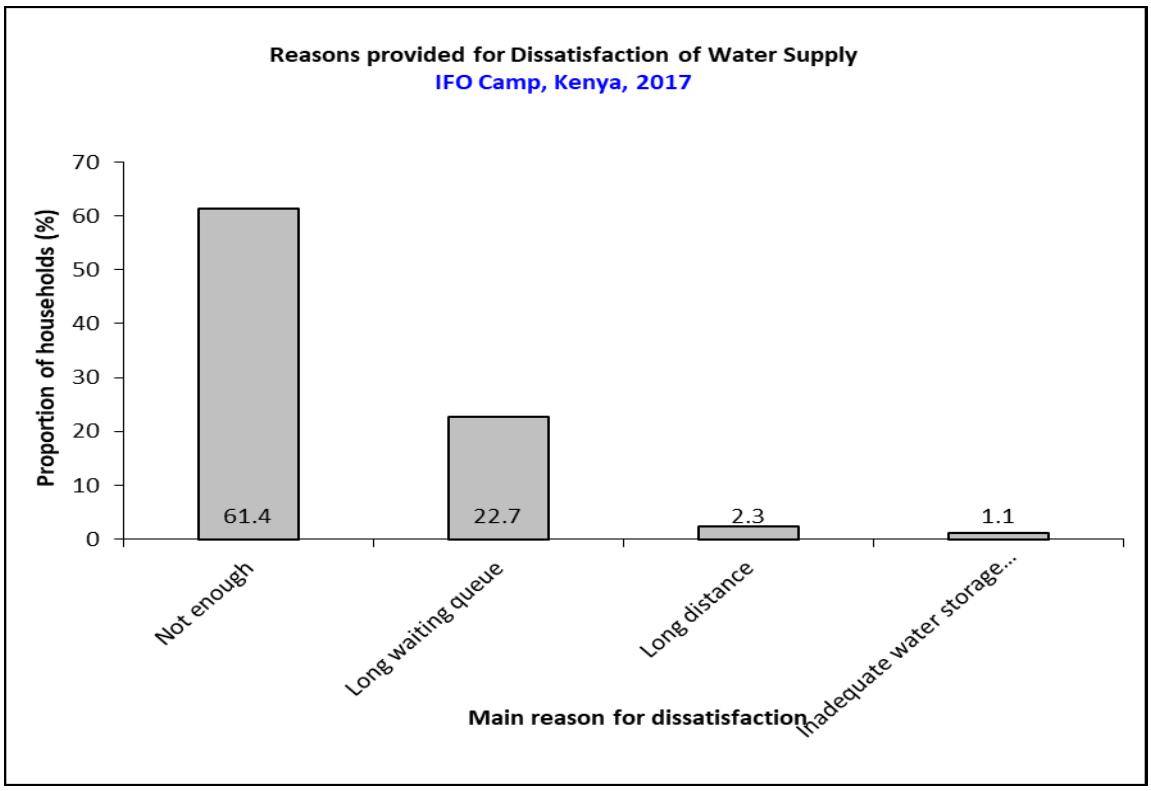


Figure 51 Reasons provided for dissatisfaction of water supply, Ifo camp, Kenya, 2017

72.5% (61.5-83.6) of households used an improved excreta disposal facility and nearly all households disposed of children’s faeces safely (Table 109).

Table 109 Safe Excreta disposal, Ifo camp, Kenya, 2017

	Number/total	% (95% CI)
Proportion of households using an improved excreta disposal facility (improved toilet facility, not shared)	206/284	72.5 (61.5-83.6)
Proportion of households using a shared family toilet	57/284	20.1 (11.9-28.3)
Proportion of households using a communal toilet	18/284	6.3 (2.6-10.1)
Proportion of households using an unimproved toilet	3/284	1.1 (0.0-2.6)
The proportion of households with children under three years old that dispose of faeces safely.	142/143	99.3 (97.9-100.0)

6 Results: Ifo 2 camp

The total population surveyed was 1,748 with an average household size of 6.7 and 19.5% children below 5 years (Table 110).

Table 110 Demographic Characteristics of the study population, Ifo 2 camp, Kenya, 2017

Total HHs surveyed	*268*
Total population surveyed	*1,748*
Total U5 surveyed	*682*
Average HH size	*6.7*
% of U5	*19.5*

6.1 Children 6-59 months

Sample size and clusters

A total of 630 children 6-59 months were interviewed, which was much higher than the target of 471 (Table 111).

Table 111 Target and actual number captured, Ifo 2 Camp, Kenya, 2017

	Target (No.)	**Total surveyed (No.)**	**% of the target**
Children 6-59 months	471	630	134
Clusters	30	30	100

The distribution of age and sex is shwon in Table 112.

Table 112 Distribution of age and sex of sample, Ifo 2 camp, Kenya, 2017

	Boys		**Girls**		**Total**		**Ratio**
AGE (mo)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy:girl**
6-17	61	44.5	76	55.5	137	21.7	0.8
18-29	74	51.7	69	48.3	143	22.7	1.1
30-41	76	53.5	66	46.5	142	22.5	1.2
42-53	78	56.1	61	43.9	139	22.1	1.3
54-59	32	46.4	37	53.6	69	11.0	0.9
Total	321	51.0	309	49.0	630	100.0	1.0

Anthropometric results (based on WHO Growth Standards 2006)

The prevalence of GAM in Ifo 2 camp was 9.4% (6.5-13.5), with a SAM prevalence of 2.0% (1.0-3.8) for children 6-59 months (Table 113).

Table 113 Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex, Ifo 2 camp, Kenya, 2017

	All n = 615	**Boys** n = 314	**Girls** n = 301
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(58) 9.4 % (6.5 - 13.5 95% C.I.)	(25) 8.0 % (5.0 - 12.4 95% C.I.)	(33) 11.0 % (7.2 - 16.3 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(46) 7.5 % (5.0 - 11.1 95% C.I.)	(20) 6.4 % (4.0 - 10.0 95% C.I.)	(26) 8.6 % (5.4 - 13.5 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(12) 2.0 % (1.0 - 3.8 95% C.I.)	(5) 1.6 % (0.7 - 3.7 95% C.I.)	(7) 2.3 % (1.1 - 5.0 95% C.I.)

The prevalence of oedema is 0.0 %

There was a decrease in GAM from 2016 to 2017 (Figure 52). However, the difference was not statistically significant *(p=0.199)*.

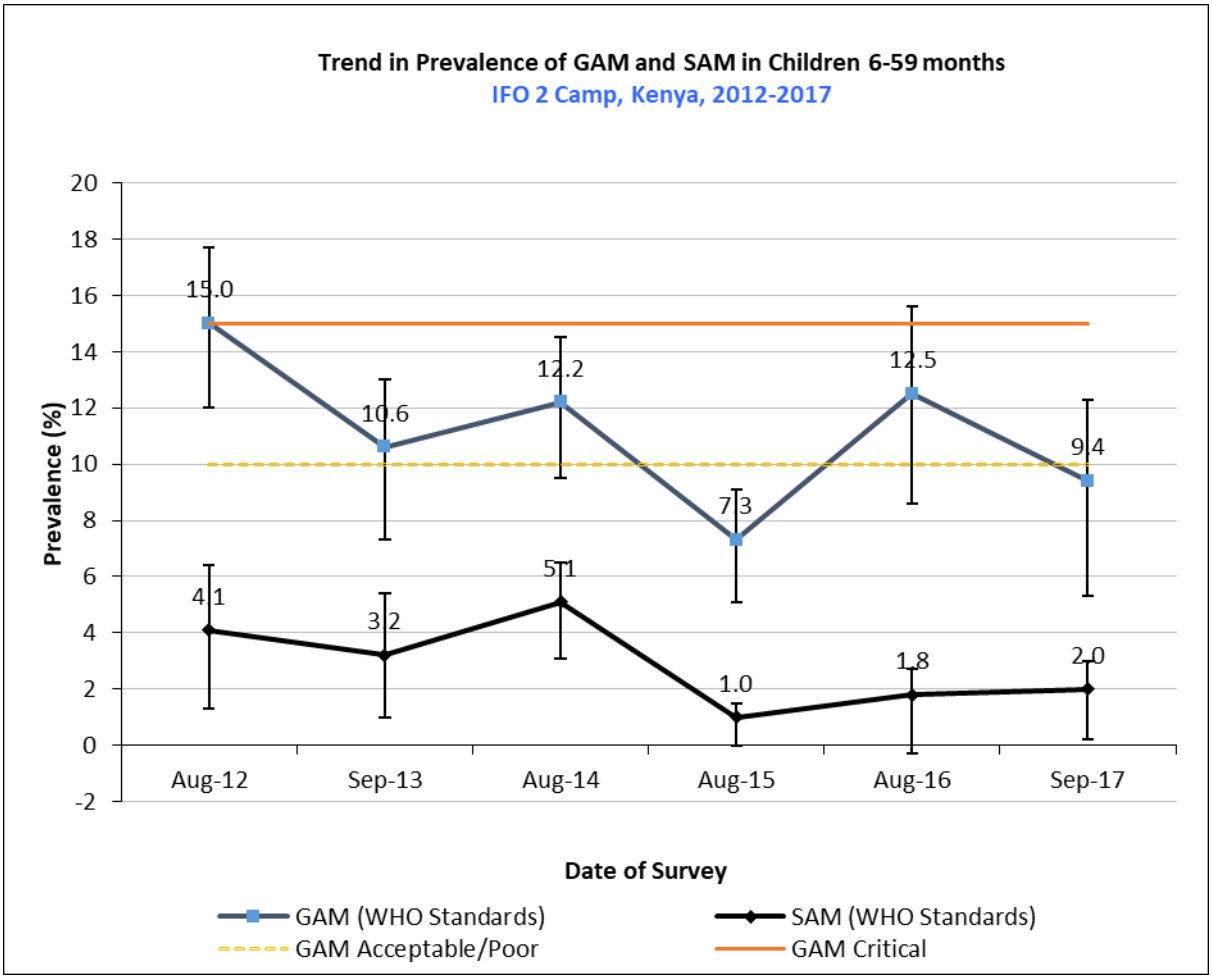


Figure 52 Trend in prevalence of GAM and SAM, Ifo 2 camp, Kenya, 2017

Table 114 Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema, Ifo 2 camp, Kenya, 2017

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	134	3	2.2	4	3.0	127	94.8	0	0.0
18-29	138	2	1.4	9	6.5	127	92.0	0	0.0
30-41	138	1	0.7	6	4.3	131	94.9	0	0.0
42-53	137	4	2.9	20	14.6	113	82.5	0	0.0
54-59	68	2	2.9	7	10.3	59	86.8	0	0.0
Total	615	12	2.0	46	7.5	557	90.6	0	0.0

Wasting was highest in the 6-17 age group (Table 114 and Figure 53).

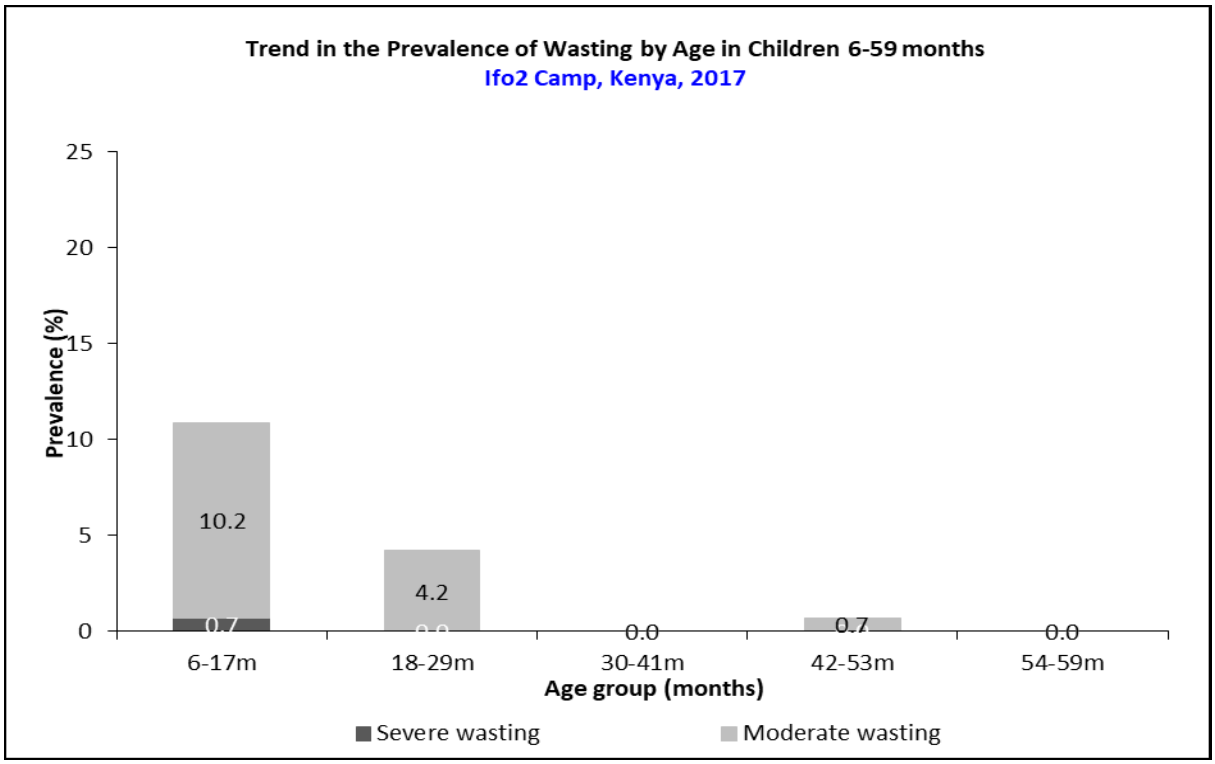


Figure 53 Trend in prevalence of wasting by age, Ifo 2 camp, Kenya, 2017

Table 115 Distribution of acute malnutrition and oedema based on weight-for-height z-scores, Ifo 2 camp, Kenya, 2017

	<-3 z-score	**>=-3 z-score**
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 18 (2.9 %)	Not severely malnourished No. 612 (97.1 %)

NB: flagged records are included

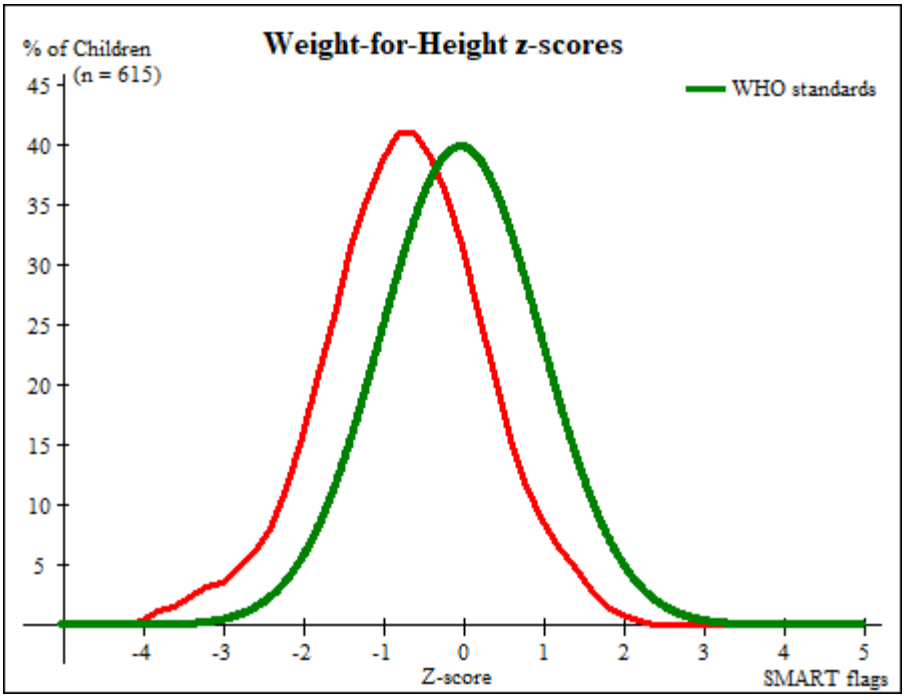


Figure 54 Distribution of weight-for-height z-scores, Ifo 2 camp, Kenya, 2017

According to MUAC classification, 3.5% (2.2-5.4) of children 6-59 months were malnourished (Table 116).

