

STANDARDIZED EXPANDED NUTRITION SURVEY (SENS) IN MELKADIDA REFUGEE CAMPS

Bokolmanyu, Buramino, Hilaweyn, Kobe and Melkadida

FINAL REPORT

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Lists of Acronyms

ARRA	Administration for Refugee & Returnee Affairs
BSFP	Blanket Supplementary Feeding Program
CI	Confidence Interval
CSB+	Corn-Soya-Blend plus
GAM	Global Acute Malnutrition
GFD	General Food Distribution
HFA	Height-for-Age
HAZ	Height-for-Age Z-score
HH	Household
IMC	International Medical Corps
IRC	International Rescue Committee
IP	Implementing Partner
IYCF	Infant and young children feeding
Kcal	Kilocalorie
Kg	Kilogram
MSF-S	Medicines sans Frontiers Spain
MUAC	Mid-Upper Arm Circumference
NCA	Nutrition causal analysis
NGO	Non-Governmental Organization
OTP	Outpatient program
SAM	Severe Acute Malnutrition
SC	Stabilization Centre
TSFP	Target Supplementary Feeding Program
TFP	Therapeutic Feeding Program
TSFP	Targeted Supplementary Feeding Program
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
WASH	Water Sanitation and Health
WFA	Weight-for-Age
WHZ	Weight-for-Height / Length Z-score
WFH	Weight-for-Height
WFP	World Food Programme
WHO	World Health Organization

1. Executive summary

Dollo Ado district hosts Somali refugees in five refugee camps of Melkadida; Bokolmanyoo, Melkadida, Kobe, Hilaweyn and Buramino. The first camp, Bokolmanyoo was opened in Oct 2009 and followed Melkadida in 2010. In 2011, there was a major influx as a result of insecurity in Somalia, resulting in the establishment of Kobe, Hilaweyn, and Buramino camps in June 2011, August 2011 and November 2012 respectively. Refugees continue to arrive in small numbers since 2011. Currently, the total population is 217,494 with 21,010 under-five children as of 31 March 2018 (source: UNHCR ProGres).

A joint UNHCR, WFP, ARRA, IMC and Humedica Standardized Expanded Nutrition Survey (SENS) was carried out in the five Somali refugee's camps in Melkadida/Dollo Ado refugee camps from 20th March to 24th April 2018, with the main objective to assess the general health and nutrition status of refugees, and formulate workable recommendations for appropriate nutritional and public health interventions.

Electronic questionnaires uploaded in the pre-installed Open Data Kit apps in smartphones were administered to heads of households and data quality checks were routinely performed at the end of each data collection day. Paper questionnaires were used for mortality data collection. Data analysis was done in ENA for SMART version of 9th July 2015 and Epi-info version 3.5.4 of 30th July 2012.

The prevalence of global acute malnutrition (GAM) in all refugee camps has remained above the UNHCR acceptable level (10.0%) while the trends are shows impressive improvements in the nutritional status over the past two years. The weighted prevalence of GAM reduced from 22.4% in 2016 to 14.1% in 2017, and 12.4% in 2018. Prevalence of severe acute malnutrition (SAM) also shows a reducing trend from 4.8% in 2016 to 2.7% in 2017, and 2.4% in 2018.

Anaemia prevalence has remained above 40% among children aged 6-59 months (prevalence of anaemia $\geq 40\%$ indicates a high public health significance as per WHO classification). Weighted prevalence of anaemia has been and remains high; 46.6% in 2016, 44.9% in 2017 and 48.8% in 2018, which indicates increasing trend in 2018 a possibly worsening situation.

Table 1: Summary of key findings SENS 2018 in Somali refugee camps Melkadida – Ethiopia

	Bokolmanyu		Melkadida		Kobe		Hilaweyn		Buramino		
CHILDREN (6-59 months)											
Acute Malnutrition (WHO 2006 Growth Standards)	No./total	% (95% CI)	No./total	% (95% CI)	No./total	% (95% CI)	No./total	% (95% CI)	No./total	% (95% CI)	Emergency Threshold
Global Acute Malnutrition (GAM)	48/414	11.5% (8.7-14.9%)	37/358	10.3% (7.6-13.9%)	46/317	14.5% (11.1-18.8%)	41/402	10.2% (7.6-13.5%)	58/382	15.2% (11.9-19.1%)	Critical if ≥ 15%
Moderate Acute Malnutrition (MAM)	40/414	9.5% (7.0-10.9%)	30/358	8.4% (5.9-11.7%)	38/317	12.0% (8.9-16.0%)	34/402	8.5% (6.1-11.6%)	43/382	11.3% (8.5-14.8%)	
Severe Acute Malnutrition (SAM)	8/414	2.0% (1.0- 3.8%)	7/358	2.0% (1.0- 4.0%)	8/317	2.5% (1.3- 4.9%)	7/402	1.7% (0.8- 3.6%)	15/382	3.9% (2.4- 6.4%)	
Oedema	0/414	0.0%	0/358	0.0%	0/317	0.0%	0/402	0.0%	0/382	0.0%	
Stunting (WHO 2006 Growth Standards)											
Total Stunting	111/405	27.3% (23.1-31.8%)	88/353	24.9% (20.7-29.7%)	111/306	36.3% (31.1-41.8%)	197/386	51.0% (46.1-56.0%)	171/380	45.0% (40.1-50.0%)	Critical if ≥ 40%
Severe Stunting	28/405	7.0% (4.9- 9.9%)	23 /353	6.5% (4.4- 9.6%)	45/306	14.7% (11.2-19.1%)	94/386	24.4% (20.3-28.9%)	57/380	15.0% (11.8-18.9%)	
Mid Upper Arm Circumference (MUAC)											
MUAC<12.5 cm	10/360	2.4% (1.2- 3.9 %)	11/360	3.1% (1.6- 4.9%)	10/318	3.1% (1.5- 5.1%)	24/402	5.9% (4.0- 8.6%)	21/382	5.5% (3.6- 8.3%)	
MUAC ≥11.5-12.4 cm	8/360	1.9% (0.9- 3.4%)	11/360	3.1% (1.6- 4.9%)	9/318	2.8% (1.3- 4.7 %)	17/402	4.2% (2.6- 6.6 %)	16/382	4.2% (2.6- 6.7%)	
MUAC <11.5 cm	2/360	0.5% (0.1- 1.6%)	0/360	0.0%	1/318	0.3% (0.0- 1.6 %)	7/402	1.7% (0.8- 3.5%)	5/382	1.3% (0.6- 3.0%)	
Anaemia for children											
Total Anaemia (Hb <11 g/dl)	186/415	44.8% (40.0-49.8%)	163/360	45.3% (40.1-50.6%)	185/307	60.3% (54.5-65.8%)	181/405	44.7% (39.9 – 49.6%)	182/383	47.5% (42.4 – 52.7%)	High if ≥ 40%
Mild (Hb 10-10.9 g/dl)	84/415	20.2% (16.5-24.5%)	85/360	23.6% (19.4-28.4%)	110/307	35.8% (30.5-41.5%)	106/405	26.2% (22.1 – 30.7%)	106/383	27.7% (23.3 – 32.5%)	
Moderate (Hb 7-9.9 g/dl)	99/415	23.9% (19.9-28.3%)	77/360	21.4% (17.3-26.1%)	75/307	24.4% (19.8-29.7%)	75/405	18.5% (15.0 – 55.3%)	75/383	19.6% (15.8 – 24.0%)	
Severe (Hb<7.0 g/dl)	3/415	0.7% (0.2-2.3%)	1/360	0.3% (0.0-1.8%)	0/307	0.0%	0/405	0%	1/383	0.3% (0.1 – 1.7%)	

	Bokolmanyó		Melkadida		Kobe		Hilaweyn		Buramino		
Programme Coverage											
Therapeutic feeding program (based on all WHZ, Oedema and MUAC)	3 /14	21.4% (4.7-50.8%)	0/8	0.0%	0/9	0.0%	4/12	33.3% (9.9-65.1%)	3/18	16.7% (3.6-41.4%)	
TSFP (based on all admission criteria WHZ, and MUAC)	13/46	28.3% (16.0-43.5%)	12/36	33.3% (18.6-51.0%)	9/36	25.0% (12.1-42.2%)	16/45	35.6% (21.9-51.2%)	18/53	34.0% (21.5-48.3%)	
BSFP, Admission based on age, 6-35 months	224/256	87.5% (82.8-91.3%)	193/ 224	86.2% (80.9-90.4%)	128/171	74.9% (67.7-81.2%)	173/227	76.2% (70.1-81.6%)	172/210	81.9% (76.0-86.9%)	
Wet feeding program as a BSFP, Admission based on age, children 36-59 months	45/158	28.5% (21.6-36.2%)	32/128	25.0% (17.8-33.4%)	63/133	47.4% (38.7-56.2%)	60/168	35.7% (28.5-43.5%)	59/163	36.2% (28.8-44.1%)	
Measles vaccination with card (9-59 months)	371/400	92.8% (89.6-95.0%)	300/340	88.2% (84.3-91.5%)	231/294	78.6% (73.4-83.1%)	274/388	70.6% (65.8-75.1%)	257/366	70.2% (65.2-74.9%)	
Measles vaccination with card or recall (9-59 months)	399/400	99.8% (98.4-100%)	340/340	100.0%	259/294	88.1% (83.8-91.6%)	350/388	90.2% (86.8 - 93.0%)	340/366	92.9% (89.6 – 95.2%)	Target of ≥ 95%
Vitamin A supplementation coverage with card, within past 6 months (6-59 months)	340/420	81.0% (76.8-84.5%)	251/360	69.7% (64.7-74.4%)	203/312	65.1% (59.5-70.3%)	135/406	33.3% (28.7-38.1%)	146/385	37.9% (33.1-43.0%)	
Vitamin A supplementation coverage with card or recall, within past 6 months (6-59 months)	419/420	99.8% (98.5-100.0%)	357/360	99.2% (97.4-99.8%)	277/312	88.8% (84.7-92.1%)	369/406	90.9% (87.7 - 93.5 %)	357/385	92.7% (89.5 - 95.0%)	Target of ≥ 90%
Morbidity											
Diarrhoea in the past 2 weeks	8/418	1.9% (0.9-3.9%)	2/358	0.6% (0.1-2.2%)	13/307	4.2% (2.4-7.3%)	3/406	0.7% (0.2-2.3%)	9/385	2.3% (1.1-4.5%)	
CHILDREN (0-23 months)											
Infant and Young children: Feeding Practices											
Timely initiation of breastfeeding (0-23 months)	151/181	83.4% (77.2-88.5%)	138/162	85.2% (78.8-90.3%)	97/107	90.7% (83.5-95.4%)	136/174	78.2% (71.3-84.1%)	158/197	80.2% (74.0 – 85.6%)	
Exclusive breastfeeding under 6 months (0-5 months)	41/49	83.7% (70.3-92.7%)	27/37	73.0% (55.9-86.2%)	27/33	81.8% (64.5-93.0%)	28/43	65.1% (49.1-79.0%)	36/53	67.9% (53.7 – 80.1%)	
Continued breastfeeding at 1 year (12-15 months)	22/39	56.4% (39.6-72.2%)	23/34	67.6% (49.5-82.6%)	19/29	65.5% (45.7-82.1%)	29/39	74.4% (57.9 – 87.0%)	17/22	77.3% (54.6- 92.2%)	
Continued breastfeeding at 2 years (20-23 months)	8/28	28.6% (13.2-48.7%)	13/34	38.2% (22.2-56.4%)	9/19	47.4% (24.4-71.1%)	6/18	33.3% (13.3 – 59.0%)	14/36	38.9% (23.1 – 56.5%)	
Introduction of solid, semi-solid or soft foods (6-8 months)	7/20	35.0% (15.4-59.2%)	9/20	45.0% (23.1-68.5%)	6/16	37.5% (15.2-64.6%)	6/20	30.0% (11.9-54.3%)	3/19	15.8% (3.4-39.6%)	
Consumption of iron-rich or iron-fortified foods (6-23 months)	154/156	98.7% (95.5 – 99.8%)	143/145	98.6% (95.1-99.8%)	86/93	92.50% (85.1-96.9%)	105/129	81.4% (73.6-87.7%)	109/142	76.80% (68.9-83.4%)	

	Bokolmanyó		Melkadida		Kobe		Hilaweyn		Buramino		
Bottle feeding (0-23 months)	43/207	20.8% (15.5-26.9%)	43/183	23.5% (17.6-30.3%)	24/129	18.6% (12.3-26.4%)	23/174	13.2% (8.6-19.2%)	27/197	13.7% (9.2 – 19.3%)	
WOMEN 15-49 years											
Anaemia (non-pregnant) (UNHCR SENS cut off)											
Total Anaemia (Hb <12.0 g/dl)	107/291	36.8% (31.2-42.6%)	84/226	37.2% (30.9-43.8%)	92/206	44.7% (37.7-51.7%)	78/263	29.7% (24.2 – 35.6%)	85/242	35.1% (29.1 – 41.5%)	High if ≥ 40%
Mild (Hb 11.0-11.9)	54/291	18.6% (14.3-23.5%)	54/226	23.9% (18.5-30.0%)	41/176	23.3% (17.3-30.2%)	39/263	14.8% (10.8 – 19.7%)	54/242	22.3% (17.2 – 28.1%)	
Moderate (Hb 8.0-10.9)	51/291	17.5% (13.3-22.4%)	30/226	13.3% (9.1-18.4%)	19/176	10.8% (6.6-16.3%)	36/263	13.7% (9.8 – 18.4%)	31/242	12.8% (8.9 – 17.7%)	
Severe (Hb<8.0)	2/291	0.7% (0.1-2.5%)	0/226	0.0%	2/176	1.1% (0.1-4.0%)	3/263	1.1% (0.2 – 3.3%)	0/242	0%	
Programme coverage , pregnant and lactating											
Pregnant women currently enrolled in the ANC	66/66	100.0%	66/67	98.5% (92.0-100%)	44/44	100.0%	49/49	100.0%	58/60	96.7% (88.5-99.6%)	
Pregnant women currently receiving Iron-folic acid pills	57/66	86.4% (75.7-93.6%)	61/67	91.0% (81.5-96.6%)	43/45	95.6% (84.9-99.5%)	42/49	85.7% (72.8-94.1%)	57/60	95.0% (86.1-99.0%)	
FOOD SECURITY											
Proportion of HH with a ration card	411/413	99.5% (98.1-99.9%)	386/387	99.7% (98.-100.0%)	339/339	100.0%	402/402	100%	380/381	99.7% (98.5 – 100%	
Average number of days GFD lasts out of 30 days	21.3 SD - 5.94		20.6 SD -5.9		21.45 SD 5.22		20.0 (SD 5.2)		19.5 (SD 5.0)		
Average duration (%) in relation to the theoretical duration of the ration (30days)	71.0%		69.0%		71.5%		66.7%		65.0%		
Household Dietary Diversity Score (HDDS) {Mean(SD)	2.6 SD 2.1		2.7 SD 2.1		2.5 SD 1.7		3.3 SD 1.8		1.8 SD 0.7		
Proportion of households reporting using the following coping strategies over the past month*:											
Borrowed cash, food or other items with or without interest	188/413	45.5% (40.7-50.5%)	178/387	46.0% (41.0-51.1%)	213/339	62.8% (57.4-68.0%)	259/402	64.4% (59.5-69.1%)	253/380	66.6% (61.6-71.3%)	
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, etc.)	10/412	2.4% (1.2-4.6%)	13/387	3.4% (1.9-5.8%)	47/339	13.9% (10.5-18.1%)	125/402	31.1% (26.6-35.9%)	80/380	21.1% (17.1-25.6%)	
Requested increased remittances or gifts as compared to normal	33/412	8.0% (5.7-11.2%)	10/387	2.6% (1.3-4.9%)	78/339	23.0% (18.7-27.8%)	132/402	32.8% (28.3-37.7%)	105/379	27.7% (23.3-32.6%)	
Reduced the quantity and/or frequency of meals and snacks	79/413	19.1% (15.5-23.3%)	77/387	19.9% (16.1-24.3%)	132/338	39.1% (33.9-44.5%)	246/402	61.2% (56.2-66.0%)	225/380	59.2% (54.1-64.2%)	

	Bokolmanyó		Melkadida		Kobe		Hilaweyn		Buramino		
Begged	10/413	2.4% (1.2-4.6%)	8/387	2.1% (1.0-4.2%)	32/338	9.5% (6.7-13.2%)	8/402	2.0% (0.9-4.0%)	10/380	2.6% (1.3-4.9%)	
Engaged in potentially risky or harmful activities	5/413	1.2% (0.4-3.0%)	15/387	3.9% (2.3-6.5%)	72/339	21.2% (17.1-26.1%)	196/402	48.8% (43.8-53.8%)	141/380	37.1% (32.3-42.2%)	
Proportion of households reporting using none of the coping strategies over the past month	214/411	52.1% (47.1-57.0%)	202/385	52.5% (47.4-57.5%)	109/337	32.3% (27.4-37.7%)	117/402	29.1% (24.8-33.9%)	111/379	29.3% (24.8-34.2%)	
WASH (WATER QUANTITY, SAFE EXCRETA DISPOSAL)											
Proportion of households using an improved drinking water source											
≥20lpppd	245/412	59.5% (54.5-64.2%)	238/372	64.0% (58.8-68.8%)	193/336	57.4% (52.0-62.8%)	190/402	47.3% (42.4 – 52.2%)	190/381	49.9% (44.9 – 54.9%)	
15- <20lpppd	59/412`	14.3% (11.2-18.2%)	67/372	18.0% (14.3-22.4%)	65/336	19.3% (15.3-24.1%)	91/402	22.6% (18.8 – 27.0%)	60/381	15.8% (12.4 – 19.8%)	
<15lpppd	108/412	26.2% (22.1-30.8%)	67/372	18.0% (14.3-22.4%)	78/336	23.2% (18.9-28.2%)	121/402	30.1% (25.8 – 34.8%)	131/381	34.4% (29.8 – 39.3%)	
Average consumption (Liters per person per day)	23.7		25.9		24.3		23.6		26.2		UNHCR target is ≥20 lpppd
Proportion of households that say they are satisfied with the drinking water supply	400/412	97.1% (94.8-98.4%)	371/371	100.0%	336/339	99.1% (97.2-99.8%)	394/401	98.3% (96.5 – 99.2)	374/381	98.2% (96.3 – 99.1%)	
An improved excreta disposal facility (improved toilet, 1 HHs)	50/410	12.2% (9.3-15.9%)	12/371	3.2% (1.8-5.7%)	9/332	2.7% (1.3-5.3%)	48/396	12.1% (9.3 – 15.7%)	23/378	6.1% (4.1 – 9.0%)	
A shared family toilet (improved toilet facility, 2 households)	269/410	65.6% (60.8-70.2%)	221/371	59.6% (54.4-64.6%)	80/332	24.1% (19.7-29.1%)	202/396	51.0% (46.1 – 55.9%)	146/378	38.6% (33.9 – 43.6%)	
A communal toilet (improved toilet facility, 3 HHs or more)	91/410	22.2% (18.3-26.6%)	138/371	37.2% (32.3-42.4%)	243/332	73.2% (68.1-77.9%)	146/396	36.9% (32.3 – 41.7%)	203/378	53.7% (48.7 – 58.7%)	
An unimproved toilet (unimproved toilet facility or public toilet)	0/410	0.0%	0/371	0.0%	0/332	0.0%	0/396	0.0%	6/378	1.6% (0.7 – 3.4%)	
Proportion of households with children under three years old that dispose of faeces safely	226/228	99.1% (96.9-99.9%)	204/307	98.6% (95.8-99.7%)	214/218	98.2% (95.4-99.5%)	227/228	99.6% (97.6 – 100)	218/220	99.1% (96.8-99.9%)	
Retrospective mortality occurred within the camps											
Crude mortality rate (CDR)	1/2371	0.05	2/2280	0.1	3/2087	0.15	3/2587	0.13	5/2483	0.22	Target of

	Bokolmanyó		Melkadida		Kobe		Hilaweyn		Buramino		
Deaths/10,000/day		(0.01-0.27)		(0.03-0.36)		(0.05-0.45)		(0.03 – 0.56)		(0.09 – 0.51)	<1/10,000
Under five mortality (U5M)		0.27		0.32		0.81		0.23		0.26	Target of
Deaths/10,000/day	1/417	(0.05-1.52)	1/357	(0.06-1.76)	3/402	(0.26-2.35)	1/466	(0.02 – 2.70)	1/418	(0.0.05 – 1.47)	<2/10,000

1 Classifications of indicators

The table below shows the public health significance malnutrition classification among children under 5 years old.

Table 2: Classification of Public Health Significance for Children Under 5 Years of Age

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

Source: WHO (1995) Physical Status: The Use and Interpretation of Anthropometry and WHO (2000). The Management of Nutrition in Major Emergencies

Table 3: Classification of Public Health Significance

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

Source: WHO (2000) The Management of Nutrition in Major Emergencies

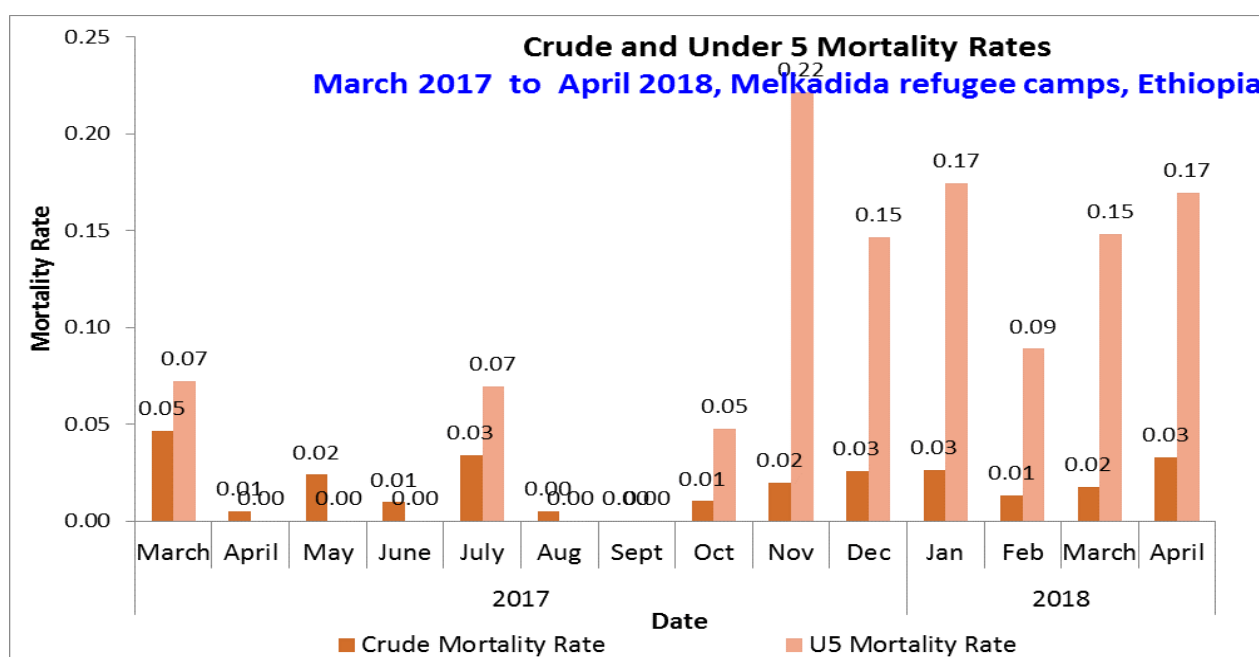
Table 4: Simplified Classification of the Severity of GAM, Anaemia, and Stunting In Refugee Setting (UNHCR Operational Guidance)

PREVALENCE%	HIGH		MEDUIM	LOW
GAM	≥15 Critical	10-14 Serious	5-9	<5
ANAEMIA U5	≥40		20-39	5-19
STUNTING	≥30		20-29	<20

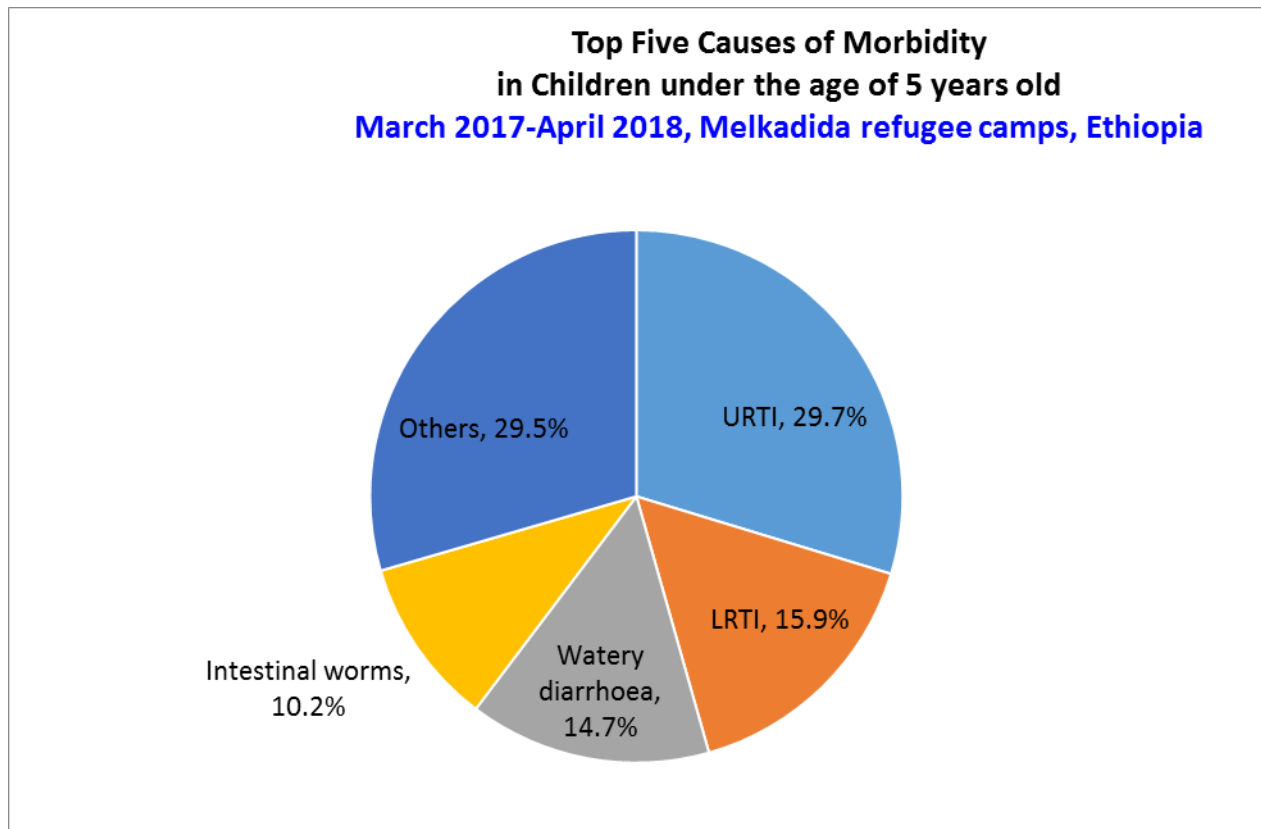
Source: UNHCR operational guidance

1.1 Brief interpretation of the results

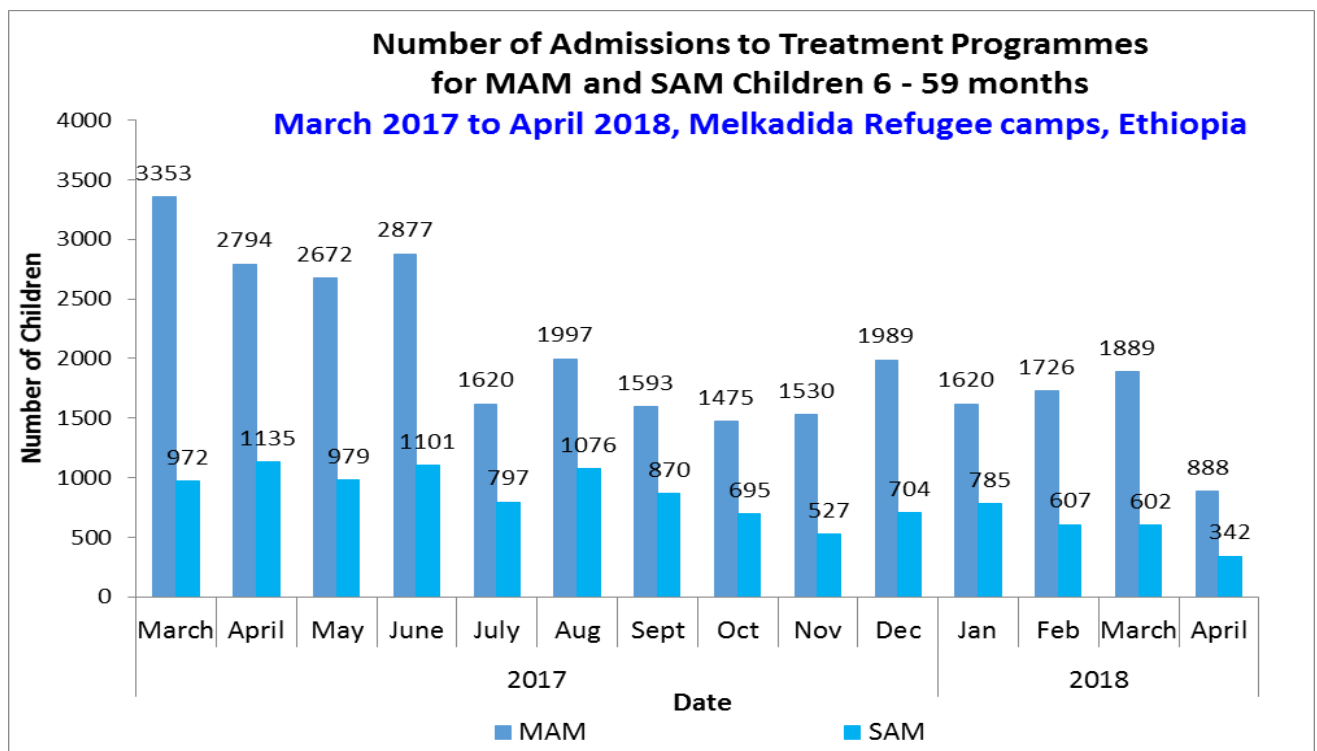
1.1.2 Crude and Under 5 Mortality Rates in All camps (Source- HIS)



1.1.3 Top five Causes of morbidity in Children under 5 years (Source- HIS)



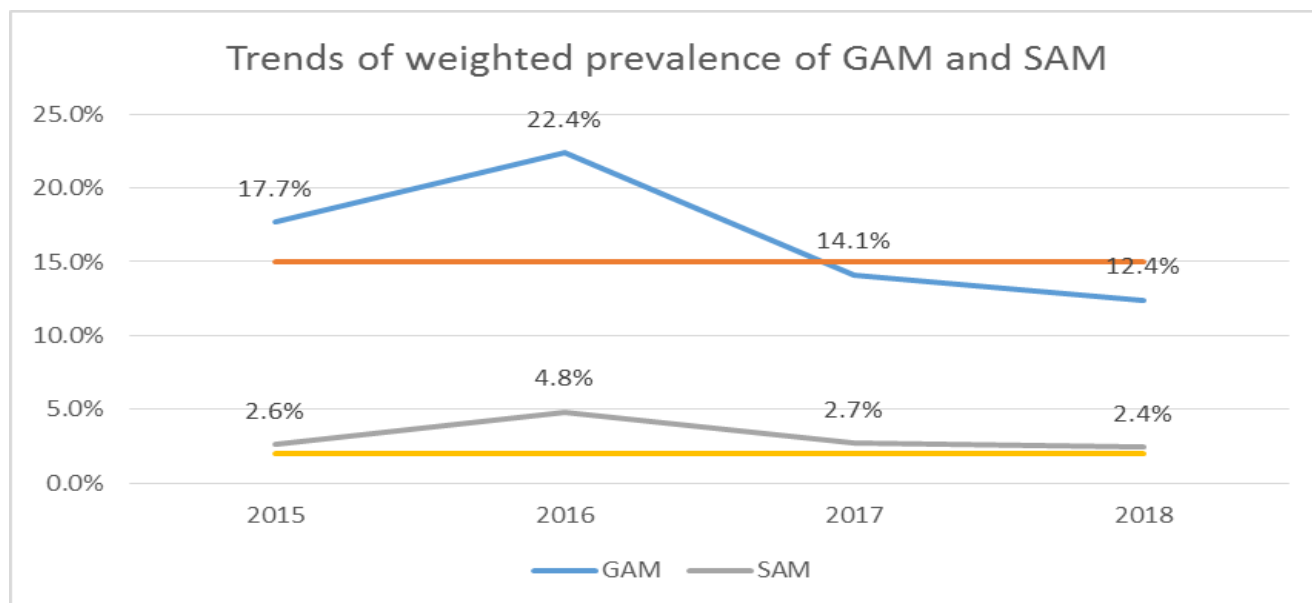
1.1.4 Nutrition program Admission



2 Interpretation of the results

The weighted prevalence of global acute malnutrition (GAM) among children aged 6-59 months shows a reducing trend from 22.4% in 2016 to 14.1% in 2017 and 12.4% in 2018 however the camp by camp prevalence did not show a significant reduction ($p>0.05$).

2.1 Trends of the Weighted Prevalence of GAM and SAM, 2015 – 2018



Similarly, the weighted prevalence of severe acute malnutrition (SAM) also reduced from 4.8% in 2016 to 2.7% in 2017 and 2.5% in 2018. No significant change ($p>0.05$) was found in any of the camps.

Figure 1 : Trends of GAM prevalence among children 6-59 months from 2015-2018

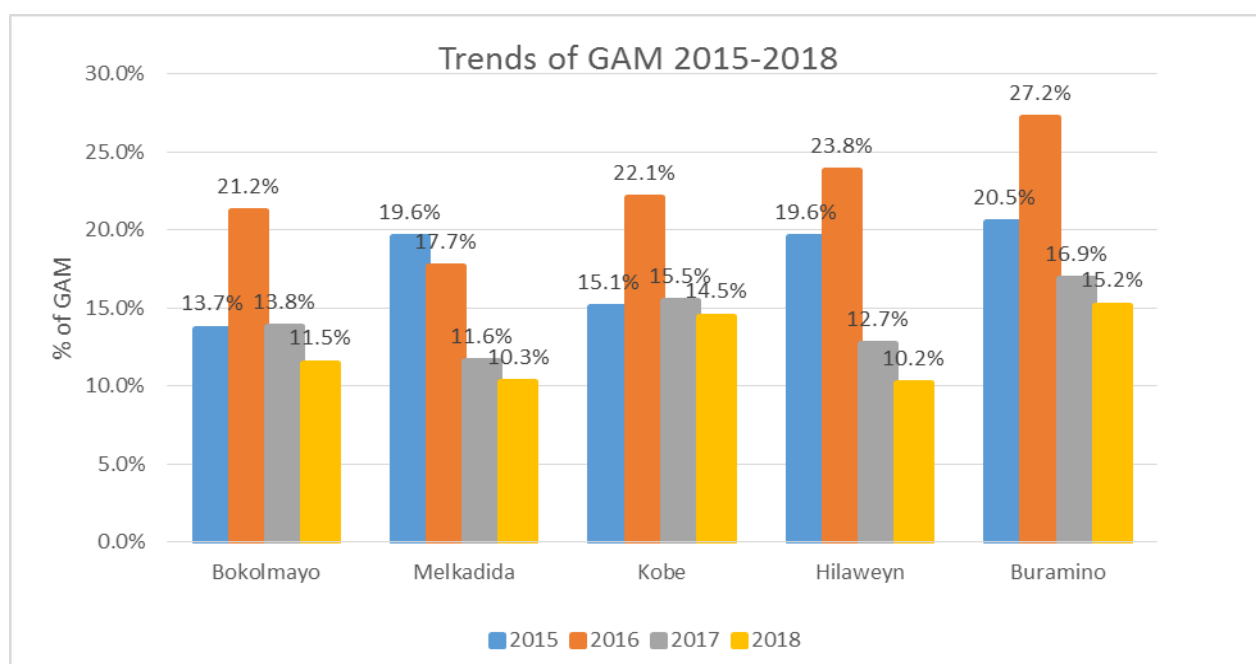
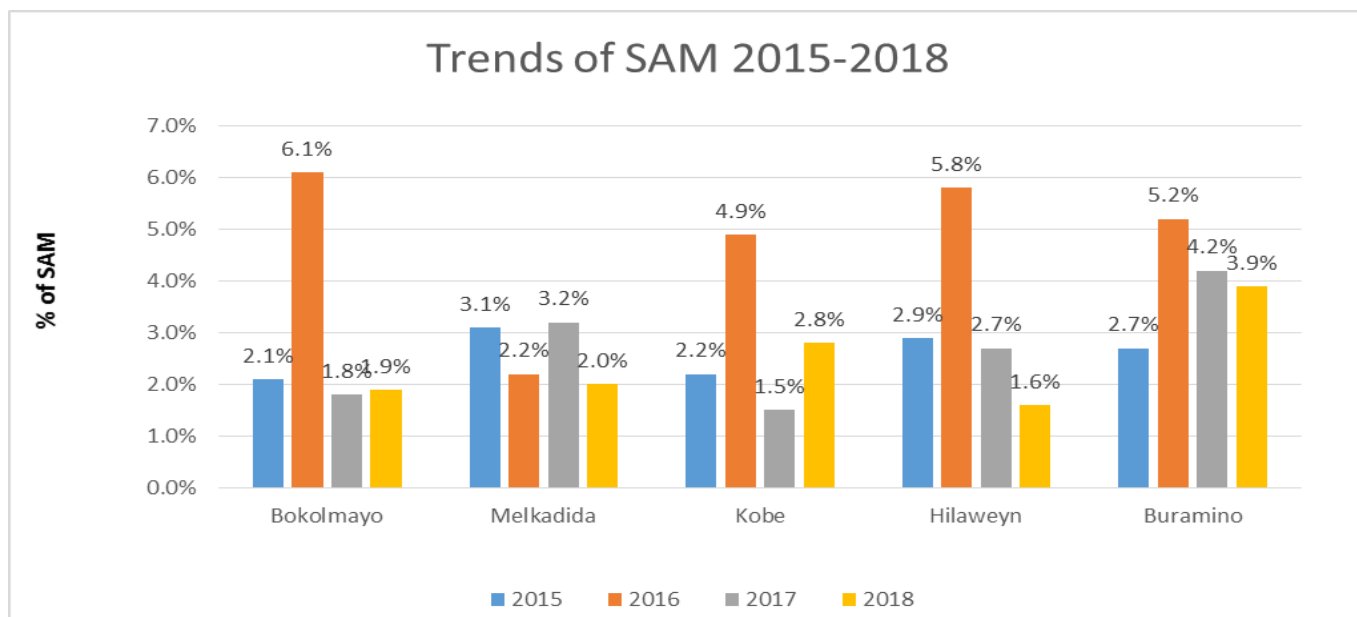


Figure 2: Trends of Severe Acute Malnutrition from 2015-2018



2.2 Anaemia:

The prevalence of anaemia among children 6-59 months decreased significantly in Hilaweyn camp from 56.9% in 2017 to 44.7% in 2018 while in Kobe there was a significant ($p < 0.05$) increase from 38.0% in 2017 to 60.3% in 2018. In all the other camps, there was no significant change in the prevalence of anaemia among children.

Among non-pregnant women of reproductive age (15-49 years) the weighted prevalence of anaemia increased significantly from 34.8% in 2017 to 48.8% in 2018. However in both Melkadida and Kobe camps Anaemia prevalence increased significantly from 24.3% to 37.2% and from 28.1% to 44.7% respectively. In Bokolmany and Buramino refugee camps there was no significant change.

Figure 4: Trends of Anaemia for children 6-59 months from 2016-2018

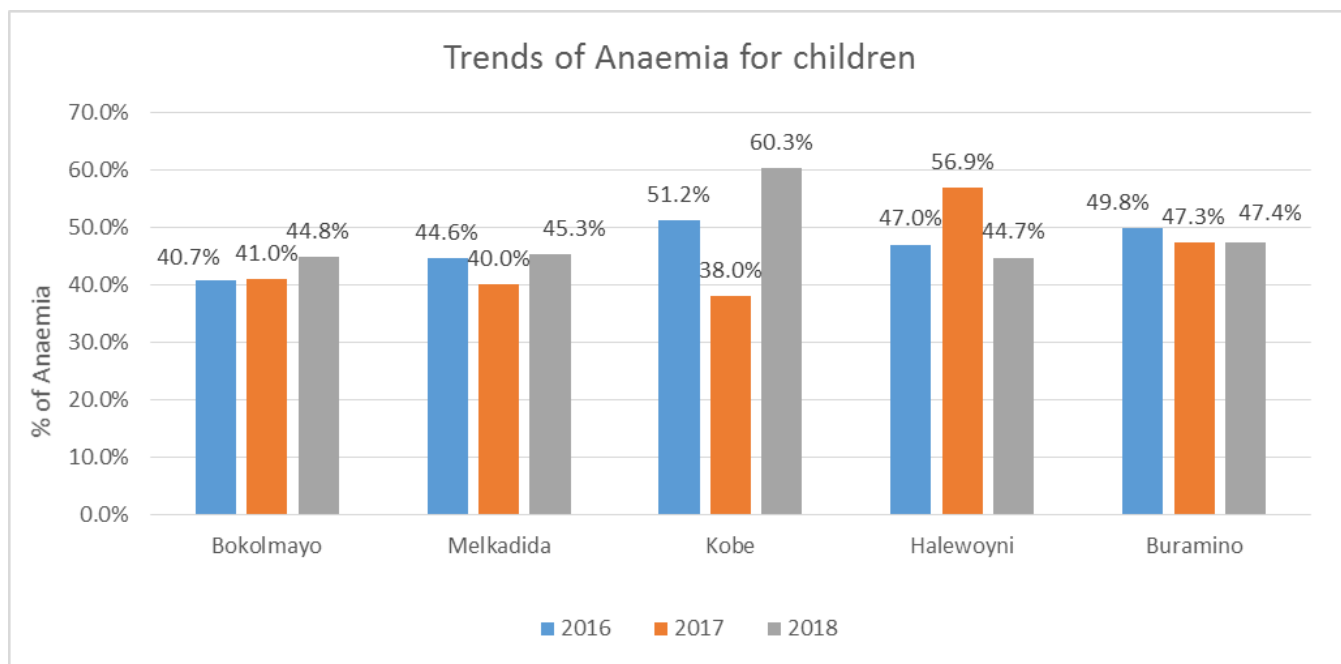
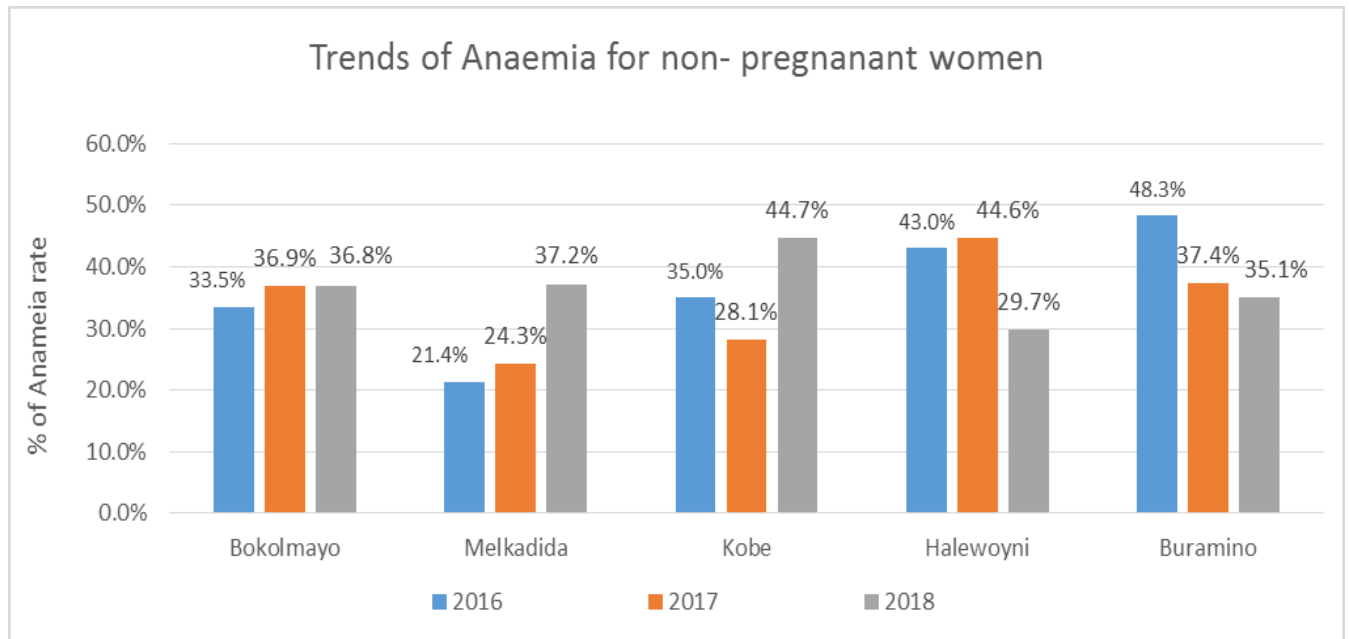


Figure 5: Trends of Anaemia for non-pregnant (15-49 years) from 2016-2018



2.3 Public health related

Measles vaccination information obtained from recall and with EPI card for children age 9-59 months. Coverage of Measles vaccination was 99.8% in Bokolmanyoo; 100.0% in Melkadida; 88.1% in Kobe; 90.2% in Hilaweyn and 92.9% in Buramino camps. In Melkadida and Bokolmanyoo camps the coverage achieved is meeting the expected above 95% (Sphere standard).

