

STANDARDISED EXPANDED NUTRITION SURVEY (SENS)

FINAL REPORT

**(PUGNIDO_I, PUGNIDO_II, KULE, TIERKIDI, JEWI, NGUENNYIEL AND
OKUGO) REFUGEE CAMPS**

GAMBELLA REGION – ETHIOPIA

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ACRONYMS AND ABBREVIATIONS

ANC	Ante Natal Clinic
AAH	Action Against hunger
ARRA	Administration for Refugee and Returnee Affairs
BSFP	Blanket Supplementary Feeding Programme
CCW	Concern Worldwide
CMR	Crude Mortality Rate
CI	Confidence Interval
COA	Community Outreach Agent
CDC	Centre Disease Control
CSB	Corn Soya Blend
ENA	Emergency Nutrition Assessment
EOS	Enhanced Outreach Strategy
EPI	Expanded Program on Immunization
Epi Info	Epidemiological information
GAM	Global Acute Malnutrition
GFR	General Food Ration
HAZ	Height-for-Age z-score
Hb	Haemoglobin
HQ	UNHCR Head Quarter
IYCF	Infant and Young Child Feeding
IRS	Indoor Residual Spraying
LLIN	Long-lasting insecticidal net
MAM	Moderate Acute Malnutrition
MSF-H	Médecins Sans Frontières- Holland
MUAC	Middle Upper Arm Circumference
ODK	Open data Kit
OTP	Out-patient Therapeutic Program
SAM	Severe Acute Malnutrition
SC	Stabilization Centre
SD	Standard Deviation
SENS	Standardized Expanded Nutrition Survey
SFP	Supplementary Feeding Program
SMART	Standardized Monitoring & Assessment of Relief & Transitions
TFP	Therapeutic Feeding Program
RHB	Regional Health Bureau
U5MR	Under-5 Mortality Rate
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
WASH	Water Sanitation and Hygiene
WAZ	Weight-for-Age z-score
WHZ	Weight-for-Height z-score
WFP	World Food Program
WHO	World Health Organization

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EXECUTIVE SUMMARY

There are seven refugee camps situated in Gambella regional state the western part of Ethiopia. In 2017 Standardized Expanded Nutrition Surveys (SENS) were conducted by UNHCR in collaboration with WFP, ARRA, UNICEF and key health and nutrition partners (ACF, GOAL, CWW, ARRA and MSF-H) from April 24th to June 9th 2017 in Kule, Pugnido_I, Pugnido_II, Tierkidi, Nguenyiel, Jewi and Okugo camps.

This was a follow-up of the previous SENS that were conducted in March/April 2015 and April/July 2016. All the SENS modules were covered in all surveyed camps: anthropometry and child health, anaemia, Infant and young child feeding (IYCF), food security, water sanitation and hygiene (WASH) and mosquito net coverage modules following the UNHCR SENS v2 (2013) guidelines and SMART methodology. In addition to the standard SENS modules, mortality was also included to determine the crude mortality and under five mortality rates.

Objectives of the survey: The overall objective of the health and nutrition survey was to assess the general health and nutrition status of the refugee population, and formulate workable recommendations for appropriate nutritional and public health interventions.

Primary objectives

1. To determine the prevalence of acute malnutrition among children 6-59 months.
2. To determine the prevalence of stunting among children 6-59 months.
3. To assess the two-week period prevalence of diarrhoea among children 6-59 months.
4. To assess the prevalence of anaemia among children 6-59 months and women of reproductive age (non-pregnant, 15-49 years).
5. To estimate the coverage of measles vaccination among children 9-59 months.
6. To estimate the coverage of vitamin A supplementation among children 6-59 months and postnatal women.
7. To investigate Infant and Young Child Feeding (IYCF) practices among children 0-23 months.
8. To assess the proportion of households that use an adequate quantity of water per person per day.
9. To determine the population's access to improved water, sanitation and hygiene facilities.
10. To determine the coverage of ration cards and the duration the General Food Distribution (GFD) ration lasts for recipient households.
11. To determine the extent to which negative coping strategies are used by households.
12. To assess household dietary diversity.
13. To determine the ownership of mosquito nets (all types and LLINs) in households.
14. To determine the utilization of mosquito nets (all types and LLINs) by the total population, children 0-59 months and pregnant women.
15. To establish recommendations on actions to be taken to address the situation

Secondary objectives

1. To determine the coverage of targeted and blanket supplementary feeding programmes (TSFP and BSFP) and therapeutic feeding programme programme for children aged 6-59 months.
2. To determine enrolment into Antenatal Care clinic and coverage of iron-folic acid supplementation in pregnant women.
3. To assess crude and under-five death rates in the camps in the retrospective over the last three months.

Methodology: The survey was based on the UNHCR Standardized Expanded Nutrition Survey (SENS) guidelines for refugee populations. The data was collected using SMART phone Open Data Kit facility (ODK) Version 1.4.5. Simple random sampling was used for all refugee camps to generate the sample of households to be surveyed. Sample size calculation was made on ENA for SMART software version July 9, 2015 by using the upper confidence interval of last year's nutrition survey global acute malnutrition prevalence as estimated prevalence, average family size and under five populations were obtained from the actual household labelling and verification exercise of households that was conducted prior the survey by GOAL, ACF, CWW with supervision by UNHCR, ARRA, and WFP. A range of 15-20% non-response rate was used to account for absentees and refusals.

Six Survey teams were organized per camp comprising of six members including the team leader, interviewer, translator, lead anthropometric measurer, anthropometric assistant and haemoglobin measurer. The core teams were trained for 6 days including a day for standardization and pilot test. Data collection was conducted for four to five days with coordination and supervision from UNHCR, ARRA, WFP and Partners (GOAL, CWW, and ACF). Each camp had a set of 2 coordinators and 2 supervisors who provided technical support to the team with lead coordinators jointly from ARRA / WFP and UNHCR.

Questionnaires for all the SENS modules were uploaded onto android mobile phones for data collection of household level and individual level indicators. Mortality data was collected using paper questionnaires.

All eligible children aged 0-59 months from all selected households were included in the assessment of anthropometry, measles vaccination and vitamin A coverage, enrolment in the nutrition program, and diarrhoea for the recall period of the last two weeks, prevalence of haemoglobin (assessment of nutritional anaemia) and infant and young child feeding (0-23 months), whilst half of the visited households were selected for Food Security, WASH and the Women questionnaire.

Data analysis for anthropometric, mortality modules was conducted using ENA for SMART version 9th July 2015 and Epi info version 3.5.4 for the other data sets