Table 116 Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex, Ifo 2 camp, Kenya, 2017

	All n = 630	**Boys** n = 321	**Girls** n = 309
Prevalence of global malnutrition (< 125 mm and/or oedema)	(22) 3.5 % (2.2 - 5.4 95% C.I.)	(7) 2.2 % (1.0 - 4.9 95% C.I.)	(15) 4.9 % (3.1 - 7.6 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(21) 3.3 % (2.1 - 5.3 95% C.I.)	(7) 2.2 % (1.0 - 4.9 95% C.I.)	(14) 4.5 % (2.8 - 7.3 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(1) 0.2 % (0.0 - 1.2 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(1) 0.3 % (0.0 - 2.5 95% C.I.)

Table 117 Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema, Ifo 2 camp, Kenya, 2017

		Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	137	1	0.7	14	10.2	122	89.1	0	0.0
18-29	143	0	0.0	6	4.2	137	95.8	0	0.0
30-41	142	0	0.0	0	0.0	142	100.0	0	0.0
42-53	139	0	0.0	1	0.7	138	99.3	0	0.0
54-59	69	0	0.0	0	0.0	69	100.0	0	0.0
Total	630	1	0.2	21	3.3	608	96.5	0	0.0

20.7% (16.8-25.3) of children were underweight and 3.7% (2.2-5.9) were severely underweight (Table 118).

Table 118 Prevalence of underweight based on weight-for-age z-scores by sex, Ifo 2 camp, Kenya, 2017

	All n = 627	**Boys** n = 319	**Girls** n = 308
Prevalence of underweight (<-2 z-score)	(130) 20.7 % (16.8 - 25.3 95% C.I.)	(63) 19.7 % (13.7 - 27.7 95% C.I.)	(67) 21.8 % (18.0 - 26.1 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(107) 17.1 % (13.7 - 21.1 95% C.I.)	(53) 16.6 % (11.7 - 23.1 95% C.I.)	(54) 17.5 % (13.4 - 22.7 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(23) 3.7 % (2.2 - 5.9 95% C.I.)	(10) 3.1 % (1.5 - 6.4 95% C.I.)	(13) 4.2 % (2.6 - 6.9 95% C.I.)

The prevalence of stunting was 29.4% (25.6-33.5), with 7.7% (5.7-10.3) classified as severely stunted (Table 119).

Table 119 Prevalence of stunting based on height-for-age z-scores and by sex, Ifo 2 camp, Kenya, 2017

	All n = 608	**Boys** n = 308	**Girls** n = 300
Prevalence of stunting (<-2 z-score)	(179) 29.4 % (25.7 - 33.5 95% C.I.)	(93) 30.2 % (23.9 - 37.4 95% C.I.)	(86) 28.7 % (24.9 - 32.8 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(132) 21.7 % (18.3 - 25.6 95% C.I.)	(73) 23.7 % (18.1 - 30.4 95% C.I.)	(59) 19.7 % (15.8 - 24.2 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(47) 7.7 % (5.7 - 10.3 95% C.I.)	(20) 6.5 % (4.0 - 10.3 95% C.I.)	(27) 9.0 % (6.3 - 12.8 95% C.I.)

There was a statistically significant decrease in stunting in 2017 compared to 2016 *(p<0.05)*.

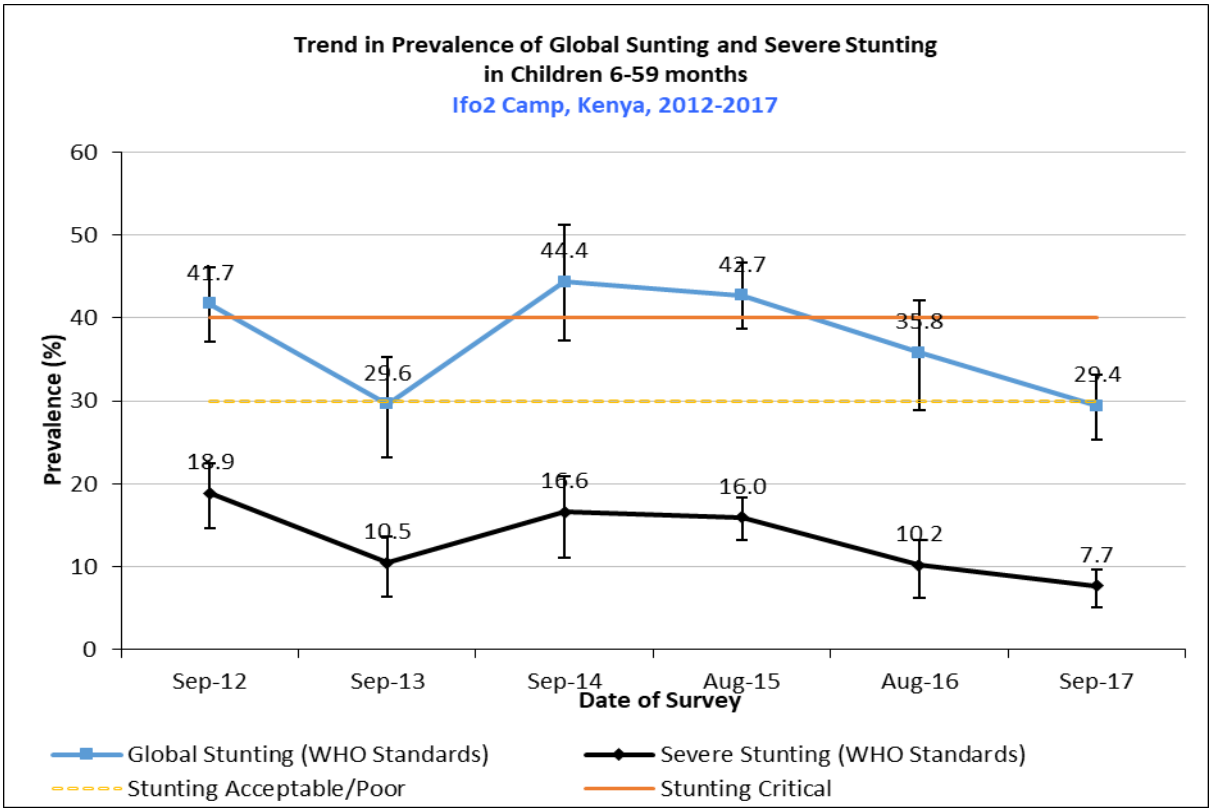


Figure 55 Trend in prevalence of global and severe stunting, Ifo 2 camp, 2017

Table 120 Prevalence of stunting by age based on height-for-age z-scores, Ifo 2 camp, Kenya, 2017

		Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	128	9	7.0	19	14.8	100	78.1
18-29	140	11	7.9	35	25.0	94	67.1
30-41	138	14	10.1	42	30.4	82	59.4
42-53	136	6	4.4	27	19.9	103	75.7
54-59	66	7	10.6	9	13.6	50	75.8
Total	608	47	7.7	132	21.7	429	70.6

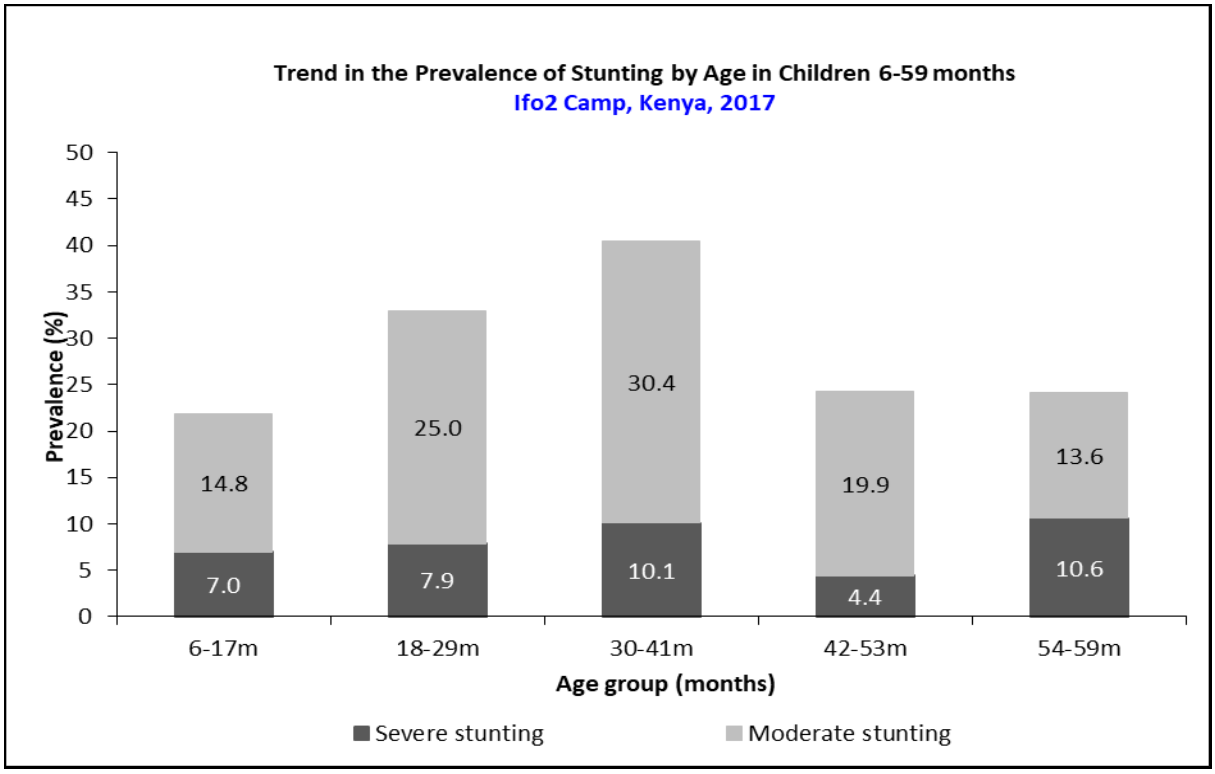


Figure 5256 Trend in prevalence of stunting by age, Ifo 2 camp, Kenya, 2017

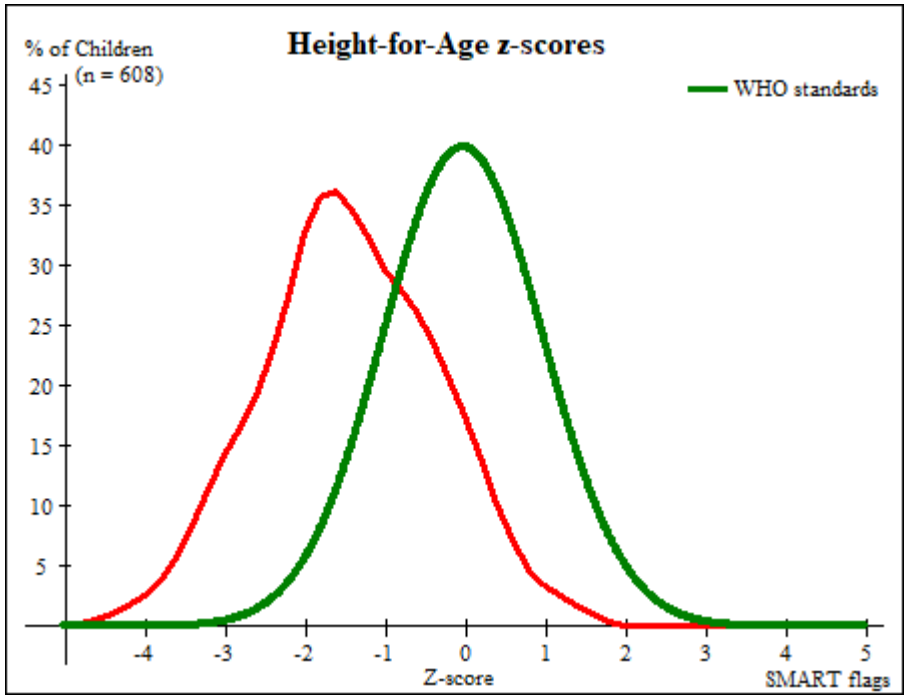


Figure 57 Distribution of height-for-age z-scores, Ifo 2 camp, Kenya, 2017

Table 121 Mean z-scores, Design Effects and excluded subjects, Ifo 2 camp, Kenya, 2017

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	615	-0.73±0.98	2.10	0	15
Weight-for-Age	627	-1.28±0.96	1.68	0	3
Height-for-Age	608	-1.42±1.10	1.07	0	22

* contains for WHZ and WAZ the children with edema.

Measles vaccination coverage results

Nearly all children of eligible age had received Vitamin A supplementation and measles vaccination (Table 122 and 123).

Table 122 Measles vaccination coverage for children aged 9-59 months, Ifo 2 camp, Kenya, 2017

	Measles (with card) n=275	Measles (with card or confirmation from mother) n=578
YES	45.8% (30.9-60.8, 95% C.I)	96.3% (94.5-98.1, 95% C.I)

Vitamin A supplementation coverage results

Table 123 Vitamin A supplementation for children aged 6-59 months within past 6 months, Ifo 2 camp, Kenya, 2017

	Vitamin A capsule (with card) n=224	Vitamin A capsule (with card or confirmation from mother) n=606
YES	35.6% (21.7-49.5, 95% C.I)	96.2% (93.7-98.7, 95% C.I)

The coverage remained high and within tht acceptable standard (Figure 58).

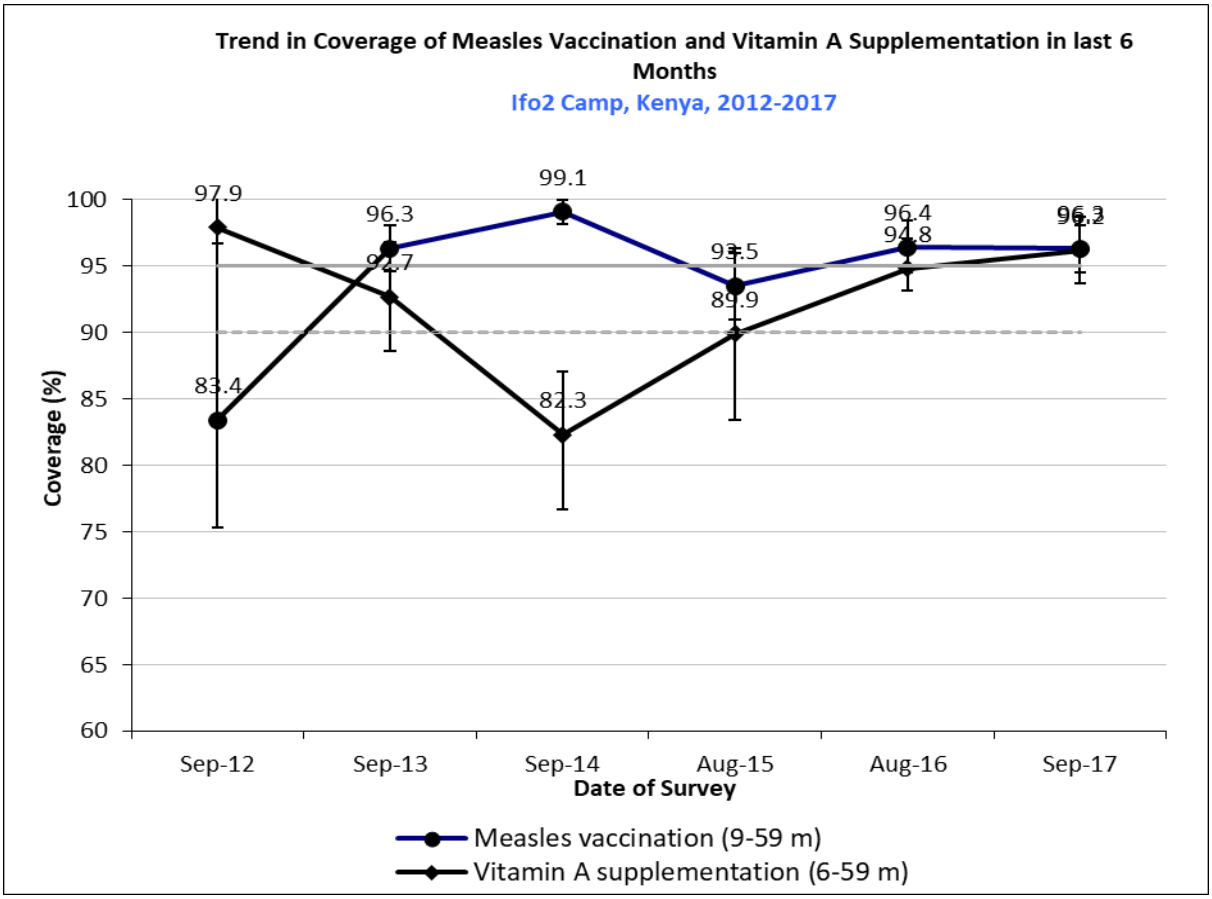


Figure 58 Trend in coverage of measles vaccination and Vitamin A supplementation, Ifo 2 camp, Kenya, 2017

Deworming

The coverage of deworming was 90.4% (85.6-95.2) with card or confirmation from mothet (Table 124).

