STANDARDISED EXPANDED NUTRITION SURVEY (SENS)

Awbarre, Kebribeyah and Sheder refugee camps
In Jijiga, Ethiopia Somali Region

Surveys conducted: 4th to 26th December 2017

Report completed: May 2018

UNHCR

WFP World Food Programme
wfp.org

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ACRONYMS AND ABREVIATIONS

ARRA	Administration for Refugee & Returnee Affairs
BSFP	Blanket Supplementary Feeding Program
CI	Confidence Interval
CMAM	Community-based Management of Acute Malnutrition
GAM	Global Acute Malnutrition
GFD	General Food Distribution
HFA	Height-for-Age
HAZ	Height-for-Age Z-score
HH	Household
IYCF	Infant and young children feeding
Kcal	Kilocalorie
Kg	Kilogram
LLIN	Long lasting insect side net
LPPPD	Liters per person per day
MUAC	Mid-Upper Arm Circumference
NGO	Non-Governmental Organization
ODK	Open Data Kit
OTP	Outpatient therapeutic program
PPD	Per person per day
PPM	Per person per month
SAM	Severe Acute Malnutrition
SC	Stabilization Centre
SENS	Standardized Expanded Nutrition Survey
TSFP	Targeted Supplementary Feeding Program
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
WASH	Water Sanitation and Hygiene
WFA	Weight-for-Age
WHZ	Weight-for-Height / Length Z-score
WFH	Weight-for-Height
WFP	World Food Programme
WHO	World Health Organization

ACKNOWLEDGEMENTS

1. EXECUTIVE SUMMARY

A joint (UNHCR, WFP and ARRA) annual standardised expanded nutrition survey (SENS) was conducted at Kebribeyah, Awbarre and Sheder camps from 11 to 23 Dec 2017. The three refugee camps are situated in Ethiopia Somali regional state in the Eastern part of Ethiopia. Jijiga is the capital town of Ethiopia-Somali regional state, eastern part of Ethiopia, which is 635 km from the capital city of Addis Ababa.

The assessment entailed five standard SENS modules; Anthropometry and Health, Anaemia, Infant and young child feeding (IYCF), Food security, Water, sanitation and hygiene (WASH) following the UNHCR SENS guidelines and SMART methodology. In addition to the above, mortality module was also included.

The main objective of the nutrition survey was to assess the health and nutrition status of refugees, mortality indices and articulate practical recommendations for appropriate nutrition and public health interventions.

Methodology: A cross-sectional study was applied in each refugee camps. Simple random sampling was implemented. In each refugee camp the list the sampling frame (zone and Block) and sampling unit (household) were updated before the survey. Empty households were excluded from the sampling frame.

The sample size was calculated by using ENA for SMART software version July 9th, 2015 and the prevalence of global acute malnutrition was estimated using the upper confidence interval (CI) from SENS 2016. An average of household size and under five populations were drawn from UNHCR ProGress data base (as of 31 Oct 2017). The number of households were updated a week prior to the survey when all households were counted and 10% non-response rate was used to determine the sample size.

UNHCR Standardised Expanded Nutrition Survey (SENS) guidelines (Version 2.0, 2013) and standardized Monitoring and Assessment of Relief and Transitions (Version July 9th 2015) were used as a reference for data collection and analysis.

A total of six survey teams composed of seven team members in each team were established. Four-days training was carried out in Jijiga camps. Prior to the data collection, one day orientation for refugee community outreach agents, standardization, pilot survey and preparation of all materials in the camps were done. The survey teams were supported by a team of supervisors and coordinator throughout data collection.

Findings: The nutrition status of the population in the three camps remains stable. The prevalence of global acute malnutrition is below 10.0% W/H Z-score in the past three years. In 2017, SENS shows an improvement of the nutrition status of the population. While there is no statically significant difference in GAM in Awbarre and Sheder refugee camps compared to 2016, in Kebribeyah the reduction in prevalence of global acute malnutrition is significant ($p<0.05$) from 8.0 % (5.7-11.3%, 95% CI) to 4.4% (2.6- 7.4, 95% CI).

TABLE 2: SUMMARY OF RESULTS

Indicators	Awbarre no.	% (95% CI)	Kebribeyah no.	% (95% CI)	Sheder no.	% (95% CI)	Classification of public health significance
CHILDREN (6-59 month): Acute Malnutrition (WHO 2006 Growth Standard)							
Global Acute Malnutrition (GAM)	14/259	5.4% (3.2- 8.9%)	13/296	4.4% (2.6- 7.4%)	18/248	7.3% (4.6-11.2%)	Critical if ≥ 15%
Moderate Acute Malnutrition (MAM)	13/259	5.0% (3.0- 8.4%)	10/296	3.4% (1.9- 5.8%)	15/248	6.0% (3.7- 9.7%)	
Severe Acute Malnutrition (SAM)	1/259	0.4% (0.1- 2.2%)	3/296	1.0% (0.3- 3.1%)	3/248	1.2% (0.4- 3.5%)	
Oedema	0/259	0.0%	0/296	0.0%	0/248	0.0%	
Stunting (WHO 2006 Growth Standards)							
Total Stunting	63/254	24.8% (19.9-30.5%)	68/296	23.0% (18.6-28.0%)	53/243	21.8% (17.1-27.4%)	Critical if ≥ 40%
Severe Stunting	13/254	5.1% (3.0- 8.6%)	9/296	3.0% (1.5- 5.9%)	12/243	4.9% (2.8- 8.4%)	
Mid Upper Arm Circumference (MUAC)							
MUAC < 125 mm and/or oedema	6/263	2.3% (1.0- 4.9%)	13/305	4.3% (2.6- 7.0%)	8/252	3.2% (1.6- 6.1%)	
MUAC < 115 mm and/or oedema	1/263	0.4% (0.1- 2.1%)	0/305	0.0%	2/252	0.8% (0.2- 2.8%)	
Anaemia (6-59 months)							
Total Anaemia (Hb <11 g/dl)	65/263	24.7% (19.6-30.4%)	95/305	31.1% (26.1-36.7%)	60/252	23.8% (18.7-29.6%)	High if ≥ 40%
Mild (Hb 10-10.9 g/dl)	36/263	13.7% (9.8-18.4%)	45/305	14.8% (11.1-19.4%)	30/252	11.9% (8.2-16.6%)	
Moderate (Hb 7-9.9 g/dl)	29/263	11.0% (7.5-15.5%)	49/305	16.1% (12.2-20.8%)	30/252	11.9% (8.2-16.6%)	
Severe (Hb<7.0 g/dl)	0/263	0.0%	1/305	0.3% (0.0-2.1%)	0/252	0.0%	
Programme coverage							

Indicators	Awbarre		Kebribeyah		Sheder		Classification of public health significance
	no.	% (95% CI)	no.	% (95% CI)	no.	% (95% CI)	
Target supplementary feeding program (TSFP) based on all admission criteria WHZ and/or MUAC)	1/16	6.3% (0.2-30.2%)	6/19	31.6% (12.6-56.6%)	0/20	0.0%	≥90%
Therapeutic program (OTP/SC) based on admission criteria WHZ, Oedema and/or MUAC)	0/5	0.0%	0/6	0.0%	0/6	0.0%	≥90%
BSFP, Admission based on age, 6-23 months	55/82	67.1% (55.8-77.1%)	66/113	58.4% (48.8-67.6%)	64/78	82.1% (71.7-89.8%)	
Measles vaccination with card or recall (9-59 months	248/252	99.2% (97.2-99.9%)	285/286	99.7% (98.1-100.0%)	228/236	96.6% (93.4-98.5%)	Target of ≥ 95%
Measles vaccination with card (9-59 months)	242/252	96.4% (93.3-98.3%)	254/286	88.8% (84.6-92.2%)	63/252	25.0% (19.8-30.8%)	
Vitamin A supplementation coverage with card or recall within past 6 months (6-59 months)	263/263	100.0%	302/305	99.0% (96.9-99.7%)	240/252	95.2% (91.8-97.5%)	Target of ≥ 90%
Vitamin A supplementation within past 6 months with card	215/263	81.7% (76.5-86.2%)	242/305	79.3% (74.4-83.7%)	131/236	55.5% (48.9-62.0%)	
Morbidity							
Diarrhoea in the past 2 weeks	12/252	4.5% (2.4-7.8%)	12/305	3.9% (2.1-7.0%)	18/521	7.2% (4.3-11.1%)	
CHILDREN (0-23 months)							
Infant and Young children Feeding Practices							
Timely initiation of breastfeeding (0-23 months)	80/104	76.9% (67.6-84.6%)	130/140	92.9% (87.3-96.5%)	83/100	83.0% (74.2-89.8%)	
Exclusive breastfeeding under 6 months	13/20	65.0% (40.8-84.6%)	20/24	83.3% (62.6-95.3%)	12/20	60.0% (36.1-80.9%)	
Continued breastfeeding at 1 year(12-15 months)	15/31	48.4% (30.2-66.9%)	19/27	70.4% (49.8-86.2%)	14/19	73.7% (48.8-90.9%)	
Continued breastfeeding at 2 years (20-23 months)	4/11	36.4% (10.9-69.2%)	4/19	21.1% (6.1-45.6%)	6/16	37.5% (15.2-64.6%)	
Introduction of solid, semi-solid or soft foods	8/13	61.5%	9/19	47.4%	9/16	56.3%	

Indicators	Awbarre		Kebribeyah		Sheder		Classification of public health significance
	no.	% (95% CI)	no.	% (95% CI)	no.	% (95% CI)	
(6-8 months)		(31.6-86.1%)		(24.4-71.1%)		(29.9-80.2%)	
Consumption of iron-rich or iron-fortified foods (6-23 months)	58/80	72.5% (61.4-81.9%)	107/114	93.9% (87.8-97.5%)	64/78	82.1% (71.7-89.8%)	
Bottle feeding (0-23 months)	20/104	19.2% (12.2-28.1%)	9/140	6.4% (3.0-11.9%)	22/99	22.2% (14.5-31.7%)	
WOMEN 15-49 years							
Anaemia (non-pregnant) SENS / WHO cut off)							
Total Anaemia (Hb <12.0 g/dl)	30/147	20.4% (14.2-27.8%)	19/120	15.8% (9.8-23.6%)	27/177	15.3% (10.3-21.4%)	High if $\geq$ 40%
Mild (Hb 11.0-11.9)	19/147	12.9% (8.0-19.4%)	10/120	8.3% (4.1-14.8%)	15/177	8.5% (4.8-13.6%)	
Moderate (Hb 8.0-10.9)	10/147	6.8% (3.3-12.2%)	9/120	7.5% (3.5-13.8%)	11/177	6.2% (3.1-10.8%)	
Severe (Hb<8.0)	1/147	0.7% (0.0-3.7%)	0/120	0.0%	1/177	0.6% (0.0-3.1%)	
FOOD SECURITY							
Proportion of HH with a ration card	139/146	95.2% (90.4-98.1%)	138/138	100.0%	161/180	89.4% (84.0-93.5%)	
Average number of days GFD including to cash lasts out of 30 days	17.2 (SD = 4.43%)		14.5 (SD = 5.12%)		14.5 (SD =5.12%)		
Average duration (%) in relation to the theoretical duration of the ration	17.2/30	57.3%	14.5/30	48.3%	14.5/30	48.3%	
Household Dietary Diversity Score (HDDS) {Mean(SD)}	6.34 (SD = 2.124%)		5.45 (SD = 1.82%)		5.64 (SD =1.4%)		
Proportion of households reporting using the following coping strategies over the past month*:							
Borrowed cash, food or other items with or without interest	108/145	74.5% (66.6-81.4%)	129/138	93.5% (88.0-97.0%)	125/180	69.4% (62.2-76.1%)	
Sold any assets that would not have normally sold (furniture, other NFI, etc.)	10/146	6.8% (3.3-12.2%)	5/138	3.6% (1.2-8.3%)	14/180	7.8% (4.3-12.7%)	

Indicators	Awbarre		Kebribeyah		Sheder		Classification of public health significance
	no.	% (95% CI)	no.	% (95% CI)	no.	% (95% CI)	
Requested increased remittances or gifts as compared to normal	12/146	8.2% (4.3-13.9%)	8/138	5.8% (2.5-11.1%)	14/180	7.8% (4.3-12.7%)	
Reduced the quantity and/or frequency of meals and snacks	68/146	46.6% (38.3-55.0%)	73/137	53.3% (44.6-61.9%)	115/180	63.9% (56.4-70.9%)	
Begged	30/146	20.5% (14.3-28.0%)	1/138	0.7% (0.0-4.0%)	35/180	19.4% (13.9-26.0%)	
Engaged in potentially risky or harmful activities (list activities)	5/146	3.4% (1.1-7.8%)	0/138	0.0%	7/180	3.9% (1.6-7.8%)	
Proportion of households reporting using none of the coping strategies over the past month	10/144	6.9% (3.4-12.4%)	6/137	4.4% (1.6-9.3%)	25/180	13.9% (9.2-19.8%)	
WASH							
Water quality							
Proportion of households using an improved drinking water source	150/150	100.0%	36/139	25.9% (18.8-34.0%)	178/178	100.0%	
Proportion of households that use a covered or narrow necked container for storing their drinking water	102/150	68.0% (59.9-75.4%)	117/139	84.2% (77.0-89.8%)	166/178	93.3% (88.5-96.5%)	
Water quantity							
≥ 20 lpppd	72/150	48.0% (39.8-56.3%)	37/139	26.6% (19.5-34.8%)	58/178	32.6% (25.8-40.0%)	
15 - <20 lpppd	29/150	19.3% (13.3-26.6%)	18/139	12.9% (7.9-19.7%)	23/178	12.9% (8.4-18.8%)	
<15 lpppd	49/150	32.7% (25.2-40.8%)	84/139	60.4% (51.8-68.6%)	97/178	54.5% (46.9-62.0%)	
Average consumption (Litres per person per day)		22.1		16.94		16.7	UNHCR target ≥20 lpppd
Proportion of HHs that say they are satisfied with the drinking water supply	126/148	85.1% (78.4-90.4%)	15/139	10.8% (6.2-17.2%)	128/178	71.9% (64.7-78.4%)	
Safe excreta disposal							
An improved excreta disposal facility	129/148	87.2%	91/122	74.6%	113/178	63.5%	

Indicators	Awbarre		Kebribeyah		Sheder		Classification of public health significance
	no.	% (95% CI)	no.	% (95% CI)	no.	% (95% CI)	
(improved toilet facility, 1 household)		(80.7-92.1%)		(65.9-82.0%)		(56.0-70.6%)	
A shared family toilet (improved toilet facility, 2 households)	2/148	1.4% (0.2-4.8%)	19/122	15.6% (9.6-23.2%)	6/178	3.4% (1.2-7.2%)	
A communal toilet (improved toilet facility, 3 households or more)	15/148	10.1% (5.8-16.2%)	10/122	8.2% (4.0-14.6%)	58/178	32.6% (25.8-40.0%)	
An unimproved toilet (unimproved toilet facility or public toilet)	2/148	1.4% (0.2-4.8%)	2/122	1.6% (0.2-5.8%)	1/178	0.6% (0.0-3.1%)	
Proportion of households with children under three years old that dispose of faeces safely	48/70	68.6% (56.4-79.1%)	62/73	84.9% (74.6-92.2%)	72/73	98.6% (92.6-100.0%)	
MORTALITY							
Crude mortality rate (CDR) Deaths/10,000/day	3/2034	0.16 (0.05-0.46)	5/1982	0.25 (0.11-0.58)	2/2159	0.1 (0.03-0.36)	Very serious if >1
Under five mortality (U5M) Deaths/10,000/day	2/291	0.72 (0.2-2.6)	3/342	0.86 (0.29 – 2.49)	1/267	0.4 (0.07-2.24)	Very serious if >2

1.1. INTERPRETATION OF RESULTS

1.1.1. Global Acute Malnutrition

The nutrition status of the refugee population in the three camps remains stable compared to the results of previous SENS (2016 and 2015). The prevalence of global acute malnutrition (GAM) is below 10.0% W/H Z-score (UNHCR target) in the past three years. In comparison to the WHO classification of public health significance only Kebribeyah camp presented GAM prevalence 4.4% classified as "ACCEPTABLE" level, while GAM prevalence in Awbarre and Sheder camps reported 5.4% and 7.3% respectively classified as "POOR" level. The prevalence of severe acute malnutrition (SAM) ranges between 0.4% - 1.2% in all three camps. In 2017, SENS shows an improvement of the nutrition status of the population in Kebribeyah camp with a significant reduction in prevalence of global acute malnutrition ($P < 0.05$) from 8.0% (5.7-11.3%, 95% CI) to 4.4% (2.6- 7.4, 95% CI). There is no statically significant difference in GAM prevalence in Awbarre and Sheder refugee camps compared to 2016.

Figure 1: Trend of prevalence of GAM among children 6-59 months in 3 camps (2014-2017)
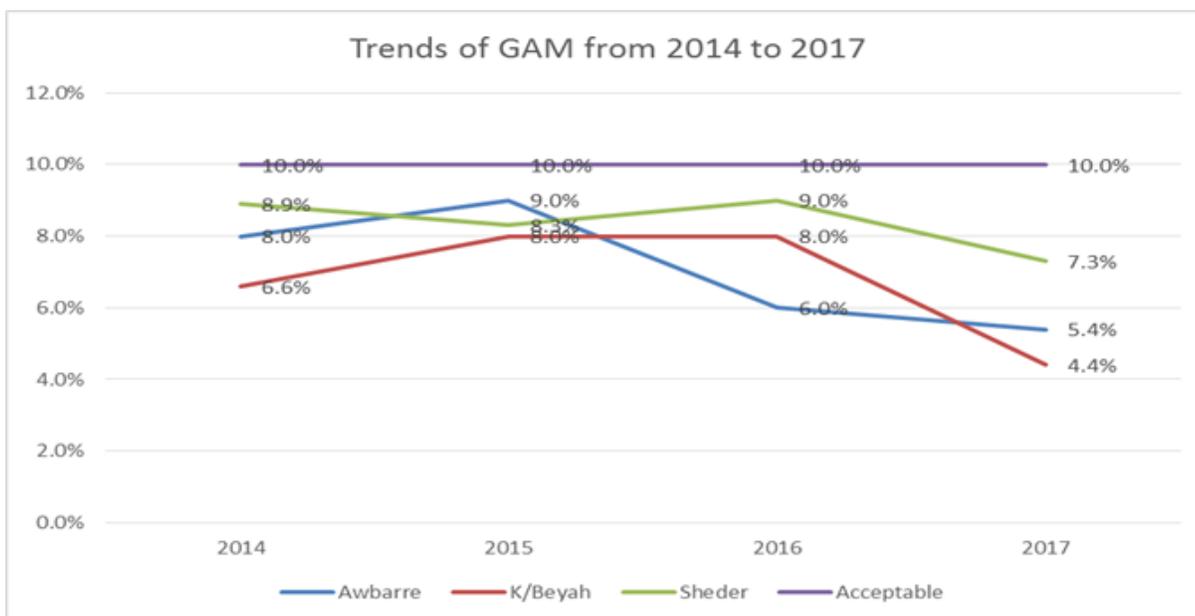
Figure 2: Trends of SAM prevalence among children 6-59 months in 3 camps (2014-2017)

Jijiga Camps Standardized Expanded Nutrition Survey Final Report, 2017.
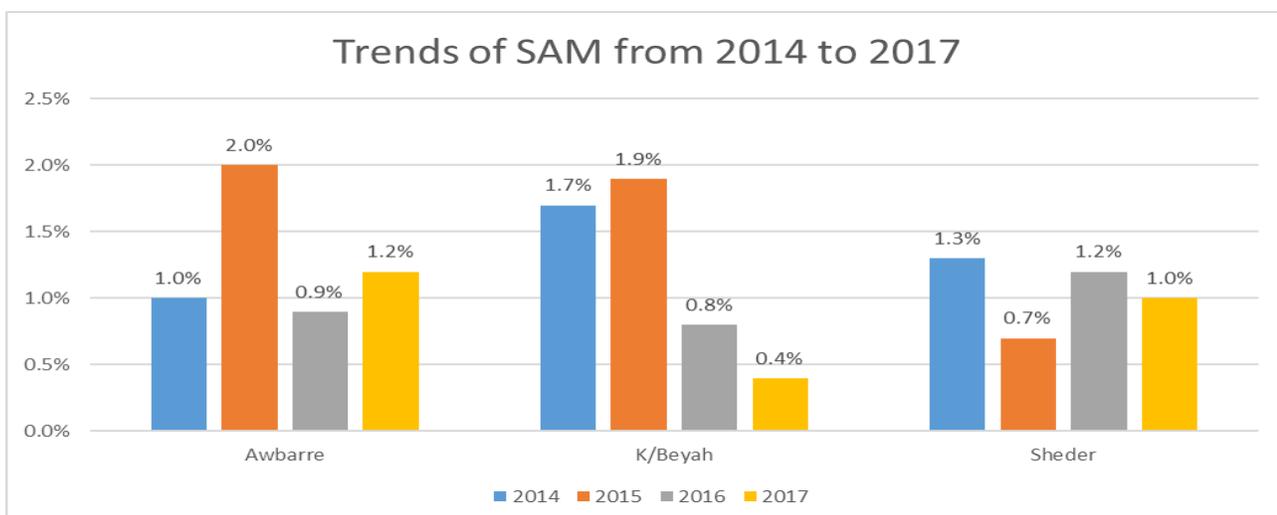
1.1.2. Stunting or chronic malnutrition

The prevalence of stunting or chronic malnutrition among children aged 6-59 months ranges between 21.8% - 24.8% in the camps classified as "POOR" level as per WHO classification of public health significance. This is above the UNHCR standard (<20%).

1.1.3. Programme enrolment coverage

The enrolment of children aged 6-23 months in the BSFP is reported 58.4%-82.1%. This is indicative of low access to super cereal plus for children aged 6-23 months making them susceptible to acute malnutrition. Increased enrolment in BSFP programme is also essential to the centre based second stage screening out of children and consequent referral to the TSFP and OTP for management of acute malnutrition. Although SMART survey methodology is not ideal for assessment of coverage for SAM and MAM programs, a number of children were identified as SAM and MAM but were not admitted in the appropriate program.

1.1.4. Anaemia among children aged 6-59 months and non-pregnant women 15-49 years

The trend of Anaemia prevalence among children 6-59 months shows a reducing trend with no significant difference from the previous year. However anaemia prevalence ranges between 23.0%-31.7% classified as "MEDIUM" level public health significance as per WHO classification. The prevalence of anaemia among non-pregnant women was established at 15.3%, 15.8% in Kebribeyah and shedder classified as "ACCEPTABLE" level, while in Awbarre camp its 20.4% classified as "MEDIUM" level public health significance as per WHO classification.

Figure 3: Trends of Anaemia prevalence among children 6-59 months in 3 camps (2014-2017)

Jijiga Camps Standardized Expanded Nutrition Survey Final Report, 2017.
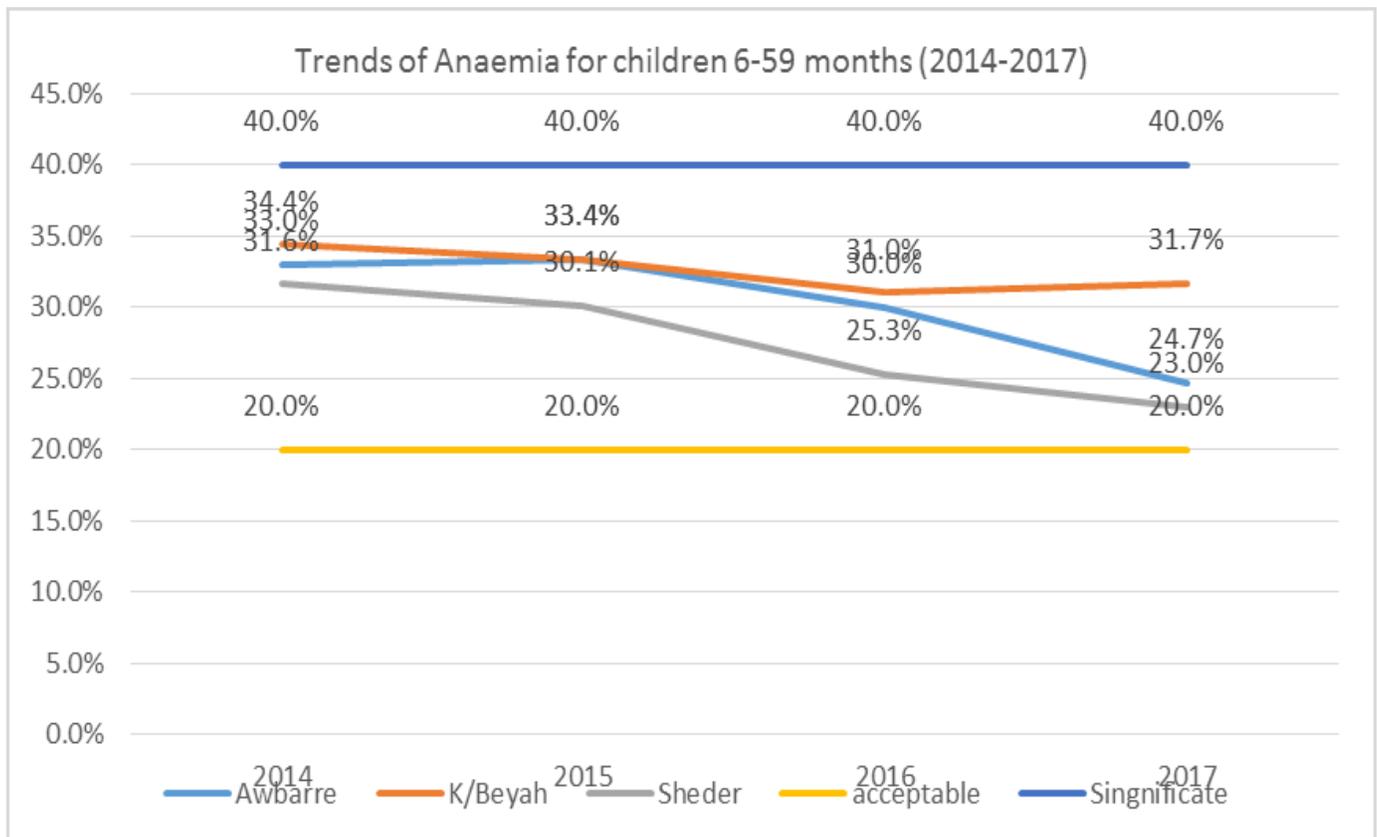
Figure 4: Trends of Anaemia prevalence for non-pregnant women age 15-49 years in 3 camps (2014-2017)
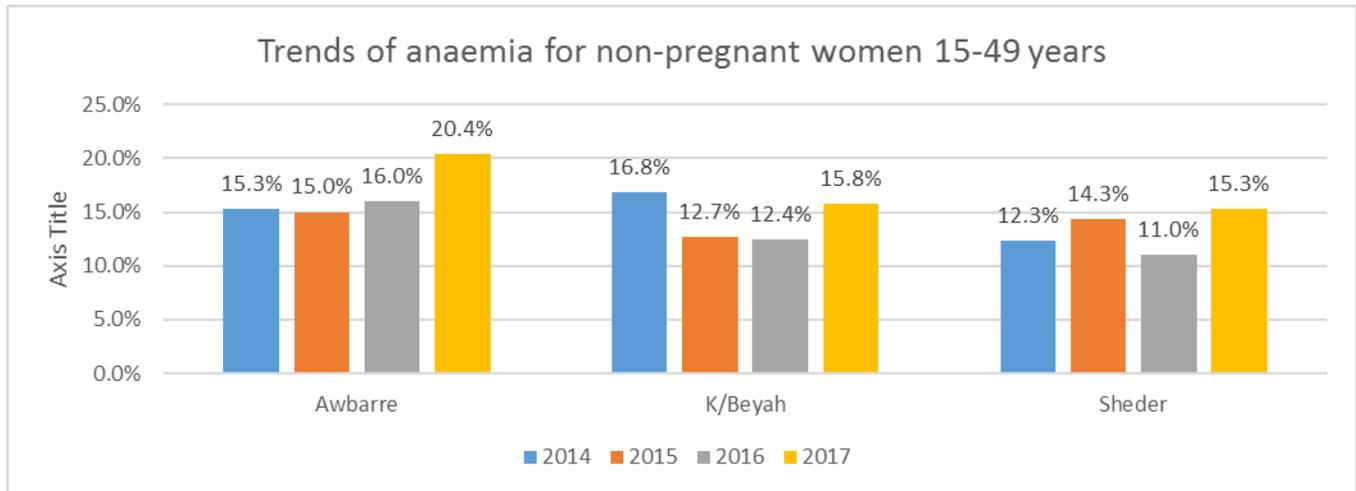
1.1.5. Infant and young child feeding practices

The importance of IYCF is adequate nutrition during infancy (<12 months) and children aged between 12 to 23 months) is essential to ensure the normal growth, health, and development of children to their full potential. Early nutritional deficits are also linked to long-term impairment in growth and health. Malnutrition during the first 2 years of life causes stunting, leading to the adult being several centimetres shorter than his or her potential height. The main IYCF indicators which are timely initiation of breastfeeding 76.9% (67.6-84.6) in Awbarre, 92.9% (87.3-96.5) in Keberibeyah and 83.0% 83.0% (74.2-89.8) in Sheder refugee camps, indicating good coverage. Exclusive breastfeeding is relatively low in sherder (60%) and Awbarre (65%) than in Kebribeyah (83.3%). Bottle feeding in Awbarre (19.2%) and Sheder (22.2%) needs to be addressed.

1.2. Public health related

1.2.1. Program coverage

Programme coverage for Measles vaccination for children age 9-59 months both by card and recall was found within acceptable threshold, ≥ 95% in the three refugee camps.

Figure 5: Trends of Measles vaccination coverage for children 9-59 months in all camps (2014-2017)
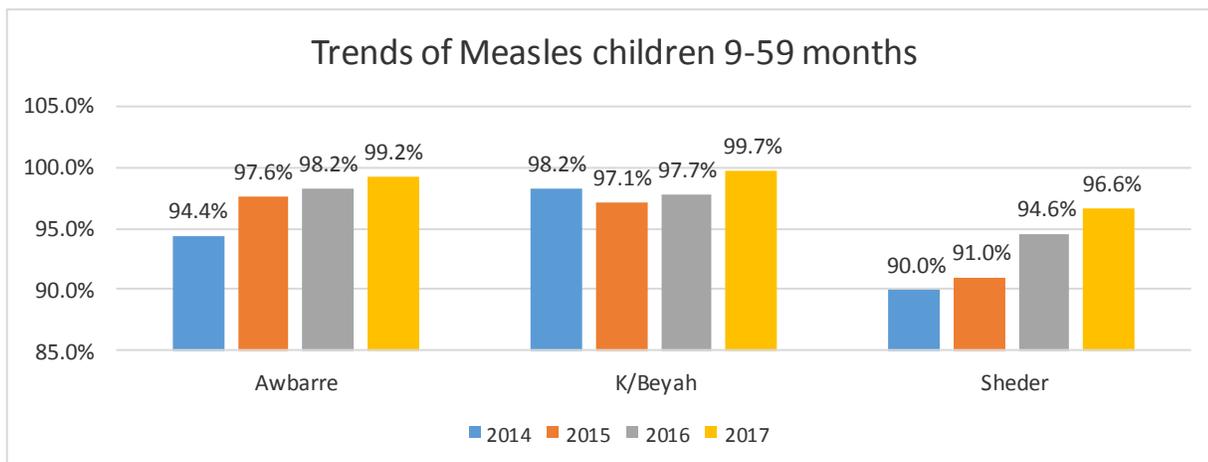
The coverage of Vitamin "A" supplementation coverage is meeting the target of ≥90% in all camps.

Jijiga Camps Standardized Expanded Nutrition Survey Final Report, 2017.

Figure 6: Trends of vitamin A supplementation coverage for children 6-59 months past 6 months in all camps (2014-2017)
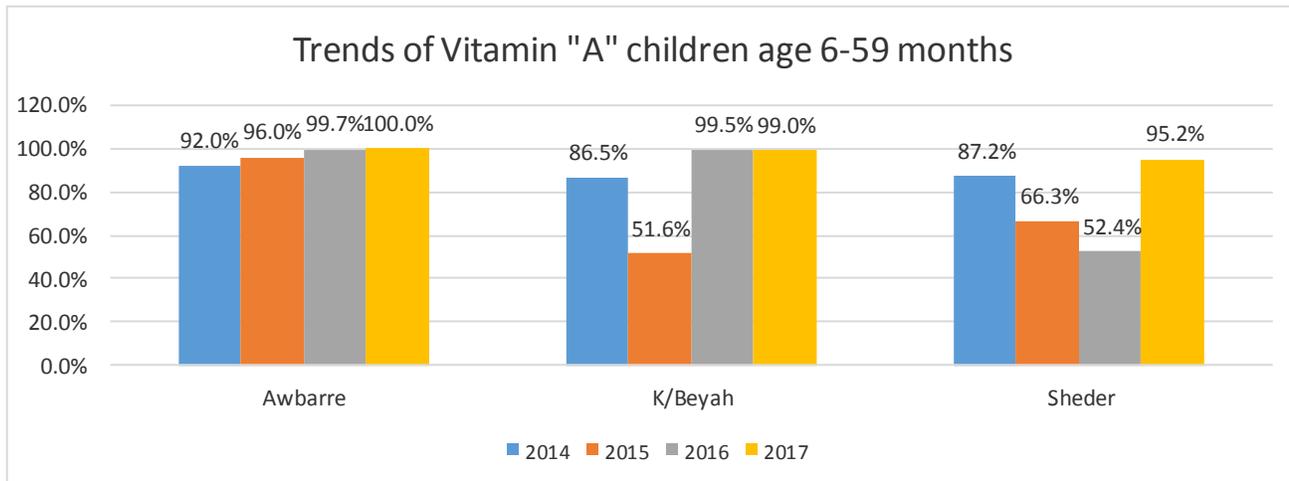
1.2.2. Food security

Proportion of households with a ration card was 95.2% (90.4-98.1) in Awbarre, 100% in Kebribeyah and 89.4% (84.0-93.5) in Sheder refugee camps. The mean household dietary diversity score (HDDS) was low which was 6.34 (SD 2.12 in Awbarre, 5.5 (SD 1.8) in Kebribeyah and 5.6 (SD 1.4) in Sheder refugee camps compared to the 12 food groups. Average number of days the general food ration and cash lasted was 17.2 days Awbbare, 14.5 days in Kebribeyah and 14.5 days in Sheder refugee camps out of the targeted 30 days respectively. This suggests that refugee were looking for alternative ways of covering the gaps through their own initiatives.

The findings indicate that negative coping strategies were used commonly including; borrowing (cash, food or other items), selling assets, reducing quantity and/or frequency of meals and snacks as well as engaged in potentially risky or harmful activities (see table 2)

1.2. WASH

The proportion of HHs using an improved drinking water source were 100% except Keberibeyah refugee camp which is 26.0% HH. The amount of water consumed per person per day was below the UNHCR standard (20 LPPPD) while 17 LPPPD in Kebribeyah and Sheder camps but 22.1 litter PPPD in Awbarre camp.

1.3. Mortality

Mortality indicator is crucial for emergency situations, which are for crude death rate and under-fives children death rate within SPHERE standard. CDR ranged from 0.1 (0.03-0.36) to 0.25 (0.11-0.58) deaths in 10,000 population per day while U5MR was between 0.4 (0.07-2.24) and 0.86 (0.29 – 2.49) deaths in 10,000 population of under-fives per day. When compared to SPHERE standard of CDR <1 death and U5DR < 2 deaths in 10,000 population per day were within acceptable levels.

1.4. Key points

Prevalence of GAM shows significant improvement in Kebribeyah camp. Weighted prevalence of GAM in all three camps is 5.7% in 2017 vs. 7.6% in 2016.
Prevalence of Anaemia in children 6-59 months ranges between 23.0% - 31.7% classified as "MEDUIM" level public health significance as per WHO classification and therefore is above the acceptable level <20% in all camps.

Nutrition programme enrolment (blanket supplementary feeding program, targeted SFP, and OTP enrolment coverage at a point of time showed less than 90% in all camps which will need to be improved to ensure that children are protected from acute malnutrition.
Measles vaccination coverage reaching to UNHCR standards >95%, Vitamin A supplementation coverage is also meeting UNHCR standards (>90%).

Jijiga Camps Standardized Expanded Nutrition Survey Final Report, 2017.

Water supply shows serious shortages in Kebribeyah and Sheder refugee camps.

Summary of key Recommendations:

Improve active case finding, referral of SAM and MAM cases at the community and in facility to maximize the coverage of selective feeding program enrolment.

Improve identification of children aged 6-23 months and referral to BSFP.

Implement / improve nutrition screening among children aged 6-23 months in the BSFP for identification, referral of SAM and MAM cases to OTP/TSFP.

Strengthen Infant and Young Child Feeding programme through implementation of the UNHCR multi-sectoral IYCF friendly framework (integration with other nutrition sensitive sectors).

Strengthen WASH activities to enhance water supply and family latrine coverage.

Training on CMAM and IYCF to the community nutrition and health workers to maximize the coverage and to ensure program quality.

Enhance provision of safe drinking water to reach UNHCR minimum standards (>20 lpppd).