Table 1: 2017 SENS Summary of Key Findings for Refugee camps in Gambella

Camp	Pugnido_I		Pugnido_II		Kule		Tierkidi		Jewi		Nguennyiel		Okugo		Classification of public health
	No./total	% (95% CI)	No./total	% (95% CI)	No./total	% (95% CI)	No./total	% (95% CI)	No./total	% (95% CI)	No./total	% (95% CI)	No./total	% (95% CI)	
CHILDREN (6-59 months)															
Acute Malnutrition (WHO 2006 Growth Standards)															
Global Acute Malnutrition (GAM)	60/358	16.8 % (13.2 - 21.0)	60/376	16.0 % (12.6 - 20)	117/501	23.4 % (19.9 - 27.3)	104/448	23.2 % (19.5 - 27.3)	84/336	25.0 % (20.7 - 29.9)	159/539	29.5% (25.8 - 33.5)	69/300	23.3 % (18.8 - 28.5)	Critical if ≥ 15%
Moderate Acute Malnutrition (MAM)	48/358	13.4 % (10.3 - 17.3)	49/376	13.0 % (10 - 16.8)	90/501	18.0 % (14.9 - 21.6)	73/448	16.3 % (13.2 - 20.0)	66/336	19.6 % (15.7 - 24.2)	116/539	21.5% (18.3-25.2)	53/300	17.8 % (13.8 - 22.6)	
Severe Acute Malnutrition (SAM)	12/358	3.4 % (1.9 - 5.8)	11/376	2.9 % (1.6 - 5.2)	27/501	5.4 % (3.7 - 7.7)	31/448	6.9 % (4.9 - 9.7)	18/336	5.4 % (3.4 - 8.3)	43/539	8% (6.0-10.6)	16/300	5.5 % (3.4 - 8.7)	
Oedema	0/358	0%	0/376	0%	0/501	0%	0/448	0%	0/336	0%	0/539	0%	0/300	0%	
Stunting (WHO 2006 Growth Standards)															
Total Stunting	32/352	9.1 % (6.5 - 12.6)	9/380	2.4 % (1.3 - 4.4)	50/501	10.0 % (7.7 - 12.9)	56/440	12.7 % (9.9 - 16.2)	35/312	11.2 % (8.2 - 15.2)	62/523	11.9% (9.4-14.9)	36/286	12.6 % (9.2 - 17.0)	Critical if ≥ 40%
Severe Stunting	5/352	1.4 % (0.6 - 3.3)	1/380	0.3% (0.0 - 1.5)	4/501	0.8 % (0.3 - 2.0)	8/440	1.8 % (0.9 - 3.5)	2/312	0.6 % (0.2 - 2.3)	6/523	1.1% (0.5-2.5)	4/286	1.4 % (0.6 - 3.6)	
Mid Upper Arm Circumference (MUAC)															
MUAC ≥12.5 cm	10/362	2.8 % (1.5 - 5.0)	8/384	2.1 % (1.1 - 4.1)	34/510	6.7 % (4.8 - 9.2)	27/463	5.8 % (4.0 - 8.4)	15/351	4.3 % (2.6 - 6.9)	60/549	10.9% (8.6-13.8)	15/307	4.7 % (2.8 - 7.8)	
MUAC ≥11.5 and <12.4 cm	7/362	1.9 % (0.9 - 3.9)	6/384	1.6 % (0.7 - 3.4)	26/510	5.1 % (3.5 - 7.4)	22/463	4.8 % (3.2 - 7.1)	6/351	1.7 % (0.8 - 3.7)	43/549	7.9% (5.9-10.4)	12/307	4.0 % (2.3 - 6.9)	
MUAC < 11.5 cm	3/362	0.8 % (0.3 - 2.4)	2/384	0.5 % (0.1 - 1.9)	8/510	1.6 % (0.8 - 3.1)	5/463	1.1 % (0.5 - 2.5)	9/351	2.6 % (1.4 - 4.8)	17/549	3.1% (1.9-4.9)	3/307	0.7 % (0.2 - 2.4)	
Program Coverage															
Therapeutic program (based on all admission criteria MUAC, Oedema, WHZ)	3/14	21.4% (4.7 - 50.8)	3/15	20% (4.3-48.1)	5/35	14.3% (4.8 - 30.3)	7/21	18.4% (7.7 - 34.3)	10/35	28.6% (14.6 - 46.3)	15/48	31.3% (18.7-46.3)	1/18	5.6% (0.1-27.3)	Target of ≥ 90%
TSFP (based on all admission criteria MUAC, Oedema, WHZ)	11/53	20.8% (10.8-34.1)	5/51	9.8% (3.3 - 21.4)	30/95	31.6% (22.4 - 41.9)	11/78	14.1% (7.3-23.8)	7/35	7.5% (3.1 - 14.9)	15/126	11.9% (6.8-18.9)	5/55	9.1% (3.0-20.0)	Target of ≥ 90%
BSFP (WHZ : ≥-2 Z-score and MUAC: ≥125mm)	320/359	89.1% (85.4-92.2)	362/375	96.5% (94.0-98.1)	422/478	88.3% (85.0 - 91.0)	379/457	82.9% (79.1 - 86.2)	366/487	75.2% (71.0 - 78.9)	444/541	82.1% (78.5-85.2)	89/300	29.7% (24.6-35.2)	Target of ≥ 90%
Measles vaccination with card (9-59 months)	202/336	60.1% (54.8-65.2)	162/364	44.5% (39.5-49.6)	117/469	24.9% (21.2 - 29.0)	240/422	56.9% (52.1-61.5)	105/329	31.9% (27.1 - 37.1)	262/515	50.9% (46.6-55.2)	27/296	9.1% (6.1-12.9)	
Measles vaccination with card or recall (9-59 months)	317/336	94.4% (91.3-96.4)	321/364	88.2% (84.5-91.1)	455/469	97.0% (95.0 - 98.1)	372/422	88.2% (84.7-90.9)	304/329	92.4% (89.0 - 94.8)	390/515	75.7% (71.8-79.2)	262/296	88.5% (84.3-91.9)	Target of ≥ 95%
Vitamin A supplementation coverage with card,	170/359	47.4% (42.1 - 52.7)	176/383	45.9% (41.0-50.9)	83/510	16.3% (13.3 - 19.7)	259/461	56.2% (51.6-60.6)	128/498	25.7% (22.1 - 29.7)	246/545	45.1% (41.1-49.3)	6/307	1.9% (0.9-4.2)	

within past 6 months (6-59 months)															
Vitamin A supplementation coverage with card or recall, within past 6 months (6-59 months)	290/359	80.8% (76.3-84.7)	341/383	89.0% (85.5-91.8)	487/510	95.5% (93.3 - 96.9)	397/461	86.1% (82.6 - 88.9)	447/498	89.8% (86.8 - 92.1)	397/545	72.8% (68.9-76.4)	279/307	90.9% (87.1-93.6)	Target of ≥ 90%
Morbidity															
Diarrhoea in the past 2 weeks	74/359	20.6% (16.8-25.1)	34/382	8.9% (6.4-12.2)	78/510	15.3% (12.4-18.7)	75/460	16.3% (13.2 - 20.0)	123/499	24.6% (21.1 - 28.6)	220/548	40.2% (36.1-44.3)	81/304	26.6% (22.0-31.9)	
Anaemia (6-59 months)															
Total Anaemia (Hb <11 g/dl)	127/359	35.4% (30.6-40.4)	125/381	32.8% (28.3-37.7)	237/507	46.7% (42.4 - 51.1)	241/459	52.5% (55.5 - 69.5)	238/494	48.2% (43.8 - 52.6)	236/545	43.3% (39.2 - 47.5)	174/307	56.7% (51.1 - 62.1)	
Mild (Hb 10-10.9 g/dl)	72/359	20.1% (16.2-24.5)	76/381	19.9% (16.2-24.3)	126/507	24.9% (21.3 - 28.8)	123/459	26.8% (22.9 - 31.0)	123/494	24.9% (21.3 - 28.9)	152/545	27.9% (24.3 - 31.8)	73/307	23.8% (19.4 - 28.8)	
Moderate (Hb 7-9.9 g/dl)	55/359	15.3% (11.9-19.4)	49/381	12.9% (9.9-16.6)	110/507	21.7% (18.3-25.5)	117/459	25.5% (21.7 - 29.7)	113/494	22.9% (19.4 - 26.8)	81/545	14.7% (12.1 - 18.0)	94/307	30.6% (25.7 - 36.0)	
Severe (Hb<7.0 g/dl)	0	0%	0	0%	1/507	0.2% (0.0 - 1.1)	1/459	0.2% (0 - 1.2)	2/494	0.4% (0.1 - 1.5)	3/545	0.6% (0.2 - 1.6)	7/307	2.3% (1.1 - 4.6)	
Anaemia (6-23 months)															
Total Anaemia (Hb <11 g/dl)	79/146	54.1% (45.7-62.4)	68/144	47.2% (38.9-55.7)	117/196	59.7% (52.5 - 66.6)	121/193	62.7% (58.2 - 75.3)	59/92	64.1% (53.5 - 73.9)	100/177	56.5% (48.9 - 63.9)	44/59	74.6% (61.6 - 85.0)	
Mild (Hb 10-10.9 g/dl)	39/146	26.7% (19.7-34.7)	34/144	23.6% (16.9-31.4)	53/196	27% (21.0 - 33.8)	62/193	32.1% (25.6 - 39.2)	26/92	28.3% (19.4-38.6)	54/177	30.5% (23.8 - 37.9)	18/59	30.5% (19.2 - 43.9)	
Moderate (Hb 7-9.9 g/dl)	40/146	27.4% (20.3-35.4)	34/144	23.6% (16.9-31.4)	64/196	32.7% (26.1 - 39.7)	58/193	30.1% (23.7-37.1)	32/92	34.8% (25.1 - 45.4)	44/177	24.9% (18.7 - 31.9)	25/59	42.4% (29.6 - 55.9)	
Severe (Hb<7.0 g/dl)	0	0%	0	0%	0	0%	1/193	0.5% (0.0-2.9)	1/92	1.1% (0.0 - 5.9)	2/177	1.1% (0.1 - 4.0)	1/59	1.7% (0.0 - 9.1)	
CHILDREN (0-23 months)															
Infant and Young Child Feeding Practices															
Timely initiation of breastfeeding (0-23 months)	142/179	79.3% (72.6-85.0)	135/168	80.4% (73.5-86.1)	229/243	94.2% (90.5 - 96.8)	197/219	90.0% (85.2- 93.6)	71/105	67.6% (57.8 - 76.4)	154/205	75.1% (68.6 - 80.9)	110/124	88.7% (81.8 - 93.7)	
Exclusive breastfeeding under 6 months (0-5 months)	26/32	81.3% (63.5-92.8)	21/22	95.5% (77.2- 99.9)	34/48	70.8% (55.9 - 83.0)	23/26	88.5% (69.8 - 97.6)	14/17	82.4% (56.6 - 92.6)	25/28	89.3% (71.8 - 97.7)	14/27	51.8% (31.9 - 71.3)	
Continued breastfeeding at 1 year (12-15 months)	35/36	97.2% (85.5- 99.9)	33/33	100%	47/49	95.9% (86.0- 99.5)	39/42	92.8% (80.5-98.5)	8/14	57.1% (28.9 - 82.2)	45/45	100%	38/39	97.4% (86.5 - 99.9)	
Continued breastfeeding at 2 years (20-23 months)	20/31	64.5% (45.4-80.7)	44/46	95.6% (85.2-99.5)	39/46	84.8% (71.1 - 93.6)	28/35	80.0% (63.1- 91.6)	16/20	80.0% (56.3 - 94.3)	28/34	82.4% (65.5 - 93.2)	15/15	100%	
Introduction of solid, semi-solid or soft foods (6-8 months)	11/24	45.8% (25.5-67.2)	2/20	10% (1.2 -31.7)	13/41	31.7% (18.1 - 48.1)	9/39	23.1% (11.1-39.3%)	2/19	10.5% (1.3 - 33.1)	9/30	30.0% (14.7 - 49.4)	6/11	54.5% (23.4 - 83.3)	
Consumption of iron-rich or iron-fortified foods (6-23 months)	114/141	80.9% (73.4-87.0)	135/139	97.1% (92.8- 99.2)	177/190	93.2% (88.6- 96.3)	171/187	91.4% (86.5-95.0%)	56/89	62.9% (52.0 - 72.9)	25/32	78.1% (60.0 - 90.7)	66/103	64.1% (54.0 - 73.3)	