Table 124 Deworming for children aged 24-59 months within past 6 months, Ifo 2 camp, Kenya, 2017

	Deworming (with card or confirmation from mother) n=387
YES	90.4% (85.6-95.2, 95% C.I)

Diarrhoea results

12.7% (8.0-17.4) of children had experienced diarrhoea in the last 2 weeks (Table 125).

Table 125 Period prevalence of diarrhoea, Ifo 2 camp, Kenya, 2017

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	80/630	12.7 (8.0-17.4)

Anaemia results

61.3% (545-68.0) of children were anaemic (Table 126). The mean haemoglobin concentration was 10.5 (10.3-10.7).

Table 126 Prevalence of anaemia in children 6-59 months, Ifo 2 camp, Kenya, 2017

Anaemia in Children 6-59 months	All n = 630
Total Anaemia (Hb<11.0 g/dL)	(386) 61.3% (54.5-68.0, 95% C.I)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(188) 29.8% (24.9-34.8, 95% C.I)
Moderate Anaemia (7.0-9.9 g/dL)	(193) 30.6% (25.7-35.5, 95% C.I)
Severe Anaemia (<7.0 g/dL)	(5) 0.8% (0.0-1.6, 95% C.I)
Mean Hb (g/dL) (confidence interval)	10.5 (10.3-10.7)

Figure 59 and 60 show a clearly increasing trend in terms of anaemia prevalence. However, the increase in 2017 from 2016 was not statistically significant *(p=0.163)*.

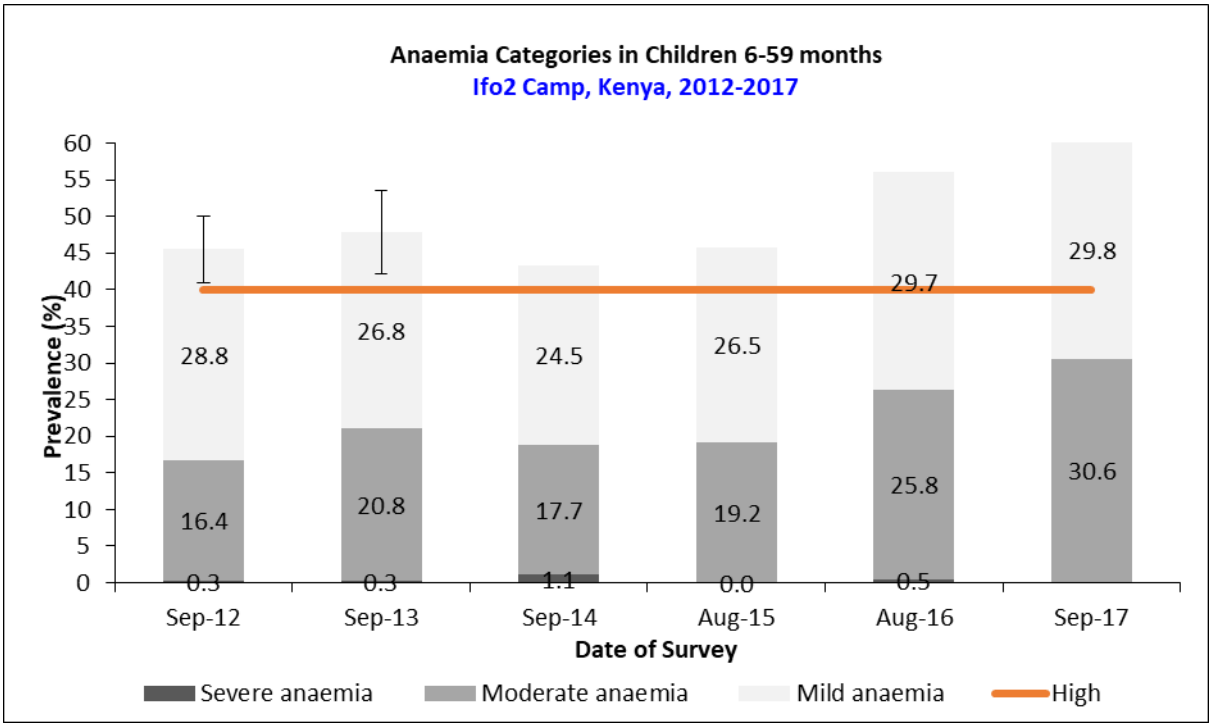


Figure 59 Anaemia categories, Ifo 2 camp, Kenya, 2017

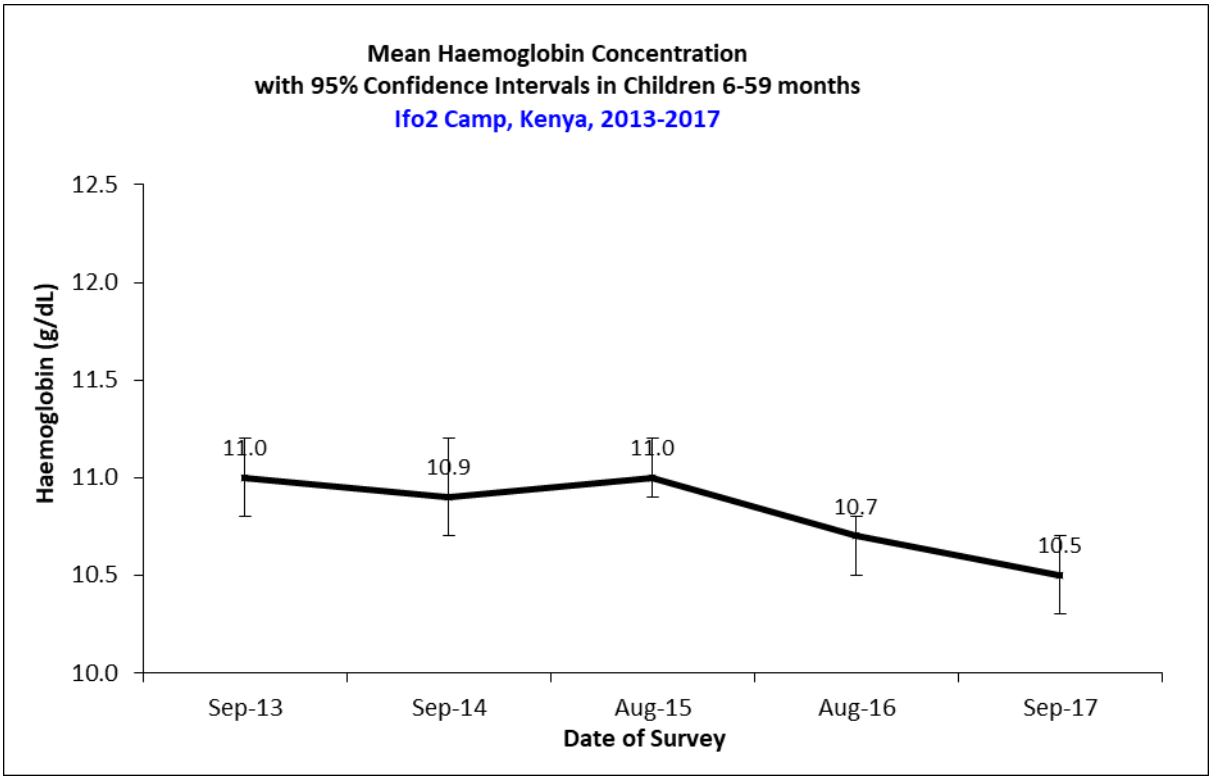


Figure 60 Mean haemoglobin concentration, Ifo 2 camp, Kenya, 2017

Moderate and severe anaemia (Hb <10g/dl) is analysed in Table 127.

Table 127 Prevalence of moderate and severe anaemia in children 6-59 months by age, Ifo 2 camp, Kenya, 2017

	6-23 months n=200	24-35 months n=154	36-59 months n=276	Total n=630
Moderate and Severe Anaemia (Hb < 10g/dl)	(79) 39.5% (31.5-47.5, 95% C.I)	(56) 36.4% (27.9-44.8, 95% C.I)	(63) 22.8% (17.7-27.9, 95% C.I)	(198) 31.4% (26.5-36.4, 95% C.I)

Anaemia was highest in the 6-23 months age group but also notably high in the 24-35 age group and much lower in the 36-59 age group (Table 128).

Table 128 Prevalence of anaemia by age, Ifo 2 camp, Kenya, 2017

		Severe Anaemia (<7.0 g/dL)		Moderate Anaemia (7.0-9.9 g/dL)		Mild Anaemia (Hb 10.0-10.9 g/dL)		Total Anaemia (Hb<11.0 g/dL)		Normal (Hb≥11.0 g/dL)	
Age (mths)	**Total no.**	**No.**	**% (95% CI)**	**No.**	**% (95% CI)**	**No.**	**% (95% CI)**	**No.**	**% (95% CI)**	**No.**	**% (95% CI)**
6-23	200	0	0.0	79	39.5 (31.5-47.5)	62	31.0 (23.3-38.7)	141	70.5 (61.2-79.8)	59	29.5 (20.2-38.8)
24-35	154	2	1.3 (0.0-3.2)	54	35.1 (26.8-43.3)	52	33.8 (24.1-43.5)	108	70.1 (61.2-79.1)	46	29.9 (20.9-38.8)
36-59	276	3	1.1 (0.0-2.3)	60	21.7 (16.8-26.7)	74	26.8 (21.2-32.4)	137	49.6 (41.5-57.7)	139	50.4 (42.3-58.5)
Total	**630**	**5**	**0.8 (0.0-1.6)**	**193**	**30.6 (25.6-35.5)**	**188**	**29.8 (24.9-34.8)**	**386**	**61.3 (54.5-68.0)**	**244**	**38.7 (32.0-45.5)**

6.2 Children 0-23 months

About three quarters of children had been introduced to breastmilk within an hour of birth as recommended. A very high proportion below 6 months were exclusively breastfeeding. Only about a third had been introduced to solid foods at 6 months (Table 129).

Table 129 Prevalence of Infant and Young Child Feeding Practices Indicators, Ifo 2 camp, Kenya, 2017

Indicator	Age range	Number/ total	Prevalence (%)	95% CI
Timely initiation of breastfeeding	0-23 months	175/228	76.8	61.2-92.3
Exclusive breastfeeding under 6 months	0-5 months	47/52	90.4	80.5-100.0
Continued breastfeeding at 1 year	12-15 month	39/54	72.2	56.4-88.1
Continued breastfeeding at 2 years	20-23 month	5/26	19.2	2.2-36.2
Introduction of solid, semi-solid or soft foods	6-8 months	10/29	34.5	13.3-55.7
Consumption of iron-rich or iron-fortified foods	6-23 months	145/200	72.5	59.6-85.4
Bottle feeding	0-23 months	5/252	2.0	0.0-4.0

Most of the indicators deteriorated between 2016 and 2017. A notable exception is exclusive breastfeeding (Figure 61).

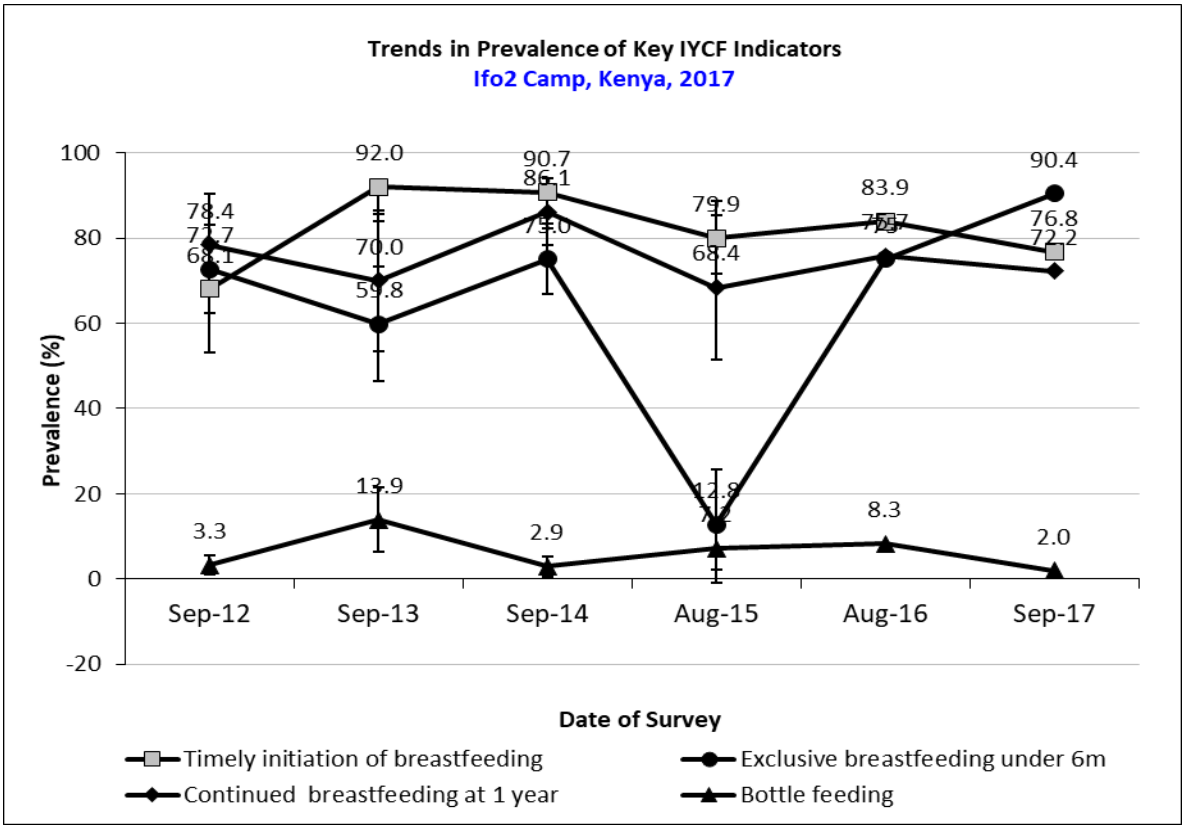


Figure 61 Trends in prevalence of key IYCF indicators, Ifo 2 camp, Kenya, 2017

Prevalence of intake

Infant formula

More than a tenth of children consumed infant formula (Table 130).

Table 130 Infant formula intake in children aged 0-23 months, Ifo 2 camp, Kenya, 2017

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who consumed infant formula (fortified or non-fortified)	33/252	13.1 (4.8-21.4)

Fortified blended foods

The proportion reporting consumption of super-cereal plus was much higher than reported by other camps (Table 131).

Table 131 Super-cereal plus (CSB++) intake in children aged 6-23 months, Ifo 2 camp, Kenya, 2017

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who consumed Super-cereal plus (CSB++)	140/299	70.4 (56.7-84.0)

6.3 Women 15-49 years

About a fifth of the sample of women of reproductive age were pregnant, which is also qite high as compared to other camps (Table 132).