The Coverage of Vitamin A supplementation in Bokolmanyoo, Melkadida, Hilaweyn and Buramino camps meets the recommended Sphere standard of >90%, however Kobe refugee camp was below this standard (see figure 7)

Figure 6: Trends of Measles vaccination for children 9-59 months from 2016-2018

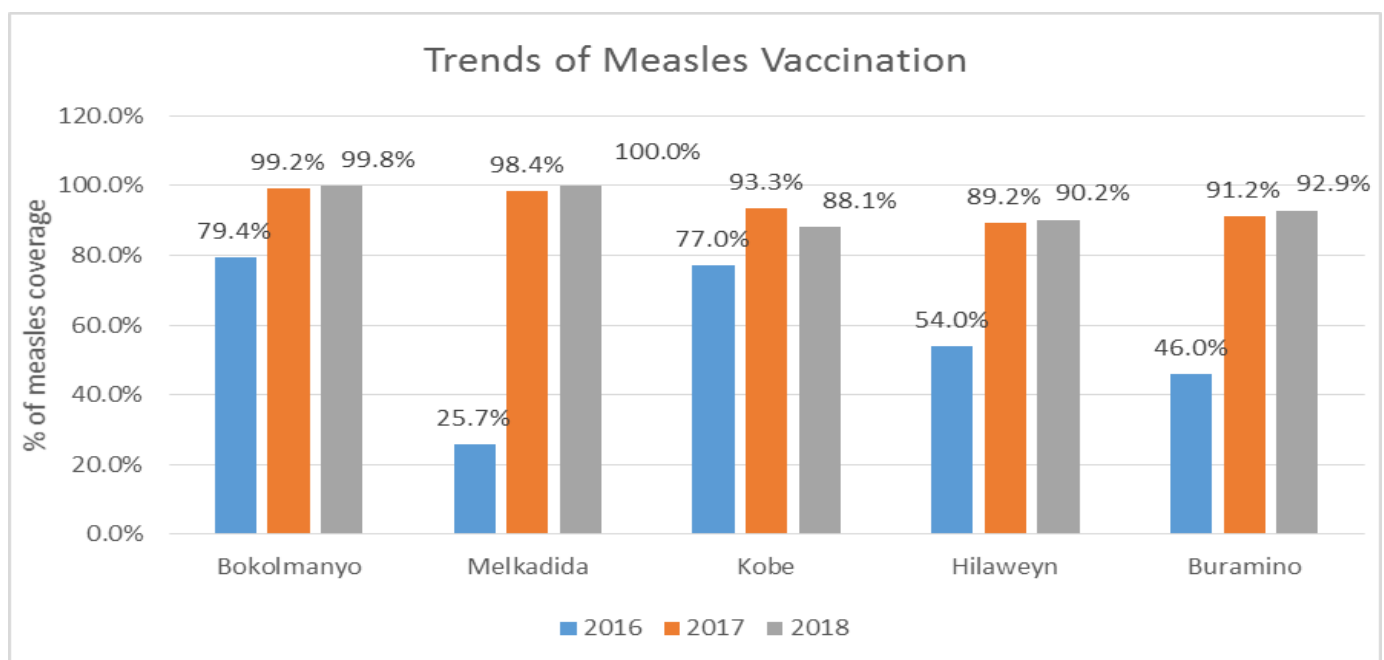
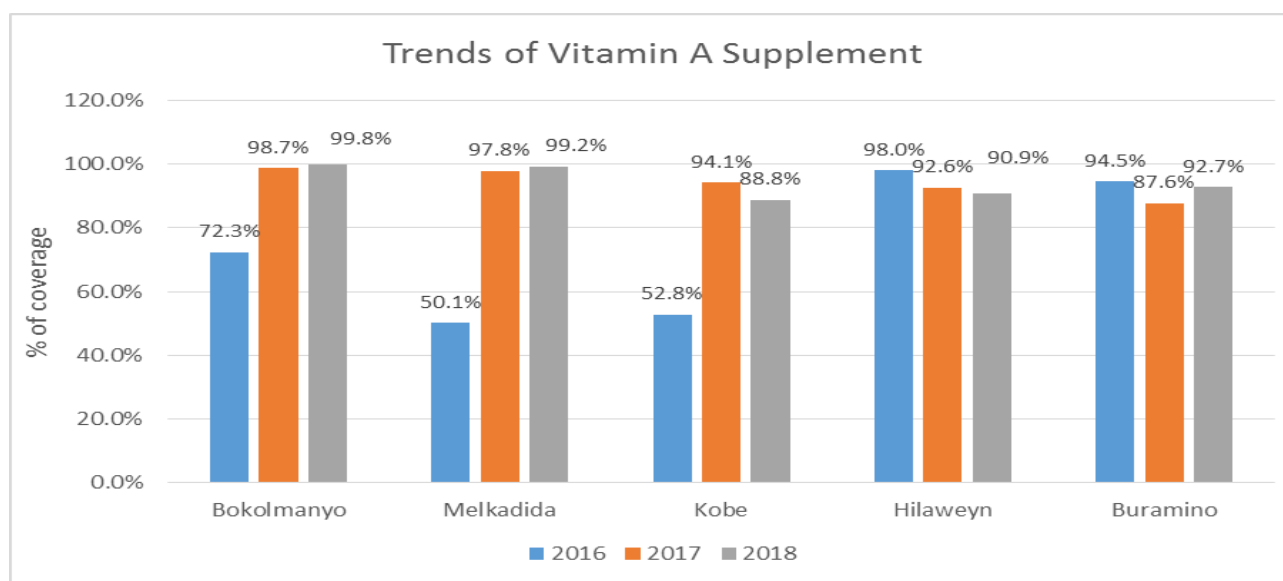


Figure 7: Trends of Vitamin A supplementation for children 6-59 months from 2016-2018



2.4 Nutrition program

SMART methodology is not the ideal for collecting information on coverage of nutrition program mostly due to the relatively small sample sizes used however data is collected to give an idea on the enrolment coverage in nutrition program. In the BSFP for children aged 6-35 months, a coverage ranging from 71.9-87.5% was achieved. A lower coverage of 23.1-47.4% was achieved for children (36-59 months) in wet school feeding program. In the TFP the enrolment coverage of severe acute malnourished children was 0%-33% and that in TSFP for moderately acute malnourished children was 23.3-50%. This is far below the standard of >90% for refugee settings.

2.5 Food security:

Proportion of households with ration cards was 99.5% in Bokolmany, 99.7 in Melkadida and 100% in Buramino, Kobe and Hilaweyn camps. The number of days that the general food ration lasted out of 30 days was 20.6 days on average (range 19.5 to 21.5 days).

2.6 WASH

The proportion of households using improved drinking water source 100.0% in all camps and proportion of households satisfied with drinking water supply above 97.0% in all camps. The average liters per person per day consumed was greater than the sphere standard (20l/p/d) in all camps.

2.7 Possible contributing factors for reduction in the prevalence of global acute malnutrition (GAM)

- Use of an elevated MUAC screening in the blanket supplementary feeding centers; for early identification of children with acute malnutrition.
- Improved and integrating infant and young child feeding (IYCF) with other primary health sectors (delivery, mother child health clinic, EPI).
- Continued provision and use of Super cereal plus for Blanket supplementary Feeding program children 6- 35 months.
- Improved nutrition program monitoring (OTP/SC, TSFP, BSFP and wet feeding program) and a stable health status of the population.

- UNHCR support to the nutrition project partners to increase number of nutrition staffing, as compared to earlier (2015 and 2016).
- Timely distribution of the general food ration distribution (GFD), despite the ration cut in cereals and removal of sugar.

2.8 Areas of concern for action

- Reduced staffing in the nutrition programme especially for the preventive aspects after budget reduction.
- Low coverage of the blanket supplementary feeding program at the nutrition centers (6-35 months) and the school feeding programme (36-59 months).
- An increasing trend of anaemia among children and women of reproductive age group in an area with no malaria and limited worm infestation.
- Relatively high prevalence of SAM with good access to nutrition centers except in Buramino camp where there are only two nutrition centers.
- Continued general food ration cuts and removal of food commodities from time to time.
- Poor introduction of solid and semi-solid foods to children at 6-8 months. Also 13-23% of the children across all the camps are reportedly bottle fed increasing their exposure to disease causing agents.
- Negative coping mechanisms especially in Buramino, Hilaweyn and Kobe where 59.2%, 61.2% and 39.1% of the households reportedly reduce frequency and quantity of meals, above 60% of households reportedly borrow food.

3 Introduction

Dollo Ado district hosts Somali refugees in five refugee camps of Melkadida; Bokolmany, Melkadida, Kobe, Hilaweyn and Buramino. The first camp, Bokolmany was opened in Oct 2009 and followed Melkadida in 2010. In 2011, there was a major influx as a result of insecurity in Somalia, resulting in the establishment of Kobe, Hilaweyn, and Buramino camps in June 2011, August 2011 and November 2012 respectively. Refugees continue to arrive in small numbers since 2011. Currently, the total population is 217,494 with 21,010 under-five children as of 31 March 2018 (source: UNHCR ProGres).

The prevalence of global acute malnutrition (GAM) in all refugee camps has remained above the UNHCR acceptable level (10.0%) while the trends are shows impressive improvements in the nutritional status over the past two years. The weighted prevalence of GAM reduced from 22.4% in 2016 to 12.4% in 2018. Prevalence of severe acute malnutrition also shows a reducing trend from 4.8% in 2016 to 2.4% in 2018.

Anaemia prevalence has remained above 40% among children aged 6-59 months (40% indicates a high public health significance). Weighted prevalence of anaemia has been and remains high; 46.6% in 2016, 44.9% in 2017 and 48.8% in 2018, which indicates a possibly worsening situation.

3.1 Nutrition Situation

Nutrition services and activities in the camps at the time of the surveys included:

- Outpatient and inpatient therapeutic feeding programmes for Severely Acute Malnourished (SAM) cases.
- Targeted Supplementary Feeding Programmes (TSFP) for Moderately Acute Malnourished (MAM) children 6-59 months, Pregnant and Lactating Women (PLW) and patients with chronic illnesses such as TB and HIV.
- Blanket Supplementary Feeding Programme (BSFP) for all children 6-35 months (dry ration) and children 36-59 months (wet feeding program) and Pregnant and Lactating Women (PLW) regardless of nutritional status they are benefiting as protective measures.
- Infant and Young Child Feeding (IYCF) support and promotion programme.
- Periodic mass MUAC screening of children 6-59 months using a two-step screening which includes weight for height measurements for children found at risk of acute malnutrition.

3.2 Food Security

Refugees in the Melkadida camps are mainly dependent on the general food ration which is provided by WFP with limited access to additional sources of food/income. At the time of the survey, the General Food Distribution (GFD) provided to refugees comprised five out of 6 food items with less cereals than planned due to funding shortages (Table 1).

Table 5: Food basket contents of the general ration during the survey at Melkadida refugee camps

Ration Type	Amount per person per day in gram	Energy (g)	Protein	Fat	iron	Vit C
Cereal (Sorghum)	367	1,229	40.4	11.0	16.5	0
Pulses	50	168	10	0.6	4.1	0
Vegetable oil	30	266	0	30	0	0
Corn Soya Blend (CSB+)	33	132	5.9	2.0	4.2	16
Sugar	0	0	0	0	0	0
Iodized salt	5	0	0	0	0	0
Ration total	485	1,794	56.3	43.6	24.8	16
% of requirements supplied by ration		85%	107%	109%	113%	58%
Milling allowance	83	278	9.1	2.5	3.7	0.

3.3 Health situation:

There are comprehensive health services in all refugee camps; curative services (OPD, IPD, and Paediatric clinic) and preventive which include EPI for children aged 0-59 months and vitamin A supplementation, reproductive health (RH), environmental sanitations and water provision.

3.4 Main Survey Objective:

The main objective of the nutrition survey was to assess the general health and nutrition status of refugees, mortality indices and formulate workable recommendations for appropriate nutritional and public health interventions.

2.4.1 Primary objectives of the survey:

- To determine the prevalence of acute malnutrition among children 6-59 months.
- To determine the prevalence of stunting among children 6-59 months.
- To assess the two-week period prevalence of Diarrhoea among children 6-59 months.
- To assess the prevalence of Anaemia among children 6-59 months and women of reproductive age (non-pregnant, 15-49 years).
- To determine the coverage of measles vaccination among children 9-59 months.
- To determine the coverage of vitamin A supplementation in the last six months among children 6-59 months and postnatal women.
- To investigate IYCF practices among children 0-23 months.
- To determine the coverage of ration cards and the duration the GFD ration lasts for recipient households.
- To determine the extent to which negative coping strategies are used by households.
- To assess household dietary diversity.
- To determine the population's access to, and use of, improved water, sanitation and hygiene facilities.
- To establish recommendations on actions to be taken to address the situation

2.4.2 Secondary objectives:

- To determine the enrolment coverage of selective feeding programs for children 6-59 months (OTP/SC, TSFP, and BSFP).
- To determine enrolment into Antenatal Care clinic and coverage of iron-folic acid supplementation in pregnant women.
- To assess crude and under-five mortality rates in the camps in the last three months.

3 Methodology:

This was a cross-sectional study in which a simple random sampling technique was employed in all the surveyed camps. All houses were physically labelled with unique numbers per zone/ block/ in each camp. Empty or abandoned houses were excluded from the sampling frame.

3.4 Sample size:

The sample size was calculated by using emergency nutrition assessment (ENA) software version 9th July 2015 from Standardized Monitoring and Assessment of Relief and Transitions (SMART) and based on UNHCR SENS methodology version 2 (2013). In each camp, the sample size was calculated based on the previous year's (2017) upper confidence interval for GAM prevalence. The average household size was also used from the actual counting household that are considered to better reflect reality in the ground. The total population and under five year children were estimated from the

UNHCR ProGres database. A non-response rate of 5% also used in all camps.

Table 5: Sample size from ENA for SMART output based on parameters indicated in the table

	Bokolmanyoy	Melkadida	Kobe	Hilaweyn	Buramino
Estimated prevalence (%) in 2017	13.8%	11.9%	15.6%	12.2%	16.9%
+ Desire precision (%)	+ 4	+ 4	+ 4.5	+ 4	+ 4.5
Average household size	5.1	6.3	5.4	5.9	5.4
% of children under 5 years (counting)	15.8%	15.8%	13.5%	12.5%	13.0%
% Non-response households	5%	5%	5%	5%	5%
Number of household (HH Count a week of prior the data collection)	8,405	5,435	8,788	8,415	7,636
Number of the population (ProGress)	43,112	34,177	47,492	49,788	41,087
Households to be included for Anthropometry and Health module	396	281	384	403	392
Number of children to be included for Anthropometry and Health module	273	239	239	254	253

Training on SENS components, techniques of data collection and teamwork in the camp was organized and conducted for survey supervisors and enumerators. Training was arranged in one venue for four days, followed by one additional day for the standardization and pilot test in the field.

A total of 72 enumerators were selected from partners (ARRA, IMC, IRC, MSF and *Humedica*) and assigned into two survey groups; one group was assigned to Buramino and Hilaweyn refugee camps and the second group was assigned to Melkadida and Bokolmanyoy. However, enumerators for Kobe camp were selected and assigned from the two groups. Each survey group comprised 36 persons and made 6 teams. Each survey team was comprised of six individuals; two for anthropometric measurements, one for the household questionnaire (WASH and Food security), one for the mortality data collection and also team leader, one for haemoglobin measurer and one assistant. The teams were mobilized into two locations as per their respective locations and data was collected simultaneously from two camps at a time.

During data collection, supervisors were assigned to each team. The overall coordination of the survey was led by the UNHCR country office nutritionist who initially supervised one camp along with colleagues from UNHCR Melkadida. Thereafter, the team split into two groups for supervision of the rest of the camps. At the end of data collection from respective camps, teams were meeting together in the evening for reviewing the data to ensure quality of information is maintained.

All eligible children aged 0-59 months from all selected households were included in the assessment of anthropometry, measles vaccination and vitamin A supplementation coverage, enrolment in the nutrition program, diarrhoea recall over a period of the previous two weeks, measurement of haemoglobin and infant and young child feeding (0-23 months) and WASH. Half of the selected households were assessed on food security, haemoglobin test in women of reproductive age (15-49 years, non-pregnant), Antenatal Care (ANC) coverage and Iron folate supplementations tools administered.

Different recall periods were used in different camps for collection of mortality data. 1st January 2017 was chosen as a recall date as this was remembered easily by all households. Consequently, the recall period was 74 days for Kobe camp, 81 days for Melkadida and Buramino camps, 88 days Bokolmanyoy and Hilaweyn camps.

Each survey team explained the purpose of the survey and issues of confidentiality and obtained verbal consent before proceeding with the survey in the selected households. The collected data were checked on daily basis and transferred to the server for plausibility check and drawn feedback for the team to correct errors and ensure data quality.

3.5 Questionnaires:

The global SENS questionnaire was used as a component of the NCA which had additional questions. During the training the enumerators were trained on the Somali translation of the questions after which the questionnaire was piloted.

Six module questionnaires were designed to provide information on the relevant indicators of the different target groups. The seven modules questionnaire covers the following areas:

3.6 Individual -level indicators

- i) **Module 1: Anthropometry and Health:** children aged 6-59 months Information will be collected anthropometry parts like Weight; Height / Length; Oedema; MUAC; Child enrolment for treatment in selective feeding programme; Measles vaccination; Vitamin A supplementation in last 6 months; and Diarrhoea in last 2 weeks. SENS with any survey design, all eligible children within all of the sampled households were assessed.
- ii) **Module 2:**
 - a) **Children Anaemia:** children aged 6-59 months the questioner focused sex, age and Haemoglobin concentration. The sample size should be selected according Anaemia assessment scenario 2 which is with any survey design, all eligible children from all randomly selected households will be assessed for anaemia.
 - b) **Women Anaemia:** women of reproductive age (15-49 years) the questioner focused to identify pregnancy status; ANC enrolment, and iron and folic acid pills receiving (pregnant women only); and Haemoglobin concentration (non-pregnant women). With any anaemia scenario and any survey design, half of the sampled households (sub-sample) should be randomly selected and all eligible women found in these households should be assessed for anaemia.
- iii) **Module 3: IYCF:** children aged 0-23 months, the questioner focused on initiation of breastfeeding, exclusivity breastfeeding and duration; feeding practices; and Bottle feeding. With any survey design, all eligible children within all of the sampled households were assessed for IYCF practices.

3.7 Household -level indicators

- i) **Module 4: Food Security:** all persons of concern, the questioner focused access to food distribution; duration of the general food ration; Use of negative coping strategies; and Level of household dietary diversity. SENS recommended with any survey design, half of the households (sub-sample) should be randomly sampled for the assessment of food security.
- ii) **Module 5: WASH:** all persons of concern; the questioner focused Access to improved drinking water sources; Storage of water; Quantity of water used per household and Type of excreta disposal facility used. SENS recommended when using simple or systematic random sampling as the survey design, half of the sampled households should be randomly selected for the assessment of WASH indicators.
- iii) **Module 6: Mortality-** Cluster or an individual-level mortality form will be used based on ENA for SMART software. SENS /SMART recommended with any survey design, all sampled households will be assessed.

3.8 Measurement methods

- a) **Sex of children:** gender will be recorded as male or female.
- b) **Birth date or age in months for children 0-59 months:** the exact date of birth (day, month, and year) will be recorded from either an EPI card, child health card or birth notification if available. If no reliable proof of age is available, age was estimated in months using a local event calendar or by comparing the selected child with a sibling whose ages are known, and will be recorded in months on the questionnaire/Phone. If the child's age cannot absolutely be determined by using a local events calendar or by probing, the child's length/height will be used for inclusion; the child has to measure between 65 cm and 110 cm. Note that the UNHCR Manifest will not be used to determine age of children U5 years because it does not reflect the correct birthdate.
- c) **Age of women 15-49 years:** Reported age will be recorded in years.
- d) **Weight of children 6-59 months:** measurements will be taken to the closest 100 grams using an electronic scale (SECA scale) with a wooden board to stabilise it on the ground. Clothes will be removed and only very light underwear will be allowed. If this is a problem, teams will be instructed to take weight inside of the surveyed tent/house. The double-weighing technique will be used to weigh young children unable to stand on their own or unable to understand instructions not to move while on the scale.
- e) **Height/Length of children 6-59 months:** children's height or length will be taken to the closest millimetre using a wooden height board (Shorr@ Productions). Due to limited age documentation available in the surveyed area, height will be used rather than age to decide on whether a child should be measured lying down (length) or standing up (height). Children less than 87cm will be measured lying down, while those greater than or equal to 87cm will be measured standing up.
- f) **Oedema in children 6 months-59 months:** bilateral oedema will be 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. All oedema cases reported by the survey teams have to be verified by the survey coordinators and will be referred immediately after.
- g) **MUAC of children 6 months-59 months:** MUAC will be measured at the mid-point of the left upper arm between the elbow and the shoulder and taken to the closest millimetre using a standard tape. MUAC will be recorded in centimetres.
- h) **Child enrolment in selective feeding programme for children 6-59 months:** selective feeding programme coverage will be assessed for the outpatient therapeutic programme and for the supplementary feeding programme. This should be verified by card or by showing images of the products being given in each programme (for e.g. Plumpy Nut, CSB++ sachet).
- i) **Measles vaccination in children 6-59 months:** measles vaccination will be assessed by checking for the measles vaccine on the EPI card if available or by asking the caregiver to recall if no EPI card was available. For ease of data collection, all children aged 6-59 months will be assessed for measles but analysis will only be done on children aged 9-59 months.
- j) **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 will be recorded from the EPI card or health card if available or by asking the caregiver to recall if no card is available. A vitamin A capsule image will be shown to the caregiver when asked to recall.
- k) **Haemoglobin concentration in children 6-59 months and women 15-49 years:** Hb concentration will be 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 (HemoCue, Sweden). If severe anaemia is detected, the child or the woman will be referred for treatment immediately.

- l) Diarrhoea in last 2 weeks in children 6-59 months:** an episode of diarrhoea is defined as three loose stools or more in 24 hours. Caregivers will be asked if their child had suffered episodes of diarrhoea in the past two weeks.
- m) ANC enrolment and iron and folic acid pills coverage:** if the surveyed woman is pregnant, it will be assessed whether she is enrolled in the ANC programme and is receiving iron-folic acid pills. An iron-folic acid pill image will be shown to the pregnant woman when asked to recall.
- n) Infant and young child feeding practices in children 0-23 months:** infant and young child feeding practices will be assessed based on UNHCR Standardised Expanded Nutrition Survey Guidelines for Refugee Populations (2014).
- o) Referrals:** Children aged 6-59 months will be referred to health post for treatment when MUAC was < 12.5 cm, when WHZ < -2 SD, when oedema is present, or when haemoglobin is < 7.0 g/dl. Women of reproductive age will be referred to the hospital for treatment when haemoglobin was < 8.0 g/dl

3.9 Data Collection

The data was collected by using smartphone with pre-installed Open Data Kit facility (ODK) Version 1.4.2 apps; and recording on paper for key measurements were made for cross checking the data and retain backup to avoid if any risks associated with the mobile phone persists.

Each team was provided with a list of households to be surveyed on a daily basis, and advised to follow the below precaution measures:

- If an individual or an entire household was not present the team had to revisit once at the end of the day. If still was unsuccessful, the individual or the household was recorded as absent and they were not replaced with another household or individual.
- If the individual or an entire household refused to participate then it was considered as a refusal and the individual or the household were not replaced with another.
- If a selected child was disabled with a physical deformity preventing certain anthropometric measurements, the child was still included in the assessment of the other indicators.
- If it was determined that a selected household did not have any eligible children, the relevant questionnaires were administered to the household.
- If a selected child was found to be admitted in the nutrition or health centre the team visited the centre to take the measurements and the child's information. If it was impossible to visit the centre, the child was given an ID number and considered as absent and not replaced. A note was made that the child was in a nutrition/health centre at the time of the survey.

This recommendation differs from the standard SMART recommendation which considers nutrition surveys that are usually conducted in large geographic areas and where it is often not possible to go to the nutrition or health centre for measurement of the admitted children.

3.10 Case definitions and calculations

Mortality: The crude death rate (CMR) was expressed as the number of deaths per 10,000 persons per day. The formula below was applied:

$$\text{Crude Death Rate (CMR)} = 10,000/a * f / (b+f/2-e/2+d/2-c/2)$$

Where:

a = Number of recall days

b = Number of current household residents

c = Number of people who joined household during recall period

d = Number of people who left household during recall period

e = Number of births during recall period

f = Number of deaths during recall period

Malnutrition in children 6-59 months: Acute malnutrition was defined using weight-for-height index values or the presence of edema and classified as show in the table below. Main results are reported after analysis using the WHO 2006 Growth Standards. Results using the NCHS 1977 Growth Reference are reported in **Appendix 2**.

Table 6: Definitions of acute malnutrition using WFH and/or oedema in children 6–59 month

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 below. Main results are reported according to the WHO Growth Standards 2006. Results using the NCHS Growth Reference 1977 are reported in.

Table 7: 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 following cut-offs. Main results are reported according to the WHO Growth Standards 2006. Results using the NCHS Growth Reference 1977 are reported in **Appendix 1**.

Table 8: 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 were used to define malnutrition according to the following cut-offs in children 6-59 months:

Table 9: Low MUAC values cut-offs in children 6-59 months

Categories of low MUAC values	
<12.5 cm:	Global acute malnutrition
≥ 11.5 cm and <12.5 cm:	Moderate acute malnutrition
< 11.5 cm:	Severe acute malnutrition

Child enrolment in selective feeding programme for children 6-59 months: Feeding programme coverage is estimated during the nutrition survey using the direct method as follows (reference: Emergency Nutrition Assessment: Guidelines for field workers. Save the Children. 2004):

Coverage of SFP programme (%) =

100 x No. of surveyed children with MAM according to SFP admission criteria who reported being registered in SFP

No. of surveyed children with MAM according to SFP admission criteria

Coverage of TFP programme (%) =

100 x No. of surveyed children with SAM according to OTP admission criteria who reported being registered in OTP

No. of surveyed children with SAM according to OTP admission criteria

Infant and young child feeding practices in children 0-23 months

Infant and young child feeding practices were assessed as follows based on the UNHCR SENS IYCF module (Version 1.3 (March 2012)).

Timely initiation of breastfeeding in children aged 0-23 months:

Proportion of children 0-23 months who were put to the breast within one hour of birth

Children 0-23 months who were put to the breast within one hour of birth

Children 0-23 months of age

Exclusive breastfeeding under 6 months:

Proportion of infants 0-5 months of age who are fed exclusively with breast milk: (including expressed breast milk or from a wet nurse, ORS, drops or syrups (vitamins, breastfeeding minerals, medicines))

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

Infants 0-5 months of age

Continued breastfeeding at 1 year:

Proportion of children 12-15 months of age who are fed breast milk

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

Children 12-15 months of age

Introduction of solid, semi-solid or soft foods:

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

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

Infants 6-8 months of age

Children ever breastfed:

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

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

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

Children 20-23 months of age

Consumption of iron rich or iron fortified foods in children aged 6-23 months:

Proportion of children 6-23 months of age who receive an iron-rich or iron-fortified food that is specially designed for infants and young children, or that is fortified in the home.

Children 6-23 months of age who received an iron-rich food or a food that was specially designed for infants and young children and was fortified with iron, or a food that was

Fortified in the home with a product that included iron during the previous day

Children 6-23 months of age

Bottle feeding:

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

Anaemia in children 6-59 months and women of reproductive age:

Anaemia was classified according to the following cut-offs in children 6-59 months and non-pregnant women of reproductive age. Pregnant women were not included in this surveys for the assessment of anaemia as recommended by UNHCR {pregnant women are not to be included in routine nutrition surveys for the assessment of anaemia due sample size issues, (usually a small number of pregnant women are found) as well as the difficulties in assessing gestational age in pregnant women)}.

Table 10: Definition of anaemia (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

Classification of public health problems and targets

Mortality: The following thresholds are used for mortality.

Table 11: Mortality benchmarks for defining crisis situations (NICS, 2010)

Emergency threshold	U5MR thresholds	
CDR > 1/10,000 / day	CDR > 2/10,000 / day	very serious
CDR > 2 /10,000 /day	CDR > 4 /10,000 /day	out of control
CDR > 5 /10,000 /day	CDR > 10 /10,000 /day	major catastrophe

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

Table 12: Classification of public Health significance for children under 5 years of age

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

Selective feeding programmes:

Table 13: Performance indicators for selective feeding programmes *

	Recovery	Case fatality	Defaulter rate	Coverage		
				Rural areas	Urban areas	Camps
TSFP	>75%	<3%	<15%	>50%	>70%	>90%
TFP	>75%	<10%	<15%	>50%	>70%	>90%

* UNHCR and WFP selective feeding guideline 2011 and SPHERE standards for performance

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

Vitamin A supplementation coverage: UNHCR performance indicator; target for vitamin A supplementation coverage for children aged 6-59 months by camp, country and region should be >90%.

Anaemia data: UNHCR Strategic Plan for Nutrition and Food Security (2008-2010) states that the targets for the prevalence of anaemia in children 6-59 months of age and in women 15-49 years of age should be low i.e. <20%. The severity of the public health situation should be classified according to WHO criteria as shown in Table 14 below.

Table 14: Classification of public health significance (WHO 2000)

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

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

Table 15: UNHCR WASH Programme Standards

UNHCR Standard	Indicator
Average quantity of water available per person/day	> or = 20 litres
Latrine provision	20 people/latrine
Soap provision	> 250 g per person per month

4. Training, coordination and supervision

The surveys were coordinated by experts from UNHCR, ARRA and WFP with supervision assistance from the health and nutrition managers from all the camps.

Supervisors training were conducted for a total of 12 participants for three days before the enumerator for understanding the each modules / questionnaires' and how to used ODK on the mobile. A total of 72 enumerators were selected from partners and grouped into two survey teams; 36 participants were from Buramino and Hilaweyn camps and the second 36 participants were from Melkadida and Bokolmany. Kobe camp all teams or two groups conduct data collection before splitting the group.

Training was arranged in two separate venues and training was conducted for four days, followed by an additional day for the pilot test in the field. 12 community incentive workers (six per team) joined the survey team in the camps. One survey team was comprising of a subset of six separate teams comprising of six individuals per team arranged two for anthropometric measurements, one for household questionnaire, one for mortality data collection, one for haemoglobin data and one assistance. The teams were mobilized into two locations as per their respective locations and data were collected simultaneously from two camps at a time. During data collections supervisors were assigned in each team. The overall coordination of survey was led by UNHCR, ARRA and WFP.

The training focused on: the purpose and objectives of the survey; roles and responsibilities of each team member, familiarization with the questionnaires by reviewing the purpose for each question; interviewing skills and recording of data; interpretation of calendar of events and age determination;

how to take anthropometric measurements and haemoglobin measurements and common errors; data collection by using Smart phone (Tablet used) and a practical session on various tools. Two mobile phone per team allocated, one for child data and women HB recording and the second for household data collection: Food security and WASH. The practical session on anthropometric measurements involved volunteer children for practice as well as a standardisation test. The practical session on haemoglobin measurements involved the trainees and trainers themselves as well as a standardisation test. For the pre-test, three households were selected for each of the teams who administered the questionnaires and took the required measurements. The data collection tools were then reviewed based on the feedback from the field pre-test.

4.1. Data collection, entry and analysis

Data collection was conducted from 14th to 30th March 2017 with an average of three to four days in each camp. Each survey team explained the purpose of the survey and issues of confidentiality and obtained verbal consent before proceeding with the survey in the selected households. The informed consent form is shown in **Appendix 5**.

Data entry was done on daily basis receiving the phones from the field. Each record was checked before transferring to the server. Some data also checked against the paper Household Listing form and either confirmed or marked to be returned to the team for correction and/or confirmation the following day. By sending the Android phones back to the teams with corrections or confirmations required, the teams received practical feedback and further learned the importance of accuracy and thoroughness in recording the measurements and responses.

Records for each questionnaire in each household were checked for completeness, consistency with HH listing form, and range of data, before being confirmed and synchronized (uploaded) from the phones to the server each evening. Records were downloaded from the server each evening as csv files to save as a back-up and minimize risk of loss of the data in case the server failed to perform the following day. Data for children 6-59 months was then transferred from the csv files into ENA for SMART software and plausibility check was done to generate report indicating quality of data collected in that particular day and subsequent feedback to team supervisors. At the end of the data collection, a complete set of data was ready for analysis. All data files were cleaned before analysis. Entries were double checked on the phone, one by one, with the original questionnaire to ensure there were no data entry errors. Duplicate entries were identified and removed. Analysis was performed using ENA for SMART and Epi Info software. The SMART plausibility report was generated for each complete set of survey data in order to check the quality of the anthropometric data and a summary of the key quality criteria is shown in **Appendix 1**.

The nutritional indices were cleaned using flexible cleaning criteria from the observed mean (also known as SMART flags in the ENA for SMART software), rather than the reference mean (also known as WHO flags in the ENA for SMART software). This flexible cleaning approach is recommended in the UNHCR SENS Guidelines. For the weight-for-height index, a cleaning window of +/- 3 SD value in SMART for ENA software version of July 2015 was used.

5. PRESENTATION OF RESULTS

5.1. RESULTS FROM BOKOLMANYO

Table 16 Demographic characteristics of the study population in Bokolmanyo

	Actual	Planned	% of Achievement
Total HHs surveyed	352	396	89%
Total population surveyed	2356	1294	182%
Total U5 surveyed	388	273	142%
Average HH size	6.7	5.1	131%
% of U5	17%	16%	104%

Table 17: Distribution of age and sex of sample

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:girl
6-17	48	43.2	63	56.8	111	26.7	0.8
18-29	54	50.9	52	49.1	106	25.5	1.0
30-41	45	47.4	50	52.6	95	22.8	0.9
42-53	38	48.1	41	51.9	79	19.0	0.9
54-59	12	48.0	13	52.0	25	6.0	0.9
Total	197	47.4	219	52.6	416	100.0	0.9

The sex ratio for boys and girls presented equally 0.9 – 1.1, which is normal trends.

5.1 Anthropometric results (based on WHO standards 2006) in Bokolmanyo:

Table 18: Prevalence of acute malnutrition based on WFH z-score and/or oedema and by sex

Indicators	95% C.I.		
	All n = 410	Boys n = 192	Girls n = 218
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(47) 11.5 % (8.7 - 14.9%)	(24) 12.5 % (8.5 - 17.9%)	(23) 10.6 % (7.1 - 15.3%)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(39) 9.5 % (7.0 - 12.7%)	(21) 10.9 % (7.3 - 16.1%)	(18) 8.3 % (5.3 - 12.7%)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(8) 2.0 % (1.0 - 3.8%)	(3) 1.6 % (0.5 - 4.5%)	(5) 2.3 % (1.0 - 5.3%)

The prevalence of oedema is 0.0 %.

Prevalence of acute malnutrition based on WFH z-score and/or oedema and by sex, there is no significant difference based on the CI indicated.

Figure 2 Distribution of weight-for-height z-scores (based on WHO Growth Standards)

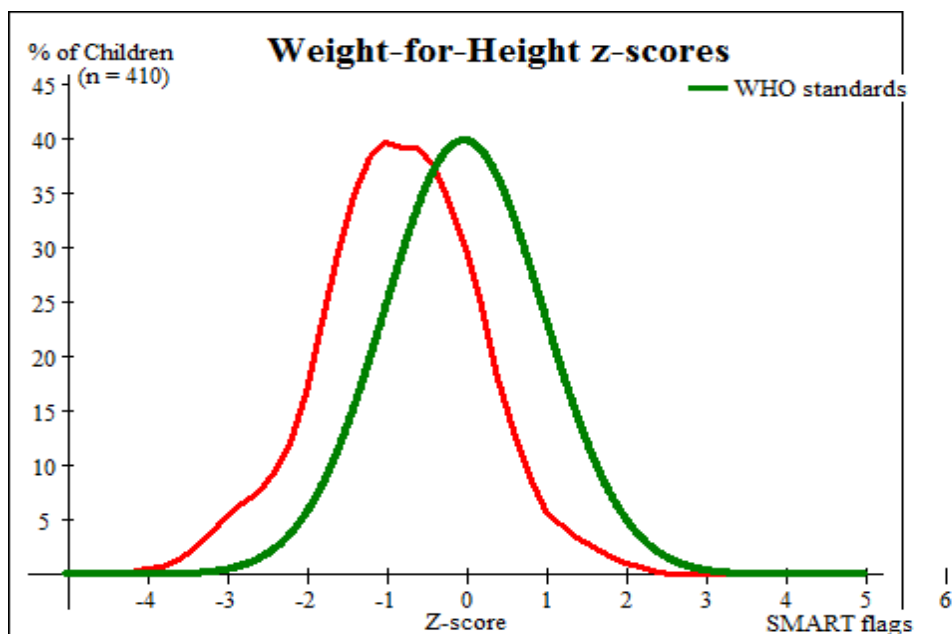


Figure 3 Trends in the prevalence of global and severe acute malnutrition based on WHO Growth Standards in children 6-59 months from 2015-2018

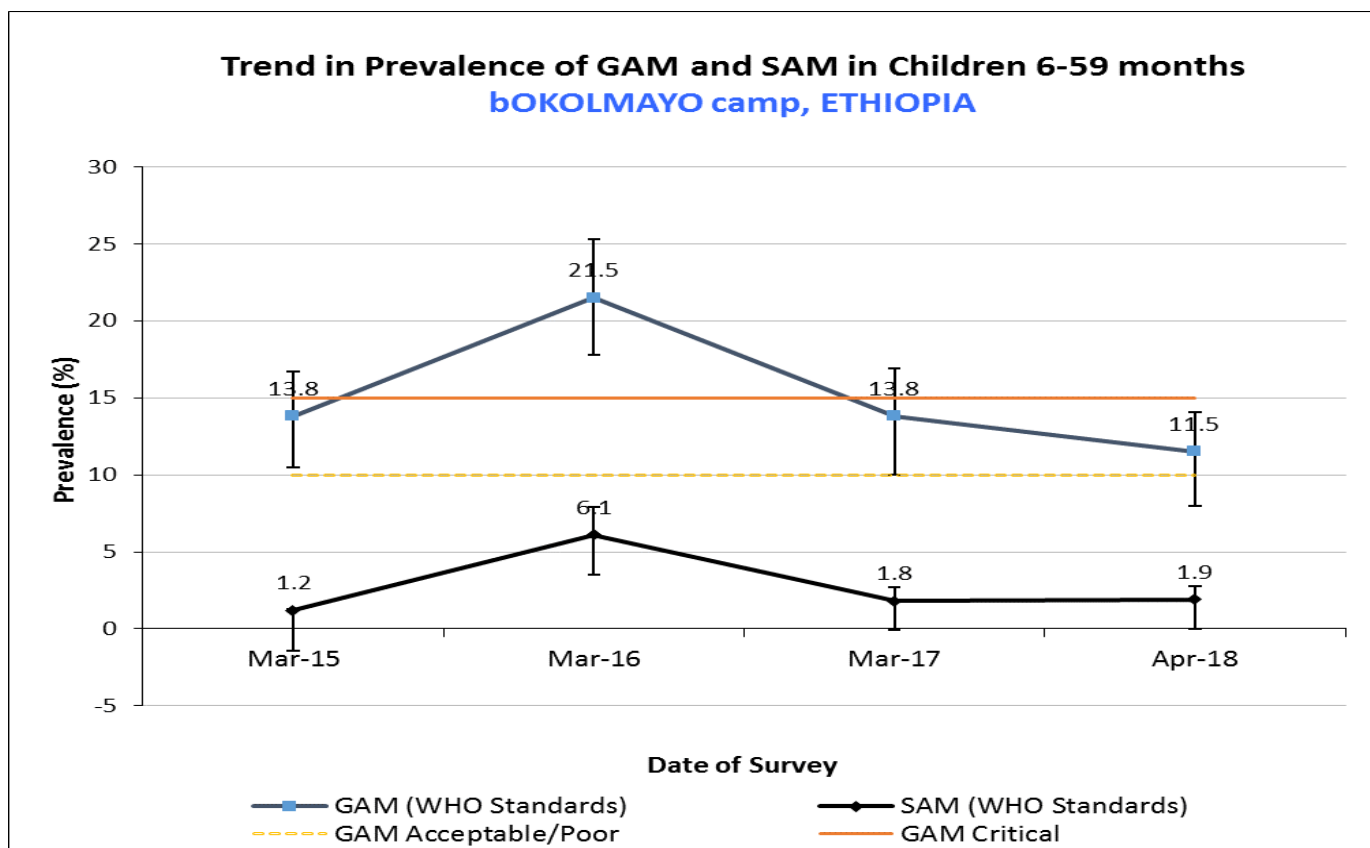


Table 19: Prevalence of acute malnutrition by age, based on WFH z-score and/or oedema

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	109	1	0.9	7	6.4	101	92.7	0	0.0
18-29	104	3	2.9	8	7.7	93	89.4	0	0.0
30-41	94	2	2.1	11	11.7	81	86.2	0	0.0
42-53	78	1	1.3	8	10.3	69	88.5	0	0.0
54-59	25	1	4.0	5	20.0	19	76.0	0	0.0
Total	410	8	2.0	39	9.5	363	88.5	0	0.0

An old group of children more affected by malnutrition which is 54-59 months.

Figure 4 prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema in Bokolmayo

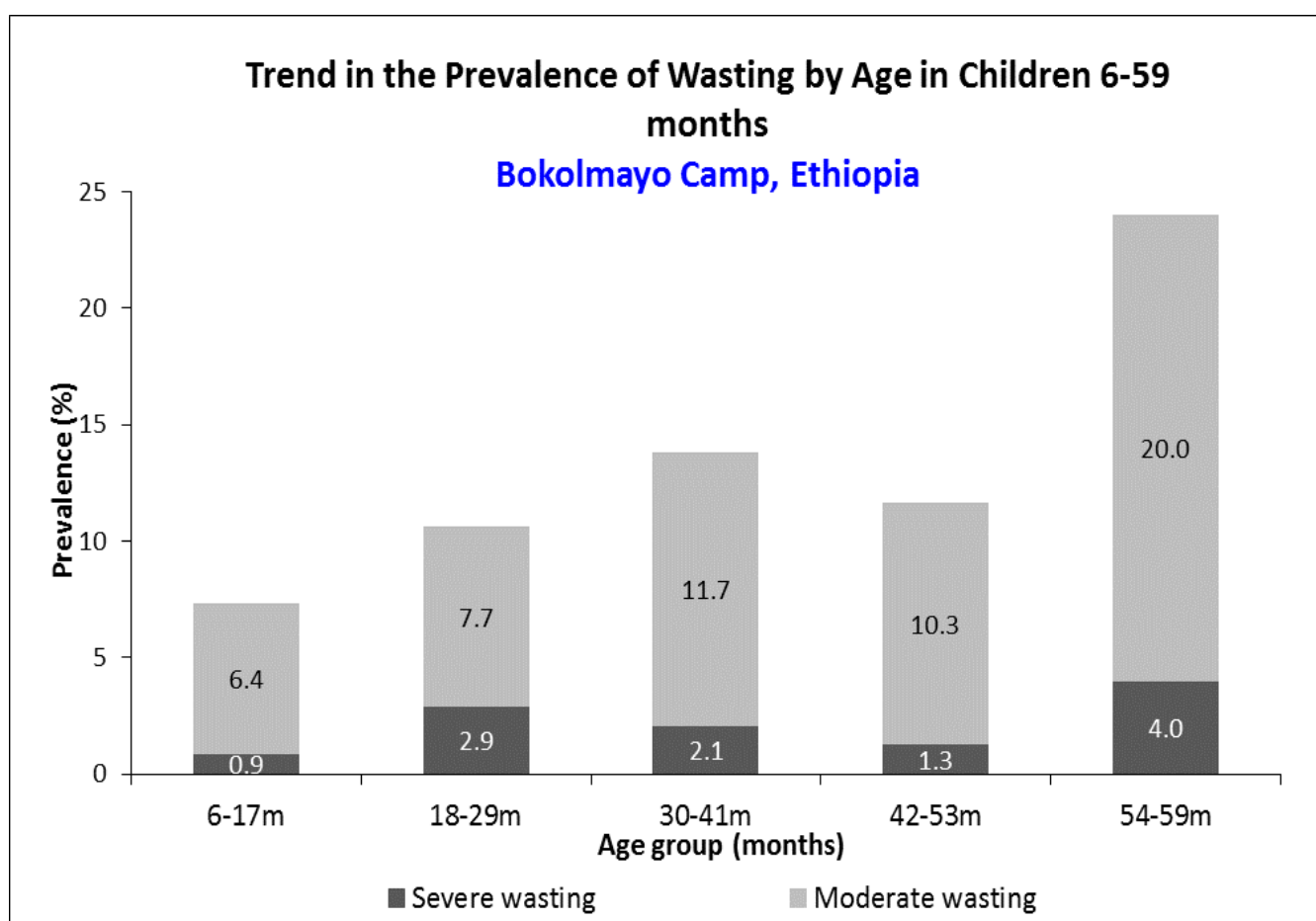


Table 20: Distribution of acute malnutrition and oedema based on weight-for-height z-scores

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 12 (2.9 %)	Not severely malnourished No. 403 (97.1 %)

Table 21: Prevalence of acute malnutrition based on MUAC cut off and/or oedema and by sex

	All n = 416	Boys n = 197	Girls n = 219
Prevalence of global malnutrition (< 125 mm and/or oedema)	(11) 2.6 % (1.5 - 4.7 95% C.I.)	(6) 3.0 % (1.4 - 6.5 95% C.I.)	(5) 2.3 % (1.0 - 5.2 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and ≥ 115 mm, no oedema)	(8) 1.9 % (1.0 - 3.7 95% C.I.)	(3) 1.5 % (0.5 - 4.4 95% C.I.)	(5) 2.3 % (1.0 - 5.2 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(3) 0.7 % (0.2 - 2.1 95% C.I.)	(3) 1.5 % (0.5 - 4.4 95% C.I.)	(0) 0.0 % (0.0 - 1.7 95% C.I.)