Bottle feeding (0-23 months)	19/17 9	10.6% (6.5-16.1)	6/168	3.6% (1.3-7.6)	44/24 3	18.1% (13.5 - 23.5)	29/21 9	13.2% (9.1 - 18.5%)	4/106	3.8% (1.0 - 9.4)	11/20 4	5.4% (2.7 - 9.4)	1/13 4	0.75% (0.0 - 4.0)	
WOMEN 15-49 years															
Anaemia (non-pregnant)															
Total Anaemia (Hb <12.0 g/dl)	66/19 8	33.3% (26.8-40.4)	64/17 9	35.8% (28.7-43.3)	92/26 1	35.3% (29.5 - 41.4)	106/2 99	35.5% (30.0 - 41.2)	52/18 9	27.5% (21.3 - 34.5)	56/19 7	28.4% (22.2 - 35.3)	43/1 50	28.7% (21.6 - 36.6)	
Mild (Hb 11.0-11.9)	44/19 8	22.2% (16.6-28.6)	46/17 9	25.7% (19.5-32.7)	66/26 1	25.3% (20.1 - 31.0)	66/29 9	22.1% (17.5 - 27.2)	32/18 9	16.9% (11.9 - 23.0)	43/19 7	21.8% (16.3 - 28.3)	24/1 50	16.0% (10.5 - 22.9)	
Moderate (Hb 8.0-10.9)	22/19 8	11.1% (7.1 - 16.3)	18/17 9	10.1% (6.1-15.4)	26/26 1	9.9% (6.6 - 14.3)	38/29 9	12.7% (9.1 - 17.0)	20/18 9	10.6% (6.6 - 15.9)	13/19 7	6.6% (3.6 - 11.0)	16/1 50	10.7% (6.2 - 16.7)	
Severe (Hb<8.0)	0	0.0%	0	0%	0	0%	2/299	(0.1-2.4)	0	0%	0	0%	3/15 0	2.0% (0.4 - 5.7)	
Program coverage , pregnant and lactating															
Pregnant women currently enrolled in the ANC	18/23	78.3% (56.3-92.5)	12/19	63.5% (38.4-83.7)	25/27	92.6% (75.7 - 99.1)	17/21	80.9% (58.1- 94.5)	10/21	47.6% (25.7- 70.2)	18/32	56.3% (37.6-73.6)	5/9	55.5% (21.2-86.3)	
Pregnant women currently receiving Iron-folic acid pills	15/23	65.2% (42.7-83.6)	10/19	52.6% (28.9-75.5)	25/27	92.6% (75.7 - 99.1)	14/21	66.7% (43.0- 85.4)	9/22	40.9% (20.7- 63.7)	17/32	53.1% (34.7-70.9)	5/9	55.5% (21.2-86.3)	
WASH (WATER QUANTITY, SAFE EXCRETA DISPOSAL)															
Proportion of households using an improved drinking water source	194/1 94	100% (98.12-100)	174/1 74	100% (97.9 -100)	210/2 10	100.0% (98.3-100)	219/2 19	100.0% (98.3-100)	192/1 93	99.5% (97.2-99.9)	238/2 79	85.3% (80.6-89.2)	181/ 181	100%	
Proportion of HHs that use a covered or narrow necked container for storing their drinking water	83/19 4	42.8% (35.7-50.1)	125/1 75	71.4% (64.1-77.9)	113/2 10	53.8% (46.8 - 60.7)	56/21 9	25.6% (19.9 - 31.9)	111/1 93	57.5% (50.2-64.6)	150/2 79	53.8% (47.7-59.7)	112/ 181	61.9% (54.4-68.9)	
Water supply															
≥20 lpppd	99/19 4	51% (43.8-58.3)	96/17 5	54.9% (47.2- 62.4)	57/21 0	27.1% (21.3 - 33.7)	59/21 9	26.9% (21.2-33.3)	73/19 3	37.8% (30.9-45.1)	73/27 9	26.2% (21.1-31.7)	55/1 80	30.6% (23.9-37.8)	
15- <20 lpppd	38/19 4	19.6% (14.3-25.9)	37/17 5	21.1% (15.3- 27.9)	36/21 0	17.1% (12.3 - 22.9)	30/21 9	24.2% (18.7 - 30.4)	33/19 3	17.1% (12.1-23.2)	62/27 9	22.2% (17.5-27.6)	26/1 80	14.4% (9.6-20.4)	
<15 lpppd	57/19 4	29.4% (23.1-36.3)	42/17 5	24.0% (17.9- 31.0)	117/2 10	55.7% (48.7 - 62.5)	107/2 19	48.9% (42.1 - 55.7)	87/19 3	45.1% (37.9-52.4)	144/2 79	51.6% (45.6-57.6)	99/1 80	55% (47.4-62.4)	
Average consumption (Liters per person per day)	21.22 lpppd		23.3 lpppd		16.09 lpppd		17.41 lpppd		17.66lpppd		16.71lpppd		16.46lpppd		UNHCR target is ≥20 lpppd
Proportion of households that say they are satisfied with the drinking water supply	182/1 94	93.8% (89.4-96.7)	166/1 75	94.8% (90.5- 97.6)	162/2 10	77.1% (70.8 - 82.6)	138/2 19	63.0% (56.3 - 69.4)	120/1 93	62.2% (54.9-69.0)	95/27 8	34.2% (28.6-40.7)	94/1 81	51.9% (44.4-59.4)	
Waste disposal															
An improved excreta disposal facility (improved toilet facility, 1 household)	58/19 4	29.9% (23.5-36.9)	45/17 2	26.2% (19.8-33.4)	122/2 08	58.7% (51.6 - 65.4)	159/2 10	75.7% (69.3 - 81.4)	171/1 92	89.1% (83.8-93.1)	1/276	0.4% (0.0-2.0)	68/1 81	37.6% (30.5-45.1)	
A shared family toilet (improved toilet)	19/19 4	9.8% (6.0-14.9)	1/172	0.6% (0.0 - 3.2)	13/20 8	6.3% (3.4 -10.5)	7/210	3.3% (1.4-6.7)	1/192	0.5% (0.0-2.9)	21/27 6	7.6% (4.8-11.4)	6/18 1	3.3% (1.2-7.1)	

facility, 2 households)															
A communal toilet (improved toilet facility, 3 households or more)	32/194	16.5% (11.6-22.5)	9/172	5.2% (2.4-9.7)	53/208	25.5% (19.7 - 32.0)	14/210	6.7% (3.7 - 10.9)	13/192	6.8% (3.7-11.3)	163/276	59.1% (53.0-64.9)	26/181	14.4% (9.6-20.3)	
An unimproved toilet (unimproved toilet facility or public toilet)	85/194	43.8% (36.7-51.1)	117/172	68.0% (60.5-74.9)	20/210	9.6% (6.0-14.5)	30/210	14.3% (9.9 - 19.8)	7/192	3.6% (1.5-7.4)	91/276	33.0% (27.5-38.9)	81/181	44.8% (37.4-52.3)	
Proportion of households with children under three years old that dispose of faeces safely	53/111	47.7% (38.2-57.4)	35/116	30.2% (22.0-39.4)	133/156	85.3% (78.7 - 90.4)	128/147	87.1% (80.6 - 92.0)	114/133	85.7% (78.6-91.2)	96/185	51.9% (44.4-59.3)	47/93	50.5% (40.0-61.1)	
FOOD SECURITY															
Proportion of HH with a ration card	192/192	100% (98.1-100)	177/178	99.5% (96.9-99.9)	210/210	100% (98.3-100)	222/223	99.6% (97.5-99.9)	192/193	99.5% (97.2-99.9)	279/279	100% (98.7-100)	180/181	99.5% (97.0-99.9)	
Average number of days GFD lasts out of 30 days	23.7 days		26.4 days		17.9days		24.1 days		21.96 days		20.47days		16.7days		
Average duration (%) in relation to the theoretical duration of the ration (30days)	79%		88.0%		59.6%		80.3%		73.2%		68.2%		55.7%		
Household Dietary Diversity Score {Mean(SD)}	5.03 (SD 1.52)		4.25 (SD 1.74)		5.41 (SD 2.52)		3.75 (SD 2.0)		3.74 (SD 1.37)		4.77 (SD 1.73)		3.74 (SD 1.24)		
Proportion of households reporting using the following coping strategies over the past month*:															
Borrowed cash, food or other items with or without interest	87/191	45.6% (38.1-52.9)	76/178	42.7% (35.3-50.3)	49/210	23.3% (17.8 - 29.6)	91/223	40.8% (34.3 - 47.6)	75/193	38.9% (31.9-46.1)	144/279	51.6% (45.6-57.6)	67/181	37% (30.0-44.5%)	
Sold any assets that would not have normally sold (furniture, tools, other NFI, livestock etc.)	19/192	9.9% (6.1-15.0)	41/177	23.2% (17.2-30.1)	19/209	9.1% (5.6 - 13.8)	31/223	13.9% (9.6 - 19.2)	20/192	10.4% (6.5-15.6)	29/278	10.4% (7.1-14.6)	0	0%	
Requested increased remittances or gifts as compared to normal	8/191	4.2% (1.8-8.1)	10/177	5.6% (2.7-10.1)	23/209	11% (7.11 - 16.1)	13/223	5.8% (3.1 - 9.8)	9/193	4.6% (2.2-8.7)	10/278	3.6% (1.7-6.5)	1/181	0.6% (0.0-3.0)	
Reduced the quantity and/or frequency of meals and snacks	123/192	64.1% (56.8-70.8)	87/177	49.2% (41.6-56.8)	76/209	36.4% (29.8-43.3)	84/223	37.7% (31.3 - 44.4)	48/193	24.9% (18.9-31.6)	91/277	32.8% (27.4-38.7)	106/181	58.6% (51.0-65.8)	
Begged	0	0%	5/175	2.9% (0.9-6.5)	12/210	5.7% (2.9 - 9.7)	7/223	3.1% (1.3 - 6.4)	24/192	12.5% (8.2-18.0)	68/278	24.5% (19.5-29.9)	24/108	13.3% (8.7-19.1)	
Engaged in potentially risky or harmful activities	0	0%	8/174	4.6% (2.0-8.9)	6/210	2.9% (1.1-6.1)	7/223	3.1% (1.3 - 6.4)	13/193	6.7% (3.6-11.2)	4/278	1.4% (0.4-3.6)	13/181	7.2% (3.9-11.9)	
Proportion of households reporting using none of the coping strategies over the past month	45/192	23.4% (17.6-30.1)	55/168	32.7% (25.7-40.4)	104/207	50.2% (43.2- 57.2)	93/223	41.7% (35.2 - 48.5)	82/191	42.9% (35.8-50.3)	70/277	25.3% (20.3-30.8)	60/180	33.3% (26.5-40.7)	
MOSQUITO NET OWNERSHIP															
Proportion of households owning at least one mosquito net of any type	80/195	41.3% (34.0- 48.3)	108/179	60.3% (52.7-67.6)	114/211	54.0% (47.0-60.9)	77/224	34.4% (28.2-40.9)	62/196	31.6% (25.2-38.6)	50/276	18.1% (13.8-23.2)	88/183	48.1% (40.6-55.6)	