Table 132 Women's physiological status and age, Ifo 2 camp, Kenya, 2017

Physiological status	Number/total	% of sample
Non-pregnant	45/214	21.0
Pregnant	169/214	79.0
Mean age (range)	32 (15-48)	

The prevalence of anaemia was 37.9% (28.0-47.7) with a mean haemoglobin of 12.1 (11.8-12.5) among non-pregnant women (Table 133).

Table 133 Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 years), Ifo 2 camp, Kenya, 2017

Anaemia in non-pregnant women of reproductive age (15-49 years)	**All** n = 169
Total Anaemia (<12.0 g/dL)	(64) 37.9% (28.0-47.7, 95% C.I)
Mild Anaemia (11.0-11.9 g/dL)	(31) 18.3% (11.5-25.2, 95% C.I)
Moderate Anaemia (8.0-10.9 g/dL)	(30) 17.8% (10.4-25.1, 95% C.I)
Severe Anaemia (<8.0 g/dL)	(3) 1.8% (0.0-3.8, 95% C.I)
Mean Hb (g/dL) **(confidence interval)**	12.1 (11.8-12.5)

Figure 62 and 63 reveal that anaemia increased in 2016 then decreased in 2017. The increase in 2017 was not statistically significant *(p=0.812)*.

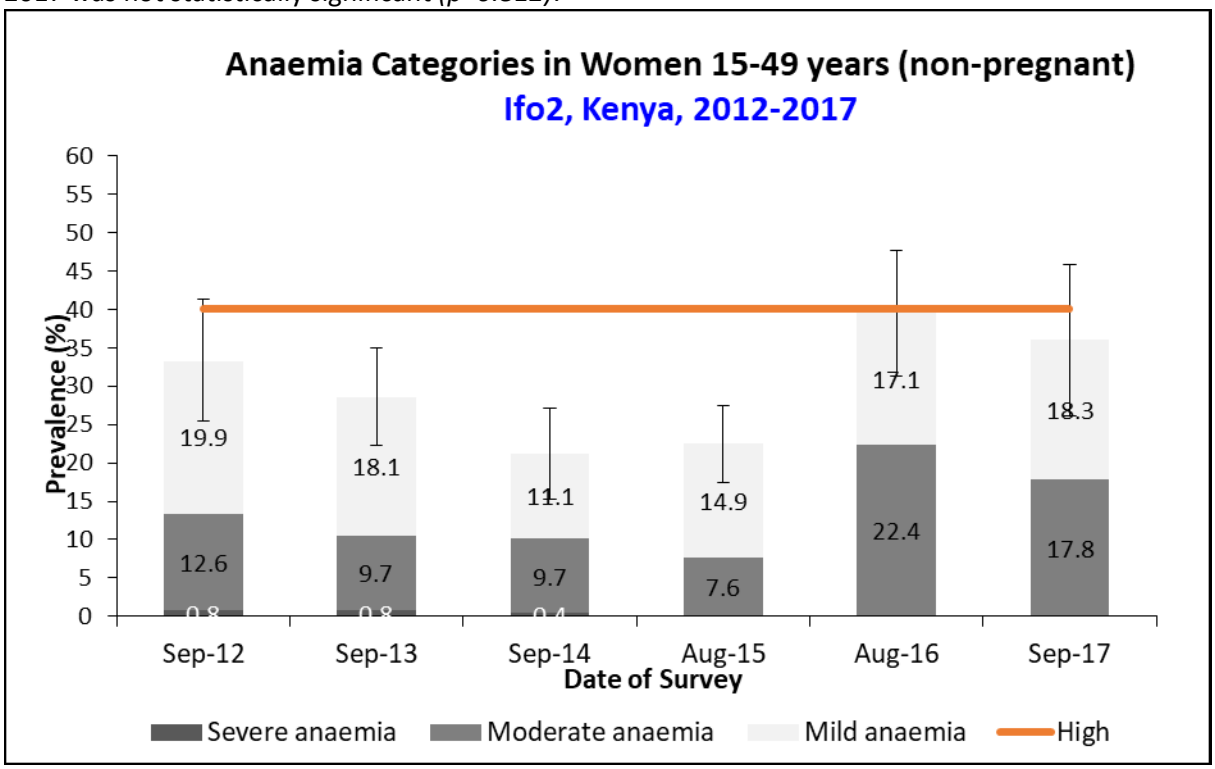


Figure 62 Anaemia categories in women 15-49 years, Ifo 2 camp, Kenya, 2017

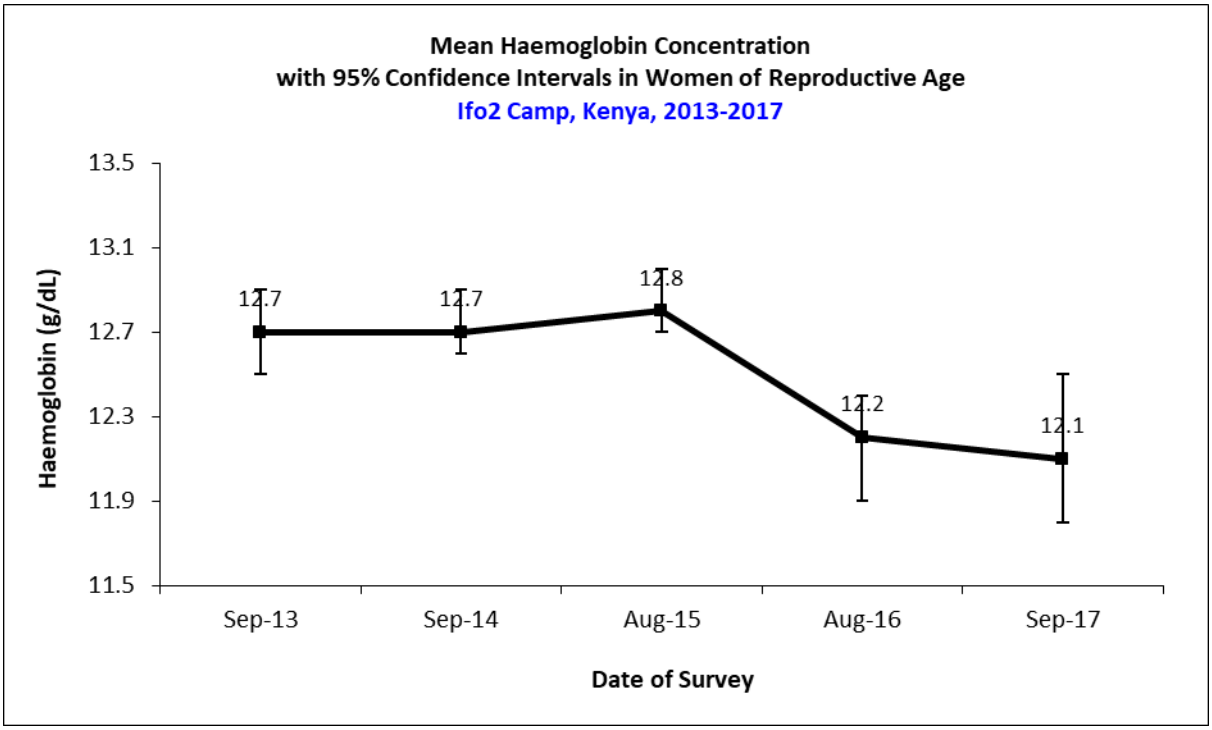


Figure 63 Mean haemoglobin concentration, Ifo 2 camp, Kenya, 2017

A very high proportion of pregnant women were enrolled in ANC and receiving iron-folic acid tablets (Table 134).

Table 134 ANC enrollment and iron-folic acid pills coverage among pregnant women (15-49 years), Ifo 2 camp, Kenya, 2017

	Number /total	% (95% CI)
Currently enrolled in ANC programme	42/45	93.3 (85.6-100.0)
Currently receiving iron-folic acid pills	41/45	91.1 (82.4-99.8)

In terms of the 210mm MUAC cut off, 6.0% (0.9-11.2) of pregnant and lactating women were malnourished (Table 135).

Table 135 Prevalence of malnutrition among pregnant and lactating women (15-49 years) based on MUAC, Ifo 2 camp, Kenya, 2017

MUAC <210mm in pregnant and lactating women (15-49 years)	**Number/total**	**% (95% CI)**
	5/83	6.0 (0.9-11.2)

The coverage of BSFP among pregnant and lactating women was 80.5% (71.2-89.8) for Ifo 2 (Table 136).

Table 136 BSFP coverage for pregnant and lactating women (15-49 years), Ifo 2 camp, Kenya, 2017

BSFP coverage for pregnant and lactating women (15-49 years)	**Number/total**	**% (95% CI)**
	66/82	80.5 (71.2-89.8)

6.4 Food security

A total of 268 households were interviewed for food security compared to the planned 255, which may be a result of slight over-sampling due to the systematic random sampling method where, for

an odd number of households in a cluster, an additional household was included (Table 137).

Table 137 Food security information, Ifo 2 camp, Kenya, 2017

Household data	Planned	Actual	% of target
Total households surveyed for Food Security	255	*268*	*105%*

Food distribution results

The average duration of the food ration was 16.9 days, which is 54.4% of the theoretical ration (Table 138).

Table 138 Reported duration of general food ration, Ifo 2 camp, Kenya, 2017

Average number of days the food ration lasts (Standard deviation or 95% CI)	Average duration (%) in relation to the theoretical duration of the ration
16.9 (14.3-19.4)	54.4%

The main reason reported for the ration not lasting the full month was “ration not big enough” (Figure 64).

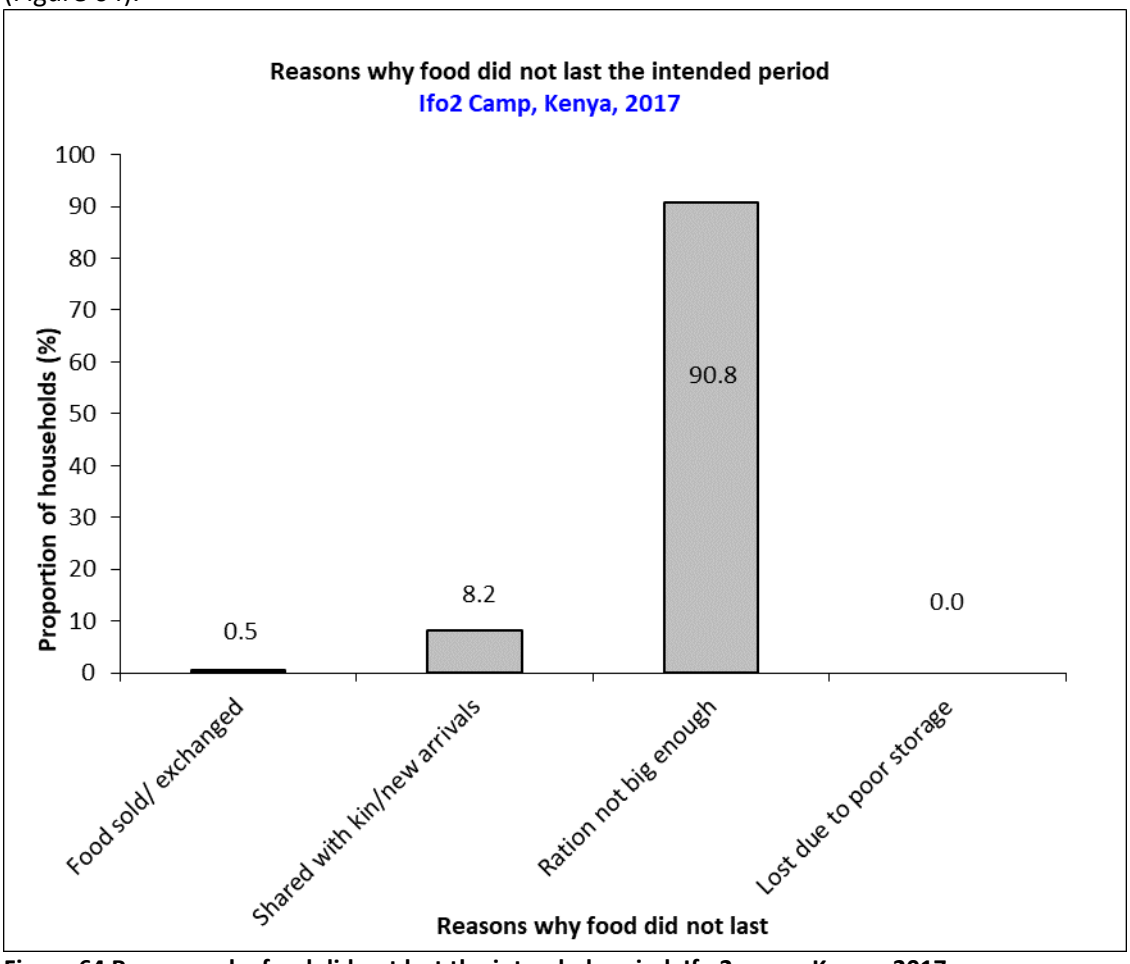


Figure 64 Reasons why food did not last the intended period, Ifo 2 camp, Kenya, 2017

Negative coping strategies results

The reduction of meal frequency and/or quantity was the most common coping mechanism, followed by borrowing. Only 6% of households did not use any of the coping mechanisms (Figure

65).

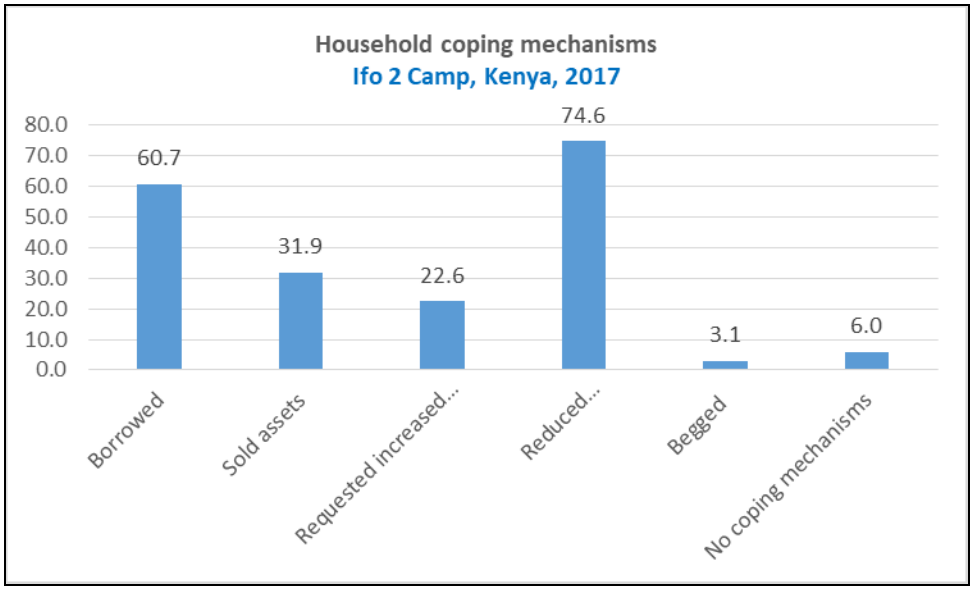


Figure 65 Household coping mechanisms, Ifo 2 camp, Kenya, 2017

Household dietary diversity results

The average household dietary diversity was 7.6 (Table 139).

Table 139 Average HDDS, Ifo 2 camp, Kenya, 2017

Average HDDS	95% CI
7.6	6.8-8.4

Cereals were consumed by nearly all households, and consumption of vegetables, pulses, and spices was also high (Figure 66).