Jijiga Camps Standardized Expanded Nutrition Survey Final Report, 2017.

2. INTRODUCTION

Somali- Ethiopian regional state has been hosting Somali refugees since following the civil war in Somalia 1989 and the subsequent collapse of Siad Barre regime in 1991 hundreds of thousands of Somalis fled to Ethiopia and in 2007 and 2008 there was another wave of violence in southern Somalia between the transitional government and the Alshabab, due to this conflict many Somalis fled again from their country to Ethiopia consequently Awbarre and Sheder refugee camps were established.

UNHCR/WFP with the support of donors and Ethiopia government counterpart, ARRA and partners provide humanitarian assistance, including health, nutrition and food /cash assistance. Food security situation is primarily dependent on food and cash aid assistance, which is provided by WFP and distributed by ARRA.

The joint UNHCR/WFP/ARRA annual standardized expanded Nutrition survey (SENS) activities from conception to completion in Jijiga Somali refugee's camps (Sheder, Awbarre and Kebribeyah) were from the 4th to 26th of Dec 2017.

2.1. Health and Nutrition services

Comprehensive health services and Nutrition programs have been running in all camps by ARRA supported by UNHCR and WFP. The CMAM, which includes OTP for severe acute malnourished children without medical complication and SC for severe acute malnourished children with medical complication, targeted supplementary feeding program for MAM (children, pregnant women and lactating mothers) and BSFP program for children 6-23 months, pregnant women and lactating mothers regardless nutritional status, community mobilization, two stage of screening (MUAC/WHZ) and nutrition education were operational in Jijiga camps.

2.2. Health services

There was health and nutrition surveillance system which includes growth monitoring in all camps regularly reported by using the UNHCR health Information System. Growth monitoring were used as a platform identifying the most at high risk children for acute malnutrition through measurement of MUAC and refer them to the nutrition and health centres for further actions. Primary health care services were provided at facility and community-based for refugees. Services at facility level were provided through In-patient department (IPD) Outpatient department (OPD) and Maternal and child health clinic (MCH). Other services were Expanded Program of Immunization (EPI) including "Health extension package" and WASH which were operational in three camps.

2.3. Nutrition services

While UNHCR was providing F-75, F-100 therapeutic milk and Plumpy'Nut for supporting treatment of severely acute malnutrition children, WFP was supporting treatment of MAM cases by providing Plumpy@Sup for treatment of moderate acute malnutrition, super cereal plus (CSB++) for blanket supplementary feeding among children 6-23 months, super cereal (CSB+) for pregnant women, lactating mothers and some chronically ill cases including HIV and TB cases among others as referred by the health centers.

2.4. Food security

WFP in collaboration with UNHCR and ARRA has recently introduced cash component to replace part of cereals distributed along with other items on monthly basis. During this survey refugees in the three camps were receiving cash 150 Birr per person/months to replacing all cereals (13.5kg) based on the market price, 1.5 kg

pulses, 0.5 kg of fortified corn-soy blend (CSB+), 0.9 kg vegetable oil and 0.15 kg salt per person per month. The refugee food basket was intended to provide a total of 1770 kcal pppd out of 2100KCal which is the minimum requirement.

Table 1: The cash and food ration type and amount per person per month from October 2017

Ration Type	Amount per person per month
Cash	150 ETB
Pulses	1.5 kg
Corn Soya Blend plus (CSB+)	0.5 kg
Vegetable oil	0.9 kg
Sugar	0.0 kg
Iodized salt	0.15 kg

2.5. Demography

Table 1: Total Population and U5 Children in Jijiga camps as of 30 Sep 2017 based on UNHCR ProGress data

Camp/Site	Population	HH*	<5 children	Average HH size	% <5 children
Awbare	11,879	1,810	1,657	6.6	13.9%
Kebribeyah	14,176	2,041	2,825	6.9	19.9%
Sheder	10,815	2,242	1,519	4.8	14.0%
Total	36,870	6,093	6,001	6.1	16.3%

2.6. OBJECTIVES OF THE SURVEY

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.

2.6.1. Primary objectives

- To determine the prevalence of acute malnutrition among children 6 – 59 months.

- To determine the prevalence of chronic malnutrition 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

- To investigate IYCF practices among children 0-23 months

- To assess the proportion of households those use an adequate quantity of water per person per day.

- To assess the proportion of households who say they are satisfied with their water supply.

- 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.

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- To establish recommendations on actions to be taken to address the situation.

2.6.2. Secondary objectives:

- To determine enrolment coverage of selective feeding programs for children 6-59 months (OT/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.

2.7. METHODOLOGY

2.7.1. Study Areas

This survey was conducted among Somali refugee communities situated in the three camps namely; Awbarre, Kebribeyah, and Sheder around in Jijiga, which is located in eastern part of Ethiopia.

2.7.2. Study Population

The study population is Somali refugee and located at around Jijiga, a total population of 36,870 of which 6,001 are children under five years of age and accommodated in 6,093 households. Total population, children aged between 0-59 months and women reproductive age groups (15-49 years) were targeted for the assessment.

2.7.3. Study design

This was a cross-sectional study in which a simple random sampling technique was employed in all the surveyed camps.

2.7.4. Sample size

Sample size was calculated using ENA for SMART software (version July 9th, 2015) based on the 2016 SENS upper confidence limit of the estimated prevalence of global acute malnutrition for Awbarre, Keberibeyah and Sheder refugee camps. Other parameters were desire precision and non-response household set at ±3.5 and 10% respectively, used for Kebribeyah, Sheder camps but Awbare Desired precision (±3%). Correction for small population size in ENA also was used for Awbarre, Keberibeyah and Sheder refugee camps.

Table 2: Sample size calculation based on ProGres population data – 30th Sep 2017

Description	Awbare	Kebribeyah	Sheder
Expected prevalence, %	9.1%	11.3%	12.6%
Desired precision, +/-%	3.0	3.5	3.5
Total households (ProGres)	1,810	2,041	2,242
Total population	11,879	14,176	10,815
Total population under 5	1,657	2,825	1,519
Average household size	6.6	6.9	4.8
% population under five	13.9	19.9	14.0
% non-response households	10	10	10
# of children to be included	285	280	276
# of HH (module 1, module 2-senario1, module 3 & mortalities)	384	252	506
# of HH (module 2-women, module 4 &5)	192	126	253

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2.7.5. Sampling procedure

Average household size was updated a week prior to the survey, all households were counted and labelled by ARRA public health staff. The number of under-fives population was also verified against UNHCR ProGress data base prior to sampling process. Empty houses were excluded from the sampling unit. Inhabited shelters were physically identified and given unique numbers for zone, block, community and household numbers. Sampling of household was generated by ENA software and all selected households were filtered from the main list of households and assigned to survey teams for data collection.

Selection of households and individuals

Survey team members introduced themselves and explained the purpose of the assessment to the head of household. A verbal consent was obtained prior to conducting interview and confidentiality was ensured to the respondent and their responses. The survey team did inquire an availability of eligible subject from the head of household. If an individual or an entire household was absent the teams revisited the household/individual later the same day or the next morning. However, if the individual or the household was absent after revisit, they were not replaced by another household or individual but rather noted as absent. If a selected child was living with a disability or 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 women questionnaire was administered to eligible women, and the mortality questionnaire was administered to the household.

2.7.6. Questionnaires

The questionnaires were prepared in English language and administered in dialect languages via translators. The questionnaires were pre-tested before the survey.

Five standard SENS modules including to mortality module. Mortality data were designed to provide information on the relevant indicators of the different target groups as indicated in the survey objectives. The questionnaires covered the following areas and the following measurements:

Module 1: Anthropometry and Health - This included questions and measures on children aged 6-59 months. Information was collected on anthropometric status, oedema, enrolment in selective feeding programmes, immunization (measles), vitamin A supplementation in the last six months, morbidity from diarrhoea in past two weeks, and haemoglobin assessment.

Module 2: Anaemia - This included measurement of levels of haemoglobin in children aged 6 – 59 months and women of child bearing age (15 – 49 years) who are not pregnant. Further information collected from women was pregnancy status, enrolment in ANC, coverage of iron-folic acid pills.

Module 3: Infant and Young Children Feeding Practices (IYCF) - This included questions on infant and young child feeding practices for children aged 0-23 months.

Module 4: Food Security - This included questions on access and use of the GFD ration, coping mechanisms when the GFD ran out ahead of time, household dietary diversity.

Module 5: Water, Sanitation and Hygiene (WASH) - This included questions on the quantity of water used per household and the satisfaction with the drinking water supply, hygiene and sanitation.

Extra Module: Mortality - This included questions related to mortality in the last three months among surveyed households.

2.7.7. Measurement methods

Household-level indicators

Mortality: An individual-level mortality form was used from ENA for SMART version July 9th, 2015.

Food security: The questionnaire was pre adopted from the UNHCR's Standardized Expanded Nutrition Survey Guidelines for Refugee Populations.

WASH: The questionnaire used was adopted from the UNHCR's Standardized Expanded Nutrition Survey Guidelines for Refugee Populations.

Individual-level indicators
Sex of children: recorded as male or female.

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Age of children: Birth date or age in months for children 0-59 months: the exact date of birth (day, month, and year) was recorded from birth certificates and checked on family fact sheet, and an EPI card or child health card. If no reliable proof of age was available, age was estimated in months using a local event calendar. If the child's age could absolutely not be determined by using a local events calendar or by probing, the child's length/height was used for inclusion; the child had to measure between 65 cm and 110 cm.

Age of women 15-49 years: unlike small children, the exact date of birth of women was not recorded. Reported age was recorded in years.

Weight of children 6-59 months: measurements were taken to the closest 100 grams using an electronic scale (SECA scale) with a wooden board to stabilize it on the ground. All children were weighed without clothes.

Height/Length of children 6-59 months: children's height or length was taken to the closest millimetre using a wooden height board (Shorr Productions). Height was used to decide on whether a child should be measured lying down (length) or standing up (height). Children less than 87cm were measured lying down, while those greater than or equal to 87cm were measured standing up.

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

Middle Upper Arm Circumference (MUAC) of children 6-59 months: MUAC was measured at the mid-point of the left upper arm between the elbow and the shoulder and taken to the closest millimetre using a standard tape. MUAC was recorded in centimetres.

Selective feeding programme for children 6-59 months: selective feeding programme enrolment status was assessed for the outpatient therapeutic feeding programme and for the targeted supplementary feeding programme. BSFP also assessed children 6 – 23 months regardless of nutritional status. This was verified by card or showing the mother or care giver the images of the products given at the different programs.

Measles vaccination in children 9-59 months: measles vaccination was 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, results were recorded on all children but were only analysed for children aged 9-59 months

Vitamin A supplementation in last 6 months in children 6-59 months: whether the child received a vitamin A capsule over the past six months was recorded from the EPI card or health card if available or by asking the caregiver to recall if no card is available. A vitamin A capsule was shown to the caregiver when asked to recall.

Haemoglobin (Hb) level: Hb concentration was taken from children 6-59 months and non-pregnant women (15-49 years) it is a capillary blood sample from the fingertip and recorded to the closest gram per decilitre by using the portable HemoCue Hb 301 Analyser (HemoCue). If severe anaemia was detected, the child or the woman was referred for treatment immediately.

Diarrhoea in last 2 weeks in children 6-59 months: an episode of diarrhoea was defined as three loose stools or more in 24 hours. Caregivers were asked if their child had suffered episodes of diarrhoea in the past two weeks.

ANC enrolment and iron and folic acid pills coverage: This data collected from pregnant woman, it was assessed by card or recall whether she was enrolled in the ANC programme and also by showing the iron folate acid pills was identify the women where she received or not the iron-folic tablet during the pregnancy period.

Infant and young child feeding practices in children 0-23 months: infant and young child feeding practices were assessed based on the UNHCR's Standardized Expanded Nutrition Survey Guidelines for Refugee Populations.

Referrals: Children aged 6-59 months were referred to health/nutrition centre/post for treatment when MUAC was < 12.5 cm, when WH was < -2 z-scores, when oedema was present, or when haemoglobin was < 7.0 g/dL. Women of reproductive age were referred to the hospital for treatment when haemoglobin was < 8.0 g/dL. Case definitions and calculations

2.7.8. Mortality

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

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

2.8. Malnutrition in children 6-59 months

2.8.1. Acute malnutrition:

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.

Table 3: Acute malnutrition using weight-for-height and/or oedema in children 6–59 months

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

2.8.2. Stunting (HFA):

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 4: 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

2.8.3. Underweight:

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 5: 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

2.8.4. Mid Upper Arm Circumference (MUAC):

Mid Upper Arm Circumference (MUAC) values were used to define malnutrition according to the following cut-offs in children 6-59 months:

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

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

2.8.5. 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 be*ing 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

2.8.6. 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:

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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)
<u>*Infants 0–5 months of age who received only breast milk during the previous day*</u>
    Infants 0–5 months of age

Continued breastfeeding at 1 year:

Proportion of children 12–15 months of age who are fed breast milk
<u>*Children 12–15 months of age who received breast milk during the previous day*</u>
    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
<u>*Children 20–23 months of age who received breast milk during the previous day*</u>
    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
<u>*Fortified in the home with a product that included iron during the previous day*</u>
    Children 6–23 months of age

Bottle feeding:

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

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2.8.7. 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.

Table 7: 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 females 15-49 years	<12.0	11.9 - 11.0	10.9 - 8.0	< 8.0

Table 8: 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 9: Simplified Classification of the Severity of GAM, Anaemia, and Stunting In Refugee Setting

PREVALENCE%	HIGH		MEDUIM	LOW
GAM (W/H)	≥15 Critical	10-14 Serious	5-9	<5
ANAEMIA U5 (<11g/dl)	≥40		20-39	5-19
STUNTING (H/A)	≥30		20-29	<20

Source: UNHCR operational guidance

2.9. Classification of public health problems and targets

Mortality: The following thresholds are used for mortality.

Table 10: Mortality benchmarks for defining crisis situations (NICS, 2010)

Emergency threshold	Crud Death Rate (CDR)	Under five death rate (U5DR)
very serious	> 1/10,000 / day	> 2/10,000 / day
Out of control	> 2 /10,000 /day	> 4/10,000 / day
major catastrophe	> 5 /10,000 /day	> 10/10,000 / day

2.10. 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 11: Classification of public Health significance for children under 5 years of age

Prevalence %	Critical	Serious	Poor	Acceptable
weight-for-height (W/H)-wasting	≥20	15-19	10-14	<10
height-for-age(H/A)-stunting	≥40	30-39	20-29	<20
weight-for-age (W/A)-underweight	≥30	20-29	10-19	<10

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

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2.11.   Selective feeding programmes:

Table 12: Performance indicators for selective feeding programmes *

	Recovery	Case fatality	Defaulter rate	Coverage		
				Rural areas	Urban areas	Camps
SFP	>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

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

2.13.   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%.

2.14.   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 8: Classification of public health significance (WHO 2000)

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

2.15.   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 9: 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

2.16.   Training, coordination and supervision
Training on SENS components, data collection techniques and teamwork was organized and conducted to the survey supervisors and enumerators. Training was conducted for four days in one location followed by one additional day for the standardization and piloting of data collection tools in each camp. 24 health and nutrition professional staffs selected from ARRA and attending training in Jijiga central level.
Enumerators and supervisors were prearranged into two groups for data collection; one for Awbarre camp and the other one in Sheder refugee camp. Data collection in the two camps at the same day and time. However,

Kebribeyah camp data collection carried out by different group/ team formed from the three camps. The 12 trained enumerators from each group joined the additional 6 national health staffs and 24 refugee community health workers joined prior to data collection in the camps. A total of 42 persons involved in the camp; which means seven (7) persons working in one. The responsibility of the person as follow; one team leader, two for anthropometric measurements, one for the household questionnaire, one for the mortality data collection, one for blood sample test and one translator.

The groups were mobilized into two locations (Awbarre and Sheder camps) and data was collected simultaneously. The UNHCR nutritionist with WFP and ARRA colleagues were the overall survey coordinator.
Data collection and quality control
Various data was collected using SMART phone pre-installed with Open Data Kit (ODK) software. A separate record was made on paper for key data particularly the measurements for backup just in case of any risks associated with the mobile phone happens and also for cross check the data.

All eligible children aged 0-59 months from selected households were included in the assessment of anthropometry, measles vaccination and vitamin A supplementation (in the past 6 months). The subjects were also assessed for enrolment in the nutrition program, episodes of diarrhoea with recall period of the previous two weeks, measurement of haemoglobin level and infant and young child feeding practices and care for aged 0-23 months. Other components of SENS assessed were WASH, food security and anaemia from non-pregnant and the enrolment in ANC, coverage of iron-folic acid was collected from pregnant women which a sub-sample was considered.

A retrospective recall period for mortality data was set from 11th Sep 2017 (Ethiopian New year) to the time of the survey the total number of days was 95 for Awbarre and Sheder respectively, while 102 days for Kebribeyah refugee camps.

Concerning the quality assurance; the data was checked on daily basis through running SMART plausibility check, after that we were given a feedback to the teams every morning to correct an errors if any for the following day of data collection. The measurement tools were calibrated every morning before the start of the data collection. Hemocue were cleaned and standardized using the Eurotrol solution, daily checks were performed and daily reminders on proper use of the micro-cuvette

2.17. Data analysis

Anthropometric and mortality data was analysed using ENA for SMART, the version of July 9th 2015, and other indicators were analysed using Epinfo v.3.5.4.

2.18. PRESENTATION OF RESULTS

Table 10: Targeted against surveyed number of children aged 6 – 59months

	Camp		
	Awbarre	Kebribeyah	Sheder
Targeted number of children to be surveyed (6-59 Months)	280	285	276
Actual number of children surveyed (6-59 Months)	291	342	267
Percentage coverage	92.5%	103.9%	89.9%

The sample sizes covered in Awbarre, Kebribeyah, Sheder was in accordance of UNHCR SENS guidelines which recommends a coverage of >80% of the expected sample sizes of children aged 6– 59 months.

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3. AWBARRE CAMP

3.1. Demography

Table 11 Demographic characteristics of the study population in Awbarre

Total HHs surveyed	315
Total population surveyed	2034
Total U5 surveyed	291
Average HH size	6.5
% of U5	14.3%

Table 12 Distribution of age and sex of sample, Awbarre

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:girl
6-17	29	45.3	35	54.7	64	24.2	0.8
18-29	31	54.4	26	45.6	57	21.6	1.2
30-41	34	51.5	32	48.5	66	25.0	1.1
42-53	25	46.3	29	53.7	54	20.5	0.9
54-59	10	43.5	13	56.5	23	8.7	0.8
Total	129	48.9	135	51.1	264	100.0	1.0

The overall sex ratio was 1.0 which denotes equal distribution of the sexes of different age groups, it show normal trends and that there is no selection bias.

Figure 7: Population age and sex pyramid, Awbarre
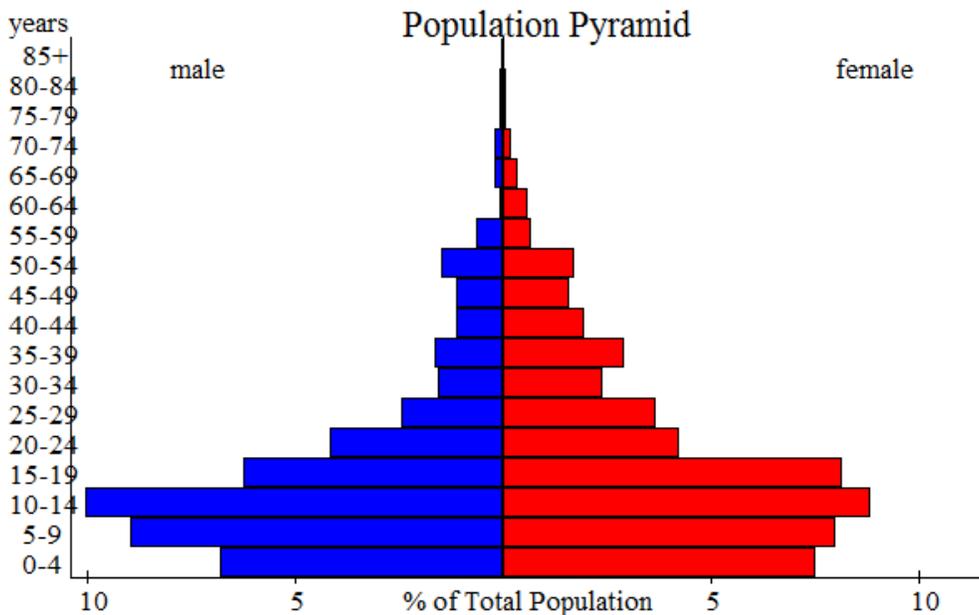
3.2. Anthropometric results (based on WHO Growth Standards 2006)

Anthropometric results are analysed and presented based on WHO Growth Standards and excluding z-scores from Observed mean (SMART flags): WHZ -3 to 3; HAZ -3 to 3; WAZ -3 to 3.

Table 13 Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex in Awbarre camp

	95% C.I.		
	All n = 259	Boys n = 127	Girls n = 132
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(14) 5.4 % (3.2 - 8.9	(8) 6.3 % (3.2 - 11.9	(6) 4.5 % (2.1 - 9.6
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(13) 5.0 % (3.0 - 8.4	(7) 5.5 % (2.7 - 10.9	(6) 4.5 % (2.1 - 9.6
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(1) 0.4 % (0.1 - 2.2	(1) 0.8 % (0.1 - 4.3	(0) 0.0 % (0.0 - 2.8

The prevalence of oedema is 0.0 %

There is no significant difference seen between Boys and Girls on the prevalence of acute malnutrition.

Figure 8 Trends in the prevalence of global and severe acute malnutrition based on WHO Growth Standards in children 6-59 months from 2014-2017

Jijiga Camps Standardized Expanded Nutrition Survey Final Report, 2017.
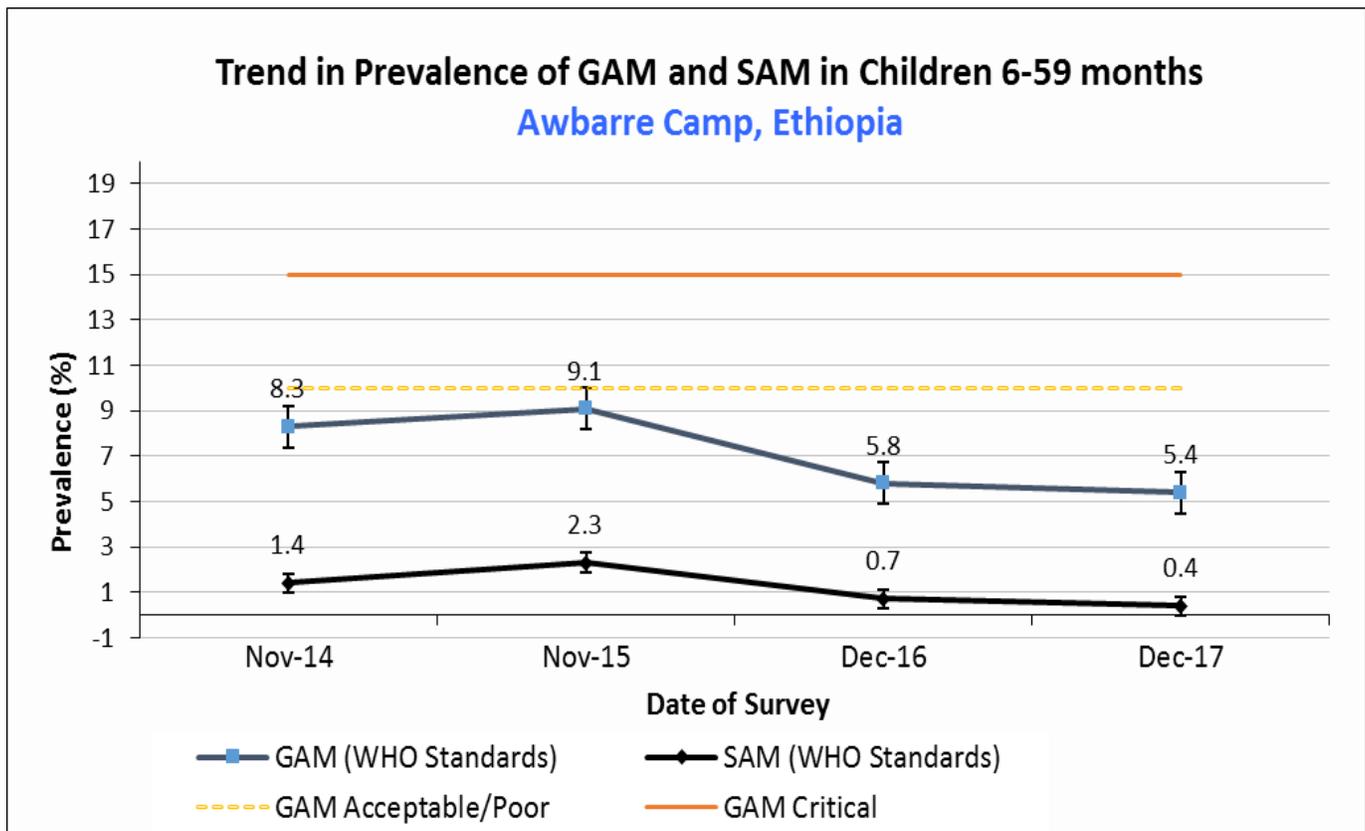
Table 14 Prevalence of Acute Malnutrition by Age, Based On Weight-For-Height Z-Scores And/Or Oedema

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	62	0	0.0	3	4.8	59	95.2	0	0.0
18-29	55	0	0.0	2	3.6	53	96.4	0	0.0
30-41	65	1	1.5	4	6.2	60	92.3	0	0.0
42-53	54	0	0.0	3	5.6	51	94.4	0	0.0
54-59	23	0	0.0	1	4.3	22	95.7	0	0.0
Total	259	1	0.4	13	5.0	245	94.6	0	0.0

Figure 9 Trend in the prevalence of wasting by age in children 6-59 months

Figure 9 Trend in the Prevalence of Wasting by Age in Children 6-59 months — Awbarre Refugee Camp, Ethiopia
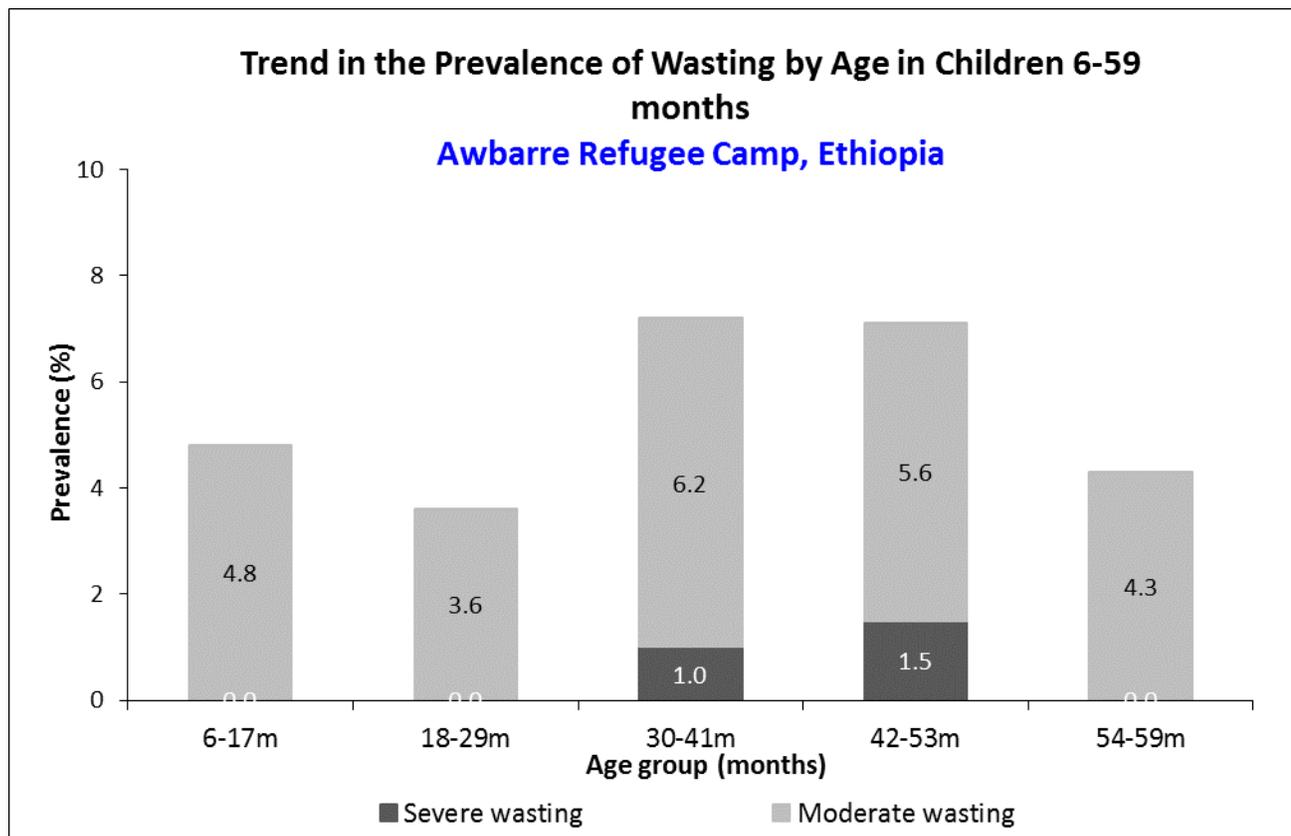
Table 15 Distribution Of Severe Acute Malnutrition And Oedema Based On Weight-For-Height Z-Scores

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 3 (1.1 %)	Not severely malnourished No. 259(98.9 %)

Figure 10 Distribution of Weight-For-Height Z-Scores (Based On Who Growth Standards; the Reference Population Is Shown In Green and The Surveyed Population Is Shown In Red) Of Survey Population Compared To Reference Population

Jijiga Camps Standardized Expanded Nutrition Survey Final Report, 2017.

Weight-for-Height z-scores
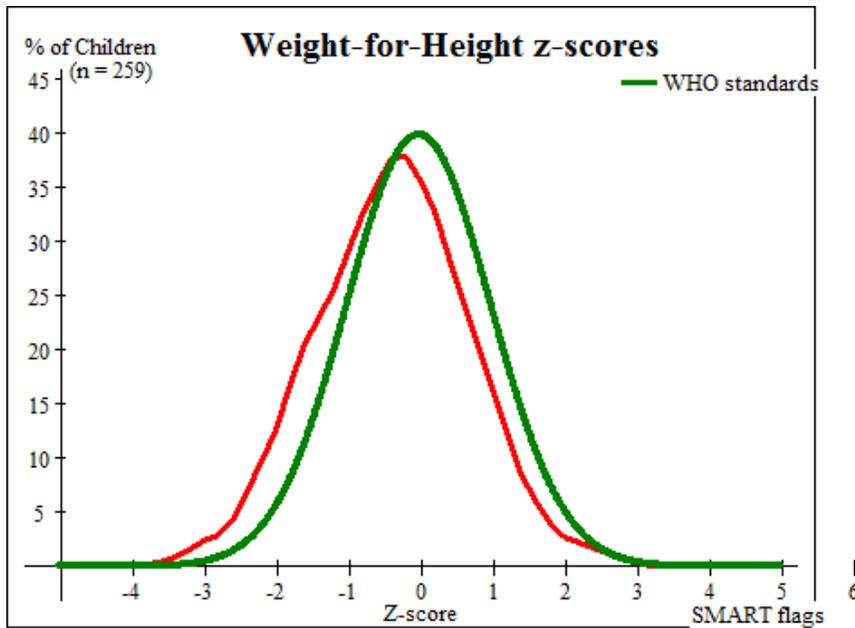
Table 16 Prevalence of MUAC MALNUTRITION

	95% C.I.		
	All n = 264	Boys n = 129	Girls n = 135
Prevalence of global malnutrition (< 125 mm and/or oedema)	(7) 2.7 % (1.3 - 5.4%)	(3) 2.3 % (0.8 - 6.6%)	(4) 3.0 % (1.2 - 7.4%)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(5) 1.9 % (0.8 - 4.4%)	(2) 1.6 % (0.4 - 5.5%)	(3) 2.2 % (0.8 - 6.3%)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(2) 0.8 % (0.2 - 2.7%)	(1) 0.8 % (0.1 - 4.3%)	(1) 0.7 % (0.1 - 4.1%)

Table 17 PREVALENCE OF MUAC 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	64	1	1.6	5	7.8	58	90.6	0	0.0
18-29	57	0	0.0	0	0.0	57	100.0	0	0.0
30-41	66	1	1.5	0	0.0	65	98.5	0	0.0
42-53	54	0	0.0	0	0.0	54	100.0	0	0.0
54-59	23	0	0.0	0	0.0	23	100.0	0	0.0
Total	264	2	0.8	5	1.9	257	97.3	0	0.0

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

	95% C.I.