Table 22: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema

Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting (≥ 115 and < 125 mm)		Normal (≥ 125 mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	111	1	0.9	3	2.7	107	96.4	0	0.0
18-29	106	1	0.9	4	3.8	101	95.3	0	0.0
30-41	95	1	1.1	0	0.0	94	98.9	0	0.0
42-53	79	0	0.0	1	1.3	78	98.7	0	0.0
54-59	25	0	0.0	0	0.0	25	100.0	0	0.0
Total	416	3	0.7	8	1.9	405	97.4	0	0.0

Table 23: Prevalence of underweight based on weight-for-age z-scores by sex

	95% C.I.		
	All n = 412	Boys n = 193	Girls n = 219
Prevalence of underweight (< -2 z-score)	(103) 25.0 % (21.1 - 29.4%)	(57) 29.5 % (23.5 - 36.3%)	(46) 21.0 % (16.1 - 26.9%)
Prevalence of moderate underweight (< -2 z-score and ≥ -3 z-score)	(80) 19.4 % (15.9 - 23.5%)	(45) 23.3 % (17.9 - 29.8%)	(35) 16.0 % (11.7 - 21.4%)
Prevalence of severe underweight (< -3 z-score)	(23) 5.6 % (3.7 - 8.2%)	(12) 6.2 % (3.6 - 10.6%)	(11) 5.0 % (2.8 - 8.8%)

Table 24: Prevalence of underweight by age, based on weight-for-age z-scores

Age (mo)	Total no.	Severe underweight (< -3 z-score)		Moderate underweight (≥ -3 and < -2 z-score)		Normal (≥ -2 z score)		Edema	
		No.	%	No.	%	No.	%	No.	%
6-17	109	0	0.0	11	10.1	98	89.9	0	0.0
18-29	104	9	8.7	17	16.3	78	75.0	0	0.0
30-41	95	8	8.4	24	25.3	63	66.3	0	0.0
42-53	79	5	6.3	20	25.3	54	68.4	0	0.0
54-59	25	1	4.0	8	32.0	16	64.0	0	0.0
Total	412	23	5.6	80	19.4	309	75.0	0	0.0

Table 25: Prevalence of stunting based on height-for-age z-scores and by sex

	95% C.I.		
	All n = 400	Boys n = 186	Girls n = 214
Prevalence of stunting (<-2 z-score)	(109) 27.3 % (23.1 - 31.8%)	(61) 32.8 % (26.5 - 39.8%)	(48) 22.4 % (17.4 - 28.5%)
Prevalence of moderate stunting (<-2 z-score and ≥ -3 z-score)	(81) 20.3 % (16.6 - 24.5%)	(45) 24.2 % (18.6 - 30.8%)	(36) 16.8 % (12.4 - 22.4%)
Prevalence of severe stunting (<-3 z-score)	(28) 7.0 % (4.9 - 9.9%)	(16) 8.6 % (5.4 - 13.5%)	(12) 5.6 % (3.2 - 9.5%)

Figure 4: Distribution of height –for Age z-scores (based on WHO Growth Standards)

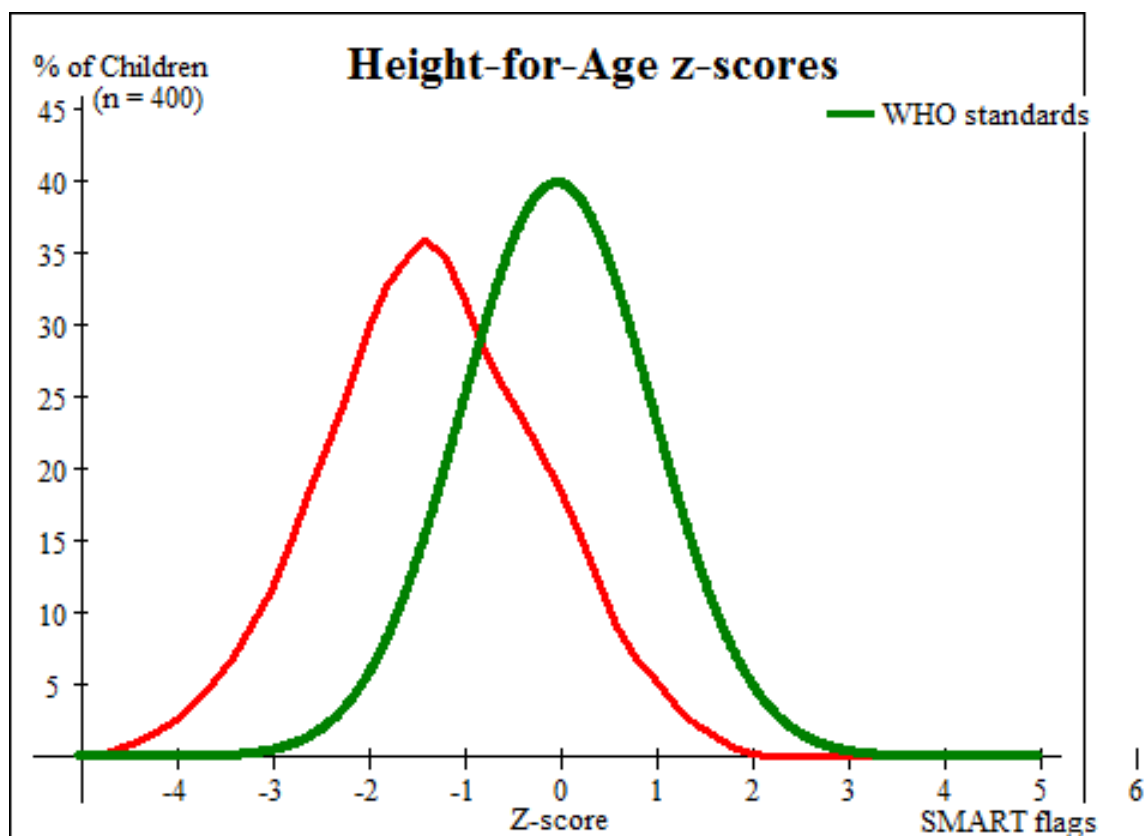


Figure 5: Trends in the prevalence of stunting in children 6-59 months from 2015-2018

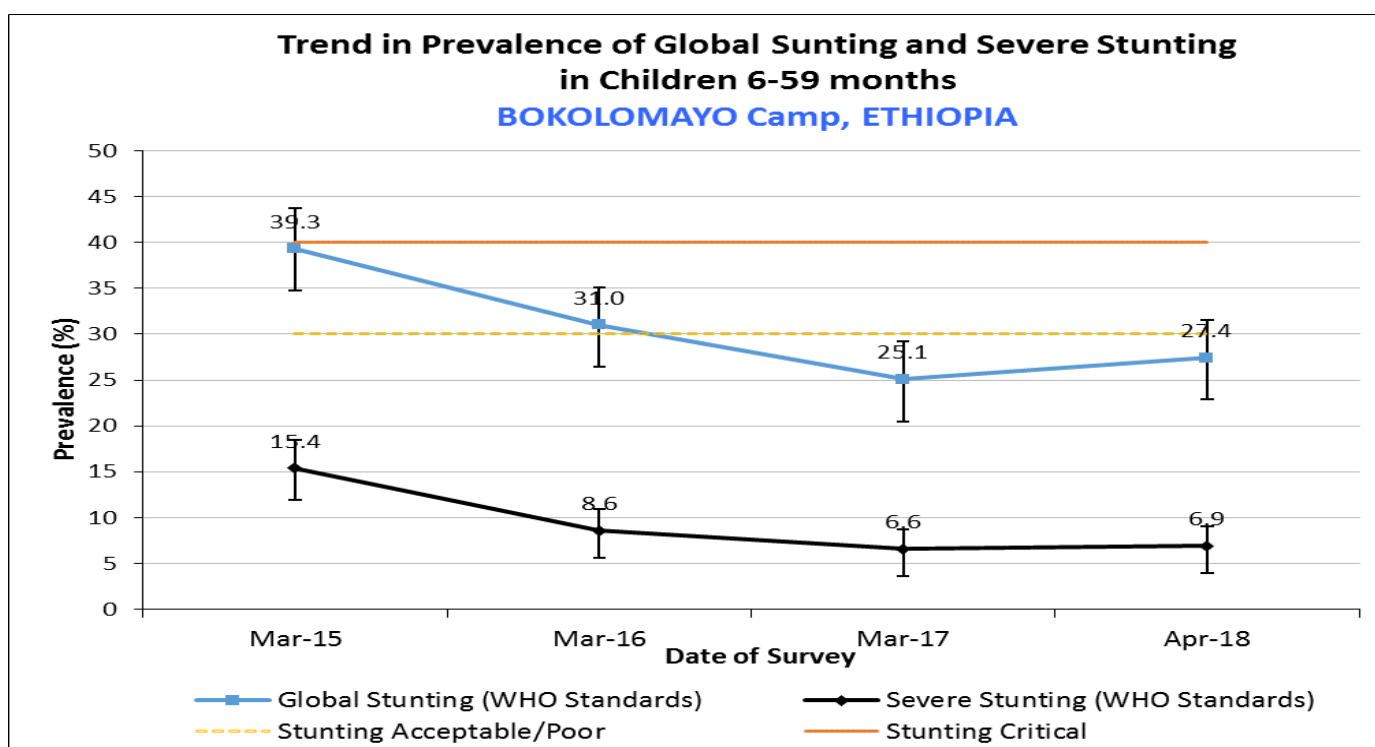


Table 26: Prevalence of stunting by age based on height-for-age z-scores

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (>= -2 z score)	
		No.	%	No.	%	No.	%
6-17	105	0	0.0	10	9.5	95	90.5
18-29	100	10	10.0	18	18.0	72	72.0
30-41	92	7	7.6	28	30.4	57	62.0
42-53	78	8	10.3	21	26.9	49	62.8
54-59	25	3	12.0	4	16.0	18	72.0
Total	400	28	7.0	81	20.3	291	72.8

Figure 6-1: Trends in the prevalence of stunting by Age in children 6-59 months

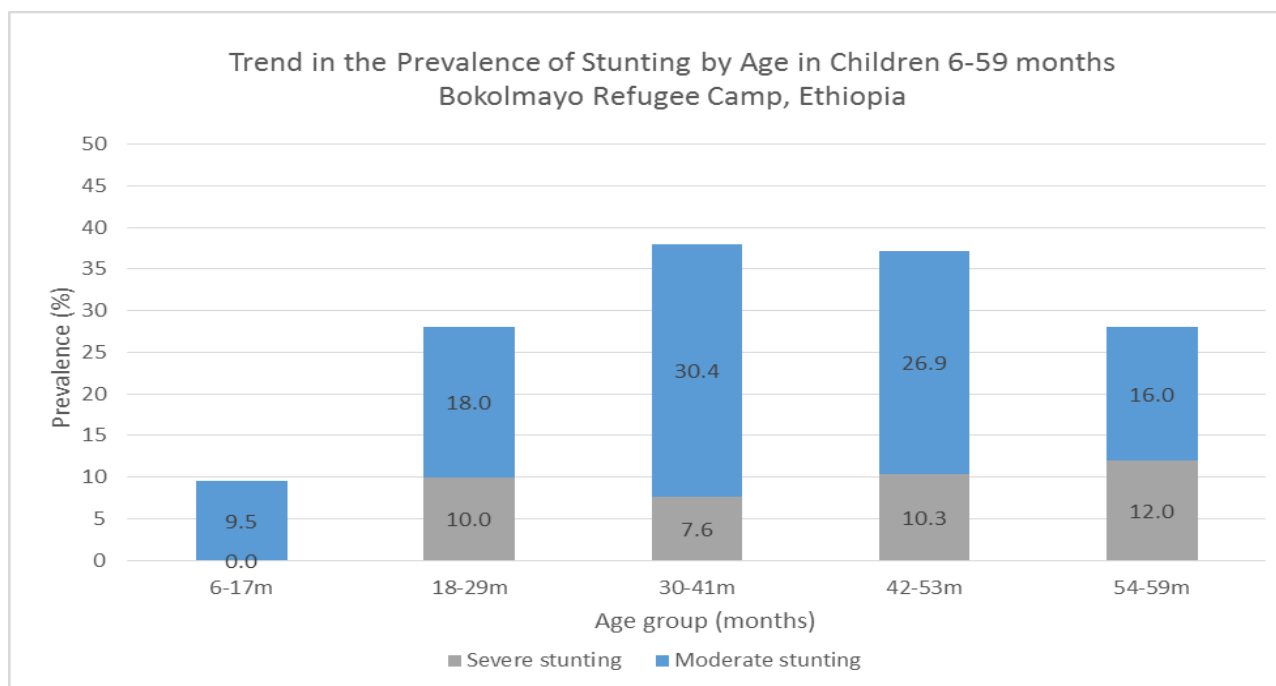


Table 27: Mean z-scores, Design Effects and excluded subjects

Indicator	n	Mean z-scores \pm SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	410	-0.83 \pm 0.98	1.00	51	5
Weight-for-Age	412	-1.32 \pm 1.02	1.00	50	4
Height-for-Age	400	-1.32 \pm 1.11	1.00	50	16

* contains for WHZ and WAZ the children with oedema.

5.2 Mortality results (retrospective over 93 days prior to interview)

Table 28: Mortality rates

CMR (total deaths/10,000 people / day): 0.05 (0.01-0.27, 95% CI)
U5MR (deaths in children under five/10,000 children under five / day): 0.27 (0.05- 152, 95% CI)

5.3 Feeding programme coverage results in Bokolmanyo

Table 29: Programme coverage for acutely malnourished children in Bokolmnyo

	Number/total	% (95% CI)
Targeted Supplementary feeding programme coverage	13/46	28.3% (16.0-43.5%)
Therapeutic feeding programme coverage	3/14	21.4% (4.7-50.8%)
Blanket supplementary feeding program (BSFP) 6-35 months	224/256	87.5% (82.8-91.3%)
Wet Feeding for children 36 -59 months	45/158	28.5% (21.6-36.2%)

5.4 Measles vaccination coverage results in Bokolmanyo

Table 30: Measles vaccination coverage for children aged 9-59 months (or other context-specific target group) (n= 400)

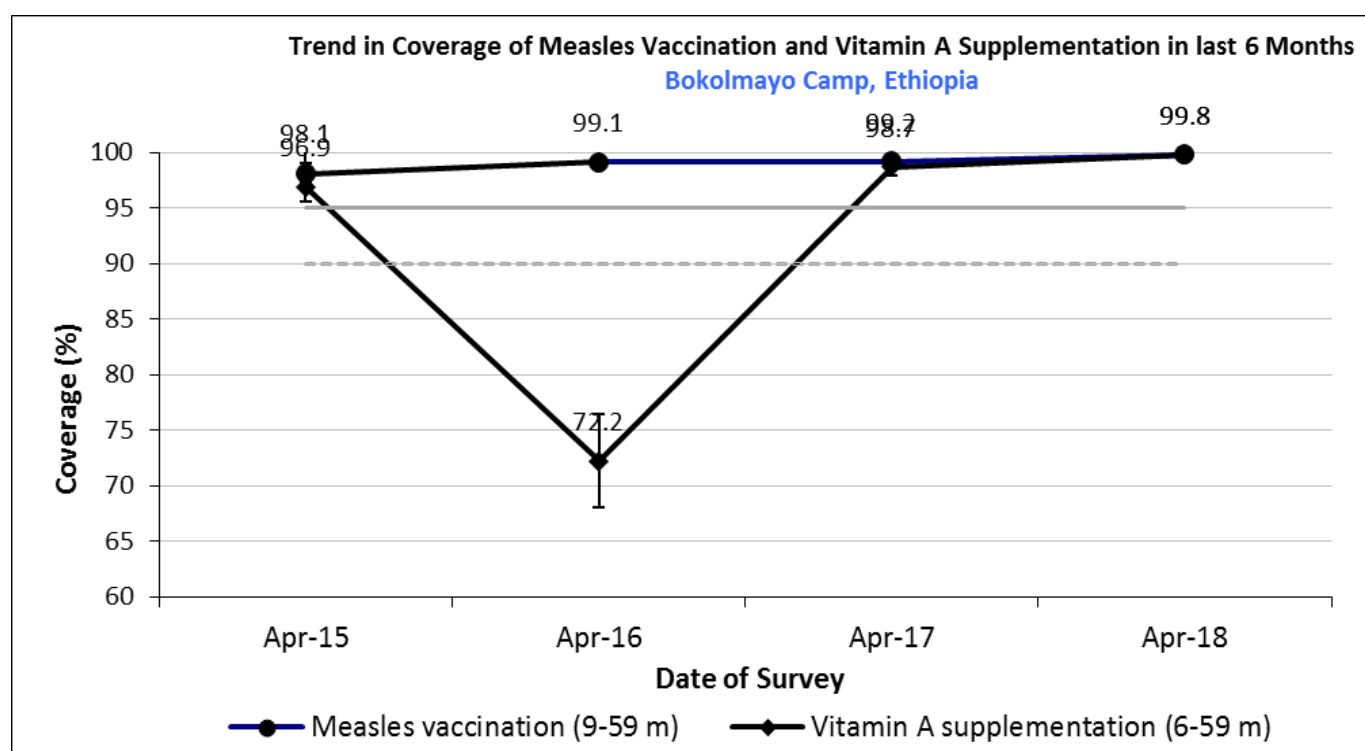
	Measles (with card) n=371	Measles (with card <u>or</u> confirmation from mother) n=399
YES	92.8% (89.6-95.0%)	99.8% (98.4-100.0%)

5.5 Vitamin A supplementation coverage results in Bokolmanyo

Table 31: Vitamin A supplementation for children aged 6-59 months within past 6 months (or other context-specific target group) (n=420)

	Vitamin A capsule (with card) n=340	Vitamin A capsule (with card <u>or</u> confirmation from mother) n=419
YES	81.0% (76.8-84.5%)	99.8% (98.5-100.0%)

Figure 7: Trends in the coverage of measles vaccination and vitamin A supplementation IN LAST 6 MONTHS in children 6-59 months 2015-2018



5.6 Diarrhoea results in Bokolmanyo

Table 32: Period prevalence of diarrhoea

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	8/418	1.9% (0.9-3.9%)

5.7 Anaemia results in Bokolmanyu

Table 33: Prevalence of TOTAL anaemia, ANAEMIA CATEGORIES, and MEAN haemoglobin concentration in children 6-59 months of age

	Number/ total	Prevalence (%) and 95% CI
Total Anaemia (Hb<11.0 g/dL)	186/415	44.8% (40.0-49.8%)
Mild Anaemia (Hb 10.0-10.9 g/dL)	84/415	20.2% (16.5-24.5%)
Moderate Anaemia (7.0-9.9 g/dL)	99/415	23.9% (19.9-28.3%)
Severe Anaemia (<7.0 g/dL)	3/415	0.7% (0.2-2.3%)
Mean Hb (g/dL) and (SD) [range]	10.9g/dl and 1.498 [5.9- 14.4]	

Figure 8: Trends in anaemia categories in children 6-59 months from 2015-2018

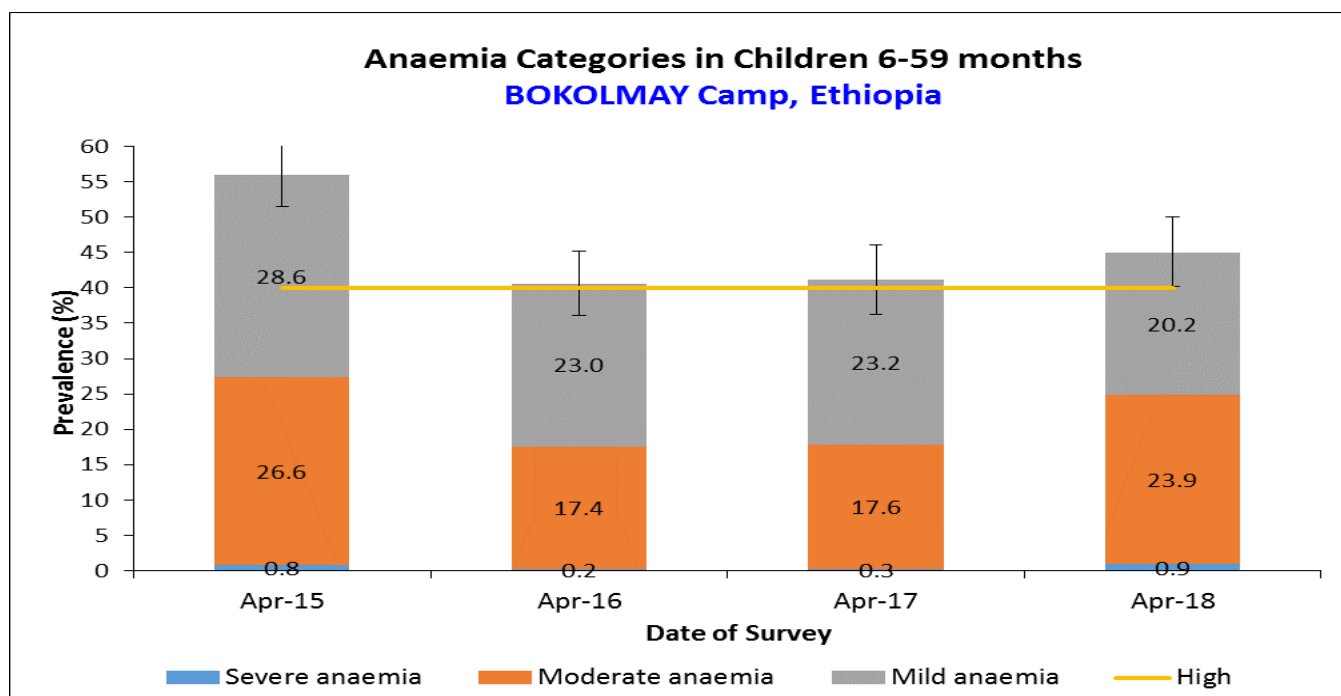


Table 34: Prevalence of moderate and severe anaemia in children 6-59 months of age by age group

	6-23 months n=156	24-35months n=103	36-59 months n=156
Total Anaemia (Hb<11.0 g/dL)	(n=90) 57.7% (49.5-65.6%)	(n=48) 46.6% (36.7-56.7%)	(n=48) 30.8% (23.6-38.6%)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(n=35) 22.4% (16.2-29.8%)	(n=21) 20.4% (13.1-29.5%)	(n=28) 17.9% (12.3-24.9%)
Moderate Anaemia (7.0-9.9 g/dL)	(n=53) 34.0% (26.6-42.0%)	(n=26) 25.2% (17.2-34.8%)	(n=20) 12.8% (8.0-19.1%)
Severe Anaemia (<7.0 g/dL)	(n=20) 1.3% (0.2-4.6%)	(n=1) 1.0% (0.0-5.3%)	(n=0) 0.0%
MEAN Hb / SD [Rang]	10.4 g/dl & SD = 1.539 [5.9-14.1]	10.85g/dl & SD= 1.52 [6.5-14.2]	11.34g/dl & SD =1.28 [7.0-14.4]

5.8 Infant and Young Children Feeding (IYCF) Children 0-23 months in Bokolmanyo

Table 35: Prevalence of Infant and Young Child Feeding Practices Indicators

Indicator	Age range	Number/total	Prevalence (%) and 95% CI
Timely initiation of breastfeeding	(0-23 months)	151/181	83.4% (77.2-88.5%)
Exclusive breastfeeding under 6 months	(0-5 months)	41/49	83.7% (70.3-92.7%)
Continued breastfeeding at 1 year	(12-15 months)	22/39	56.4% (39.6-72.2%)
Continued breastfeeding at 2 years	(20-23 months)	8/28	28.6% (13.2-48.7%)
Introduction of solid, semi-solid or soft foods	(6-8 months)	7/20	35.0% (15.4-59.2%)
Consumption of iron-rich or iron-fortified foods	(6-23 months)	7/20	35.0% (15.4-59.2%)
Bottle feeding	(0-23 months)	43/207	20.8% (15.5-26.9%)

Table 36: Infant formula intake in children aged 0-23 months

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	90/207	43.5% (36.6-50.5%)

Table 37: CSB+ intake in children aged 6-23 months

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive FBF	107/158	67.7% (59.8-74.9%)

Table 38: CSB++ intake in children aged 6-23 months

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive FBF++	146/158	92.4% (87.1-96.0%)

5.9 Women 15-49 years in Bokolmanyo

Table 39: Women physiological status and age

Physiological status	Number/total	% of sample
Non-pregnant	295/361	81.7% (77.3-85.6%)
Pregnant	66/351	18.3% (14.5-22.7%)
Mean age and (SD) [range]	29.5 year and SD 9.2 [15.0 – 48.0]	

Table 40: Prevalence of anaemia and Hb concentration in non-pregnant women age (15-49 years)

Anaemia in non-pregnant women of reproductive age (15-49 years)	Number/total	% (95% CI)
Total Anaemia (<12.0 g/dL)	107/291	36.8% (31.2-42.6%)
Mild Anaemia (11.0-11.9 g/dL)	54/291	18.6% (14.3-23.5%)
Moderate Anaemia (8.0-10.9 g/dL)	51/291	17.5% (13.3-22.4%)
Severe Anaemia (<8.0 g/dL)	2/291	0.7% (0.1-2.5%)
Mean Hb (g/dL) (SD) and [range]	12.22 and SD 1.578 [7.5 - 16.5]	

Figure 9: Trends in anaemia categories in women 15-49 years from 2015-2018

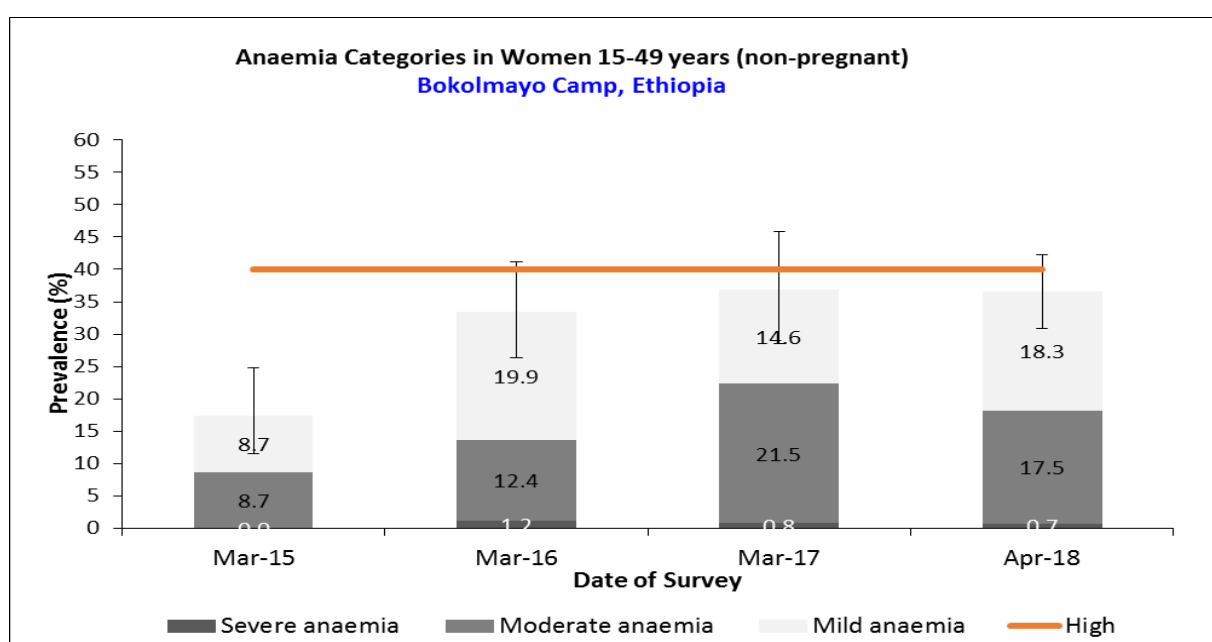


Table 41: ANC enrolment and iron-folic acid pills coverage among pregnant women (15-49 years)

	Number /total	% (95% CI)
Currently enrolled in ANC programme	66/66	100.0%
Currently receiving iron-folic acid pills	57/66	86.4% (75.7-93.6%)

5.10 Food security in Bokolmanyao

Table 42: Ration card coverage

	Number/total	% (95% CI)
Proportion of households with a ration card	411/413	99.5% (98.1-99.9%)

Table 43: Reported duration of general food ration

Average number of days the food ration lasts (Standard deviation or 95% CI)	Average duration (%) in relation to the theoretical duration of the ration*
21.3 and SD = 5.94	71.0%

Table 44: Reported duration of general food ration 2

	Number/total	% (95% CI)
Proportion of households reporting that the food ration lasts the entire duration of the cycle	377/411	91.7% (88.6-94.2%)
Proportion of households reporting that the food ration lasted:		
≤75% of the cycle 30 days	19/411	4.6% (2.9-7.3%)
>75% of the cycle 30 days	392/411	95.4% (92.7-97.1%)

5.9.1 Negative coping strategies results

Table 45: Coping strategies used by the surveyed population over the past month

	Number/total	% (95% CI)
Proportion of households reporting using the following coping strategies over the past month*:		
Borrowed cash, food or other items <i>with or without interest</i>	188/413	45.5% (40.7-50.5%)
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)	10/412	2.4% (1.2-4.6%)
Requested increased remittances or gifts as compared to normal	33/412	8.0% (5.7-11.2%)
Reduced the quantity and/or frequency of meals	79/413	19.1% (15.5-23.3%)
Begged	10/413	2.4% (1.2-4.6%)
Engaged in potentially risky or harmful activities	5/413	1.2% (0.4-3.0%)
Proportion of households reporting using none of the coping strategies over the past month	214/411	52.1% (47.1-57.0%)

* The total will be over 100% as households may use several negative coping strategies.

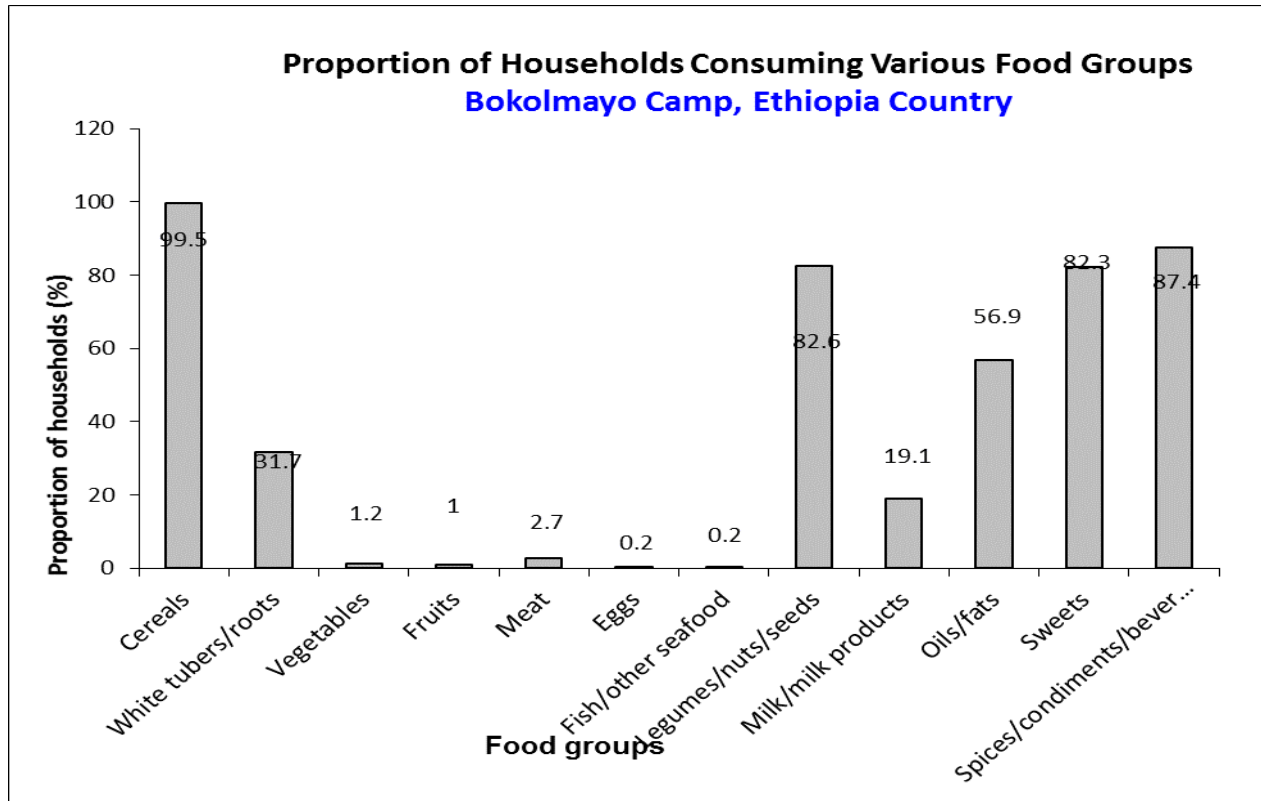
Table 46: Average HDDS

	Mean (Standard deviation or 95% CI)
Average HDDS	2.6 SD 2.1

Table 47: Consumption of micronutrient rich foods by households

	Number/Total	% and 95% CI
Proportion of households <i>not consuming any</i> vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	330/413	79.9% (75.6-83.6%)
Proportion of households consuming either a plant or animal source of vitamin A	99/413	24.0% (20.0-28.4%)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	11/413	2.7% (1.4-4.9%)

Figure 10: Proportion of Households Consuming Various Food Groups



WASH in Bokolmanyo

Table 48: Water Quality

	Number/total	% (95% CI)
Proportion of households using an improved drinking water source	411/412	99.8% (98.4-100.0%)
Proportion of households that use a covered or narrow necked container for storing their drinking water	215/411	52.3% (47.4-57.2%)

Table 49: Water Quantity: Amount of litres of water used per person per day

Proportion of households that use:	Number/total	% (95% CI)
≥ 20 lpppd	245/412	59.5% (54.5-64.2%)
15 – <20 lpppd	59/412	14.3% (11.2-18.2%)
<15 lpppd	108/412	26.2% (22.1-30.8%)
Average consumption (Liters per person per day)	23.7	

Table 50: Satisfaction with water supply

	Number/total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	400/412	97.1% (94.8-98.4%)

Figure 11: Proportion of households that say they are satisfied with the water supply

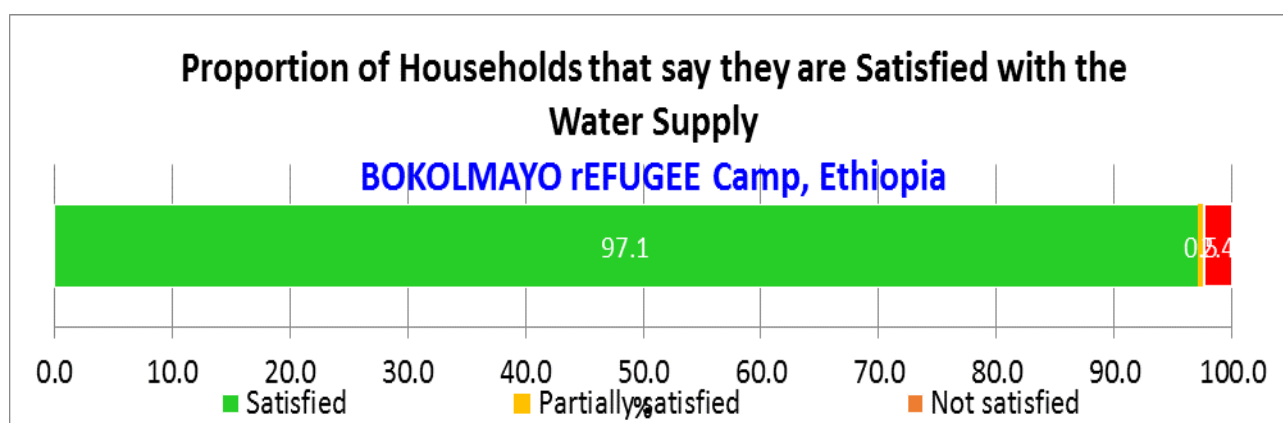
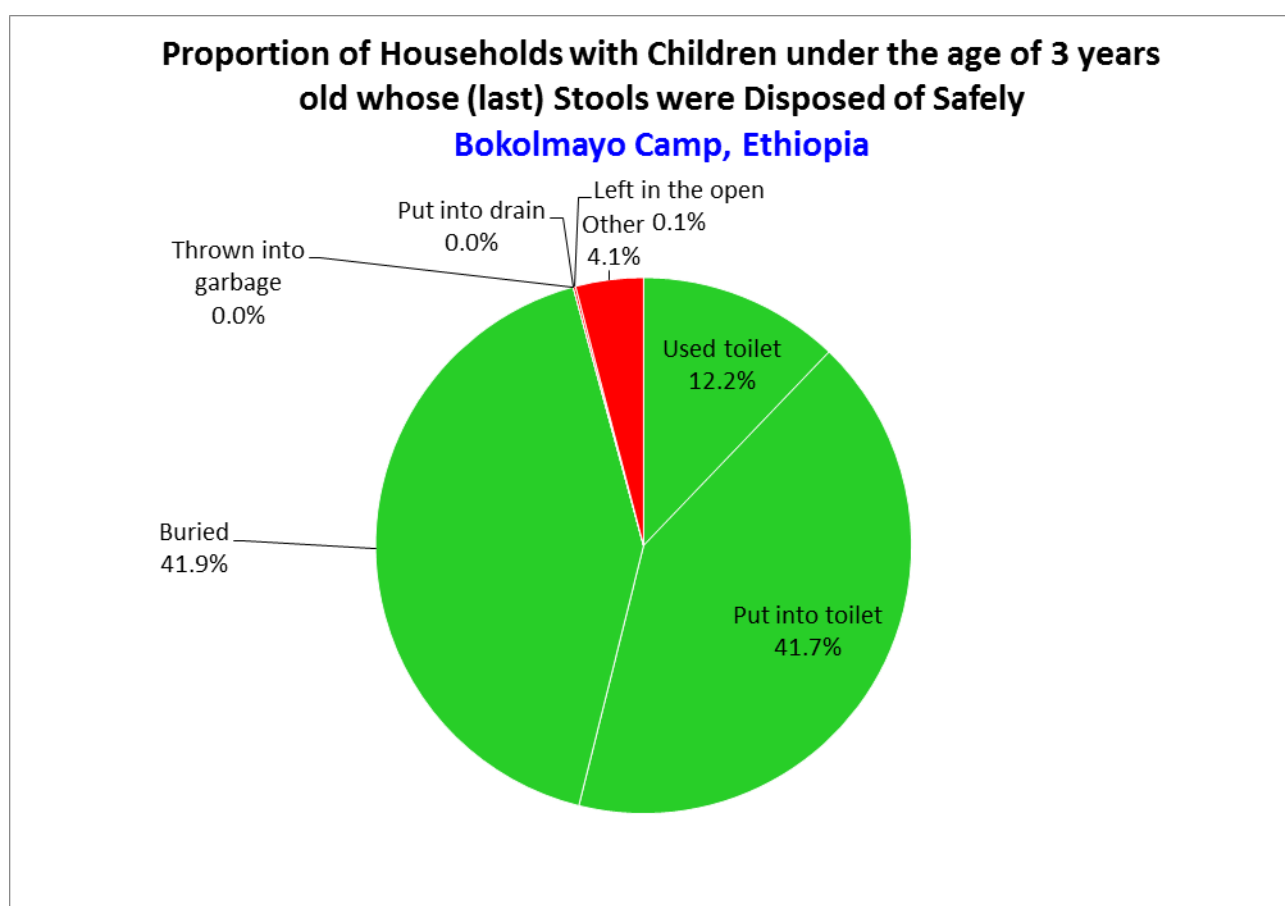


Table 51: Safe Excreta disposal

	Number/total	% (95% CI)
Proportion of households that use:		
An improved excreta disposal facility (improved toilet facility, 1 household)	50/410	12.2% (9.3-15.9%)
A shared family toilet (improved toilet facility, 2 households)	269/410	65.6% (60.8-70.2%)
A communal toilet (improved toilet facility, 3 households or more)	91/410	22.2% (18.3-26.6%)
An unimproved toilet (unimproved toilet facility or public toilet)	0/410	0.0%
Proportion of households with children under three years old that dispose of faeces safely	226/228	99.1% (96.9-99.9%)

Figure 12: Proportion of Households with Children under the age of 3 years old whose (last) Stools were Disposed of Safely



6 RESULTS FROM MELKADIDA CAMP

Table 52: Demographic characteristics of the study population in Melkadida

	Actual	Planned	%
Total HHs surveyed	350	328	107%
Total population surveyed	2280	1284	178%
Total U5 surveyed	357	239	149%
Average HH size	6.5	5.4	120%
% of U5	16%	16%	103%

Table 53: Distribution of age and sex of sample

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:girl
6-17	59	54.6	49	45.4	108	30.0	1.2
18-29	51	54.8	42	45.2	93	25.8	1.2
30-41	39	53.4	34	46.6	73	20.3	1.1
42-53	38	58.5	27	41.5	65	18.1	1.4
54-59	11	52.4	10	47.6	21	5.8	1.1
Total	198	55.0	162	45.0	360	100.0	1.2

The sex ratio for boys and girls presented 0.8 – 1.2, which is might be there is selection bias during data collection.

6.1 Anthropometric results (based on WHO standards 2006) in Melkadida:

Table 54: Prevalence of acute malnutrition based on WFH z-score and/or oedema and by sex

	95% C.I.		
	All n = 358	Boys n = 197	Girls n = 161
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(37) 10.3 % (7.6 - 13.9%)	(23) 11.7 % (7.9 - 16.9%)	(14) 8.7 % (5.3 - 14.1%)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(30) 8.4 % (5.9 - 11.7%)	(18) 9.1 % (5.9 - 14.0%)	(12) 7.5 % (4.3 - 12.6%)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(7) 2.0 % (1.0 - 4.0%)	(5) 2.5 % (1.1 - 5.8%)	(2) 1.2 % (0.3 - 4.4%)

The prevalence of oedema is 0.0 %

Prevalence of acute malnutrition based on WFH z-score and/or oedema and by sex, there is no significant difference based on the (Confidence intervals is overlapping).