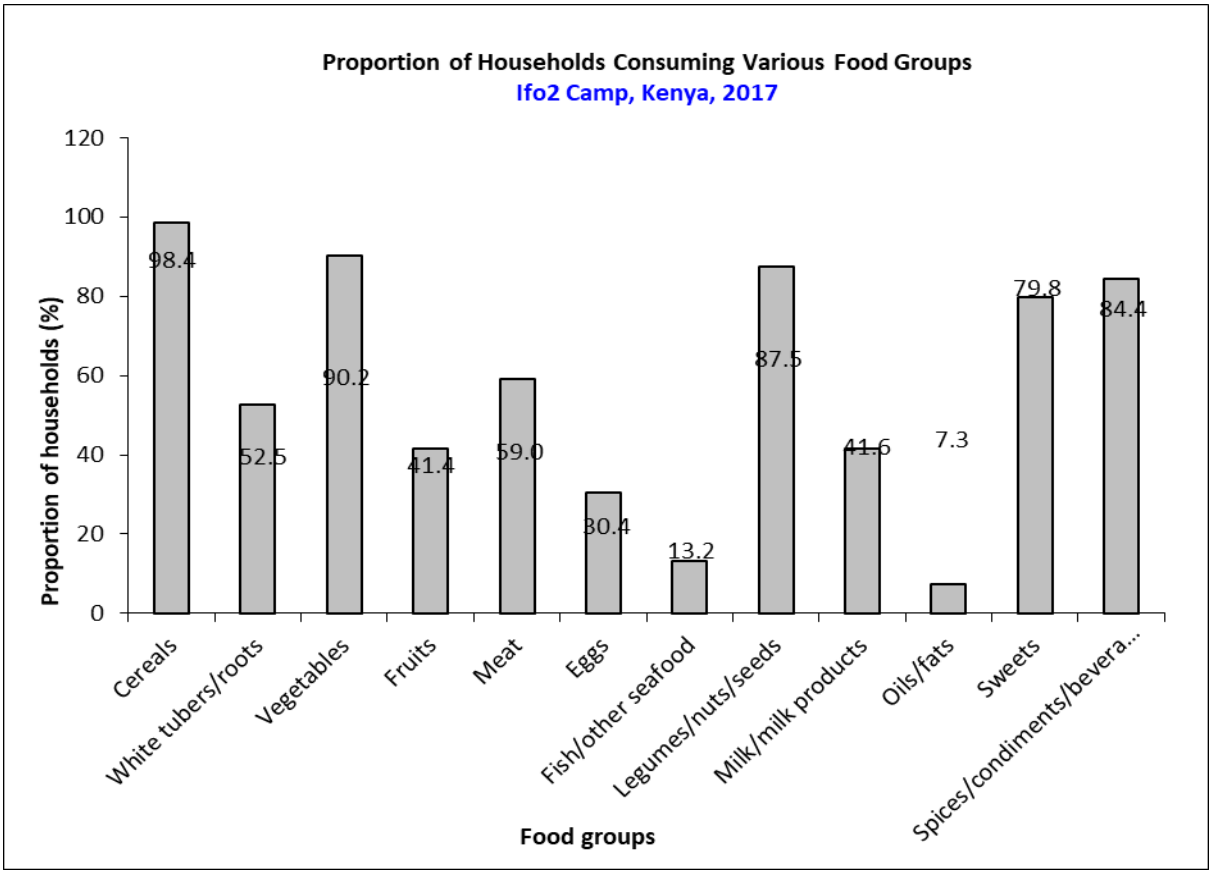


Figure 66 Proportion of households consuming various food groups, Ifo 2 camp, Kenya, 2017

Only 4.5% of households had not consumed any vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products. About two thirds had consumed either an animal or plant source of Vitamin A, More than half had consumed food sources of haem iron (Table 140).

Table 140 Consumption of food aid commodities and micronutrient rich foods by households, Ifo 2 camp, Kenya, 2017

	Number/total	% (95% CI)
Proportion of households *not consuming any* vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	12/266	4.5 (1.1-8.0)
Proportion of households consuming either a plant or animal source of vitamin A	183/266	68.8 (57.2-80.4)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	158/266	59.4 (48.1-70.7)

The most commonly purchased food items using the Bamba Chakula food vouchers were cereals, sugar, tea and milk (Figure 67).

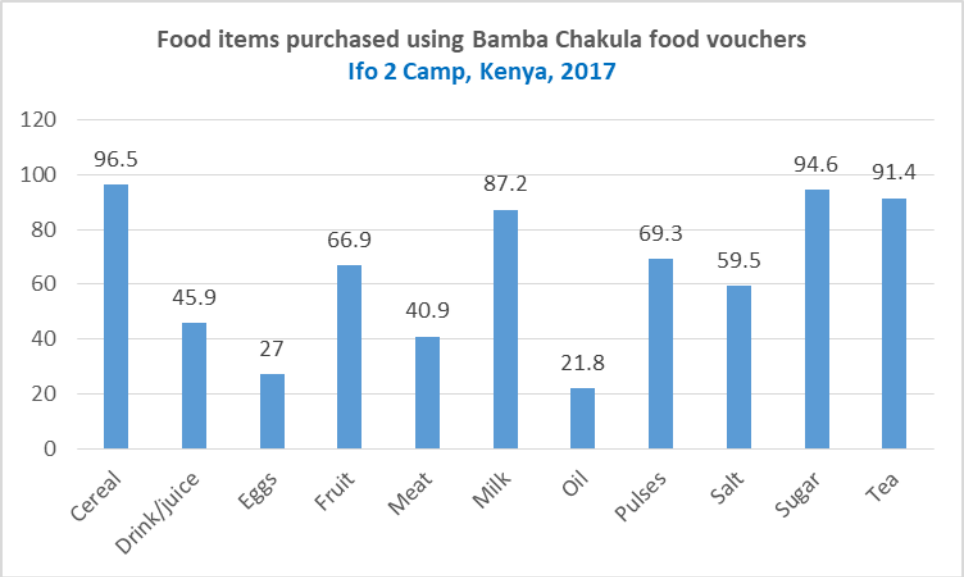


Figure 67 Food items purchased using Bamba Chakula food vouchers, Ifo 2 camp, Kenya, 2017

6.5 WASH

Table 141 WASH information, Ifo 2 camp, Kenya, 2017

Household data	Planned	Actual	% of target
Total households surveyed for WASH	255	*268*	*105%*

All household had access to an improved source of drinking water (Table 142).

Table 142 Water Quality, Ifo 2 camp, Kenya, 2017

	Number/total	% (95% CI)
Proportion of households using an improved drinking water source	259/259	100.0
Proportion of households that use a covered or narrow necked container for storing their drinking water	181/259	69.9 (56.2-83.6)

The average usage of water per day was 19.6 (16.8-22.4), and 41.7% (32.0-51.4) used at least 20 litres per day (Table 143).

Table 143 Water Quantity: Amount of litres of water used per person per day, Ifo 2 camp, Kenya, 2017

Proportion of households that use:	Number/total	% (95% CI)
≥ 20 lpppd	108/259	41.7 (32.0-51.4)
15 – <20 lpppd	32/259	12.4 (6.7-18.0)
<15 lpppd	119/259	45.9 (34.9-57.0)
Mean (95% CI)	19.6 (16.8-22.4)	

Only 58.3% (43.9-72.7) of households were satisfied with the water supply (Table 144). The only reason cited for dissatisfaction was “not enough”.

Table 144 Satisfaction with water supply, Ifo 2 camp. Kenya, 2017

	Number/total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	151/259	58.3 (43.9-72.7)

60.6% (51.1-70.1) of households were using an improved excreta disposal facility and nearly all households disposed of children's faeces safely (Table 145).

Table 145 Safe Excreta disposal, Ifo 2 camp, Kenya, 2017

	Number/total	% (95% CI)
Proportion of households using an improved excreta disposal facility (improved toilet facility, not shared)	157/259	60.6 (51.1-70.1)
Proportion of households using a shared family toilet	39/259	15.1 (9.3-20.8)
Proportion of households using a communal toilet	26/259	10.0 (3.3-16.8)
Proportion of households using an unimproved toilet	37/259	14.3 (6.8-21.7)
The proportion of households with children under three years old that dispose of faeces safely.	177/182	97.3 (94.4-100.0)

7 Discussion

7.1 Nutritional status of young children

The results of the plausibility report (Appendix 1) show that the quality of anthropometry was of a high standard, especially with respect to the key indicator, the standard deviation of weight-for-height. However, in Ifo, the overall score was problematic. When further analysing individual measures, including the SD of WHZ, the main scores were within an acceptable range. According to SMART guidance, "the overall score of the summary table should be used as an indication for further scrutiny of the data and highlight the areas that may need more detailed analysis and not used by itself as the primary criterion to validate or invalidate a survey's results" and that "whether the errors have a significant effect upon the reported prevalence". In this case, due to the acceptable SD of WHZ, the prevalence is unlikely to be in question. The weighted prevalence of GAM of 9.7% showed that acute malnutrition has stabilised following the sharp increase of 8.1% to 10.2% which was observed in 2016. GAM remained below the emergency threshold. There was a general decrease in stunting across the camps, which is also very pleasing. Stunting also remained below the 40% critical threshold.

7.2 Programme coverage

Results on programme coverage revealed that deworming, Vitamin A supplementation and measles vaccination coverage were all above 95%, confirming the positive impact of periodic supplementation and vaccination which is conducted twice a year during malezi bhora in May and November. OTP and TSFP coverage based on all criteria (MUAC, WHZ, oedema) was way below the target of 90%, a situation which must be improved.

7.3 Anaemia in young children and women

Anaemia is now the major concern in Dadaab camps, with a weighted prevalence of 60.7%, up from 49.7% in 2016. The prevalence was highest in the 6-23 months age group, but also very high in the 24-35 months age group, which is a major concern. Anaemia among non-pregnant women also increased in all camps from 31.8% in 2016 to 43.6% in 2017, which shows that efforts to reduce anaemia should focus both on the children and women of reproductive age. The increase in anaemia for children, in particular, is despite the fact that children 6-23 months receive super cereal plus on a monthly basis. The survey results showed that consumption was low.

7.4 IYCF indicators

Infant and young child feeding practices are a key determinant of child nutrition, morbidity and mortality. The survey results showed that there are still gaps with respect to several of the key indicators in this regard. Early initation of breastfeeding (within an hour of birth) still has room for improvement. Exclusive breastfeeding, though it improved in some camps, can still further improve. Late introduction to solid foods, as well as lack of continued breastfeeding up to the recommended minimum of 2 years, was found to be low.

7.5 Food Security

The reported duration of the general food ration was between 16 and 20, approximately 50-60% of the theoretical duration. The contribution of the cash vouchers was clear given the range of food items which were reported to have been purchased. Preferences were mainly for cereals,

vegetables, and sugar. The main household coping mechanisms were borrowing and reduction of meal frequency or quantity.

7.6 WASH

Access to safe drinking water remains virtually universl in Dadaab as nearly all households reported access to an improved drinking water source. There are still gaps with respect to access to an improved excreta disposal facility.

8 Conclusions

It is pleasing to see that acute malnutrition has stabilized after the increase in 2016, and to see the general decrease in stunting. However, the rising prevalence of anaemia in both children and women of reproductive age is a major concern and must be urgently addressed. The current efforts to improve maternal, infant and young child nutrition must be scaled up given the gaps observed with respect to infant feeding practices and the link which exists between maternal care and child nutrition. The coverage of Vitamin A supplementation, measles vaccination and deworming must be sustained.

9 Recommendations and priorities

- Improve infant and young child feeding practices through integrating with existing programmes such as radio programmes, community dialogues, community leaders meetings and mother-to-mother support groups focussing on early initiation of breastfeeding, timely introduction of soild foods, and continued breastfeeding up to at east 2 years.
- Investigate the reasons for low consumption of super cereal plus and formulate a strategy to increase intake in children 6-23 months. Expansion of the provision of super cereal plus to the 24-35 months age group given the critical anaemia prevalence in this age group which is not far from the 6-23 months age group.
- Consider the provision of the lipid-based nutrient supplement Nutributter given the demonstrated efficacy and effectiveness in the same context from research findings.
- Engage community health workers in listing all pregnant and lactating women in community-level registers to ensure follow up of all eligible to the blanket supplementary feeding programme.
- Strenghen active case finding for children 6-59 months and include WHZ screening where possible so as to increase programme coverage.

10 List of individuals involved in the survey

Overall survey coordination

1. Blessing Mureverwi, Nutrition & Food Security Officer, UNHCR
2. Yussuf Mohamed Ali, Senior Nutritionist Associate, UNHCR
3. Albert Mwambonu, Monitoring Assistant, WFP

Dagahaley Camp participants: MSF Switzerland

SURVEY COORDINATOR
Maryan Hussein Abdi
SUPERVISOR
Abdullahi Jimale Adow
TEAM LEADERS
Muhumed Tawane Hefow
Yussuf Adan Dugow
Mohamed Ismail Ahmed
Muhlar Abdi Ismail
Abdiwahab Ahmed Mohamed
ENUMERATORS
Bashi Mohamud Abdi
Ismail Mohamed Hussein
Hamdi Mohamed Ali
Issack Noor Haji
Abdikani Mohamed Iman
HEMOCUE MEASURERS
Boqorow Abdullahi Haji
Adey Abdi Duula
Jamac Noor Mohamud
Ali Ibrahim Ali
Wali Hassan Abdirahman
ANTHROPOMETRY MEASURERS
Ahmed Hassan Gedi
Muhiyadin Abdikadir Hussein
Wanago MOHAMED ABDI
Mahat Noor Idle
Abdullahi Abdi Barsug
ANTHROPOMETRY ASSISTANT MEASURERS
Boqor Osman Mohamud
Hindiyo Iman aden
Abdullahi Abdinoor Kahin
Muraya Muse Abdi
Abdi Hassan Abdullahi
CLUSTER GUIDES

Hawa Abdi Mohamed
Madina Khalaf Hussein
Sharifo Adan
Omar Hassan Aden
Fatuma Adow Sugal
WASTE DISPOSER
Farah Dek Issack

Ifo Camp participants: IRK

SURVEY COORDINATOR
Anne Claire Otieno
SUPERVISORS
Zahara Abdi
Sammy Okusi
TEAM LEADERS
Leonard Nakiboli
Mohamednur Adow
Mohamed Ali Bashir
Yussuf Shaban Hussein
Ephraim Olome
ENUMERATORS
Mohamed Abdi Hassan
Abdirizak Bare Santur
Dahir Abdi Farah
Adenkadar Abdi Yussuf
Abdi Hussein Noor
ANTHROPOMETRY MEASURERS
Noor Abdiraham Ali
Mohamed Abdullahi Mohamed
Abdi Gedi Dakane
Keirow Ali Hassan
Abdikadar Farah Muhumed
Ahmed Hassan Bare
Farhan Abdi Ahmed
Issack Mohamed Aden
Hussein Bile Farah
Shukri Khalif Mire.
HEMOCUE MACHINE OPERATORS
Mohamed Abdullahi Muse
Ali Omar Qad
Mohamed Garane Abdullahi
Aden Dekow Aress
Aidrus Abdi Farah
COMMUNITY MOBILISERS

Kassim Bashir
Said Ibrahim Iman
Khalif Ismail Abdi
Rashid Bashir Hilolwe
Alemayehu Nordofa Shrie

Hagadera camp participants: IRC

OVERALL COORDINATION
Noelyne Achieng
Norah Khalifwa
Irene Mugo
SUPERVISORS
Hared Ibrahim Abdi
Halima Mahat Ali
Sadia Maalim Yarow
Issack Hussein Ahmed
Aden Yusuf Hussein
Abdi Kadir Mohammed Said
ENUMERATORS
Mohammed Ibrahim Mohammed
Mohammed Ali Farah
Ahmed Ali Aden
Abdi Ahmed Farah
Abdi Abdulahi Aden
Abdi Hakin Ali Abdulahi
Mohammed Aden Abdi
Yussuf Ibrahim Nune
Feisal Ugas Aden
Fardowso Abdi Aden
Mohammud Jelle Maalim
Farah Abdi Mumin
Mohammed Dek Ahmed Ibrahim
Dek Mohammed Gudle
Mohammed Abdi Aden
Samriye Ali Noor
Kassim Mohammed Ahmed
Ibrahim Kalib Hassan
Zeinab Mohammed Bokor
Hassan Ali Aden
COMMUNITY GUIDES
Abdirahman Ahmed Kahin
Shamso Yusuf Elmi
Habibo Noor Khalif

Hussein Yusuf Ugas
Abukar Abdi Bashir
Habibo Mohammed Hussein

Ifo 2 Camp participants: Kenya Red Cross Society

SURVEY COORDINATOR
Evelyn Bochere Nyangaresi
SUPERVISOR
Naomi Sanguli Mgelle
TEAM LEADERS
Mark Ondwasi
Loice Njogu
Mathews Masime
Magdalene Chepkemoi
Wang Malual Riek
ENUMERATORS
Gabriel Machot Leb
Feisal Rashid Abdullahi
Aden Ali Warsame
Mohamed Sheikh Aden
Mohamed Ali Noor
HEMOCUE MEASURERS
Aden Abdullahi Mohamed
Salat Muhamed Abdi
Ahmed Aden Hassan
Yussuf Ibrahim Abdi
Mohamed Ismail Abdullahi
ANTHROPOMETRY MEASURERS
Sugal Jama Baljir
Ibrahim Mohamed Aden
Hassan Aden Ali
Aden Ibrahim Mohamed
Salat Mohamud Siyat
ANTHROPOMETRY ASSISTANTS
Mohamed Muhumed Abikar
Weli Shukri Ali
Rebeca Nyamuon
Adow Muhumed Issack
Dubow Aden Hassan

Appendix 1 SMART Plausibility Check Report

Plausibility check for: DAGAHALEY

Standard/Reference used for z-score calculation: WHO standards 2006
(If it is not mentioned, flagged data is included in the evaluation. Some parts of this plausibility report are more for advanced users and can be skipped for a standard evaluation)

Overall data quality

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** (1.5 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.672)
Age ratio(6-29 vs 30-59)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.540)
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** (7)
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 and	<1.15 and	<1.20 and	>=1.20 or	
.							
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	5	10	20	**0** (1.02)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (0.01)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (0.03)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**3** (p=0.003)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**3** %

The overall score of this survey is 3 %, this is excellent.