Proportion of households owning at least one LLIN	80/195	41.3% (34.0-48.3)	107/179	59.8% (52.2-62.0)	113/211	53.6% (46.6-60.4)	77/224	34.4% (28.2-40.9)	60/196	30.6% (24.2-37.6)	46/276	16.7% (12.5-21.6)	86/183	47.0% (39.6-54.5)	Target of >80%
Average number of LLINs per household	1.6		1.62		1.5		1.5		1.32		1.54		1.3		
Average number of persons per LLIN	8.9		5.8		9.2		13.1		13.2		21		6.5		2 person per LLIN
Proportion of household covered by IRS	2/195	1% (0.1-3.6)	173/179	96.6% (92.8-98.7)	0	0%	4/224	1.8% (0.5 - 4.5)	0	0%	4/275	1.5% (0.4-3.4)	0	0%	
MORTALITY RESULT															
Crude mortality rate (CDR) Deaths/10,000/day	0.18 (0.07 -0.47)		0.33 (0.77 -1.26)		0.39 (0.07 -2.08)		0.39 (0.07 -2.08)		0.49 (0.18 - 1.35)		0.23 (0.10 -0.53)		0.23 (0.08 -0.66)		Very serious if >1 Deaths/10,000/day
Under five mortality (U5M) Deaths/10,000/day	0.26 (0.05 -1.47)		1.04 (0.22 -3.85)		0.77 (0.34 -1.75)		1.20 (0.15 -8.93)		1.13 (0.44 -2.84)		0.36 (0.03 -4.25)		0.00 (0.00 -1.30)		Very serious if >2 Deaths/10,000/day

Result Interpretation

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

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

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

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

Table 3: Classification of Public Health Significance

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

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

Table 4: simplified classification of the severity of gam, anaemia, and stunting in refugee setting (UNHCR operational guidance)

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

Source: UNHCR operational guidance

SUMMARY OF KEY FINDINGS

Global acute malnutrition (GAM) and severe acute malnutrition: The prevalence of Global acute malnutrition per camp was as follows; Pugnido_II 16.0% (12.6 – 20.0 C.I), SAM 2.9% (1.6 – 5.2 C.I); Pugnido_I 16.8% (13.2 – 21.0, SAM 3.4% (1.9-5.8 C.I); Okugo 23.3% (18.8-28.5 C.I) SAM 5.5% (3.4-8.7 C.I); Kule 23.4% (19.9 – 27.3 C.I), SAM 5.4%(3.7 – 7.7 C.I); Tierkidi 23.2% (19.5 – 27.3), SAM 6.9% (4.9 – 9.7 C.I); Jewi 25% (20.7 -29.9 C.I), SAM 5.4%(3.4-8.3 C.I) and Nguennyiel 29.5% (25.8 -33.5 C.I) SAM 8.0% (6.0 -10.6 C.I). All the surveyed camps have SAM above the >2 % of critical. The findings of the 2017 SENS survey depicted that, there was no statistically significant difference in comparison to the previous year's surveys [Pugnido_II, Kule and Tierkidi], except for Pugnido_II which has shown statistically significant reduction in GAM rate from 24.7% in 2016 to 16.8% in 2017. Prevalence of severe acute malnutrition (SAM) have shown slight reduction in the four camps [Pugnido_II, Pugnido_II, Kule and Tierkidi] where last year survey have covered, but the reduction was not statistically significant. In Okugo prevalence of GAM increased from 10.1% (6.9 -14.6) to 23.3% (18.8-28.5) and SAM from 0.8% (0.2-3.0) to 5.5% (3.4-8.7). This deterioration possibly was linked to the new arrivals that were reported at the time of the survey coming in from South Sudan.

Mortality: The mortality indicators remained at acceptable level and were within the sphere standards which are; <1 deaths per 10,000 per day for crude mortality rates and <2 deaths per



10,000 per day for under five mortality rate. The results per camp were; Pugnido_II CMR 0.33(0.07-1.26) and U5MR 1.04(0.22-3.85); Pugnido_I CMR 0.18 (0.07-0.47), U5MR 0.26(0.05 - 1.47); Okugo CMR 0.23(0.08-0.66), U5MR 0.0(0.00 -1.30); Kule CMR 0.39(0.24-0.68), U5MR 0.07(0.34 -1.75); Tierkidi CMR 0.39(0.07-2.08), U5MR 1.20(0.15-8.93); Jewi CMR 0.49(0.18-1.35), U5MR 1.13(0.44 -2.84) and Nguennyiel CMR 0.23(0.10 -0.53) U5MR 0.36(0.03-4.25).

Anaemia children 6-59 months and 6-23 months: Anaemia prevalence was above the critical threshold of 40% classified by WHO and sphere standards among children 6 – 59 months in Kule (46.7%), Tierkidi (52.5%), Jewi (48.2%), Nguennyiel (43.3%) and Okugo (56.7%) and below 40% in Pugnido_I (35.4%) and Pugnido_II (32.8%). There was a significant reduction in prevalence of anaemia in the four camps namely: Pugnido_I, Pugnido_II, Kule and Tierkidi as compared to 2016 survey report. The prevalence among children 6-23 months was of public health concern across all the camps; Okugo (74.6%), Jewi (64.1%), Tierkidi (62.7%), Kule (59.7%), Nguennyiel (56.5%), Pugnido_I (54.1%) and Pugnido II with 47.2%. The mean HB among children 6-59 months ranged from 12.3 to 12.8g/dl in all the surveyed camps.

Anaemia in women 15-49 years (Non-pregnant):The prevalence of anaemia among women of reproductive age (15 - 49 years) was below the critical threshold of 40% in all the camps; Pugnido_I 33.3% and, Tierkidi 35.5%, Pugnido_II 35.8%, Kule 35.3%, Jewi 27.5%, Nguennyiel 43.3% and Okugo 28.7%. Prevalence of anaemia among women and children was notably reduced compared to 2016 presumably because of restoration of CSB+ with micro nutrient food dense in the refugee food basket, blanket supplementary feeding and other interventions aimed at reduction of the high level anaemia prevalence reported last year.

Infant and young child feeding indicators: Timely initiation of breastfeeding ranged between 67.6% in Jewi to 94.2% in Tierkidi. Exclusive breastfeeding among 0-6 months was above 80% in most camps except Kule with 70.8% and Okugo with 51.8%. Introduction of semi-solid or soft foods for infants who had completed 6 months in camps ranged from 10% - 54.5% which is very low.

Vitamin A supplementation: Coverage of vitamin A supplementation was within the recommended SPHERE standards only in Okugo (90.9%) and Kule (95.5%) while in other camps the coverage ranged between 72.8 and 89%. There is need to strengthen the EOS campaign in the camp and also recording of the vaccinations given to children in the health facilities.

Measles vaccination: The coverage by card and or recall was above the cut-off point of 95% in 3 camps, Pugnido_I, Kule, and Jewi. The coverages in the other camps were; 88.5% in Okugo, 88.2% in Tierkidi, 88.2% in Pugnido_II and lowest in the newly established camp of Nguennyiel at 75.7%. Coverage by card ranges from 9.1% to 60.1%. There is need to strengthen recording of the vaccinations given to children in the health facilities.

Morbidity: Diarrhoea in the past two weeks among all the surveyed children ranges between 8.9% and 40.2%. The highest prevalence was recorded in Nguennyiel refugee camp, with 40.2%, followed by 26.6 in Okugo, 24.5% in Jewi and lowest in Pugnido_II.

Food security; All the household surveyed reports to have ration cards across all the camps, the main source of food being the WFP food rations which, the finding showed that they lasted for an average duration ranging from 16.7 to 23.7days. The least number of days was reported in Okugo with an average of 16.7days. The average household dietary diversity score (HDDS) ranged from 3.8 to 5.4. Most households reported to use negative coping mechanisms to cover the gap as a result of inadequate food, through borrowing, reducing the amount of food and also engaging in other risky activities.

WASH: All the camps had access to improved water sources with proportion of households using improved water sources being at 100% including Nguennyiel camp, where water trucking through the partner contracted and approved by UNHCR WASH section was being done. The average water consumption in litres per person per day (lpppd) was 21.2 in Pugnido_I, 23.3 in

Pugnido_II, 16.1 in Kule, 17.4 in Tierkidi, 17.7 in Jewi, 16.7 in Nguennyiel and 16.5 in Okugo. The average lpppd was below the UNHCR recommended amount of ≥ 20 lpppd in most of the camps. Access to improved toilet facility was poor in Nguennyiel (0.4%) being the newly camp struggling with emergency latrines and low in Pugnido_I (29.9%), Pugnido_II (26.2%) and Okugo (37.7%). Coverage in Kule, Tierkidi and Jewi was 58.7%, 75.7% and 89.1% respectively. Generally latrine coverage (be it household, shared or communal) was low, efforts to improve this should be made as it has a direct implication on the health and nutrition situation of the entire refugee population.