Figure 13 : Distribution of WFH z-scores (based on WHO Growth Standards) in Melkadida

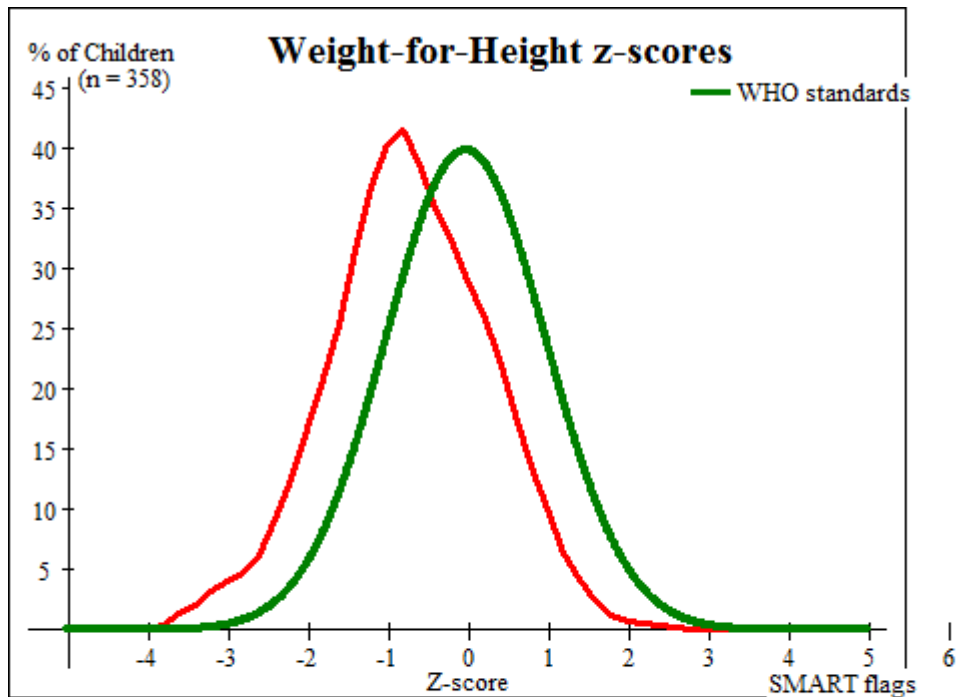


Figure 14: Trends in the prevalence of global and severe acute malnutrition based on WHO Growth Standards in children 6-59 months from 2015-2018 in Melkadida

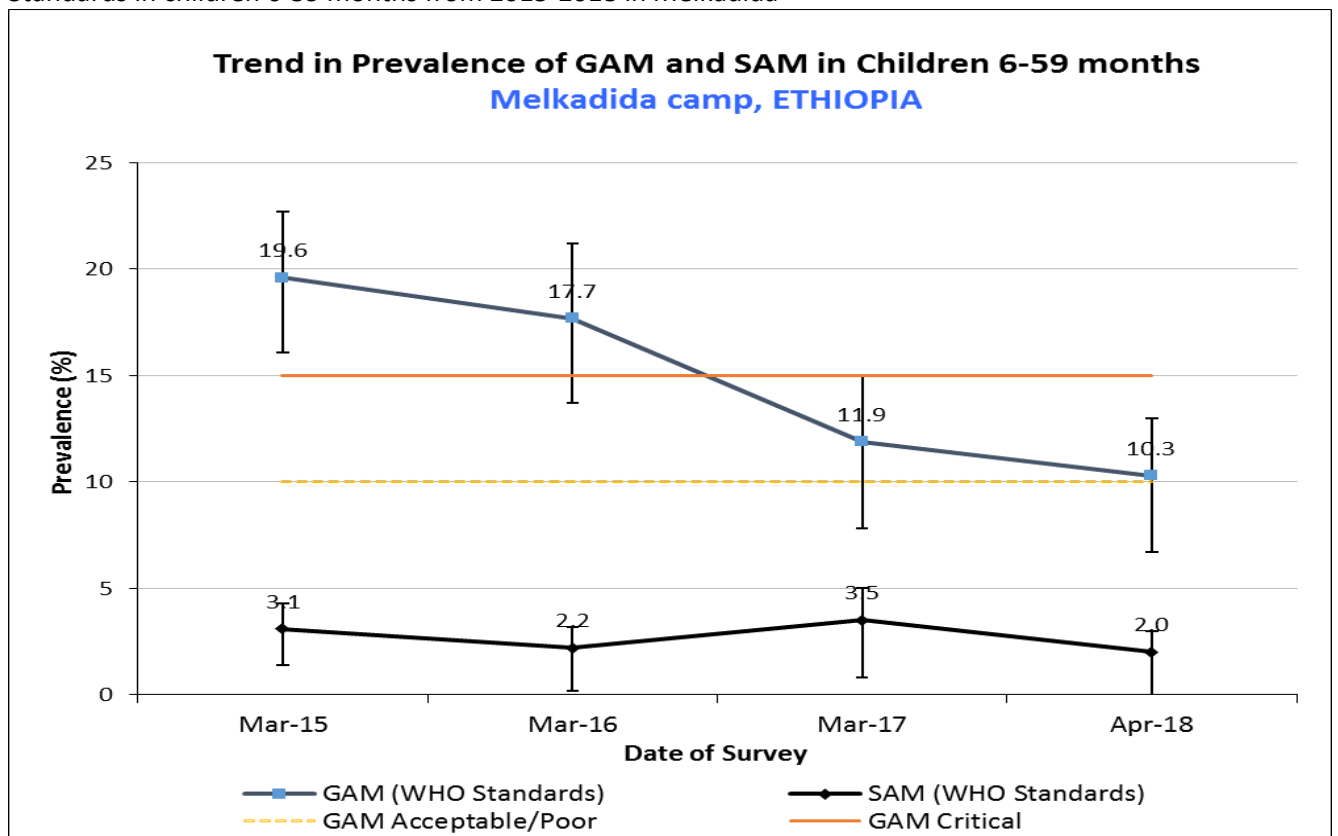


Table 55: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (>= -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	107	5	4.7	9	8.4	93	86.9	0	0.0
18-29	92	1	1.1	8	8.7	83	90.2	0	0.0
30-41	73	1	1.4	6	8.2	66	90.4	0	0.0
42-53	65	0	0.0	5	7.7	60	92.3	0	0.0
54-59	21	0	0.0	2	9.5	19	90.5	0	0.0
Total	358	7	2.0	30	8.4	321	89.7	0	0.0

Figure 15: Prevalence of Acute Malnutrition by Age, Based On WFH Z-Score And /Or Oedema

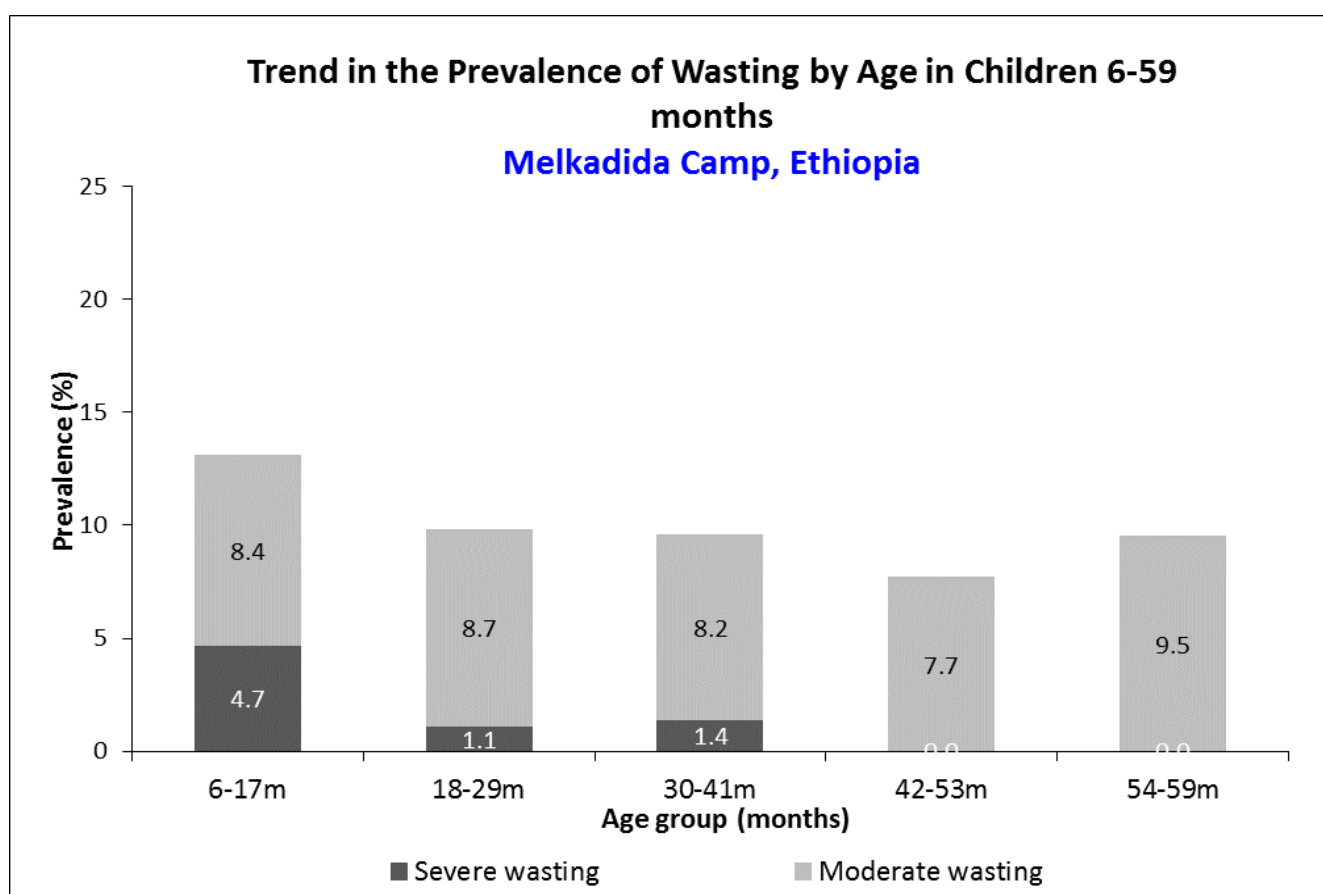


Table 56: Distribution of acute malnutrition and oedema based on weight-for-height z-scores

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 8 (2.2 %)	Not severely malnourished No. 352 (97.8 %)

Table 57: Prevalence of acute malnutrition based on MUAC cut off' and/or oedema and by sex

	All n = 360	Boys n = 198	Girls n = 162
Prevalence of global malnutrition (< 125 mm and/or oedema)	(11) 3.1 % (1.7 - 5.4%)	(5) 2.5 % (1.1 - 5.8%)	(6) 3.7 % (1.7 - 7.8%)
Prevalence of moderate malnutrition (< 125 mm and ≥ 115 mm, no oedema)	(11) 3.1 % (1.7 - 5.4%)	(5) 2.5 % (1.1 - 5.8%)	(6) 3.7 % (1.7 - 7.8%)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(0) 0.0 % (0.0 - 1.1%)	(0) 0.0 % (0.0 - 1.9%)	(0) 0.0 % (0.0 - 2.3%)

Table 58: Prevalence of acute malnutrition by age, based on MUAC cut offs and/or oedema

Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting (≥ 115 mm and < 125 mm)		Normal (≥ 125 mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	108	0	0.0	10	9.3	98	90.7	0	0.0
18-29	93	0	0.0	1	1.1	92	98.9	0	0.0
30-41	73	0	0.0	0	0.0	73	100.0	0	0.0
42-53	65	0	0.0	0	0.0	65	100.0	0	0.0
54-59	21	0	0.0	0	0.0	21	100.0	0	0.0
Total	360	0	0.0	11	3.1	349	96.9	0	0.0

Table 59: Prevalence of underweight based on weight-for-age z-scores by sex

	95% C.I.		
	All n = 359	Boys n = 198	Girls n = 161
Prevalence of underweight (< -2 z-score)	(71) 19.8 % (16.0 - 24.2%)	(51) 25.8 % (20.2 - 32.3%)	(20) 12.4 % (8.2 - 18.4%)
Prevalence of moderate underweight (< -2 z-score and ≥ -3 z-score)	(57) 15.9 % (12.5 - 20.0%)	(40) 20.2 % (15.2 - 26.3%)	(17) 10.6 % (6.7 - 16.3%)
Prevalence of severe underweight (< -3 z-score)	(14) 3.9 % (2.3 - 6.4%)	(11) 5.6 % (3.1 - 9.7%)	(3) 1.9 % (0.6 - 5.3%)

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

Age (mo)	Total no.	Severe underweight (< -3 z-score)		Moderate underweight (≥ -3 and < -2 z-score)		Normal (≥ -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	108	3	2.8	17	15.7	88	81.5	0	0.0
18-29	92	8	8.7	10	10.9	74	80.4	0	0.0
30-41	73	2	2.7	12	16.4	59	80.8	0	0.0
42-53	65	1	1.5	14	21.5	50	76.9	0	0.0
54-59	21	0	0.0	4	19.0	17	81.0	0	0.0
Total	359	14	3.9	57	15.9	288	80.2	0	0.0

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

	95% C.I.		
	All n = 353	Boys n = 196	Girls n = 157
Prevalence of stunting (<-2 z-score)	(88) 24.9 % (20.7 - 29.7%)	(57) 29.1 % (23.2 - 35.8%)	(31) 19.7 % (14.3 - 26.7%)
Prevalence of moderate stunting (<-2 z-score and ≥ -3 z-score)	(65) 18.4 % (14.7 - 22.8%)	(41) 20.9 % (15.8 - 27.1%)	(24) 15.3 % (10.5 - 21.7%)
Prevalence of severe stunting (<-3 z-score)	(23) 6.5 % (4.4 - 9.6%)	(16) 8.2 % (5.1 - 12.8%)	(7) 4.5 % (2.2 - 8.9%)

Figure 16: Distribution of height –for Age z-scores (based on WHO Growth Standards)

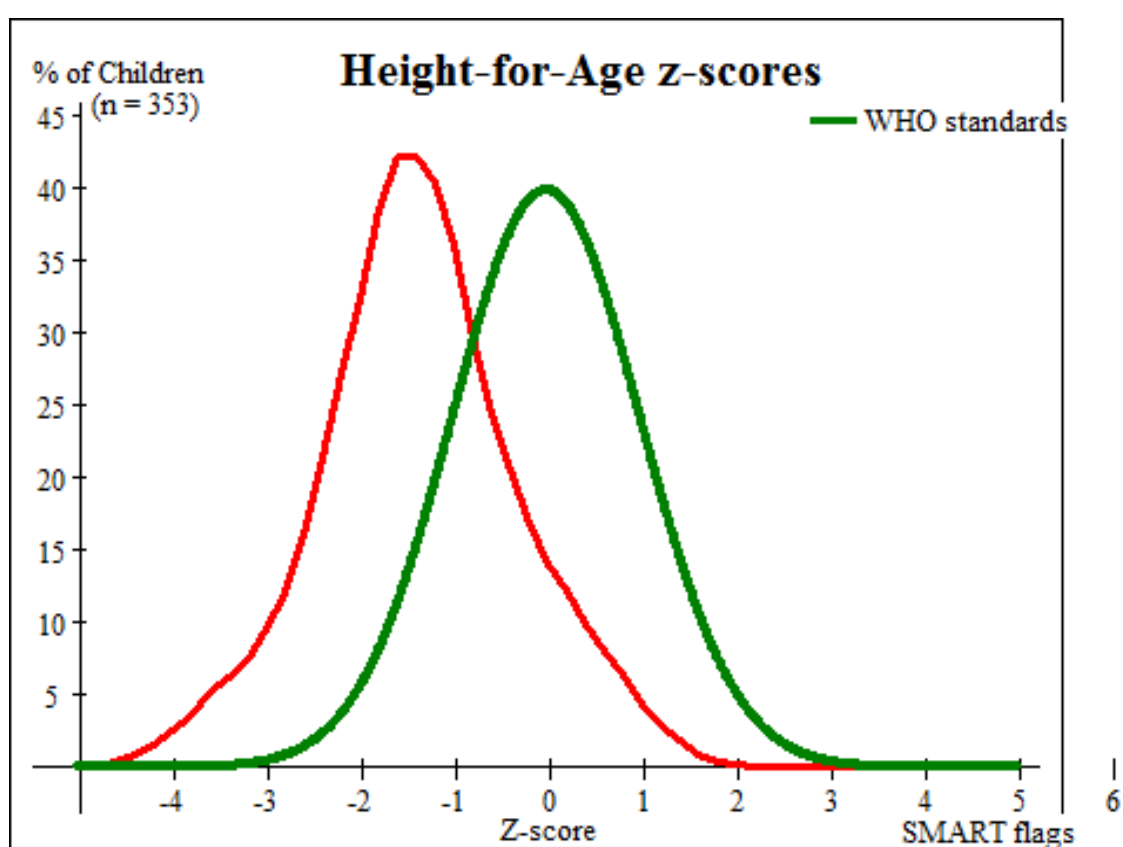


Figure 17: Trends in the prevalence of stunting in children 6-59 months (2015-2018)

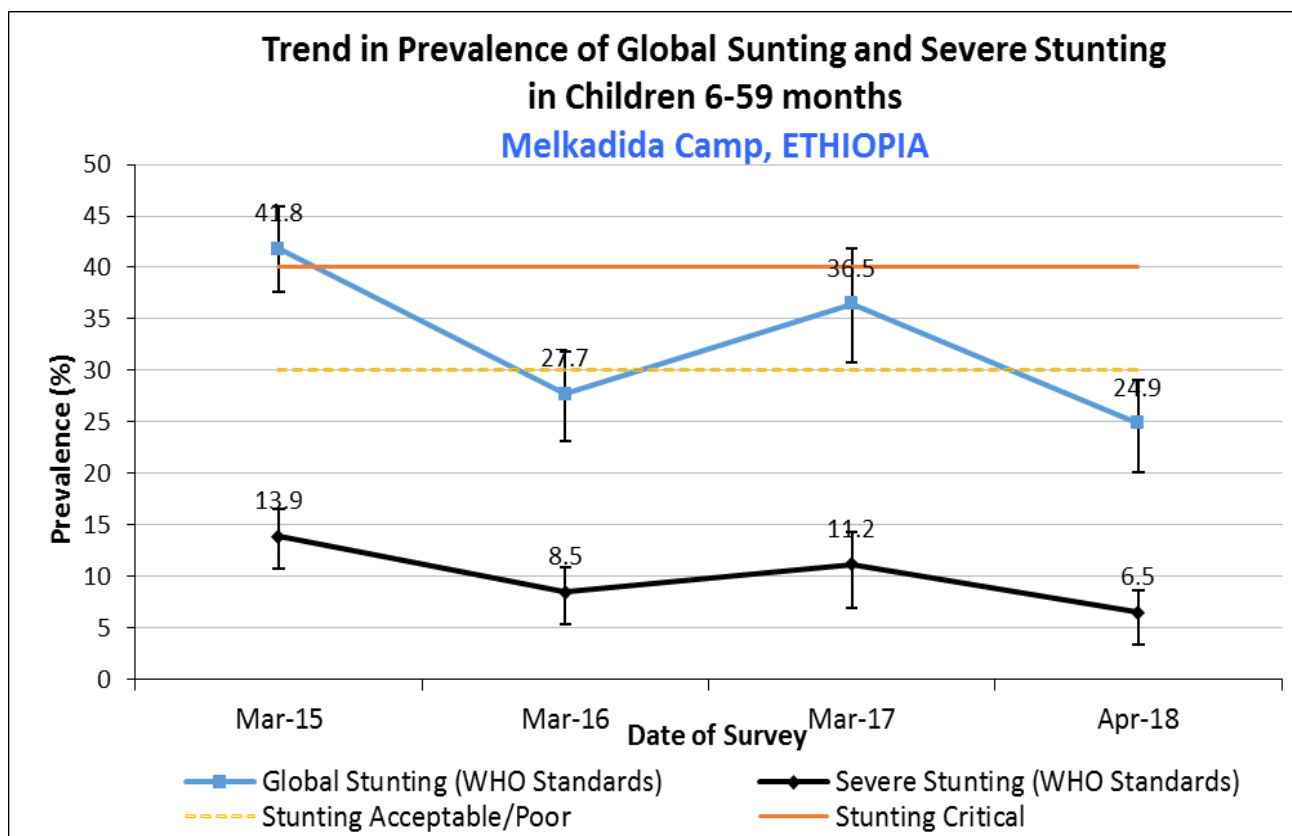


Table 62: Prevalence of stunting by age based on height-for-age z-scores

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (>= -2 z score)	
		No.	%	No.	%	No.	%
6-17	105	4	3.8	17	16.2	84	80.0
18-29	91	8	8.8	18	19.8	65	71.4
30-41	72	4	5.6	16	22.2	52	72.2
42-53	64	7	10.9	12	18.8	45	70.3
54-59	21	0	0.0	2	9.5	19	90.5
Total	353	23	6.5	65	18.4	265	75.1

Figure 18: Trends in the prevalence of stunting by Age in children 6-59 months in Melkadida

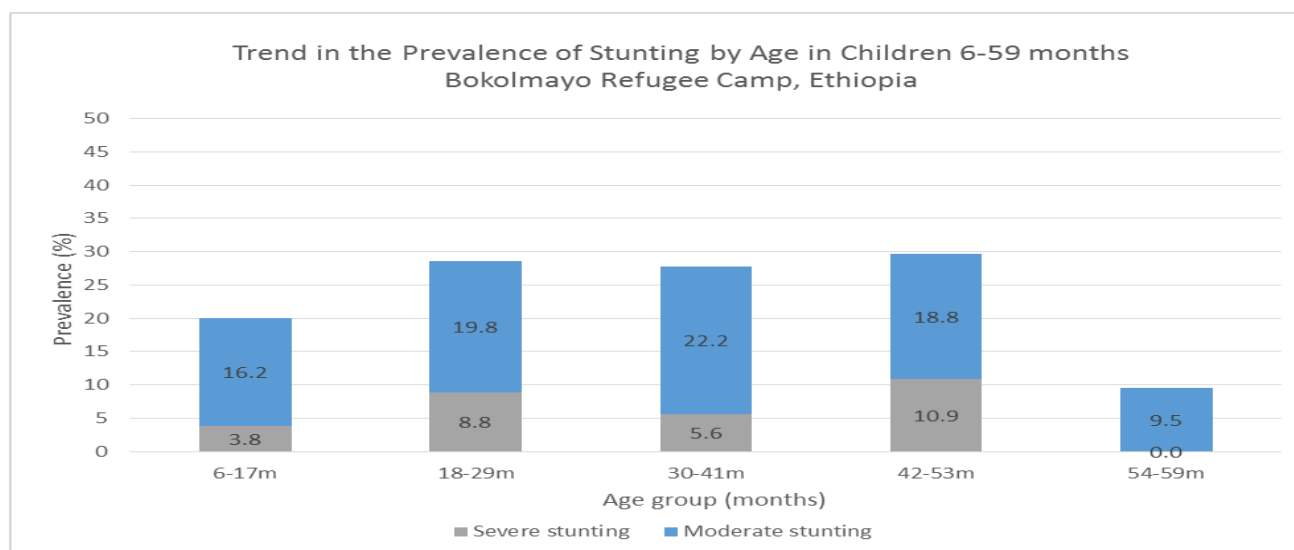


Table 63: Mean z-scores, Design Effects and excluded subjects

Indicator	n	Mean z-scores \pm SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	358	-0.73 \pm 0.98	1.00	37	2
Weight-for-Age	359	-1.24 \pm 0.99	1.00	37	1
Height-for-Age	353	-1.36 \pm 1.04	1.00	37	7

* contains for WHZ and WAZ the children with edema.

6.2 Mortality results (retrospective over 104 days prior to interview)

Table 64: The 81 days retrospective mortality rate

CMR (total deaths/10,000 people / day): 0.10 (0.03-0.36) (95% CI)
U5MR (deaths in children <5 /10,000 children under five / day): 0.32 (0.06-1.78) (95% CI)

6.3 Feeding programme coverage results in Melkadida

Table 65: Programme coverage for acutely malnourished children

	Number/total	% (95% CI)
Targeted Supplementary feeding Programme coverage (SFP)	12/36	33.3% (18.6-51.0%)
Therapeutic feeding Programme coverage (TFP)	0/8	0.0%
Blanket feeding Programme coverage (6-35 months) (BFP)	193/224	86.2% (80.9-90.4%)
Wet feeding (36-59 months)	32/128	25.0% (17.8-33.4%)

6.4 Measles vaccination coverage results in Melkadida

Table 66: Measles vaccination coverage for children aged 9-59 months (n= 340)

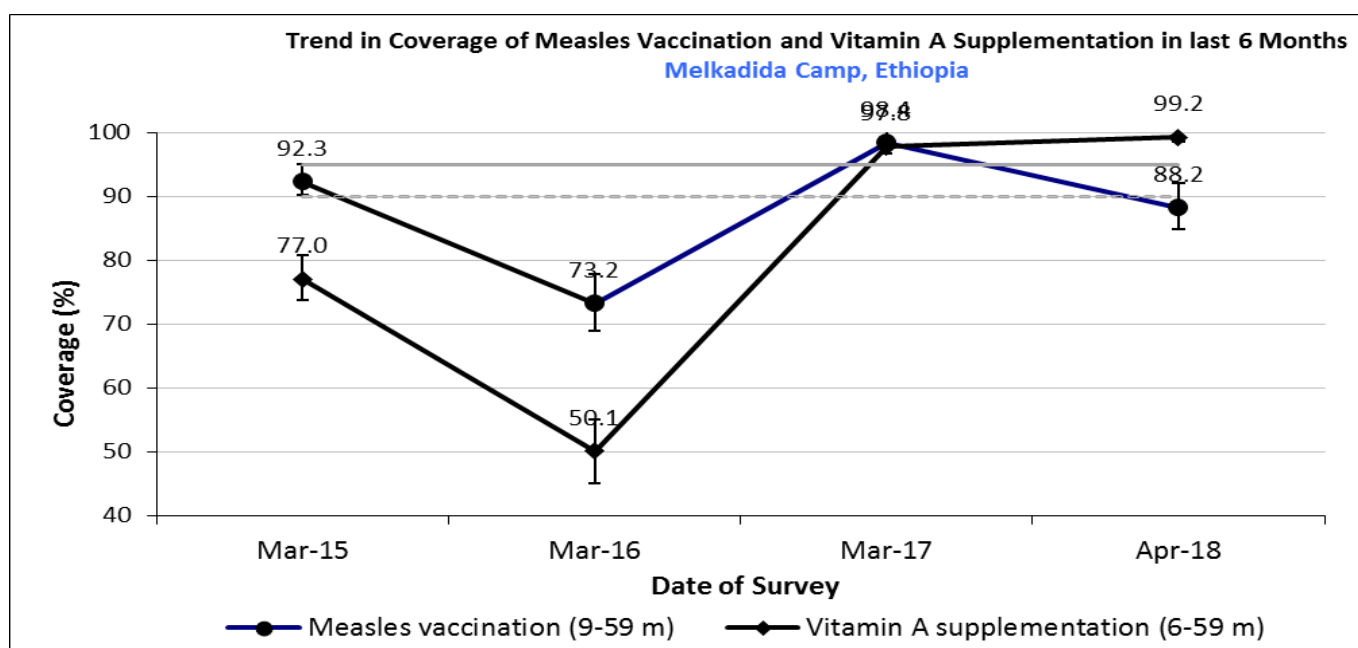
	Measles (with card) n=300	Measles (with card <u>or</u> confirmation from mother) n=340
YES	88.2% (84.3-91.5%)	100.0%

6.5 Vitamin A supplementation coverage results in Melkadida

Table 67: Vitamin A supplementation for children aged 6-59 months within past 6 months (n=360)

	Vitamin A capsule (with card) n=251	Vitamin A capsule (with card <u>or</u> confirmation from mother) n=357
YES	69.7% (64.7-74.4%)	99.2% (97.4-99.8%)

Figure 19: Trends in the coverage of measles vaccination and vitamin A supplementation IN LAST 6 MONTHS in children 6-59 months from 2015-2018



6.6 Diarrhoea results in Melkadida

Table 68: Period prevalence of diarrhoea

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	0/323	0.0%

6.7 Anaemia results in Melkadida

Table 69: Prevalence of TOTAL anaemia, ANAEMIA CATEGORIES, and MEAN haemoglobin concentration in children 6-59 months of age

	Number/ total	Prevalence (%) and 95% CI
Total Anaemia (Hb<11.0 g/dL)	163/360	45.3% (40.1-50.6%)
Mild Anaemia (Hb 10.0-10.9 g/dL)	85/360	23.6% (19.4-28.4%)
Moderate Anaemia (7.0-9.9 g/dL)	77/360	21.4% (17.3-26.1%)
Severe Anaemia (<7.0 g/dL)	1/360	0.3% (0.0-1.8%)
Mean Hb (g/dL) [range]		10.9g/dl [6.9-13.9]

Figure 20: Trends in anaemia categories in children 6-59 months from 2015-2018

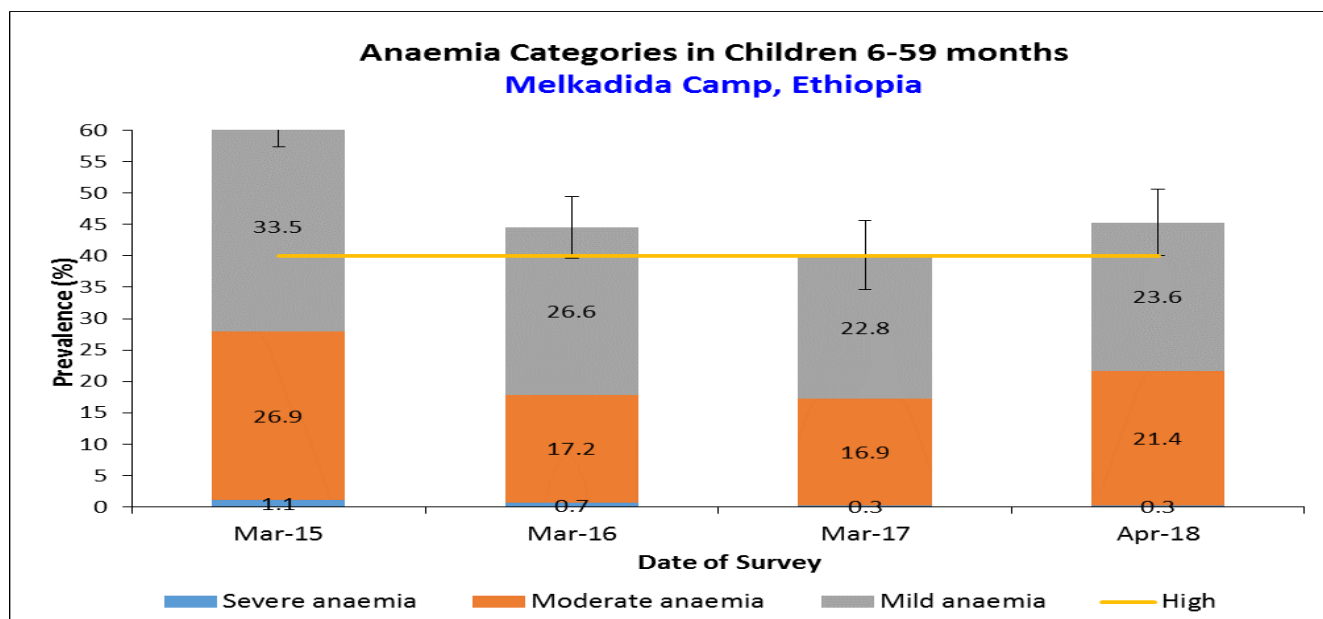


Table 70: Prevalence of anaemia in children 6-59 months of age by age group

	6-23 months (n=147)	24-35 months (n=85)	36-59 months (n=128)
Total Anaemia (Hb<11.0 g/dL)	(n=94) 63.9% (55.6-71.7%)	(n=38) 44.7% (33.9-55.9%)	(n=31) 24.2% (17.1-32.6%)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(n=50) 34.0% (26.4-42.3%)	(n=18) 21.2% (13.1-31.4%)	(n=17) 13.3% (7.9-20.4%)
Moderate Anaemia (7.0-9.9 g/dL)	(n=44) 29.9% (22.7-38.0%)	(n=20) 23.5% (15.0-34.0%)	(n=13) 10.2% (5.5-16.7%)
Severe Anaemia (<7.0 g/dL)	(n=0) 0.0%	(n=0) 0.0%	(n=1) 0.8% (0.0-4.3%)
Mean Hb and SD	10.5177 SD =1.12	10.83 SD = 1.16	11.38 SD = 1.09

6.8 Infant and Young Children Feeding (IYCF) Children 0-23 months

Table 71: Prevalence of Infant and Young Child Feeding Practices Indicators

Indicator	Age range	Number/total	Prevalence (%) & 95% CI
Timely initiation of breastfeeding	0-23 months	138/162	85.2% (78.8-90.3%)
Exclusive breastfeeding under 6 months	0-5 months	27/37	73.0% (55.9-86.2%)
Continued breastfeeding at 1 year	12-15 months	23/34	67.6% (49.5-82.6%)
Continued breastfeeding at 2 years	20-23 months	13/34	38.2% (22.2-56.4%)
Introduction of solid, semi-solid or soft foods	6-8 months	9/20	45.0% (23.1-68.5%)
Consumption of iron-rich or iron-fortified foods	6-23 months	143/145	98.6% (95.1-99.8%)
Bottle feeding	0-23 months	43/183	23.5% (17.6-30.3%)

Table 72: Infant formula intake in children aged 0-23 months

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	67/183	36.0% (29.6-44.0%)

Table 73: CSB+ intake in children aged 6-23 months

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive FBF	58/145	40.0% (32.0-48.5%)

Table 74: CSB++ intake in children aged 6-23 months

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive FBF++	130/146	89.0% (82.8-93.6%)

6.9 Women 15-49 years in Melkadida

Table 75: Women physiological status and age

Physiological status	Number/total	% of sample
Non-pregnant	230/297	77.4% (72.3-82.1%)
Pregnant	67/297	22.6% (17.9-27.7%)
Mean age [range]	29.1973 year and SD =8.136 [15-48]	

Table 76: Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 years)

Anaemia in non-pregnant women of reproductive age (15-49 years)	Number/T otal	% and (95% CI)
Total Anaemia (<12.0 g/dL)	84/226	37.2% (30.9-43.8%)
Mild Anaemia (11.0-11.9 g/dL)	54/226	23.9% (18.5-30.0%)
Moderate Anaemia (8.0-10.9 g/dL)	30/226	13.3% (9.1-18.4%)
Severe Anaemia (<8.0 g/dL)	0/226	0.0%
Mean Hb (g/dL) (SD / 95% CI) and [range]	12.3g/dl and SD =1.26 [8.3-15.3]	

Figure 21: Trends in anaemia categories in women 15-49 years from 2015-2018

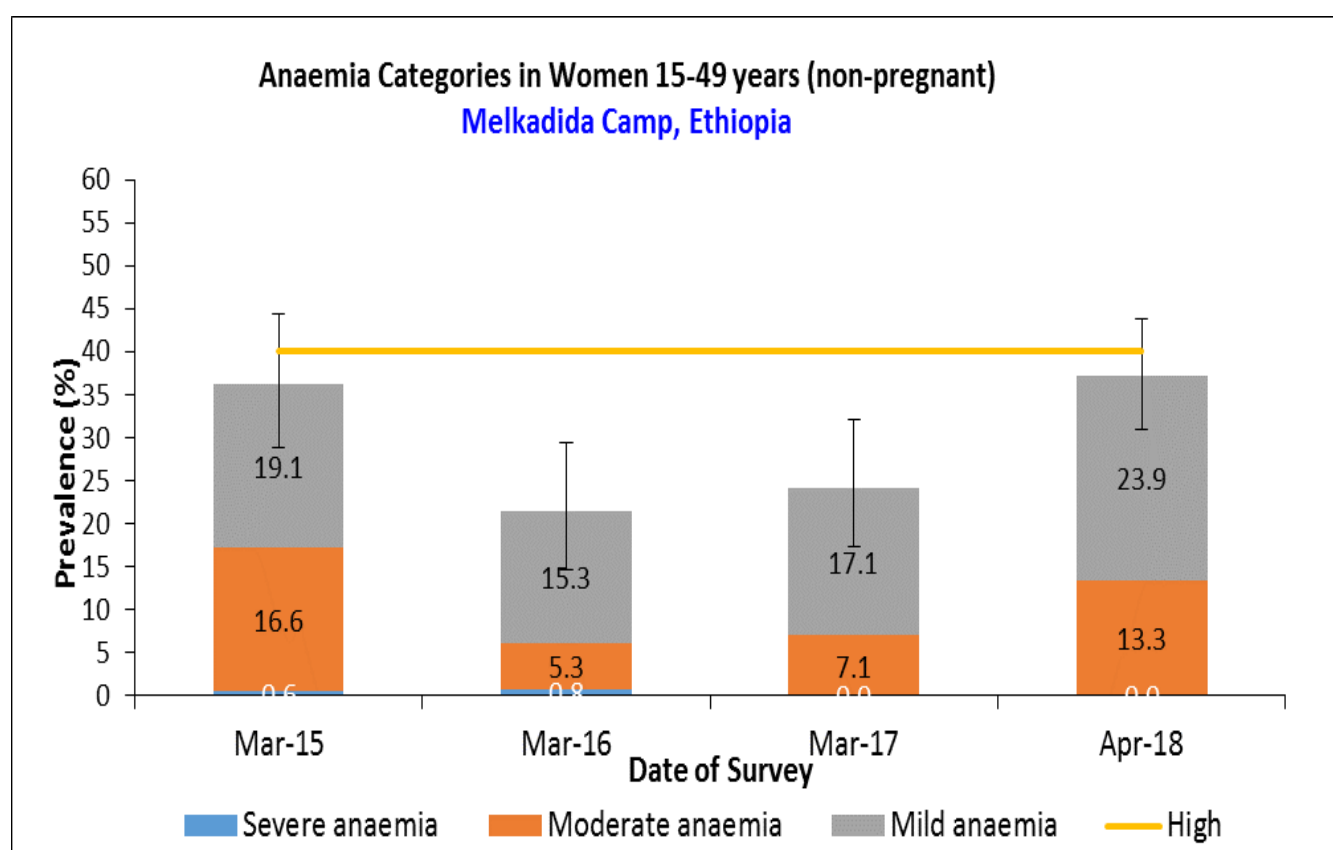


Table 77: ANC enrolment and iron-folic acid pills coverage among pregnant women (15-49yr)

	Number /total	% (95% CI)
Currently enrolled in ANC programme	66/67	98.5% (92.0-100.0%)
Currently receiving iron-folic acid pills	61/67	91.0% (81.5-96.6%)

6.10 Food security in Melkadida

Table 78: Ration card coverage

	Number/total	% (95% CI)
Proportion of households with a ration card	386/387	99.7% (98.-100.0%)

Table 79: Reported duration of general food ration 1

Average number of days the food ration lasts (Standard deviation or 95% CI)	Average duration (%) in relation to the theoretical duration of the ration
20.6 and SD = 5.9	68.7%

Table 80: Reported duration of general food ration 2

	Number/total	% (95% CI)
Proportion of households reporting that the food ration lasts the entire duration of the cycle	336/385	87.3% (83.5-90.4%)
Proportion of households reporting that the food ration lasted:		
≤75% of the cycle [30 DAYS]	33 /385	8.6% (6.1-11.9%)
>75% of the cycle [30 DAYS]	352/385	91.4% (88.2-94.0%)

NEGATIVE HOUSEHOLD COPING STRATEGIES

Table 81: Coping strategies used by the surveyed population over the past month

	Number/total	% (95% CI)
Proportion of households reporting using the following coping strategies over the past month*:		
Borrowed cash, food or other items with or without interest	178/387	46.0% (41.0-51.1%)
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)	13/387	3.4% (1.9-5.8%)
Requested increased remittances or gifts as compared to normal	10/387	2.6% (1.3-4.9%)
Reduced the quantity and/or frequency of meals and snacks	77/387	19.9% (16.1-24.3%)
Begged	8/387	2.1% (1.0-4.2%)
Engaged in potentially risky or harmful activities	15/387	3.9% (2.3-6.5%)
Proportion of households reporting using none of the coping strategies over the past month	202/385	52.5% (47.4-57.5%)

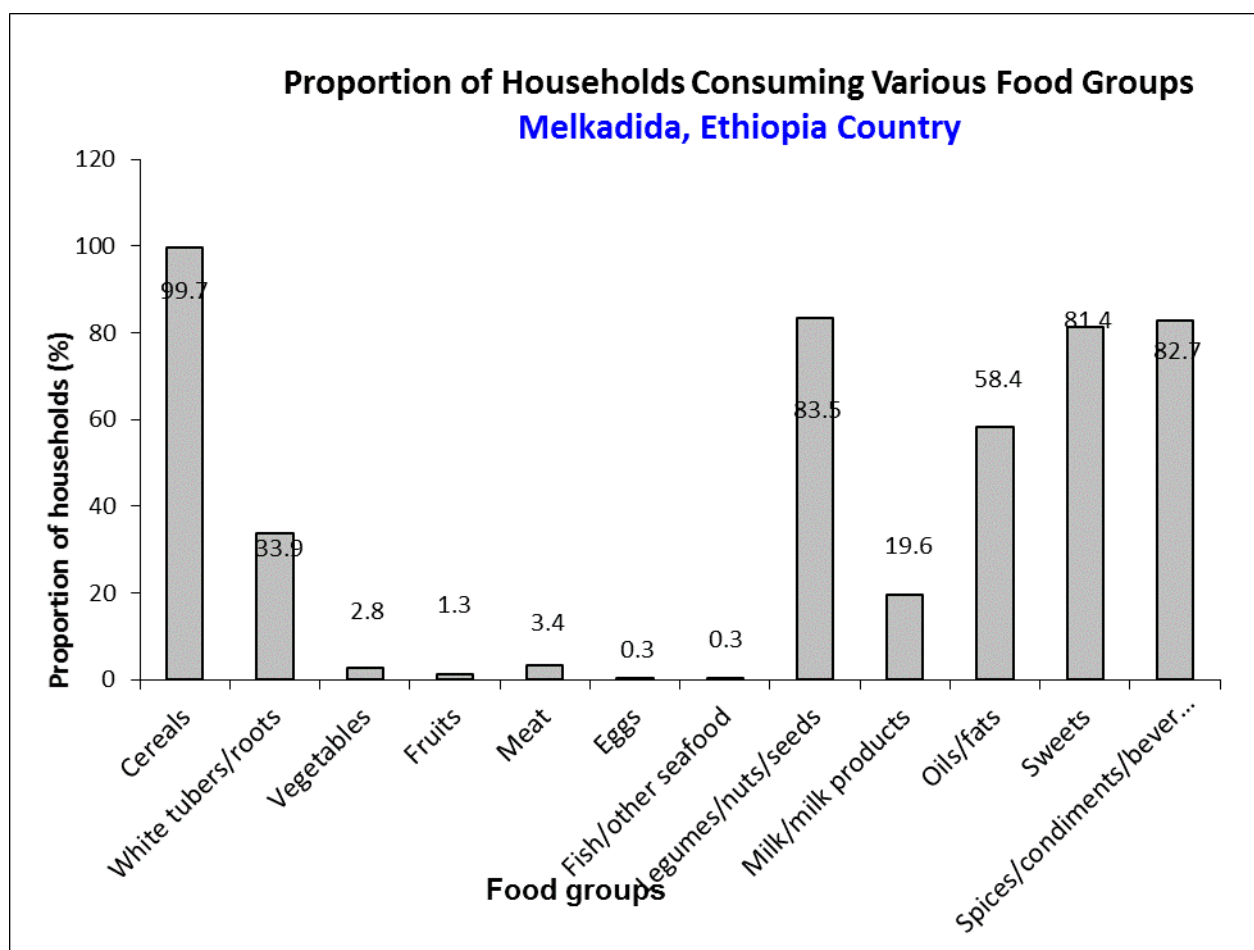
Table 82: Average HDDS

	Mean (Standard deviation or 95% CI)
Average HDDS	2.7 SD 2.1

Table 83: Consumption of micronutrient rich foods by households

	Number/total	% (95% CI)
Proportion of households <i>not consuming any</i> vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	300/387	77.5% (73.0-81.6%)
Proportion of households consuming either a plant or animal source of vitamin A	89/387	23.0% (19.0-27.6%)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	14/387	3.6% (2.1-6.1%)

Figure 22: Proportion of Households consuming Various Food Groups



6.11 WASH in Melkadida

Table 84: Water Quality

	Number/total	% (95% CI)
Proportion of households using an improved drinking water source	371/372	99.7% (98.3-100.0%)
Proportion of households that use a covered or narrow necked container for storing their drinking water	244/372	65.6% (60.5-70.4%)

Table 85: Water Quantity: Amount of litres of water used per person per day

Proportion of households that use:	Number/total	% (95% CI)
≥ 20 lpppd	238/372	64.0% (58.8-68.8%)
15 – <20 lpppd	67/372	18.0% (14.3-22.4%)
<15 lpppd	67/372	18.0% (14.3-22.4%)
Add the average water usage in lpppd		25.9 Lpppd

Table 86: Satisfaction with water supply

	Number/total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	371/371	100.0%

Figure 23 : Proportion of households that say they are satisfied with the water supply

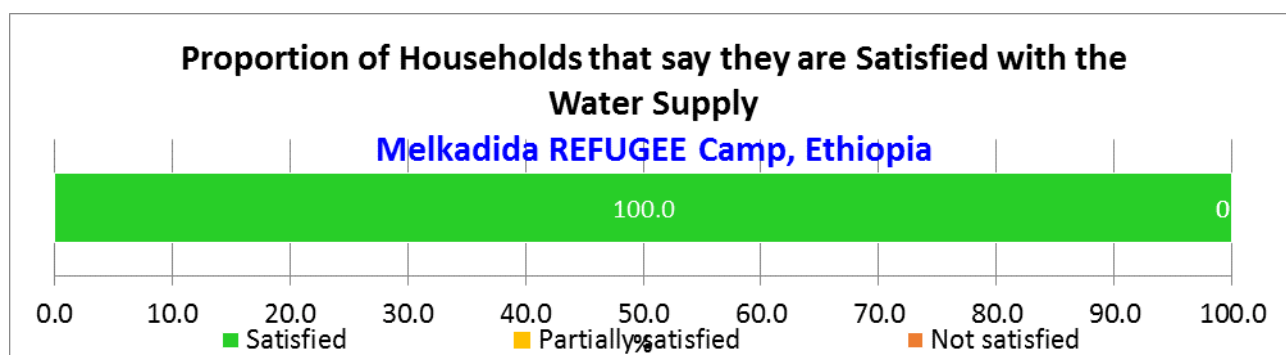
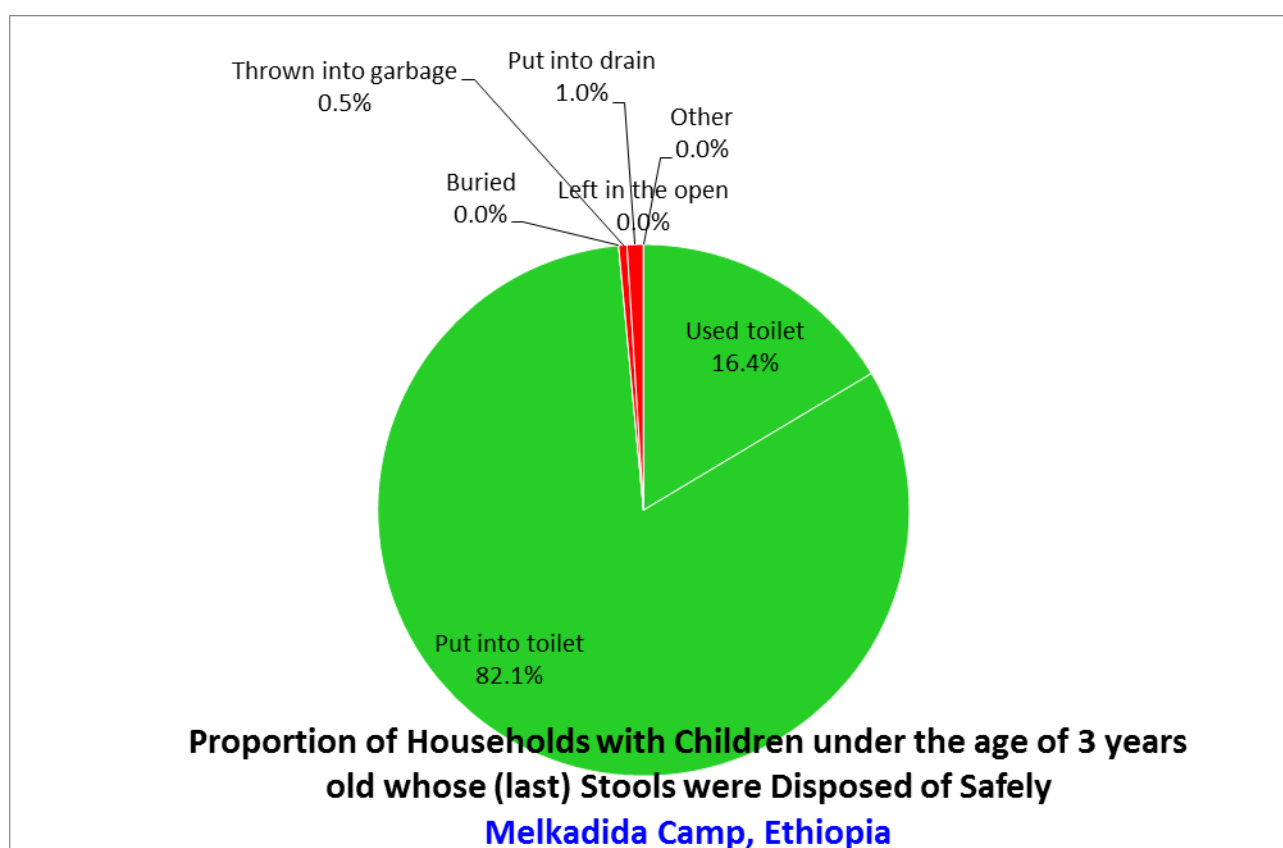


Table 87: Safe Excreta disposal

	Number/total	% (95% CI)
Proportion of households that use:		
An improved excreta disposal facility (improved toilet facility, 1 household)	12/371	3.2% (1.8-5.7%)
A shared family toilet (improved toilet facility, 2, households)	221/371	59.6% (54.4-64.6%)
A communal toilet (improved toilet facility, households or more)	138/371	37.2% (32.3-42.4%)
An unimproved toilet (unimproved toilet facility or public toilet)	0/371	0.0%
Proportion of households with children under three years old that dispose of faeces safely	204/307	98.6% (95.8-99.7%)

Figure 24: Proportion of household with children under the age 3 years old



7 RESULTS FROM KOBE CAMP

Table 88: Demographic characteristics of the study population in Kobe

	Actual	Planned	%
Total HHs surveyed	324	384	84%
Total population surveyed	2087	1297	161%
Total U5 surveyed	402	239	168%
Average HH size	6.4	5.4	119%
% of U5	19%	15%	129%

Table 89: Distribution of age and sex of sample

AGE (mo)	Boys		Girls		Total		Ratio	
	no.	%	no.	%	no.	%	Boy : girl	
6-17	42	56.0	33	44.0	75	23.5	1.3	
18-29	45	52.3	41	47.7	86	27.0	1.1	
30-41	44	57.1	33	42.9	77	24.1	1.3	
42-53	34	51.5	32	48.5	66	20.7	1.1	
54-59	8	53.3	7	46.7	15	4.7	1.1	
Total	173	54.2	146	45.8	319	100.0	1.2	

The sex ratio for boys and girls presented 0.8 – 1.2, which is might be there is selection bias during data collection.