Plausibility check for: HAGADERA

Standard/Reference used for z-score calculation: WHO standards 2006
(If it is not mentioned, flagged data is included in the evaluation. Some parts of this plausibility report are more for advanced users and can be skipped for a standard evaluation)

Overall data quality

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** (2.2 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.377)
Age ratio(6-29 vs 30-59)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.318)
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	**2** (10)
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** (1.06)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (-0.02)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**1** (-0.20)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**0** (p=0.363)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**3** %

The overall score of this survey is 3 %, this is excellent.

Plausibility check for: IFO

Standard/Reference used for z-score calculation: WHO standards 2006
(If it is not mentioned, flagged data is included in the evaluation. Some parts of this plausibility report are more for advanced users and can be skipped for a standard evaluation)

Overall data quality

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** (4.6 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.764)
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=0.018)
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	**4** (17)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**2** (10)
Standard Dev WHZ	Excl	SD	<1.1 and	<1.15 and	<1.20 and	>=1.20 or	
.							
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	5	10	20	**10** (1.16)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (0.09)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**1** (-0.21)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**1** (p=0.024)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**27** %

The overall score of this survey is 27 %, this is problematic.

Plausibility check for: IFO2

Standard/Reference used for z-score calculation: WHO standards 2006
(If it is not mentioned, flagged data is included in the evaluation. Some parts of this plausibility report are more for advanced users and can be skipped for a standard evaluation)

Overall data quality

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** (2.4 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.633)
Age ratio(6-29 vs 30-59)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.450)
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	**2** (9)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**2** (8)
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** (0.98)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (-0.19)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**1** (0.20)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**3** (p=0.003)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**8** %

The overall score of this survey is 8 %, this is excellent.

Appendix 2 Assignment of clusters

Dagahaley Camp

Geographical unit	Population size	Cluster
BC	335	RC
A9	627	
A8	791	
B0	760	RC
BA	575	
DB	944	1
B10	612	
A10	843	
D2	559	2
C1	535	
BB	670	
B7/C10	867	3
A7	525	
EA	678	4
CO	555	
B8/9	804	
EB	676	RC
DC	752	
D1	431	
D0/DA	537	5
A2	287	
A3	754	
B3	592	6
BH2	252	
B2	804	
C2	574	
C3	364	7
G4	500	
H6	481	
H2	274	
G5	566	8
H8	630	
G2	908	9
G1	734	
H3	411	
G7	412	
G8	607	10
G9/10	723	
H10	289	
H1	454	11

G3	666	
H7	669	
H4	370	
H5	357	12
H9	530	
A1	1097	13
AC	679	
AB	401	
AA	442	
A0	449	14
B1	452	
CL6	667	
F8	508	15
CL5	543	
CL3	633	
CL4	331	
CL2	536	16
F3	538	
F4	633	
F5	441	17
F6	374	
F7	549	
F10	401	
F9	625	18
CL1	501	
F2	436	
FA	593	19
FB	770	
F0	408	
E9	550	
C9	803	20
E4,5	633	
E6,7	1005	21
E0	797	
D7	625	22
D4	586	
C8	732	
D9	500	23
E1	674	
D3	585	
E10	548	RC
D6	465	
D8	561	
E3	515	
E8	419	24

D5	623	
D10	585	
C5	621	25
A11-1	494	
B5	585	
A11-2	606	26
C6	584	
A11-3	812	
A11-4	724	27
A11-5	694	
C4	422	
A5	684	28
A11-6	555	
A11-7	956	29
A6	935	
C7	886	30
B4	466	
B6	568	
A4	374	

Hagadera Camp

Geographical unit	Population size	Cluster
D1	290	1
D2	284	
D3	185	
D4	180	2
D5	190	
D7	131	
D8	108	3
D9	132	
D10	158	
E1	297	4
E2	271	
E3	192	
E4	151	5
E5	180	
E7	191	
E8	139	RC
E9	139	
E10	180	
E11	152	RC
F0	110	
F1	188	

F2	175	
F3	170	6
F4	147	
F5	154	
F7	123	
F8	165	7
F9	151	
F10	136	
F11	8	
K1	98	
K3	197	8
K4	160	
K5	147	
K7	127	RC
K8	119	
K9	118	
K10	115	
Os2	100	
Os3	120	9
Os4	85	
Os5	51	
Os7	75	
Os8	38	
Os9	37	
Os10	33	
S Block	23	
MSF Block	18	
Oromo Block	42	
A1	209	10
A2	162	
A3	170	
A4	120	11
A5	130	
A7	115	
A8	130	
A9	163	12
A10	95	
A11	20	
B1	244	
B2	178	13
B3	123	
B4	119	
B5	195	
B7	124	14
B8	130	

B9	85	
B10	108	
B11	36	
Al Haramain	40	
C1	285	15
C2	194	
C3	103	
C4	138	16
C5	180	
C7	130	
C8	100	
C9	93	
C10	118	17
J0	71	
J1	221	
J2	96	
J3	81	18
J4	105	
J5	110	
J7	102	
J8	92	
J9	110	
J10	163	RC
L1	87	
L2	76	
L3	51	
L4	115	
L5	162	19
L7	121	
L8	190	
L9	120	
L10	110	20
L11	120	
M1	110	
M2	84	
M3	132	
M4	144	21
M5	141	
M6	130	
M7	97	
M8	150	22
N1	103	
N2	90	
N3	110	
N4	105	

N5	100	23
N6	112	
G1	230	
G2	125	
G3	125	24
G4	100	
G5	167	
G7	112	
G8	100	25
G9	129	
G10	129	
G11	73	
H1	209	
H2	200	26
H3	201	
H4	142	
H5	153	27
H7	110	
H8	104	
H9	107	
H11	110	28
I1	240	
I2	215	
I3	180	29
I4	150	
I5	129	
I7	147	
I8	162	30
I9	113	
I11	75	

Ifo Camp

Geographical unit	Population size	Assigned cluster
A4	375	RC
A5	473	1,2
A6	413	3
D5	604	4,5
D6	399	6
D8	309	7
C1	108	
C2	90	8
C3	128	
C4	81	
C5	93	
C6	75	9
C7	145	

C8	82	
C9	90	10
C10	75	
C11	69	
C12	93	
C13	100	RC
C14	93	
C15	162	
C16	92	11
C17	102	
C18	112	
C19	107	12
C20	82	
C21	89	
C22	83	
C23	72	13
C24	83	
C25	105	
C26	75	
C27	92	14
D3	338	15
D4	369	16
D7	213	
E1	72	17
E2	120	
G1	3	
G3	30	
S2	48	
S3	80	18
S4	26	
N8	69	
N9	83	
N10	67	
N11	101	RC
N12	98	
N13	41	
N14	38	
N15	82	
N16	60	19
N17	45	
N18	47	
N20	86	
N21	10	
N24	60	
N29	62	
N30	40	20
N31	21	
N32	28	
N0	52	
N1	33	
N2	37	
N3	25	

N4	39	
N5	74	21
N6	85	
N7	102	
N26	23	
N27	31	
N28	26	
F2	285	22
F3	472	RC,23
B1	89	
B2	76	
B3	68	
B4	64	
B5	66	24
B6	43	
B7	70	
B8	89	
B9	52	
B10	4	
B11	30	25
B12	90	
B13	78	
B14	72	
B15	80	
B16	82	26
B17	86	
B18	87	
B19	70	
B20	141	27
B21	76	
B22	72	
A1	225	28
A2	192	29
A3	249	
D1	106	30
D2	191	

Ifo 2 Camp

Geographical unit	Population size	Assigned cluster
D1	40	
D2	45	
D3	21	1
D4	57	
D5	22	
D6	62	2
D7	42	
D8	36	
E1	27	
E2	34	3
E3	15	
E4	30	

E5	38	
E6	47	4
E7	27	
E8	33	
E9	37	5
F1	38	
F2	29	
F3	35	
F4	31	6
F5	25	
F6	53	
F7	40	7
F8	13	
G1	33	
G2	24	
G3	42	
G4	27	8
G5	21	
G6	18	
G7	41	
H1	38	RC
H2	42	
H3	52	
H4	48	9
H5	57	
H6	42	10
I1	10	
I2	16	
I3	49	
I4	30	
I5	42	11
I6	31	
I7	11	
J1	40	
J2	44	RC
J3	40	
J4	40	
J5	20	
J6	48	12
J7	12	
J8	12	
K1	30	
K2	28	
K3	36	13
K4	9	
K5	40	
K6	53	14
L1	46	
L2	51	
L3	40	15
L4	72	
M1	40	16

M2	32	
M3	42	
M4	21	
M5	49	17
M6	63	
M7	40	18
M8	30	
N1	63	
N2	21	
N4	63	19
N5	63	
N6	41	20
N7	42	
N8	42	
P1	33	RC
P2	41	
P3	13	
P4	2	
P6	14	
P7	14	
P8	34	21
P9	30	
P10	11	
Q1	61	
Q2	24	RC
Q3	30	
Q4	22	
Q5	65	22
Q6	42	
R1	16	
R2	64	23
R3	83	
R4	17	
R5	57	24
R6	21	
R7	20	
R8	31	
S1	27	25
S2	25	
S3	18	
S4	26	
T1	37	
T2	26	26
T3	23	
T4	42	
T5	42	
T6	46	27
T7	12	
U1	25	
U2	29	
U3	34	28
U4	51	

U5	54	
U6	56	29
U7	28	
U8	70	30

Appendix 3 Standardisation test results

Dagahaley camp

Standardisation test results						Precision				Accuracy		OUTCOME
Weight	subjects	mean	SD	max	Technical error	TEM/mean		Coef of reliability		Bias from superv	Bias from median	result
	#	kg	kg	kg	TEM (kg) TEM (%)	R (%)	Bias (kg)	Bias (kg)				
Supervisor	5	11	2.3	0	0	0	100	-	0.9	TEM good	R value good	
Enumerator 1	5	11	2.3	0.2	0.1	0.6	99.9	0	0.9	TEM acceptable	R value good	Bias acceptable
Enumerator 2	5	11	2.3	0.3	0.1	1.3	99.6	0	0.9	TEM poor	R value good	Bias good
Enumerator 3	5	11	2.3	0.1	0	0.4	100	0.1	0.9	TEM acceptable	R value good	Bias acceptable
Enumerator 4	5	11	2.3	0	0	0	100	0.1	0.9	TEM good	R value good	Bias acceptable
Enumerator 5	5	11	2.3	0.1	0	0.4	100	0	0.9	TEM acceptable	R value good	Bias good
enum inter 1st	5x5	11	2.2	-	0.1	0.7	99.9	-	-	TEM good	R value good	
enum inter 2nd	5x5	11	2.2	-	0.1	0.7	99.9	-	-	TEM good	R value good	
inter enum + sup	6x5	11	2.2	-	0.1	0.7	99.9	-	-	TEM good	R value good	
TOTAL intra+inter		5x5	-	-	-	0.1	1	99.8	0	0.9	TEM acceptable	R value good	Bias acceptable
TOTAL+ sup	6x5	-	-	-	0.1	0.9	99.8	-	-	TEM acceptable	R value good	

Height	subjects	mean	SD	max	Technical error	TEM/mean		Coef of reliability		Bias from superv	Bias from median	result
	#	cm	cm	cm	TEM (cm)	TEM (%)	R (%)	Bias (cm)		Bias (cm)		
Supervisor	5	88.9	12.3	0.1	0.1	0.1	100	-	3.3	TEM good	R value good	
Enumerator 1	5	88.9	12.3	0.4	0.2	0.2	100	0	3.3	TEM good	R value good	Bias good
Enumerator 2	5	88.8	12.3	0.5	0.2	0.2	100	-0.1	3.2	TEM good	R value good	Bias good
Enumerator 3	5	88.9	12.3	0.9	0.3	0.3	99.9	0	3.3	TEM good	R value good	Bias good
Enumerator 4	5	88.8	12.2	0.2	0.1	0.1	100	-0.1	3.2	TEM good	R value good	Bias good
Enumerator 5	5	88.9	12.4	1	0.3	0.4	99.9	0	3.3	TEM good	R value good	Bias good
enum inter 1st	5x5	88.8	11.9	-	0.2	0.2	100	-	-	TEM good	R value good	
enum inter 2nd	5x5	88.9	12	-	0.3	0.3	99.9	-	-	TEM good	R value good	
inter enum + sup	6x5	88.9	11.8	-	0.2	0.3	100	-	-	TEM good	R value good	
TOTAL intra+inter		5x5	-	-	-	0.3	0.4	99.9	0	3.3	TEM good	R value good	Bias good
TOTAL+ sup	6x5	-	-	-	0.3	0.4	99.9	-	-	TEM good	R value good	

MUAC	subjects	mean	SD	max	Technical error	TEM/mean		Coef of reliability		Bias from superv	Bias from median	result
	#	mm	mm	mm	TEM (mm)	TEM (%)	R (%)	Bias (mm)		Bias (mm)		
Supervisor	5	141.2	1.9	1	0.6	0.4	88.6	-	1.2	TEM good	R value reject	Bias acceptable
Enumerator 1	5	140.4	2.2	5	1.9	1.4	19.3	-0.8	0.4	TEM poor	R value reject	Bias good

Enumerator 2	5	141.7	2.7	3	1.4	1	71.4	0.5	1.7	TEM poor	R value reject	Bias acceptable
Enumerator 3	5	138.6	2	1	0.4	0.3	95.1	-2.6	-1.4	TEM good	R value acceptable	Bias good
Enumerator 4	5	139.8	2.1	3	1	0.7	77.3	-1.4	-0.2	TEM good	R value reject	Bias good
Enumerator 5	5	140.5	3	3	1.4	1	79.3	-0.7	0.5	TEM poor	R value reject	Bias good
enum inter 1st	5x5	139.9	2.4	-	1.6	1.2	53.7	-	-	TEM acceptable	R value reject	
enum inter 2nd	5x5	140.5	2.7	-	2.2	1.6	34	-	-	TEM poor	R value reject	
inter enum + sup	6x5	140.4	2.5	-	1.8	1.3	50	-	-	TEM acceptable	R value reject	
TOTAL intra+inter	5x5	-	-	-	2.4	1.7	14.5	-1	0.4	TEM poor	R value reject	Bias good
TOTAL+ sup	6x5	-	-	-	2.2	1.6	19.8	-	-	TEM poor	R value reject	