Mosquito net coverage: Mosquito net retention was reported to be very low across all the camps with proportion of households owning at least one mosquito nets ranges from 18.1% in Nguennyiel to 60.3% in Pugnido_II which is way below the UNHCR standards of at least 80% coverage. The average LLINs per household ranged from 1.3 to 1.6 while average number of persons per LLIN ranged from 5.8 in Pugnido_II to as higher as 21 in Nguennyiel compared to 2 persons targeted by UNHCR. This exposes the UNHCR persons of concern to public health risk of acquiring malaria leading to adverse impacts including fatalities.

The ultimate causes of high levels of malnutrition among the refugees camps in Gambella cannot be solely deduced from the nutrition survey findings as it focus on the quantitative indicators rather than qualitative which requires a Nutritional Causal Analysis (NCA) ; although it's rather clear that it can be attributed to many existing causes including: new arrivals refugee coming in a deteriorated nutrition situation, inadequate access food; poor hygiene practices, access to portable water, poor maternal care and child feeding practices especially introduction of appropriate complimentary foods, access and utilisation of health and nutrition services. As such it is necessary to have strong surveillance system to try and resolve the causes as arises.

Conclusions

The prevalence of global acute malnutrition in the seven refugee camps in Gambella operation has persistently remained critically above the emergency threshold of $\geq 15\%$ (WHO classification) as well as UNHCR acceptable standard of $< 10\%$ in stable camps since 2014. Prevalence was very high in the newly established camp of Nguennyiel that received majority of the new arrivals in late 2016 and also a double-increase in Okugo probably attributed by the same reason as Nguennyiel. Prevalence of anaemia was high above the 40% of public health significance (critical) among children aged 6-59 months in five camps out of seven, while among children aged 6-23 months it was above the 40% public health significance (critical) in all the seven camps. IYCF indicators requires improvement especially the introduction of solid and semi solid food is a concern as this provides a window of opportunity to prevent the onset of malnutrition after successfully periods of exclusive breastfeeding have been achieved.

Most of the indicators such as food security WASH, Mosquito net coverage are below the SPHERE and UNHCR standards for refugee programming. It is crucial for the Gambella operation to strengthen multi sectoral approach is addressing the high level of malnutrition and also ensuring adequate funding for the provision of live saving activities such as WASH, health and nutrition. There is need to implement robust livelihood intervention to ensure self-reliance and economic empowerment among the refugees, this will also cushion the population from the effects of the ongoing ration cuts in the WFP general food basket that poses a risk in the overall household food security leading to inadequate dietary intake and therefore a major factor in the already critical nutrition situation.

The ultimate cause of high levels of malnutrition among the refugees camp in Gambella cannot be solely deduced from the nutrition survey findings; although it's rather clear that it can be attributed to many existing causes including: new arrivals refugee coming in a deteriorated nutrition situation, inadequate access to food; poor hygiene practices, access to portable water, poor maternal care and child feeding practices especially introduction of appropriate complimentary foods, access and utilisation of health and nutrition services. As such it is necessary to have strong surveillance system to try and solve the causes as they arise.

Recommendations

Immediate term

Health and Nutrition programmes

- Strengthen the supervision of the nutrition outreach activities by community outreach agents (COAs), at the community level, focusing on active case finding, referral, enrolment in nutrition programme and systematic follow up of absentees to avoid defaulters.
- Strengthen the monthly two stage MUAC and WHZ screening and also the quarterly exhaustive WHZ screening to ensure early detection and referral for treatment of acute malnourished children in the respective nutrition programmes.
- Urgent need to harmonize the community mobilization strategy to ensure integration of the health, nutrition and WASH activities, to avoid missed opportunities and overburdening of the refugees with similar information from different sets of COAs, (health and nutrition) and hygiene promoters.
- Capacity building of the community outreach agents on the basic cross cutting issues especially key messaging on WASH, health and nutrition to ensure their effectiveness and efficiency in health education at the household level.
- Enhance the UNHCR/WFP/ARRA /UNICEF quarterly joint regular monitoring and supervision of the nutrition programmes to identify capacity needs and a monthly follow up of the key findings and action plans to address gaps in program delivery in a timely manner.
- Conduct community awareness of the existing health and nutrition services and strengthen integration with other services to ensure that the population is aware, especially the pregnant and lactating women and children to ensure early health seeking behaviors especially among the new arrivals,
- Scaling up of the blanket supplementary feeding programmes (BSFP) to cover all children 6-59 months in Okugo refugee camp due to the high prevalence of global acute malnutrition (GAM being above 15% of emergency thresholds) as per the SENS, the current target group was children 6-23 months.
- Scale up the number of mother to mother support groups, to ensure adequate coverage of all the pregnant and lactating women at the community level following the current MTMSGs methodology.
- Strengthen and improve IYCF health education sessions to be audience focused and also more emphasis on appropriate introduction of complementary feeding among children who have completed 6 months through cooking demonstrations at the community and also in the BFS.
- Capacity building of the nutrition staff on the key treatment IMAM.IYCF guidelines and more focus on provision of quality of care to all malnourished children in the camps. Mentoring of the nutrition staff on the nutrition programming, in order to improve the quality of care and reporting was needed across all the camps.

Food Security

- Improve timely distribution of the general food assistance to the refugees across all the camps, to prevent negative coping strategies that are often used when the food ration gets finished at the household levels.

- Joint UNHCR/WFP advocacy for funding for food for all the refugees to avoid ration cuts and also find alternative durable solutions, to support self-reliance and livelihood activities to prevent the dependency of refugees on humanitarian assistance.
- UNHCR/ARRA and WFP to strengthen food basket market monitoring to ensure that the refugees receive their rightful entitlements especially with the current ration cuts.

Water, Sanitation and Hygiene (WASH)

- Advocacy for funding for WASH activities to ensure implementation of adequate water provision and sanitation facilities (water usage lpppd, and latrine coverage was very low) to meet the SPHERE and UNHCR standards in all the camps.
- Strengthen hygiene promotion and education on proper hygiene, safe storage of water, hand washing at critical moments, with the aim of reducing diarrhoea among children.
- Increase water storage capacity in camps that have inadequate storage facilities and prioritize distribution of water storage Jerri cans for the households.

Mosquito net coverage

- Urgent distribution of mosquito nets to the refugees especially in the newly established camp, Nguennyiel camp, where the refugees are still living in the emergency shelters.
- Prioritize indoor residual spraying of the household in the older camps.

Mid-Terms Actions

- Conduct an impact assessment of the fresh food voucher programmes already implemented by DCA targeting the households with pregnant and lactating women in Kule and Tierkidi, to be used as baseline future programing.
- Conduct a nutrition causal analysis in Gambella to determine the risk factors of the persistent high prevalence of acute malnutrition and anaemia for the past years in Gambella and to come up with recommendations to improve the situation.
- Strengthen the multi-sectoral collaboration within all the sectors to foster integration of the services, launch the UNHCR/SCUK infant and young child feeding (multi-sectoral IYFC friendly framework for actions) to start off the process of integration with other sectors.
- Explore the possibility of introducing cash based interventions in the refugee camps in Gambella to replace a percentage of food, in order to reduce the sale of food and improve dietary diversity and household food security at the household.

Longer Term

- UNHCR/ARRA and partners to develop capacity building strategy for refugees to leverage on continuity of health and nutrition service delivery during insecurity situations that may restrict qualified staff from accessing the camps.
- Review the anaemia preventions and treatment strategy implementation in the camps, to ensure proper follow up and treatment of the children and women with severe and moderate anaemia.
- Strengthen IYCF programmes and integration with other nutrition services and scale up the community based mother to mother support groups with the introduction of MUAC screening in the support groups.
- Need for continued funding (multi-year funding) to support nutrition sensitive sectors that include WASH, health Nutrition including complimentary diets, Food, livelihoods (Nutrition agricultural sensitive projects) to close the gap of recurring malnutrition.

INTRODUCTION

There are seven refugee camps situated in Gambella Peoples' National Regional State administrative region in western part of Ethiopia. The total area of Gambella region is 3,406.3 km² sub-divided into three zonal administrations and 12 Woredas/Districts. The regional had a total of 325,415 refugee population as of 28th April 2017 following constant influx of South Sudanese flee seeking for asylum in Ethiopia. Some of the refugees have been settled in the existing camps, Akula village and Nipnip area. Majority of the refugees have been settled in Tierkidi, Pugnido_I, Jewi, Nguennyiel and Kule. Pugnido II has an estimated population 16,879 and 10,150. Majority of refugee asylum seekers enter mainly through Akobo, Burbeiy and Pagak entry points. More than 98% of the new arrivals are of Nuer ethnicity displaced from Unity, Upper Nile and Jonglei states in South Sudan.

UNHCR in coordination with ARRA, UN agencies and humanitarian partners have responded in a timely manner to the several emergencies due to sudden refugee influx in Gambella operation by ensuring set up and roll out of essential services including health, WASH, food security and Nutrition interventions in all the camps, at entry points and transit centres. There are five main health and nutrition partners ARRA, GOAL, IMC, CWW ACF and MSF-H implementing the various components of health and nutrition in Okugo, Tierkidi, Kule, Jewi, Pugnido_I, Pugnido_II, and Nguennyiel refugee camps, and Pagak entry points.