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	All n = 259	Boys n = 127	Girls n = 132
Prevalence of underweight (<-2 z-score)	(26) 10.0 % (6.9 - 14.3%)	(17) 13.4 % (8.5 - 20.4%)	(9) 6.8 % (3.6 - 12.5%)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(24) 9.3 % (6.3 - 13.4%)	(15) 11.8 % (7.3 - 18.6%)	(9) 6.8 % (3.6 - 12.5%)
Prevalence of severe underweight (<-3 z-score)	(2) 0.8 % (0.2 - 2.8%)	(2) 1.6 % (0.4 - 5.6%)	(0) 0.0 % (0.0 - 2.8%)

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

	95% C.I.		
	All n = 254	Boys n = 123	Girls n = 131
Prevalence of stunting (<-2 z-score)	(63) 24.8 % (19.9 - 30.5%)	(34) 27.6 % (20.5 - 36.1%)	(29) 22.1 % (15.9 - 30.0%)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(50) 19.7 % (15.3 - 25.0%)	(27) 22.0 % (15.5 - 30.1%)	(23) 17.6 % (12.0 - 25.0%)
Prevalence of severe stunting (<-3 z-score)	(13) 5.1 % (3.0 - 8.6%)	(7) 5.7 % (2.8 - 11.3%)	(6) 4.6 % (2.1 - 9.6%)

Figure 11 Trends in the prevalence of global and severe stunting based on WHO Growth Standards in children 6-59 months from 2014-2017
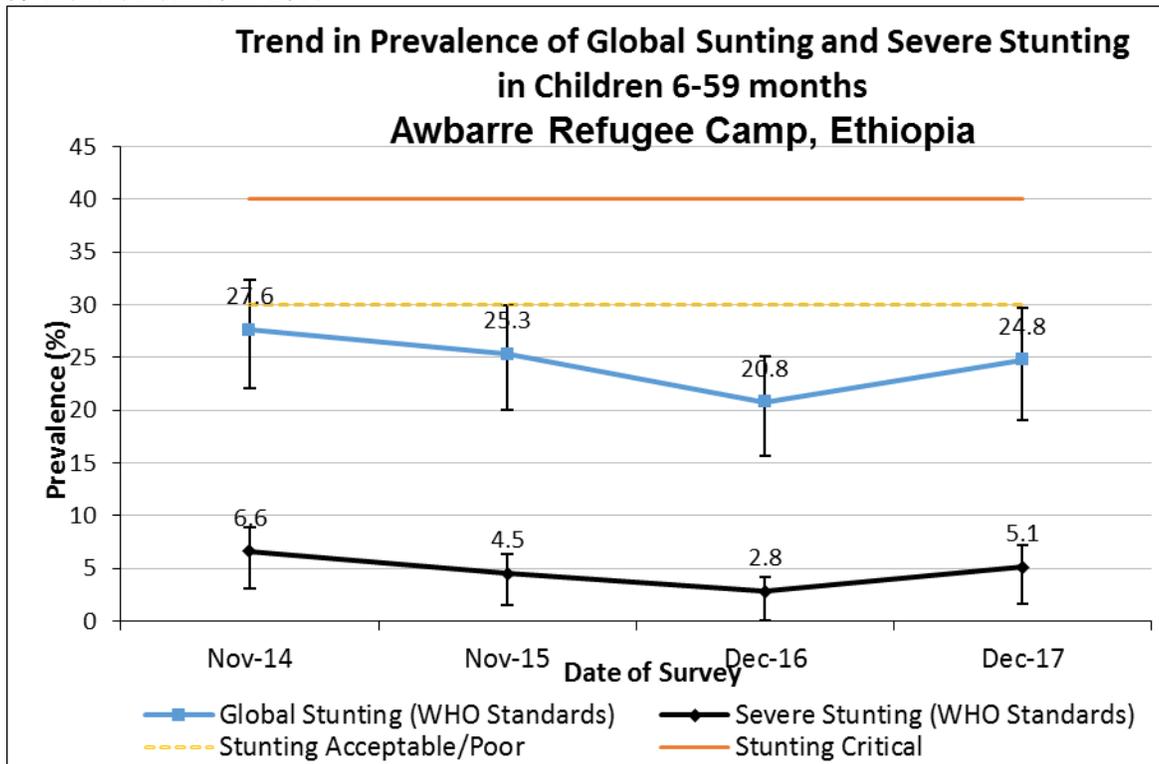
Table 20 Prevalence of stunting by age based on height-for-age z-scores

Age (mo)	Total no.	Severe stunting (<-3 z-score)	Moderate stunting (>= -3 & <-2 z-score)	Normal (> = -2 z score)

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		No.	%	No.	%	No.	%
6-17	60	2	3.3	8	13.3	50	83.3
18-29	52	5	9.6	13	25.0	34	65.4
30-41	65	3	4.6	16	24.6	46	70.8
42-53	54	2	3.7	7	13.0	45	83.3
54-59	23	1	4.3	6	26.1	16	69.6
Total	254	13	5.1	50	19.7	191	75.2

Figure 12 Trends in the prevalence of stunting by age in children 6-59 months

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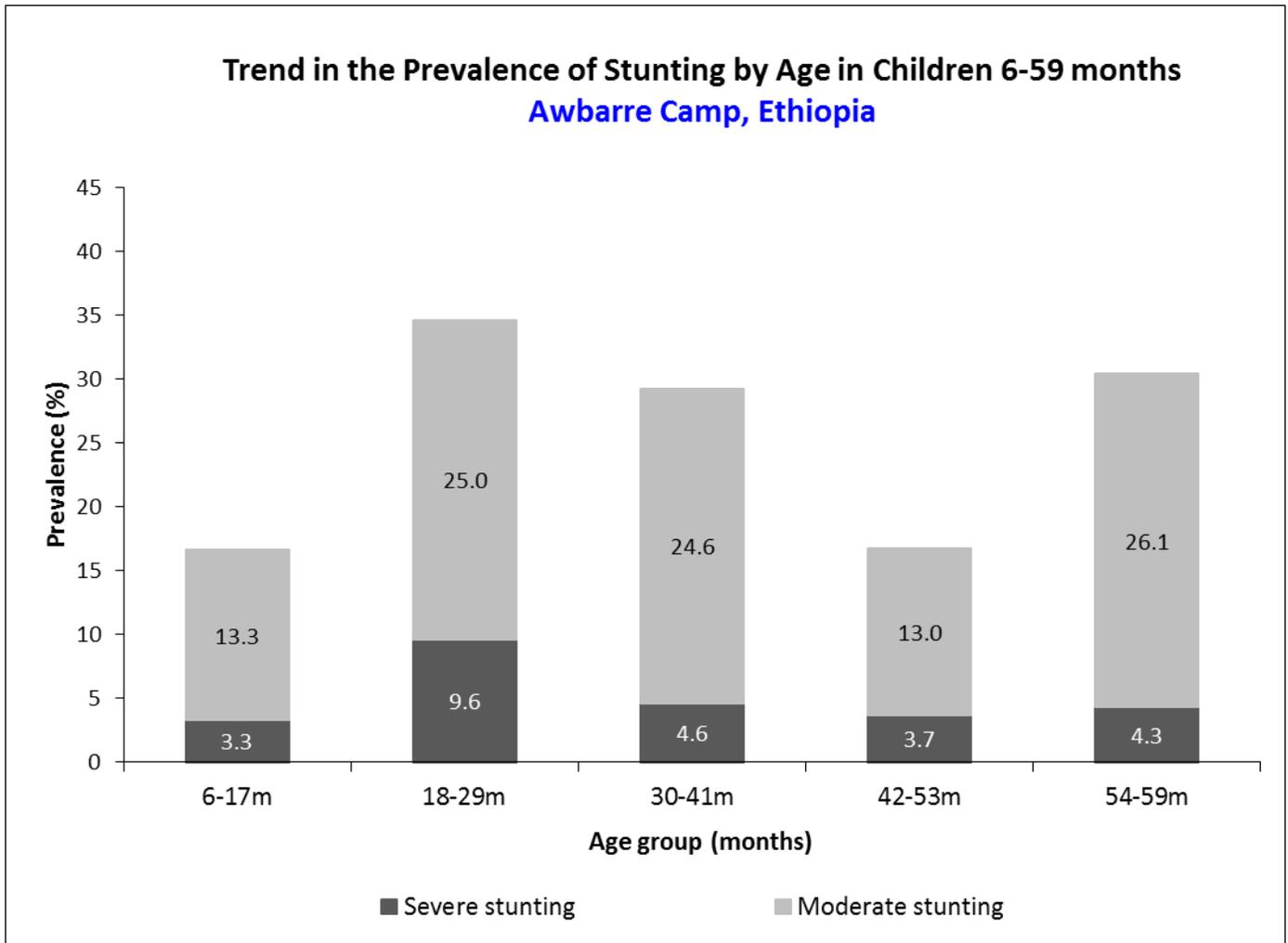
Figure 13 Distribution of Height-For-Age Z-Scores (Based On Who Growth Standards; the Reference Population Is Shown In Green and the Surveyed Population Is Shown In Red) Of Survey Population Compared To Reference Population
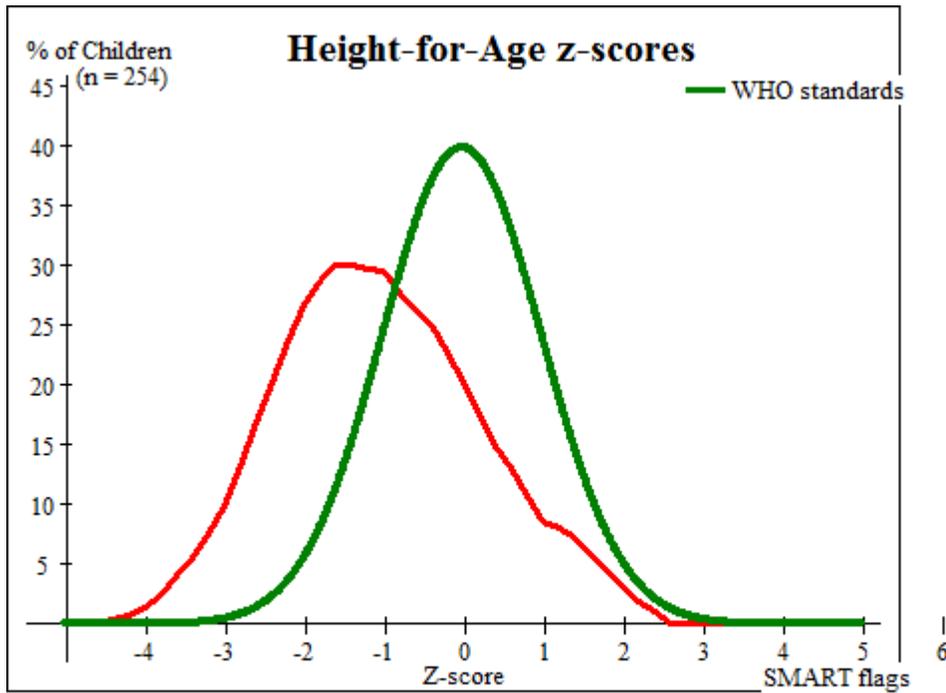
Table 21 Mean z-scores, Design Effects and excluded subjects

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	259	-0.39±1.04	1.00	2	3
Weight-for-Age	259	-0.85±0.90	1.00	2	3
Height-for-Age	254	-1.03±1.23	1.00	2	8

* contains for WHZ and WAZ the children with oedema.
Mortality results

Table 22: Death rates Awbarre

Crude Death Rate (CMR) total No. of death /10,000/day = 0.16 (0.05-0.46)	
Under 5 Death (U5MR) total No. of death /10,000/day = 0.72 (0.2-2.6)	

U5MR was above the emergency threshold however this result is to be interpreted with caution due to the wide confidence interval.

3.3. Feeding programme coverage results

Table 23 Programme coverage for acutely malnourished children

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	Number/total	% (95% CI)
Supplementary feeding programme coverage	1/16	6.3% (0.2-30.2%)
Therapeutic feeding programme coverage	0/5	0.0%
Blanket feeding program (6-23 months)	55/82	67.1% (55.8-77.1%)

It is calculated based on the admission criteria used in the survey camp, admission is based on MUAC, WHZ and oedema (mixed criteria). Estimated programme enrolment coverage for supplementary, therapeutic and blanket feeding programme was lower than expected standards for refugee settings (>90%).

Measles vaccination coverage results

Table 24 Measles vaccination coverage for children aged 9-59 months (n= 252)

	Measles (with card) n=242	Measles (with card or confirmation from mother) n=248
YES	96.4% (93.3-98.3, 95% CI)	99.2% (97.2-99.9, 95% CI)

The measles coverage with card or recall was in line with the recommendation which is above 95% target at 99.9% (97.2-99.9%, 95% CI).

3.4. Vitamin A supplementation coverage results

Table 25 Vitamin A supplementation for children aged 6-59 months within past 6 months (n=263)

	Vitamin A capsule (with card) n=215	Vitamin A capsule (with card or confirmation from mother) n=263
YES	81.7 % (76.5-86.2, 95% CI)	100 %

Vitamin A supplementation coverage by card or confirmation from the mother was 100.0% which is meeting the UNHCR target of above 90%.

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Figure 13 measles vaccination children 9-59 months and vitamin A supplementation IN LAST 6 MONTHS in children 6-59 months from 2014-2017

Trend in Coverage of Measles Vaccination and Vitamin A Supplementation in last 6 Months
Awbarre Refugee Camp, Ethiopia
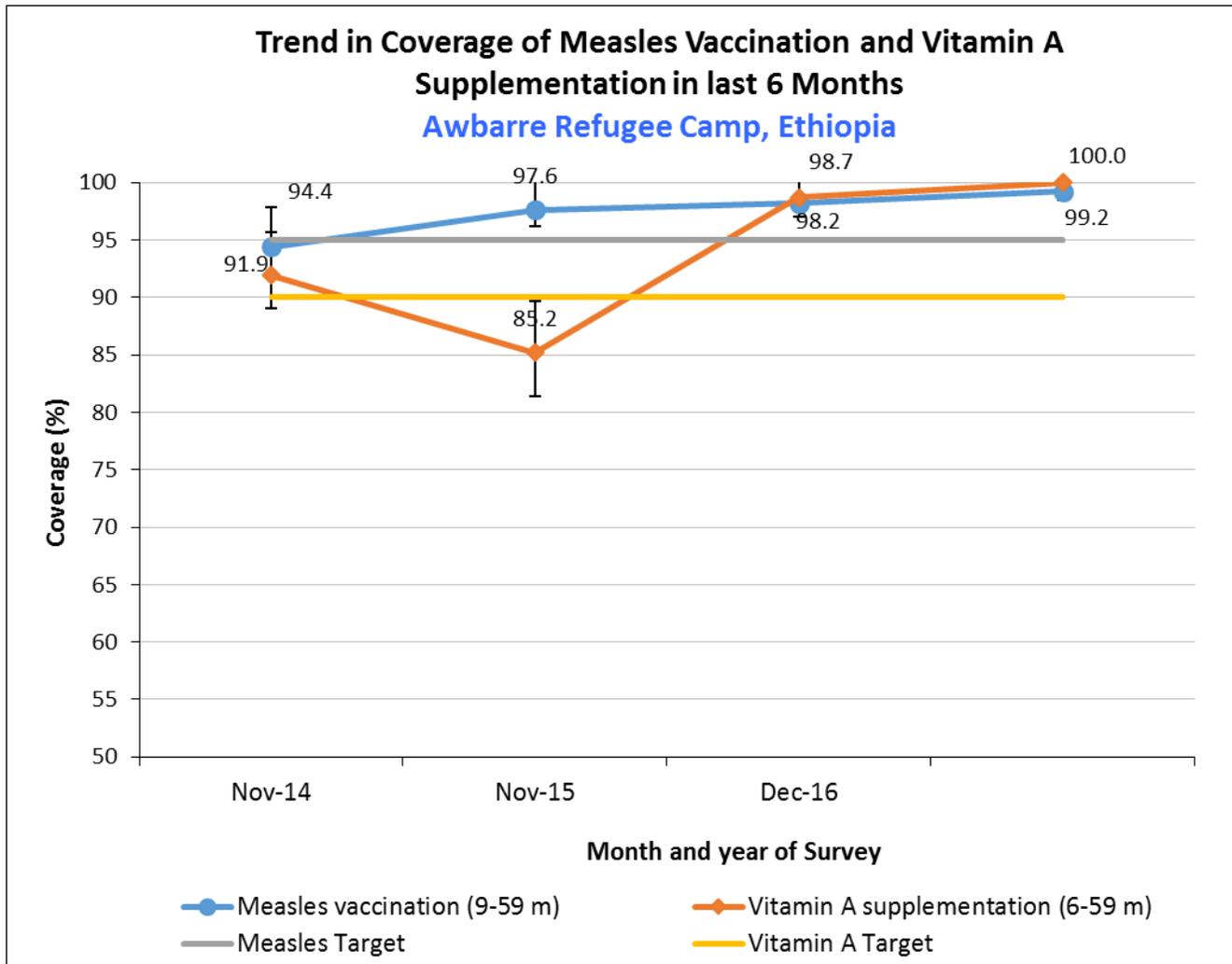
3.5. Diarrhoea results

Table 26 Period prevalence of diarrhoea

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	12/252	4.5% (2.4-7.8, 95% CI)

4.5% (2.4-7.8, 95% CI) of the sampled children reported having had diarrhoea in the 2 weeks prior to the survey.

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3.6. Anaemia results

Table 27 Prevalence of Total Anaemia, Anaemia Categories, And Mean Haemoglobin Concentration In Children 6-59 Months Of Age And By Age Group

	95% CI		
	6-59 months n =263	6-23 months n=84	24-59 months n=179
Total Anaemia (Hb<11.0 g/dL)	(n=65) 24.7% (19.6-30.4	(n = 36) 42.9% (32.1-54.1%)	(n = 29) 16.2% (11.1-22.4%)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(n=36) 13.7% (9.8-18.4	(n = 20) 23.8% (15.2-34.3%)	(n =16) 8.9% (5.2-14.1%)
Moderate Anaemia (7.0-9.9 g/dL)	(n=29) 11.0% (7.5-15.5	(n=16) 19.0% (11.3-29.1%)	(n= 13) 7.3% (3.9-12.1%)
Severe Anaemia (<7.0 g/dL)	(n=0) 0.0%	(n = 0) 0.0%	(n =0) 0.0 %
Mean Hb (g/dL) (SD / 95% CI) [range]	11.8g/dL / (SD 1.5) [7.4-16.3]	11.1g/dL / (SD 1.5) [7.4- 14.0]	12.2g/dL / (SD 1.4) [7.4-16.3]

Table 28 Prevalence of Moderate and Severe Anaemia in Children 6-59 Months Of Age And By Age Group

	6-59 months n = 263	6-23 months n=84	24-59 months n=179
Moderate and Severe Anaemia (Hb<10.0 g/dL)	(n=29) 11.0% (7.5-15.5	(n = 16) 19.0% (11.3-29.1%)	(n= 13) 7.3% (3.9-12.1%)

Figure 14 Trends in anaemia categories in children 6-59 months from 2014-2017

Jijiga Camps Standardized Expanded Nutrition Survey Final Report, 2017.
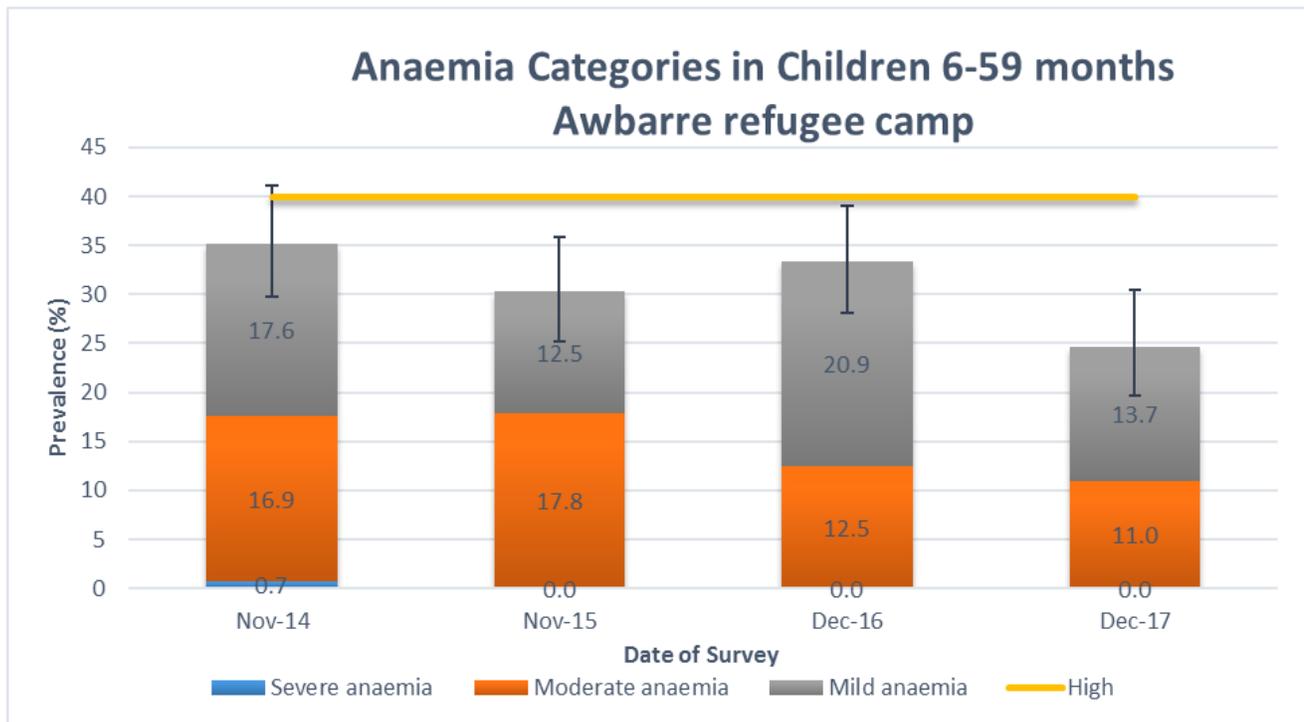
Figure 15 Trend in Total Anaemia (<11 G/Dl), and Moderate and Severe Anaemia (<10 G/Dl) With 95% Ci in Children 6-59 Months from 2014-2017
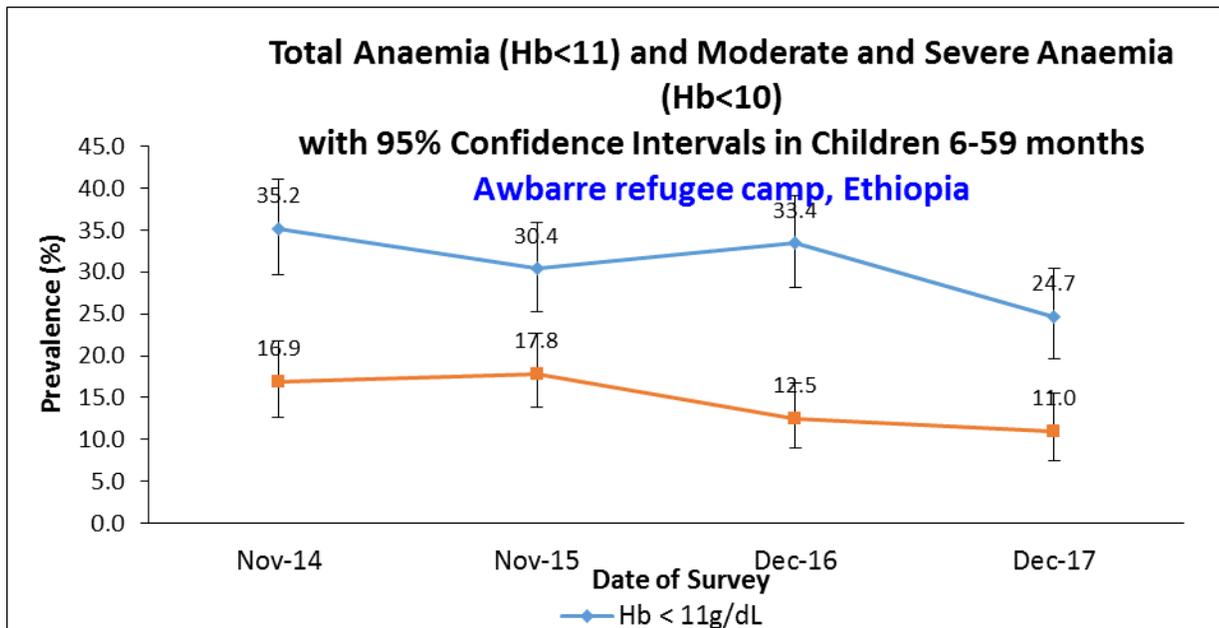
FIGURE 16 TREND IN MEAN HAEMOGLOBIN CONCENTRATION WITH 95% CI IN CHILDREN 6-59 months from 2014-2017

Jijiga Camps Standardized Expanded Nutrition Survey Final Report, 2017.
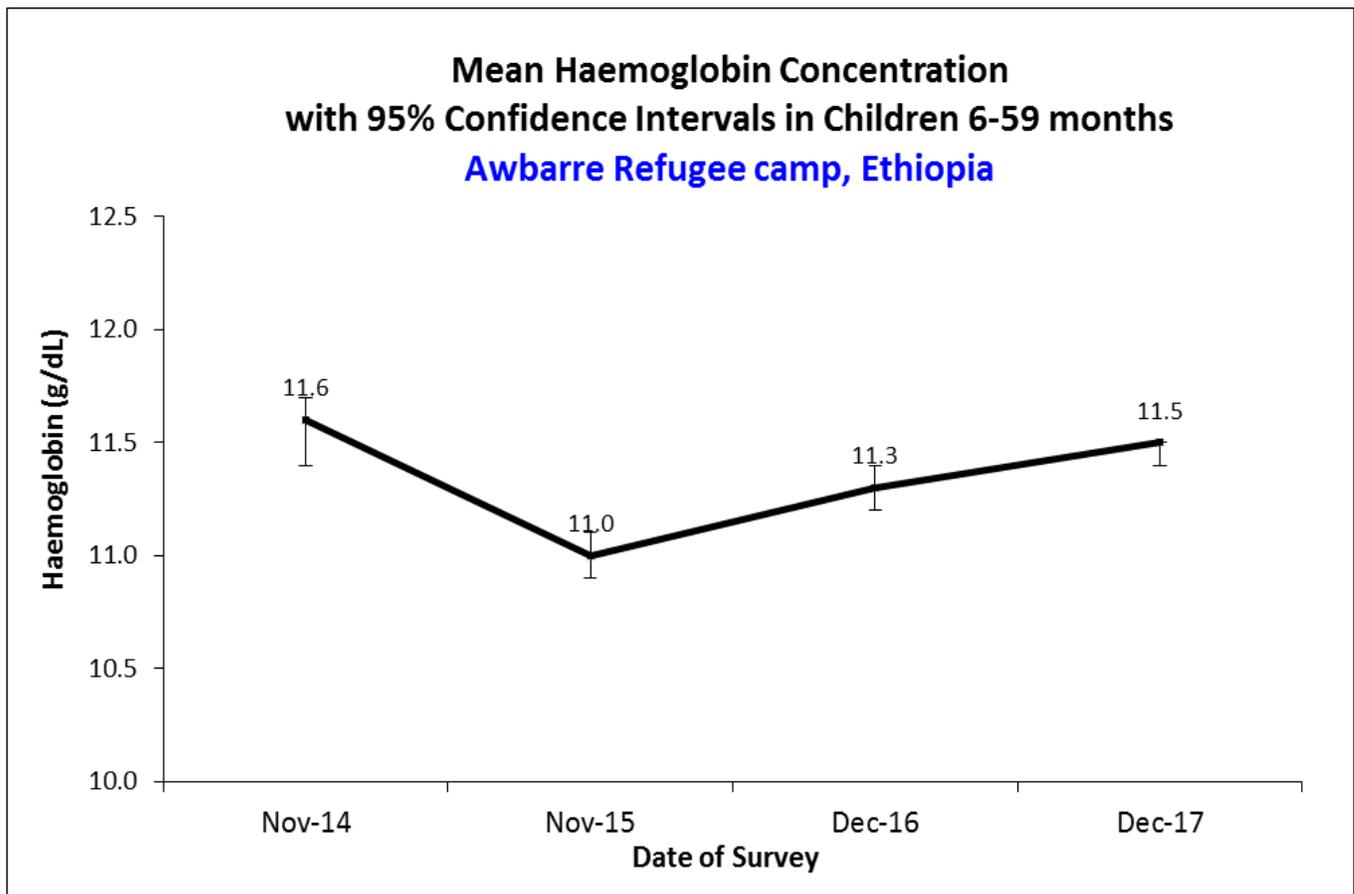
3.7. Children 0-23 months

Table 29 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	80/104	76.9% (67.6-84.6%)
Exclusive breastfeeding under 6 months	0-5 months	13/20	65.0% (40.8-84.6%)
Continued breastfeeding at 1 year	12-15 months	15/31	48.4% (30.2-66.9%)
Continued breastfeeding at 2 years	20-23 months	4/11	36.4% (10.9-69.2%)
Introduction of solid, semi-solid or soft foods	6-8 months	8/13	61.5% (31.6-86.1%)
Consumption of iron-rich or iron-fortified foods	6-23 months	58/80	72.5% (61.4-81.9%)
Bottle feeding	0-23 months	20/104	19.2% (12.2-28.1%)

When IYCF indicators are collected in nutritional surveys based on GAM in children aged 6-59 months, it is not feasible to achieve a large enough sample size for some of the indicators to be estimated as precisely as desired, especially for indicators covering a very narrow age range (e.g. 12-15 months, 6-8 months). Hence, trend analyses need to be interpreted with caution. However, trend analyses are useful for assessing the situation and major differences seen from year to year should warrant further investigation.

Figure 17 KEY IYCF indicators from 2014-2017

Jijiga Camps Standardized Expanded Nutrition Survey Final Report, 2017.
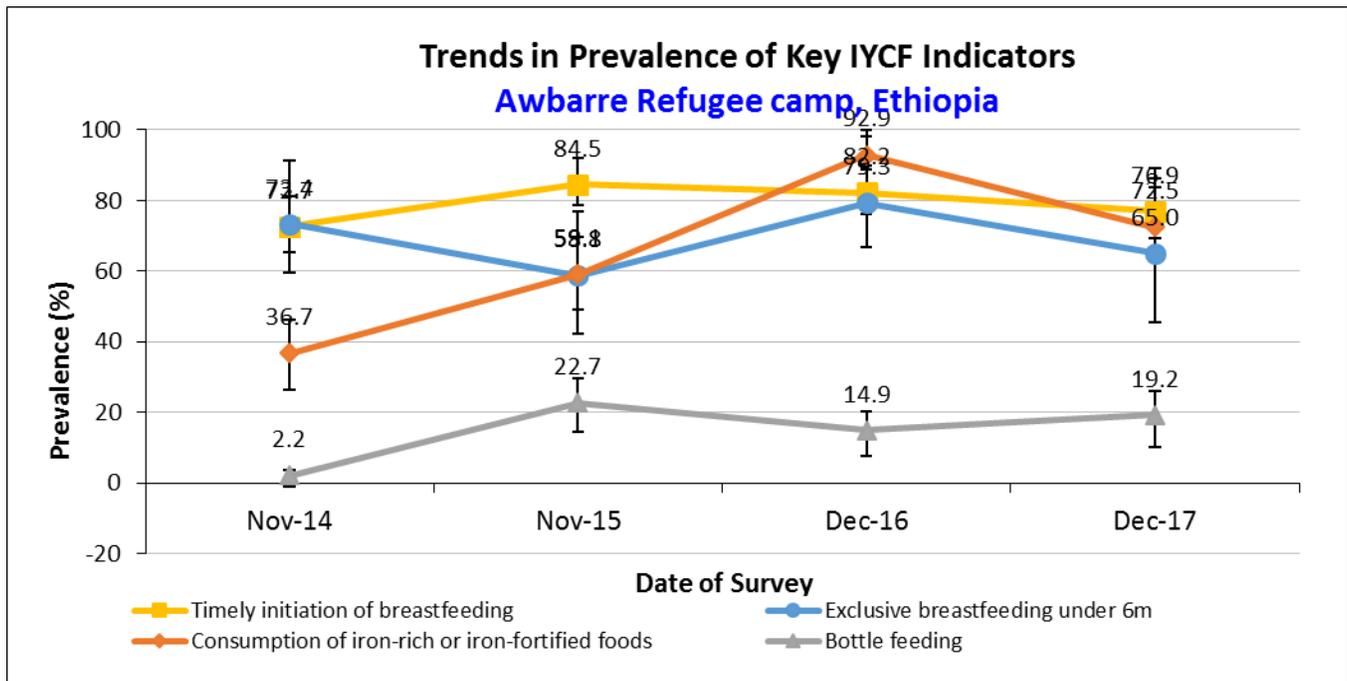
3.8. Prevalence of intake
3.8.1. Infant formula

Table 30 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)	28/104	26.9% (18.7-36.5%)

3.8.2. Fortified blended foods

Table 31 FBF intake in children aged 6-23 months

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB+	34/82	41.5% (30.7-52.9%)

Table 32 FBF++ intake in children aged 6-23 months

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB++	44/82	53.7% (42.3-64.7%)

3.9. Women 15-49 years

Table 33 Women physiological status and age

Physiological status	Number/total	% of sample
Non-pregnant	147/157	93.6% (88.6-96.9%)
Pregnant	10/157	6.4% (3.1-11.4%)
Mean age (range)	27.7 year Range (15 -48 years)	

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

Anaemia in non-pregnant women of reproductive age (15-49 years	All n = 147	
Total Anaemia (<12.0 g/dL)	30	20.4% (14.2-27.8%)
Mild Anaemia (11.0-11.9 g/dL)	19	12.9% (8.0-19.4%)
Moderate Anaemia (8.0-10.9 g/dL)	10	6.8% (3.3-12.2%)
Severe Anaemia (<8.0 g/dL)	1	0.7% (0.0-3.7%)
Mean Hb (g/dL) / (SD / 95% CI) [range]	13.06g/dl / (SD 1.6) [6.9 min, 17.0 max]	

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Figure 18 Trends in anaemia categories in women of reproductive age (non-pregnant) from 2014 -2017
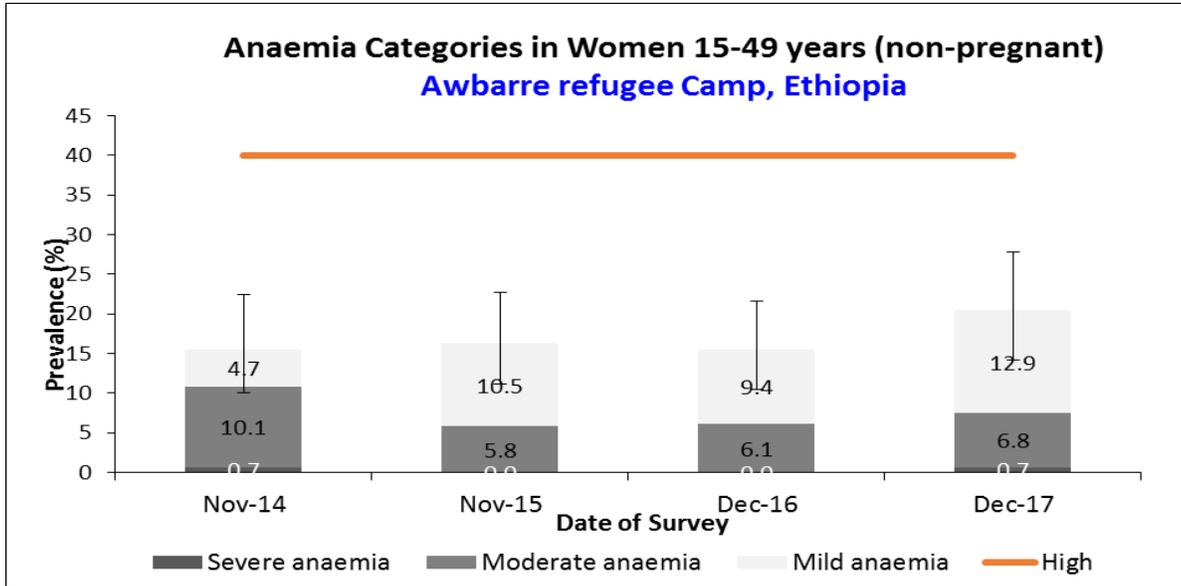
Figure 19 Trend in mean haemoglobin concentration with 95% CI in women of reproductive age (non-pregnant) from 2014-2017
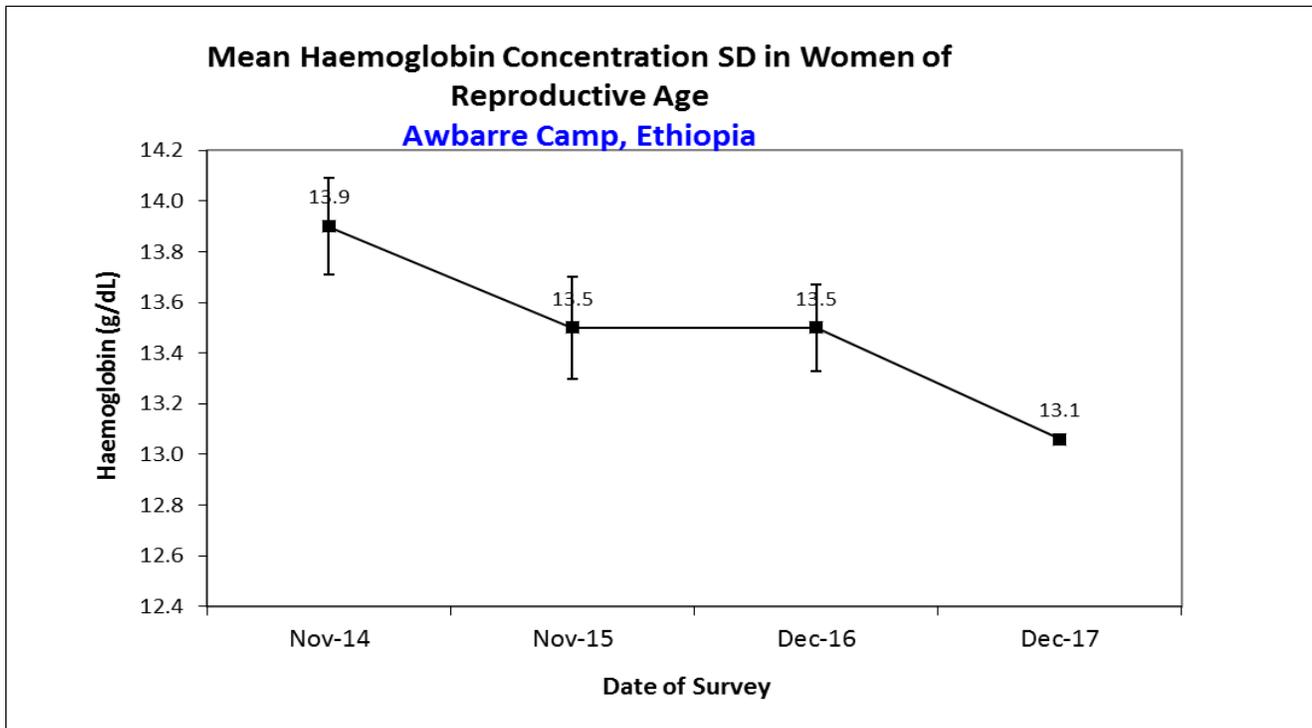
Table 35: ANC enrolment and iron-folic acid among pregnant women (15-49 years)

	Number /total	% (95% CI)
Currently enrolled in ANC programme	10/10	100.0%
Currently receiving iron-folic acid pills	8/10	80.0% (44.4-97.5%)

More than half of pregnant women enrolled in ANC had received iron-folic pills

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3.10. Food security

Table 36 Ration card coverage

	Number/total	% (95% CI)
Proportion of households with a ration card	139/146	95.2% (90.4-98.1%)

A total of 7 households had no ration cards; three of households saying were not given ration card once registered and the rest (four HH) were not registered but they are eligible.

Table 37 Reported duration of general food ration

Average number of days the food ration lasts	Average duration (%) in relation to the theoretical duration of the ration*
17.2 SD 4.4	57.3%

*For example, if the average number of days the food ration lasts is 17.2 days out of the 30 days, then the average duration in relation to the theoretical duration of the ration was covered 57.3% including to cash.

Table 38 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	117/139	84.2% (77.0-89.8%)
Proportion of households reporting that the food ration lasted:		
≤75% of the cycle [30 days]	15/139	10.8% (6.2-17.2%)
>75% of the cycle [30 days]	124/139	89.2% (82.8-93.8%)

3.10.1 Negative coping strategies results

Table 39 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	108/145	74.5% (66.6-81.4%)
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)	10/146	6.8% (3.3-12.2%)
Requested increased remittances or gifts as compared to normal	12/146	8.2% (4.3-13.9%)
Reduced the quantity and/or frequency of meals	68/146	46.6% (38.3-55.0%)
Begged (Just asking anyone on the street)	30/146	20.5% (14.3-28.0%)
Engaged in potentially risky or harmful activities [list activities]	5/146	3.4% (1.1-7.8%)
Proportion of households reporting using none of the	10/144	6.9%

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coping strategies over the past month		(3.4-12.4%)

3.10.2 Household dietary diversity results

Table 40 Average HDDS

	Mean (Standard deviation or 95% CI)
Average HDDS	6.34 SD 2.12

* Maximum HDDS is 12.