7.1 Anthropometric results (based on WHO standards 2006) in Kobe:

Table 90: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex

	95% C.I.		
	All n = 317	Boys n = 171	Girls n = 146
Prevalence of global malnutrition (<-2 z-score and/or Oedema)	(46) 14.5 % (11.1 - 18.8%)	(33) 19.3 % (14.1 - 25.9%)	(13) 8.9 % (5.3 - 14.6%)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no Oedema)	(38) 12.0 % (8.9 - 16.0%)	(25) 14.6 % (10.1 - 20.7%)	(13) 8.9 % (5.3 - 14.6%)
Prevalence of severe malnutrition (<-3 z-score and/or Oedema)	(8) 2.5 % (1.3 - 4.9%)	(8) 4.7 % (2.4 - 9.0%)	(0) 0.0 % (0.0 - 2.6%)

The prevalence of oedema is 0.0 %

Prevalence of acute malnutrition based on WFH z-score and/or oedema and by sex, boys more affected than girls. It might gate why? Boys affected than girls we are expected to answer the main cause of malnutrition on boys from Nutrition causal analysis (NCA).

Figure 254 Distribution of WFH z-score (based on WHO Growth Standards)

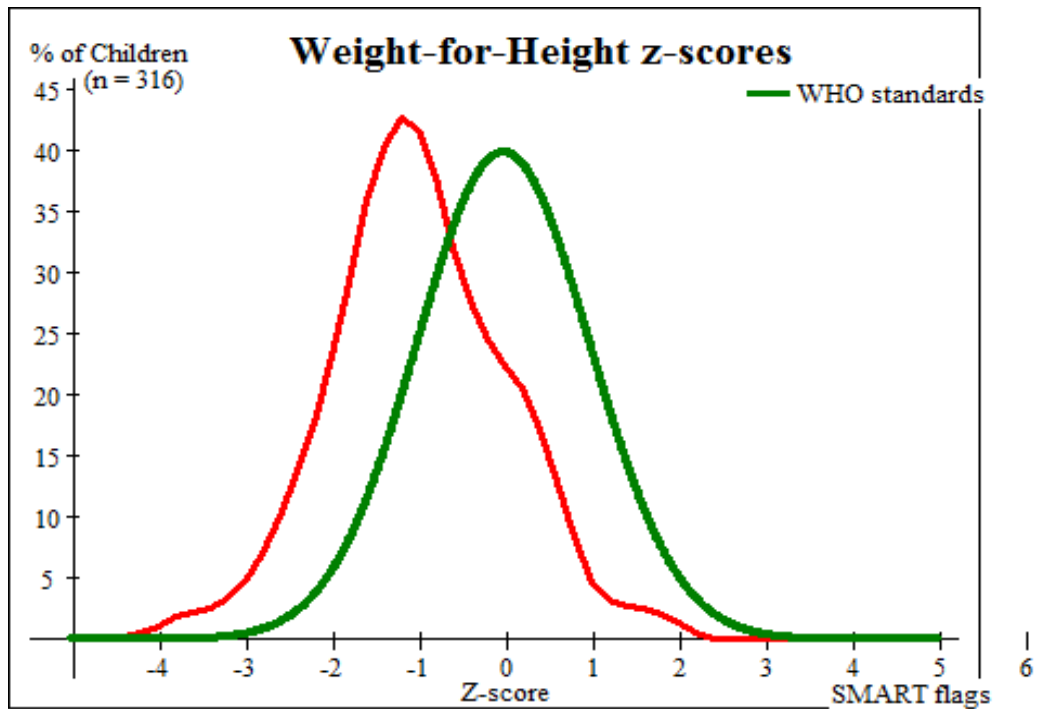


Figure 26 : Trends in the prevalence of global and severe acute malnutrition based on WHO Growth Standards in children 6-59 months from 2015-2018 in kobe

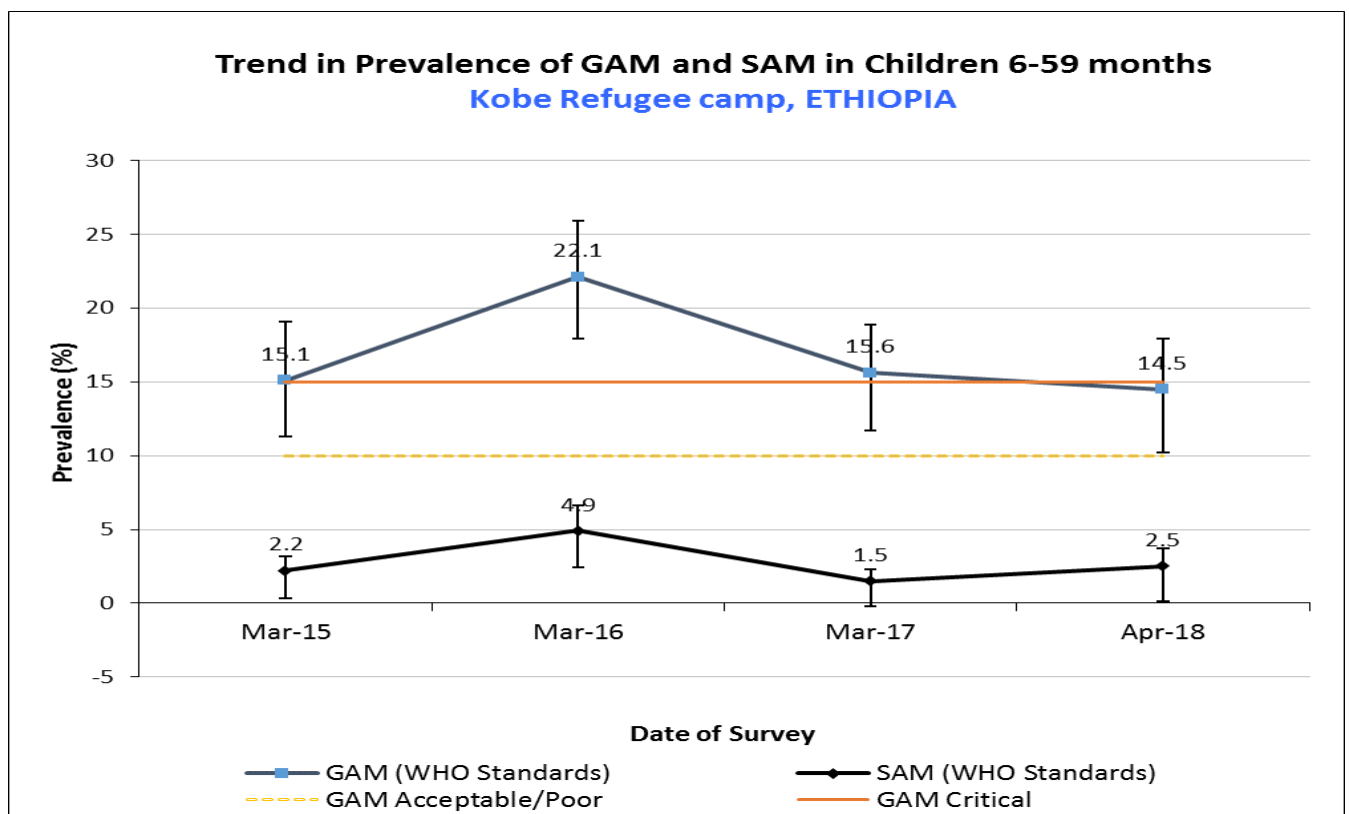


Table 91: Prevalence of acute malnutrition by age, based on WFH z-scores and/or oedema

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	75	3	4.0	7	9.3	65	86.7	0	0.0
18-29	84	1	1.2	12	14.3	71	84.5	0	0.0
30-41	77	2	2.6	13	16.9	61	79.2	1	1.3
42-53	66	1	1.5	3	4.5	62	93.9	0	0.0
54-59	15	0	0.0	3	20.0	12	80.0	0	0.0
Total	317	7	2.2	38	12.0	271	85.5	1	0.3

Table 92: Distribution of acute malnutrition and oedema based on weight-for-height z-scores

	<-3 z-score	>= -3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 1 (0.3 %)
Oedema absent	Marasmic No. 8 (2.5 %)	Not severely malnourished No. 309 (97.2 %)

Table 93: Prevalence of acute malnutrition based on MUAC cut off' and/or oedema and by sex

	All n = 319	Boys n = 173	Girls n = 146
Prevalence of global malnutrition (< 125 mm and/or oedema)	(11) 3.4 % (1.9 - 6.1%)	(5) 2.9 % (1.2 - 6.6%)	(6) 4.1 % (1.9 - 8.7%)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(9) 2.8 % (1.5 - 5.3%)	(3) 1.7 % (0.6 - 5.0%)	(6) 4.1 % (1.9 - 8.7%)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(2) 0.6 % (0.2 - 2.3 %)	(2) 1.2 % (0.3 - 4.1%)	(0) 0.0 % (0.0 - 2.6%)

Table 94: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema

Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	75	0	0.0	5	6.7	70	93.3	0	0.0
18-29	86	1	1.2	4	4.7	81	94.2	0	0.0
30-41	77	0	0.0	0	0.0	77	100.0	1	1.3
42-53	66	0	0.0	0	0.0	66	100.0	0	0.0
54-59	15	0	0.0	0	0.0	15	100.0	0	0.0
Total	319	1	0.3	9	2.8	309	96.9	1	0.3

Table 95: Prevalence of underweight based on weight-for-age z-scores by sex

	95% C.I.		
	All n = 317	Boys n = 171	Girls n = 146
Prevalence of underweight (<-2 z-score)	(102) 32.2 % (27.3 - 37.5%)	(62) 36.3 % (29.4 - 43.7%)	(40) 27.4 % (20.8 - 35.1%)
Prevalence of moderate underweight (<-2 z-score and ≥ -3 z-score)	(67) 21.1 % (17.0 - 26.0%)	(38) 22.2 % (16.6 - 29.0%)	(29) 19.9 % (14.2 - 27.1%)
Prevalence of severe underweight (<-3 z-score)	(35) 11.0 % (8.0 - 15.0%)	(24) 14.0 % (9.6 - 20.0%)	(11) 7.5 % (4.3 - 13.0%)

Table 96: Prevalence of underweight by age, based on weight-for-age z-scores

Age (mo)	Total no.	Severe underweight (<-3 z-score)		Moderate underweight (≥ -3 and <-2 z-score)		Normal (≥ -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	75	3	4.0	11	14.7	61	81.3	0	0.0
18-29	85	16	18.8	19	22.4	50	58.8	0	0.0
30-41	76	11	14.5	18	23.7	47	61.8	1	1.3
42-53	66	4	6.1	13	19.7	49	74.2	0	0.0
54-59	15	1	6.7	6	40.0	8	53.3	0	0.0
Total	317	35	11.0	67	21.1	215	67.8	1	0.3

Table 97: Prevalence of stunting based on height-for-age z-scores and by sex

	95% C.I.		
	All n = 306	Boys n = 165	Girls n = 141
Prevalence of stunting (<-2 z-score)	(111) 36.3 % (31.1 - 41.8%)	(63) 38.2 % (31.1 - 45.8%)	(48) 34.0 % (26.7 - 42.2%)
Prevalence of moderate stunting (<-2 z-score and ≥ -3 z-score)	(66) 21.6 % (17.3 - 26.5%)	(35) 21.2 % (15.7 - 28.1%)	(31) 22.0 % (15.9 - 29.5%)
Prevalence of severe stunting (<-3 z-score)	(45) 14.7 % (11.2 - 19.1%)	(28) 17.0 % (12.0 - 23.4%)	(17) 12.1 % (7.7 - 18.5%)

Figure 27 : Distribution of HFA z-scores (based on WHO Growth Standards) in Kobe camp

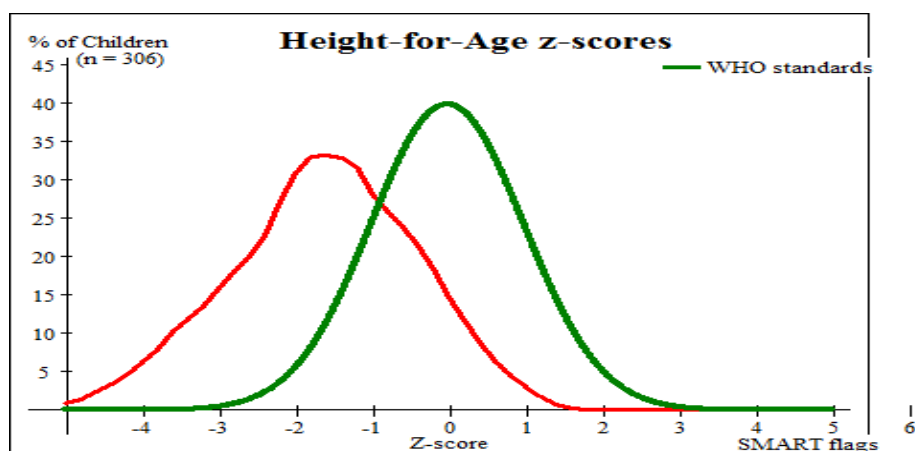


Figure 28 : Trends in the prevalence of stunting in children 6-59 months in Kobe camp

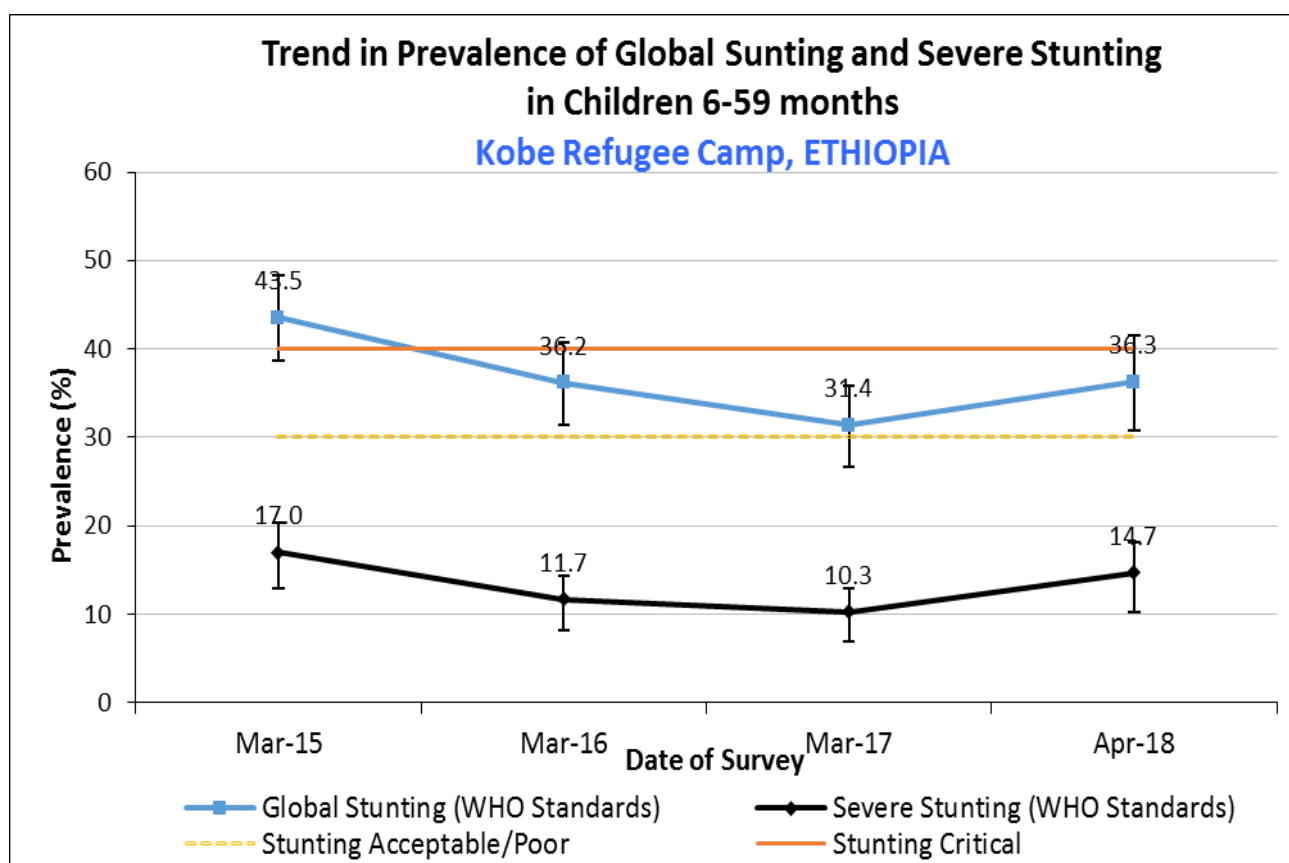


Table 98: Prevalence of stunting by age based on height-for-age z-scores

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (>= -2 z score)	
		No.	%	No.	%	No.	%
6-17	72	7	9.7	14	19.4	51	70.8
18-29	80	20	25.0	13	16.3	47	58.8
30-41	74	11	14.9	22	29.7	41	55.4
42-53	65	4	6.2	16	24.6	45	69.2
54-59	15	3	20.0	1	6.7	11	73.3
Total	306	45	14.7	66	21.6	195	63.7

Table 99: Mean z-scores, Design Effects and excluded subjects

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	316	-0.99±1.01	1.00	42	1
Weight-for-Age	317	-1.62±1.04	1.00	42	0
Height-for-Age	306	-1.63±1.18	1.00	41	12

* contains for WHZ and WAZ the children with oedema.

7.2 Mortality results (retrospective over 88 days prior to interview)

Table 100: The 74 days retrospective mortality rate

CMR (total deaths/10,000 people / day): 0.15 (0.05-0.45) (95% CI)
U5MR (deaths in children under five/10,000 children under five / day): 0.81 (0.28-2.35) (95% CI)

7.3 Feeding programme coverage results in Kobe

Table 101: Programme coverage for acutely malnourished children

	Number/total	% (95% CI)
Targeted Supplementary feeding programme coverage	9/36	25.0% (12.1-42.2%)
Therapeutic feeding programme coverage	0/9	0.0%
Blanket supplementary feeding program (BSFP) 6-35 months	128/171	74.9% (67.7-81.2%)
Wet Feeding for children 36 -59 months of age	63/133	47.4% (38.7-56.2%)

7.4 Measles vaccination coverage results in Kobe

Table 102: Measles vaccination coverage for children aged 9-59 months (or other context-specific target group) (n= 294)

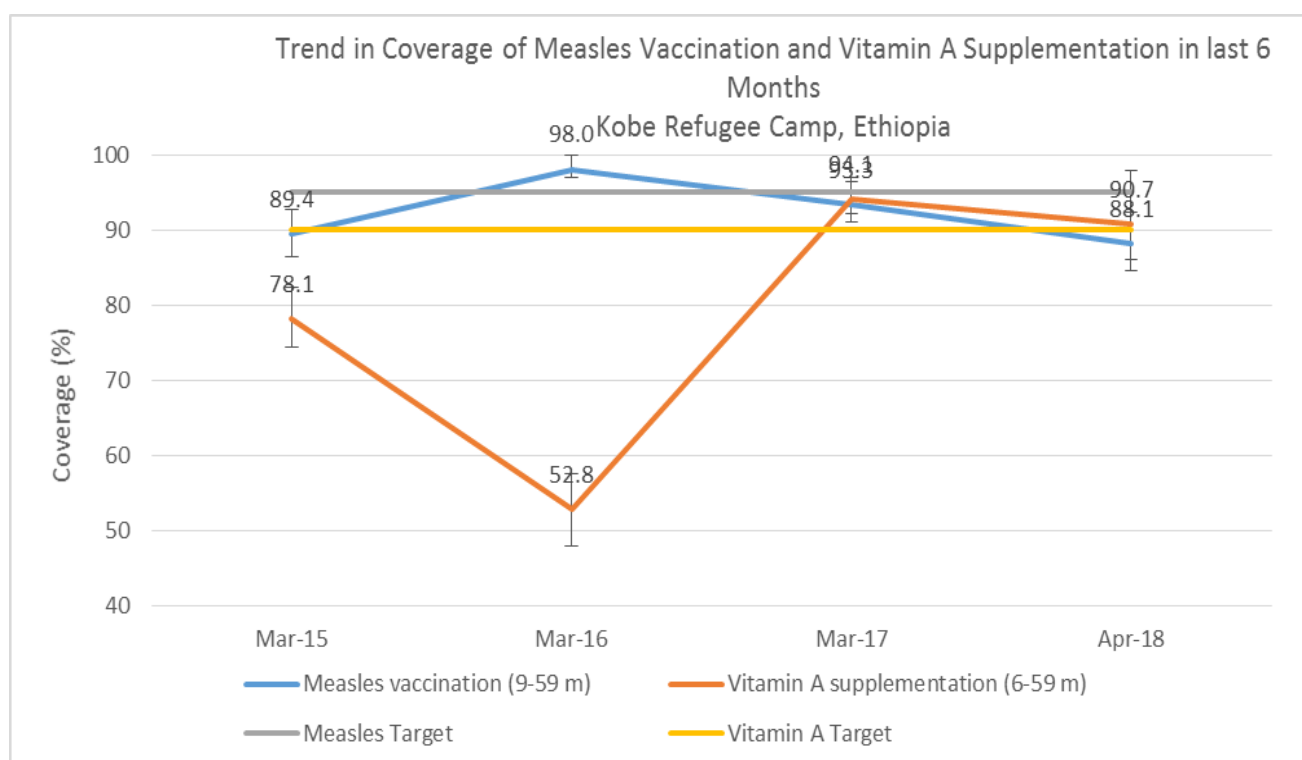
	Measles (with card) n=231	Measles (with card <u>or</u> confirmation from mother) n=259
YES	78.6% (73.4-83.1%)	88.1% (83.8-91.6%)

7.5 Vitamin A supplementation coverage results in Kobe

Table 103: Vitamin A supplementation for children aged 6-59 months within past 6 months (or other context-specific target group) (n=312)

	Vitamin A capsule (with card) n=203	Vitamin A capsule (with card <u>or</u> confirmation from mother) n=277
YES	65.1% (59.5-70.3%)	88.8% (84.7-92.1%)

FIGURE 29: trends in the coverage of measles vaccination and vitamin a supplementation in last 6 months in children 6-59 months from 2015-2018



7.6 Diarrhoea results in Kobe

Table 104: Period prevalence of diarrhoea

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	13/307	4.2% (2.4-7.3%)

7.7 Anaemia results in Kobe

Table 105: Prevalence of TOTAL anaemia, ANAEMIA CATEGORIES, and MEAN haemoglobin concentration in children 6-59 months of age in Kobe

	All (95% CI) n =307
Total Anaemia (Hb<11.0 g/dL)	(n=185) 60.3% (54.5-65.8%)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(n=110) 35.8% (30.5-41.5%)
Moderate Anaemia (7.0-9.9 g/dL)	(n=75) 24.4% (19.8-29.7%)
Severe Anaemia (<7.0 g/dL)	(n=0) 0.0%
Mean Hb (g/dL) (SD / 95% CI) / [range]	10.65g/dl and SD =1.27 [7- 14.1]

Figure 30 : Trends in anaemia categories in children 6-59 months from 2015-2018

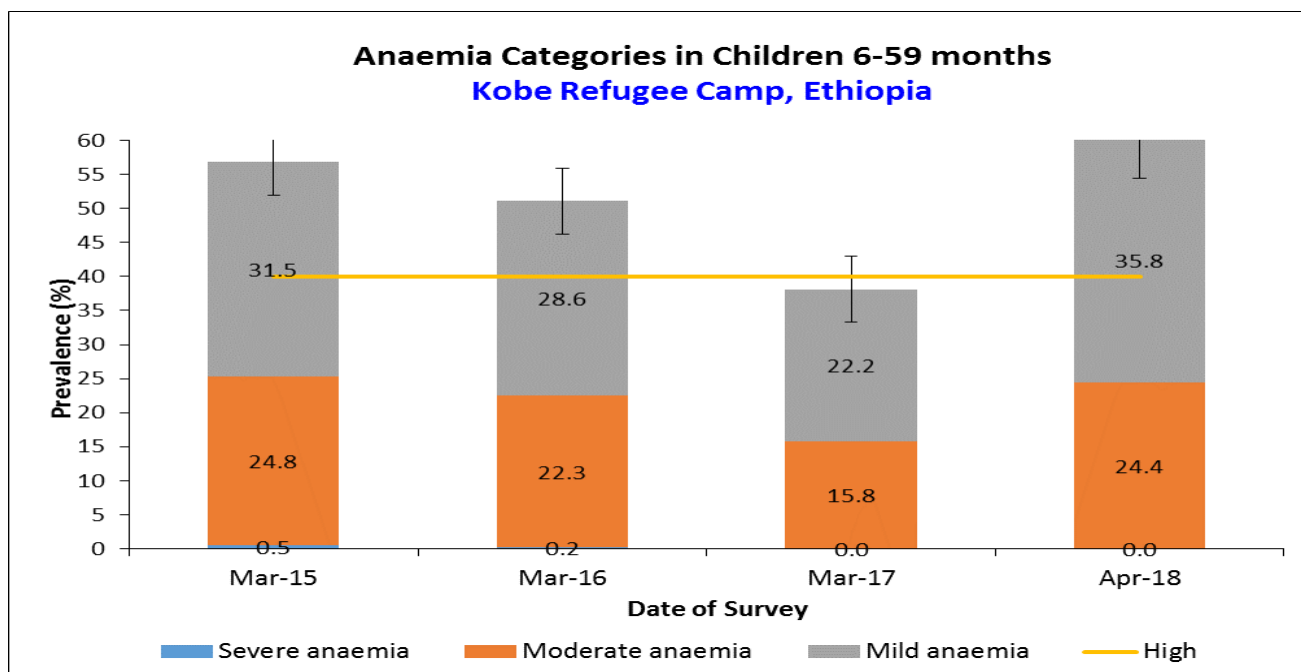


Table 106: Prevalence of Anaemia in children 6-59 months of age BY AGE GROUP

	6-23 months (n=108)	24-35 months (n=73)	36-59 months (n=129)
Total Anaemia (Hb<11.0 g/dL)	(n=81) 75.0% (65.7-82.8%)	(n=43) 61.4% (49.0-72.8%)	(n=61) 47.3% (38.4-56.3%)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(n=35) 32.4% (23.7-42.1%)	(n=31) 44.3% (32.4-56.7%)	(n=44) 34.1% (26.0-43.0%)
Moderate Anaemia (7.0-9.9 g/dL)	(n=46) 42.6% (33.1-52.5%)	(n=12) 17.1% (9.2-28.0%)	(n=17) 13.2% (7.9-20.3%)
Severe Anaemia (<7.0 g/dL)	(n=0) 0.0%	(n=0)	(n=0) 0.0%
Mean Hb and SD [Range]	10.1g/dl & SD = 1.22 [7-13.4]	10.76g/dl & SD =1.17 [7.6-13.3]	11.04g/dl & SD =1.198 [7.4-14.1]

7.8 Infant and Young Children Feeding (IYCF) Children 0-23 months in Kobe

Table 107: Prevalence of Infant and Young Child Feeding Practices Indicators

Indicator	Age range	Number/ total	Prevalence (%) and 95% CI
Timely initiation of breastfeeding	0-23 months	97/107	90.7% (83.5-95.4%)
Exclusive breastfeeding under 6 months	0-5 months	27/33	81.8% (64.5-93.0%)
Continued breastfeeding at 1 year	12-15 months	19/29	65.5% (45.7-82.1%)
Continued breastfeeding at 2 years	20-23 months	9/19	47.4% (24.4-71.1%)
Introduction of solid, semi-solid or soft foods	6-8 months	6/16	37.5% (15.2-64.6%)
Consumption of iron-rich or iron-fortified foods	6-23 months	86/93	92.5% (85.1-96.9%)
Bottle feeding	0-23 months	24/129	18.6% (12.3-26.4%)

Table 108: Infant formula intake in children aged 0-23 months

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	38/128	29.7% (21.9-38.4%)

Fortified blended foods

Table 109: CSB intake in children aged 6-23 months

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB	46/94	48.9% (38.5-59.5%)

Table 110: CSB ++ intake in children aged 6-23 months

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB++	71/94	75.5% (65.6-83.8%)

7.9 Women 15-49 years in Kobe

Table 111: Women physiological status and age

Physiological status	Number/total	% of sample
Non-pregnant	209/254	82.3% (77.0-86.8%)
Pregnant	45/254	17.7% (13.2-23.0%)
Mean age (range)	28.9488 SD = 8.368 [15-48]	

Table 112: Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 years)

Anaemia in non-pregnant women of reproductive age (15-49 years)	Number/total	% (95% CI)
Total Anaemia (<12.0 g/dL)	92/206	44.7% (37.7-51.7%)
Mild Anaemia (11.0-11.9 g/dL)	41/176	23.3% (17.3-30.2%)
Moderate Anaemia (8.0-10.9 g/dL)	19/176	10.8% (6.6-16.3%)
Severe Anaemia (<8.0 g/dL)	2/176	1.1% (0.1-4.0%)
Mean Hb (g/dL) and (SD) [range]	11.9141 and SD =1.4 [6-14.6]	

Figure 31 : Trends in anaemia categories in women 15-49 years from 2011-2016 in kobe

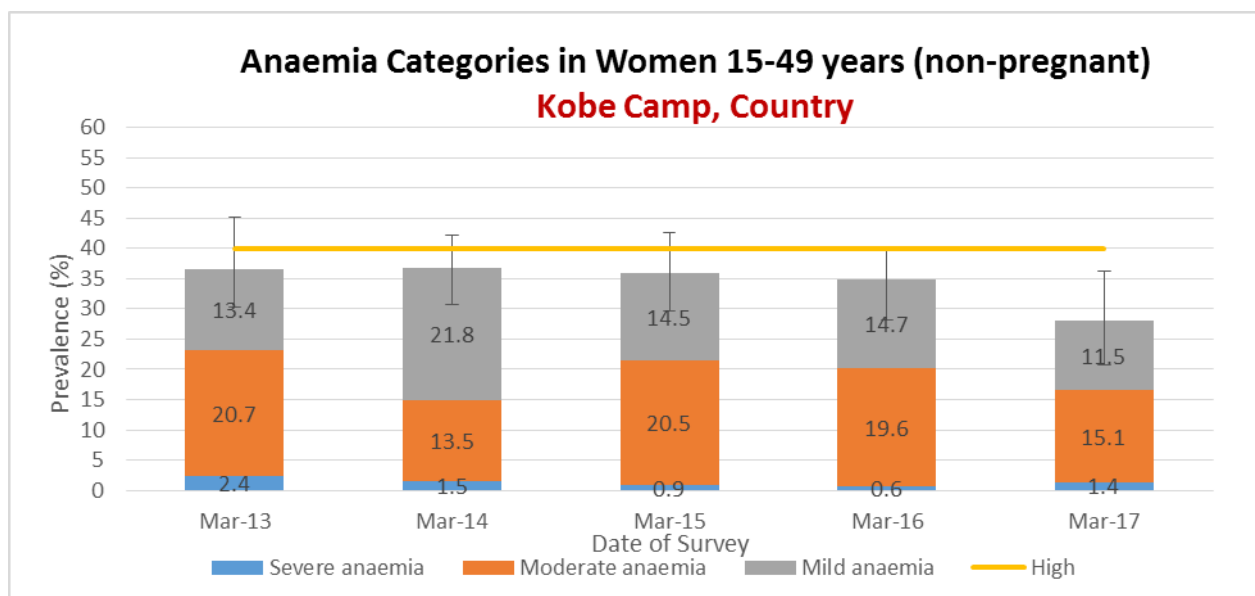


Table 113: ANC enrolment and iron-folic acid pills coverage among pregnant women (15-49 years)

	Number /total	% (95% CI)
Currently enrolled in ANC programme	44/44	100.0%
Currently receiving iron-folic acid pills	43/45	95.6% (84.9-99.5%)

7.10 Food security in Kobe

Access to food assistance results

Table 1144: Ration card coverage

	Number/total	% (95% CI)
Proportion of households with a ration card	339/3339	100.0%

Table 1155: Reported duration of general food ration

Average number of days the food ration lasts (Standard deviation or 95% CI)	Average duration (%) in relation to the theoretical duration of the ration*
21.45 SD 5.22	71.5%

Table 116: Reported duration of general food ration

	Number/total	% (95% CI)
Proportion of households reporting that the food ration lasts the entire duration of the cycle	333/339	98.2% (96.0-99.3%)
Proportion of households reporting that the food ration lasted:		
≤75% of the cycle [30 DAYS]	6/339	1.8% (0.7-4.0%)
>75% of the cycle [30 DAYS]	333/339	98.2% (96.0-99.3%)

Negative coping strategies results

Table 117: Coping strategies used by the surveyed population over the past month

	Number/total	% (95% CI)
Proportion of households reporting using the following coping strategies over the past month*:		
Borrowed cash, food or other items <i>with or without interest</i>	213/339	62.8% (57.4-68.0%)
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, etc.)	47/339	13.9% (10.5-18.1%)
Requested increased remittances or gifts as compared to normal	78/339	23.0% (18.7-27.9%)
Reduced the quantity and/or frequency of meals	132/338	39.1% (33.9-44.5%)
Begged	32/338	9.5% (6.7-13.2%)
Engaged in potentially risky or harmful activities	72/339	21.2% (17.1-26.1%)
Proportion of households reporting using none of the coping strategies over the past month	109/337	32.3% (27.4-37.7%)

* The total will be over 100% as households may use several negative coping strategies.

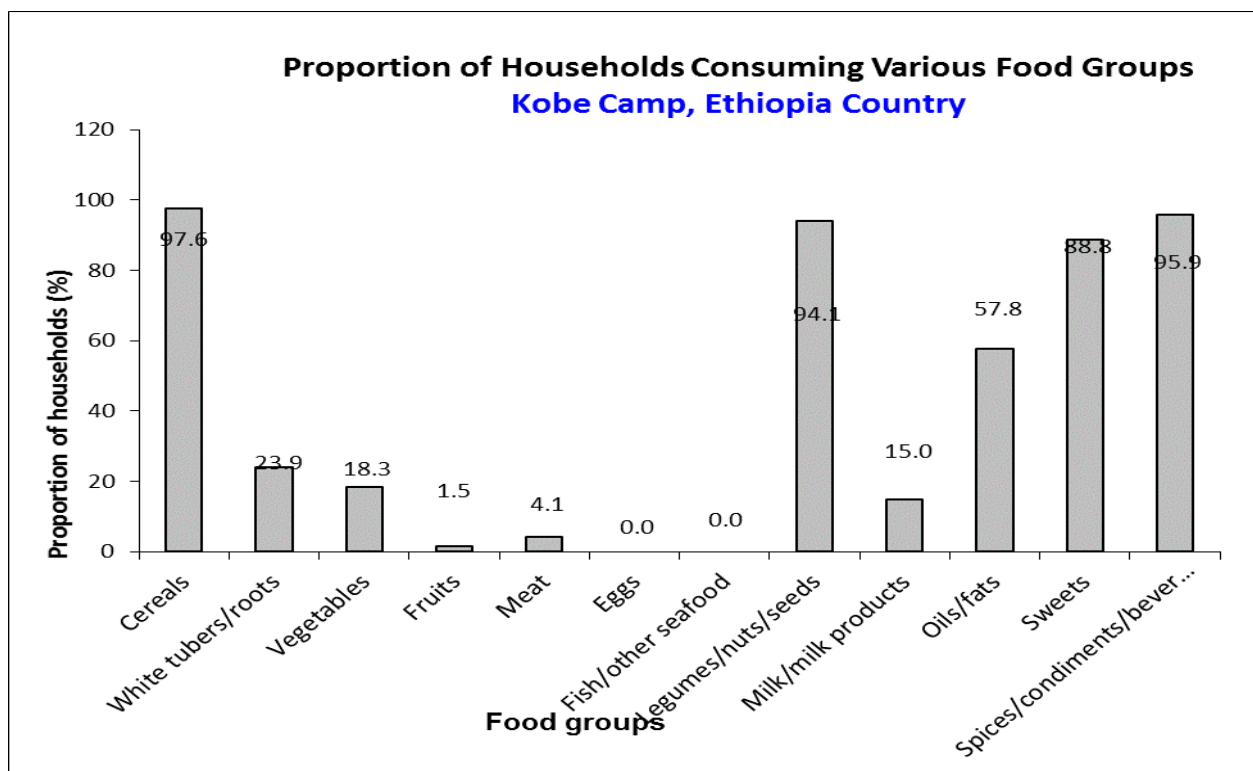
Table 118: Average HDDS

	Mean (Standard deviation or 95% CI)
Average HDDS	2.5 SD 1.7

Table 119: Consumption of micronutrient rich foods by households

	Number/total	% (95% CI)
Proportion of households <i>not consuming any</i> vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	222//339	65.5% (60.2-70.5%)
Proportion of households consuming either a plant or animal source of vitamin A	66/339	19.5% (15.5-24.2%)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	14/339	4.1% (2.4-7.0%)

Figure 32 : Proportion of Households Consuming Various Food Groups



7.11 WASH in Kobe

Table 120: Water Quality

	Number/total	% (95% CI)
Proportion of households using an improved drinking water source	339/339	100.0%
Proportion of households that use a covered or narrow necked container for storing their drinking water	214/339	63.1% (57.7-68.3%)

Table 121: Water Quantity: Amount of litres of water used per person per day

Proportion of households that use:	Number/total	% (95% CI)
≥ 20 lpppd	193/336	57.4% (52.0-62.8%)
15 – <20 lpppd	65/336	19.3% (15.3-24.1%)
<15 lpppd	78/336	23.2% (18.9-28.2%)
average water usage in lppd		24.28 liter/peron/day

Table 122: Satisfaction with water supply

	Number/total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	336/339	99.1% (97.2-99.8%)

Figure 33 : Proportion of households that say they are satisfied with the water supply

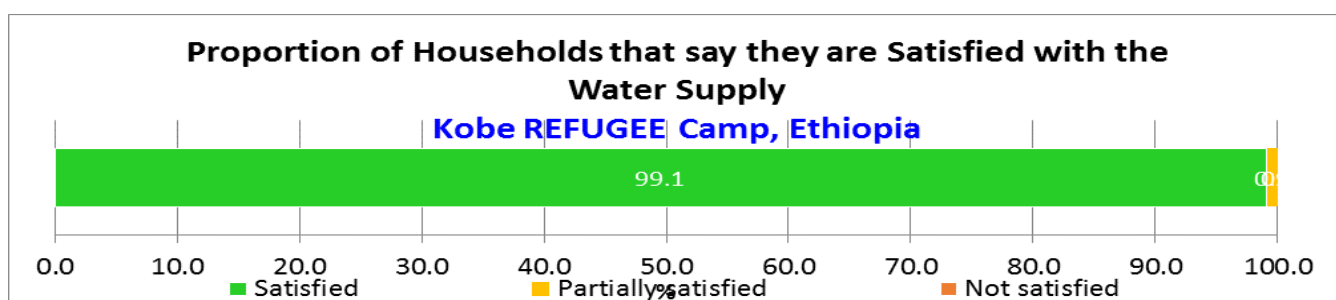
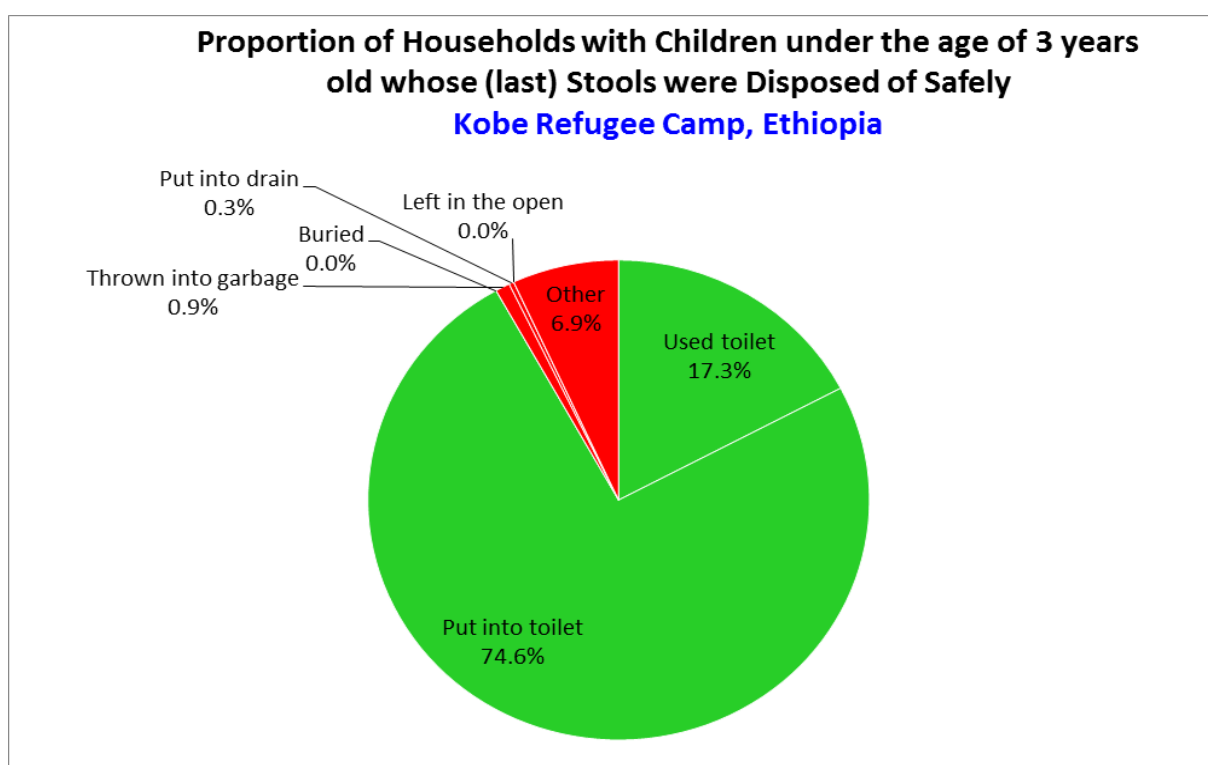


Table 123: Safe Excreta disposal

	Number/total	% (95% CI)
Proportion of households that use:		
An improved excreta disposal facility (improved toilet facility, 1 household),	9/332	2.7% (1.3-5.3%)
A shared family toilet (improved toilet facility, 2 households)	80/332	24.1% (19.7-29.1%)
A communal toilet (improved toilet facility, 3 households or more)	243/332	73.2% (68.1-77.9%)
An unimproved toilet (unimproved toilet facility or public toilet)	0	0.0%
Proportion of households with children under three years old that dispose of faeces safely	214/218	98.2% (95.4-99.5%)

Figure 34: Proportion of Household with children under the age 3 years old whose last Stool were Disposed safely



8 RESULTS FROM HILAWEYN CAMP

Table 124: Demographic characteristics of the study population in Hilaweyn

	Actual	Planned	%
Total HHs surveyed	402	403	100%
Total population surveyed	2587	1299	199%
Total U5 surveyed	453	254	178%
Average HH size	6.4	5.9	109%
% of U5	17.5%	12.5%	140%

Table 125: Distribution of age and sex of sample

AGE (mo)	Boys		Girls		Total		Ratio Boy:girl
	no.	%	no.	%	no.	%	
6-17	48	48.5	51	51.5	99	24.3	0.9
18-29	51	51.5	48	48.5	99	24.3	1.1
30-41	42	40.0	63	60.0	105	25.7	0.7
42-53	46	53.5	40	46.5	86	21.1	1.1
54-59	10	52.6	9	47.4	19	4.7	1.1
Total	197	48.3	211	51.7	408	100.0	0.9

The sex ratio for boys and girls presented 0.9 – 1.1, which is might be there is selection bias during data collection.