UNHCR Gambella operation successfully coordinated the relocation of 3034 refugees since the beginning of May 2017 from Pagak to Gure shembola in Assosa.

Health and Nutrition Services in Gambella

Primary Health Care

The primary health services are provided by ARRA in Tierkidi, Pugnido I Pugnido II, Jewi and Okugo and Nguennyiel, MSF-H in Kule and Tierkidi refugee camps. The existing services provided are preventive and curative services such reproductive health, curative outpatient and inpatient department, HIV AIDS and Tuberculosis, medical referrals.

Measles, polio vaccinations, deworming and Vitamin A supplementation are provided to all children under 5 years at the reception centres upon registration and routine vaccination was ongoing in all the surveyed camps and also during the bi-annual EOS campaigns conducted in collaboration with the regional health bureau. All partners contribute to the weekly Health Information System (HIS) report. The leading morbidities reported in the HIS in 2016/17 are malaria, upper and lower respiratory tract infections and diarrhoea.

Nutrition services

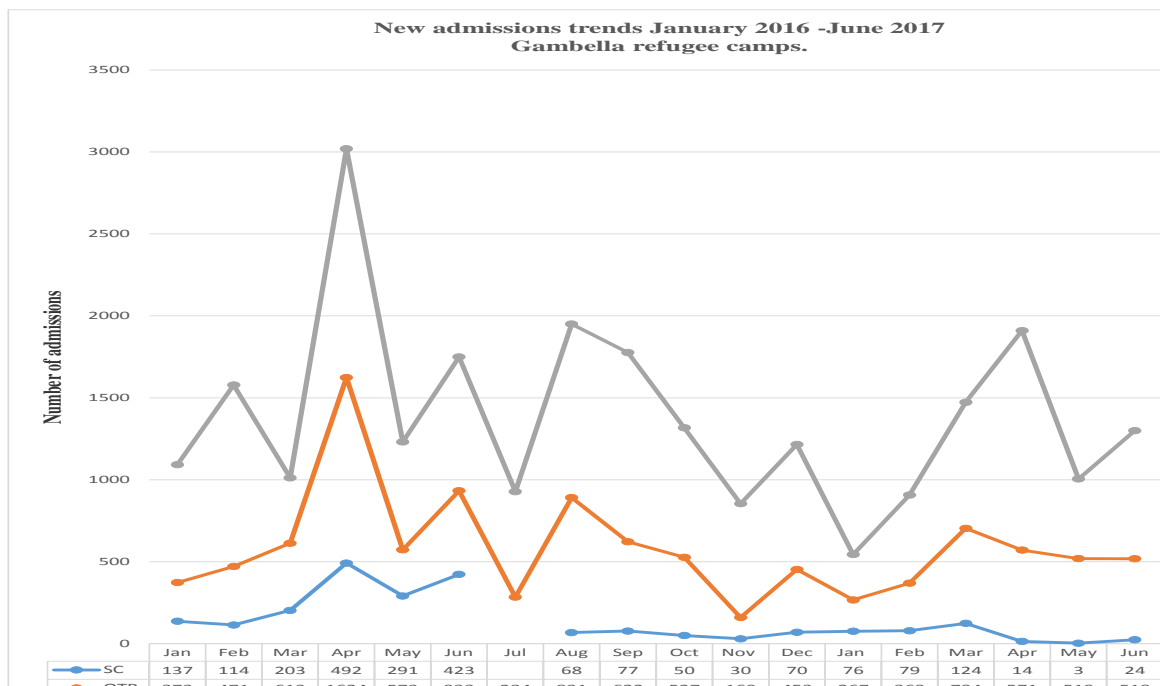
Comprehensive nutrition programmes (TSFP, BSFP, IYCF and OTP/SC) are well established across all the camps with 15 nutrition centres. GOAL in Tierkidi and Kule ACF in Pugnido and Nguennyiel, MSF-H -Kule and CWW in Pugnido_1, IMC in Jewi and ARRA in Okugo

Key nutrition interventions include:

- Community outreach activities; Active case finding using MUAC of children, 6-59 months, referrals of acute malnourished children, defaulter tracing and health education at the household level).
- Blanket Supplementary Feeding (BSFP) for children aged 6-59 months, Pregnant and Lactating Women (PLW) as preventive method from further nutritional deterioration (except Okugo with the BSFP target of children 6-23 months)
- Targeted Supplementary Feeding Program (TSFP) for Moderately Acute Malnourished (MAM) children aged 6-59 months, Pregnant and Lactating Women (PLW), medical and social cases and chronic illnesses such as people living with HIV, TB.

- Outpatient Therapeutic Feeding Program (OTP) for children with severe acute malnutrition (SAM) without medical complications treatment and Stabilization Care for the treatment of SAM with medical complications, usually at high risk of death.
- Support and promotion of Infant and Young child Feeding (IYCF) through the baby friendly spaces at the nutrition centre and mother to mother support groups at the community level.
- Electronic fresh food voucher programme targeting household with children aged 6-23 months, pregnant and lactating women using electronic voucher system in Kule and Tierkidi camps.
- Community based Management of Acute Malnutrition (CMAM) where over 13,193 malnourished fewer than five children (1038 in the SC 6,818 in OTP and 16,928 in TSFP have been treated for acute malnutrition from June 2016 –June 2017.

Figure 1. Trends of new admissions in the nutrition programmes



Food Security

The main source of food in the camps is through the general food distribution (GFD) provided by WFP and distributed by ARRA on monthly basis. Most households in the camps are food insecure due to the continuous new arrivals that come and spontaneously reside with their relatives prior to formal registration. Dietary diversity is also a major challenge in meeting all the nutritional requirements, limited livelihoods and lack of purchasing power which is further worsened by lack of access to additional sources of income has led to continuous sale of food rations provided to meet other dietary needs as reported in the post distribution monitoring reports conducted the first quarter of 2017. Though analysis of Food basket monitoring conducted in March 2017 showed that the food basket provided exceeded the requirements of 2100 kcal/person/day, the calculations did not consider the 20% meant for compensation of losses and milling cost therefore, the total the daily provision of energy requirement was 1926 Kcal/person/day which is below the minimum daily recommended allowance.

Table 5: Contents of the General Food Ration (GFR) – May –June 2017



RATION CONTENTS	Daily Ration	Energy	Protein	Fat	Calcium	Copper	Iodine	Iron	Magnesium	Selenium	Zinc
	g/person/day	kcal	g	g	mg	mg	µg	mg	mg	µg	mg
MAIZE MEAL, WHITE, WHOLE GRAIN	450	1629	36.5	16.2	27.0	0.9	-	15.5	571.5	69.8	8.2
BEANS, DRIED	50	169.9	11.0	0.6	70.8	0.4	-	3.1	86.2	6.8	1.4
CSB SUPERCEREAL (CSB+) [WFP]	50	187.89	7.6	4.0	198.2	0.2	20.0	4.7	-	8.0	3.8
OIL, VEGETABLE [WFP]	30	265.2	0.0	30.0	0.0	-	-	0.0	-	-	-
SALT, IODISED [WFP]	5	0	0.0	0.0	-	-	200.0	-	-	-	0.0
Ration totals:	585	2252	55.2	50.8	296.0	1.5	220.0	23.3	657.7	84.5	13.4
Beneficiary requirements for:		2100	52.5	40	989	1.1	138	32	201	27.6	12.4
% of requirements supplied by ration:		107%	105%	127%	30%	140%	159%	73%	327%	306%	108%
% of energy supplied by protein or fat:		70%	10%	20%							

*20.0% of the amount of cereals allocated for milling cost and loss.

Efforts to improve household food diversity, several agencies CWW, ACF and GOAL are supporting small scale back yards gardens, and demonstration sites in the respective camps. Most households have been supported with seedlings and farming equipment's, training and monitoring at the household level.

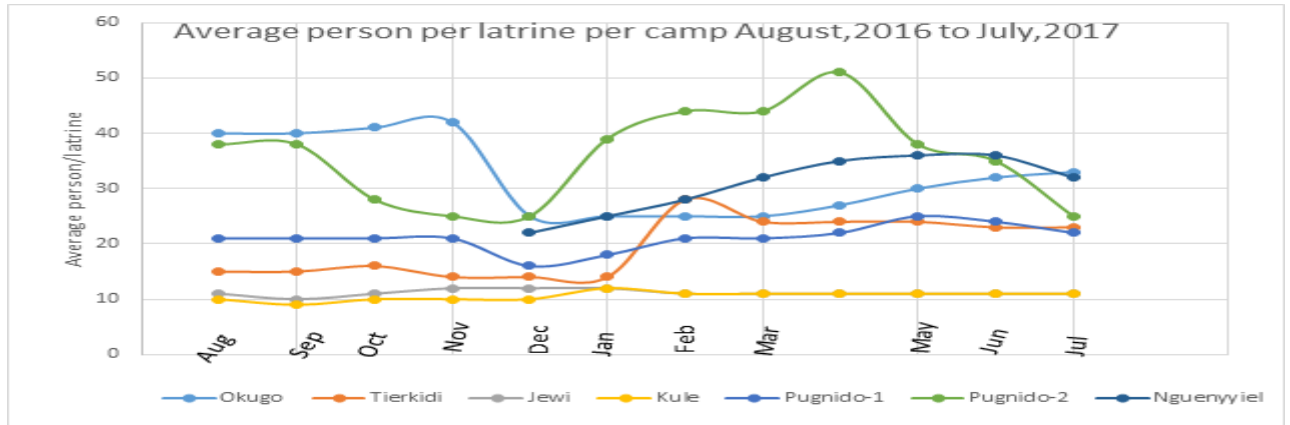
DCA continued to provide fresh food vouchers to household with children, pregnant and lactating women in Kule and Tierkidi refugee camps.