Table 41 Consumption of micronutrient rich foods by households

	Number/total	% (95% CI)
Proportion of households not consuming any vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	14/144	9.7% (5.4-15.8%)
Proportion of households consuming either a plant or animal source of vitamin A	90/144	62.5% (54.1-70.4%)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	41/145	28.3% (21.1-36.3%)

Figure 20 Proportion of households consuming different food groups within last 24 hours

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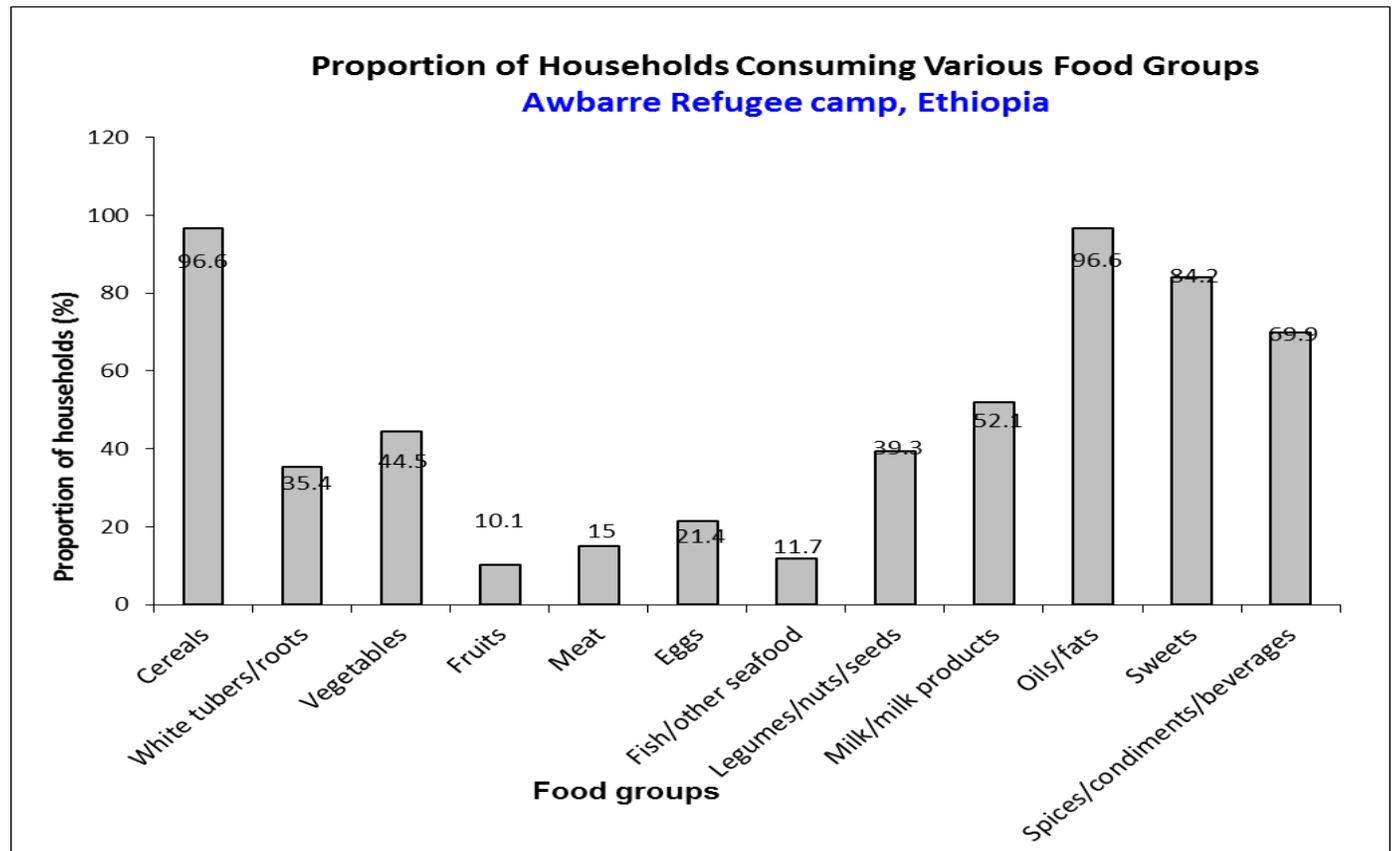
Most common items reported to be consumed were oils/fats (96.6%), cereal, (96.6%), Sweets (84.2%) and others most important food items very low.

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3.11   WASH

Table 42: Water Quality

	Number/total	% (95% CI)
Proportion of households using an improved drinking water source	150/150	100.0%
Proportion of households that use a covered or narrow necked container for storing their drinking water	102/150	68.0% (59.9-75.4%)

62.5% (57.0-67.8%, 95% CI) reported to have covered or narrow necked drinking water storage containers and 97.5% had improved drinking water source.

Table 43: Water Quantity 1: Amount of litres of water used per person per day

Proportion of households that use:	Number/total	% (95% CI)
≥ 20 lpppd	72/150	48.0% (39.8-56.3%)
15 – <20 lpppd	29/150	19.3% (13.3-26.6%)
<15 lpppd	49/150	32.7% (25.2-40.8%)
An average water usage in lpppd	22.1	

Table 44: Satisfaction with water supply

	Number/total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	126/148	85.1% (78.4-90.4%)

About 85.1% of household reported that they are satisfied with the drinking water supply. 13.3% were not satisfied with the drinking water supply.

Figure 21: Proportion of households that say they are satisfied with the water supply

Proportion of Households that say they are Satisfied with the Water Supply
Awbarre Camp, Ethiopia

84.0 — Satisfied
2.7 — Partially satisfied
13.3 — Not satisfied

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Table 45: Safe Excreta disposal

	Number/total	% (95% CI)
Proportion of households that use:		
Proportion of households using an improved excreta disposal facility (improved toilet facility, not shared)	129/148	87.2% (80.7-92.1%)
Proportion of households using a shared family toilet (improved toilet facility, 2 HH only)	2/148	1.4% (0.2-4.8%)
Proportion of households using a communal toilet (improved toilet facility, 3 HH or more)	15/148	10.1% (5.8-16.2%)
Proportion of households using an unimproved toilet	2/148	1.4% (0.2-4.8%)
The proportion of households with children under three years old that dispose of faeces safely.	48/70	68.6% (56.4-79.1%)

Percentages of the beneficiaries are using improved toilet which are not shared was 87.2% (80.7-92.1, 95% CI) whereas about 26% has unimproved toilet facilities (table 54). Further analysis showed 75.0% of households surveyed with children less than three years of age had their last stools disposed into the toilet and 40.5% had their stools disposed of unsafely.

Figure 22: Proportion of households with < 3 years whose (last) stools were disposed of safely

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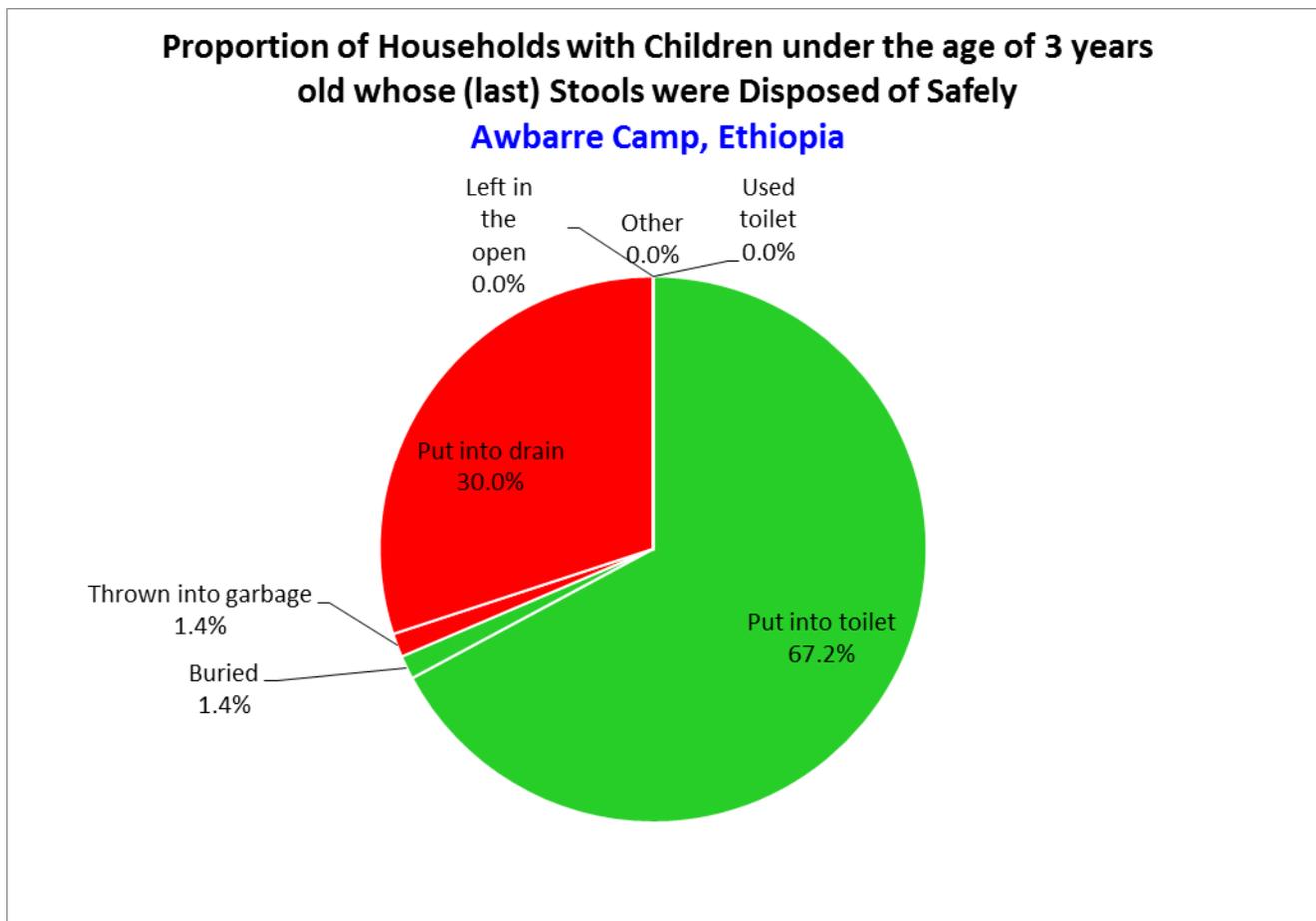
4. KEBRIBEYAH CAMP

4.1. Demography

Table 46 Demographic characteristics of the study population in Kebribeyah

Total HHs surveyed	281
Total population surveyed	1982
Total U5 surveyed	342
Average HH size	7.0
% of U5	17.3%

Table 47 Distribution of age and sex of sample, Kebribeyah

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:girl
6-17	41	50.0	41	50.0	82	26.9	1.0
18-29	43	62.3	26	37.7	69	22.6	1.7
30-41	46	56.8	35	43.2	81	26.6	1.3
42-53	25	49.0	26	51.0	51	16.7	1.0
54-59	8	36.4	14	63.6	22	7.2	0.6
Total	163	53.4	142	46.6	305	100.0	1.1

The overall sex ratio was 0.8 which denotes equal distribution of the sexes of different age groups, it show normal trends and that there is no selection bias

Figure 23: Population age and sex pyramid, Kebribeyah

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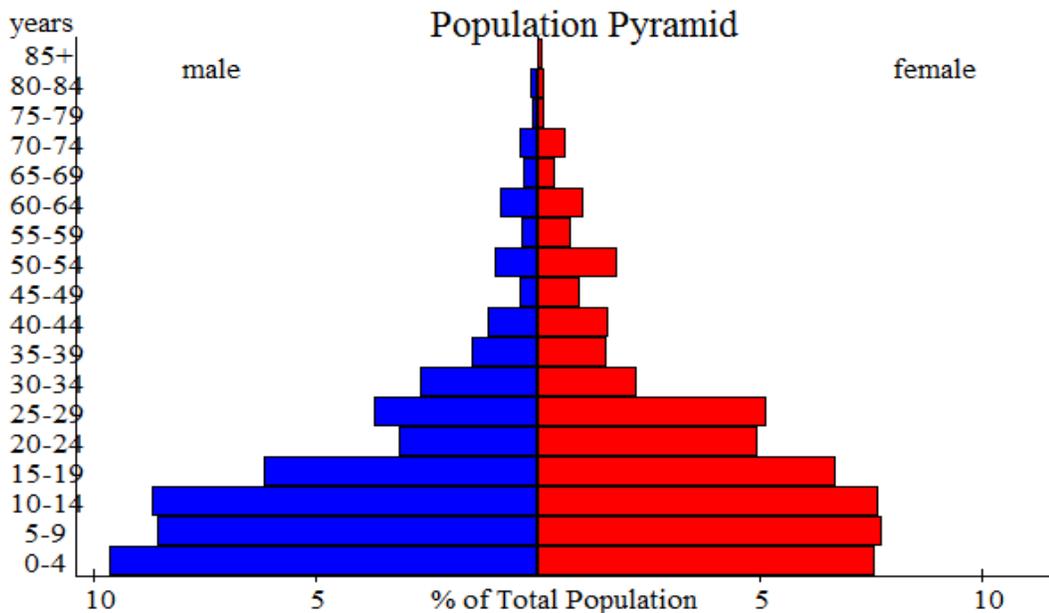
4.2. Anthropometric results (based on WHO Growth Standards 2006)

Anthropometric results were analysed and presented based on WHO Growth Standards and excluding z-scores from Observed mean (SMART flags): WHZ -3 to 3; HAZ -3 to 3; WAZ -3 to 3. Results based on NCHS Growth Reference 1977 are presented

Table 48: Prevalence of acute malnutrition based on WHZ and/or oedema and by sex

	95% CI		
	All n = 296	Boys n = 157	Girls n = 139
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(13) 4.4 % (2.6 - 7.4%)	(8) 5.1 % (2.6 - 9.7%)	(5) 3.6 % (1.5 - 8.1%)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(10) 3.4 % (1.8 - 6.1%)	(6) 3.8 % (1.8 - 8.1%)	(4) 2.9 % (1.1 - 7.2%)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(3) 1.0 % (0.3 - 2.9%)	(2) 1.3 % (0.4 - 4.5%)	(1) 0.7 % (0.1 - 4.0%)

The prevalence of oedema was 0.0%

Figure 24 Prevalence of GAM and SAM based on WHZ in 6-59 months (2014-2017)

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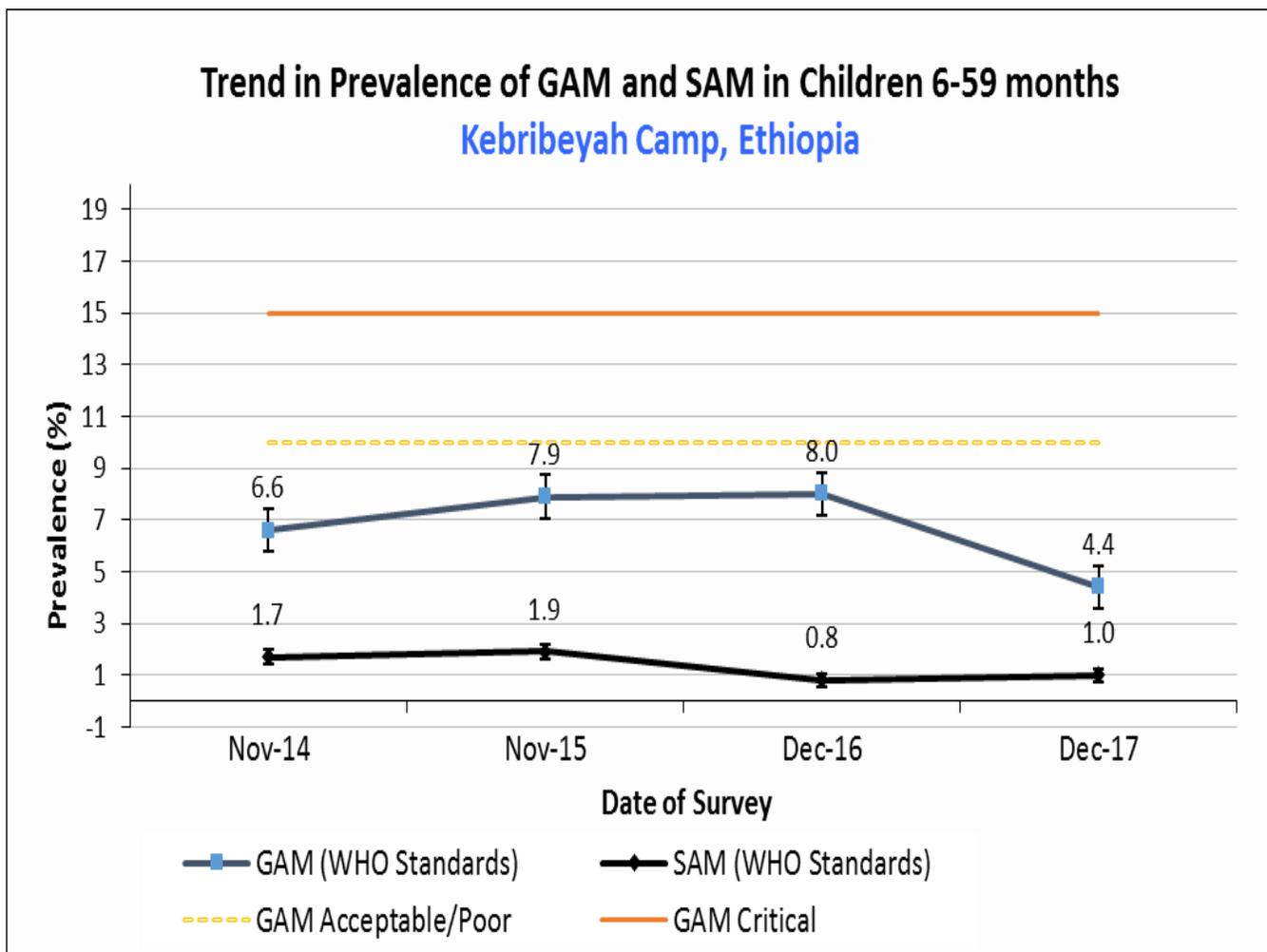
Table 49: Prevalence of acute malnutrition by age, based on WHZ and/or oedema

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 & <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	77	0	0.0	3	3.9	74	96.1	0	0.0
18-29	68	3	4.4	3	4.4	62	91.2	0	0.0
30-41	79	0	0.0	2	2.5	77	97.5	0	0.0
42-53	50	0	0.0	1	2.0	49	98.0	0	0.0
54-59	22	0	0.0	1	4.5	21	95.5	0	0.0
Total	296	3	1.0	10	3.4	283	95.6	0	0.0

The youngest children (18-29 months) is most affected by malnutrition as compared to other age groups.

Figure 25: Trends in the prevalence of wasting by age in children 6-59 months
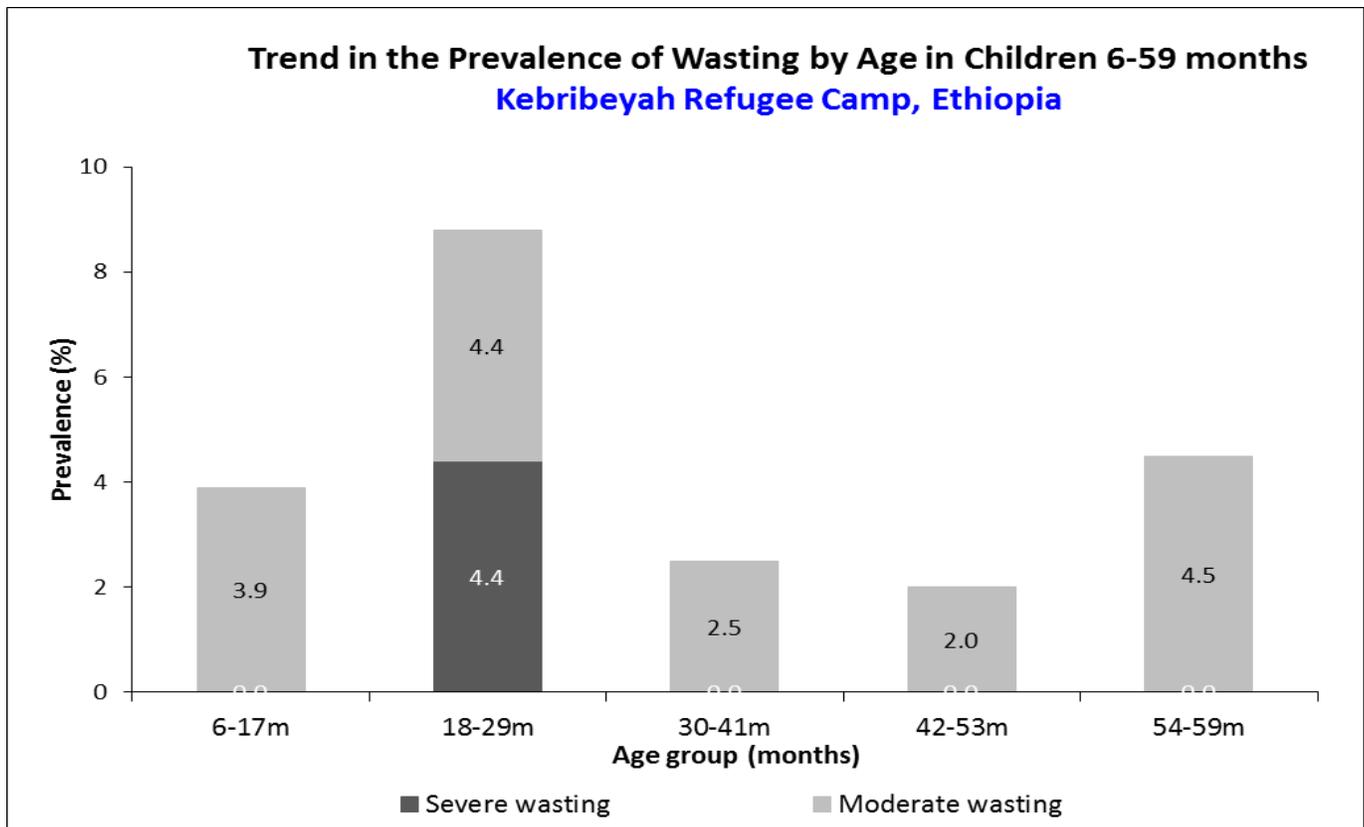
Table 50: Distribution of severe acute malnutrition and oedema based on WHZ

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 6 (2.0 %)	Not severely malnourished No. 299 (98.0 %)

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Figure 26: Distribution of WHZ based on WHO Growth Standards Kebribeyah
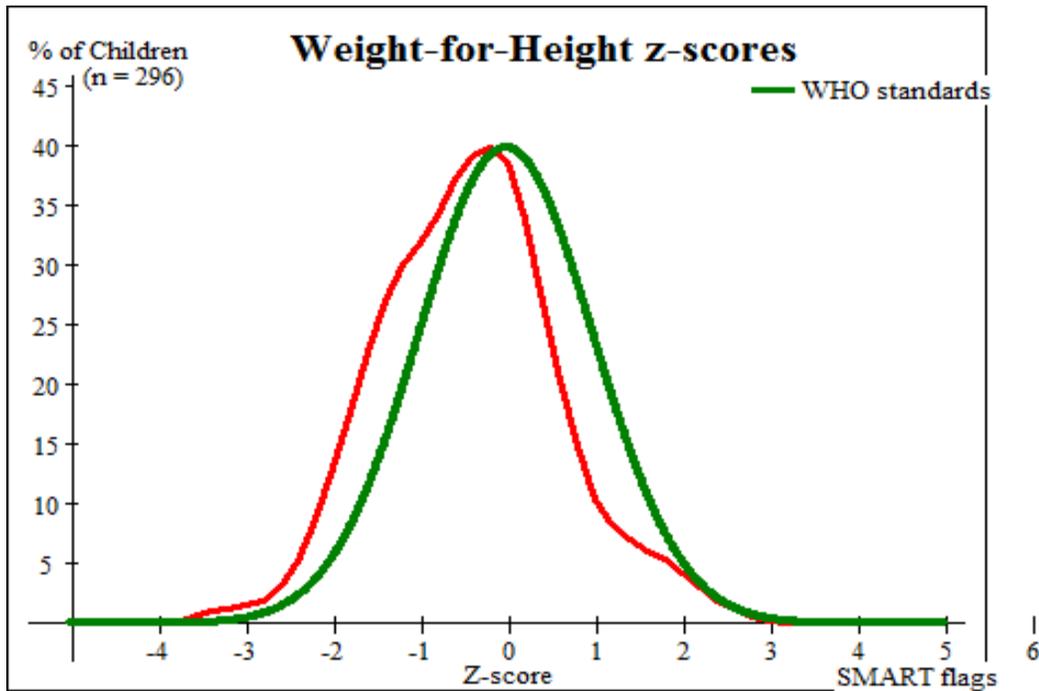
Table 51: Prevalence of acute malnutrition based on MUAC and/or oedema and by sex

	95% CI		
	All n = 305	Boys n = 163	Girls n = 142
Prevalence of global malnutrition (< 125 mm and/or oedema)	(13) 4.3 % (2.5 - 7.2%)	(3) 1.8 % (0.6 - 5.3%)	(10) 7.0 % (3.9 - 12.5%)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(13) 4.3 % (2.5 - 7.2%)	(3) 1.8 % (0.6 - 5.3%)	(10) 7.0 % (3.9 - 12.5%)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(0) 0.0 % (0.0 - 1.2%)	(0) 0.0 % (0.0 - 2.3%)	(0) 0.0 % (0.0 - 2.6%)

Table 52: Prevalence of acute malnutrition by age, based on MUAC 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	82	0	0.0	9	11.0	73	89.0	0	0.0
18-29	69	0	0.0	3	4.3	66	95.7	0	0.0
30-41	81	0	0.0	1	1.2	80	98.8	0	0.0
42-53	51	0	0.0	0	0.0	51	100.0	0	0.0
54-59	22	0	0.0	0	0.0	22	100.0	0	0.0
Total	305	0	0.0	13	4.3	292	95.7	0	0.0

Table 53: Prevalence of underweight based on weight-for-age z-scores by sex

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	95% CI		
	All n = 299	Boys n = 159	Girls n = 140
Prevalence of underweight (<-2 z-score)	(43) 14.4 % (10.9 - 18.8%)	(27) 17.0 % (11.9 - 23.6%)	(16) 11.4 % (7.2 - 17.8%)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(36) 12.0 % (8.8 - 16.2%)	(22) 13.8 % (9.3 - 20.1%)	(14) 10.0 % (6.1 - 16.1%)
Prevalence of severe underweight (<-3 z-score)	(7) 2.3 % (1.1 - 4.8%)	(5) 3.1 % (1.4 - 7.1%)	(2) 1.4 % (0.4 - 5.1%)

A total of 14.4 % (10.9 - 18.8, 95% C.I.) were underweight, and 2.3 % (1.1 - 4.8, 95% C.I.) were severely underweight.

Table 54: 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	78	0	0.0	12	15.4	66	84.6	0	0.0
18-29	68	5	7.4	12	17.6	51	75.0	0	0.0
30-41	80	1	1.3	8	10.0	71	88.8	0	0.0
42-53	51	1	2.0	1	2.0	49	96.1	0	0.0
54-59	22	0	0.0	3	13.6	19	86.4	0	0.0
Total	299	7	2.3	36	12.0	256	85.6	0	0.0

Table 55: Prevalence of stunting based on height-for-age z-scores and by sex

	95% C.I		
	All n = 296	Boys n = 159	Girls n = 137
Prevalence of stunting (<-2 z-score)	(68) 23.0 % (18.5 - 28%)	(49) 30.8 % (24.2 - 38.4%)	(19) 13.9 % (9.1 - 20.6%)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(59) 19.9 % (15.8 - 24.9%)	(40) 25.2% (19.1 - 32.4%)	(19) 13.9 % (9.1 - 20.6%)
Prevalence of severe stunting (<-3 z-score)	(9) 3.0 % (1.6 - 5.7%)	(9) 5.7 % (3.0 - 10.4%)	(0) 0.0 % (0.0 - 2.7%)

Table 65: 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	78	1	1.3	12	15.4	65	83.3
18-29	64	3	4.7	18	28.1	43	67.2
30-41	81	3	3.7	16	19.8	62	76.5
42-53	51	2	3.9	10	19.6	39	76.5
54-59	22	0	0.0	3	13.6	19	86.4
Total	296	9	3.0	59	19.9	228	77.0

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Children under between the ages of 18-29 months of age appear to be more affected by stunting than the other age groups.

Figure 27: Trends in the prevalence of stunting by age in children 6-59 months
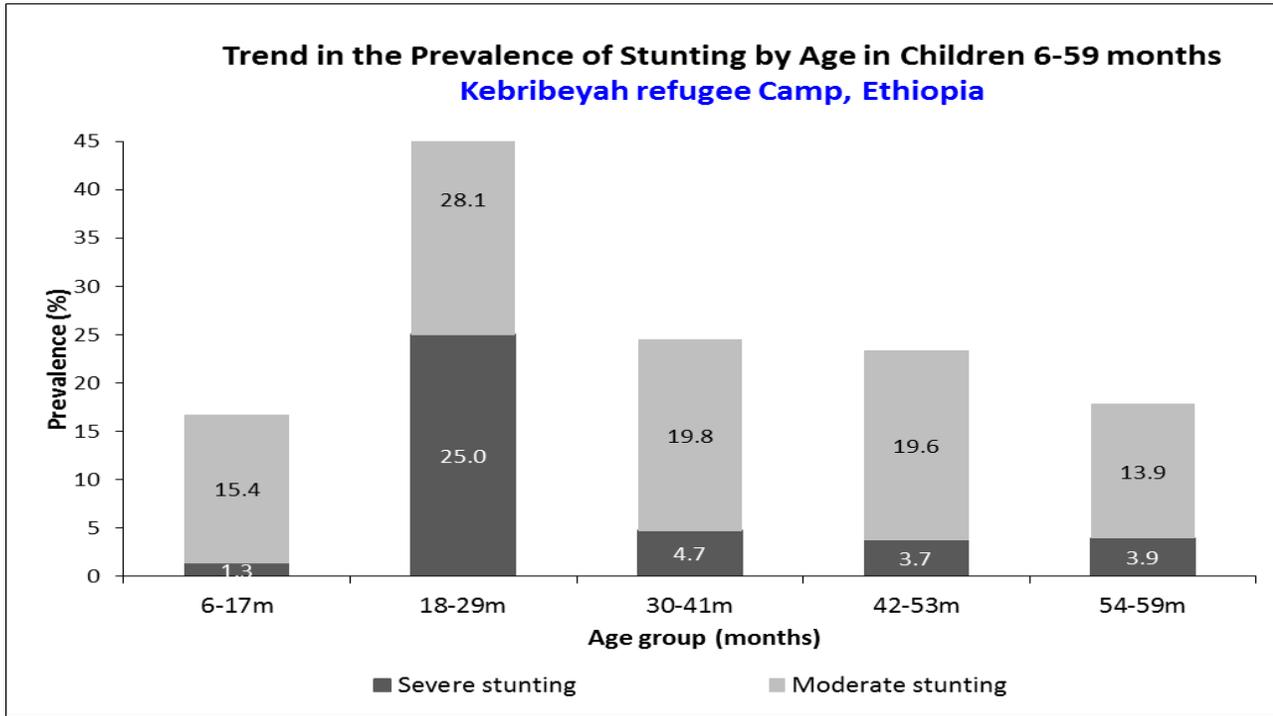
Figure 28: Distribution of height-for-age z-scores based on WHO Growth Standards

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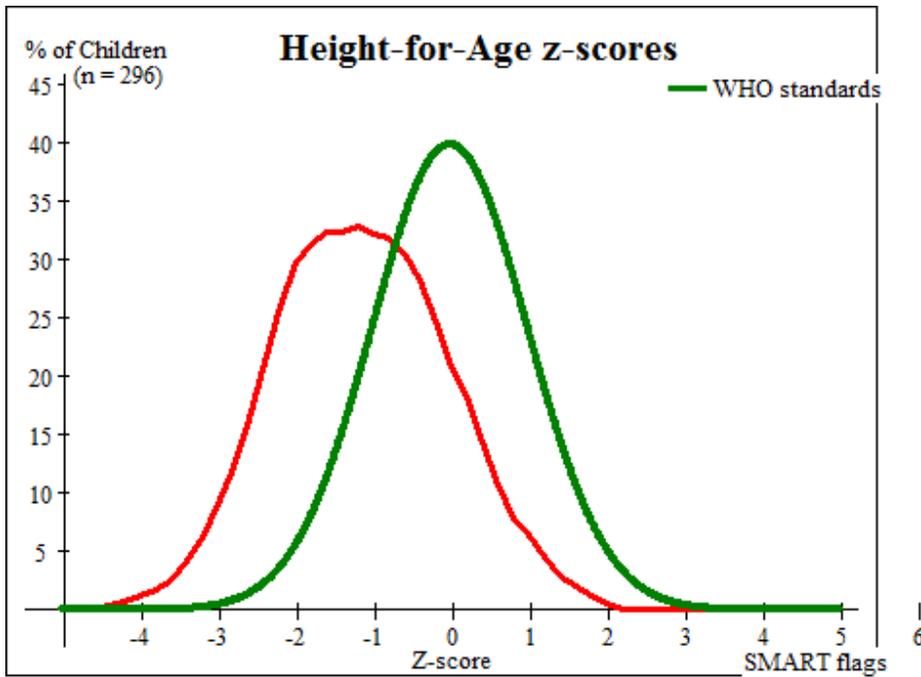
The height-for-age distribution for the survey (red) is compared to the WHO distribution (green) in

Table 66 Mean z-scores, Design Effects and excluded subject

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	296	-0.43±1.01	1.00	0	9
Weight-for-Age	299	-0.95±1.00	1.00	0	6
Height-for-Age	296	-1.15±1.07	1.00	0	9

* contains for WHZ and WAZ the children with oedema.

4.3. Mortality results

Table 56: Mortality rates

Crude Mortality Rate (CMR%) total No. of death /10,000/day = 0.25 (0.11-0.58, 95% CI)
Under 5 Mortality (U5MR%) total No. of death /10,000/day = 0.86 (0.29 -1.49, 95% CI)

U5MR was above the emergency threshold however this result has to be interpreted with caution due to the wide confidence interval.

4.4. Feeding programme coverage results

Table 57: Estimated programme coverage for acutely malnourished children

	Number/total	% (95% CI)
Supplementary feeding programme coverage (WHZ >= - 3 AND WHZ < - 2 OR MUAC >= 115 mm AND MUAC < 125 mm)	6/19	31.6% (12.6-56.6%)
Therapeutic feeding programme coverage (WHZ < - 3 OR MUAC < 115mm)		
Blanket Supplementary (WHZ >= - 2 OR MUAC >= 125%)	66/113	58.4% (48.8-67.6%)

Estimated programme coverage for supplementary and therapeutic was far below the expected standard for refugee settings (>90%).

4.5. Measles vaccination coverage results

Table 58: Measles vaccination coverage for children aged 9-59 (n= 286)

	Measles (with card) n= 254	Measles (with card or confirmation from mother) n= 285
YES	88.8% (84.6-92.2%)	99.7% (98.1-100.0%)

The measles coverage with card or recall was in line with the recommendation which was above 95% target at 99.7% (98.1-100.0%).

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4.6. Vitamin A supplementation coverage results

Table 59: Vitamin A supplementation in 6-59 months within past 6 months (n= 305)

	Vitamin A capsule (with card) n= 242	Vitamin A capsule (with card or confirmation from mother) n= 302
yes	79.3% (74.4-83.7%)	99.0% (96.9-99.7%)

Vitamin A coverage by card or confirmation from the mother was 99.0% (96.9-99.7%) which is achieved the UNHCR target > 90%.