8.1 Anthropometric results (based on WHO standards 2006) in Hilaweyn:

Table 126: Prevalence of acute malnutrition based on WFH z-scores (and/or oedema) and by sex

	All n = 402	Boys n = 193	Girls n = 209
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(41) 10.2 % (7.6 - 13.5%)	(26) 13.5 % (9.4 - 19.0%)	(15) 7.2 % (4.4 - 11.5%)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(34) 8.5 % (6.1 - 11.6%)	(20) 10.4 % (6.8 - 15.5%)	(14) 6.7 % (4.0 - 10.9%)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(7) 1.7 % (0.8 - 3.6%)	(6) 3.1 % (1.4 - 6.6%)	(1) 0.5 % (0.1 - 2.7%)

The prevalence of oedema is 0.0 %

Prevalence of acute malnutrition based on WFH z-score and/or oedema and by sex, boys more affected than girls by malnutrition. Why? Boys more affected than girls we are expected to answer the main cause of malnutrition on boys from Nutrition causal analysis (NCA).

Figure 35: Distribution of weight-for-height z-scores (based on WHO Growth Standards)

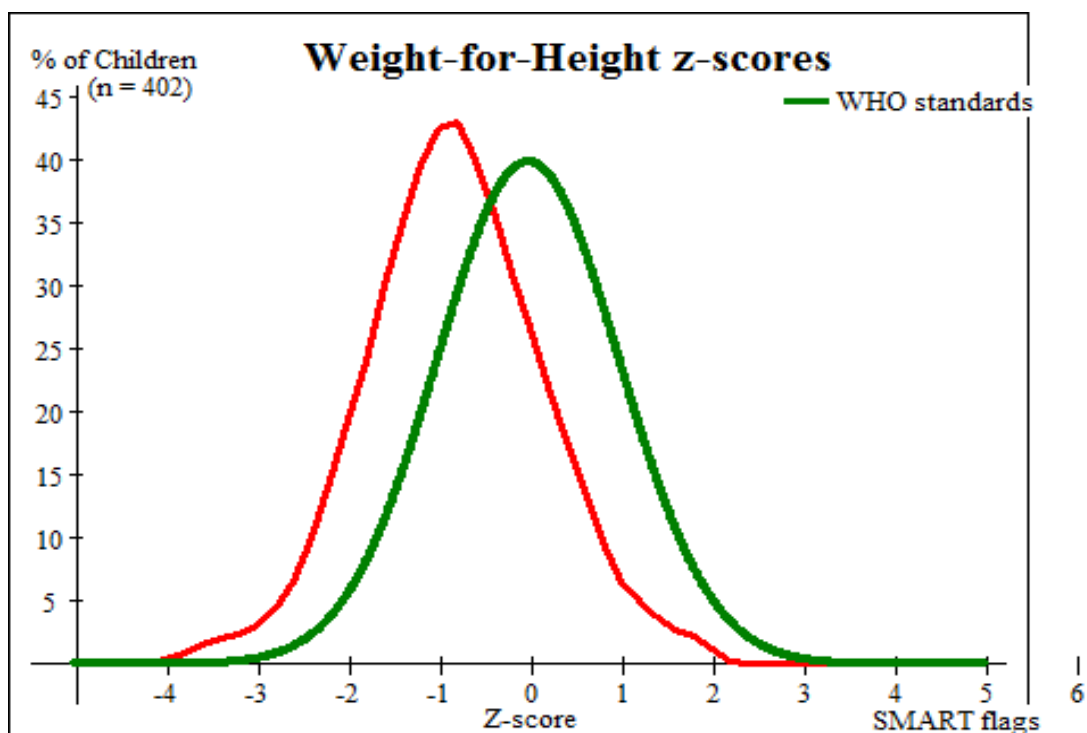


Figure 36 : Trends in the prevalence of global and severe acute malnutrition based on WHO Growth Standards in children 6-59 months from 2015-2018 in Hilaweyn

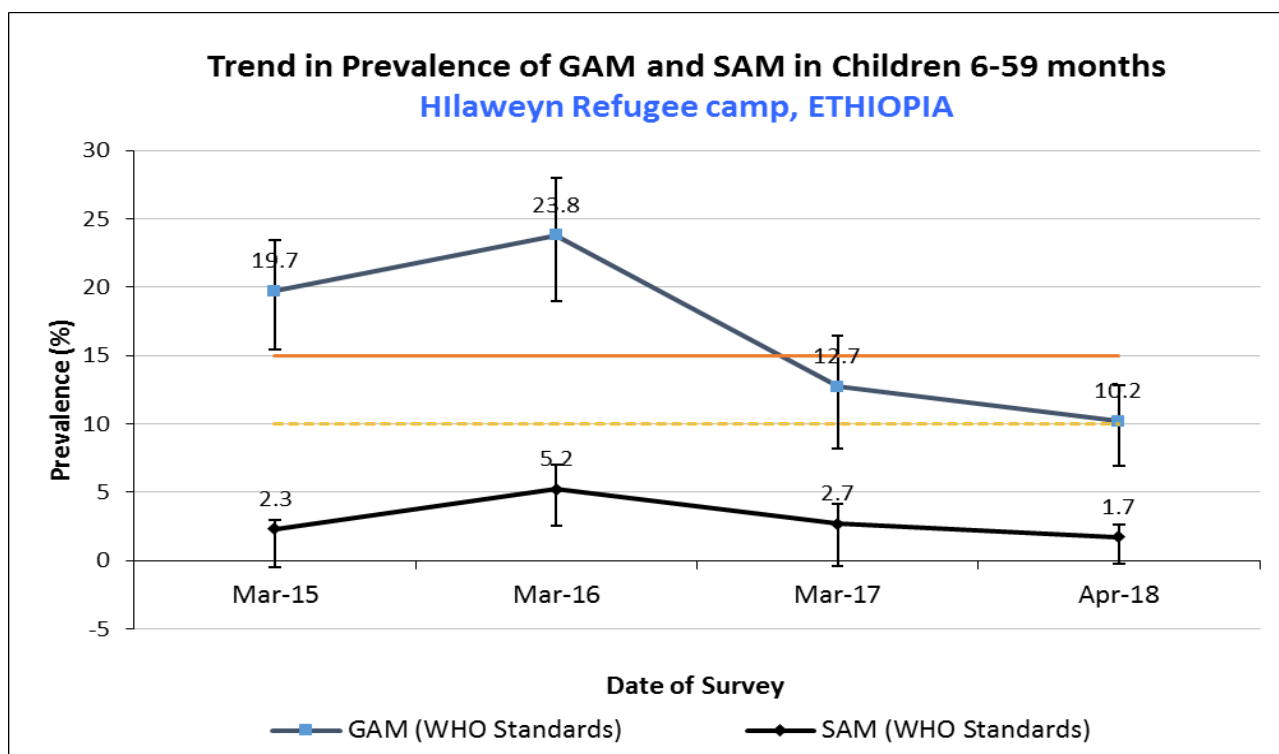


Table 1277: Prevalence of acute malnutrition by age, based on WFH z-scores and/or oedema

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	95	2	2.1	9	9.5	84	88.4	0	0.0
18-29	99	2	2.0	9	9.1	88	88.9	0	0.0
30-41	104	3	2.9	6	5.8	95	91.3	0	0.0
42-53	85	0	0.0	8	9.4	77	90.6	0	0.0
54-59	19	0	0.0	2	10.5	17	89.5	0	0.0
Total	402	7	1.7	34	8.5	361	89.8	0	0.0

Figure 37 : Prevalence of acute malnutrition by age, based on WFH z-scores and/or oedema

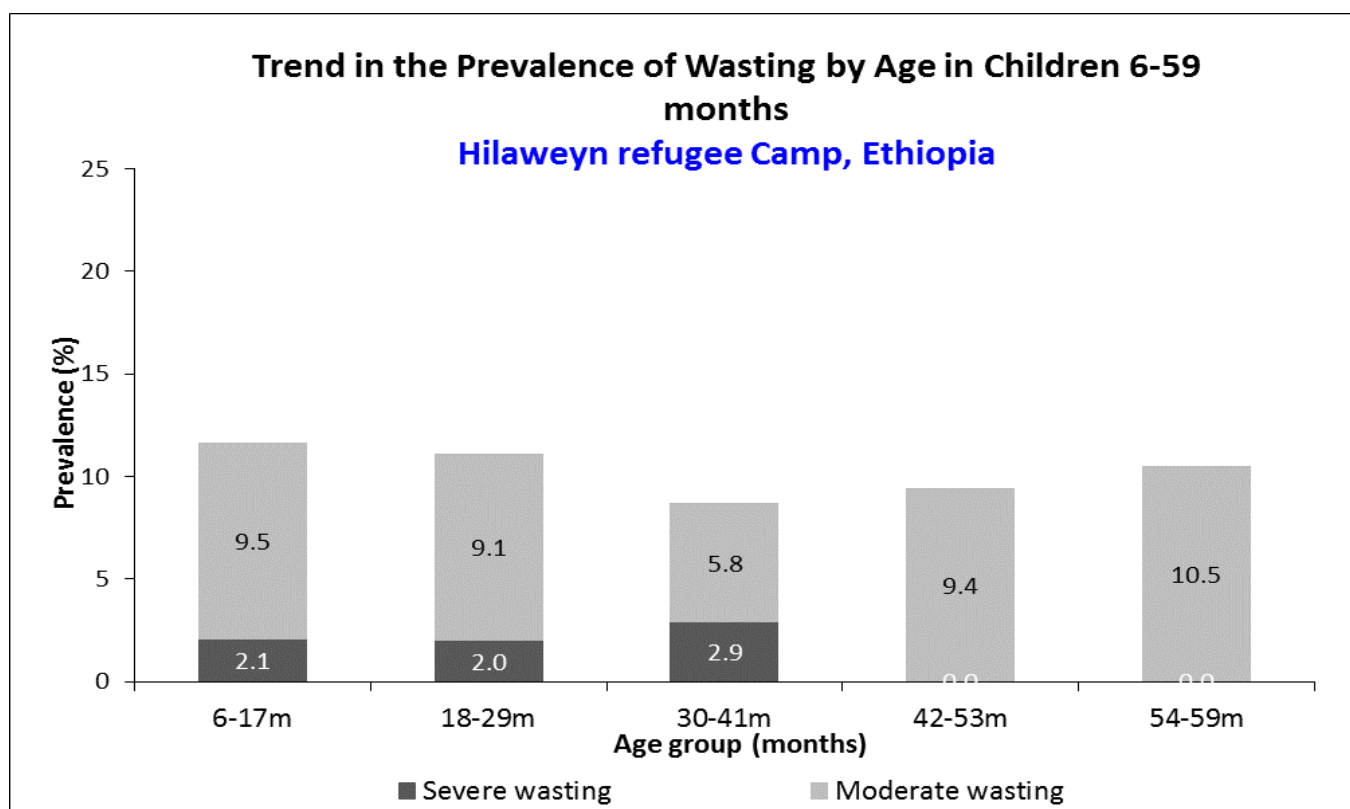


Table 128: Distribution of acute malnutrition and oedema based on WFH z-scores

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 10 (2.5 %)	Not severely malnourished No. 397 (97.5 %)

Table 129: Prevalence of acute malnutrition on MUAC cut off' and/or oedema and by sex

	95% C.I.		
	All n = 407	Boys n = 196	Girls n = 211
Prevalence of global malnutrition (< 125 mm and/or oedema)	(24) 5.9 % (4.0 - 8.6%)	(8) 4.1 % (2.1 - 7.8%)	(16) 7.6 % (4.7 - 12.0%)
Prevalence of moderate malnutrition (< 125 mm and ≥ 115 mm, no oedema)	(17) 4.2 % (2.6 - 6.6%)	(4) 2.0 % (0.8 - 5.1%)	(13) 6.2 % (3.6 - 10.3%)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(7) 1.7 % (0.8 - 3.5%)	(4) 2.0 % (0.8 - 5.1%)	(3) 1.4 % (0.5 - 4.1%)

Table 130: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema

Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting (≥ 115 & < 125 mm)		Normal (≥ 125 mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	98	6	6.1	8	8.2	84	85.7	0	0.0
18-29	99	1	1.0	5	5.1	93	93.9	0	0.0
30-41	105	0	0.0	3	2.9	102	97.1	0	0.0
42-53	86	0	0.0	1	1.2	85	98.8	0	0.0
54-59	19	0	0.0	0	0.0	19	100.0	0	0.0
Total	407	7	1.7	17	4.2	383	94.1	0	0.0

Table 131: Prevalence of underweight based on weight-for-age z-scores by sex

	95% C.I.		
	All n = 403	Boys n = 192	Girls n = 211
Prevalence of underweight (< -2 z-score)	(158) 39.2 % (34.6 - 44.1%)	(84) 43.8 % (36.9 - 50.8%)	(74) 35.1 % (29.0 - 41.7%)
Prevalence of moderate underweight (< -2 z-score and ≥ -3 z-score)	(112) 27.8 % (23.6 - 32.4%)	(59) 30.7 % (24.6 - 37.6%)	(53) 25.1 % (19.7 - 31.4%)
Prevalence of severe underweight (< -3 z-score)	(46) 11.4 % (8.7 - 14.9%)	(25) 13.0 % (9.0 - 18.5%)	(21) 10.0 % (6.6 - 14.7%)

Table 132: Prevalence of underweight by age, based on weight-for-age z-scores

Age (mo)	Total no.	Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (>= -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	95	12	12.6	19	20.0	64	67.4	0	0.0
18-29	98	15	15.3	31	31.6	52	53.1	0	0.0
30-41	105	10	9.5	31	29.5	64	61.0	0	0.0
42-53	86	8	9.3	25	29.1	53	61.6	0	0.0
54-59	19	1	5.3	6	31.6	12	63.2	0	0.0
Total	403	46	11.4	112	27.8	245	60.8	0	0.0

Table 133: Prevalence of stunting based on height-for-age z-scores and by sex

	95% C.I.		
	All n = 386	Boys n = 185	Girls n = 201
Prevalence of stunting (<-2 z-score)	(197) 51.0 % (46.1 - 56.0%)	(99) 53.5 % (46.3 - 60.6%)	(98) 48.8 % (41.9 - 55.6%)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(103) 26.7 % (22.5 - 31.3%)	(48) 25.9 % (20.2 - 32.7%)	(55) 27.4 % (21.7 - 33.9%)
Prevalence of severe stunting (<-3 z-score)	(94) 24.4 % (20.3 - 28.9%)	(51) 27.6 % (21.6 - 34.4%)	(43) 21.4 % (16.3 - 27.6%)

Figure 37: Distribution of weight-for-height z-scores (based on WHO Growth Standards)

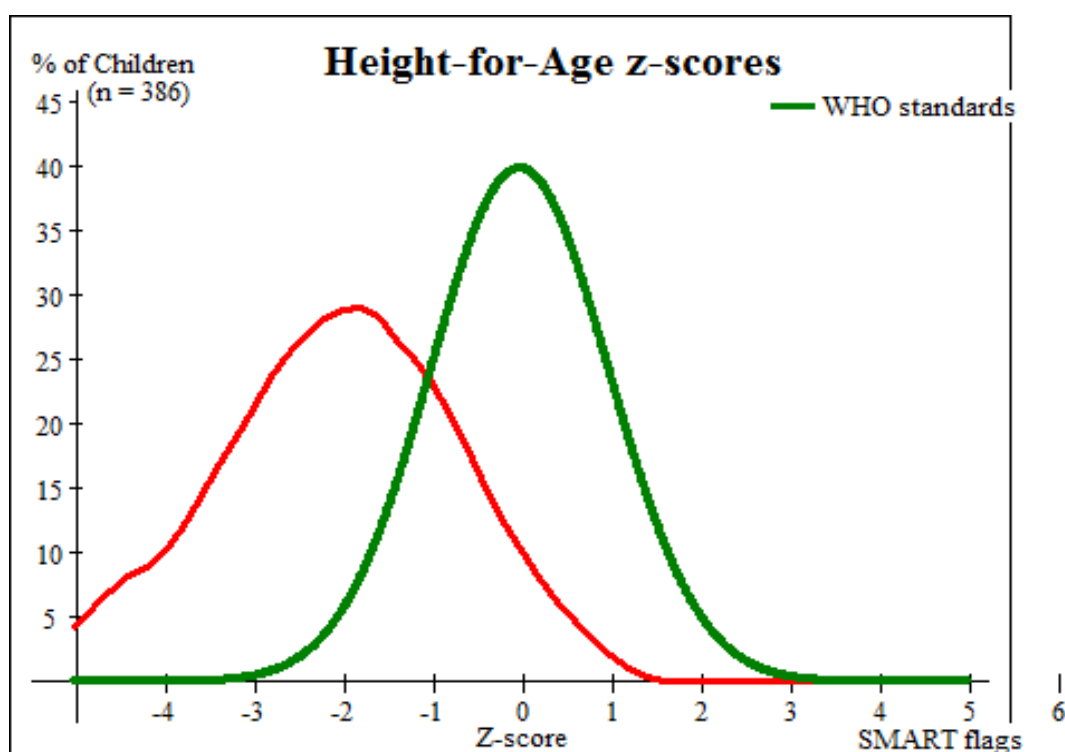


Figure 38 : Trends of prevalence of stunting in children 6-59 months from 2015-2018

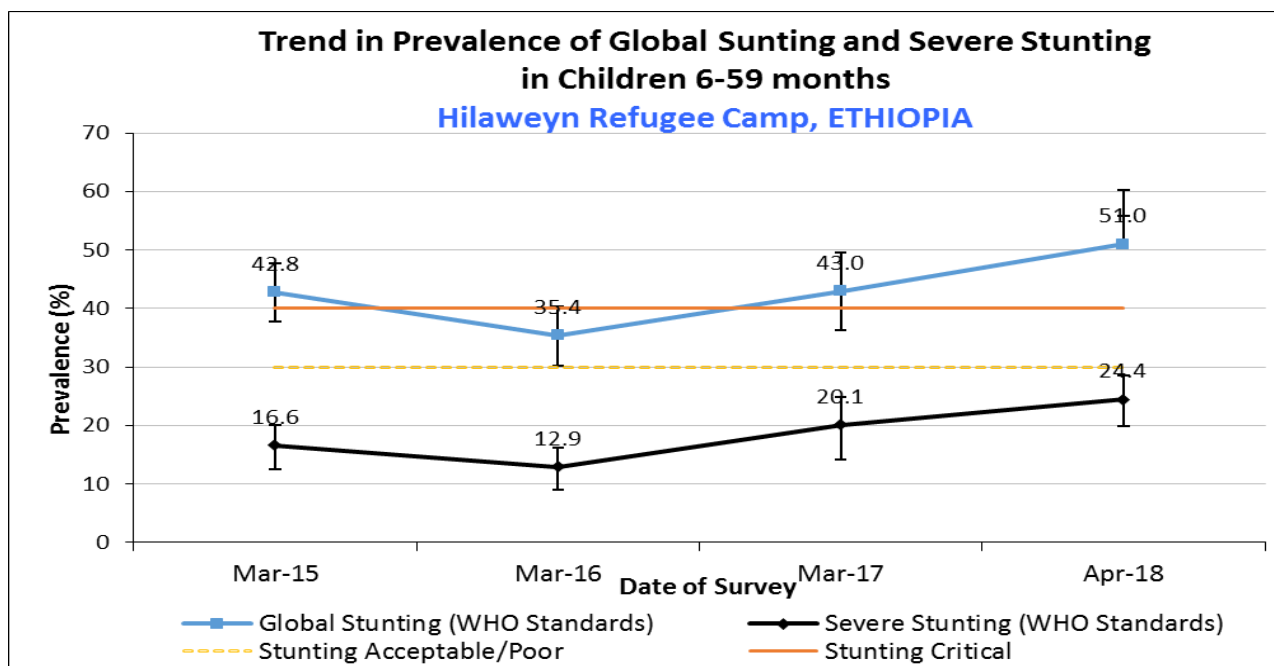


Table 134: Prevalence of stunting by age based on height-for-age z-scores

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
		No.	%	No.	%	No.	%
6-17	93	15	16.1	26	28.0	52	55.9
18-29	96	34	35.4	24	25.0	38	39.6
30-41	98	29	29.6	26	26.5	43	43.9
42-53	80	15	18.8	20	25.0	45	56.3
54-59	19	1	5.3	7	36.8	11	57.9
Total	386	94	24.4	103	26.7	189	49.0

Figure 39 : Prevalence of stunting by age based on height-for-age z-scores

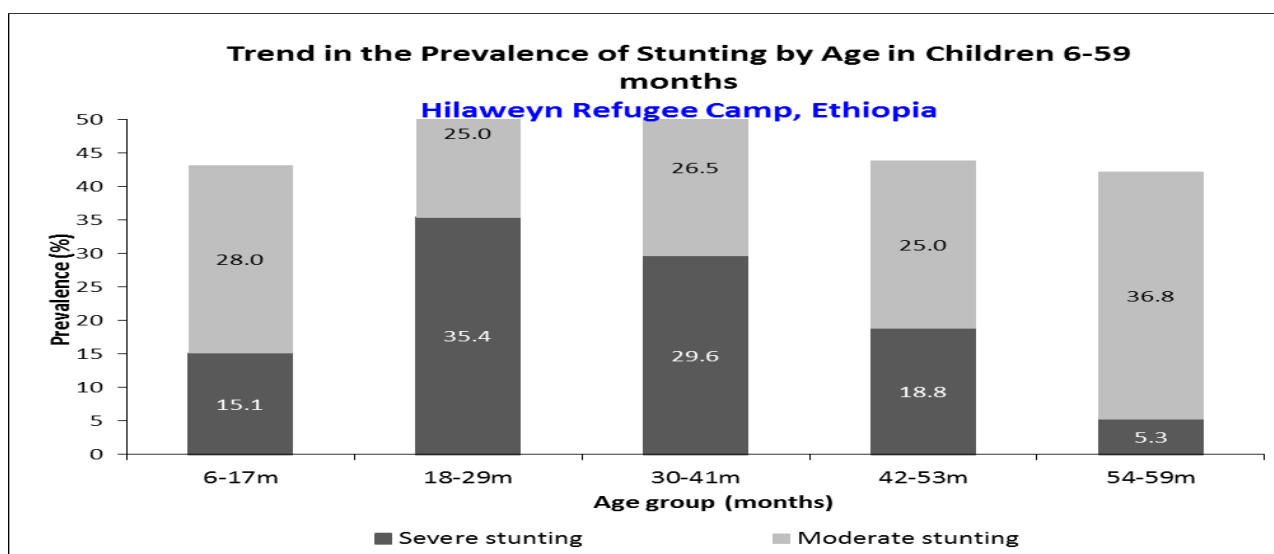


Table 135: Mean z-scores, Design Effects and excluded subjects

Indicator	n	Mean z-scores \pm SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	402	-0.83 \pm 0.96	1.00	44	5
Weight-for-Age	403	-1.74 \pm 1.05	1.00	44	4
Height-for-Age	386	-2.05 \pm 1.30	1.00	44	21

* contains for WHZ and WAZ the children with edema.

8.2 Mortality results (retrospective over 105 days prior to interview)

Table 136: The 88 days retrospective mortality rate

CMR (total deaths/10,000 people / day):0.13 (0.03-0.56, 95% CI)
U5MR (deaths in children U5/10,000 children U5/day):0.23 (0.02-2.7, 95% CI)

8.3 Feeding programme coverage results in Hilaweyn

Table 137: Programme coverage for acutely malnourished children

	Number/total	% (95% CI)
Supplementary feeding programme coverage	16/45	35.6% (21.9-51.2%)
Therapeutic feeding programme coverage	4/12	33.3% (9.9-65.1%)
Blanket feeding programme coverage (6-35 month)	173/227	76.2% (70.1-81.6%)
Wet feeding programme coverage (36-59 months)	60/168	35.7% (28.5-43.5%)

8.4 Measles vaccination coverage results

Table 138: Measles vaccination coverage for children aged 9-59 months (n=388)

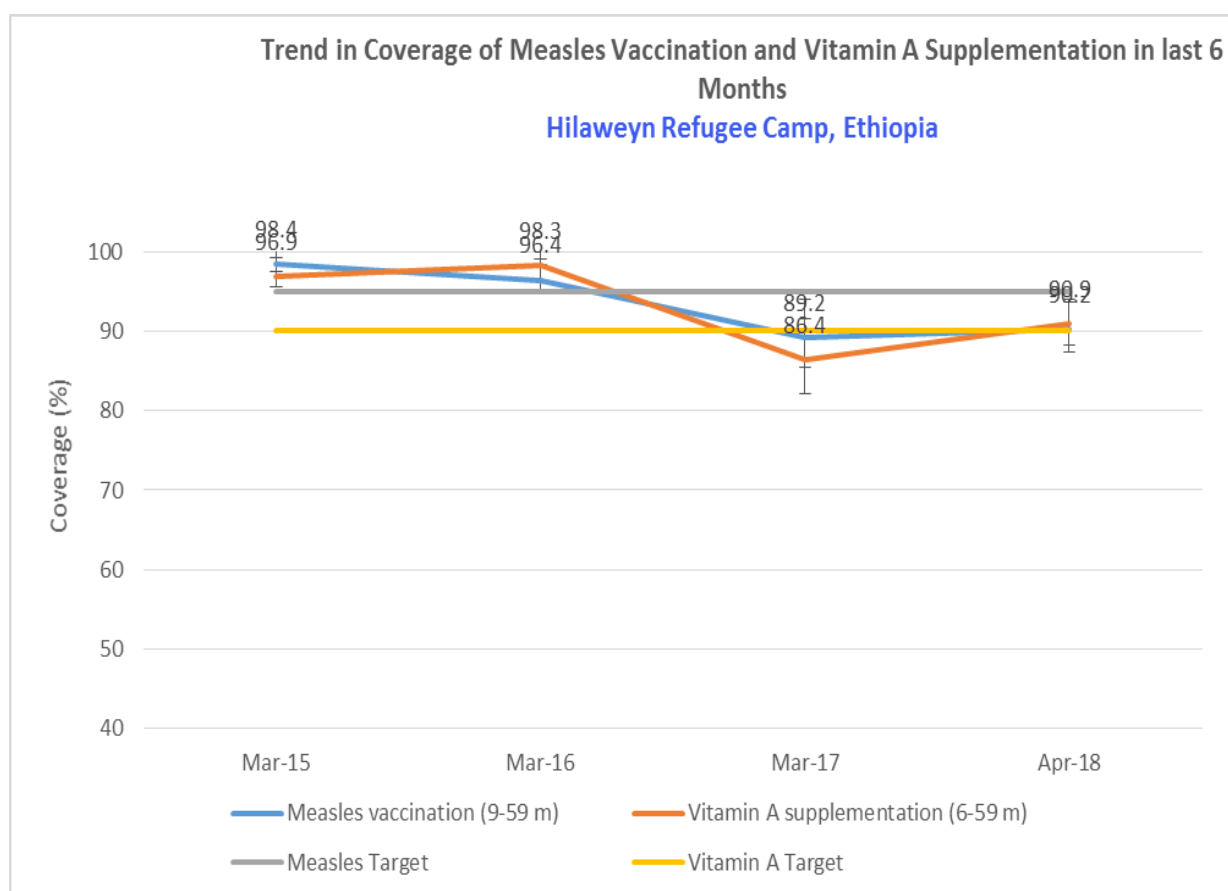
	Measles (with card) n=274	Measles (with card <u>or</u> confirmation from mother) n=350
YES	70.6% (65.8-75.1%)	90.2% (86.8-93.0%)

8.5 Vitamin A supplementation coverage results in Hilaweyn

Table 139: Vitamin A supplementation for children aged 6-59 months within past 6 months (n=406)

	Vitamin A capsule (with card) n=135	Vitamin A capsule (with card <u>or</u> confirmation from mother) n=369
YES	33.3% (28.7-38.1%)	90.9% (87.7-93.5%)

Figure 40 : Trends in the coverage of measles vaccination and vitamin A supplementation IN LAST 6 MONTHS in children 6-59 months from 2015-2018



8.6 Diarrhoea results in Hilaweyn

Table 140: Period prevalence of diarrhoea

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	3 /406	0.7% (0.2 – 2.3%)

8.7 Anaemia results

Table 141: Prevalence of TOTAL anaemia, ANAEMIA CATEGORIES, and MEAN haemoglobin concentration in children 6-59 months of age

	Number/ total	Prevalence (%) & 95% CI
Total Anaemia (Hb<11.0 g/dL)	181/405	44.7% (39.8-49.7%)
Mild Anaemia (Hb 10.0-10.9 g/dL)	106/405	26.2% (22.0-30.8%)
Moderate Anaemia (7.0-9.9 g/dL)	75/405	18.5% (14.9-22.7%)
Severe Anaemia (<7.0 g/dL)	0/405	0.0%
Mean Hb (g/dL) [range]		11.0g/dl & SD= 1.27 [7.0-14.1]

Figure 41 : Trends in anaemia categories in children 6-59 months from 2015-2018

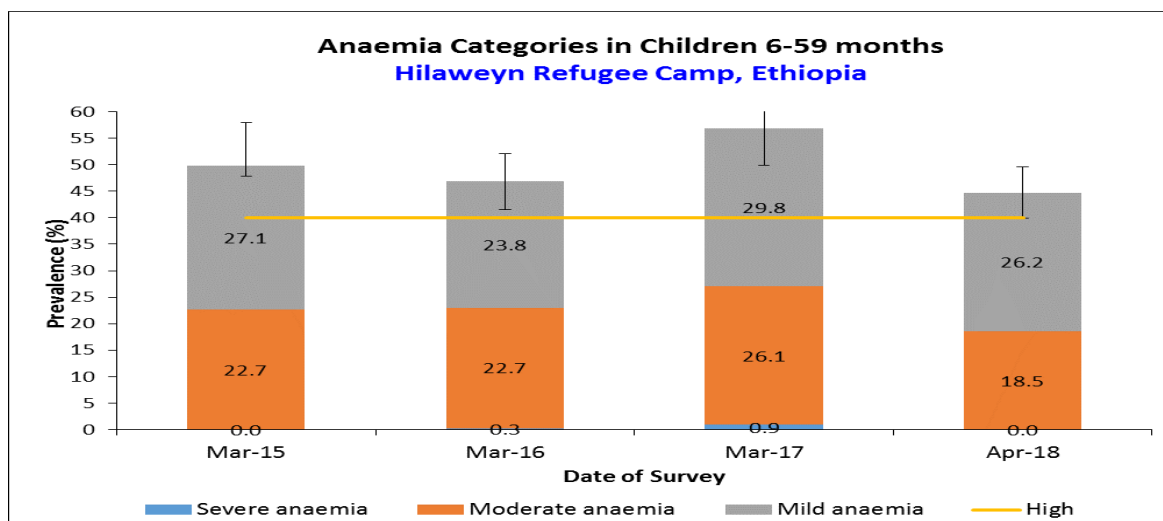


Table 142: Prevalence of Anaemia in children 6-59 months of age BY AGE GROUP

	6-23 months (n=129)	24-35 months (n=109)	36-59 months (n=167)
Total Anaemia (Hb<11.0 g/dL)	(n=69) 53.5% (44.5-62.3%)	(n=57) 52.3% (42.5-61.9%)	(n=55) 32.9% (25.9-40.6%)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(n=37) 28.7% (21.1-37.3%)	(n=31) 28.4% (20.2-37.9%)	(n=38) 22.8% (16.6-29.9%)
Moderate Anaemia (7.0-9.9 g/dL)	(n=32) 24.8% (17.6-33.2%)	(n=26) 23.9% (16.2-33.0%)	(n=17) 10.2% (6-15.8%)
Severe Anaemia (<7.0 g/dL)	(n=0) 0.0%	(n=0) 0.0%	(n=0) 0.0%
Mean Hb	10.58	10.89	11.4
SD	1.26	1.27	1.16
[Rang]	[7.0-13.2]	[8.2-14.1]	[8.3-14]

8.8 Infant and Young Children Feeding (IYCF) Children 0-23 months, in Hilaweyn

Table 143: Prevalence of Infant and Young Child Feeding Practices Indicators

Indicator	Age range	Number/total	Prevalence (%) and 95% CI
Timely initiation of breastfeeding	0-23 months	136/174	78.2% (71.3-84.1%)
Exclusive breastfeeding under 6 months	0-5 months	28/43	65.1% (49.1-79.0%)
Continued breastfeeding at 1 year	12-15 months	29/39	74.4% (57.9 – 87.0%)
Continued breastfeeding at 2 years	20-23 months	6/18	33.3% (13.3 – 59.0%)
Introduction of solid, semi-solid or soft foods	6-8 months	6/20	30.0% (11.9-54.3%)
Consumption of iron-rich or iron-fortified foods	6-23 months	105/129	81.4% (73.6-87.7%)
Bottle feeding	0-23 months	23/174	13.2% (8.6-19.2%)

Table 144: Infant formula intake in children aged 0-23 months

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	35/174	20.1% (14.4-26.8%)

Fortified blended foods

Table 145: CSB+ intake in children aged 6-23 months

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive FBF	31/130	23.8% (16.8-32.1%)

Table 146: CSB++ intake in children aged 6-23 months

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive FBF++	86/130	66.2% (57.3-74.2%)

8.9 Women 15-49 years in Hilaweyn

Table 147: Women physiological status and age

Physiological status	Number/total	% of sample
Non-pregnant	209	82.3% (77.0-86.8%)
Pregnant	45	17.7% (13.2-23.0%)
Mean age and SD [range]	28.9488 years and SD = 8.36 [15-48]	

Table 148: Prevalence of anaemia & Hb concentration in non-pregnant women age (15-49 yr)

Anaemia - Women of reproductive age 15-49 years	Number/total	(%) and 95% CI
Total Anaemia (<12.0 g/dL)	78/263	29.7% (24.2 – 35.6%)
Mild Anaemia (11.0-11.9 g/dL)	39/263	14.8% (10.8 – 19.7%)
Moderate Anaemia (8.0-10.9 g/dL)	36/263	13.7% (9.8 – 18.4%)
Severe Anaemia (<8.0 g/dL)	3/263	1.1% (0.2 – 3.3%)
Mean Hb, g/dL (SD) [range]	12.48 and SD = 1.526 [6.9-17.5]	

Figure 42 : Trends in anaemia categories in women 15-49 years from 2015-2018

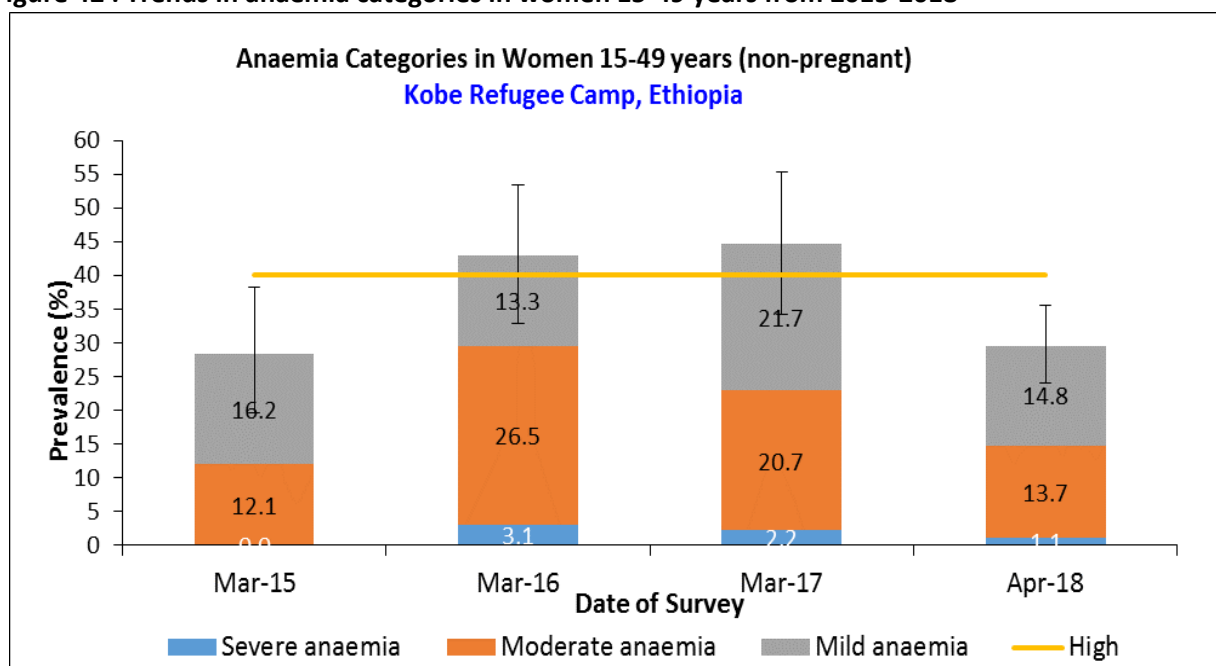


Table 149: ANC enrolment and iron-folic acid pills coverage among pregnant women (15-49 years)

	Number /total	% (95% CI)
Currently enrolled in ANC programme	49/49	100.0%
Currently receiving iron-folic acid pills	42/49	85.7% (72.8-94.1%)

8.10 Food security

Table 150: Ration card coverage

	Number/total	% (95% CI)
Proportion of households with a ration card	339/3339	100.0%

Table 151: Reported duration of general food ration 1

Average number of days the food ration lasts (Standard deviation or 95% CI)	Average duration (%) in relation to the theoretical duration of the ration*
20.0 (SD 5.2)	66.7%%

Table 152: Reported duration of general food ration 2

	Number/total	% (95% CI)
Proportion of households reporting that the food ration lasts the entire duration of the cycle	333/339	98.2% (96.0-99.3%)
Proportion of households reporting that the food ration lasted:		
≤75% of the cycle [30 DAYS]	6/339	1.8% (0.7-4.0%)
>75% of the cycle [30 DAYS]	333/339	98.2% (96.0-99.3%)

Negative coping strategies results

Table 153: Coping strategies used by the surveyed population over the past months

	Number/total	% (95% CI)
Proportion of households reporting using the following coping strategies over the past month*:		
Borrowed cash, food or other items <i>with or without interest</i>	259/402	64.4% (59.5-69.1%)
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)	125/402	31.1% (26.6-35.9%)
Requested increased remittances or gifts as compared to normal	132/402	32.8% (28.3-37.7%)
Reduced the quantity and/or frequency of meals	246/402	61.2% (56.2-66.0%)
Begged	8/402	2.0% (0.9-4.0%)
Engaged in potentially risky or harmful activities	196/402	48.8% (43.8-53.8%)
Proportion of households reporting using none of the coping strategies over the past month	117/402	29.1% (24.8-33.9%)

* The total will be over 100% as households may use several negative coping strategies.