Water Sanitation and Hygiene Situation

UNHCR coordinates water, sanitation and hygiene activities in the camps in liaison with partners (DRC, IRC, ADRA, OXFAM, NCA/DCA and ANE, Water supply per person per day has been improving and was maintained at an average of 15.6 litre per person per day (lpppd) Jewi -14, Kule -15.6, Tierkidi-14, Nguenyiel – 11.4, Pugnido_1 - 17.4, Pugnido_II – 16.5, Okugo, 20) during the last one year. The crude latrine access was at an average of 1:24 (Jewi 1:11, Kule 1:11 Tierkidi 1:20, Pugnido-I 1:21, Okugo 1:32, Nguenyiel 1:35 and Pugnido-II 1:36).

Efforts to improve sanitation through latrine construction has been ongoing through community participation in all the camps and hygiene promotion has been part of community outreach agents. Access to sufficient sanitation facilities will be improved in Nguenyiel and Pugnido 1 and 2 camps when the planned construction of household latrines from the annual budget is completed.

Figure 2: Average latrine per person in Gambella camps; August 2016 to July 2017.



SURVEY OBJECTIVES

The overall objective of the SENS was to assess the general health and nutrition status of refugee population and the mortality indices to formulate workable recommendations for appropriate nutrition and public health interventions.

Primary objectives

1. To determine the prevalence of acute malnutrition among children 6-59 months
2. To determine the prevalence of stunting among children 6-59 months
3. To assess the two-week period prevalence of diarrhoea among children 6-59 months
4. To assess the prevalence of anaemia among children 6-59 months and women of reproductive age (non-pregnant, 15-49 years)
5. To determine the coverage of measles vaccination among children 9-59 months
6. To determine the coverage of vitamin A supplementation among children 6-59 months and postnatal women
7. To investigate Infant and Young Child Feeding (IYCF) practices among children 0-23 months
8. To assess the proportion of households that use an adequate quantity of water per person per day
9. To determine the population's access to improved water, sanitation and hygiene facilities
10. To determine the coverage of ration cards and the duration the General Food Distribution (GFD) ration lasts for recipient households
11. To determine the extent to which negative coping strategies are used by households
12. To assess household dietary diversity
13. To determine the ownership of mosquito nets (all types and LLINs) in households
14. To determine the utilization of mosquito nets (all types and LLINs) by the total population, children 0-59 months and pregnant women
15. To assess crude and under-five death rates in the camps in the retrospective period over the last three months.
16. To establish recommendations on actions to be taken to address the situation.

Secondary objectives:

1. To determine enrolment into Antenatal Care clinic and coverage of iron-folic acid supplementation in pregnant women.
2. To assess the enrolment coverage of selective feeding programs (OTP/SC, TSFP and BSFP) for children 6-59 months.

METHODOLOGY

Study Areas

The survey was carried out in seven camps, named Pugnido_I, Pugnido_II, Kule, Tierkidi, Jewi, Nguennyiel and Okugo located in Gambella region – Ethiopia. Generally, the population surveyed is homogeneous and there are no major differences in the topography and weather conditions in all the locations or area of study.

Study Population

Refugee population are living in different refugee camps, by the time of the survey the total refugee population in Gambella region was 325,972 (UNHCR progress data as of 28th April 2017). The assessment was carried out among children aged 0-59 months and women of reproductive age (15-49 years). Heads of households or caregivers were interviewed and provided information related to either individuals or household depending on the administered questionnaire.

Study design

A cross-sectional study was conducted in each camp, where all the required parameters were measured at a point in time. The survey was designed using the simple random sampling method in all the camps.

Sample size

Sample size was estimated based on the actual population obtained from the household labelling and verification which was conducted prior to the survey to ensure that all households included in the sampling frame were physically present in respective camps.

The sample size was calculated using the Standardized Monitoring and Assessment of Relief and Transitions (ENA for SMART) software version July 9th, 2015 following UNHCR SENS guideline v2 (2013). In all the camp, except Jewi, Nguenyiel and Okugo, the sample size was calculated using the upper confidence interval of previous year’s nutrition survey global acute malnutrition (GAM) prevalence as estimated prevalence, desired precision (5%), average HH sized (5.2 -6.3), estimated % of under five children (16.4 -18.9%) and a non-response rate ranging from 15 -20% was used. For Jewi, Nguennyiel and Okugo camps, the weighted prevalence of 2016 GAM rate for Gambella camps were used to get the maximum possible sample size due to the fact that there were no previous survey result or outdated result which might not represent the current situation in nutrition programs.

Table 6: Camp specific sampling and sample size calculation

Parameter	Tierkidi	Kule	Pugnido 1	Nguen nyiel	Pugnid o 2	Jewi	Okugo
Estimated % GAM prevalence	29.4	29.9	28.9	24.5	20.4	24.5	24.5
± Desire precision	5	5	5	5	5	5	5
Average household size (context data)	6.3	6.1	6.0	5.2	5.5	6.0	4.37
<5 population (%)	18.1	18.1	16.4	18.1	18.5	18.9	17.5

Non-response households (%)	15	15	15	20	15	15	5
Estimated Mortality prevalence	0.5	0.5	0.5	0.5	0.5	0.5	0.4
Precision	0.3	0.3	0.3	0.3	0.3	0.3	0.3
# HH for anthropometric	364	379	419	419	321	325	347
# HH for Mortality data	441	455	465	570	356	462	361
Children to be included	319	322	316	284	250	284	227
Population for Mortality	2371	2371	2371	2371	1728	2371	1773

Sampling procedure

Prior to the surveys all inhabited tukuls / tents were physically identified and given unique numbers per zone and block (zone, block, community and household numbers). Verification of the households was done the week just before data collection in the respective camp. This was done to ensure the sampling frame is updated and as accurate as possible. Simple random sampling method was used in all the refugee camp. Sample size was generated using ENA for SMART software based on the household list created during verification.

Selection of households and individuals

Each team was provided with a list of households to be surveyed in the respective camp. 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 the individual or an entire household refused to participate then it was considered a refusal and the individual or the household were not replaced with another.

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.

Questionnaires

The standard UNHCR SENS questionnaires (appendix1) was used to collect all the required for the household. The questions were in English language and administered in local language Nuer and Agnuak via translation.

Six standard module tools were used to collected information on the relevant indicators from different target groups. The six module questionnaire covered the following areas and measurements:

Module 1: Anthropometry and Health: children aged 6-59 months. The questionnaire focused on the anthropometric measurements on children aged 6-59 months. Information collected on weight, height, MUAC, oedema, enrolment in selective feeding programmes, immunisation (measles), vitamin A supplementation and diarrhoea in past two weeks.

Module 2: Anaemia: children aged 6-59 months and women of reproductive age (15-49 years). The questionnaire collected the Hb level of the targeted beneficiaries.

Module 3: IYCF: children aged 0-23 months.

Module 4: Food Security: all persons of concern (household as a whole). The questionnaire focused on access and use of the GFR, negative coping mechanisms used by household members and household dietary diversity (HDDS).

Module 5: WASH: all persons of concern (household as a whole).

Module 6: Mosquito Net Coverage: all persons of concern (household as a whole).

An additional questionnaire for mortality data was included in the survey and data was collected based on a 90-day recall period.

Measurement methods

Household-level indicators

- a) **Food security:** Food insecurity is a key underlying cause of malnutrition. Currently limited systematic food security information collected from households in refugee contexts.
- b) **WASH:** Currently limited systematic WASH information collected from households in refugee contexts, although UNHCR is increasingly implementing regular WASH camp-level monitoring systems. The quality of WASH practices is an important determinant of malnutrition and improvement of WASH indicators is a priority for UNHCR
- c) **Mosquito net coverage:** Universal coverage of mosquito nets at the household level is currently being followed in areas where there is malaria transmission. Malaria also is related to anaemia levels and acute malnutrition is often associated with increased mortality from malaria, especially among young children
- d) **Mortality:** An individual-level mortality form was used. Data entry and analysis was done in ENA for SMART with the household-level summary data derived from the form by manual data entry.

Individual-level indicators

- a) **Sex of children:** gender was recorded as male or female.
- b) **Birth date or age in months for children 0-59 months:** the exact date of birth (day, month, and year) was recorded from either an EPI card, child health card or birth notification if available. Other, alternative means to found the information of age of the children was used:-
- c) **Estimated age in months by used a local event calendar or by comparing the selected child with a sibling whose ages are known.** We used length/height proxy was used which means that the measurement of between 67 cm to less than 87 cm we considered age between 6 to 23 months and 87 to 110 cm also considered 24 to 59 months of age.
- d) **Age of women 15-49 years:** Reported age was recorded in years by recall (Birth certificate).
- e) **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 stabilise it on the ground. Clothes, shoes and any heavily ornaments were removed except very light underwear.