Suggested cut-off points for acceptability of measurements

Parameter			MUAC mm	Weight Kg	Height cm
individual	good	<1.0	<0.04	<0.4	
TEM	acceptable	<1.3	<0.10	<0.6	
(intra)	poor	<2.1	<0.21	<1.2	
	reject	>2.1	>0.21	>1.2	
Team TEM	good	<1.3	<0.10	<0.5	
(intra+inter)	acceptable		<2.1	<0.21	<1.0
and Total	poor	<3.0	<0.24	<1.5	
	reject	>3.0	>0.24	>1.5	
R value	good	>99	>99	>99	
	acceptable		>95	>95	>95
	poor	>90	>90	>90	
	reject	<90	<90	<90	
Bias	good	<1	<0.04	<0.4	
From sup if good	acceptable		<2	<0.10	<0.6
"outcome, otherwise"	poor		<3	<0.21	<1.4
from median	reject		>3	>0.21	>1.4

Hagadera camp

Standardisation test results						Precision				Accuracy		OUTCOME
Weight	subjects	mean	SD	max	Technical error		TEM/mean		Coef of reliability	Bias from superv	Bias from median	result
	#	kg	kg	kg	TEM (kg)	TEM (%)	R (%)	Bias (kg)	Bias (kg)			
Supervisor	5	7.7	4.6	14.7	5.48	70.9	-41.6	-	-0.17	TEM reject	R value reject	Bias good
Enumerator 1	5	7.7	4.6	14.6	5.46	70.9	-41.8	-0.03	-0.2	TEM reject	R value reject	Bias good
Enumerator 2	5	7.7	4.6	14.6	5.44	70.6	-40.6	-0.02	-0.19	TEM reject	R value reject	Bias good
Enumerator 3	5	7.7	4.6	14.6	5.46	70.5	-41.2	0.01	-0.16	TEM reject	R value reject	Bias good
Enumerator 4	5	7.7	4.6	14.6	5.42	70.6	-40.5	-0.05	-0.22	TEM reject	R value reject	Bias good
Enumerator 5	5	7.7	4.6	14.5	5.4	70.1	-40	-0.03	-0.2	TEM reject	R value reject	Bias good
enum inter 1st	5x5	10.1	2.6	-	0.07	0.7	99.9	-	-	TEM good	R value good	
enum inter 2nd	5x5	5.4	4.6	-	0.05	1	100	-	-	TEM good	R value good	
inter enum + sup	6x5	7.7	4.4	-	0.06	0.8	100	-	-	TEM good	R value good	
TOTAL intra+inter		5x5	-	-	-	5.44	70.5	-53.4	-0.02	-0.19	TEM reject	R value reject	Bias good
TOTAL+ sup	6x5	-	-	-	5.44	70.6	-54	-	-	TEM reject	R value reject	

Height	subjects	mean	SD	max	Technical error		TEM/mean		Coef of reliability	Bias from superv	Bias from median	result
	#	cm	cm	cm	TEM (cm)		TEM (%)	R (%)	Bias (cm)	Bias (cm)		
Supervisor	5	64.2	34.8	98.4	40.1	62.4	-32.7	-	-10.87	TEM reject	R value reject	Bias good
Enumerator 1	5	63.9	34.7	99.2	40.16	62.8	-33.6	-0.3	-11.17	TEM reject	R value reject	Bias good
Enumerator 2	5	64.1	34.7	98.5	40.15	62.7	-33.6	-0.18	-11.05	TEM reject	R value reject	Bias good
Enumerator 3	5	64	34.7	97.7	39.96	62.4	-32.9	-0.22	-11.09	TEM reject	R value reject	Bias good
Enumerator 4	5	64	34.7	98.2	40.16	62.8	-34.2	-0.26	-11.13	TEM reject	R value reject	Bias good
Enumerator 5	5	64.2	34.8	98.9	40.19	62.6	-33.4	-0.02	-10.89	TEM reject	R value reject	Bias good
enum inter 1st	5x5	82.1	9.6	-	0.5	0.6	99.7	-	-	TEM acceptable	R value good	
enum inter 2nd	5x5	46	38.6	-	0.29	0.6	100	-	-	TEM good	R value good	
inter enum + sup	6x5	64.1	33.2	-	0.4	0.6	99.9	-	-	TEM good	R value good	
TOTAL intra+inter		5x5	-	-	-	40.13	62.7	-45.4	-0.2	-11.03	TEM reject	R value reject	Bias good
TOTAL+ sup	6x5	-	-	-	40.12	62.6	-45.8	-	-	TEM reject	R value reject	

MUAC	subjects	mean	SD	max	Technical error		TEM/mean		Coef of reliability	Bias from superv	Bias from median	result
	#	mm	mm	mm	TEM (mm)		TEM (%)	R (%)	Bias (mm)	Bias (mm)		
Supervisor	5	11.4	6.1	15.7	6.65	58.5	-20.4	-	-1.93	TEM reject	R value reject	Bias good
Enumerator 1	5	11	5.9	15.4	6.37	57.9	-17.8	-0.37	-2.3	TEM reject	R value reject	Bias good
Enumerator 2	5	11.2	6	15.9	6.7	59.8	-23.1	-0.16	-2.09	TEM reject	R value reject	Bias good
Enumerator 3	5	11.2	6	14.5	6.23	55.5	-8.8	-0.14	-2.07	TEM reject	R value reject	Bias good

Enumerator 4	5	10.7	5.8	15.2	6.17	57.5	-14.1	-0.65	-2.58	TEM reject	R value reject	Bias good
Enumerator 5	5	11.3	6	15.7	6.51	57.8	-16.6	-0.1	-2.03	TEM reject	R value reject	Bias good
enum inter 1st	5x5	14	1.2	-	0.55	3.9	80.5	-	-	TEM good	R value reject	
enum inter 2nd	5x5	8.2	6.9	-	0.19	2.4	99.9	-	-	TEM good	R value good	
inter enum + sup	6x5	11.1	5.7	-	0.37	3.1	90.7	-	-	TEM good	R value poor	
TOTAL intra+inter		5x5	-	-	-	6.41	57.8	-26.8	-0.28	-2.17	TEM reject	R value reject	Bias good
TOTAL+ sup	6x5	-	-	-	6.46	58	-28	-	-	TEM reject	R value reject	

Suggested cut-off points for acceptability of measurements

Parameter			MUAC mm	Weight Kg	Height cm
individual	good	<2.0	<0.04	<0.4	
TEM	acceptable	<2.7	<0.10	<0.6	
(intra)	poor	<3.3	<0.21	<1.0	
	reject	>3.3	>0.21	>1.0	
Team TEM	good	<2.0	<0.10	<0.5	
(intra+inter)	acceptable		<2.7	<0.21	<1.0
and Total	poor	<3.3	<0.24	<1.5	
	reject	>3.3	>0.24	>1.5	
R value	good	>99	>99	>99	
	acceptable		>95	>95	>95
	poor	>90	>90	>90	
	reject	<90	<90	<90	
Bias	good	<1	<0.04	<0.4	
From sup if good	acceptable		<2	<0.10	<0.6
"outcome, otherwise"	poor		<3	<0.21	<1.4
from median	reject		>3	>0.21	>1.4

Ifo camp

Report for Evaluation of Enumerators

Weight:

	Precision: Sum of Square [W1-W2]	Accuracy: Sum of Square [Enum.(W1+W2)-(Superv.(W1+W2)]	No. +/- Precision	No. +/- Accuracy
Supervisor	0.01		1/0	
Enumerator 1	0.09 POOR	0.12 POOR	0/3	2/1
Enumerator 2	0.02 OK	0.33 POOR	1/1	1/2
Enumerator 3	0.07 POOR	0.08 POOR	3/1	4/1
Enumerator 4	0.01 OK	0.00 OK	1/0	0/0
Enumerator 5	0.01 OK	0.00 OK	1/0	0/0

Height:

	Precision: Sum of Square [H1-H2]	Accuracy: Sum of Square [Enum.(H1+H2)-Superv.(H1+H2)]	No. +/- Precision	No. +/- Accuracy
Supervisor	0.06		4/2	
Enumerator 1	0.13 POOR	0.91 POOR	2/5	1/5
Enumerator 2	0.95 POOR	44.01 POOR	3/6	5/4
Enumerator 3	0.16 POOR	0.32 POOR	1/4	2/7
Enumerator 4	0.32 POOR	0.34 POOR	5/0	4/3
Enumerator 5	0.06 OK	0.10 OK	4/2	1/1

MUAC:

	Precision: Sum of Square [MUAC1-MUAC2]	Accuracy: Sum of Square [Enum.(MUAC1+MUAC2)-Superv.(MUAC1+MUAC2]	No. +/- Precision	No. +/- Accuracy
Supervisor	0.12		2/7	
Enumerator 1	0.49 POOR	0.97 POOR	5/3	5/4
Enumerator 2	0.18 OK	0.64 POOR	3/4	4/4
Enumerator 3	0.12 OK	0.00 OK	2/7	0/0
Enumerator 4	0.06 OK	0.26 OK	4/2	5/3
Enumerator 5	0.09 OK	0.01 OK	2/7	0/1

For evaluating the enumerators the precision and the accuracy of their measurements is calculated.
For precision the sum of the square of the differences for the double measurements is calculated. This value should be less than two times the precision value of the supervisor.
For the accuracy the sum of the square of the differences between the enumerator values (weight1+weight2) and the supervisor values (weight1+weight2) is calculated. This value should be less than three times the precision value of the supervisor.
To check for systematic errors of the enumerators the number of positive and negative deviations can be used.

Ifo 2 camp

Standardisation test results							Precision			Accuracy		OUTCOME
Weight	subjects	mean	SD	max	Technical error		TEM/mean		Coef of reliability	Bias from superv	Bias from median	result
	#	kg	kg	kg	TEM (kg)	TEM (%)	R (%)	Bias (kg)	Bias (kg)			
	Supervisor	10	9.4	3	0	0	0	100	-	0.88	TEM good	R value good
	Enumerator 1	10	9.4	3	0.2	0.05	0.6	100	0.01	0.89	TEM acceptable	R value good	Bias good
	Enumerator 2	10	9.3	3.1	0.1	0.02	0.2	100	-0.12	0.76	TEM good	R value good	Bias good
	Enumerator 3	10	12.4	13.9	62.9	14.06	113.5	-2.8	3.02	3.9	TEM reject	R value reject	Bias reject
	Enumerator 4	10	9.3	3.1	0.4	0.11	1.2	99.9	-0.05	0.83	TEM poor	R value good	Bias good
	Enumerator 5	10	9.4	3	0	0	0	100	-0.01	0.87	TEM good	R value good	Bias good
	enum inter 1st	5x10	10.6	9.1	-	8.82	83.3	5.4	-	-	TEM reject	R value reject	
	enum inter 2nd	5x10	9.3	3	-	0.13	1.4	99.8	-	-	TEM acceptable	R value good	
	inter enum + sup	6x10	9.9	6.3	-	4.09	38.7	60.5	-	-	TEM reject	R value reject	
	TOTAL intra+inter		5x10	-	-	-	8.86	89	-72.1	0.57	1.35 TEM reject	R value reject	Bias reject
	TOTAL+ sup	6x10	-	-	-	8.08	82	-65.9	-	-	TEM reject	R value reject	

Height	subjects	mean	SD	max	Technical error		TEM/mean		Coef of reliability	Bias from superv	Bias from median	result
	#	cm	cm	cm	TEM (cm)		TEM (%)	R (%)	Bias (cm)	Bias (cm)		
	Supervisor	10	77.9	12.6	5.5	1.25	1.6	99	-	6.26	TEM reject	R value good	Bias reject
	Enumerator 1	10	78.2	12.9	0.3	0.1	0.1	100	0.31	6.57	TEM good	R value good	Bias reject
	Enumerator 2	10	78.5	13.1	0.3	0.13	0.2	100	0.66	6.92	TEM good	R value good	Bias reject
	Enumerator 3	10	78.4	13.3	0.7	0.18	0.2	100	0.52	6.78	TEM good	R value good	Bias reject
	Enumerator 4	10	78.6	12.8	1.4	0.44	0.6	99.9	0.7	6.96	TEM acceptable	R value good	Bias reject
	Enumerator 5	10	78.5	13.3	0	0	0	100	0.64	6.9	TEM good	R value good	Bias reject
	enum inter 1st	5x10	78.4	12.9	-	0.52	0.7	99.8	-	-	TEM acceptable	R value good	
	enum inter 2nd	5x10	78.4	12.9	-	0.54	0.7	99.8	-	-	TEM acceptable	R value good	
	inter enum + sup	6x10	78.3	12.7	-	0.73	0.9	99.7	-	-	TEM acceptable	R value good	
	TOTAL intra+inter		5x10	-	-	-	0.58	0.7	99.8	0.57	6.73 TEM acceptable	R value good	Bias reject
	TOTAL+ sup	6x10	-	-	-	0.94	1.2	99.5	-	-	TEM acceptable	R value good	

MUAC	subjects	mean	SD	max	Technical error		TEM/mean		Coef of reliability	Bias from superv	Bias from median	result
	#	mm	mm	mm	TEM (mm)		TEM (%)	R (%)	Bias (mm)	Bias (mm)		
	Supervisor	10	13	2.8	10.2	2.28	17.6	32.9	-	-0.2	TEM acceptable	R value reject	Bias good
	Enumerator 1	10	13.4	1.3	0.3	0.09	0.7	99.5	0.36	0.16	TEM good	R value good	Bias good
	Enumerator 2	10	13.5	1.3	0.2	0.1	0.7	99.5	0.55	0.35	TEM good	R value good	Bias good
	Enumerator 3	10	13.4	1.2	0.1	0.06	0.5	99.7	0.41	0.21	TEM good	R value good	Bias good

Enumerator 4	10	13.4	1.1	0.9	0.29	2.2	93.1	0.36	0.16	TEM good	R value poor	Bias good
Enumerator 5	10	13.6	1.3	0	0	0	100	0.58	0.37	TEM good	R value good	Bias good
enum inter 1st	5x10	13.5	1.2	-	0.28	2.1	94.6	-	-	TEM good	R value poor	
enum inter 2nd	5x10	13.4	1.3	-	0.25	1.9	96	-	-	TEM good	R value acceptable	
inter enum + sup	6x10	13.4	1.6	-	0.82	6.1	38.9	-	-	TEM good	R value reject	
TOTAL intra+inter	5x10	-	-	-	0.3	2.3	93.9	0.45	0.17	TEM good	R value poor	Bias good
TOTAL+ sup	6x10	-	-	-	1.36	10.2	27.1	-	-	TEM good	R value reject	

Suggested cut-off points for acceptability of measurements

Parameter		MUAC mm	Weight Kg	Height cm
individual	good	<2.0	<0.04	<0.4
TEM	acceptable	<2.7	<0.10	<0.6
(intra)	poor	<3.3	<0.21	<1.0
	reject	>3.3	>0.21	>1.0
Team TEM	good	<2.0	<0.10	<0.5
(intra+inter)	acceptable	<2.7	<0.21	<1.0
and Total	poor	<3.3	<0.24	<1.5
	reject	>3.3	>0.24	>1.5
R value	good	>99	>99	>99
	acceptable	>95	>95	>95
	poor	>90	>90	>90
	reject	<90	<90	<90
Bias	good	<1	<0.04	<0.4
From sup if good	acceptable	<2	<0.10	<0.6
"outcome, otherwise"	poor	<3	<0.21	<1.4
from median	reject	>3	>0.21	>1.4

Appendix 4 Survey Questionnaires

UNHCR Standardized Expanded Nutrition Survey (SENS) Questionnaire
Dadaab Nutrition Survey, September 2017

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 *[MSF, KRCS, IRK, IRC*]. 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.

- 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.