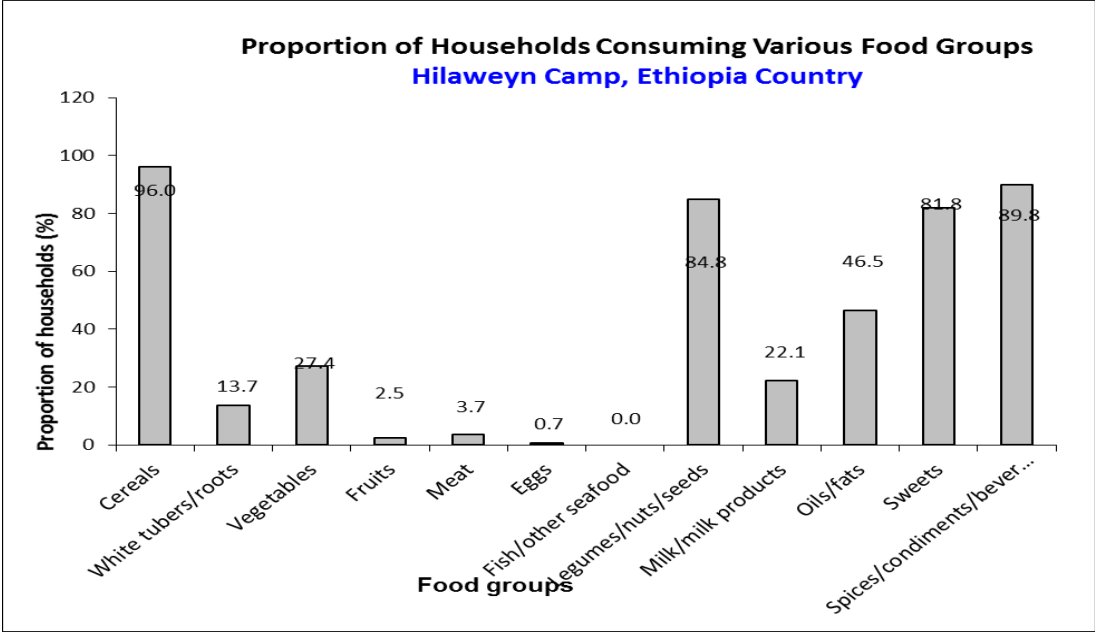
Table 154: Average HDDS

	Mean (Standard deviation or 95% CI)
Average HDDS	3.3 SD 1.8

Table 155: Consumption of micronutrient Rich foods by households

	Number/total	% (95% CI)
Proportion of households <i>not consuming any</i> vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	213/402	53.0% (48.0-57.9%)
Proportion of households consuming either a plant or animal source of vitamin A	105/402	26.1% (21.9-30.8%)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	15/402	3.7% (2.2-6.2%)

Figure 43 : Proportion of Households Consuming Various Food Groups



8.11 WASH

Table 156: Water Quality

	Number/total	% (95% CI)
Proportion of households using an improved drinking water source	339/339	100.0%
Proportion of households that use a covered or narrow necked container for storing their drinking water	214/339	63.1% (57.7-68.3%)

Table 157: Water Quantity: Amount of litres of water used per person per day

Proportion of households that use:	Number/total	% (95% CI)
≥ 20 lpppd	190/402	47.3% (42.4 – 52.2%)
15 – <20 lpppd	91/402	22.6% (18.8 – 27.0%)
<15 lpppd	121/402	30.1% (25.8 – 34.8%)
Average water usage in lpppd	23.6 lpppd	

Table 158: Satisfaction with water supply

	Number/total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	336/339	99.1% (97.2-99.8%)

Figure 44 : Proportion of households that say they are satisfied with the water supply

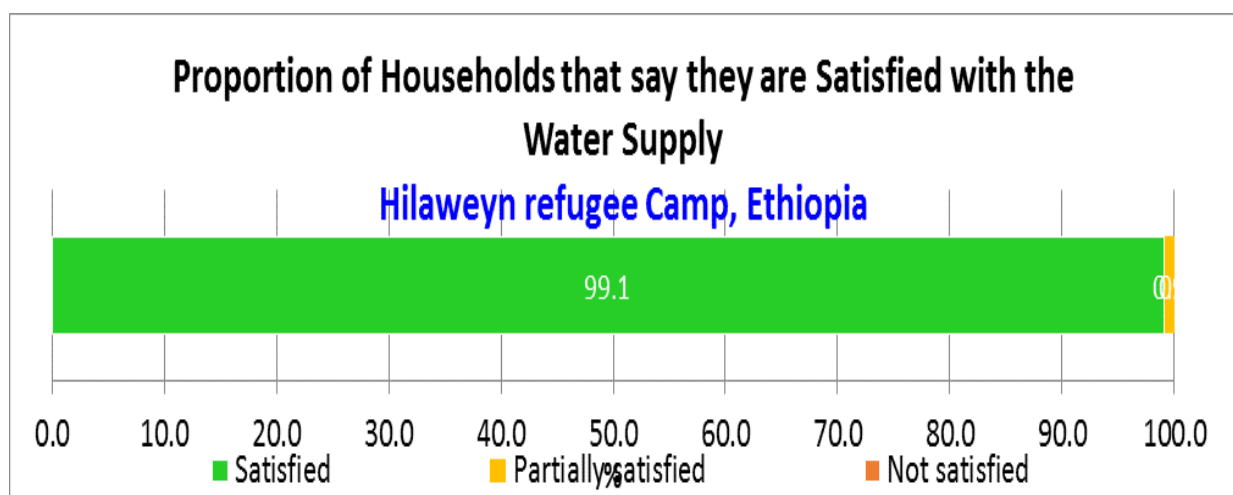
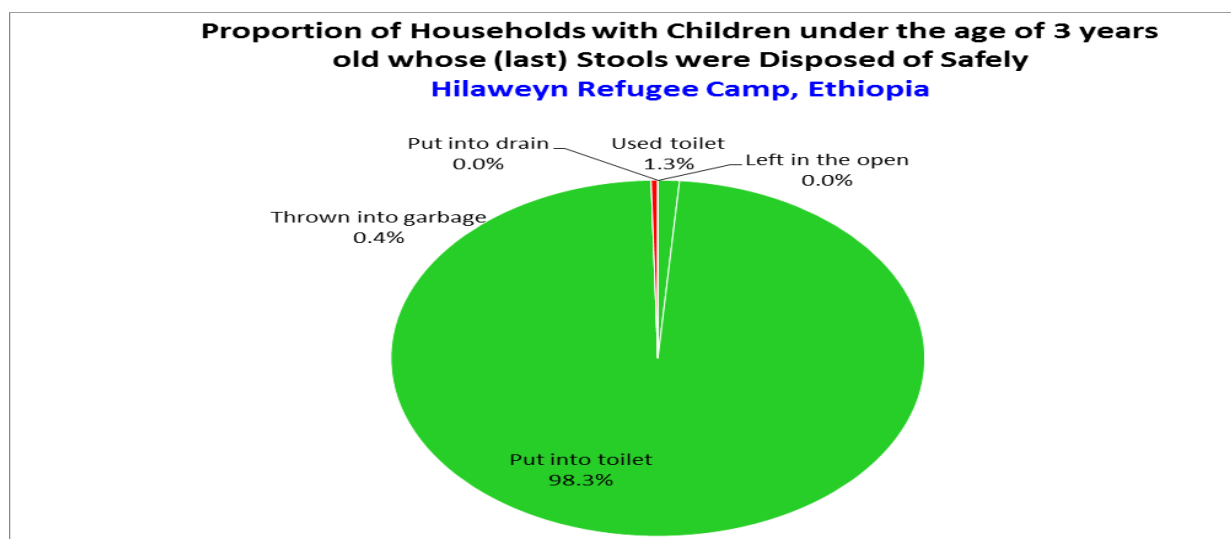


Table 159: Safe Excreta disposal

	Number/total	% (95% CI)
Proportion of households that use:		
An improved excreta disposal facility (improved toilet facility, 1 household),	9/332	2.7% (1.3-5.3%)
A shared family toilet (improved toilet facility, 2 households)	80/332	24.1% (19.7-29.1%)

A communal toilet (improved toilet facility, 3 households or more)	243/332	73.2% (68.1-77.9%)
An unimproved toilet (unimproved toilet facility or public toilet)	0	0.0%
Proportion of households with children under three years old that dispose of faeces safely	214/218	98.2% (95.4-99.5%)

Figure 45 : Proportion of Household with children under the age 3 years old whose last Stool were Disposed safely



9. RESULTS FROM BURAMINO CAMP

Table 160: Demographic characteristics of the study population in Buramino

	Actual	Planned	%
Total HHs surveyed	373	392	95%
Total population surveyed	2483	1292	192%
Total U5 surveyed	418	<u>253</u>	165%
Average HH size	6.7	<u>5.4</u>	124%
% of U5	16.80%	14.00%	120%

Table 161: Distribution of age and sex of sample

AGE (mo)	Boys		Girls		Total		Ratio Boy: girl
	no.	%	no.	%	no.	%	
6-17	44	47.8	48	52.2	92	23.9	0.9
18-29	48	44.4	60	55.6	108	28.1	0.8
30-41	24	37.5	40	62.5	64	16.6	0.6
42-53	44	48.9	46	51.1	90	23.4	1.0
54-59	18	58.1	13	41.9	31	8.1	1.4
Total	178	46.2	207	53.8	385	100.0	0.9

The sex ratio for boys and girls presented 0.9 -1.1, which is might be there is selection bias during data collection.

9.1. Anthropometric results (based on WHO standards 2006)

Table 162: Prevalence of acute malnutrition based on WFH z-scores (and/or oedema) and by sex

	95% C.I.		
	All n = 382	Boys n = 176	Girls n = 206
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(58) 15.2 % (11.9 - 19.1%)	(30) 17.0 % (12.2 - 23.3%)	(28) 13.6 % (9.6 - 18.9%)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(43) 11.3 % (8.5 - 14.8%)	(21) 11.9 % (7.9 - 17.6%)	(22) 10.7 % (7.2 - 15.6%)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(15) 3.9 % (2.4 - 6.4%)	(9) 5.1 % (2.7 - 9.4%)	(6) 2.9 % (1.3 - 6.2%)

The prevalence of oedema is 0.0 %

Prevalence of acute malnutrition based on WFH z-score and/or oedema and by sex, boys more affected than girls by malnutrition. Why? Boys more affected than girls we are expected to answer the main cause of malnutrition on boys from Nutrition causal analysis (NCA).

Figure 46 : Distribution of WFH z-scores (based on WHO Growth Standards) in Buramino

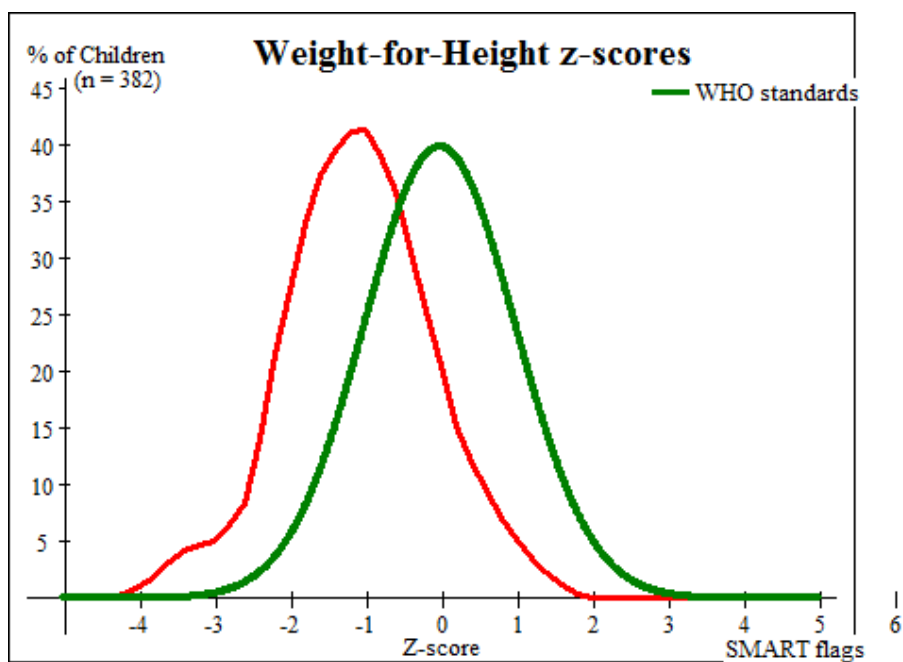


Figure 47 : Trends in the prevalence of global and severe acute malnutrition based on WHO Growth Standards in children 6-59 months from 2015-2018 in Buramino

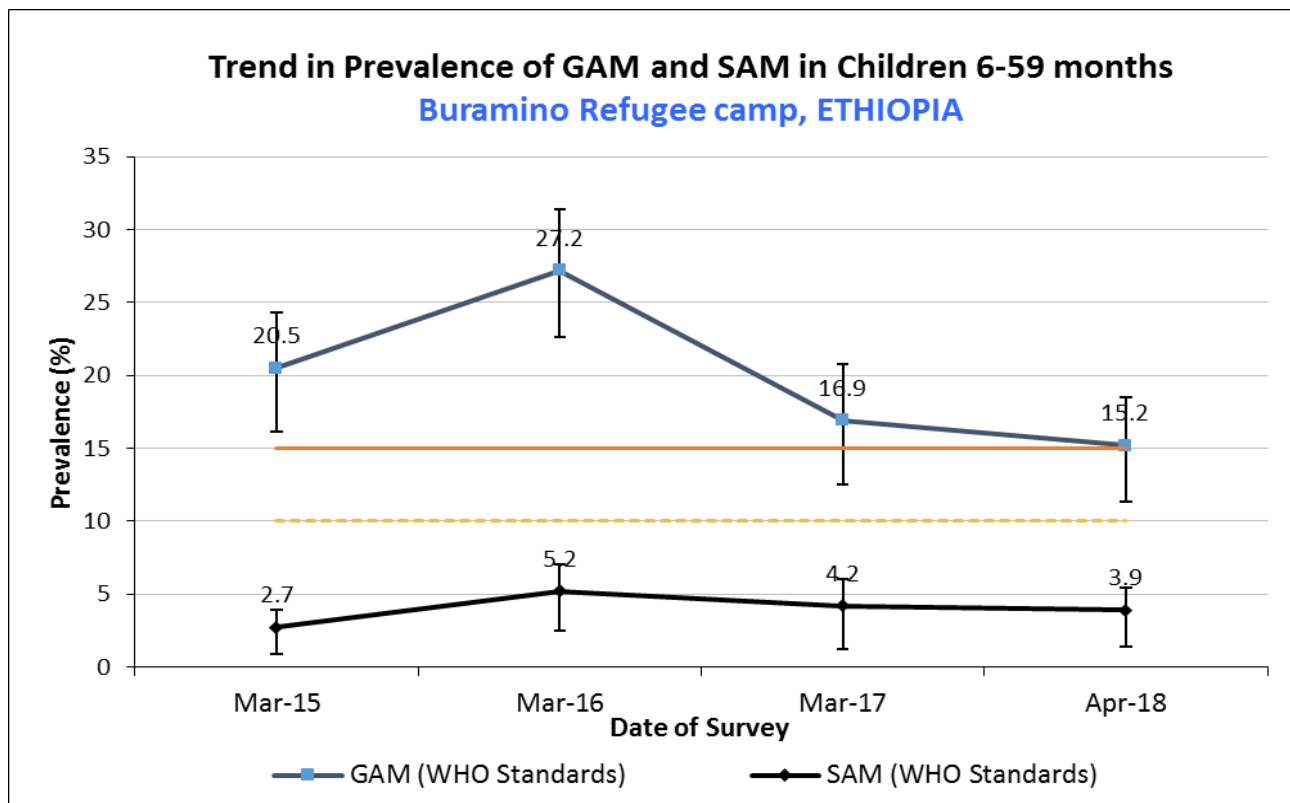


Table 163: Prevalence of acute malnutrition by age, based on WFH z-scores and/or oedema

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (>= -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	90	6	6.7	10	11.1	74	82.2	0	0.0
18-29	107	1	0.9	10	9.3	96	89.7	0	0.0
30-41	64	2	3.1	7	10.9	55	85.9	0	0.0
42-53	90	5	5.6	8	8.9	77	85.6	0	0.0
54-59	31	1	3.2	8	25.8	22	71.0	0	0.0
Total	382	15	3.9	43	11.3	324	84.8	0	0.0

Figure 48 : Trend in the Prevalence of Wasting by Age in Children 6-59 months

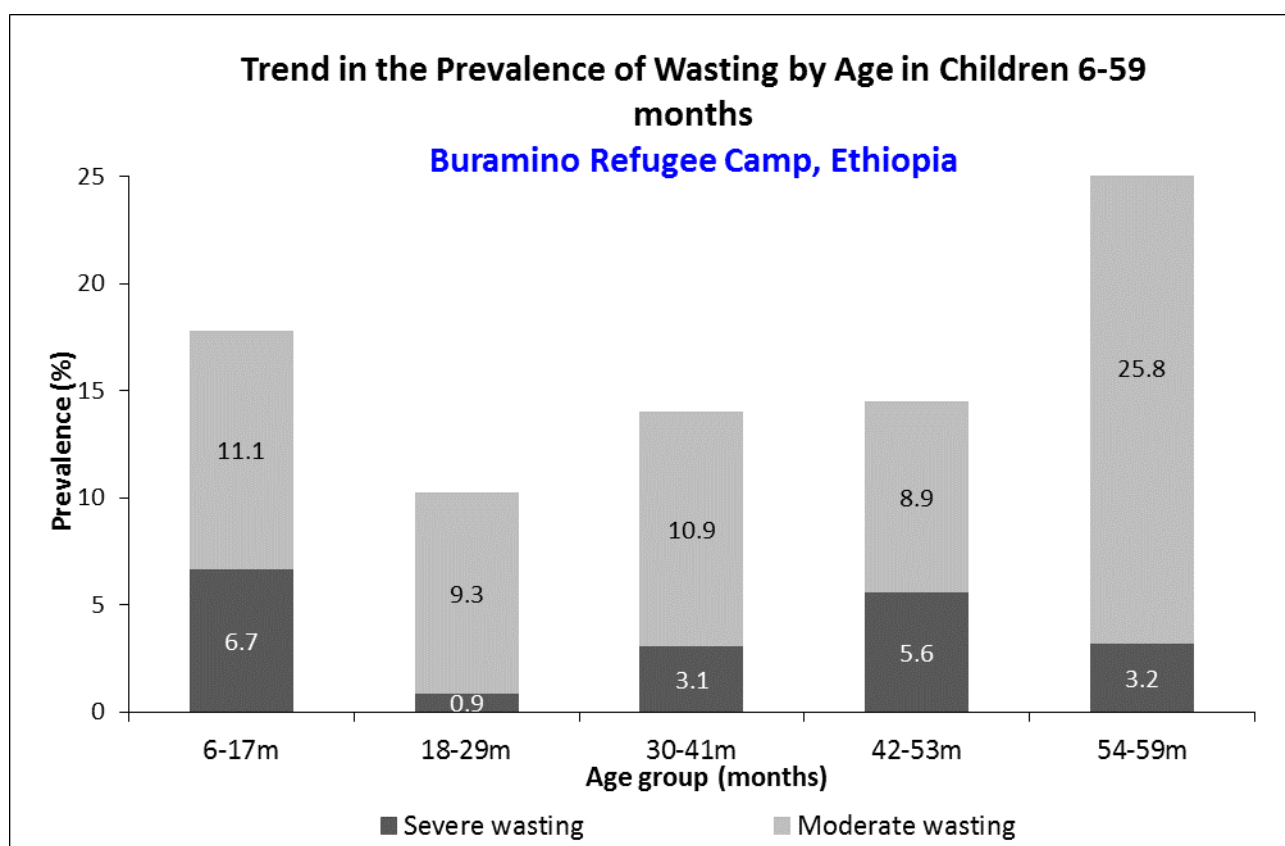


Table 164: Distribution of acute malnutrition and oedema based on weight-for-height z-scores

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 17 (4.4 %)	Not severely malnourished No. 368 (95.6 %)

Table 165: Prevalence of acute malnutrition on MUAC cut off and/or oedema and by sex

	95% C.I.		
	All n = 385	Boys n = 178	Girls n = 207
Prevalence of global malnutrition (< 125 mm and/or oedema)	(21) 5.5 % (3.6 - 8.2%)	(7) 3.9 % (1.9 - 7.9%)	(14) 6.8 % (4.1 - 11.0%)
Prevalence of moderate malnutrition (< 125 mm and ≥ 115 mm, no oedema)	(16) 4.2 % (2.6 - 6.6%)	(4) 2.2 % (0.9 - 5.6%)	(12) 5.8 % (3.3 - 9.9%)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(5) 1.3 % (0.6 - 3.0%)	(3) 1.7 % (0.6 - 4.8%)	(2) 1.0 % (0.3 - 3.5%)

Table 166: Prevalence of underweight based on weight-for-age z-scores by sex

	95% C.I.		
	All n = 383	Boys n = 177	Girls n = 206
Prevalence of underweight (< -2 z-score)	(155) 40.5 % (35.7 - 45.5%)	(72) 40.7 % (33.7 - 48.0%)	(83) 40.3 % (33.8 - 47.1%)
Prevalence of moderate underweight (< -2 z-score and ≥ -3 z-score)	(116) 30.3 % (25.9 - 35.1%)	(50) 28.2 % (22.1 - 35.3%)	(66) 32.0 % (26.0 - 38.7%)
Prevalence of severe underweight (< -3 z-score)	(39) 10.2 % (7.5 - 13.6%)	(22) 12.4 % (8.4 - 18.1%)	(17) 8.3 % (5.2 - 12.8%)

Table 167: Prevalence of underweight by age, based on weight-for-age z-score

Age (mo)	Total no.	Severe underweight (< -3 z-score)		Moderate underweight (≥ -3 & < -2 z-score)		Normal (≥ -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	91	12	13.2	20	22.0	59	64.8	0	0.0
18-29	107	14	13.1	36	33.6	57	53.3	0	0.0
30-41	64	3	4.7	14	21.9	47	73.4	0	0.0
42-53	90	6	6.7	33	36.7	51	56.7	0	0.0
54-59	31	4	12.9	13	41.9	14	45.2	0	0.0
Total	383	39	10.2	116	30.3	228	59.5	0	0.0

Table 168: Prevalence of stunting based on height-for-age z-scores and by sex

	95% C.I.		
	All n = 380	Boys n = 176	Girls n = 204
Prevalence of stunting (< -2 z-score)	(171) 45.0 % (40.1 - 50.0%)	(86) 48.9 % (41.6 - 56.2%)	(85) 41.7 % (35.1 - 48.5%)
Prevalence of moderate stunting (< -2 z-score and ≥ -3 z-score)	(114) 30.0 % (25.6 - 34.8%)	(53) 30.1 % (23.8 - 37.3%)	(61) 29.9 % (24.0 - 36.5%)
Prevalence of severe stunting (< -3 z-score)	(57) 15.0 % (11.8 - 18.9%)	(33) 18.8 % (13.7 - 25.2%)	(24) 11.8 % (8.0 - 16.9%)

Figure 49 : Distribution of Height -for-Age z-scores (based on WHO Growth Standards)

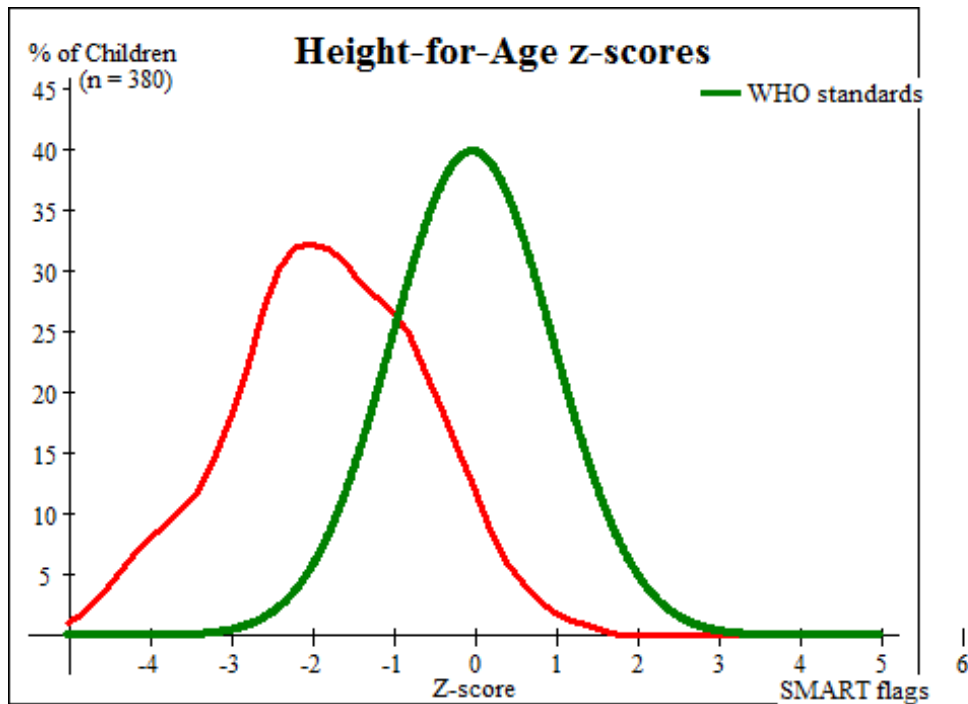


Figure 50 : Trends in the prevalence of stunting in children 6-59 months in Buramino camp

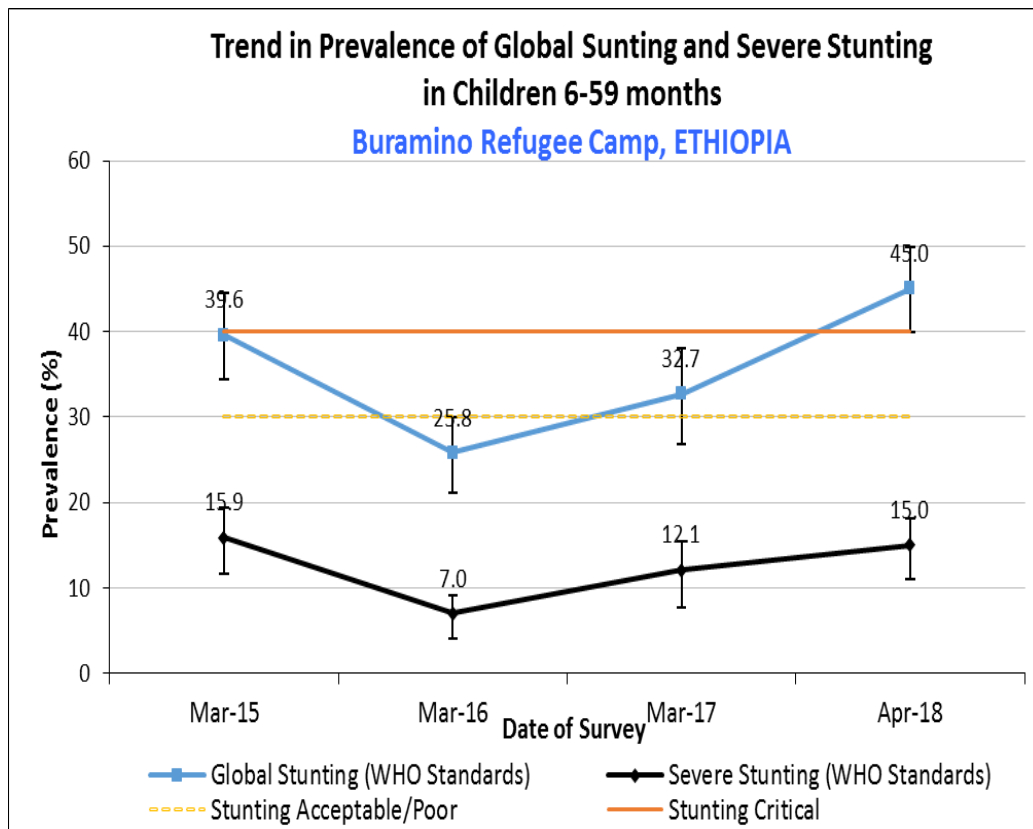


Table 169: Prevalence of stunting by age based on height-for-age z-scores

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
		No.	%	No.	%	No.	%
6-17	92	10	10.9	22	23.9	60	65.2
18-29	104	26	25.0	40	38.5	38	36.5
30-41	63	9	14.3	20	31.7	34	54.0
42-53	90	8	8.9	24	26.7	58	64.4
54-59	31	4	12.9	8	25.8	19	61.3
Total	380	57	15.0	114	30.0	209	55.0

Figure 51 : Trend in the Prevalence of Stunting by Age in Children 6-59 months

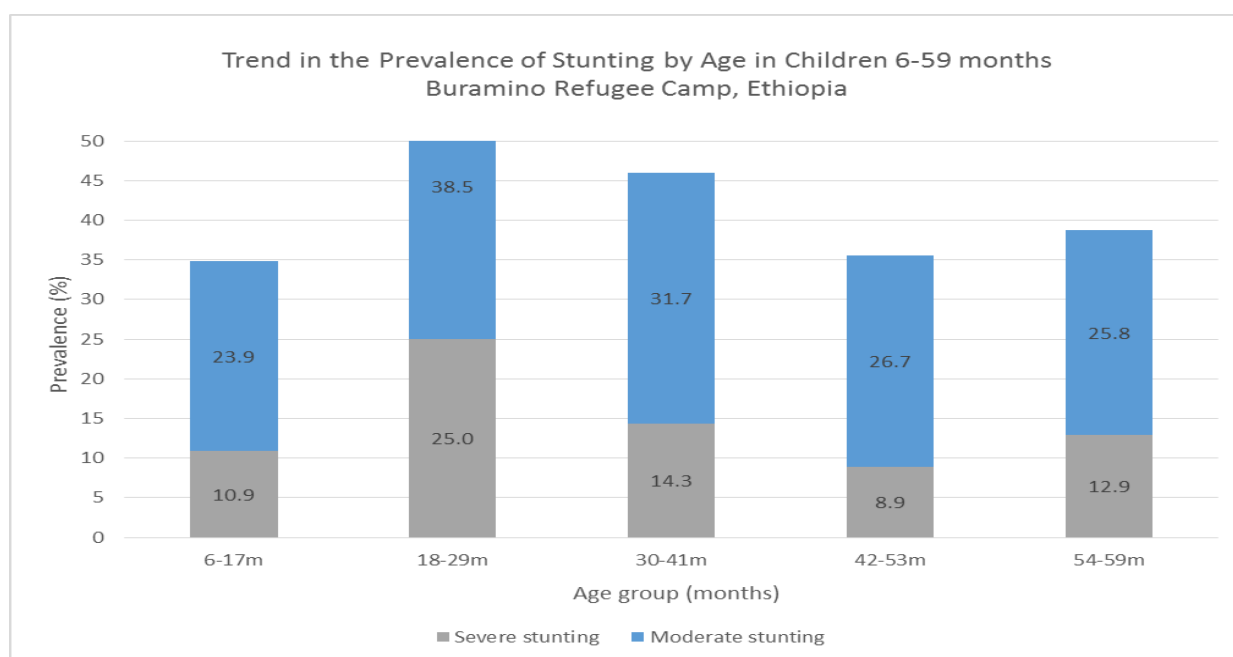


Table 170: Mean z-scores, Design Effects and excluded subjects

Indicator	n	Mean z-scores \pm SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	382	-1.10 \pm 0.96	1.00	53	3
Weight-for-Age	383	-1.78 \pm 0.95	1.00	53	2
Height-for-Age	380	-1.81 \pm 1.17	1.00	53	5

* contains for WHZ and WAZ the children with edema.

9.2. Mortality Result (Retrospective over 96 days prior to interview)

Table 171: The 81 days retrospective mortality rate

CMR (total deaths/10,000 people / day): 0.22 (0.09-0.51) (95% CI)
U5MR (deaths in children under five/10,000 children under five / day): 0.26 (0.5-1.47) (95% CI)

9.3. Feeding programme coverage results in Buramino

Table 172: Programme coverage for acutely malnourished children

	Number/total	% (95% CI)
Targeted Supplementary feeding programme coverage	18/53	34.0% (21.5-48.3%)
Therapeutic feeding programme coverage	3/18	16.7% (3.6-41.4%)
Blanket supplementary feeding program (BSFP) 6-35 months	172/210	81.9% 76.0-86.9%)
Wet Feeding for children 36 -59 months	59/163	36.2% (28.8-44.1%)

9.4. Measles vaccination coverage results in Buramino

Table 173: Measles vaccination coverage for children aged 9-59 months (n= 366)

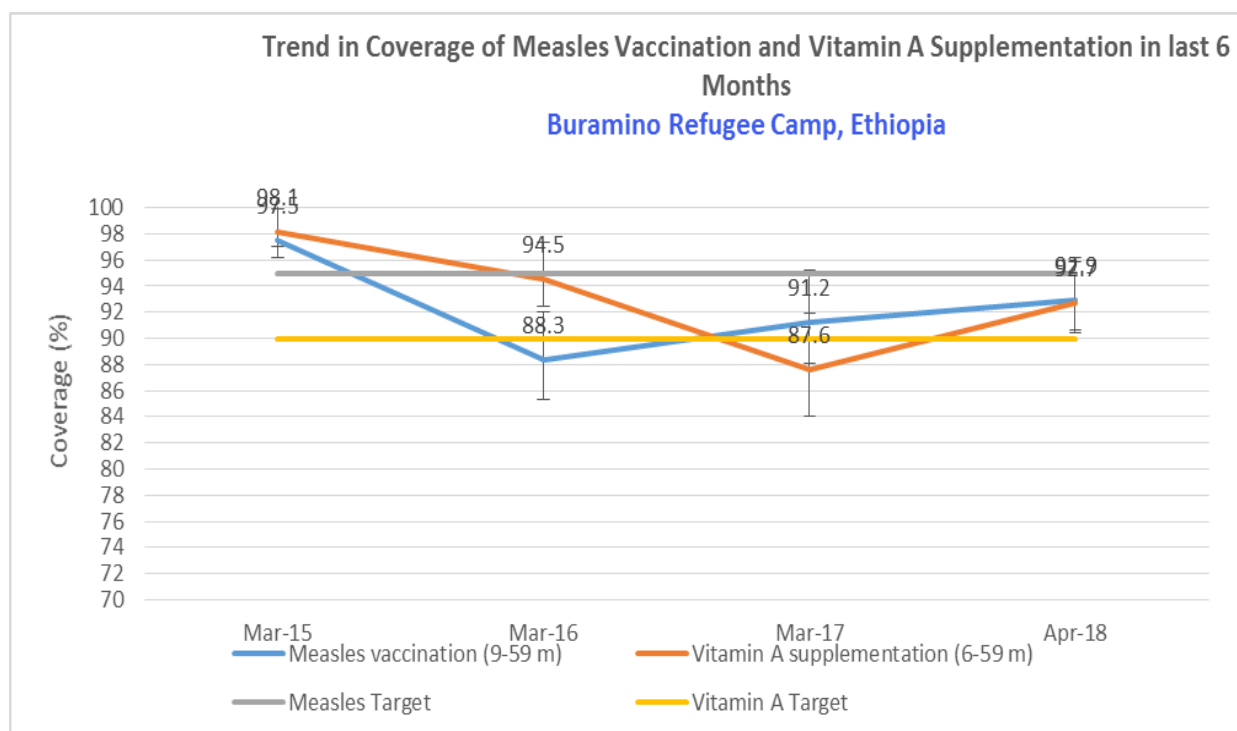
	Measles (with card) n=257	Measles (with card <u>or</u> confirmation from mother) n= 3340
YES	70.2% (65.2-74.9%)	92.9% (89.6 – 95.2%)

9.5. Vitamin A supplementation coverage results in Buramino

Table 174: Vitamin A supplementation for children aged 6-59 months within past 6 months (n= 385)

	Vitamin A capsule (with card) n= 146	Vitamin A capsule (with card <u>or</u> confirmation from mother) n= 357
YES	37.9% (33.1-43.0%)	92.7% (89.5 - 95.0%)

FIGURE 52: TRENDS IN THE COVERAGE OF MEASLES VACCINATION AND VITAMIN A SUPPLEMENTATION IN LAST 6 MONTHS IN CHILDREN 6-59 MONTHS FROM 2015-2018



9.6. Diarrhoea results in Buramino

Table 175: PERIOD prevalence of diarrhoea

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	9/385	2.3% (1.1-4.5%)

9.7. Anaemia results in Buramino

Table 176: Prevalence of TOTAL anaemia, ANAEMIA CATEGORIES, and MEAN haemoglobin concentration in children 6-59 months of age

	Number/total	% and CI 95%
Total Anaemia (Hb<11.0 g/dL)	182/383	47.5% (42.4 – 52.7%)
Mild Anaemia (Hb 10.0-10.9 g/dL)	106/383	27.7% (23.3 – 32.5%)
Moderate Anaemia (7.0-9.9 g/dL)	75/383	19.6% (15.8 – 24.0%)
Severe Anaemia (<7.0 g/dL)	1/383	0.3% (0.1 – 1.7%)
Mean Hb (g/dL) and (SD) [range]	10.98g/dL & SD = 1.35 [4.7-14.8]	

Figure 53 : Trends in anaemia categories in children 6-59 months from 2015-2018

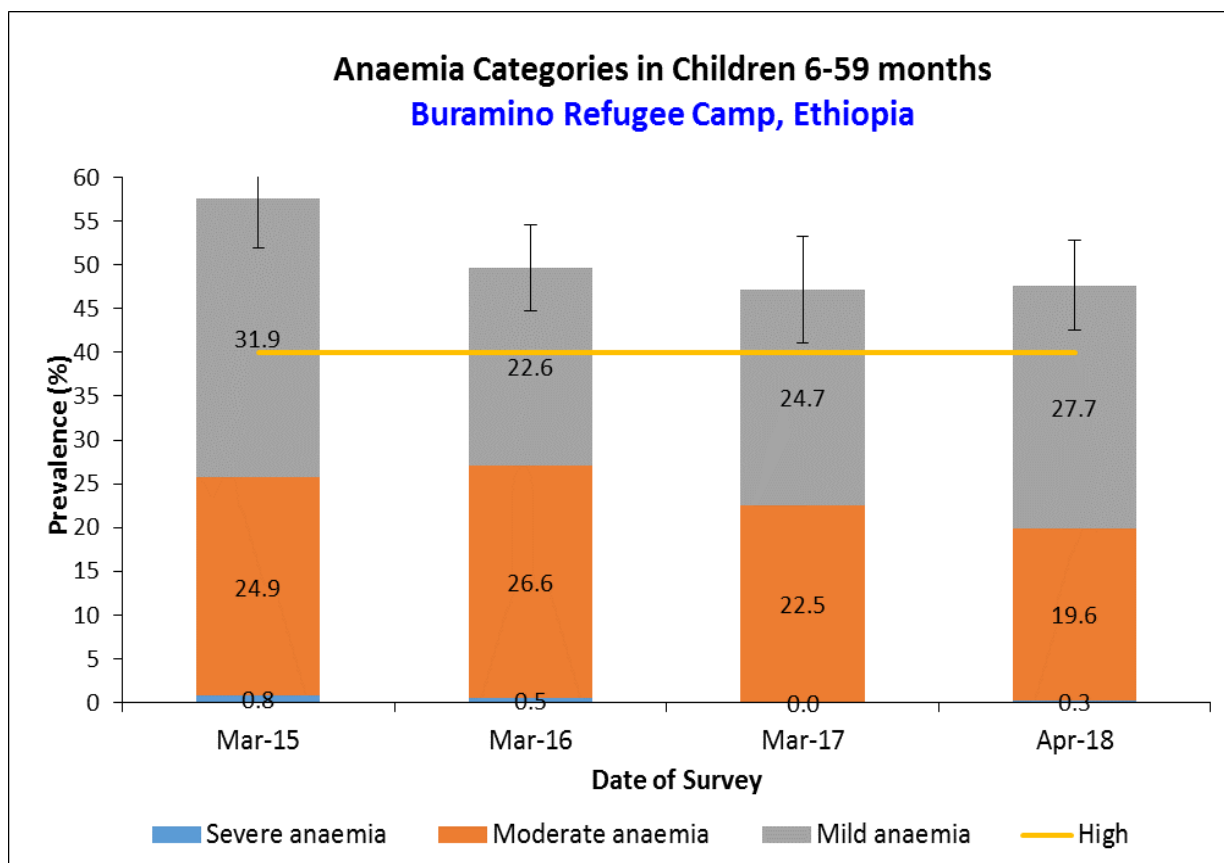


Table 177: Prevalence of MODERATE AND SEVERE anaemia in children 6-59 months of age BY AGE GROUP

	6-59 months n = 383	6-23 months n=144	24-59 months n=239
Total Anaemia (Hb<11.0 g/dL)	(n=182) 47.5% (42.4-52.7%)	(n=92) 63.9% (55.5-71.7%)	(n=90) 37.7% (31.5-44.1%)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(n=106) 27.7% (23.3-32.5%)	(n=46) 31.9% (24.4-40.2%)	(n=60) 25.1% (19.7-31.15)
Moderate Anaemia (7.0-9.9 g/dL)	(n=75) 19.6% (15.8-24.0%)	(n=45) 31.3% (23.8-39.5%)	(n=30) 12.6% (8.6-17.4%)
Severe Anaemia (<7.0 g/dL)	(n=1) 0.3% (0.0-1.7%)	(n=1) 0.7% (0.0-3.8)	(n=0) 0.0%
Mean Hb, g/dL (SD) and [range]	11.0g/dl SD 1.35 [4.7-14.8]	10.48g/dl SD 1.33 [4.7-13.3]	11.28g/dl SD 1.27 [7.4 -14.8]

9.8. Infant and Young Children Feeding (IYCF) Children 0-23 months

Table 178: Prevalence of Infant and Young Child Feeding Practices Indicators

Indicator	Age range	Number/total	Prevalence (%) and 95% CI
Timely initiation of breastfeeding	0-23 months	158/197	80.2% (73.9-85.5%)
Exclusive breastfeeding under 6 months	0-5 months	36/53	67.9% (53.7-80.1%)
Continued breastfeeding at 1 year	12-15 months	17/22	77.3% (54.6-92.2%)
Continued breastfeeding at 2 years	20-23 months	14/35	38.9% (23.1-56.5%)
Introduction of solid, semi-solid or soft foods	6-8 months	3/19	15.8% (3.4-39.6%)
Consumption of iron-rich or iron-fortified foods	6-23 months	109/142	76.8% (68.9-83.4%)
Bottle feeding	0-23 months	27/197	13.7% (9.2-19.3%)

Table 179: Infant formula intake in children aged 0-23 months

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	27/197	13.7% (9.2-19.3%)

9.9. Fortified blended foods

Table 180: FBF intake in children aged 6-23 months

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB+	36/144	25.0% (18.2-32.9%)

Table 181: FBF++ intake in children aged 6-23 months

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB++	78/144	54.2% (45.7-62.5%)

9.10. Women 15-49 years

Table 182: Women physiological status and age

Physiological status	Number/total	% of sample
Non-pregnant	244/305	80.0% (75.1-84.3%)
Pregnant	61/305	20.0% (15.7-25.0%)
Mean age [range]	29.8 year [15.0-49.0]	

Table 183: Prevalence of anaemia and Hb concentration in non-pregnant women age (15-49)

Anaemia in non-pregnant women of reproductive age (15-49 years)	Number/total	% and 95% CI
Total Anaemia (<12.0 g/dL)	85/242	35.1% (29.1 – 41.5%)
Mild Anaemia (11.0-11.9 g/dL)	54/242	22.3% (17.2 – 28.1%)
Moderate Anaemia (8.0-10.9 g/dL)	31/242	12.8% (8.9 – 17.7%)
Severe Anaemia (<8.0 g/dL)	0/242	0%
Mean Hb (g/dL) and (SD) [range]	12.39g/dL & SD = 1.38 [8.3-16]	

Figure 54 : Trends in anaemia categories in women 15-49 years from 2015-2018

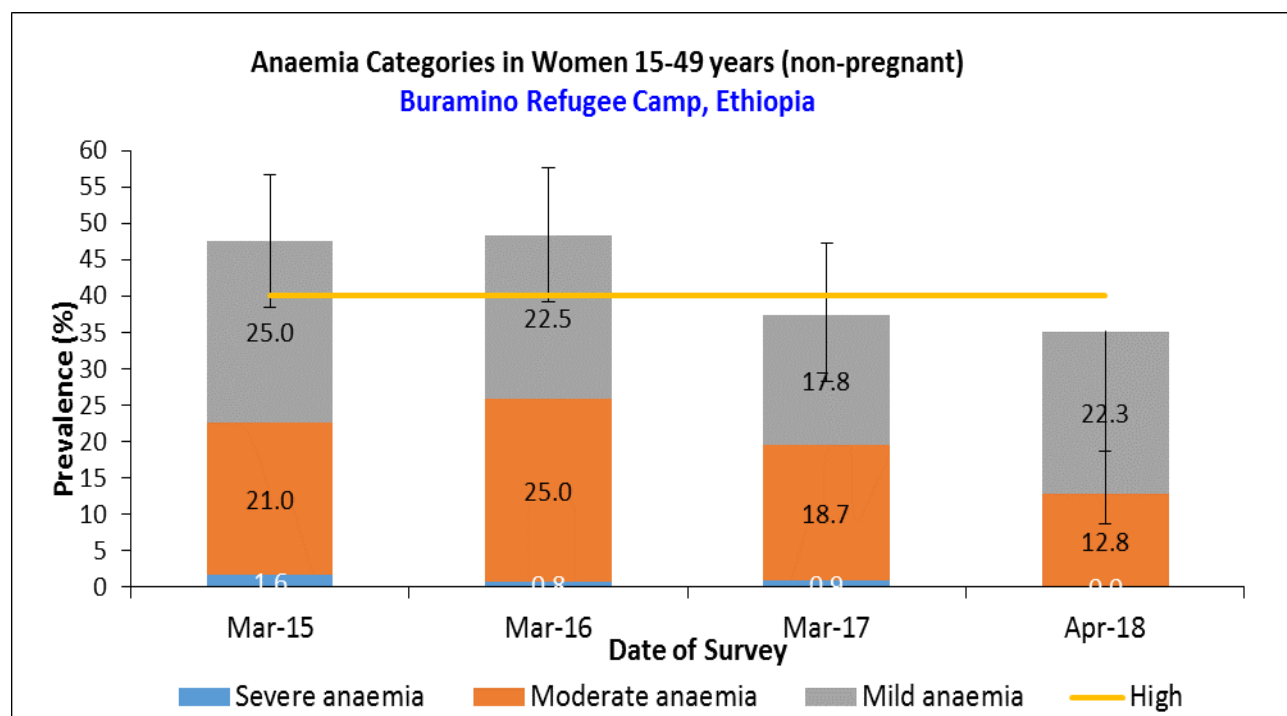


Table 184: ANC enrolment and iron-folic acid pills coverage among pregnant women (15-49 years)

	Number /total	% (95% CI)
Currently enrolled in ANC programme	58/60	96.7% (88.5-99.6%)
Currently receiving iron-folic acid pills	57/60	95.0% (86.1-99.0%)

9.11. Food security

Table 185: Ration card coverage

	Number/total	% (95% CI)
Proportion of households with a ration card	379/380	99.7% (98.3- 100.0%)

Table 186: Reported duration of general food ration

Average number of days the food ration lasts (Standard deviation or 95% CI)	Average duration (%) in relation to the theoretical duration of the ration*
19.5 day SD =5.0	65.0

Table 187: Reported duration of general food ration 2

	Number/total	% (95% CI)
Proportion of households reporting that the food ration lasts the entire duration of the cycle	350/380	92.1% (88.8-94.5%)
Proportion of households reporting that the food ration lasted:		
≤75% of the cycle [30 DAYS]	16/380	4.2% (2.5-6.9%)
>75% of the cycle [30 DAYS]	364/380	95.8% (93.1-97.5%)

Negative coping strategies results

Table 188: Coping strategies used by the surveyed population over the past month

	Number/total	% (95% CI)
Proportion of households reporting using the following coping strategies over the past month*:		
Borrowed cash, food or other items <i>with or without interest</i>	253/380	66.6% (61.6-71.3%)
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, etc.)	80/380	21.1% (17.1-25.6%)
Requested increased remittances or gifts as compared to normal	105/379	27.7% (23.3-32.6%)
Reduced the quantity and/or frequency of meals	225/380	59.2% (54.1-64.2%)
Begged	10/380	2.6% (1.3-4.9%)
Engaged in potentially risky or harmful activities	141/380	37.1% (32.3-42.2%)
Proportion of households reporting using none of the coping strategies over the past month	111/379	29.3% (24.8-34.2%)

* The total will be over 100% as households may use several negative coping strategies.