Figure 29: Measles and Vit. A supplementation in 6-59 months from 2013-2017
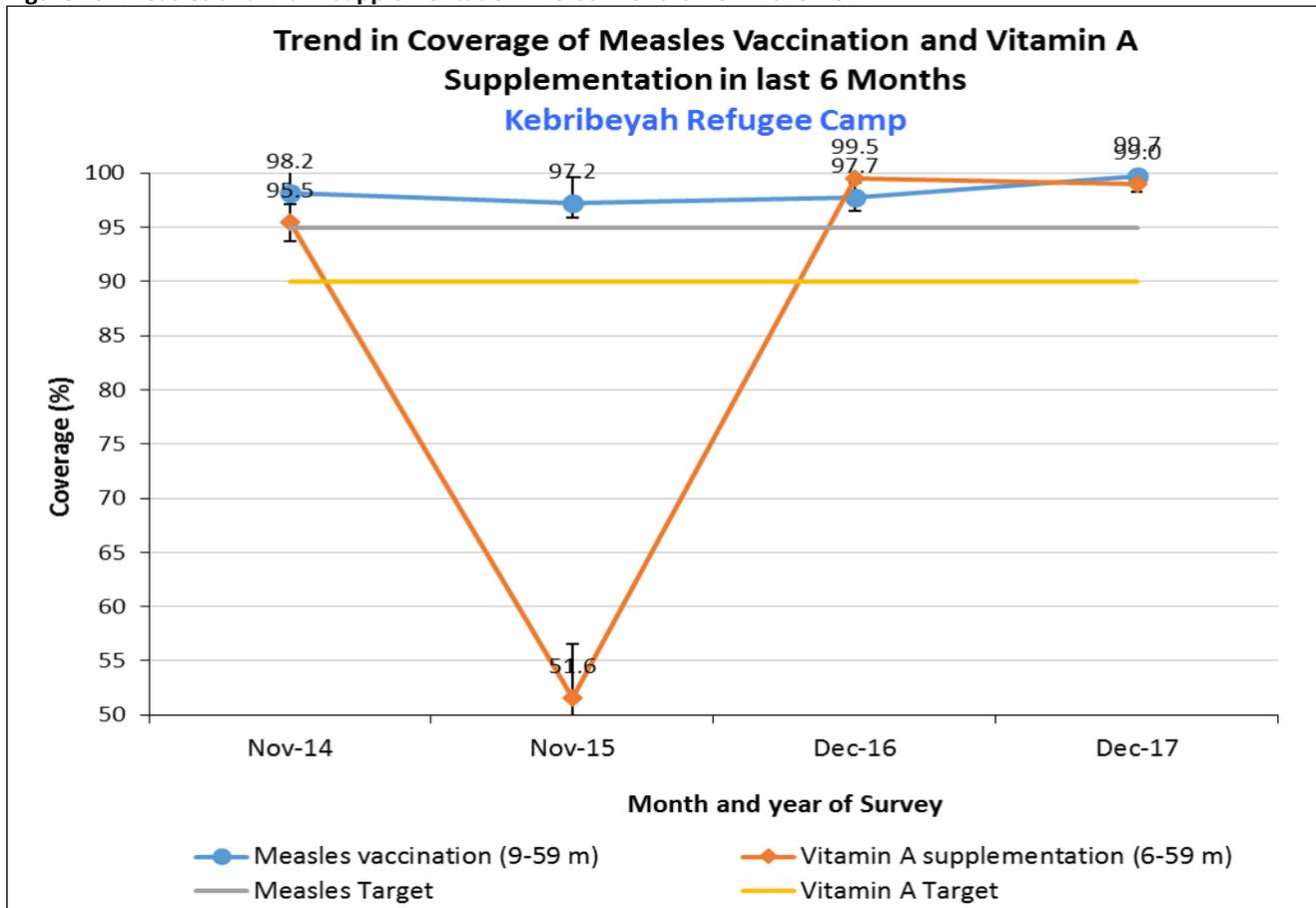
4.7. Diarrhoea results

Table 60: Period prevalence of diarrhoea

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	12/305	3.9% (2.1-7.0%)

3.9% (2.1-7.0%) of the sampled children reported having had diarrhoea in the 2 weeks prior to the survey.

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4.8. Anaemia results

Table 61: Prevalence of anaemia and haemoglobin concentration in children 6-59 months of age

	95% CI		
	6-59 months n =305	6-23 months n=116	24-59 months n=189
Total Anaemia (Hb<11.0 g/dL)	(n=95) 31.1% (26.1-36.7%)	(n= 53) 45.7% (36.4-55.2%)	(n=42) 22.2% (16.5-28.8%)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(n=45) 14.8% (11.1-19.4%)	(n=19) 16.4% (10.2-24.4%)	(n=26) 13.8% (9.2-19.5%)
Moderate Anaemia (7.0-9.9 g/dL)	(n=49) 16.1% (12.2-20.8%)	(n=33) 28.4% (20.5 -37.6%)	(n=16) 8.5% (4.9-13.4%)
Severe Anaemia (<7.0 g/dL)	(n=1) 0.3% (0.0-2.1%)	(n=1) 0.9% (0.0 -4.7%)	(n=0) 0.0%
Mean Hb (g/dL) (SD / 95% CI) [range]	11.5 g/dL / (SD 1.5) [6.6 – 14.6]	10.8g/dL /SD 1.5 [6.6 -14.3]	11.9g/dL /Sd 1.4 [7.5 – 14.6]

Table 62 Prevalence of Moderate and Severe Anaemia in Children 6-59 Months Of Age And By Age Group

	6-59 months n = 263	6-23 months n=84	24-59 months n=179
Moderate and Severe Anaemia (Hb<10.0 g/dL)	(n=29) 11.0% (7.5-15.5	(n = 16) 19.0% (11.3-29.1%)	(n= 13) 7.3% (3.9-12.1%)

Figure 30: Anaemia categories in children 6-59 months from 2014-2017

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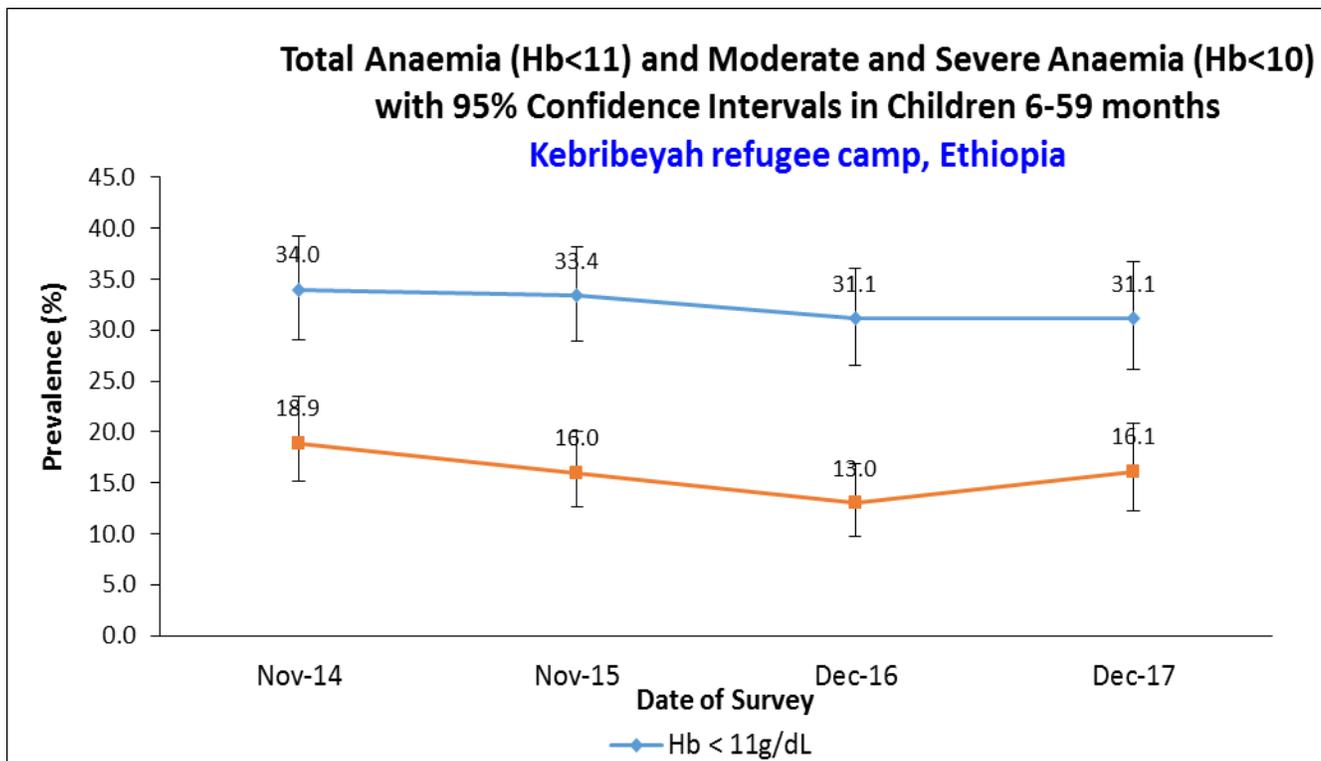
Figure 31: Mean Haemoglobin concentration in children 6-59 months from 2014-2017

Mean Haemoglobin Concentration
with 95% Confidence Intervals in Children 6-59 months
Kebribeyah Camp, Ethiopia
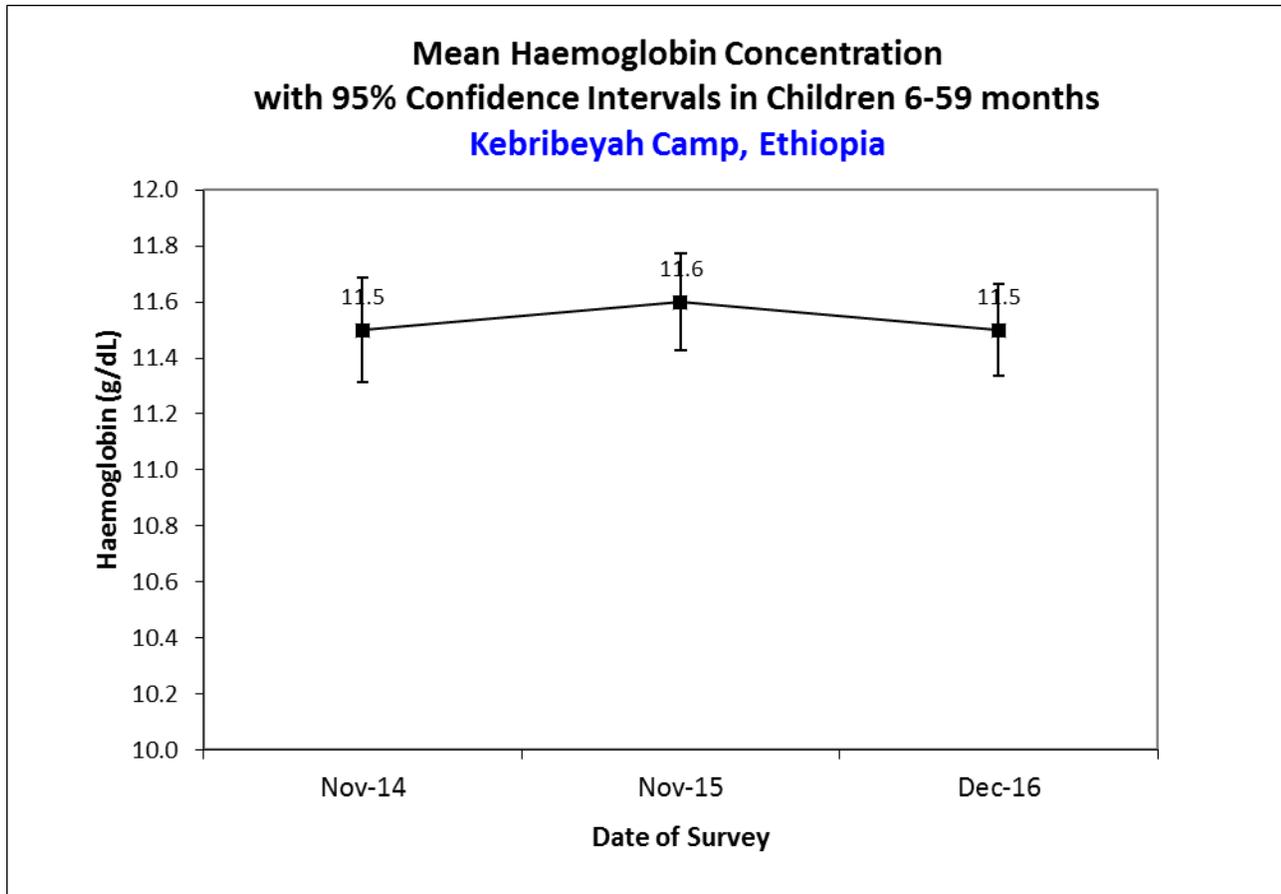
4.9. Children 0-23 months

Table 63: Prevalence of Infant and Young Child Feeding Practices Indicators

Indicator	Age range	No./ total	Prevalence (%) & 95% CI
Timely initiation of breastfeeding	0-23 months	130/140	92.9% (87.3-96.5%)
Exclusive breastfeeding under 6 months	0-5 months	20/24	83.3% (62.6-95.3%)
Continued breastfeeding at 1 year	12-15 months	19/27	70.4% (49.8-86.2%)
Continued breastfeeding at 2 years	20-23 months	4/19	21.1% (6.1-45.6%)
Introduction of solid, semi-solid or soft foods	6-8 months	9/19	47.4% (24.4-71.1%)
Consumption of iron-rich or iron-fortified foods	6-23 months	107/114	93.9% (87.8-97.5%)
Bottle feeding	0-23 months	9/140	6.4% (3.0-11.9%)

Timely initiation of breast feeding was higher coverage 92.9% (87.3 - 96.5, 95% CI) within an hour of birth and exclusive breastfeeding prevalence was 83.3% (62.6-95.3%, 95% C.I).

Others continues breastfeeding at one year and two years and introduced to solid foods were too low coverage. The proportion of children who were bottle fed the day before the survey were 6.4% ((3.0-11.9, 95% C.I). The

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2017 findings have shown the same trend in some of the key IYCF indicators and there has been deteriorated in bottle feeding prevalence (Figure 366).

Note that when IYCF indicators are collected in nutritional surveys based on anthropometric sample of children aged 0-59 months, it is not feasible to achieve a large enough sample size for some of the indicators to be estimated as precisely as desired, especially for indicators covering a very narrow age range (e.g. 12-15 months, 6-8 months%). Hence, IYCF indicators need to be interpreted with care.

Figure 32 Nutrition survey results (IYCF indicators) from 2014-2017
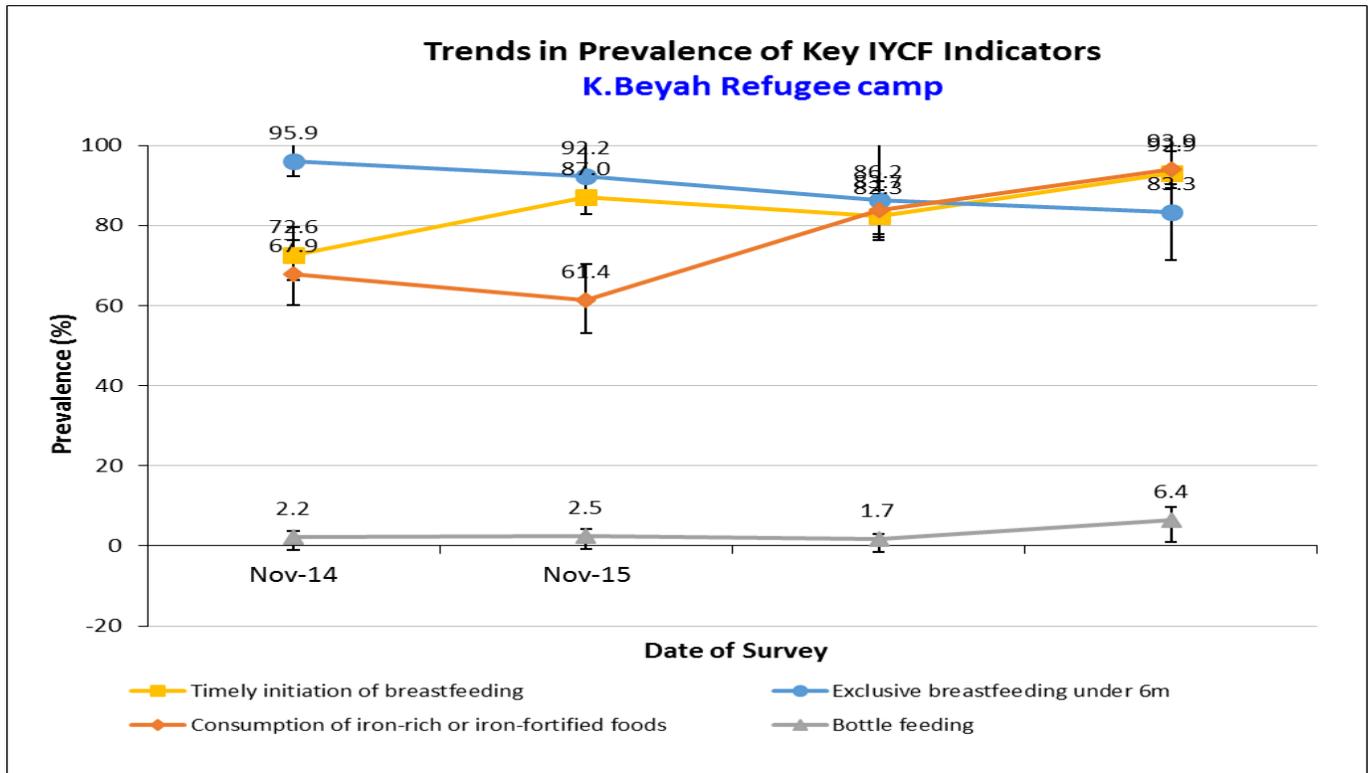
4.10. Prevalence of intake ANALYSIS

4.10.1. Infant formula

Table 75: Infant formula intake in children aged 0-23 months, Kebribeyah

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	28/104	26.9% (18.7-36.5%)

Table 76: CSB intake in children aged 6-23 months

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB+	91/116	78.4% (69.9-85.5%)

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Table 77: CSB ++ intake in children aged 6-23 months _Kebribeyah

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB++	60/116	51.7% (42.3-61.1%)

4.11. Women 15-49 years

Table 64: Women physiological status and age, Kebribeyah

Physiological status	Number/total	% of sample
Non-pregnant	120/148	81.1% (73.8-87.0%)
Pregnant	28/148	18.9% (13.0-26.2%)
Mean age (range)	23.9 year [15- 45]	

The target group of studies of women aged 15-49 years in the survey, 18.9% (13.0-26.2%) were pregnant.

Table 65: Prevalence of anaemia and Hb concentration women (15-49 yrs)

Anaemia in non-pregnant women of reproductive age (15-49 years)	Number/total	All (95% CI)
Total Anaemia (<12.0 g/dL)	19/120	15.8% (9.8-23.6%)
Mild Anaemia (11.0-11.9 g/dL)	10/120	8.3% (4.1-14.8%)
Moderate Anaemia (8.0-10.9 g/dL)	9/120	7.5% (3.5-13.8%)
Severe Anaemia (<8.0 g/dL)	0/120	0.0%
Mean Hb (g/dL)	13.445g/dl & SD =1.6 [8.2-16.5]	

Figure 33: Anaemia categories in 15 – 49yrs women from 2014-2017

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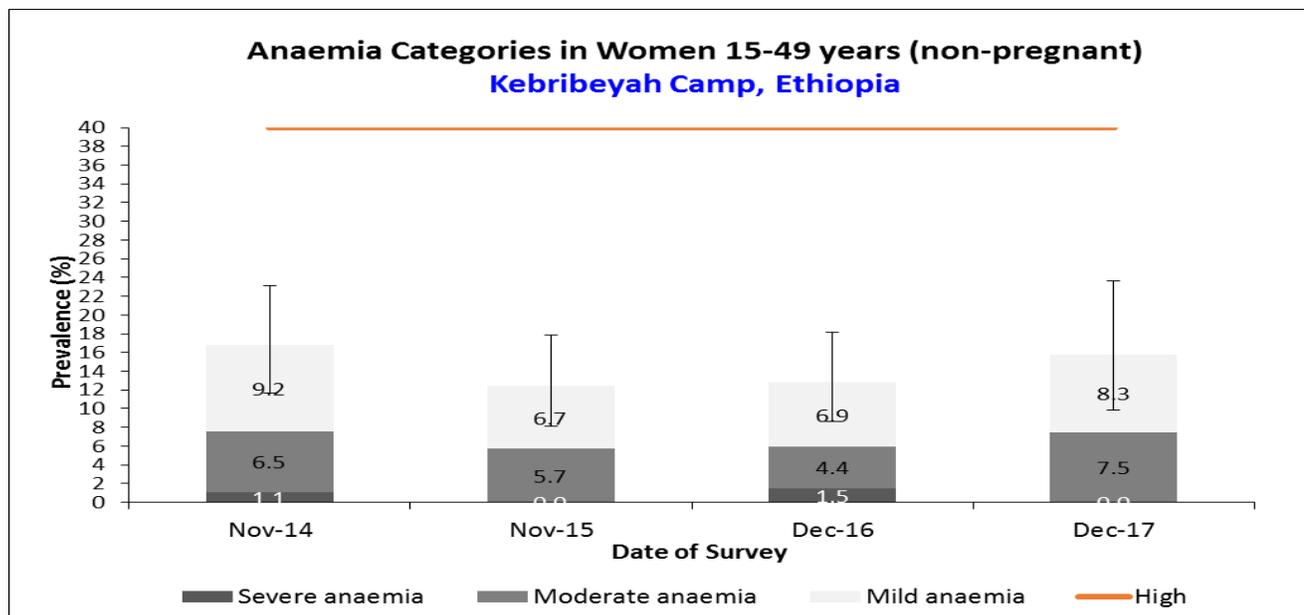
Figure 34: Mean Hb concentration in women age 15 – 49yrs from 2014-2017
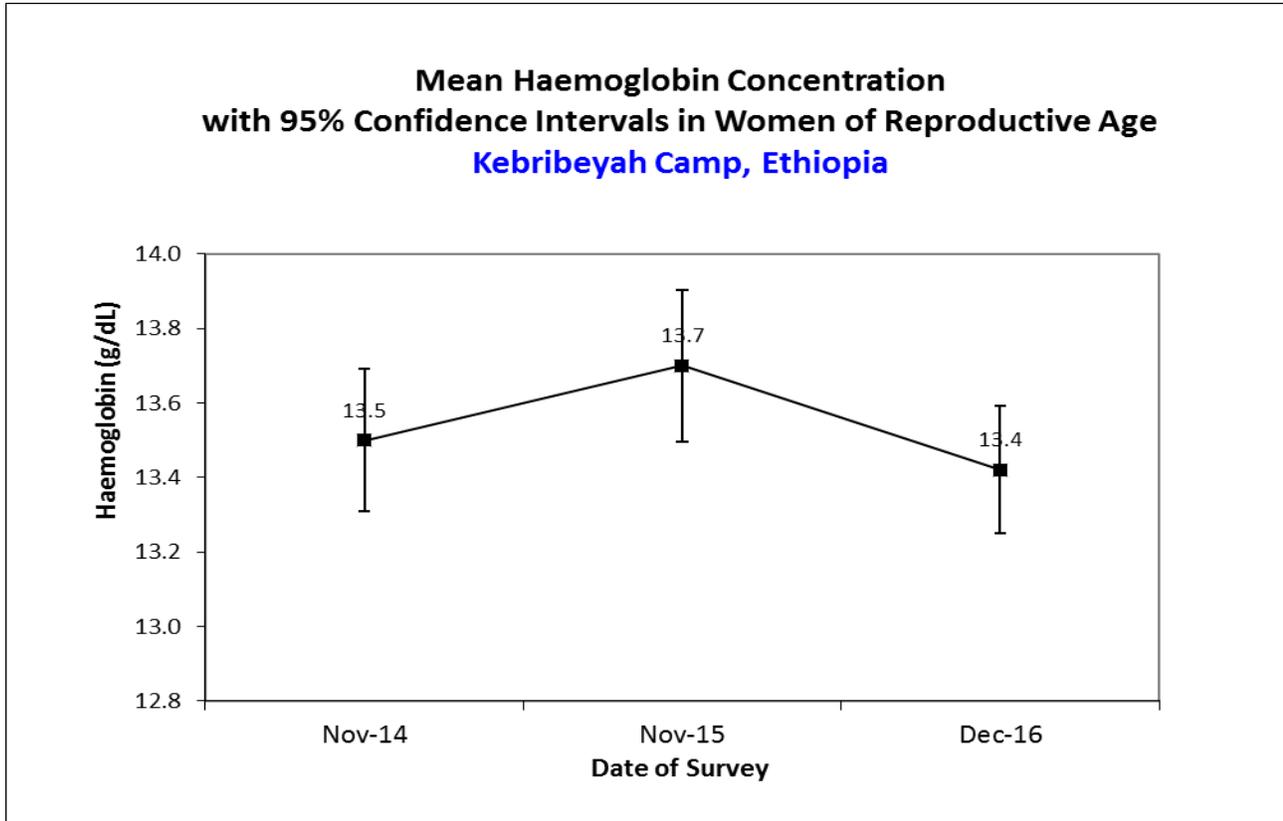
Table 660: ANC enrolment and iron-folic acid coverage among pregnant women

	Number /total	% (95% CI)
Currently enrolled in ANC programme	22/28	78.6% (59.0-91.7%)
Currently receiving iron-folic acid pills	18/28	64.3% (44.1-81.4%)

4.12.   Food security

Table 67: Ration card coverage

	Number/total	% (95% CI)
Proportion of households with a ration card	138/138	100.0%

Table 68: Reported duration of general food ration

Average number of days the food ration lasts (Standard deviation)	Average duration (%) in relation to the theoretical duration of the ration*
16.9 days	56.3%

Table 69: Reported duration of general food ration

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	Number/total	% (95% CI)
Proportion of households reporting that the food ration lasts the entire duration of the cycle	122/138	88.4% (81.9-93.2%)
Proportion of households reporting that the food ration lasted:		
≤75% of the cycle (30 days)	10/138	7.2% (3.5-12.9%)
>75% of the cycle (30 days)	128/138	92.8% (87.1-96.5%)

4.12.1. Negative coping strategies results

Table 70: 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	129/138	93.5% (88.0-97.0%)
Sold any assets (furniture, seed stocks, tools, other NFI, livestock etc.)	5/138	3.6% (1.2-8.3%)
Requested increase remittances or gifts as compared to normal	8/138	5.8% (2.5-11.1%)
Reduced the quantity and/or frequency of meals	73/137	53.3% (44.6-61.9%)
Begged	1/138	0.7% (0.0-4.0%)
Engaged in potentially risky or harmful activities	0/138	0.0%
Proportion of households reporting using none of the coping strategies over the past month	6/137	4.4% (1.6-9.3%)

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

The most important coping strategy that was reported to be used to fill the food gap was borrowing and reducing meal quantity and frequency (table 81%).

4.12.2. Household dietary diversity results
The general food distribution usually lasts more than one day and may be organized by family size, hence the surveyed households will be at different times of the cycle which may have an impact on the HDDS results and this needs to be considered in interpreting the data.

Table 85 Average HDDS

Average HDDS	5.45 (SD 1.82)

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Figure 35: Proportion of households consuming different food groups within last 24 hours
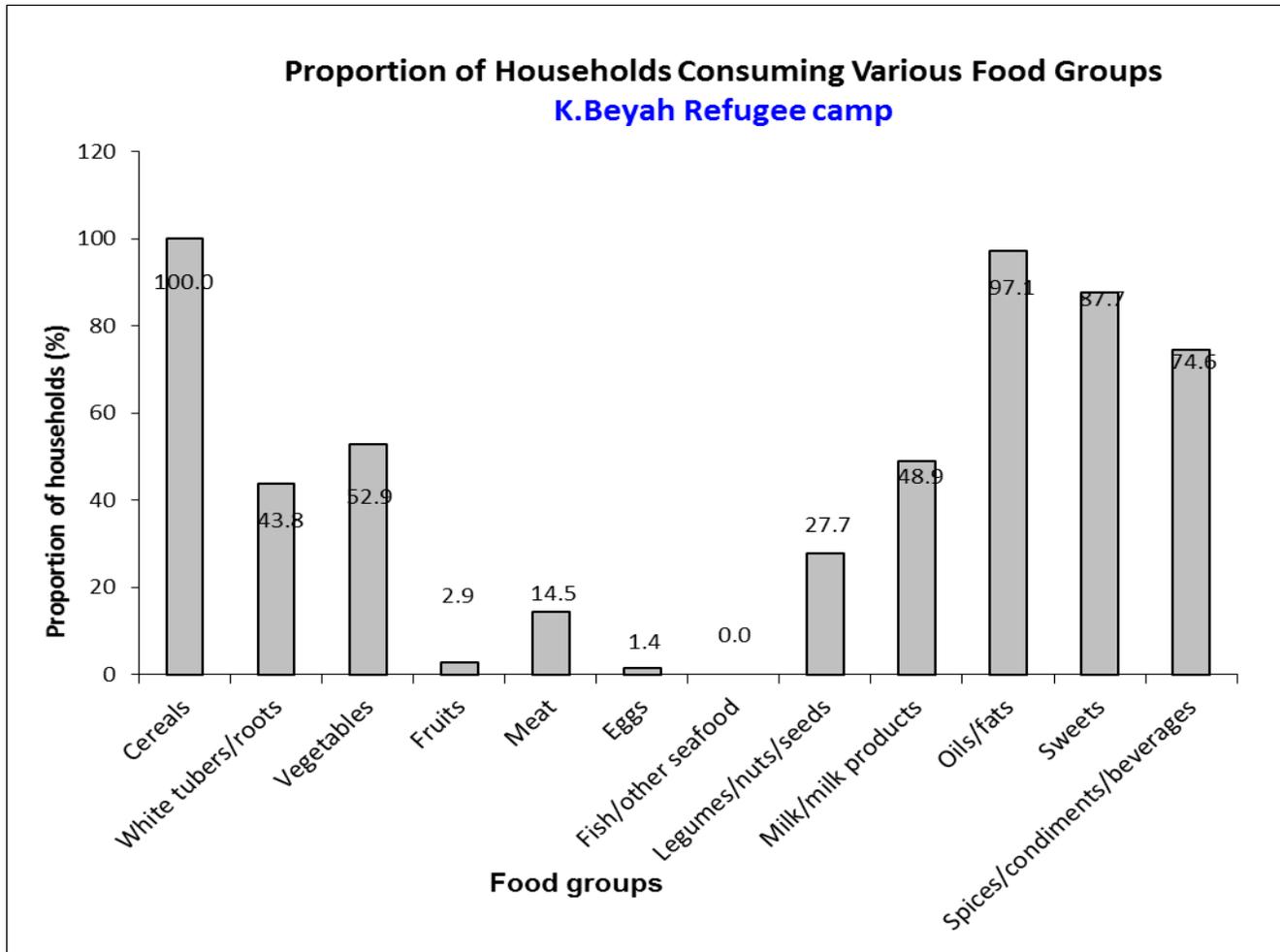
The most food items reported to have been consumed in the last 24 hours were cereal (100%), oils/fats (97.1%), sweet and spices 87.7% and 74.6% respectively. While others food ingredient consumption is low like Fish, eggs, fruit and meat.

Table 71: Consumption of food rich of macro and micronutrients

	Number/total	% (95% CI)
Proportion of households not consuming any vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	42/136	30.9% (23.2-39.4%)
Proportion of households consuming either a plant or animal source of vitamin A	71/136	52.2% (43.5-60.8%)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	20/137	14.6% (9.2-21.6%)

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4.13.   WASH

Table 87: Water Quality

	Number/total	% (95% CI)
Proportion of households using an improved drinking water source	36/139	25.9% (18.8-34.0%)
Proportion of households that use a covered or narrow necked container for storing their drinking water	117/139	84.2% (77.0-89.8%)

84.2% (77.0-89.8%) 95% CI) reported to have covered or narrow necked drinking water storage containers and 25.9% (18.8-34.0%) had improved drinking water source is too low.

Table 72: Amount of litres of water used per person per day

Proportion of households that use:	Number/total	% (95% CI)
≥ 20 lpppd	37/139	26.6% (19.5-34.8%)
15 – <20 lpppd	18/139	12.9% (7.9-19.7%)
<15 lpppd	84/139	60.4% (51.8-68.6%)
An average water usage in lpppd	16.94	

4.13.1. Satisfaction with water supply

Table 73: Satisfaction with water supply

	Number/total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	15/139	10.8% (6.2-17.2%)

About 10.8% (6.2-17.2%) of household responded had been said satisfied with the drinking water supply. 87.8% of Household were bay partial satisfied and 1.4% of HH not satisfied with the drinking water supply (Figure 40). Generally, the drinking water supply was not enough.

Figure 36: Proportion of households that say they are satisfied with the water supply

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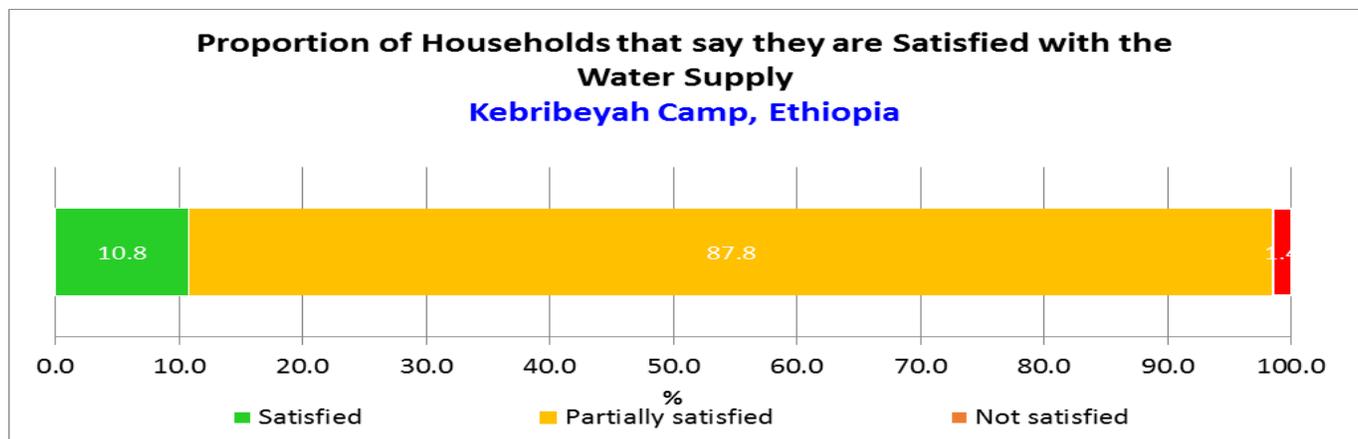
Figure 37: Proportion of household say they are not satisfied with the water supply main reason

Reasons provided for Dissatisfaction of Water Supply
kEBRIBEYAH Camp, Ethiopia
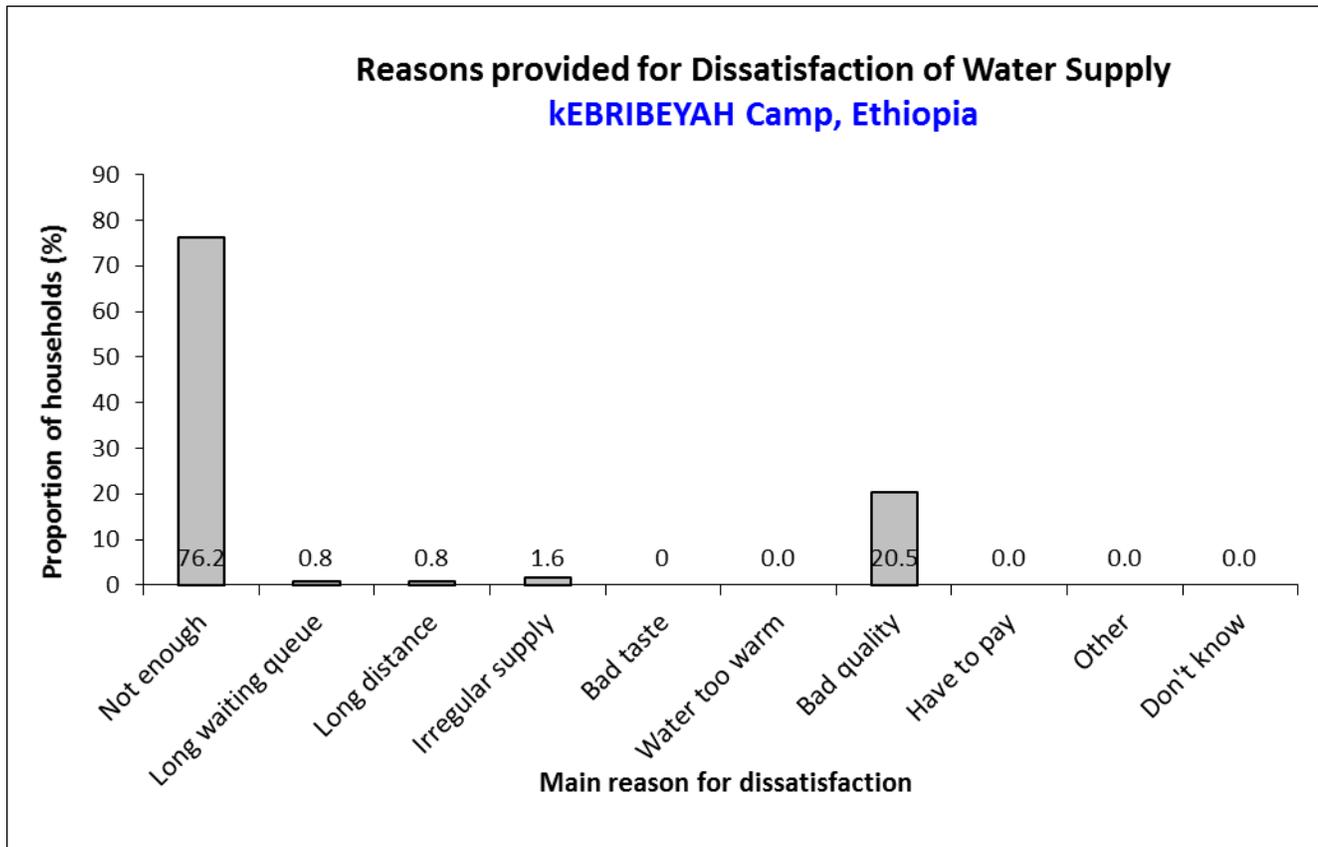
4.13.2. Safe Excreta disposal

Table 74: Safe Excreta disposal

	Number/total	% (95% CI)
Proportion of households that use:		
An improved excreta disposal facility (improved toilet facility, not shared)	91/122	74.6% (65.9-82.0%)
A shared family toilet (improved toilet facility, 2 HH only)	19/122	15.6% (9.6-23.2%)
A communal toilet (improved toilet facility, 3 HH or more)	10/122	8.2% (4.0-14.6%)
An unimproved toilet (unimproved toilet facility or public toilet)	2/122	1.6% (0.2-5.8%)
Proportion of households with children under three years old that dispose of faeces safely.	62/73	84.9% (74.6-92.2%)

Percentages of the beneficiaries that were using improved toilet which are not shared was 74.6% (65.9-82.0, 95% CI) whereas 1.6% (0.2-5.8, 95% CI) were using unimproved toilet facilities (Table 90).