FOOD SECURITY QUESTIONNAIRE

Date of interview (dd/mm/yyyy)	Cluster Number	Team Number
|___|___|/|___|___|/ 2015	|___|___|	|___|
Block code/Number	**:** 1=IFO-2, 2=DAG, 3=KAM, 4=HAG, 5=IFO	HH No
|___||___||___|	**Camp** |___|	|___|

No	QUESTION	ANSWER CODES	
SECTION FS1			
FS1	**Consent:**	Yes..... 1 No ..... 2 Absent 3	
FS2	How many people live in this Household?		|___|
FS3	Does your household have a *Bamba Chakula* sim card?	Yes..... 1 No..... 2	|___| If 1 go to FS5 If 2, go to FS4
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	
FS5	How many days did your food ration last from the July distribution cycle (general ration and *Bamba Chakula*)?		|___|
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/new arrivals .....2 Ration not big enough, ...3 Gave to livestock.....4 Lost due to theft.....5 Lost due to poor storage.....6 Others.....98	
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, patsta).....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 Firewood ……..12 Shoes/clothing ……13 Mobile phone airtime ……14 School materials/ fees ……15 Bus fare/transport ……16 Detergent/soap……17 Cooking utensils……18 Miraa/khat……19 Cosmetics/make-up……20	
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?	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.)?	Yes……. 1 No ……2	|___|
FS11	In the last month, have you or anyone in your household requested increased remittances or gifts as compared to normal?	Yes……. 1 No ……2	|___|
FS12	In the last month, have you or anyone in your household reduced the quantity and/or frequency of meals?	Yes……. 1 No ……2	|___|
FS13	In the last month, have you or anyone in your household begged?	Yes……. 1 No ……2	|___|
	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 knowing about meals, beverages and snacks eaten or drank inside or outside the home.

FS15	**1**. **Cereals**: Any wheat, corn/maize, sorghum, rice or any foods made from these (e.g. bread, porridge) ***(Canjeero, chapati, 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***.(moos ceyriin, baradho)***	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)***	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)***	3B……|___|
	3C. **Other vegetables**: Any other vegetables (e.g., cabbage, green pepper, tomato, onion, eggplant, zucchini, okra/) *vegetables* ***(tamata, basal, kabash, basbas cagaar ton, Baamiye, barbarooni, nyanyo)***	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,)***	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	4B……|___|

	(ananas, tufax, afkadho, moos, liin- iwm)	
	5A. **Organ meat**: Any liver, kidney, heart or other organ meats or blood-based foods***.(ber, kilyo, wadna iwm)***	5A……|___|
	5B. Flesh meats: Any beef, goat, lamb, mutton, chicken, duck, doves or other small wild bush meat ***(hilib xoola sida ari, lo' geel, ida, digaag ama hilib cidood ,hilib qooley-gaaleed).***	5B……|___|
	6. **Eggs**: Any eggs from chicken, duck, guinea fowl or any other egg ***(bet/ukun noc kasta)***	6……|___|
	7. Fish and seafood: Any fresh or dried fish, canned fish (anchovies, tuna, sardines), or shellfish ***(kaluun, kaluun laqalajijay,, tuna/kaluunka gasacadaha, iwm).***	7……|___|
	8. **legumes, nuts and seeds**: Any dried peas, lentils, nuts, seeds or foods made from these (eg. hummus, peanut butter) **(Misir, *sida digir , salbuko, digir soomali*).**	8……|___|
	9. **Milk and milk products**: Any milk, infant formula, cheese, yogurt or other milk products (e.g. kiefer) (***caano dhamaan, cano fadhi, garoor, susac*** **)**	9……|___|
	10. **Oils and fats:** Vegetable oil ***(saliida lagabixiyo xarada –sida saliid cadeey). (saliida xarada aan lagabixinin-sida macsaro, sixin, subag iwm)***	10……|___|
	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)***	11……|___|
	12. **Spices, condiments, beverages**: Any spices (black pepper, salt), condiments (soy sauce, hot sauce), coffee, tea, alcoholic beverages**.((*filfil madoow, cusba,heel, basbaas, shah, bun*)**	12……|___|
	13. 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)***	Yes……..1 No……..2 DK……..8

WASH QUESTIONNAIRE

Date of interview (dd/mm/yyyy)	Cluster Number	Team Number
|___|___|/|___|___|/|___|___||___|___|	|___|___|	|___|
Block code/Number	**Camp :** 1=IFO-2, 2=DAG, 3=KAM, 4=HAG, 5=IFO HH No	
|___||___||___|	|___|	|___|

No	QUESTION	ANSWER CODES	
SECTION WS1			
WS1	How many people live in this household and slept here last night?		|___|
WS2	What is the ***main*** source of drinking water for members of your household? **DO NOT READ THE ANSWERS** **SELECT ONE ONLY**	Public tap/standpipe..... .....01 Small water vendor..... 02 Surface water (e.g. river, pond) ..... 03 Other..... 98 Don't know 99	|___|
WS3	Are you satisfied with the water supply? THIS RELATES TO THE DRINKING WATER SUPPLY	Yes..... 1 No ..... 2 Other..... 6	|___ **IF ANSWER IS 2 GO TO WS4**|
WS4	What is the ***main*** reason you are not satisfied with the water supply?	Amount is not enough .....1 Long queue at the tap stand.....2 Water point is far .....3 Water tastes bad .....4 Inadequate water storage containers.....5 Other..... 98	
WS5	What kind of toilet facility does this household use? **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 WS7**
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) **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	|___|___| Households

WS7	Do you have children under three years old?	Yes..... 1 No 2			|___| **IF ANSWER IS 2 GO TO WS9**
WS8	The last time [NAME OF YOUNGEST CHILD] passed stools, what was done to dispose of the stools? 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			|___|___|
WS9	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	25 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	5 L	1 x	5
		5 E.g. bucket	50 L	1 x	50
		Total litres used by household			**110**
WS10	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			|___|___|

WOMEN QUESTONNAIRE

Date (dd/mm): |_____|_____||_____|_____| 2015			**Team Number:** |_____|					
Block Code / Number: |_____|_____|_____|										
WM1	**WM2**	**WM3**	**WM4**	**WM5**	**WM6**	**WM7**	**WM8**	**WM9**	**WM10**	**WM11**
ID	**HH**	**Consent given** 1=yes 2=no 3=absent	**How old are you?** (years)	**Are you pregnant?** 1=yes 2=no 8=DK	**Are you currently breastfeeding a child below 6 months?** 1=yes 2=no	**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	**Hb** (g/L or g/dL) Question will be asked for WM5=No or DK	**MUAC** (cm) Question will be asked for WM5=Yes or WM6=Yes	**Are you currently enrolled in any nutrition programme?** 1=TSFP 2=BSFP 3=None Question will be asked for WM5=Yes or WM6=Yes
01										
02										
03										
04										
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08										
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10										
11										

12										
13										
14										
…										

CHILD QUESTIONNAIRE

		Cluster Number: |_____|_____|					**Team Number:** |_____|			
		Camp/Survey Number: 1=IFO-2, 2=DAG, 3=KAM, 4=HAG, 5=IFO |_____|									
C1	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**	**C9**	**C10**	**C11**	**C12**
HH No	**Child ID**	**Name of child**	**Consent** 1=yes 2=no 3=absent	**Sex** (m/f)	**Birthdate** (dd/mm/yyyy)	**Age** (months) If child is 0-5months, GO TO IF7	**Weight** (kg)	**Height** (cm)	**Bilateral oedema** (y/n)	**MUAC** (mm)	**IS CHILD ENROLED IN NUTRITION PROGRAMME ?** 1 = OTP; 2 = SFP; 3=BSFP 4 = None 5=Don't know
	1										
	2										
	3										
	4										
	5										
	6										

	9										
	10										

		C13	**C14**	**C15**	**C16**	**C17**	**C20**
		Measles Vaccination 9-59m 1=Yes with card 2=Yes by recall 3=No or don't know	**Vit. A in past 6 months 6-59m** (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 (more than 3 loose, watery 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)
1							
2							
3							
4							
5							
6							

Team Number: |_____|		

IF1	IF2	IF3	IF4	IF5	IF6	IF7	IF8	IF9
Child No.	**HH No.**	**Consent** 1=yes 2=no 3=absent	**Birthdate** (dd/mm/yyyy)	**Sex** **1=male** **2=female**	**Age (months)**	**Was [name] ever breastfed?** 1=yes 2=no	**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	**Was [name] breastfed yesterday during the day or at night?** 1 = yes 2 = no 99 = don't know
1								
2								
3								
4								
5								

Now I would like to ask you about liquids that you may have had. I'm interested in whether your child had the item even if it was combined with other foods. Yesterday during the day and night, has your child received:

IF10	IF11	1F12	IF13	IF14	IF15	IF16	IF17	IF18 I

Plain water 1 = yes 2 = no 99 = don't know	**Infant formula: for example Mamex, Sahar, Nan, S26** 1 = yes 2 = no 99 = don't know	**Milk such as tinned, powdered or fresh animal milk(*anchor, melody , hilwa)*** 1 = yes 2 = no 99 = don't know	**Juice or juice drinks e.g fresh juice or flavoured juices such as (Zeitun, Altuza, Mushakil, vimto, soda, afya, tamu, yahoo, savannah)** 1 = yes 2 = no 99 = don't know	**Clear broth** 1 = yes 2 = no 99 = don't know	**Sour milk or yoghurt** 1 = yes 2 = no 99 = don't know	**Thin porridge made from CSB+ or CSB++** 1 = yes 2 = no 99 = don't know	**Tea or coffee black or white** 1 = yes 2 = no 99 = don't know	**Any other water-based liquids (sodas, other sweet drinks, sweetened water, herbal infusion, gripe, clear tea with no milk, black coffee, ritual fluids)** 1 = yes 2 = no 99 = don't know

IF19	**IF20**	Now I would like to ask you about some particular foods (child) may eat. I'm interested in whether he/she had the item even if it was combined with other foods. Yesterday during the day or at night, did (child) consume any of the following?	**IF21**	**IF22**	**IF23**	**IF24**	**IF25**	**IF26**	**IF27**
Yesterday during the day and night, did (child) eat solid or semi-solid (soft, mushy) food? 1 = yes 2 = no 99 = don't know	**Did (child) drink anything from a bottle with a nipple yesterday during the day or at night?** 1 = yes 2 = no 99 = don't know		**Flesh foods like *hilib, kaluun, digaag, beer, wada, kilyo iwm?*** 1 = yes 2 = no 99 = don't know	**CSB+?** 1 = yes 2 = no 99 = don't know	**CSB++?** 1 = yes 2 = no 99 = don't know	**Plumpy nut?** 1 = yes 2 = no 99 = don't know	**Plumpy sup?** 1 = yes 2 = no 99 = don't know	**Infant formula, eg. Nan, mamix, choice, anchor, S26 (*caano, boodhe, sahha*)?** 1 = yes 2 = no 99 = don't know	**Iron fortified solid, semi-solid or soft foods designed specifically for infants and young children Eg.Weetabix, Serifam Cerelac** 1 = yes 2 = no 99 = don't know

Appendix 5 Local events calendar

Dadaab Nutrition survey Events calendar: September 2017					
Season	**Local Event (in camp of surrounding areas)**	**Somali Calendar**	**Religious holidays**	**Month / year**	**Age (m)**
End of Xagaa		Bisha Sagaalad		Sep-16	0
Mid Xagaa	World Breastfeeding week 1-7 August	Bisha Sideedaad		Aug-17	1
Beginning of Xagaa	Somalia Independence 1 July	Bisha Todobaad	End of Ramadhan (Eid Al Fatir)	Jul-17	2
End of Gu'	Madaraka Day 1 June World Refugee Day 20 June	Bisha Luuly	Start of Ramadhan	Jun-17	3
Mid of Gu'		Bisha Shanaad		May-17	4
Beginning of Gu'		Abriil	Easter holidays	Apr-17	5
End of Jiilal	Women's Day 8 March	Maarso		Mar-17	6
Mid of Jiilal	Valentines' Day 14 February	Febrayo		Feb-17	7
Beginning of Jililal		Janaayo	New years' holiday 1 January	Jan-17	8

End of Deyr	Jamhuri Day 12 December	Bisha diseenbar		Dec-16	9
Mid of Deyr		Bisha kow iyo Tobnad		Nov-16	10
Beginning of Deyr		Bisha Tob		Oct-16	11
End of Xagaa		Bisha Sagaalad		Sep-16	12
Mid Xagaa	World breastfeeding week	Bisha Sideedaad		Aug-16	13
Beginning of Xagaa	Somalia Independence 1 July	Bisha Todobaad	End of Ramadhan 7 July (Eid Al Fatir) 7 July	Jul-16	14
End of Gu'	Madaraka Day 1 June World Refugee Day 20 June	Bisha Luuly	Start of Ramadhan 6 June	Jun-16	15
Mid of Gu'	Government decision to close Dadaab 6 May Visit of President of Somalia 10 May Measles campaign 16 May	Bisha Shanaad		May-16	16
Beginning of Gu'		Abriil	Easter holidays	Apr-16	17
End of Jiilal	Women's Day 8 March	Maarso		Mar-16	18
Mid of Jiilal	Valentines' Day 14 February	Febrayo		Feb-16	19
Beginning of Jililal		Janaayo	New years' holiday 1 January	Jan-16	20
End of Deyr	Jamhuri Day 12 December	Bisha diseenbar		Dec-15	21
Mid of Deyr	Kambioos maternity opened 17 November	Bisha kow iyo Tobnad		Nov-15	22
Beginning of Deyr	Cholera outbreak in Hagadera 13 October	Bisha Tob		Oct-15	23
End of Xagaa		Bisha		Sep-15	24

		Sagaalad			
Mid Xagaa	World breastfeeding week	Bisha Sideedaad		Aug-15	25
Beginning of Xagaa		Bisha Todobaad	Eid Al Fatir 18 July	Jul-15	26
End of Gu'	World Refugee Day	Bisha Luuly	Beginning of Ramadan 18 June	Jun-15	27
Mid of Gu'	Yumbis attack/fire at albushra	Bisha Shanaad		May-15	28
Beginning of Gu'	Hagadera windle trust Incident	Abriil		Apr-15	29
End of Jiilal		Maarso		Mar-15	30
Mid of Jiilal	Attempted hijacking of UNHCR car	Febrayo		Feb-15	31
Beginning of Jililal		Janaayo	Mawlid al-Nabi 3 January	Jan-15	32
End of Deyr		Bisha diseenbar		Dec-14	33
Mid of Deyr		Bisha kow iyo Tobnad		Nov-14	34
Beginning of Deyr		Bisha Tob	Muharram 25 October/ Eid adha oct 4	Oct-14	35
End of Xagaa		Bisha Sagaalad		Sep-14	36
Mid Xagaa	World Breastfeeding Week.	Bisha Sideedaad		Aug-14	37
Beginning of Xagaa		Bisha Todobaad	Eid Al Fatir 28 July	Jul-14	38
End of Gu'	World Refugee Day	Bisha Luuly	Beginning of Ramadan 28 June رمضان شهر بداية 28/06/	Jun-14	39
Mid of Gu'		Bisha Shanaad		May-14	40
Beginning of Gu'		Abriil		Apr-14	41
End of Jiilal		Maarso		Mar-14	42

Mid of Jiilal		Febrayo		Feb-14	43
Beginning of Jililal		Janaayo	Mawlid al-Nabi 13 January	Jan-14	44
End of Deyr		Bisha diseenbar		Dec-13	45
Mid of Deyr		Bisha kow iyo Tobnad	Muharram 5 November	Nov-13	46
Beginning of Deyr		Bisha Tob	Eid al adha Oct 15th	Oct-13	47
End of Xagaa	Refugee elections	Bisha Sagaalad		Sep-13	48
Mid Xagaa	World breastfeeding week	Bisha Sideedaad	Eid Al Fatir 19 August	Aug-13	49
Beginning of Xagaa	start of WFP biometrics	Bisha Todobaad	Beginning of Ramadan 9 July	Jul-13	50
End of Gu'	Refugee Day	Bisha Luuly		Jun-13	51
Mid of Gu'		Bisha Shanaad		May-13	52
Beginning of Gu'		Abriil		Apr-13	53
End of Jiilal	IRC started Kambioos HP operation	Maarso		Mar-13	54
Mid of Jiilal		Febrayo		Feb-13	55
Beginning of Jililal		Janaayo	Mawlid al-Nabi 24 January	Jan-13	56
End of Deyr		Bisha diseenbar		Dec-12	57
Mid of Deyr		Bisha kow iyo Tobnad	Muharram 15 November	Nov-12	58
Beginning of Deyr		Bisha Tob	Eid al adha Oct 26th	Oct-12	59