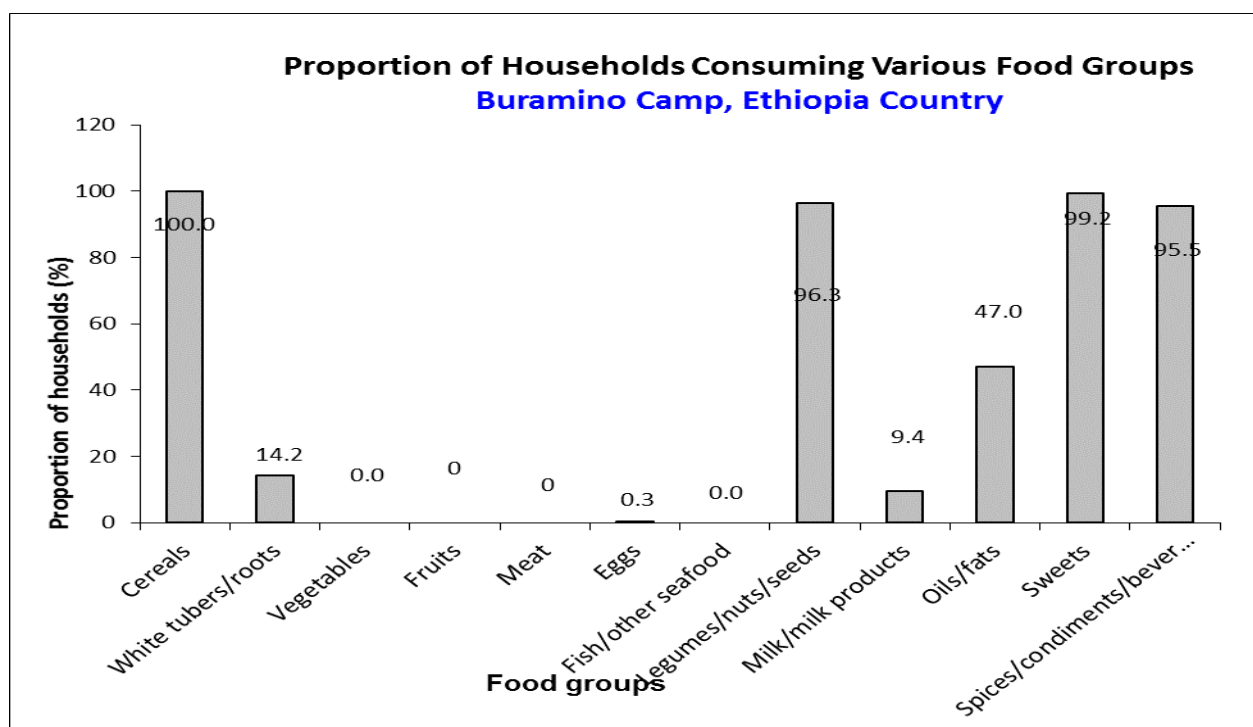
Table 189: Average HDDS

	Mean (Standard deviation or 95% CI)
Average HDDS	1.8 SD 0.7

Table 190: Consumption of micronutrient rich foods by households

	Number/total	% (95% CI)
Proportion of households <i>not consuming any</i> vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	345/381	90.6% (87.2-93.3%)
Proportion of households consuming either a plant or animal source of vitamin A	74/381	19.4% (15.6-23.8%)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	0/381	0.0%

Figure 55 : Proportion of Households Consuming Various Food Groups



9.12. WASH

Table 191: Water Quality

	Number/total	% (95% CI)
Proportion of households using an improved drinking water source	380/380	100.0%
Proportion of households that use a covered or narrow necked container for storing their drinking water	197/3801	51.7% (46.6-56.8%)

Table 192: Water Quantity: Amount of litres of water used per person per day

Proportion of households that use:	Number/total	% (95% CI)
≥ 20 lpppd	190/381	49.9% (44.9 – 54.9%)
15 – <20 lpppd	60/381	15.8% (12.4 – 19.8%)
<15 lpppd	131/381	34.4% (29.8 – 39.3%)
Average Water in LPPPD	26.2 Lpppd	

Table 193: Satisfaction with water supply

	Number/total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	374/381	98.2% (96.1-99.2%)

Figure 56 : Households that say they are satisfied with the water supply

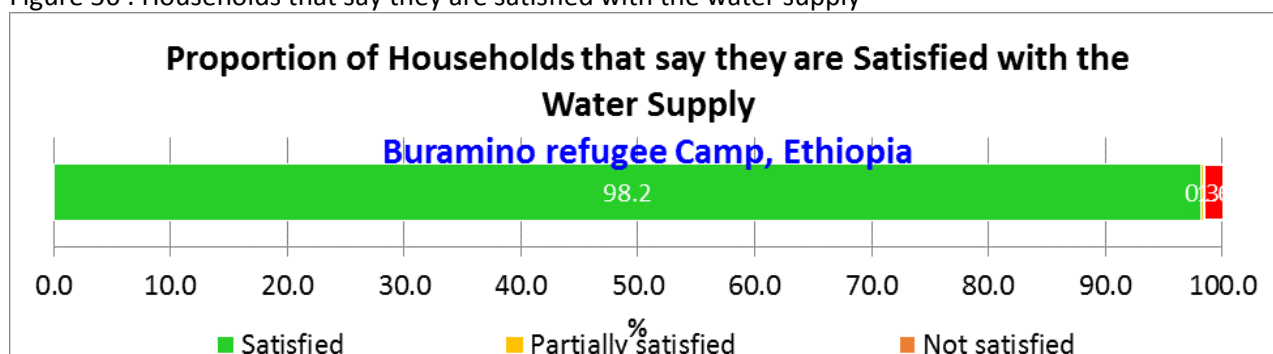
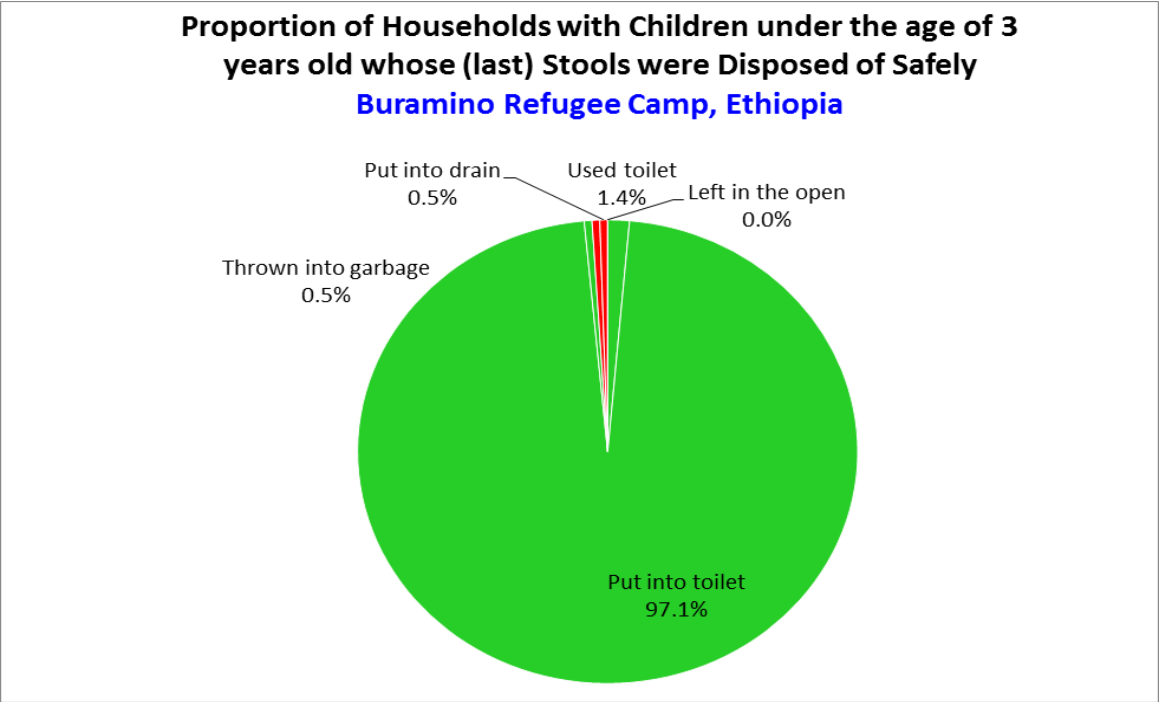


Table 194: Safe Excreta disposal

	Number/total	% (95% CI)
Proportion of households that use:		
An improved excreta disposal facility (improved toilet facility, 1 household),	23/378	6.1% (4.0-9.1%)
A shared family toilet (improved toilet facility, 2 households)	146/378	38.6% (33.7-43.8%)
A communal toilet (improved toilet facility, 3 households or more)	203/378	53.7% (48.5-58.8%)
An unimproved toilet (unimproved toilet facility or public toilet)	6/378	1.6% (0.6-3.6%)
Proportion of households with children under three years old that dispose of faeces safely	218/220	99.1% (96.3-99.9%)

Figure 57 : Proportion of Household with children under the age 3 years old whose last Stool were Disposed safely



10. Discussion

10.1 Anthropometry and Health

The weighted prevalence of global acute malnutrition (GAM) for the five refugee camps has shown a reduction from 22.4% in 2016 to 14.1% in 2017 and to 12.1% in 2018 which is below the WHO emergency threshold ($\geq 15\%$). The weighted SAM also shows a reduction from 4.8% in 2016 to 2.7% in 2017 and to 2.4% in 2018 improved in nutritional status among children aged 6 – 59 months. Despite these improvements, the prevalence of SAM remains above the 2%, a value denoting criticality of the nutritional status. The children in the two camps of Kobe and Buramino are the most affected with prevalence levels of 2.5 % (1.3-4.9 95%CI) and 3.9 % (2.4-6.4 95% CI) respectively.

The reduced prevalence of acute malnutrition is attributed to a combination of efforts invested in Melkadida camps, one being the scale up IYCF staff in 2016 and 2017 and improved monitoring capacity by UNHCR. Despite the noted reductions, prevalence of GAM was still above the UNHCR recommended level of $<10\%$ and far above the WHO acceptable standard of $<5\%$ for normal populations. In comparison with the prevalence of GAM in the host community at 22.7% (DHS, 2016) the nutrition status among the refugees appears to be slightly better.

Long-term insufficient nutrient intake and or infections especially in the first 1000 days of a child's life usually have a permanent negative impact on their cognitive development and stature if attempts to reverse this trend are not implemented effectively and in a timely manner. Chronic malnutrition (stunting) was far above WHO acceptable standard ($<20\%$) in all the five camps. Bokolmanyoo and Melkadida refugee camps had relatively lower prevalence of 27.4% (23.3-31.9%, 95% CI) and 24.9% (20.7-29.7%, 95%CI) while Kobe, Buramino and Hilaweyn had 36.3% (31.1-41.8%, 95% C.I.), 45.0% 40.1-50.0% and 51.0% (46.1-56.0%, 95% CI) respectively with the latter two camps categorised as "critical" ($>40\%$) This may be attributed to the fact that in all the refugee camps since November 2015, refugees consistently receive less than the internationally recognised minimum required kilocalories (2100Kcal), access to a variety of foods in addition to what is provided in the general food ration is low due to minimal livelihood opportunities in the area. Additionally, this food is also sold to buy other foods and non-food items such as clothes which are not provided. This has evidently resulted in negative coping strategies such as reduced quantity and frequency of meals at household level by 39-61% of the households interviewed in Kobe, Hilaweyn and Buramino camp. Ultimately, the weighted prevalence of stunting has increased since 2013 from 11% across the camps to 34% in 2018.

As part of the preventive measures of malnutrition and to ensure that children under two years of age receive adequate nutrients WFP provides super cereal plus through the blanket supplementary feeding centres to bridge the nutrient gap in the food ration. For camps with a nutrition status denoted as emergency (prevalence of GAM $\geq 15\%$, or $>10\%$ with aggravating factors) children aged 6-59 months receive super cereal plus. The estimated coverage in blanket feeding program for children aged 6 – 35 months ranged between 74.9% (67.7-81.2%, 95% CI) in Kobe camp and 87.5% (82.8-91.3, 95% CI) Bokolmanyoo camp and age of children 36-59 months enrolment coverage also between 25.0% (17.8-33.4%, 95% CI) in Melkadida camp and 47.4% (38.7-56.2%, 95% CI) Kobe camp. For both categories, the coverage is less than 90% which is expected for camp. Improvements in coverage need to be addressed more urgently in the wet feeding school program.

Disease prevention through vaccination and strengthening immunity through Vitamin A supplementation are critical in densely populated areas such as the camps. Measles vaccination coverage for children age 9-59 months meets the standard ($>95\%$) in Bokolmanyoo 99.8% (98.4-100.0%, 95% CI) and Melkadida (100.0%) however more efforts need to be put in Kobe (88.1% (83.8-91.6%), Hilaweyn (90.2% (86.8-93.0% 95% CI)) and Buramino (92.9% (89.6 – 95.2%, 95% CI). Total vitamin A supplementation coverage meets the sphere standard ($>90\%$) in all camps with the exception of Kobe (88.8% (84.7-92.1%, 95% CI). More efforts need to be put into mobilising the community for effective prevention measures and community health.

10.2 Anaemia

Prevalence of anaemia among children 6-59 months showed a significantly ($p<0.05$) increase in Kobe from 38.0% in 2017 to 60.3% in 2018. Prevalence of Anaemia in Bokolmanyoo and Melkadida slightly increased comparing to in 2017 which is 41.0% to 44.8% and 40.0% to 45.3% respectively. However, the prevalence of anaemia among children 6-59 months decreased significantly ($p<0.05$) in Hilaweyn camp from 56.9% in 2017 to 44.7% in 2018. This indicated those children in this need serious attention to address the situation. Despite high intake of iron rich foods by children, it is probable that the quantities are small thus the anaemia situation remains terrible.

Prevalence anaemia remained above 40% which categorized as “critical” by classification of public health significance

Anaemia prevalence in among non-pregnant women of reproductive aged (15-49 years) the weighted prevalence increased significantly ($P<0.05$) from 34.8% in 2017 to 48.8 in 2018.

Among the refugee camps, in Melkadida and Kobe, Anaemia prevalence increased significantly from 24.3% to 37.2% and from 28.1% to 44.7% respectively. Whereas it remained unchanged in in Bokolmanyoo and Buramino camps when compared to 2017 while, Hilaweyn camp was shows reduction significantly ($p<0.05$) from 44.6% in 2016 to 29.7%

According to classification of public health significance generally, the situation is categorized as “serious” and an anaemia reduction strategy needs to be put in place.

10.3 Food Security

The proportion of households with a ration card was almost 100% in the all camps. One or two households in the surveyed sample were found not to have food ration cards in Bokolomanyoo, Hilaweyn and Buramino. The number of days which the general food ration lasted out of 30 days was 21.3 days in Bokolmanyoo, 20.6 days in Melkadida, 21.45 days in Kobe, 20.0 days in Hilaweyn and 19.5 days in Buramino camp. Negative coping mechanisms are employed to cope including sale of assets, borrowing and reduced meal quantities and frequency. The coping strategy that is most employed is borrowing of cash or food items (45.5-66.6%). This creates a dependency on the borrower since they borrow against the rations to be received in the future. Continuous advocacy for use of cash or vouchers as has been implemented in other camps may alleviate this situation and increase food diversity in the camps. Proportion of households that did not use any negative copying strategy was highest in Bokolmanyoo and Melkadida (52%) but low in the rest of the camps (29.1%-32.3%)

10.3 WASH

Proportion of households using an improved drinking water source was almost 100.0% in the five camps. Water consumption at household level was above 20 lpppd recommended by UNHCR except Melkadida with 18.5 lpppd. More than 97% if the assessed population in all camps reported satisfaction with water provision.

Sanitation indicators show that with the exception of Buramino (1.6%) all PoCs accessed improved facilities whether for a single household, shared or communal however non-shared household latrines are recommended following emergencies. Hygiene practices were also found to be good where more than 98% of the as high as 23.7% of households using unimproved toilet in Kobe camp. This includes use of pour flush for some households, open defecation or in the field and public toilets like in the market and hospitals with no control of cleanliness. In such situation refugees may be subjected to risks of outbreak of waterborne diseases including acute watery diarrhoea.

11. Conclusions

Generally there is a reducing trend in prevalence of GAM, attributed to improvements that have been made in both the nutrition programme and other nutrition sensitive sectors such as WASH and livelihoods however the more challenging task that is faced by the refugees is the household food insecurity attributed to high dependence on the GFD, which is currently below standard and limited livelihood options. As a result, the prevalence of chronic malnutrition has progressively increased from 11% in 2013 to 34% in 2018. Preventive strategies using the IYCF framework to increase focus on children aged 0-59 months need to be strengthened to mitigate the impact on children.

12. Recommendations

12.1. Immediate-term

1. Infant and Young children Feeding Practices indicators showed low proportion of “timely initiation of complementary feeding” and “continued breast feeding up to two years”. Given better access of RCH clinics by pregnant and lactating mothers, health providers should use this platform to delivery key messages for improvement of IYCF practice. Staff for the community based IYCF program need to increase to reach the influencers of behaviour change at community level.
2. Food rations provided have been below the recommended daily energy of 2100 kcal per person per day since Nov 2015. It is strongly recommended to advocate for an increase in the refugee food basket to reach the minimum daily recommended allowance of both macro and micronutrients – minerals and vitamins.
3. Prevalence of anaemia among children aged 6-59 months was “high” in the five camps and one camp among women. Considering the WHO acceptable level of prevalence < 20% which has not been attained, there is need to continue with blanket supplementation to children aged 6 – 35 months with super cereal plus and super cereal to children aged 36 – 59 month. A strategy to address anaemia needs to be developed.
4. Coverage of SAM and MAM was very low in OTP and TSFP while attendance was high at BSFP both dry and wet feeding. The two-stage screening of MUAC and subsequent Weight for Height should be done twice a month at BSFP while all children should have their weight for height z scores determined on a monthly basis to identify and admit malnourished children timely and in the appropriate programs.

12.2. Medium-term

1. Strengthen outreach program to ensure effective identification and referral of children identified through nutritional screening in the community. Wet feeding as part of BSFP in children aged 36 – 59 months is done at schools by SCI. This imposes challenges related to screening and monitoring of nutritional status of the children since SCI has no such capacity. It is strongly recommended to provide this service within IMC facilities since they are mandated and have capacity of screening, identification and treatment of SAM and MAM cases.
2. Strengthen outreach program for active case finding in terms of capacity building and linkage with other programs like growth monitoring for children aged 0-59 months at community level to speedup referral of suspected cases of acute malnutrition to nutrition facilities.

3. Organize a regular joint monitoring and supportive supervision on the health, nutrition and WASH sectors from country office by both UNHCR and partners.

12.3. Long-term

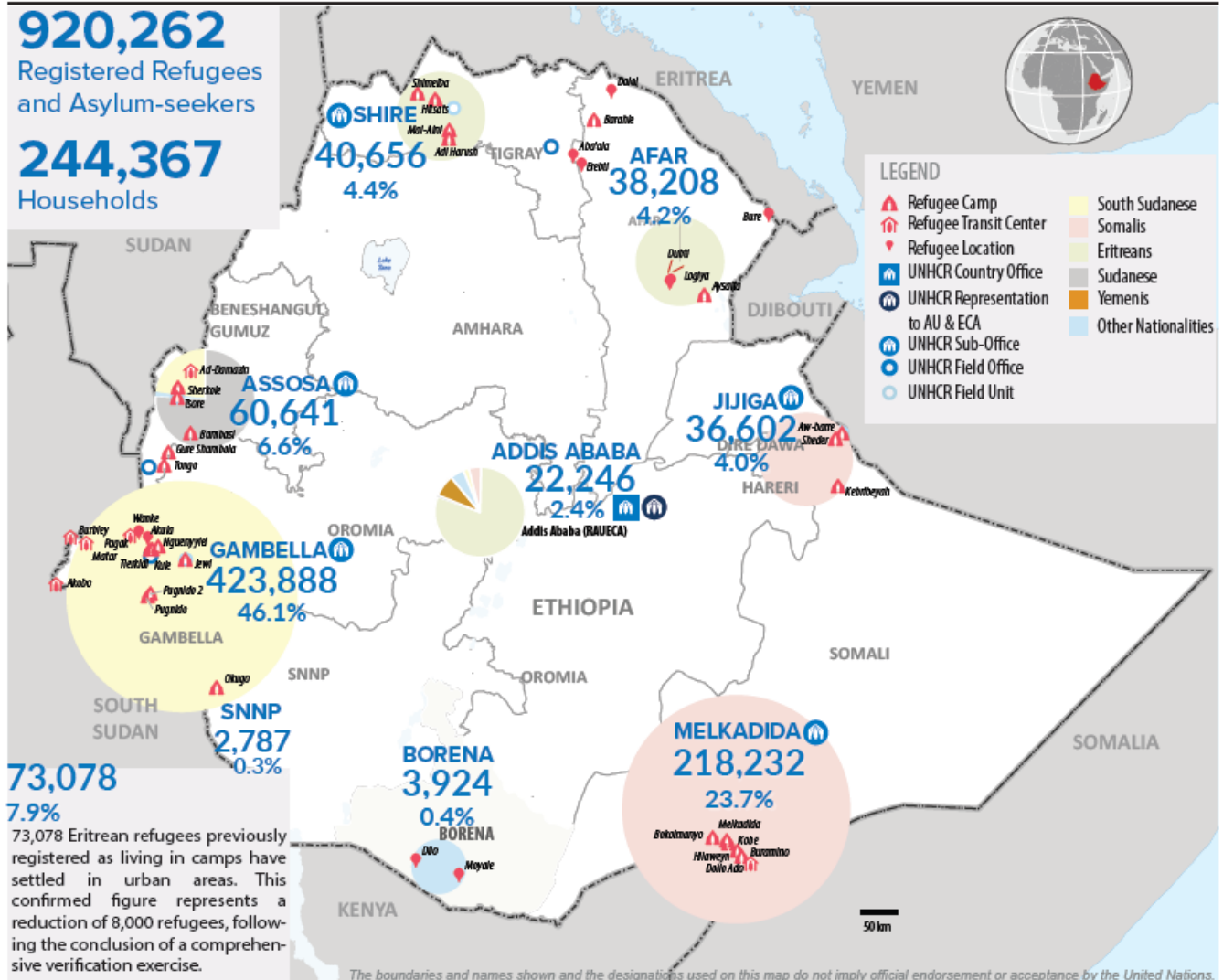
1. Strengthen and scale up livelihood projects for improvement of the household food security to bring positive impact at household level.
2. Despite high vaccination coverage from the aggregate sum of card and parental recall, coverage by card alone was very low. Messaging in retention and use of these health cards needs to be improved. Also, lost or damaged cards should be replaced with new ones while keeping information which was available from the old card.

MAP of the surveyed area

ETHIOPIA

Refugees and Asylum-seekers

as of 31 May 2018



1.3. Appendices

1.4. Plausibility check for the SESN data for all camps

Overall data quality for Bokolomanyo camp

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Flagged data (% of out of range subjects)	Incl %		0-2.5 0	>2.5-5.0 5	>5.0-7.5 10	>7.5 20	0 (2.5 %)
Overall Sex ratio (Significant chi square)	Incl p	>0.1	>0.05 0	>0.001 2	<=0.001 4	<=0.001 10	0 (p=0.920)
Age ratio (6-29 vs 30-59) (Significant chi square)	Incl p	>0.1	>0.05 0	>0.001 2	<=0.001 4	<=0.001 10	0 (p=0.546)
Dig pref score - weight	Incl #	0-7	8-12	13-20	> 20		
		0		2	4	10	2 (9)
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		0 (4)
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 (1.09)
Skewness WHZ	Excl #	<±0.2	<±0.4	<±0.6	>=±0.6		
		0	1	3	5		0 (0.11)
Kurtosis WHZ	Excl #	<±0.2	<±0.4	<±0.6	>=±0.6		
		0	1	3	5		1 (-0.34)
Poisson dist WHZ-2	Excl p	>0.05	>0.01	>0.001	<=0.001		
		0	1	3	5		0 (p=)
OVERALL SCORE WHZ =		0-9	10-14	15-24	>25		5 %

The overall score of this survey is 5 %, this is excellent.

Overall data quality for Melkadida camp

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Flagged data (% of out of range subjects)	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
			0	5	10	20	5 (3.3 %)
Overall Sex ratio (Significant chi square)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
			0	2	4	10	4 (p=0.009)
Age ratio(6-29 vs 30-59) (Significant chi square)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
			0	2	4	10	4 (p=0.043)
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	2 (10)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	0 (7)
Standard Dev WHZ . and . and	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 (1.07)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	0 (0.06)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	0 (0.02)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	0 (p=)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	15 %

The overall score of this survey is 15 %, this is acceptable.

Overall data quality for Kobe camp

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Flagged data (% of out of range subjects)	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
			0	5	10	20	0 (2.2 %)
Overall Sex ratio (Significant chi square)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
			0	2	4	10	0 (p=0.729)
Age ratio(6-29 vs 30-59) (Significant chi square)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
			0	2	4	10	2 (p=0.073)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
	0	2	4	10	0	(5)	
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
	0	2	4	10	0	(6)	
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
	0	2	4	10	0	(5)	
Standard Dev WHZ . and . and	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	10 (1.18)
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 (-0.38)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	0 (p=)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	13 %

The overall score of this survey is 13 %, this is good.

Overall data quality for Hilaweyn camp

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Flagged data (% of out of range subjects)	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
			0	5	10	20	0 (1.7 %)
Overall Sex ratio (Significant chi square)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
			0	2	4	10	0 (p=0.960)
Age ratio(6-29 vs 30-59) (Significant chi square)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
			0	2	4	10	10 (p=0.000)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
	0	2	4	10	0	(6)	
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
	0	2	4	10	2	(8)	
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 and	<1.15 and	<1.20 or	>=1.20	
	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	5	10	20	5 (1.13)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
	0	1	3	5	0	(0.06)	
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
	0	1	3	5	1	(-0.31)	
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
	0	1	3	5	0	(p=)	
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	18 %

The overall score of this survey is 18 %, this is acceptable.

Overall data quality for Buramino camp

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Flagged data (% of out of range subjects)	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
			0	5	10	20	0 (2.0 %)
Overall Sex ratio (Significant chi square)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
			0	2	4	10	0 (p=0.457)
Age ratio(6-29 vs 30-59) (Significant chi square)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
			0	2	4	10	10 (p=0.000)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
	0	2	4	10	0	(5)	
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	(6)	
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	5 (1.14)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	0 (0.06)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	1 (-0.33)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	0 (p=)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	16 %

The overall score of this survey is 16 %, this is acceptable.

Appendix 4

Nutrition Surveys Questionnaires March 2016

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 [organization/institution]. We would like to invite your household to participate in a survey that is looking at the nutrition and health status of people living in this camp.

UNHCR and other IPs working in the nutrition and health sectors are sponsoring this nutrition survey

Taking part in this survey is totally your choice. You can decide to not participate or stop taking part at any time and 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. We will then measure the arm circumference, weight and height of children who are older than 6 months up to 5 years. In addition to these assessments we will also 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 give your verbal consent. 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 whether to participate.

Thank you

Questionnaire for WOMEN 15-49 YEARS (every other HH)

This questionnaire is to be administered to all women aged between 15 and 49 years IN THE SELECTED HH

Date (dd/mm/yyyy)				Camp			Block Number	
				Team Number				
W1	W2	W3	W4	W5	W6	W7	*W8	W9
Wom an ID	HH	Consent given 1=yes 2=no 3=absent	Age (years)	Are you pregnant? (<i>Wax Maad Leedahay</i>) 1=yes(go to W8 and W9) 2=no (go to HB) 8=unk (go to HB)	Are you currently enrolled in the ANC? 1=yes 2=no	Are you currently receiving iron- folate tablets? (<i>SHOW PILL</i>) 1=yes 2=no 8=unk	Hb (g/dL)	Woman referred for anaemia 1=yes 2=no
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

***REFER TO CLINIC FOR SEVERE ANAEMIA IF HB <8.0 G/DL UNK=UNKNOWN**

Questionnaire for CHILDREN 6-59 MONTHS (every HH)

THIS QUESTIONNAIRE IS TO BE ADMINISTERED TO ALL CARETAKERS OF A CHILD THAT LIVES WITH THEM AND IS BETWEEN 6-59 MONTHS OF AGE

Date (dd/mm/yyyy)							Camp							Block Number		
							Team Number									
C1	C2		C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
Child No	HH No	Name	Did you arrive in the camp in the last 3 months	Sex (m/f)	Birthdate* d/m/y	Age** (months)	Weight (kg)	Height (cm) ±0.1cm	Oedema*** (y/n)	MUAC*** (cm)	Is child enrolled in a nutrition programme? 1=TFP(SC/OTP) 2=TSFP 3.BFP 4=None	Is this child enrolled into BSFP? 1=Yes 2=No	Measles 1=Yes card 2=Yes recall 3=No or don't Know	Vit. A in past 6 months (SHOW CAPSULE) 1=Yes card 2=Yes recall 3=No or don't Know	Has [name] had diarrhoea in the last two weeks, including today? # 1=yes 2=no 8=unk	Hb (g/dL) REFER CHILDREN WITH <7G/DL
1																
2																
3																
4																
5																
6																

**Record from EPI/health card/age documentation if available. Leave blank if no valid age documentation. **Estimate using event calendar and recall if age documentation not available. #Diarrhoea:3 or more loose stools within*

24hrs ***C9 & C10: REFER TO CLINIC FOR MALNUTRITION IF NOT ALREADY ENROLED IN SFP / OTP IF OEDEMA=Y OR MUAC < 12.5CM; C19:REFER IF HB IS<7 G/DL

Date (dd/mm/yyyy)		Camp	Block Number	
HH Number		Team Number	Child Number	
	QUESTION	ANSWER CODES		
SECTION 1				
1.	Sex	Male1 Female2		
2.	Birthdate (<i>Taariikh dhalasho</i>) RECORD FROM AGE DOCUMENTATION. LEAVE BLANK IF NO VALID AGE DOCUMENTATION.	Day/Month/Year... ____ / ____ / ____		
3.	Child's age in months (<i>Da'da bilo ahaan</i>) ESTIMATE USING EVENT CALENDAR AND RECALL IF AGE DOCUMENTATION NOT AVAILABLE	_____		
4.	Has [NAME] ever been breastfed? <i>Ilmahan mala naas nuujiyay waligii</i>	Yes.....1 No2 DK.....8	_____ IF ANSWER IS 2 or 8 GO TO Q7	
5.	How long after birth did you first put [NAME] to the breast? <i>Markuu ilmuhu dhashay muddo goormaad ku duwday naaska</i>	Less than one hour1 Between 1 and 23 hours.....2 More than 24 hours.....3 DK.....8	_____	
6.	Was [NAME] breastfed yesterday during the day or at night? <i>Ilaa shalay iyo xalay ma siisay naas</i>	Yes.....1 No2 DK.....8	_____	
SECTION 2				
7.	Now I would like to ask you about liquids that [NAME] may have had yesterday during the day and at night. I am interested in whether your child had the item even if it was combined with other foods. Yesterday, during the day or at night, did [NAME] receive any of the following? <i>illaa shalay ilmaha ma siisay wax ka mid ah waxyaalaha hoos ku qoran ?</i>	ASK ABOUT EVERY LIQUID. IF ITEM WAS GIVEN, CIRCLE '1'. IF ITEM WAS NOT GIVEN, CIRCLE '2'. IF CAREGIVER DOESN'T KNOW, CIRCLE '8'. EVERY LINE MUST HAVE A CODE.		
	7A: Plain water for example (Biyo caadiah ama biyo madow)	<div>Yes No DK</div> <div>7A.....1 2 8</div>		

	<p>7B: Infant formula for example (<i>Nan, mamix, choice, S26, Sahha, caanaha ilmaha, sida mamix-caanah dasada yar</i>)</p> <p>7C: Milk other than breast milk, such as tinned, powdered, or fresh animal milk for example (<i>Caanaha naaska marka lagareebo, sida ookale, canaha daasada ama qardaasyada, caano xoolo</i>)</p> <p>7D: Juice or juice drinks: (<i>Sharaab sida cambe liin iwm</i>)</p> <p>7E: Clear broth: (fuud/maraq xoolo)</p> <p>7F: Sour milk or yogurt for example (<i>Caano fadhi ama gadhood, suusac iwm</i>)</p> <p>7G: Thin porridge for example (<i>Boorash khafiif ah</i>)</p> <p>7H: Tea or coffee with milk (<i>Shaah ama bun caano leh iwm</i>)</p> <p>7I: Any other water-based liquids Sodas, other sweet drinks, herbal infusion, gripe water, clear tea with no milk, black coffee, ritual fluids (<i>biges, bun, casmale, biyo tiira, soda</i>)</p>	<p>7B.....1 2 8</p> <p>7C.....1 2 8</p> <p>7D.....1 2 8</p> <p>7E.....1 2 8</p> <p>7F.....1 2 8</p> <p>7G.....1 2 8</p> <p>7H.....1 2 8</p> <p>7I.....1 2 8</p>							
8.	<p>Yesterday, during the day or at night, did [NAME] eat solid or semi-solid (soft, mushy) food? For example (<i>illaa shalay ilmaha ma siisay cunta la tumay ama cunta yar adag ama cunta adag</i>)</p>	<table border="1"> <tr> <td>Yes</td><td>1</td><td rowspan="3"> __ </td></tr> <tr> <td>No</td><td>2</td></tr> <tr> <td>DK</td><td>8</td></tr> </table>	Yes	1	__	No	2	DK	8
Yes	1	__							
No	2								
DK	8								
SECTION 3									
9.	<p>Did [NAME] drink anything from a bottle with a nipple yesterday during the day or at night? (<i>Cunuga makucabay masaasad, duuda am dalo ib leh</i>)</p>	<table border="1"> <tr> <td>Yes</td><td>1</td><td rowspan="3"> __ </td></tr> <tr> <td>No</td><td>2</td></tr> <tr> <td>DK</td><td>8</td></tr> </table>	Yes	1	__	No	2	DK	8
Yes	1	__							
No	2								
DK	8								
SECTION 4									
10.	<p>Is child aged 6-23 months? (<i>Cunuga majiraa 6-23 bilood</i>) REFER TO Q2</p>	<table border="1"> <tr> <td>Yes</td><td>1</td><td rowspan="2"> __ </td></tr> <tr> <td>No</td><td>2</td></tr> </table> <p>IF ANSWER IS 2 STOP</p>	Yes	1	__	No	2		
Yes	1	__							
No	2								

			NOW
11.	<p>Now I would like to ask you about some particular foods [NAME] may eat. I am interested in whether your child had the item even if it was combined with other foods.</p> <p>Yesterday, during the day or at night, did [NAME] consume any of the following? <i>(Imika waxaan doonayaa in aan kuwareysto cuntooyiin qaas ah oo cunuga uu cunay ama gooni ha u cuno ama rashiin kujiro shaygan)</i></p>	<p>ASK ABOUT EVERY ITEM. IF ITEM WAS GIVEN, CIRCLE '1'. IF ITEM WAS NOT GIVEN, CIRCLE '2'. IF CAREGIVER DOESN'T KNOW, CIRCLE '8'. EVERY LINE MUST HAVE A CODE.</p>	
	<p>11A. Flesh foods like <i>hilib, kaluun, digaag, beer, /wadna, kilyo iwm</i></p> <p>11B. CSB+</p> <p>11C. CSB++/Super cereal +(SHOW SACHET)</p> <p>11D. Plumpy'Nut® (SHOW SACHET)</p> <p>11E. Plumpy'Sup® (SHOW SACHET)</p> <p>11G. Infant formula: for example Nan, mamix, choice, anchor, S26(<i>caano boodhe, sahha</i>)</p> <p>11H. List any iron fortified solid, semi-solid or soft foods designed specifically for infants and young children available in the local setting that are different than distributed commodities.(<i>Serifam , Cerelac</i>)</p>	<p style="text-align: right;">Yes No DK</p> <p>11A.....1 2 8</p> <p>11B.....1 2 8</p> <p>11C.....1 2 8</p> <p>11D.....1 2 8</p> <p>11E.....1 2 8</p> <p>11G.....1 2 8</p> <p>11H.....1 2 8</p>	

Infant and young child feeding questionnaire (1 questionnaire per child 0-23 months)

Food Security questionnaire (1 questionnaire per every other household)

Date (dd/mm/yyyy)		Camp	Block Number
HH Number		Team Number	
No	QUESTION	ANSWER CODES	
SECTION 1			
1	Does your family receive general food ration distributed by ARRA? <i>Reerku mahelaa rashiinka ey bixiso hayada ARRA?</i>	Yes 1 No 2	_____ IF ANSWER IS 1 GO TO Q3
2.	Why do you not receive the general food ration? <i>Waa maxaay sababta uu reerka u qaadanin rashiinka lagabixiyo xarada?</i>	No ration card 1 Lost card 2 Traded card 3 Not registered but eligible 4 Not eligible (not in targeting criteria) 5 Other 6	_____ IF ANSWER IS 1 GO TO Q3
3.	How many days did the food from the general ration from the [insert] cycle of [insert] month last? <i>(Imisa cisho ayuu raashinka bishu idin gaadhsiya(qor inta maalmood)</i>	Number of Dates _____ IF ANSWER IS > or =30 days GO TO Q5	_____ IF ANSWER IS > or =30 days GO TO Q5
4.	What is the <i>main</i> reason the general ration did not last until the next distribution? <i>(haddi cuntadu inikufilneen 30 casho maxaa sabaabay)</i>	Amount given is not adequate 1 Part of food sold to buy other items 2 Food sold for milling cost 3 Food sold to pay debt 4 New arrival family 5 Gave to livestock 6 Shared the food with kins 7 Others 8	_____ IF ANSWER IS 1 GO TO Q3
5.	In the last month, have you or anyone in your household borrowed cash, food or other items with or without interest? <i>(Bishii lasoodaafay qof qooyaska kamid ah masoodensaday lacag, ama raashin ama wax kale oo an riba lahayn)</i>	Yes 1 No 2 Don't Know 8	_____ IF ANSWER IS 1 GO TO Q3
6.	In the last month, have you or anyone in your household sold any assets that you would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)? <i>(Bishii lasoodaafay qof qooyaska kamid ah ma iibiyay alaabta guriga, harurka, qalabka,</i>	Yes 1 No 2 Don't Know 8	_____ IF ANSWER IS 1 GO TO Q3
7.	In the last month, have you or anyone in your household been requested increased remittances or gifts as compared to normal?	Yes 1 No 2	_____ IF ANSWER IS 1 GO TO Q3

	<i>(Bishii lasoodaafay qof qooyaska ah madalbaday in loo soo xawilo lacag dheerad ah ama deeq ka badan intii hore)</i>	Don't Know.....8	
8.	In the last month, have you or anyone in your household reduced the quantity and/or frequency of meals? <i>(Bishii lasoodaafay qof qooyaska ah ma dhimay qiyaasta rashiinka guriga lagakariyo ama madimay waqtiyaha raashiinka lacuna guriga)</i>	Yes 1 No..... 2 Don't Know.....8	__
9.	In the last month, have you or anyone in your household begged? <i>Bishii lasoodaafay qof qooyaska ah maraasaday caawitan ama masw baryotamay)</i>	Yes 1 No..... 2 Don't Know.....8	__
10.	In the last month, have you or anyone in your household engaged in: killing of wild animals, cutting of big trees and selling, stealing, cross boarder smuggling, charcoal burning or any other risky or harmful activities <i>Bishii lasoodaafay qof qooyaska ah maka qeeyb qaatay waxyaala sida cidoodka oo la ugaarto, dhirta oo laguro, kutoroban iwm)</i>	Yes 1 No..... 2 Don't Know.....8	__
11.	Do you have one or more children 5-14 years of age currently living in the household? Qooyaska ma leeyahay cunug da'disa 5-14 sano ama kayar?	Yes 1 No..... 2	__ IF ANSWER IS 2 GO TO SECTION 2
12.	In the last month, have you or anyone in your household sent your child or children 5-14 years to work outside the household in order to get income (cash or in-kind)? <i>Bishii lasoodaafay qof qooyaska ah ma u diray cunug 5-14 in uu kasoo shaqeeyo meel ka baxsan guriga sifa uu dahqaale guriga u keeno)</i>	Yes 1 No..... 2 Don't Know.....8	__

SECTION 2

13.	Now I would like to ask you about the types of foods that you or anyone else in your household ate yesterday during the day and at night. I am interested in whether you or anyone else in your household had the item even if it was combined with other foods. <i>(Fadlan qeex cunnooyinka ee shalay reerku cunay maalinimadii. Ka bilow cuntada u horraysa)</i>	READ THE LIST OF FOODS AND DO NOT PROBE. RECORD (1) IN THE BOX IF ANYONE IN THE HOUSEHOLD ATE THE FOOD IN QUESTION, OR (0) IN THE BOX IF NO ONE IN THE HOUSEHOLD ATE THE FOOD.
	1A. Cereals from own food aid ration: wheat ,rice or any foods made from these (Canjeero, Cambuulo, Baris; rooti,Iyo boorash)	1A..... __
	1B. Cereals purchased, exchanged ,home-grown ,gift and not from own food ration:	1B..... __

wheat ,rice, pasta, bread, porridge (Baris, Basto, Rooti, Iyo boorash)

1C. Fortified blended foods: CSB+, CSB++ or any other food made from these.

2. White roots and tubers: Any green bananas, plantains, white potatoes, white yam, white cassava, or other foods made from roots (*moos ceyriin, baradho*)

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) (*qumbe, karoot*)

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, kale, spinach (*Caleen cagaaran sida kosta gooman cagaar iwm*).

3C. Other vegetables: Any other vegetables (e.g. bamboo shoots, cabbage, green pepper, tomato, onion, eggplant, zucchini) + other locally available vegetables (*tamata, basal, cabash, basbas cagaar. Ton*)

4A. Vitamin A rich fruits: Any mango (ripe, fresh and dried), ripe papaya, and 100% fruit juice made from these + other locally available vitamin A rich fruits (*canbo kartay, cambe,, papaya,qara*)

4B. Other fruits: Any other fruits such as apple, avocados, banana, coconut flesh, lemon, , including wild fruits and 100% fruit juice made from these(*ananas, tufax, afkadho, moos, liin- iwm*)

5A. Organ meat: ber, kilyo, wadna iwm

5B. Flesh meats: hilib xoola sida ari, lo' geel, ida, digaag ama hilib cidood

6. Eggs: bet/ukun noc kasta

7. Fish and seafood: kaluun, kaluun laqalajijay,, tuna/kaluunka gasacadaha, iwm

8A. Legumes, nuts and seeds from own food aid ration: Misir/Digir

1C..... |__|

2..... |__|

3A..... |__|

3B..... |__|

3C..... |__|

4A..... |__|

4B..... |__|

5A..... |__|

5B..... |__|

6..... |__|

7..... |__|

8A..... |__|

Date (dd/mm/yyyy)		Camp	Block Number
_ _ / _ _ /2016			
HH		_ _ _	Team Number _ _ _
	<p>8B. Legumes, nuts and seeds purchased, exchanged, home-grown, gift and not from own food aid ration: Any dried peas, lentils, nuts, seeds or foods made from these (<i>Misir, sida digir marawe, digir soomali,</i></p> <p>9. Milk and milk products: Any milk, infant formula, cheese, yogurt or other milk products (<i>caano dhamaan, cano fadhi, garoor</i>)</p> <p>10A. Oils and fats from own food aid ration: Vegetable oil (<i>saliida lagabixiyo xarada – sida saliid cadeey</i>)</p> <p>10B. Oils and fats purchased, exchanged , home-grown, gift and not from own food ration Oil, fats, ghee or butter added to food or used for cooking (<i>saliida xarada aan lagabixinin-sida macsaro, sixin, subag iwm.</i>)</p> <p>11. Sweets: sugar, honey, sweetened soda or sweetened juice drinks, sugary foods such as chocolates, candies, cookies, sweet biscuits and cakes (<i>macmacaanka (sokor, malab, soda, cabitaan lamacaaneyay, nacinac, buskut, doolsha halwa)</i></p> <p>12. Spices, condiments, beverages: (<i>filfil madoow, cusba,heel, basbaas, shah, bun .</i>)Any spices (black pepper, salt), condiments (soy sauce, hot sauce), coffee, tea, alcoholic beverages</p>	<p>8B..... _ </p> <p>9..... _ </p> <p>10A..... _ </p> <p>10B..... _ </p> <p>11..... _ </p> <p>12..... _ </p>	

Wash questionnaire (1 Questionnaire per every other Household)

No	QUESTION	ANSWER CODES	
SECTION WS1			
WS1	How many people are currently living in this household?	_ _ _	
WS3	Are you satisfied with the water supply? THIS RELATES TO THE DRINKING WATER SUPPLY	Yes.....1 No.....2 Partially3 Don't know.....8	_ IF ANSWER IS 1, 3 OR 8 GO TO WS9
WS4	What is the main reason you are not satisfied with the water supply? DO NOT READ THE ANSWERS SELECT ONE ONLY	Not enough 01 Long waiting queue..... 02 Long distance 03 Irregular supply..... 04 Bad taste 05 Water too warm 06 Bad quality 07 Have to pay 08 Other (specify) 96 Don't know.....98	
SECTION WS2			
Observation Based Questions (done after the initial questions to ensure the flow of the interview is not broken)			
No	OBSERVATION / QUESTION	ANSWER	

WS9	CALCULATE THE TOTAL AMOUNT OF WATER USED BY THE HOUSEHOLD PER DAY	Please show me the containers you used yesterday for collecting water	Capacity in litres	Number of journeys made with each container	Total litres
	THIS RELATES TO ALL SOURCES OF WATER (DRINKING WATER AND NON-DRINKING WATER SOURCES)	ASSIGN A NUMBER TO EACH CONTAINER			SUPERVISOR TO COMPLETE HAND CACLULATION
	IF HOUSEHOLD BORROWED CONTAINERS TO COLLECT WATER OR DID NOT COLLECT WATER YESTERDAY, LEAVE BLANK				
	Total litres used by household				