Additional anlaysis showed 84.9% (74.6-92.2, 95% CI) of households with children less than three years of age had been their last stools disposed safely (figure 41).

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Figure 38 Proportion of households with children under the age of 3 years whose (last) stools were disposed of safely

Proportion of Households with Children under the age of 3 years old whose (last) Stools were Disposed of Safely
Kebribeyah Camp, Ethiopia

Left in the open 0.0%
Thrown into garbage 0.0%
Buried 0.0%
Other 0.0%
Used toilet 0.0%
Put into drain 13.3%
Put into toilet 86.7%

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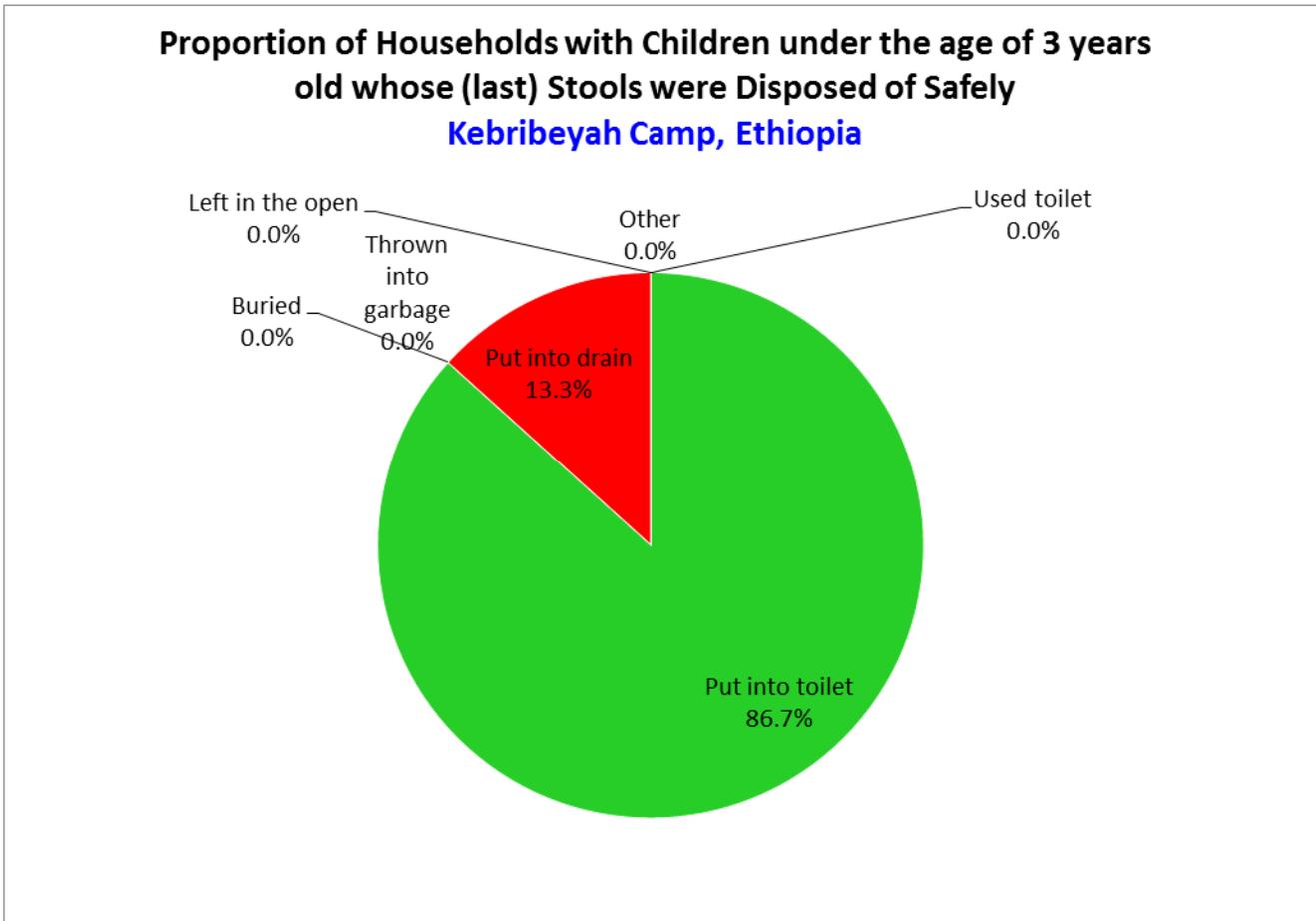
5. SHEDER CAMP

5.1.   Demography

Table 751 Demographic characteristics of the study population in Sheder

Total HHs surveyed	360
Total population surveyed	2159
Total U5 surveyed	267
Average HH size	6.0
% of U5	12.4%

Table 76 Distribution of age and sex of sample, Sheder

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:girl
6-17	21	39.6	32	60.4	53	21.0	0.7
18-29	26	44.8	32	55.2	58	23.0	0.8
30-41	29	47.5	32	52.5	61	24.2	0.9
42-53	27	52.9	24	47.1	51	20.2	1.1
54-59	13	44.8	16	55.2	29	11.5	0.8
Total	116	46.0	136	54.0	252	100.0	0.9

The overall sex ratio was 0.9 to 1 which means equal distribution, it show normal trends and that there was no selection bias

Figure 39: Population age and sex pyramid
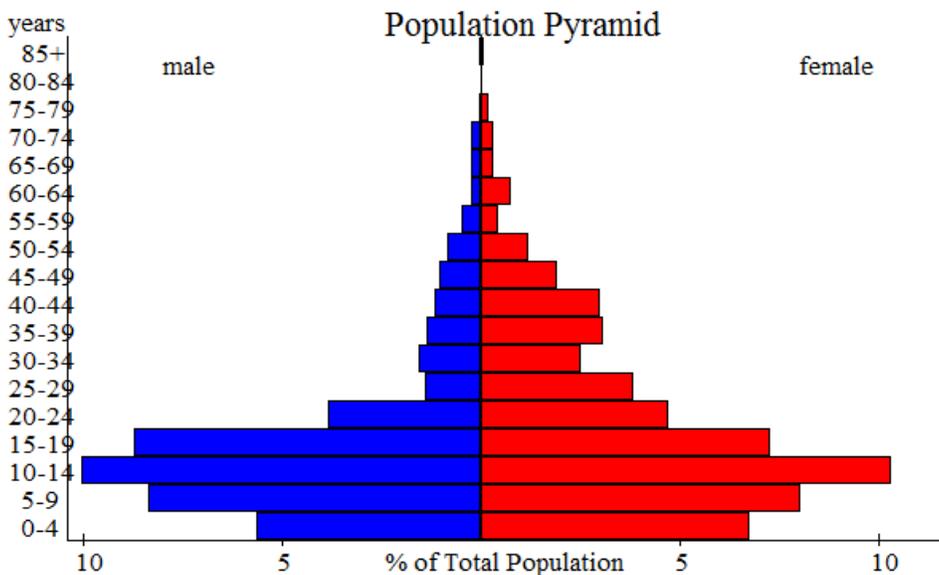
5.2.   Anthropometric results (based on WHO Growth Standards 2006%)

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Anthropometric results were analysed and presented based on WHO Growth Standards and excluding z-scores from Observed mean (SMART flags%): WHZ -3 to 3; HAZ -3 to 3; WAZ -3 to 3

Table 77: Prevalence of acute malnutrition based on WHZ (and/or oedema) and by sex

	95% C.I.		
	All n = 248	Boys n = 114	Girls n = 134
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(18) 7.3 % (4.6 - 11.2%)	(8) 7.0 % (3.6 - 13.2%)	(10) 7.5 % (4.1 - 13.2%)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(15) 6.0 % (3.7 - 9.7%)	(8) 7.0 % (3.6 - 13.2%)	(7) 5.2 % (2.6 - 10.4%)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(3) 1.2 % (0.4 - 3.5%)	(0) 0.0 % (0.0 - 3.3%)	(3) 2.2 % (0.8 - 6.4%)

The prevalence of oedema was 0.0 %
There was no significant difference seen between Boys and Girls on the prevalence of global acute malnutrition.

Figure 40: Prevalence of GAM and SAM based on WHZ in 6-59m from 2014-2017
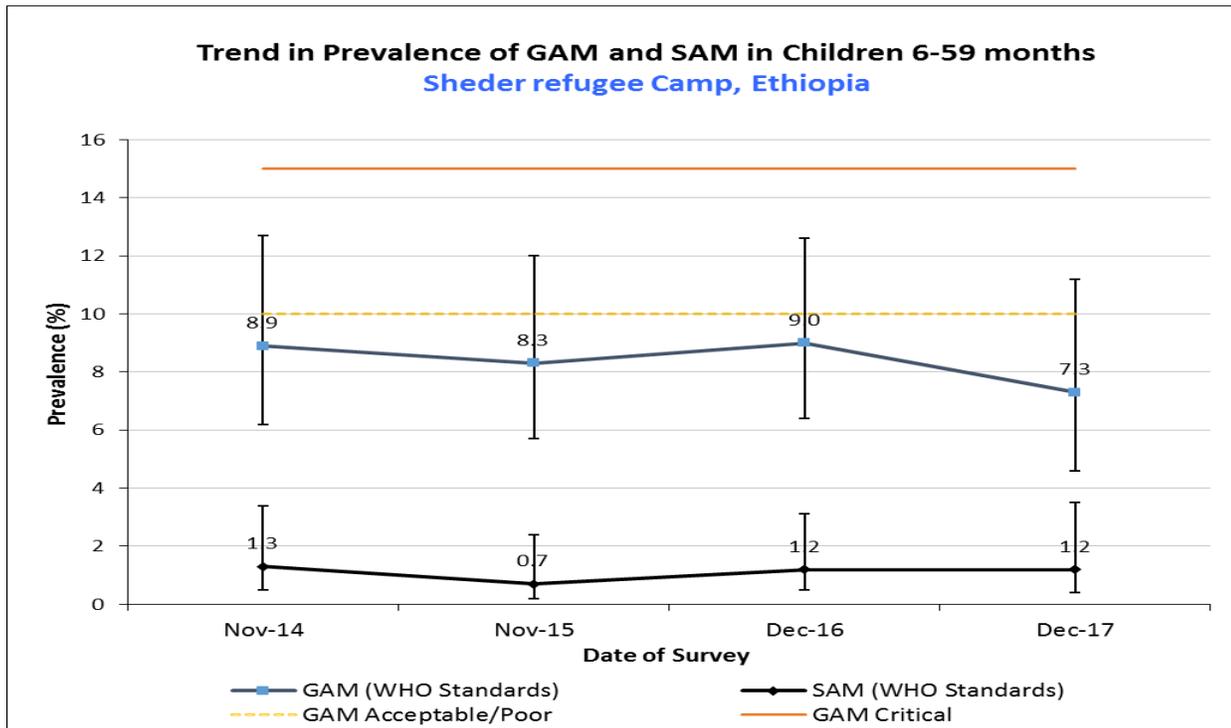
The prevalence of global acute malnutrition trend in 2017 shows remain same level over the year.

Jijiga Camps Standardized Expanded Nutrition Survey Final Report, 2017.

Table 78: Prevalence of acute malnutrition by age, based on WHZ 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	53	2	3.8	4	7.5	47	88.7	0	0.0
18-29	57	0	0.0	1	1.8	56	98.2	0	0.0
30-41	60	0	0.0	3	5.0	57	95.0	0	0.0
42-53	50	0	0.0	3	6.0	47	94.0	0	0.0
54-59	28	1	3.6	4	14.3	23	82.1	0	0.0
Total	248	3	1.2	15	6.0	230	92.7	0	0.0

Figure 41: Trends in the prevalence of wasting by age in children 6-59 months

Trend in the Prevalence of Wasting by Age in Children 6-59 months
Sheder Refugee Camp, Ethiopia
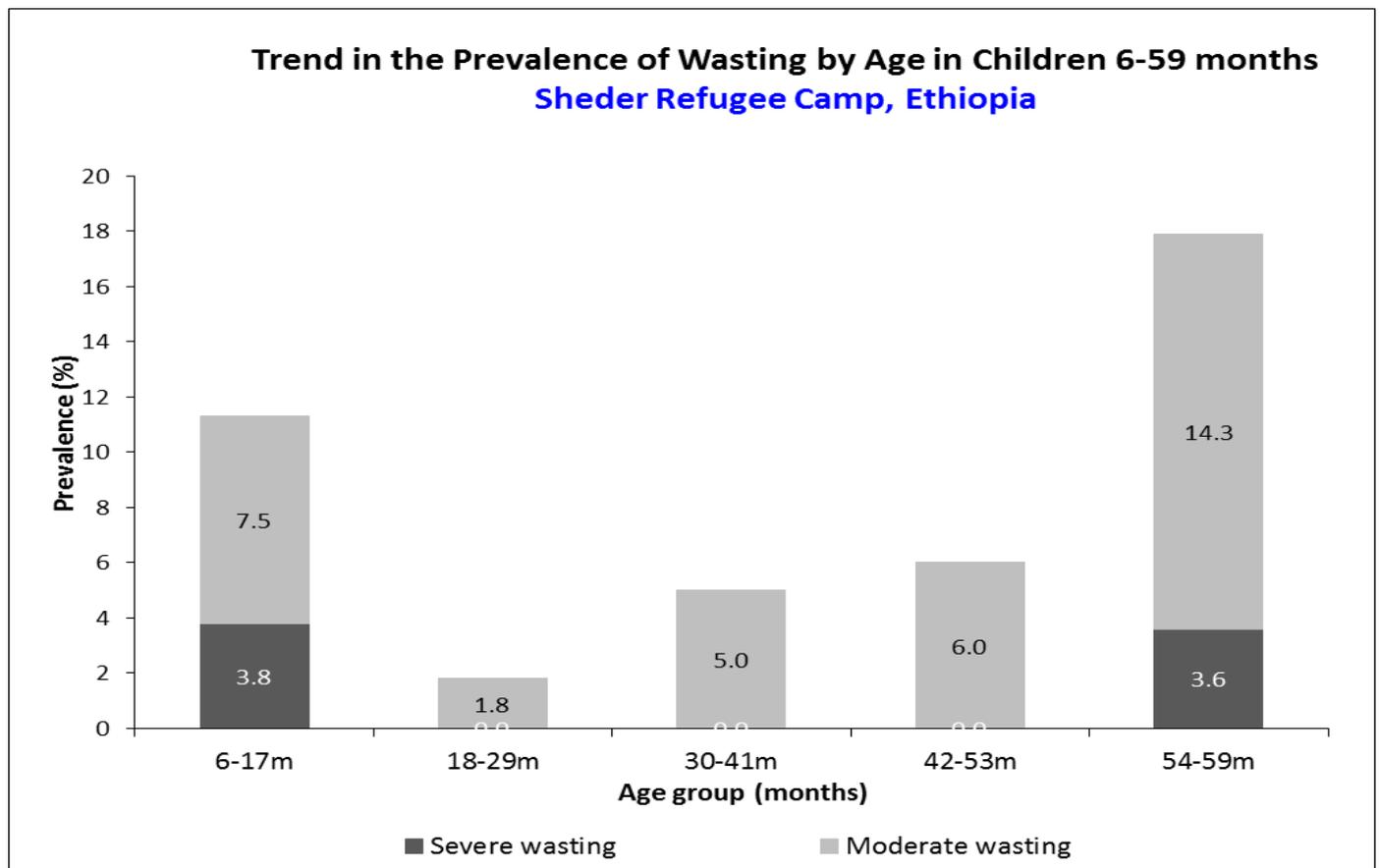
The age 6-17 and the age 54 to 59 mostly affected among the others.

Table 79: Distribution of SAM 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. 4 (1.6 %)	Not severely malnourished No. 248 (98.4 %)

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Figure 42: Distribution of weight-for-height z-scores (based on WHO Growth Standards
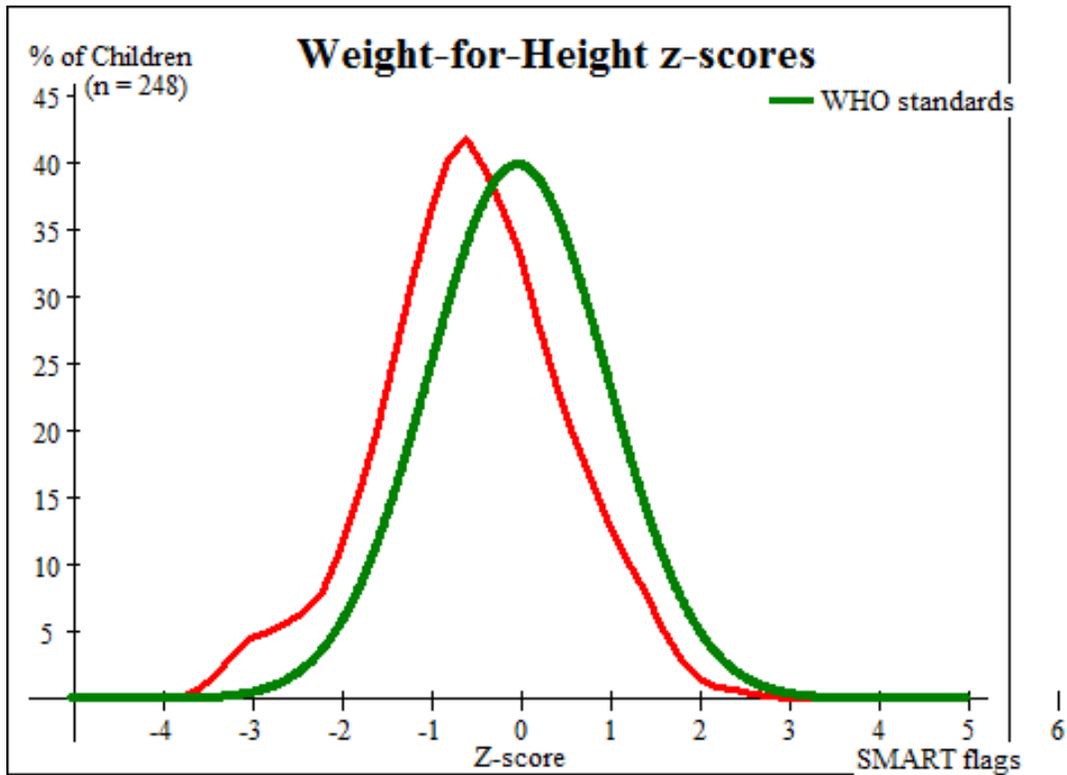
Figure 48 is a comparison of the surveyed and reference weight-for-height z-score (WHZ) distribution.

The survey distribution (in red) followed a normal distribution and was shifted to the left of the WHO reference, showing an average lower z-scores, and therefore high malnutrition.

Table 80: Prevalence of acute malnutrition based on MUAC (and/or oedema) and by sex

Indicator	95% C.I.		
	All n = 252	Boys n = 116	Girls n = 136
Prevalence of global malnutrition (< 125 mm and/or oedema)	(8) 3.2 % (1.6 - 6.1%)	(2) 1.7 % (0.5 - 6.1%)	(6) 4.4 % (2.0 - 9.3%)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(6) 2.4 % (1.1 - 5.1%)	(1) 0.9 % (0.2 - 4.7%)	(5) 3.7 % (1.6 - 8.3%)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(2) 0.8 % (0.2 - 2.8%)	(1) 0.9 % (0.2 - 4.7%)	(1) 0.7 % (0.1 - 4.0%)

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Table 81: Prevalence of acute malnutrition by age, based on MUAC 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	53	1	1.9	5	9.4	47	88.7	0	0.0
18-29	58	1	1.7	1	1.7	56	96.6	0	0.0
30-41	61	0	0.0	0	0.0	61	100.0	0	0.0
42-53	51	0	0.0	0	0.0	51	100.0	0	0.0
54-59	29	0	0.0	0	0.0	29	100.0	0	0.0
Total	252	2	0.8	6	2.4	244	96.8	0	0.0

Table 82: Prevalence of underweight based on weight-for-age z-scores by sex

	95% C.I.		
	All n = 249	Boys n = 114	Girls n = 135
Prevalence of underweight (<-2 z-score)	(32) 12.9 % (9.3 - 17.6%)	(17) 14.9 % (9.5 - 22.6%)	(15) 11.1 % (6.8 - 17.5%)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(27) 10.8 % (7.6 - 15.3%)	(13) 11.4 % (6.8 - 18.5%)	(14) 10.4 % (6.3 - 16.7%)
Prevalence of severe underweight (<-3 z-score)	(5) 2.0 % (0.9 - 4.6%)	(4) 3.5 % (1.4 - 8.7%)	(1) 0.7 % (0.1 - 4.1%)

Table 83: Prevalence of underweight by age, based on weight-for-age z-scores

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	53	3	5.7	6	11.3	44	83.0	53	3
18-29	56	0	0.0	2	3.6	54	96.4	56	0
30-41	61	2	3.3	8	13.1	51	83.6	61	2
42-53	50	0	0.0	5	10.0	45	90.0	50	0
54-59	29	0	0.0	6	20.7	23	79.3	29	0
Total	249	5	2.0	27	10.8	217	87.1	249	5

Table 84: Prevalence of stunting based on height-for-age z-scores and by sex

	95% C.I.		
	All n = 243	Boys n = 110	Girls n = 133
Prevalence of stunting (<-2 z-score)	(53) 21.8 % (17.1 - 27.4%)	(29) 26.4 % (19.0 - 35.3%)	(24) 18.0 % (12.4 - 25.4%)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(41) 16.9 % (12.7 - 22.1%)	(22) 20.0 % (13.6 - 28.4%)	(19) 14.3 % (9.3 - 21.2%)
Prevalence of severe stunting (<-3 z-score)	(12) 4.9 % (2.8 - 8.4%)	(7) 6.4 % (3.1 - 12.6%)	(5) 3.8 % (1.6 - 8.5%)

Table 85: Prevalence of stunting by age based on height-for-age z-scores

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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	51	1	2.0	11	21.6	39	76.5
18-29	56	5	8.9	8	14.3	43	76.8
30-41	59	5	8.5	10	16.9	44	74.6
42-53	49	0	0.0	7	14.3	42	85.7
54-59	28	1	3.6	5	17.9	22	78.6
Total	243	12	4.9	41	16.9	190	78.2

Figure 43 Trends in the prevalence of stunting by age in children 6-59 months
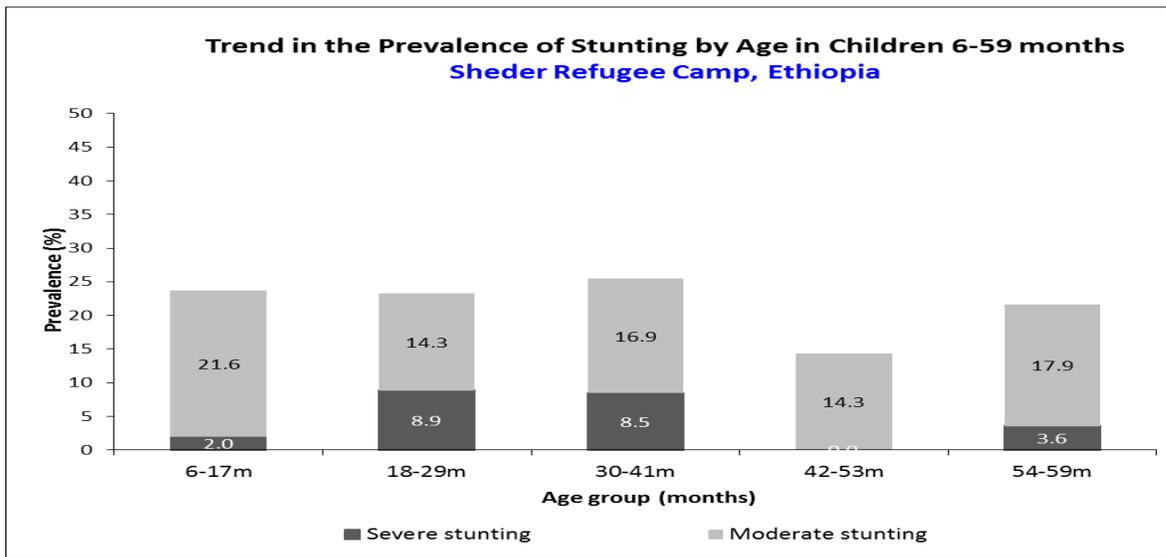
Figure 44: Distribution of height-for-age z-scores (based on WHO Growth Standards)

Jijiga Camps Standardized Expanded Nutrition Survey Final Report, 2017.
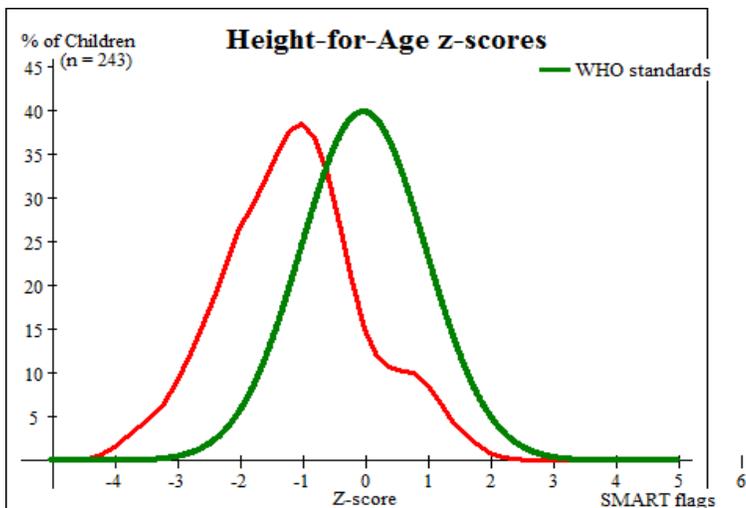
Table 86: Mean z-scores, Design Effects and excluded subjects

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	248	-0.54±1.01	1.00	0	4
Weight-for-Age	249	-0.97±0.95	1.00	0	3
Height-for-Age	243	-1.14±1.10	1.00	0	9

* contains for WHZ and WAZ the children with oedema.

5.3. Mortality results

Table 87: Mortality rates

Crude Mortality Rate (CDR) total No. of death /10,000/day	0.1 (0.03-0.36, 95 % CI)
Under 5 Mortality (U5DR) total No. of death /10,000/day	0.4 (0.07-2.24, 95 % CI)

Crud death rate (CDR) and under five death rate (U5DR) was below the emergency threshold according to the SPHARE guideline.

5.4. Feeding programme coverage results

Table 88: Estimated programme coverage for acutely malnourished children

	Number/total	% (95% CI)
Supplementary feeding programme coverage (WHZ >=- 3 and WHZ<-2 OR MUAC>=115 & MUAC < 125 mm)	0/20	0.0%
Therapeutic feeding programme coverage (WHZ< - 3 OR MUAC< 115mm)	0/6	0.0%
Blanket Supplementary (WHZ>=- 2 OR MUAC>= 125%)	64/78	82.1% (71.7-89.8%)

Estimated programme coverage for supplementary, therapeutic and blanket feeding programme was lower than expected standards for refugee settings (> 90%)

5.5. Measles vaccination coverage results

Table 89: Measles vaccination coverage for children aged 9-59 months (n= 236)

	Measles (with card) n=131	Measles (with card or confirmation from mother) n=228
YES	55.5% (48.9-62.0%, 95% CI)	96.6% (93.4-98.5%, 95 CI)

Total coverage of measles vaccination is in line with UNHCR standard which is above 95%)

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5.6.   Vitamin A supplementation coverage results

Table 90: Vitamin A sup in children aged 6-59 months within past 6 months (n= 252)

	Vitamin A capsule (with card) n=63	Vitamin A capsule (with card or confirmation from mother) n= 240
YES	25.0% (19.8-30.8%, 95% CI)	95.2% (91.8-97.5%, 95% CI)

Total coverage of Vitamin A supplementation with in the past 6 month's period the survey was in line with the UNHCR standards of above 90%.

Figure 45: Measles vaccination and Vit A supplementation in 6-59 months (2014-2017)
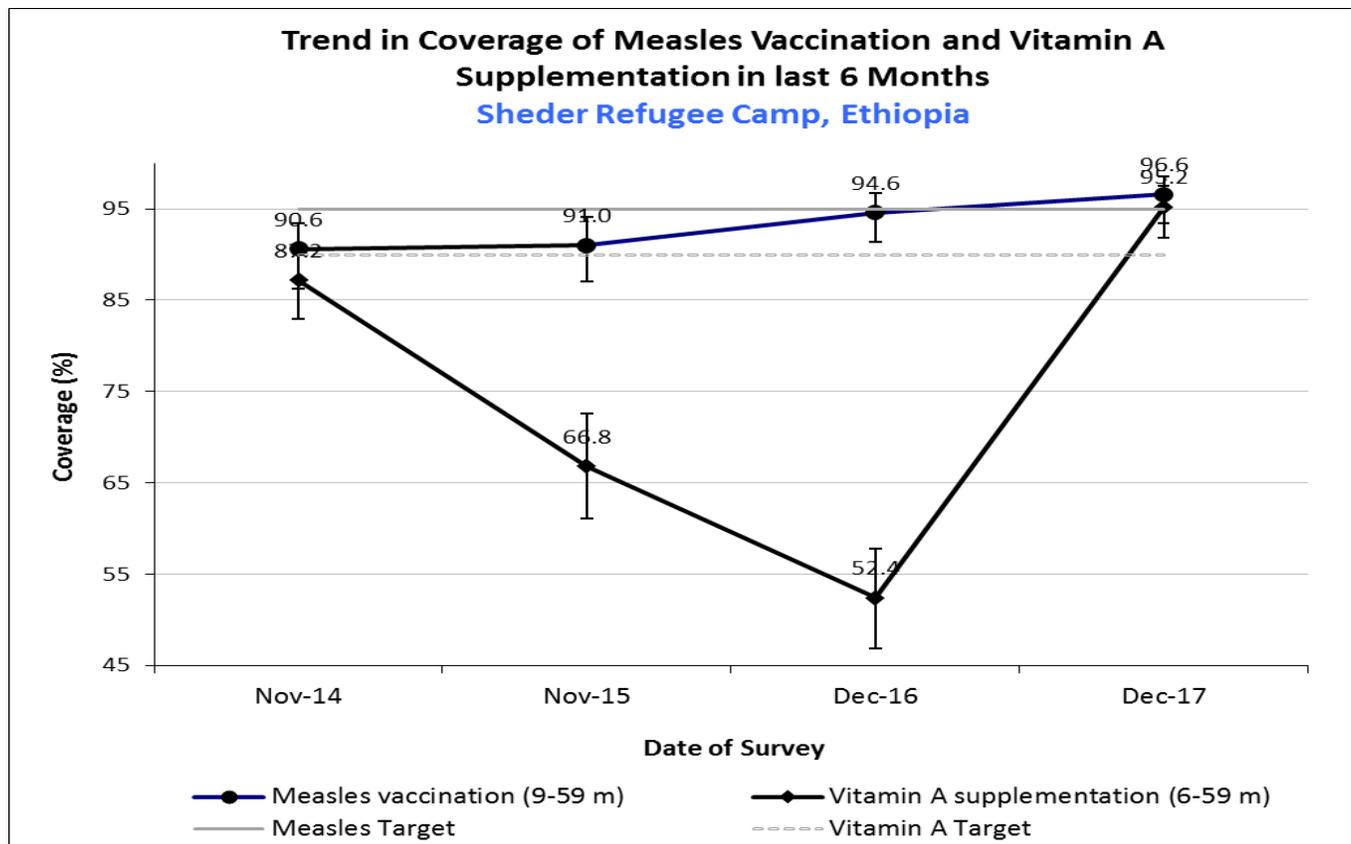
5.7.   Diarrhoea Result

Table 91: Period prevalence of diarrhoea

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	18/251	7.2% (4.3-11.1%)

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5.8. Anaemia results

Table 92: Prevalence of anaemia and haemoglobin concentration in 6-59 months of age

	95% CI		
	6-59 months n = 252	6-23 months n=80	24-59 months n=172
Total Anaemia (Hb<11.0 g/dL)	(n=60) 23.8% (18.7-29.6%)	(n=25) 31.3% (21.3-42.6%)	(n=35) 20.3% (14.6-27.1%)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(n=30) 11.9% (8.2-16.6%)	(n=11) 13.8% (7.1-23.3%)	(n=19) 11.0% (6.8-16.7%)
Moderate Anaemia (7.0-9.9 g/dL)	(n=30) 11.9% (8.2-16.6%)	(n=14) 17.5% (9.9-27.6%)	(n=16) 9.3% (5.4-14.7%)
Severe Anaemia (<7.0 g/dL)	(n=0) 0.0%	(n=0) 0.0%	(n=0) 0.0%
Mean Hb (g/dL) (SD) [range]	12.0g/dL & SD 1.52 [7.3 -16.0]	11.46gdL/ & SD 1.35 [8.2-13.9]	12.2gdL & SD 1.53 [7.3- 16.0]

Table 93 Prevalence of Moderate and Severe Anaemia in Children 6-59 Months Of Age And By Age Group

	6-59 months n = 252	6-23 months n=80	24-59 months n=172
Moderate and Severe Anaemia (Hb<10.0 g/dL)	(n=30) 11.9% (8.2-16.6%)	(n=14) 17.5% (9.9-27.6%)	(n=16) 9.3% (5.4-14.7%)

Figure 46: Anaemia categories in children 6-59 months from 2014-2017
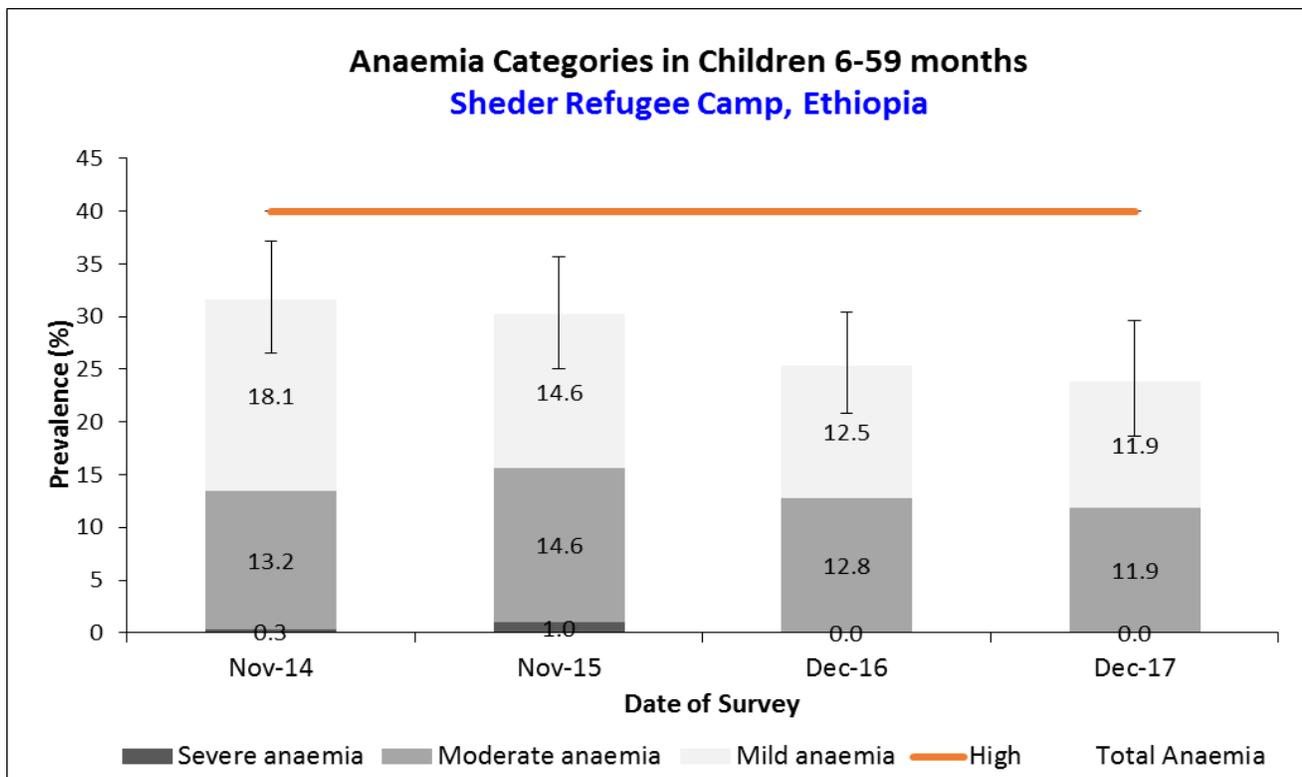
Figure 47: Mean Haemoglobin concentration in children 6-59 months from 2014-2017

Jijiga Camps Standardized Expanded Nutrition Survey Final Report, 2017.
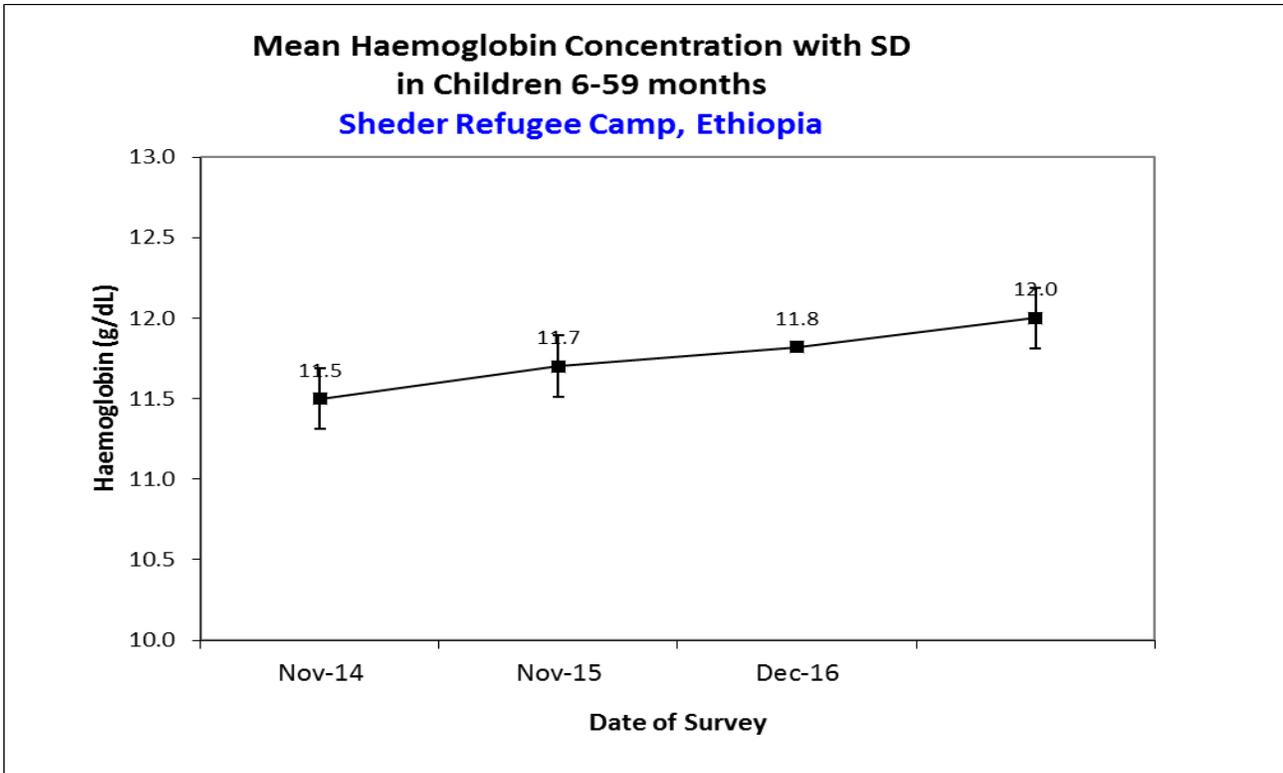
Figure 482: Compares of Anaemia (Hb<11g/dl) and Anaemia Hb <10g/dl) in children 6-59 months from 2014-2017

Jijiga Camps Standardized Expanded Nutrition Survey Final Report, 2017.
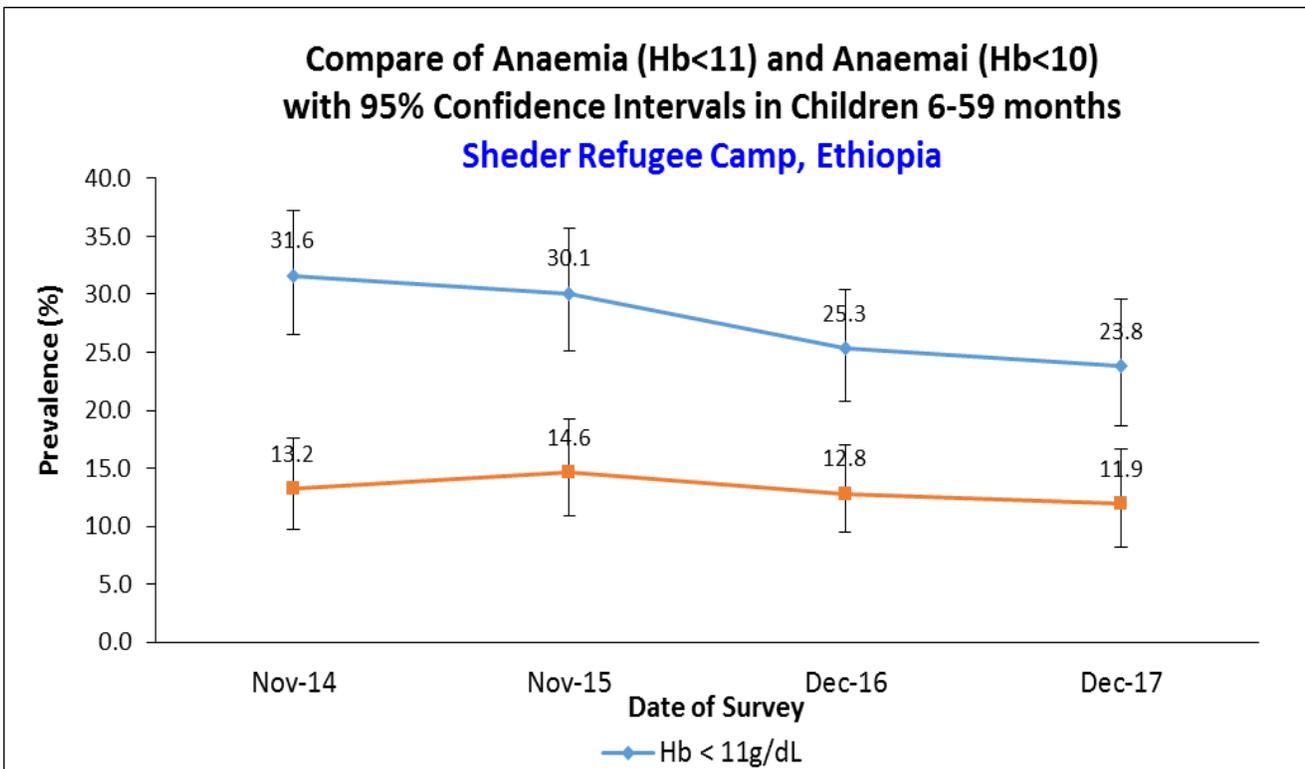
5.9. Children 0-23 months

Table 94: Prevalence of Infant and Young Child Feeding Practices Indicators

Indicator	Age range	No./ total	Prevalence (%) & 95% CI
Timely initiation of breastfeeding	0-23 months	83/100	83.0% (74.2-89.8%)
Exclusive breastfeeding under 6 months	0-5 months	12/20	60.0% (36.1-80.9%)
Continued breastfeeding at 1 year	12-15 months	14/19	73.7% (48.8-90.9%)
Continued breastfeeding at 2 years	20-23 months	6/16	37.5% (15.2-64.6%)
Introduction of solid, semi-solid or soft foods	6-8 months	9/16	56.3% (29.9-80.2%)
Consumption of iron-rich or iron-fortified foods	6-23 months	64/78	82.1% (71.7-89.8%)
Bottle feeding	0-23 months	22/99	22.2% (14.5-31.7%)

Figure 49 Nutrition survey results (IYCF indicators) from 2014-2017

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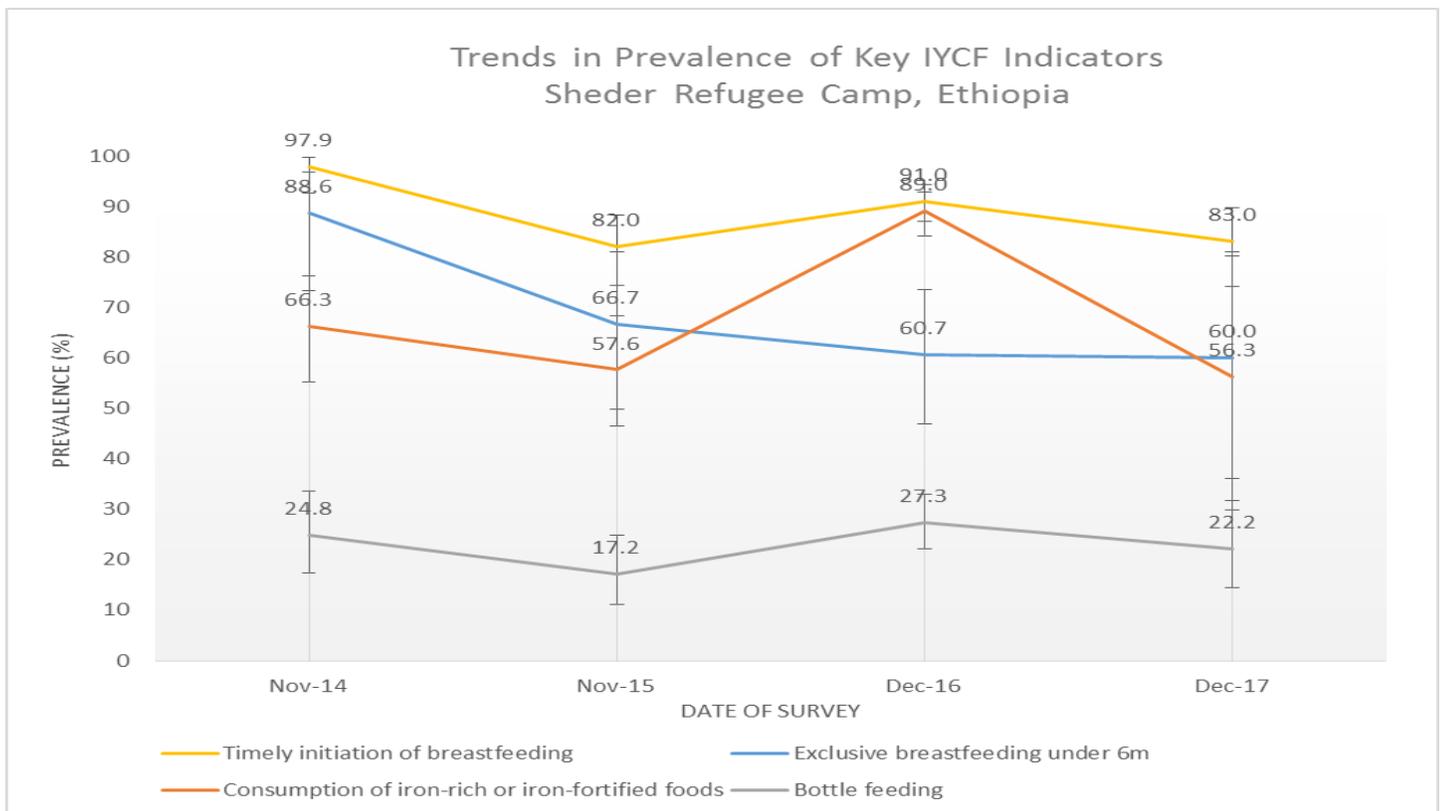
5.10.   Prevalence of intake

Infant formula

Table 109: 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)	31/100	31.0% (22.1-41.0)

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

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB+	34/80	42.5% (31.5-54.1%)

Table 111: CSB ++ intake in children aged 6-23 months

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB++	47/80	58.8% (47.2-69.6%)

5.11.   Women 15-49 years

Table 112: Women physiological status and age

Physiological status	Number/total	% of sample
Non-pregnant	177/193	91.7% (86.9 – 95.2%)
Pregnant	16/193	8.3% (4.8-13.1%)
Mean age (range)	29.9 year [15.0 -49.0]	

Table 95: Prevalence of anaemia and Hb concentration in women (15-49 years)

Anaemia in non-pregnant women of reproductive age (15-49 years)	All	95% CI
Total Anaemia (<12.0 g/dL)	27/177	15.3% (10.3-21.4%)
Mild Anaemia (11.0-11.9 g/dL)	15/177	8.5% (4.8-13.6%)
Moderate Anaemia (8.0-10.9 g/dL)	11/177	6.2% (3.1-10.8%)
Severe Anaemia (<8.0 g/dL)	1/177	0.6% (0.0-3.1%)
Mean Hb (g/dL)	13.65g/dl & 1.697 [7.0-17.1]	

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Figure 50: Anaemia categories in women of reproductive age from 2014-2017

Anaemia Categories in Women 15-49 years (non-pregnant)
Sheder Refugee Camp, Ethiopia

Date of Survey	Severe anaemia	Moderate anaemia	Mild anaemia
Nov-14	0.5	6.4	5.4
Nov-15	1.0	5.4	7.8
Dec-16	0.4	3.1	7.5
Dec-17	0.6	6.2	8.5

Legend: Severe anaemia, Moderate anaemia, Mild anaemia, High, Total Anaemia
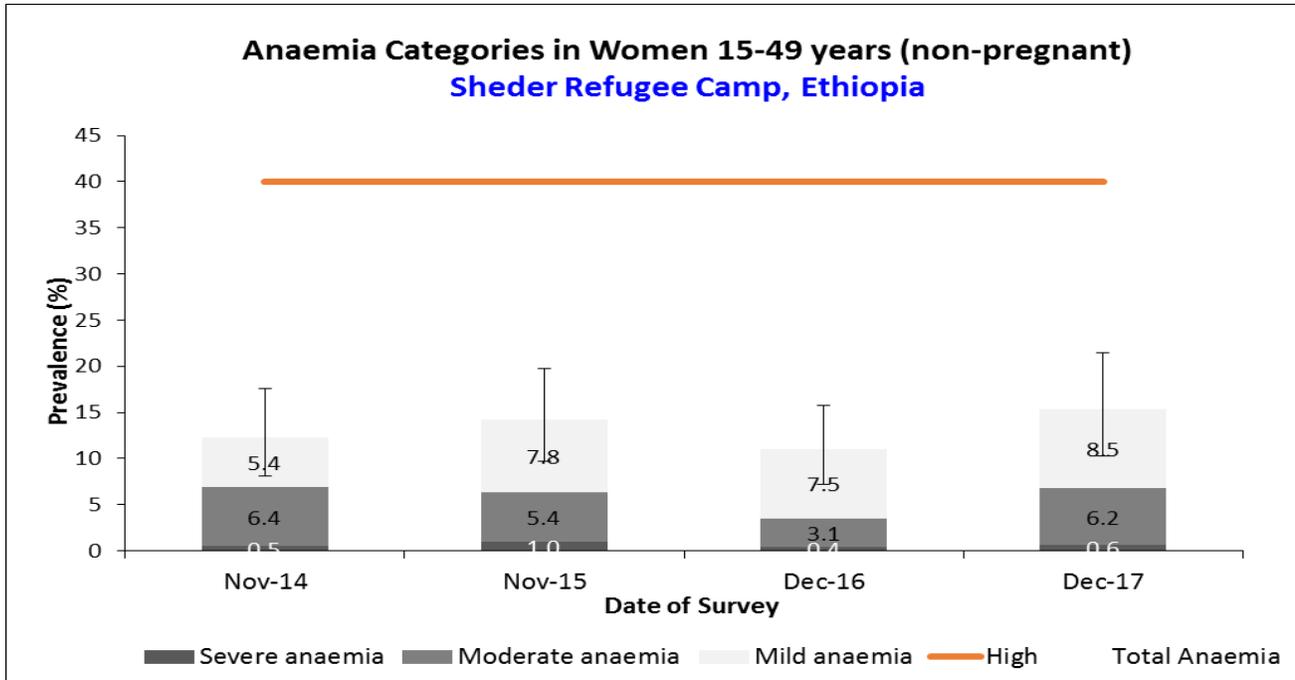
Figure 51: Mean Hb concentration in women of reproductive age from 2014-2017

Mean Haemoglobin Concentration with Mean in Women of Reproductive Age
Sheder Refugee Camp, Ethiopia

Date of Survey	Haemoglobin (g/dL)
Nov-14	13.9
Nov-15	13.6
Dec-16	13.7
Dec-17	13.7

Jijiga Camps Standardized Expanded Nutrition Survey Final Report, 2017.
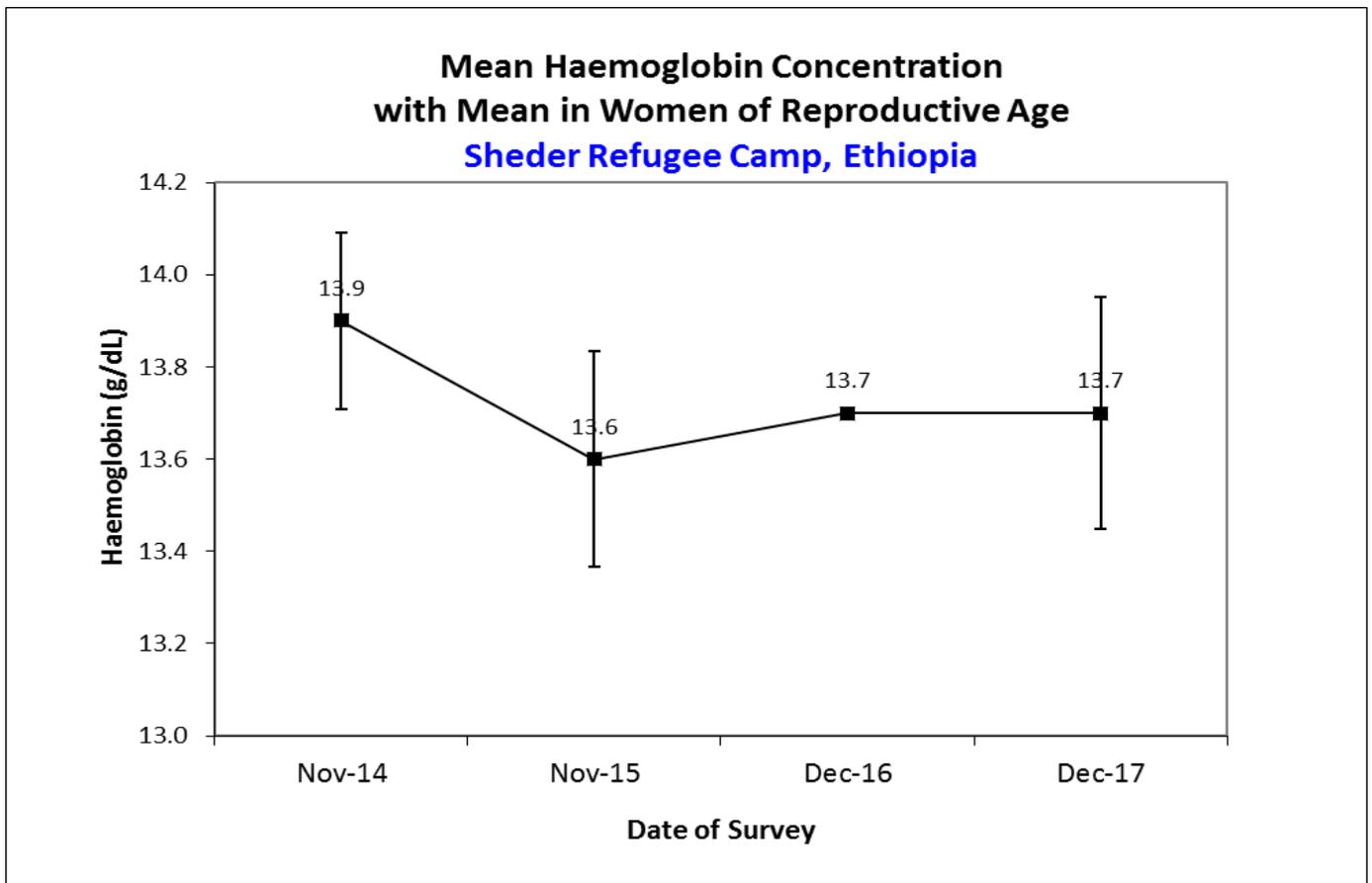
Table 114: ANC enrolment and iron-folic acid coverage among pregnant women

	Number /total	% (95% CI)
Currently enrolled in ANC programme	15/16	93.8% (69.8-99.8%)
Currently receiving iron-folic acid pills	12/16	75.0% (47.6-92.7%)

Three quarters of pregnant women enrolled in ANC had received iron-folic pills

5.12.   Food Security

Table 115: Ration card coverage

	Number/total	% (95% CI)
Proportion of households with a ration card	161/180	89.4% (84.0-93.5%)

A total of 19 households had no ration cards; seven households saying were not given ration card but registered and the rest (12 HH) were not registered but eligible.

Table 116: 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*
14.5 days out of 30 days	48.3%

Table 117: 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	113/161	70.2%	(62.5-77.1%)
Proportion of households reporting that the food ration lasted:			
≤75% of the cycle (30 days)	43/161	26.7%	(20.1-32.2%)
>75% of the cycle (30 days)	118/161	73.3%	(65.8-79.9%)

5.12.1. Negative coping strategies results

Table 118: 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	125/180	69.4% (62.2-76.1%)
Sold any assets (furniture, seed stocks, tools, other NFI, livestock etc.)	14/180	7.8% (4.3-12.7%)
Requested increase remittances or gifts as compared to normal	14/180	7.8% (4.3-12.7%)
Reduced the quantity and/or frequency of meals	115/180	63.9% (56.4-70.9%)

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Begged	35/180	19.4% (13.9-26.0%)
Engaged in potentially risky or harmful activities (list activities)	7/180	3.9% (1.6-7.8%)
Proportion of households reporting using none of the coping strategies over the past month	25/180	13.9% (9.2-19.8%)

5.12.2. Household dietary diversity results

The general food distribution usually lasts more than one day and is organized by family size, hence the surveyed households were at different times of the cycle which may have an impact on the HDDS results and this needs to be considered in interpreting the data.

Table 96 Average HDDS

Average HDDS	5.64 (SD =1.4)

Figure 52 Proportion of households consuming different food groups within last 24 hours
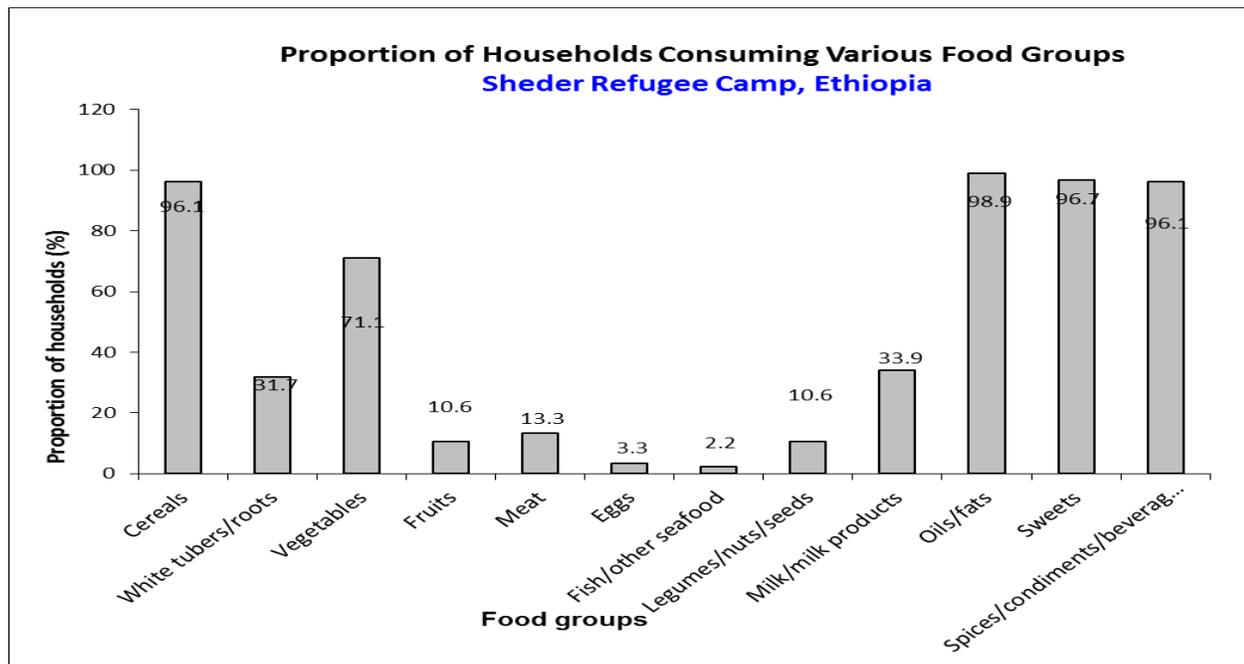
Table 97: Consumption of Macro and micronutrient rich foods by households

	Number/total	% (95% CI)
Proportion of households not consuming any vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	35/180	19.4% (13.9-26.0%)
Proportion of households consuming either a plant or animal source of vitamin A	86/180	47.8% (40.3-55.3%)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	28/180	15.6% (10.6-21.7%)

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5.13. WASH

Table 98: Water Quality

	Number/total	% (95% CI)
Proportion of households using an improved drinking water source	178/178	100.0%
Proportion of households that use a covered or narrow necked container for storing their drinking water	166/178	93.3% (88.5-96.5%)

Table 99: Amount of litres of water used per person per day

Proportion of households that use:	Number/total	% (95% CI)
≥ 20 lpppd	58/178	32.6% (25.8-40.0%)
15 – <20 lpppd	23/178	12.9% (8.4-18.8%)
<15 lpppd	97/178	54.5% (46.9-62.0%)
Average water usage in lpppd	16.7	

5.13.1. Satisfaction with water supply

Table 100: Satisfaction with water supply

	Number/total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	128/178	71.9% (64.7-78.4%)

Figure 53: Proportion of households that say they are satisfied with the water supply

Jijiga Camps Standardized Expanded Nutrition Survey Final Report, 2017.
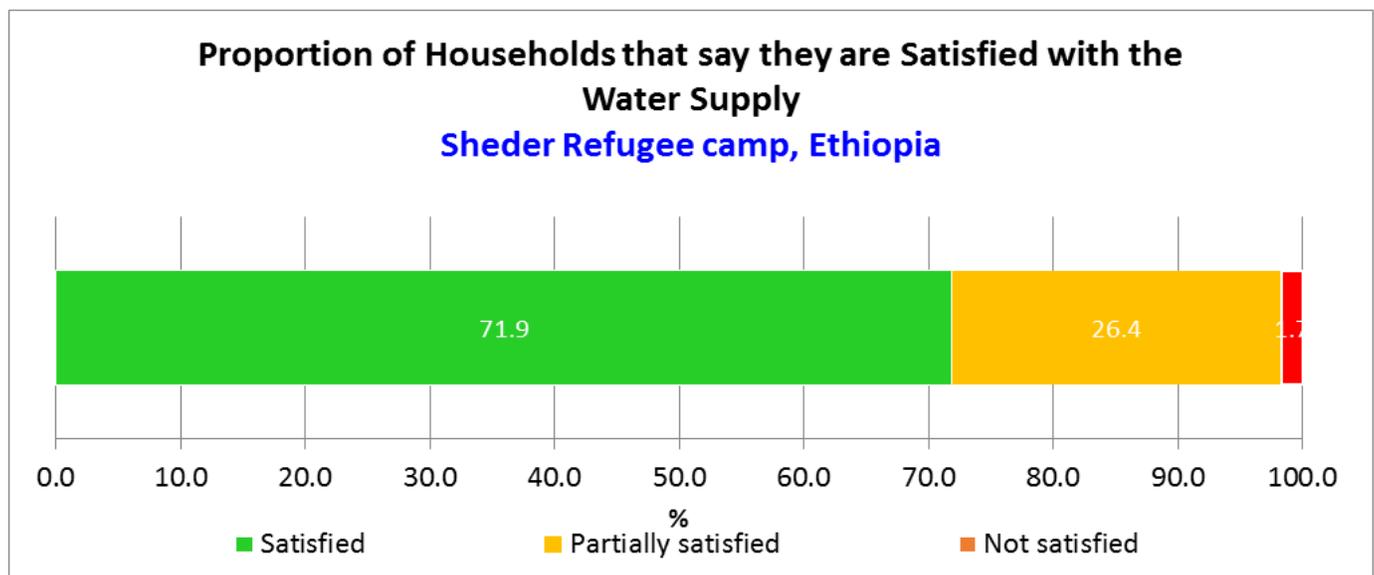
nFigure 57: Proportion of households that say they are dissatisfied with the water supply

Reasons provided for Dissatisfaction of Water Supply
Sheder Refugee Camp, Ethiopia
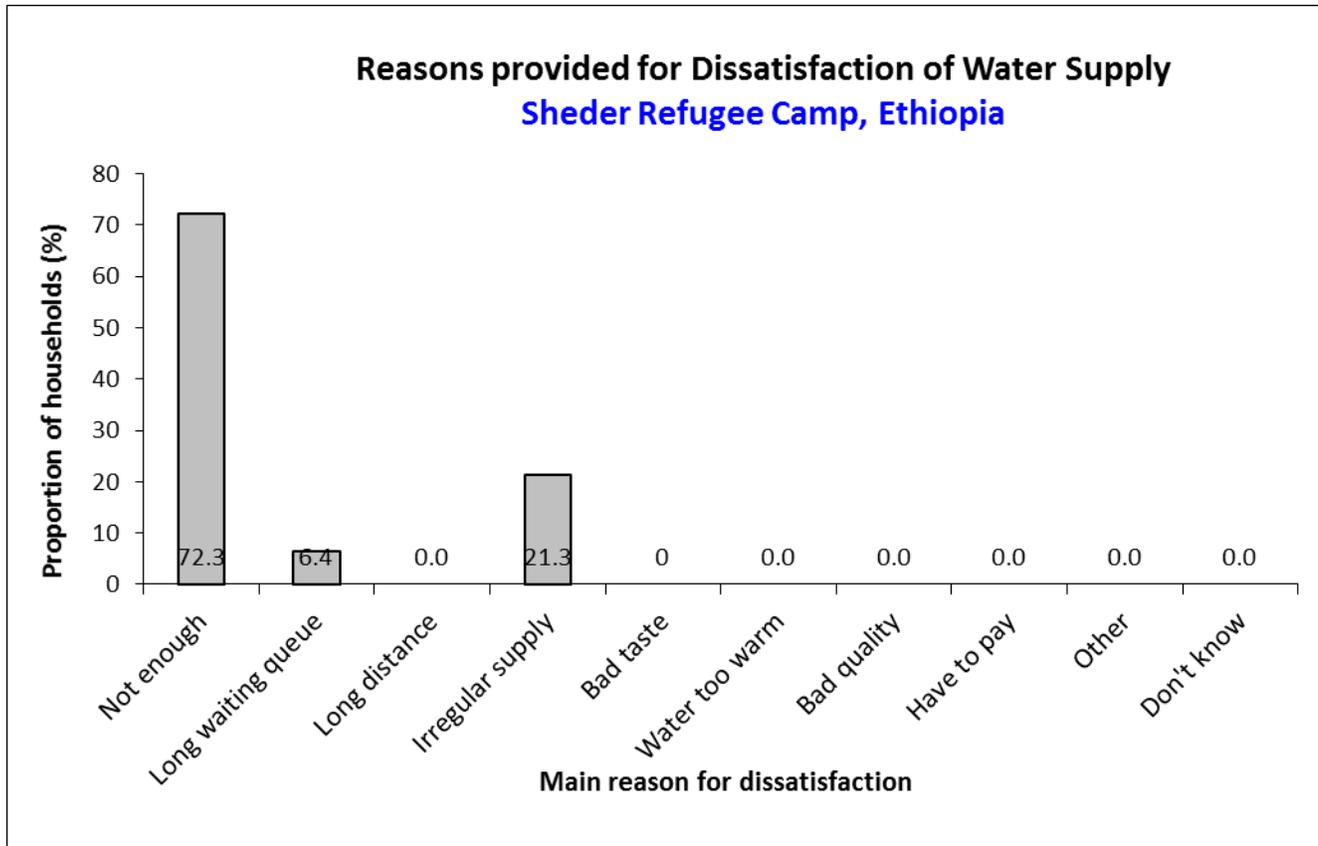
5.13.2. Safe Excreta disposal

Table 101: Safe Excreta disposal

	Number/total	% (95% CI)
Proportion of households that use:		
Proportion of households using an improved excreta disposal facility (improved toilet facility, not shared)	113/178	63.5% (56.0-70.6%)
Proportion of households using a shared family toilet (improved toilet facility, shared with only 2 HH)	6/178	3.4% (1.2-7.2%)
Proportion of households using a communal toilet (improved toilet facility, shared with 3HH and more)	58/178	32.6% (25.8-40.0%)
Proportion of households using an unimproved toilet	1/178	0.6% (0.0-3.1%)
The proportion of households with children under three years old that dispose of faeces safely.	72/73	98.6% (92.6-100.0%)

Percentages of the beneficiaries are using improved toilets which are not shared was 63.5% (56.0-70.6%, 95% CI) whereas about 0.6% (0.0-3.1%) had unimproved toilet facilities.

Jijiga Camps Standardized Expanded Nutrition Survey Final Report, 2017.

Figure 54: Proportion of households with children < 3 years whose (last) stools were disposed of safely

Proportion of Households with Children under the age of 3 years old whose (last) Stools were Disposed of Safely
Sheder Refugee Camp/, Ethiopia

Thrown into garbage
1.4%

Put into toilet
98.6%

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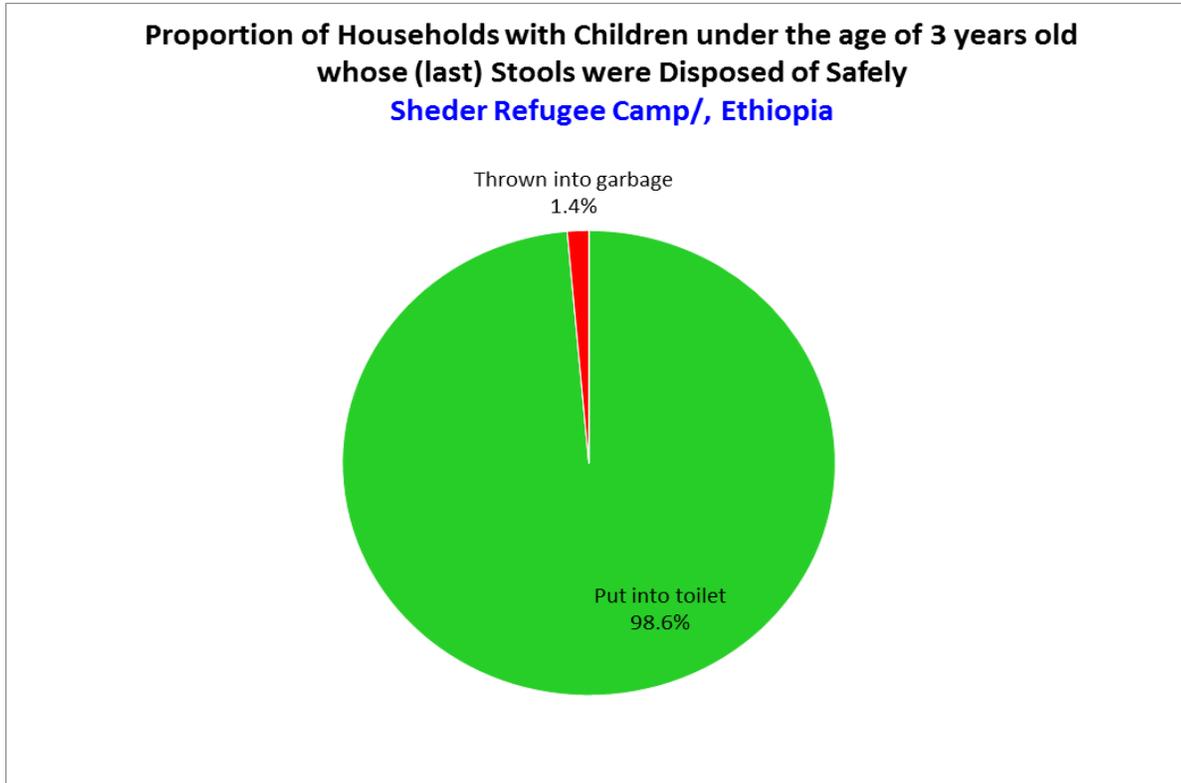
6. DISCUSSION

The overall nutritional situation in Jijiga refugee camps (Awbarre, Kebribeyah and Sheder) shows improvement from a weighted prevalence of global acute malnutrition (GAM) of 7.6% in 2016 to 5.7% in 2017. However, Kebribeyah refugee camp specifically prevalence of global acute malnutrition shows significant improvement (P <0.05) from 8.0 (5.7-11.3%, 95% CI) in 2016 to 4.4% (2.6-7.4%, 95% CI) in 2017.

Chronic malnutrition among children aged 6-59 months ranges between 21.8% - 24.8% in the camps classified as "POOR" level as per WHO classification of public health significance. This remains above the acceptable level (<20%) for normal populations. Efforts need to be increased in ensuring that children in the first 1000 days of their lives receive adequate nourishment both of micro and macro nutrient nature for optimal growth and development.

Infant and Young child feeding indicators remained relatively similar from 2016 to 2017 in Jijiga refugee camps with no significant change. Prevalence of timely initiation of breastfeeding ranges from 76.9% to 92.9% while exclusive breast feeding was relatively lower from 60.0% to 83.3% in Jijiga camps. Reasons for low initiation considering the availability of 24 hours facility delivery services and IYCF messaging in the camps needs to be established. Introduction of solid or semi-solid foods among children 6-8 months was also low in three camp the coverage ranges from 47.4% -61.5%. Despite the small sample of children aged 6-8months, introduction of food/ optimal feeding of children at this age remains a challenge for most caregivers and may be associated with acute malnutrition. Over all IYCF situation needs an attention to improve the infant and young feeding practices with integration of MCH clinic services.

Prevalence of Anaemia among children aged 6-59 months ranges between 23.0% - 31.7% in Jijiga refugee camps. While it is below the critical level (>40%) it is above the acceptable level (<20%) in all camps. On the contrary, among women of reproductive age group (15-49 years) prevalence of anaemia remained acceptable (<20%) in all Jijiga camps. In Awbarre it was established at 20.4% (14.2%-27.8%), Kebribeyah; 15.8% (9.8-23.6%) and Sheder; 15.3% (10.3-21.4%). This may imply that families have access to iron rich foods however optimal complementary feeding to ensure that children's needs to meet their rapid growth may be a challenge and needs to be addressed.

Proportion of households with a ration card was 100% in Kebribeyah 95.2% (90.4-98.1%) and Sheder 89.4% (84.0-93.5%). In Sheder camp, 19 of HHs in the selected sample did not have ration cards which means do not access in-kind food and cash, due to seven (7) households, they responded not given ration card once they registered and the rest (12 HH) were not registered but they are eligible.
The mean household dietary diversity score (HDDS) was found to be at 5.45 to 6.34 (out of 12 food groups). The main purpose of cash intervention is to give dignity, better purchasing power and choices to buy preferable food items on the market.

Proportion of households reporting using none of the negative coping strategies over the past months of the survey conducted was below 15% which means most of the refugee population using a negative coping strategies to meet all their food needs. This may be partially attributed to reduced food assistance and limited access to livelihoods.

Access to portable water, its safe storage and consumption are key areas for focus to prevent diarrhoearal diseases that are immediate causes of acute malnutrition. The Proportion of HHs using an improved drinking water source was 100% in Awbarre and Sheder refugee camps which indicates that all refugees had access to quality drinking / or potable water. However, in Kebribeyah refugee camp access was low at 25.9% (18.8-34.0%) which means that, many households were other water sources "BEYKA" (a place where to collecting water from the raining /roofing water and river) whose safety is not ascertained. The amount of water was good in Awbarre refugee camp (22.1 LPPPD). While in Kebribeyah 16.9 and in Sheder 16.7 LPPPD. Therefore, more needs to be done in Kebribeyah and Sheder to ensure provision of the the minimum UNHCR standard of portable water (> 20 LPPPD).

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The mortality indicators remained acceptable according to the sphere standards; crude mortality rates are <1 death per 10,000 per day and under five mortality rate <2 deaths per 10,000 per day.

Nutrition program enrolment coverage at a point of time need improvement. Enrolment in the blanket supplementary feeding program for children aged 6-23 months was <90% in all camps; 67.1% in Awbarre, 58.4% in Kebribeya and 82.1% in Sheder. This implies that access to the freely provided preventive super cereal plus which is an appropriate food for complementary feeding is unfortunately low. In addition a number of children identified during the survey with either severe or moderate acute malnutrition were not admitted in the appropriate prorgrames. Reasons such as timely referral of children for BSFP program at 6 months and second stage screening following use of MUAC need to be identified and addressed.

Measles vaccination coverage and Vitamin A supplementation in the previous 6 months prior to the survey meet UNHCR standards of >95% and >90% respectively. This is commendable as it fosters immunity among the population reducing the risk of morbidity and mortality.

7. CONCLUSION

Nutrition situation has slightly improved in the three camps and is within the UNHCR acceptable level for encamped refugees (<10%). Strengthening of therapeutic programs, improving complementary feeding and implementation of the infant and young child framework with a focus of nutrition sensitive sectors such WASH, livelihoods and food security may go a long way in reducing acute malnutrition to levels that are similar to that of a normal population (<5%).

8. RECOMMENDATIONS

Short Term

Improve the nutrition programme outreach (active case finding at the community and in facilities) to improve programme coverage and ensure children are enrolled in appropriate feeding program. Enrolment coverage for SAM and MAM cases was very low in both OTP and TFSP in all camps. Some of the children were not enrolled in the right feeding program, for instance SAM children enrolled in MAM program while MAM children were in SAM or BSFP.

Improve Infant and Young Child Feeding programme through training of health care providers in field and ensuing an implementation of the UNHCR IYCF framework.

Improve access to water provision to meet the minimum standards of 20LPPPD in Kebribeyah and Sheder camps.

Long term

Conduct formal training on CMAM and IYCF to the community nutrition and health workers to maximize the coverage and to ensure program quality. Most of the nutrition outreach workers are not trained on the use of anthropometric measurements. UNHCR and ARRA needs to organize on job trainings.

WFP in collaboration with UNHCR and ARRA should advocate to increase food ration to the minimum recommended level, strengthen food basket monitoring and post distribution monitoring to ensure right amount of food is received and properly utilized.

9. ANNEX- Result Tables for NCHS growth reference 1977
9.1. AWBARRE

Table 3.2: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex

	95% C.I.		
	All n = 258	Boys n = 127	Girls n = 131
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(17) 6.6 % (4.2 - 10.3%)	(9) 7.1 % (3.8 - 12.9%)	(8) 6.1 % (3.1 - 11.6%)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(17) 6.6 % (4.2 - 10.3	(9) 7.1 % (3.8 - 12.9%)	(8) 6.1 % (3.1 - 11.6%)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(0) 0.0 % (0.0 - 1.5	(0) 0.0 % (0.0 - 2.9%)	(0) 0.0 % (0.0 - 2.8%)

The prevalence of oedema is 0.0 %

Table 3.3: 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	61	0	0.0	4	6.6	57	93.4	0	0.0
18-29	55	0	0.0	4	7.3	51	92.7	0	0.0
30-41	65	0	0.0	6	9.2	59	90.8	0	0.0
42-53	54	0	0.0	2	3.7	52	96.3	0	0.0
54-59	23	0	0.0	1	4.3	22	95.7	0	0.0
Total	258	0	0.0	17	6.6	241	93.4	0	0.0

Table 3.4: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex

	95% C.I.		
	All n = 264	Boys n = 129	Girls n = 135
Prevalence of global malnutrition (< 125 mm and/or oedema)	(7) 2.7 % (1.3 - 5.4%)	(3) 2.3 % (0.8 - 6.6%)	(4) 3.0 % (1.2 - 7.4%)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(5) 1.9 % (0.8 - 4.4%)	(2) 1.6 % (0.4 - 5.5%)	(3) 2.2 % (0.8 - 6.3%)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(2) 0.8 % (0.2 - 2.7%)	(1) 0.8 % (0.1 - 4.3%)	(1) 0.7 % (0.1 - 4.15%)

Table 3.5: Prevalence of acute malnutrition based on the percentage of the median and/or oedema

	n = 258
Prevalence of global acute malnutrition (<80% and/or oedema)	(8) 3.1 % (1.6 - 6.0 95% C.I.)
Prevalence of moderate acute malnutrition (<80% and >= 70%, no oedema)	(8) 3.1 % (1.6 - 6.0 95% C.I.)
Prevalence of severe acute malnutrition (<70% and/or oedema)	(0) 0.0 % (0.0 - 1.5 95% C.I.)

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Table 3.7: Prevalence of underweight based on weight-for-age z-scores by sex

	95% C.I.		
	All n = 260	Boys n = 128	Girls n = 132
Prevalence of underweight (<-2 z-score)	(35) 13.5 % (9.8 - 18.1%)	(23) 18.0 % (12.3 - 25.5%)	(12) 9.1 % (5.3 - 15.2%)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(31) 11.9 % (8.5 - 16.4%)	(19) 14.8 % (9.7 - 22.0%)	(12) 9.1 % (5.3 - 15.2%)
Prevalence of severe underweight (<-3 z-score)	(4) 1.5 % (0.6 - 3.9%)	(4) 3.1 % (1.2 - 7.8%)	(0) 0.0 % (0.0 - 2.8%)

Table 3.8: 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	62	3	4.8	6	9.7	53	85.5	0	0.0
18-29	56	0	0.0	9	16.1	47	83.9	0	0.0
30-41	65	1	1.5	5	7.7	59	90.8	0	0.0
42-53	54	0	0.0	8	14.8	46	85.2	0	0.0
54-59	23	0	0.0	3	13.0	20	87.0	0	0.0
Total	260	4	1.5	31	11.9	225	86.5	0	0.0

Table 3.9: Prevalence of stunting based on height-for-age z-scores and by sex

	95% C.I.		
	All n = 254	Boys n = 123	Girls n = 131
Prevalence of stunting (<-2 z-score)	(40) 15.7 % (11.8 - 20.7%)	(22) 17.9 % (12.1 - 25.6%)	(18) 13.7 % (8.9 - 20.7%)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(34) 13.4 % (9.7 - 18.1%)	(19) 15.4 % (10.1 - 22.9%)	(15) 11.5 % (7.1 - 18.0%)
Prevalence of severe stunting (<-3 z-score)	(6) 2.4 % (1.1 - 5.1%)	(3) 2.4 % (0.8 - 6.9%)	(3) 2.3 % (0.8 - 6.5%)

Table 3.10: 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	60	1	1.7	7	11.7	52	86.7
18-29	52	2	3.8	9	17.3	41	78.8
30-41	65	1	1.5	8	12.3	56	86.2
42-53	54	1	1.9	4	7.4	49	90.7
54-59	23	1	4.3	6	26.1	16	69.6
Total	254	6	2.4	34	13.4	214	84.3

Table 3.13: 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	258	-0.63±0.89	1.00	2	4
Weight-for-Age	260	-1.10±0.91	1.00	2	2
Height-for-Age	254	-0.85±1.20	1.00	2	8

* contains for WHZ and WAZ the children with edema.

Jijiga Camps Standardized Expanded Nutrition Survey Final Report, 2017.

9.1.1. Plausibility check for: AWBARRE_2017

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

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Flagged data (% of out of range subjects)	Incl	%	0-2.5 0	>2.5-5.0 5	>5.0-7.5 10	>7.5 20	0 (1.1 %)
Overall Sex ratio (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<=0.001 10	0 (p=0.712)
Age ratio(6-29 vs 30-59) (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<=0.001 10	0 (p=0.971)
Dig pref score - weight	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	2 (10)
Dig pref score - height	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	2 (12)
Dig pref score - MUAC	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	2 (12)
Standard Dev WHZ .	Excl	SD	<1.1 and	<1.15 and	<1.20 and	>=1.20 or	
.	Excl	SD	>0.9 0	>0.85 5	>0.80 10	<=0.80 20	0 (1.04)
Skewness WHZ	Excl	#	<±0.2 0	<±0.4 1	<±0.6 3	>=±0.6 5	0 (-0.01)
Kurtosis WHZ	Excl	#	<±0.2 0	<±0.4 1	<±0.6 3	>=±0.6 5	0 (-0.01)
Poisson dist WHZ-2	Excl	p	>0.05 0	>0.01 1	>0.001 3	<=0.001 5	0 (p=)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	6 %

The overall score of this survey is 6 %, this is excellent.

There were no duplicate entries detected.

Jijiga Camps Standardized Expanded Nutrition Survey Final Report, 2017.

9.2.   KEBRIBEYAH

Result Tables for NCHS growth reference 1977
Table 3.2: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex

	95% C.I.		
	All n = 294	Boys n = 157	Girls n = 137
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(12) 4.1 % (2.4 - 7.0%)	(8) 5.1 % (2.6 - 9.7	(4) 2.9 % (1.1 - 7.3%)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(9) 3.1 % (1.6 - 5.7 %)	(6) 3.8 % (1.8 - 8.1	(3) 2.2 % (0.7 - 6.2%)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(3) 1.0 % (0.3 - 3.0%)	(2) 1.3 % (0.4 - 4.5	(1) 0.7 % (0.1 - 4.0%)

The prevalence of oedema is 0.0 %

Table 3.3: 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	76	0	0.0	3	3.9	73	96.1	0	0.0
18-29	67	3	4.5	3	4.5	61	91.0	0	0.0
30-41	79	0	0.0	2	2.5	77	97.5	0	0.0
42-53	50	0	0.0	0	0.0	50	100.0	0	0.0
54-59	22	0	0.0	1	4.5	21	95.5	0	0.0
Total	294	3	1.0	9	3.1	282	95.9	0	0.0

Table 3.4: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex

	95% C.I.		
	All n = 305	Boys n = 163	Girls n = 142
Prevalence of global malnutrition (< 125 mm and/or oedema)	(13) 4.3 % (2.5 - 7.2%)	(3) 1.8 % (0.6 - 5.3%)	(10) 7.0 % (3.9 - 12.5%)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(13) 4.3 % (2.5 - 7.2%)	(3) 1.8 % (0.6 - 5.3%)	(10) 7.0 % (3.9 - 12.5%)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(0) 0.0 % (0.0 - 1.2%)	(0) 0.0 % (0.0 - 2.3%)	(0) 0.0 % (0.0 - 2.6%)

Table 3.5: Prevalence of acute malnutrition based on the percentage of the median and/or oedema

	n = 294
Prevalence of global acute malnutrition (<80% and/or oedema)	(7) 2.4 % (1.2 - 4.8 95% C.I.)
Prevalence of moderate acute malnutrition (<80% and >= 70%, no oedema)	(7) 2.4 % (1.2 - 4.8 95% C.I.)
Prevalence of severe acute malnutrition (<70% and/or oedema)	(0) 0.0 % (0.0 - 1.3 95% C.I.)

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Table 3.6: Prevalence of malnutrition by age, based on weight-for-height percentage of the median and oedema

Age (mo)	Total no.	Severe wasting (<70% median)		Moderate wasting (>=70% & <80% median)		Normal (> =80% median)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	76	0	0.0	1	1.3	75	98.7	0	0.0
18-29	67	0	0.0	5	7.5	62	92.5	0	0.0
30-41	79	0	0.0	1	1.3	78	98.7	0	0.0
42-53	50	0	0.0	0	0.0	50	100.0	0	0.0
54-59	22	0	0.0	0	0.0	22	100.0	0	0.0
Total	294	0	0.0	7	2.4	287	97.6	0	0.0

Table 3.7: Prevalence of underweight based on weight-for-age z-scores by sex

	95% C.I.		
	All n = 299	Boys n = 159	Girls n = 140
Prevalence of underweight (<-2 z-score)	(59) 19.7 % (15.6 - 24.6	(39) 24.5 % (18.5 - 31.8	(20) 14.3 % (9.4 - 21.0
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(53) 17.7 % (13.8 - 22.5	(35) 22.0 % (16.3 - 29.1	(18) 12.9 % (8.3 - 19.4
Prevalence of severe underweight (<-3 z-score)	(6) 2.0 % (0.9 - 4.3	(4) 2.5 % (1.0 - 6.3	(2) 1.4 % (0.4 - 5.1

Table 3.8: Prevalence of underweight by age, based on weight-for-age z-scores

		Severe underweight (<-3 z-score)		Moderate underweight (>= -3 & <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	Total no.	No.	%	No.	%	No.	%	No.	%
6-17	78	0	0.0	18	23.1	60	76.9	0	0.0
18-29	68	6	8.8	12	17.6	50	73.5	0	0.0
30-41	80	0	0.0	12	15.0	68	85.0	0	0.0
42-53	51	0	0.0	6	11.8	45	88.2	0	0.0
54-59	22	0	0.0	5	22.7	17	77.3	0	0.0
Total	299	6	2.0	53	17.7	240	80.3	0	0.0

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Table 3.9: Prevalence of stunting based on height-for-age z-scores and by sex

	95% C.I.		
	All n = 297	Boys n = 160	Girls n = 137
Prevalence of stunting (<-2 z-score)	(43) 14.5 % (10.9 - 18.9%)	(31) 19.4 % (14.0 - 26.2%)	(12) 8.8 % (5.1 - 14.7%)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(38) 12.8 % (9.5 - 17.1%)	(26) 16.3 % (11.3 - 22.7%)	(12) 8.8 % (5.1 - 14.7%)
Prevalence of severe stunting (<-3 z-score)	(5) 1.7 % (0.7 - 3.9%)	(5) 3.1 % (1.3 - 7.1%)	(0) 0.0 % (0.0 - 2.7%)

Table 3.13: 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	294	-0.67±0.88	1.00	2	9
Weight-for-Age	299	-1.17±0.98	1.00	0	6
Height-for-Age	297	-0.97±1.03	1.00	0	8

* contains for WHZ and WAZ the children with edema.

Jijiga Camps Standardized Expanded Nutrition Survey Final Report, 2017.

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

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
(% of out of range subjects)			0	5	10	20	5 (3.0 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	0 (p=0.229)
Age ratio(6-29 vs 30-59)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	0 (p=0.212)
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 (10)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	2 (12)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>=1.20	
.			and	and	and	or	
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	5	10	20	0 (1.01)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	0 (0.19)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	1 (0.22)
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	10 %

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

There were no duplicate entries detected.

Percentage of children with no exact birthday: 13 %

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9.3. SHEDER

Result Tables for NCHS growth reference 1977

Table 3.2: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex

	95% C.I.		
	All n = 248	Boys n = 114	Girls n = 134
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(16) 6.5 % (4.0 - 10.2%)	(7) 6.1 % (3.0 - 12.1%)	(9) 6.7 % (3.6 - 12.3%)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(16) 6.5 % (4.0 - 10.2 %)	(7) 6.1 % (3.0 - 12.1%)	(9) 6.7 % (3.6 - 12.3%)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(0) 0.0 % (0.0 - 1.5%)	(0) 0.0 % (0.0 - 3.3%)	(0) 0.0 % (0.0 - 2.8%)

The prevalence of oedema is 0.0 %

Table 3.3: 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	53	0	0.0	5	9.4	48	90.6	0	0.0
18-29	57	0	0.0	1	1.8	56	98.2	0	0.0
30-41	60	0	0.0	3	5.0	57	95.0	0	0.0
42-53	50	0	0.0	3	6.0	47	94.0	0	0.0
54-59	28	0	0.0	4	14.3	24	85.7	0	0.0
Total	248	0	0.0	16	6.5	232	93.5	0	0.0

Table 3.5: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex

	95% C.I.		
	All n = 252	Boys n = 116	Girls n = 136
Prevalence of global malnutrition (< 125 mm and/or oedema)	(8) 3.2 % (1.6 - 6.1%)	(2) 1.7 % (0.5 - 6.1%)	(6) 4.4 % (2.0 - 9.3%)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(6) 2.4 % (1.1 - 5.1%)	(1) 0.9 % (0.2 - 4.7%)	(5) 3.7 % (1.6 - 8.3%)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(2) 0.8 % (0.2 - 2.8%)	(1) 0.9 % (0.2 - 4.7%)	(1) 0.7 % (0.1 - 4.0%)

Table 3.5: Prevalence of acute malnutrition based on the percentage of the median and/or oedema

	n = 248
Prevalence of global acute malnutrition (<80% and/or oedema)	(11) 4.4 % (2.5 - 7.8 95% C.I.)
Prevalence of moderate acute malnutrition (<80% and >= 70%, no oedema)	(11) 4.4 % (2.5 - 7.8 95% C.I.)
Prevalence of severe acute malnutrition (<70% and/or oedema)	(0) 0.0 % (0.0 - 1.5 95% C.I.)

Table 3.6:   Prevalence of malnutrition by age, based on weight-for-height percentage of the median and oedema

Age (mo)	Total no.	Severe wasting (<70% median)		Moderate wasting (>=70% & <80% median)		Normal (> =80% median)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	52	0	0.0	4	7.5	49	92.5	0	0.0
18-29	57	0	0.0	1	1.8	56	98.2	0	0.0
30-41	60	0	0.0	2	3.3	58	96.7	0	0.0
42-53	50	0	0.0	2	4.0	48	96.0	0	0.0
54-59	28	0	0.0	2	7.1	26	92.9	0	0.0
Total	248	0	0.0	11	4.4	237	95.6	0	0.0

Table 3.7: Prevalence of underweight based on weight-for-age z-scores by sex

	95% C.I		
	All n = 247	Boys n = 114	Girls n = 133
Prevalence of underweight (<-2 z-score)	(48) 19.4 % (15.0 - 24.8%)	(20) 17.5 % (11.7 - 25.6%)	(28) 21.1 % (15.0 - 28.7%)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(45) 18.2 % (13.9 - 23.5%)	(18) 15.8 % (10.2 - 23.6%)	(27) 20.3 % (14.3 - 27.9%)
Prevalence of severe underweight (<-3 z-score)	(3) 1.2 % (0.4 - 3.5%)	(2) 1.8 % (0.5 - 6.2%)	(1) 0.8 % (0.1 - 4.1%)

Table 3.9: Prevalence of stunting based on height-for-age z-scores and by sex

	95% C.I		
	All n = 244	Boys n = 112	Girls n = 132
Prevalence of stunting (<-2 z-score)	(42) 17.2 % (13.0 - 22.4%)	(22) 19.6 % (13.3 - 28.0%)	(20) 15.2 % (10.0 - 22.2%)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(35) 14.3 % (10.5 - 19.3%)	(18) 16.1 % (10.4 - 24.0%)	(17) 12.9 % (8.2 - 19.7%)
Prevalence of severe stunting (<-3 z-score)	(7) 2.9 % (1.4 - 5.8%)	(4) 3.6 % (1.4 - 8.8%)	(3) 2.3 % (0.8 - 6.5%)

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Table 3.10: 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	52	0	0.0	10	19.2	42	80.8
18-29	57	3	5.3	7	12.3	47	82.5
30-41	58	3	5.2	7	12.1	48	82.8
42-53	49	0	0.0	6	12.2	43	87.8
54-59	28	1	3.6	5	17.9	22	78.6
Total	244	7	2.9	35	14.3	202	82.8

Table 3.11: Prevalence of overweight based on weight for height cut off's and by sex (no oedema)

	All n = 248	Boys n = 114	Girls n = 134
Prevalence of overweight (WHZ > 2)	(1) 0.4 % (0.1 - 2.2 95% C.I.)	(0) 0.0 % (0.0 - 3.3 95% C.I.)	(1) 0.7 % (0.1 - 4.1 95% C.I.)
Prevalence of severe overweight (WHZ > 3)	(0) 0.0 % (0.0 - 1.5 95% C.I.)	(0) 0.0 % (0.0 - 3.3 95% C.I.)	(0) 0.0 % (0.0 - 2.8 95% C.I.)

Table 3.13: 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	248	-0.75±0.87	1.00	0	4
Weight-for-Age	247	-1.22±0.91	1.00	0	5
Height-for-Age	244	-0.96±1.10	1.00	0	8

* contains for WHZ and WAZ the children with edema.

9.3.1. Plausibility check for: ETH_SHEDER_2017.as

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

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
(% of out of range subjects)			0	5	10	20	0 (1.6 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	0 (p=0.208)
Age ratio(6-29 vs 30-59)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	0 (p=0.545)
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	2 (11)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	2 (8)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>=1.20	
.			and	and	and	or	
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	5	10	20	0 (1.01)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	0 (-0.12)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	0 (0.15)
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	4 %

The overall score of this survey is 4 %, this is excellent.

There were no duplicate entries detected.

Percentage of children with no exact birthday: 23 %

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10. ANNEX: UNHCR standardise Expanded Nutrition Survey (SENS)

Questionnaire

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 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 [organisation/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, WFP and ARRA is sponsoring this nutrition survey.

Taking part in this survey is totally your choice. You can decide to not participate, or if you do participate you can stop taking part in this survey at any time for any reason. If you stop being in this survey, it will not have any negative effects on how you or your household is treated or what assistance you receive.

If you agree to participate, I will ask you some questions about your family and I will also measure the weight and height of all the children in the household who are older than 6 months and younger than 5 years In addition to these assessments, I will test a small amount of blood from the finger of the children and women to see if they have anaemia.

Before we start to ask you any questions or take any measurements, we will ask you to give us your verbal consent. Be assured that any information that you will provide will be kept strictly confidential.

You can ask me any question that you have about this survey before you decide to participate or not.

If you do not understand the information or if your questions were not answered to your satisfaction, do not declare your consent on this form. Thank you.

Note that in some camps, the words 'block' and 'section' may not be used and other words may be used for these. Adapt the wording accordingly.

CAPITAL LETTERS refer to instructions for the surveyors and should not be read to the respondent.

CHILDREN 6-59 MONTHS ANTHROPOMETRY, HEALTH AND ANAEMIA: 1 questionnaire per cluster / zones / sections (This questionnaire is to be administered to all childREN between 6 and 59 months of age)

Section code / number:_____Block code / number: _____

Date of interview (dd/mm/yyyy): ___|___||___|___|										Team number |___|			
CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8	CH9	CH10	CH11	CH12	CH13	CH14	CH15
ID	HH	Consent given 1=Yes 2=No 3=Absent	Sex (m/f)	Birthdate* dd/mm/yy	Age** (months)	Weight (kg) ±100g	Height (cm) ±0.1cm	Oedema (y/n)	MUAC (mm)	Child enrolled 1=SFP 2=TFP 3=None	Measles 1=Yes card 2=Yes recall 3=No or don't know	Vit. A in past 6 months 1=Yes card 2=Yes recall 3=No/don't/kno	Diarrhoea in past 2 weeks 1=Yes 2=No 3=Don't know	Hb g/dL)
01				/ /										
02				/ /										
03				/ /										
04				/ /										
05				/ /										
06				/ /										
07				/ /										
08				/ /										
09				/ /										
…				/ /										
…				/ /										
…				/ /										
…				/ /										

*The exact birth date should only be taken from an age documentation showing day, month and year of birth. It is only recorded if an official age documentation is available; if the mother recalls the exact date, this is not considered to be reliable enough. Leave blank if no official age documentation is available.

**If no age documentation is available, estimate age using local event calendar. If an official age documentation is available, record the age in months from the date of birth.

WOMEN ANAEMIA: 1 questionnaire per cluster / zones / sections (This questionnaire is to be administered to all women aged between 15 and 49 years IN THE SELECTED HOUSEHOLD)

Section code / number:_____Block code / number: _____

Date of interview (dd/mm/yyyy): |___|___|/|___|___|/|___|___||___|___|					Cluster Number (in cluster survey only) |___|___|		Team number |___|
WM1	WM2	WM3	WM4	WM5	WM6	WM7	WM8
ID	HH	Consent given 1=Yes 2=No 3=Absent	Age (years)	Are you pregnant? 1=Yes 2=No (GO TO HB) 8=Don't know (GO TO HB)	Are you currently enrolled in the ANC programme? 1=Yes 2=No 8=Don't know	Are you currently receiving iron-folate pills (SHOW PILL)? 1=Yes (STOP NOW) 2=No (STOP NOW) 8=Don't know (STOP NOW)	Hb (g/dL)
01							
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
…							
…							
…							
…							
…							
…							

IYCF: 1 questionnaire per child 0-23 months (This questionnaire is to be administered to the MOTHER OR THE Main Care GIVER WHO IS RESPONSIBLE FOR FEEDING THE CHILD AND THE CHILD SHOULD BE BETWEEN 0 AND 23 MONTHS OF AGE)
Section code / number:_____Block code / number: _____Consent : yes / no / absent

Date of interview (dd/mm/yyyy)	Cluster Number (in cluster survey only)	
__|___|/|___|___|/|___|___||___|___|	|___|___|	
Team Number |___|	ID Number |___|___|___|	HH Number |___|___|___|

No	QUESTION	ANSWER CODES	
SECTION IF1			
IF1	Sex	Male 1 Female 2	|___|
IF2	Birthdate RECORD FROM AGE DOCUMENTATION. LEAVE BLANK IF NO VALID AGE DOCUMENTATION.	Day/Month/Year…..|___|___| /|___|___| / |___|___||___|___|	
IF3	Child's age in months	IF AGE DOCUMENTATION NOT AVAILABLE, ESTIMATE USING EVENT CALENDAR. IF AGE DOCUMENTATION AVAILABLE, RECORD THE AGE IN MONTHS FROM THE DATE OF BIRTH.	|___|___|
IF4	Has [NAME] ever been breastfed?	Yes 1 No 2 Don't know 8	|___| IF ANSWER IS 2 or 8 GO TO IF7
IF5	How long after birth did you first put [NAME] to the breast?	Less than one hour 1 Between 1 and 23 hours 2 More than 24 hours 3 Don't know 8	|___|
IF6	Was [NAME] breastfed yesterday during the day or at night?	Yes 1 No 2 Don't know 8	|___|
SECTION IF2			
IF7	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? ASK ABOUT EVERY LIQUID. IF ITEM WAS GIVEN, CIRCLE '1'. IF ITEM WAS NOT GIVEN, CIRCLE '2'. IF CAREGIVER DOES NOT KNOW, CIRCLE '8'. EVERY LINE MUST HAVE A CODE. Replace and adapt the TEXT HIGHLIGHTED IN GREY TO THE CONTEXT. The text IN ITALICS NEEDS TO BE DELETED FROM THE FINAL SURVEY QUESTIONNAIRE – THE LIST THAT IS PROVIDED BELOW IS AN EXAMPLE.		
		Yes No DK	
	7A. Plain water	7A………………….1 2 8	
	7B. Infant formula, for example [INSERT locally available brand names of infant formula, ALL TYPES]	7B………………….1 2 8	
	7C. Milk such as tinned, powdered, or fresh animal milk, for example [INSERT locally available brand names of tinned and powdered milk]	7C………………….1 2 8	
	7D. Juice or juice drinks, for example [insert locally available brand names of juice drinks]	7D………………….1 2 8	
	7E. Clear broth	7E………………….1 2 8	
	7F. Sour milk or yogurt, for example [insert local names]	7F………………….1 2 8	
	7G. Thin porridge, for example [insert local names]	7G………………….1 2 8	

	7H. Tea or coffee with milk	7H.........................1 2 8
	7I. Any other water-based liquids, for example [insert other water-based liquids available in the local setting AND USE LOCAL NAMES] (e.g. sodas, other sweet drinks, herbal infusion, gripe water, clear tea with no milk, black coffee, ritual fluids%)	7I............................1 2 8
IF8	Yesterday, during the day or at night, did [NAME] eat solid or semi-solid (soft, mushy) food?	Yes.....................1 No.......................2 Don't know........8 |___|

SECTION IF3

IF9	Did [NAME] drink anything from a bottle with a nipple yesterday during the day or at night?	Yes.....................1 No.......................2 Don't know........8 |___|

SECTION IF4

IF10	IS CHILD AGED 6-23 MONTHS? REFER TO IF2 / IF3	Yes.....................1 |___| No.....................2 IF ANSWER IS 2 STOP NOW
IF11	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. Yesterday, during the day or at night, did [NAME] consume any of the following? ASK ABOUT EVERY ITEM. IF ITEM WAS GIVEN, CIRCLE '1'. IF ITEM WAS NOT GIVEN, CIRCLE '2'. IF CAREGIVER DOES NOT KNOW, CIRCLE '8'. EVERY LINE MUST HAVE A CODE. Replace and adapt the TEXT HIGHLIGHTED IN GREY TO THE CONTEXT. The text IN ITALICS NEEDS TO BE DELETED FROM THE FINAL SURVEY QUESTIONNAIRE – THE LIST THAT IS PROVIDED BELOW IS AN EXAMPLE. If a category of IRON-RICH food (11A-11H) is not available in the setting, delete it from the questionnaire BUT KEEP THE original QUESTION NUMBERS and do not change. Yes No DK	
	11A. [insert common meat, fish, poultry and liver/organ flesh foods used the local setting] (e.g. beef, goat, lamb, mutton, pork, rabbit, chicken, duck, liver, kidney, heart)	11A.........................1 2 8
	11B. [INSERT FBF available in the local setting and USE LOCAL NAMES] (e.g. CSB+, WSB+)	11B..........................1 2 8
	11C. [INSERT FBF++ available in the local setting AND USE LOCAL NAMES] (e.g. CSB++, WSB++)	11C..........................1 2 8
	11D. [INSERT RUTF products available in the local setting AND USE LOCAL NAMES] (e.g. Plumpy'Nut®, eeZeePaste™) (SHOW SACHET)	11D..........................1 2 8
	11E. [INSERT RUSF products available in the local setting AND USE LOCAL NAMES] (e.g. Plumpy'Sup®) (SHOW SACHET)	11E..........................1 2 8
	11F. [INSERT LNS products available in the local setting AND USE LOCAL NAMES] (e.g. Nutributter®, Plumpy'doz®) (SHOW SACHET / POT)	11F.....................1 2 8
	11G. [INSERT locally available brand names of iron fortified infant formula ONLY] (e.g. Nan, S26 infant formula)	11G.......................1 2 8
	11H. [iNSERTst 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 AND USE LOCALLY AVAILABLE BRAND NAMES] (e.g. Cerelac, Weetabix%)	11H.......................1 2 8
IF12	In a setting where micronutrient powders are used: Yesterday, during the day or at night, did [NAME] consume any food to which you added a [INSERT LOCAL NAME FOR Micronutrient powder or sprinkles] like this? (SHOW MICRONUTRIENT POWDER SACHET)	Yes.....................1 No.......................2 Don't know...........8 |___|

WASH: 1 questionnaire per household (This questionnaire is to be administered to the Main Caretaker or, if they are absent, another adult member of the household)
Section code / number:_____Block code / number: _____Consent : yes / no / absent

Date of interview (dd/mm/yyyy)		Cluster Number (in cluster survey only)	
|___|___|/|___|___|/|___|___||___|___|		|___|___|	
Team Number		HH Number	
|___|		|___|___|___|	

No	QUESTION	ANSWER CODES	
SECTION WS1			
WS1	How many people live in this household and slept here last night?	|___|___|	
WS2	What is the main source of drinking water for members of your household? Adapt list to local setting before survey. When adapting the list, keep the original answer codes and do not change. DO NOT READ THE ANSWERS SELECT ONE ONLY	Piped water 01 Public tap/standpipe 02 Tubewell/borehole (& pump) 03 Protected dug well 04 Protected spring 05 Rain water collection 06 UNHCR Tanker 07 Unprotected spring 08 Unprotected dug well 09 Small water vendor 10 Tanker truck 11 Bottled water 12 Surface water (e.g. river, pond) 13 Other 96 Don't know 98	|___|___|
WS3	Are you satisfied with the water supply? THIS RELATES TO THE DRINKING WATER SUPPL	Yes 1 No 2 Partially 3 Don't know 8	|___| IF ANSWER IS 1, 3 OR 8 GO TO WS5
WS4	What is the main reason you are not satisfied with the water supply? Adapt list to local setting before survey. 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 96 Don't know 98	|___|___|
WS5	What kind of toilet facility does this household use? Adapt list to local setting before survey. When adapting the list, keep the original answer codes and do not change. DO NOT READ THE ANSWERS SELECT ONE ONLY	Flush to piped sewer system 01 Flush to septic system 02 Pour-flush to pit 03 VIP/simple pit latrine with floor/slab 04 Composting/dry latrine 05 Flush or pour-flush elsewhere 06 Pit latrine without floor/slab 07 Service or bucket latrine 08 Hanging toilet/latrine 09 No facility, field, bush, plastic bag 10	|___|___| IF ANSWER IS 10 GO TO WS7
WS6	How many households share this toilet? THIS INCLUDES THE SURVEYED HOUSEHOLD	RECORD NUMBER OF HOUSEHOLDS IF KNOWN (RECORD 96 IF PUBLIC TOILET OR 98 IF UNKNOWN)	|___|___| Households
		SUPERVISOR SELECT ONE ONLY Not shared (1 HH%) 1	

		Shared family (2 HH%)	2		___	
		Communal toilet (3 HH or more%)	3	
		Public toilet (in market or clinic etc.%)	4	
		Don't know	8	
WS7	Do you have children under three years old?	Yes	1		___	
		No	2	IF ANSWER IS 2 GO TO WS9
WS8	The last time [NAME OF YOUNGEST CHILD] passed stools, what was done to dispose of the stools? DO NOT READ THE ANSWERS SELECT ONE ONLY	Child used toilet/latrine	01		___	___	
		Put/rinsed into toilet or latrine	02	
		Buried	03	
		Thrown into garbage	04	
		Put/rinsed into drain or ditch	05	
		Left in the open	06	
		Other	96	
		Don't know	98	

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 THIS RELATES TO ALL SOURCES OF WATER (DRINKING WATER AND NON-DRINKING WATER SOURCES)	Please show me the containers you used yesterday for collecting water ASSIGN A NUMBER TO EACH CONTAINER	Capacity in litres	Number of journeys made with each container	Total litres SUPERVISOR TO COMPLETE HAND CALCULATION
		1 E.g. jerry can	25 L	1 x	25
		2 E.g. jerry can	10 L	2 x	20
		3 E.g. jerry can	5 L	2 x	10
		4 E.g. jerry can	5 L	1 x	5
		5 E.g. bucket	50 L	1 x	50
		6			
		7			
		8			
		9			
		10			
		Total litres used by household			110
WS10	Please show me where you store your drinking water. ARE THE DRINKING WATER CONTAINERS COVERED OR NARROW NECKED?	All are 1 Some are 2 None are 3			|___|

Add followings as annexes:
- event calendar
- List of survey teams
- Map of survey area