- f) **Height/Length of children 6-59 months:** children's height or length was taken to the closest 1 millimetre using a wooden height board (Shorr Productions). Children less than 87cm were measured lying down, while those greater than or equal to 87cm was measured standing up.
- g) **Oedema in children 6 months-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.
- h) **Mid Upper Arm Circumference (MUAC) of children 6 months-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 1 millimetre used a standard tape.
- i) **Child enrolment in selective feeding programme for children 6-59 months:** selective feeding programme enrolment coverage was assessed.
- j) **Measles vaccination in children 6-59 months:** measles vaccination was assessed by checking for the measles vaccine on the EPI card if available if not asking the caregiver to by recall.
- k) **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 were recorded from the EPI card or health card if available or by asking the caregiver to recall if no card was available.
- l) **Haemoglobin concentration in children 6-59 months and women 15-49 years:** Hb concentration was taken from a capillary blood sample from the fingertip and recorded on gram per decilitre by used the portable HemoCue Hb 301 Analyser (HemoCue, Sweden). If severe anaemia was detected, the child or the woman was referred for treatment immediately.
- m) **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. Mothers / Caregivers were asked if their child had suffered episodes of diarrhoea in the past two weeks.
- n) **ANC enrolment and iron and folic acid pills coverage:** The surveyed woman was pregnant and asked the enrolment of ANC programme and was receiving iron-folic acid pills. An iron-folic acid pill image was shown to the pregnant woman when asked to recall.
- o) **Infant and Young child feeding practices in children 0-23 months:** infant and young child feeding practices was assessed based on UNHCR Standardised Expanded Nutrition Survey (SENS) Guidelines.
- p) **Referrals:** one of the ethical considerations was referral the needy people of concern based on the health status. For example: when a child severe malnutrition MUAC was < 12.5 cm and /or has oedema was present and also when haemoglobin was < 7.0 g/dl all are referred.

Case definitions, inclusion criteria and calculations

Household: The definition of the household in the nutrition survey was “a group of people who lives together and eats from the same pot”.

- a) **Malnutrition in children 6-59 months:** Acute malnutrition was defined using weight-for-height index values or the presence of oedema and classified as show in the table below.

Definitions of acute malnutrition using weight-for-height and/or oedema in children 6–59 months

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

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

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

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

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

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

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

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

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

Child enrolment in selective feeding programme for children 6-59 months:

Feeding programme coverage was 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 (%) =

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

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

Coverage of TFP programme (%) =

No. of surveyed children with SAM according to OTP criteria who reported being registered in OTP X100

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

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

Infant and young child feeding practices were assessed as follows based on the UNHCR SENS IYCF module that was based on WHO recommendations (WHO, 2007 as follows:

a) *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

b) *Exclusive breastfeeding under 6 months:*

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

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

Infants 0–5 months of age

c) *Continued breastfeeding at 1 year:*

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

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

Children 12–15 months of age

d) *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

e) *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

f) *Continued breastfeeding at 2 years:*

Proportion of children 20–23 months of age who are fed breast milk =

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

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

Proportion of children 6–23 months of age who receive an iron-rich or iron-fortified food that was specially designed for infants and young children, or that was fortified in the home=
Children aged 6–23 months who received iron-rich foods or a food that was specially designed for infants and young children and was fortified with iron, or a food that was fortified in the home with a product that included iron during the previous day
Children 6–23 months of age

Bottle feeding:

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

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

Anaemia was classified according to the following cut-offs in children 6-59 months and non-pregnant women of reproductive age. Anaemia cut-offs for pregnant women should be adjusted depending on the stage of pregnancy (gestational age). Pregnant women are not included in routine UNHCR nutrition surveys for the assessment of anaemia due sample size issues (usually a small number of pregnant women are found) as well as the difficulties in assessing gestational age in pregnant women.

Definition of anaemia (WHO 2000)

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

Classification of public health problems and targets

Mortality: The following thresholds are used for mortality.

Mortality benchmarks for defining crisis situations (NICS, 2010)

Emergency threshold	
very serious	CDR > 1/10,000 / day
out of control	CDR > 2 /10,000 /day
major catastrophe' (double for U5MR thresholds)	CDR > 5 /10,000 /day

Anthropometric data: UNHCR's target for the prevalence of global acute malnutrition (GAM) for children 6-59 months of age by camp, country and region was < 10% and the target for the prevalence of severe acute malnutrition (SAM) was <2%.

Classification of public health significance for children under 5 years of age

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

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

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

	Recovery	Case fatality	Defaulter rate	Coverage
SFP	>75%	<3%	<15%	>90%
TFP	>75%	<10%	<15%	>90%

* Also meet SPHERE standards for performance

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

Vitamin A supplementation coverage in children: UNHCR Strategic Plan for Nutrition and Food Security (2008-2012) states that the target for vitamin A supplementation coverage for children aged 6-59 months by camp, country and region should be >90%.

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

Classification of public health significance (WHO 2000)

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

Training, coordination and supervision

The surveys were coordinated by UNHCR and ARRA with support from WFP, GOAL, CWW, IMC and ACF. Data management, analysis and technical assistance implementation, data management and analysis was done by UNHCR Addis Ababa BO and Gambella Sub-office nutritionists.

A total of 12 teams were involved in training and data collection (6 teams per camp); collecting data concurrently in two camps each team consisting of 6 personnel's (team leader, interviewer, translator, Anthropometric measurer, Anthropometric Assistance and HB measurer). The core teams were trained for 5 days including a day for standardization test and pilot test. A two days training was conducted centrally for coordinators, supervisors and team leaders who joined the continuation of the training at camp level for the enumerators. The training included theoretical and practical parts covering survey objectives, methodologies, the use of mobile data collection (MDC), ODK mobile technology, techniques of anthropometric measurement, haemoglobin measurements, roles and responsibilities of each team member, interviewing skills and recording of data; interpretation of local calendar of events to age determination, consent taking,

administration of different questionnaires, a practical session on sampling procedures and ethical considerations. The practical session on anthropometric measurements included practice on volunteer children as well as a standardization test. The practical session on haemoglobin measurements included practice on trainers themselves as well as a standardization test. The training was concluded with a field test prior to data collection in all the surveyed camps.

Survey quality

Quality was ensured by comprehensive training and supervision during the data collection period. The ENA-SMART plausibility check for anthropometric measurements was generated daily and feedback provided to the teams. Quality of data was ensured through: Crosschecking of filled questionnaires on daily basis, daily review of the team performance and addressing any difficulties encountered. 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

Data collection and analysis

Data collection was conducted from the 29th April to 9th of July 2017 in Nguennyiel, Kule, Tierkidi, Jewi, Pugnido_I, Pugnido_II and Okugo refugee camps. Data was transferred from the mobile phones to excel readable format, whereas mortality data entry was done in ENA for SMART. Anthropometric and mortality data was analysed using ENA for SMART version July 9th 2015, and other indicators were analysed using Epiinfo v.3.5.4. Primary data and secondary information related to health and nutrition was gathered through observations and from partner records.

Ethical consideration and community consent.

During the protocol development partners in the camps and at Gambella were informed and taken through the process of the survey in March 2017. The camp management was also informed of the upcoming SENS. Given the comprehensive nature of the survey and taking of peripheral blood, verbal consent was obtained from individuals or /and households before the interviews, anthropometric measurements and haemoglobin test. Children and women with serious health and nutrition problems; either sick or malnourished were referred to the health centre for further assessment and treatment

PRESENTATION OF RESULTS

Table 7: Targeted against surveyed number of children aged 6 - 59months

	Camp						
	Pugnido_I	Pugnido_II	Kule	Tierkidi	Jewi	Nguennyiel	Okugo
Targeted # of children to be surveyed	316	287	322	319	284	284	227
Actual # of children surveyed	362	384	510	463	351	549	307
Percentage coverage	114%	153.6%	158%	145%	123.5%	193%	135%

RESULTS FROM PUGNIDO_I CAMP

Table 8: Demographic characteristics of the study population

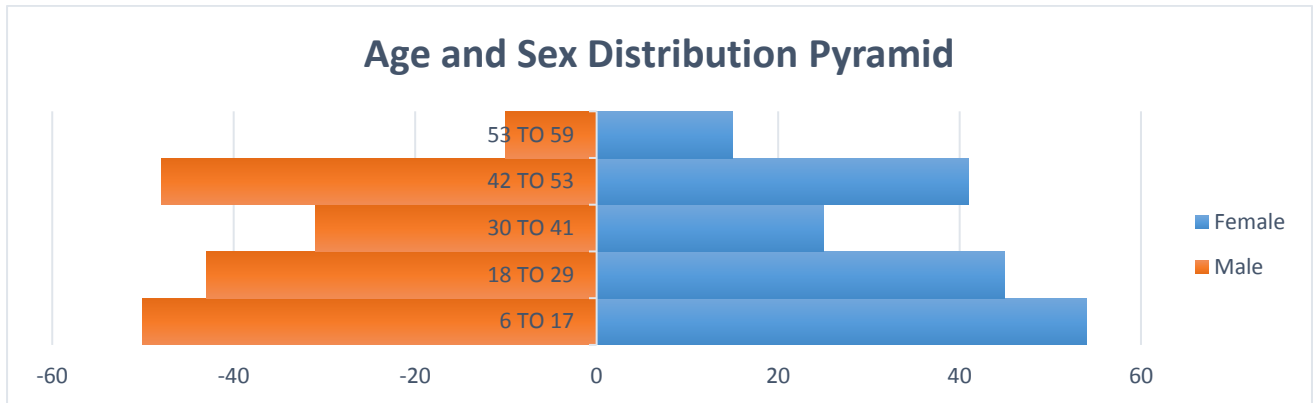
Total population surveyed	2,446
Total U5 surveyed	407
Average Household size	6.0
% of children U5	16.6%

Table 9: Distribution of age and sex of sample, Pugnido_I

AGE (mo)	Boys		Girls		Total		Ratio
	no.	%	no.	%	no.	%	Boy: girl
6-17	50	48.1	54	51.9	104	28.7	0.9
18-29	43	48.9	45	51.1	88	24.3	1.0
30-41	31	55.4	25	44.6	56	15.5	1.2
42-53	48	53.9	41	46.1	89	24.6	1.2
54-59	10	40.0	15	60.0	25	6.9	0.7
Total	182	50.3	180	49.7	362	100.0	1.0

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

Figure 3: Population age and sex pyramid, Pugnido_I



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).

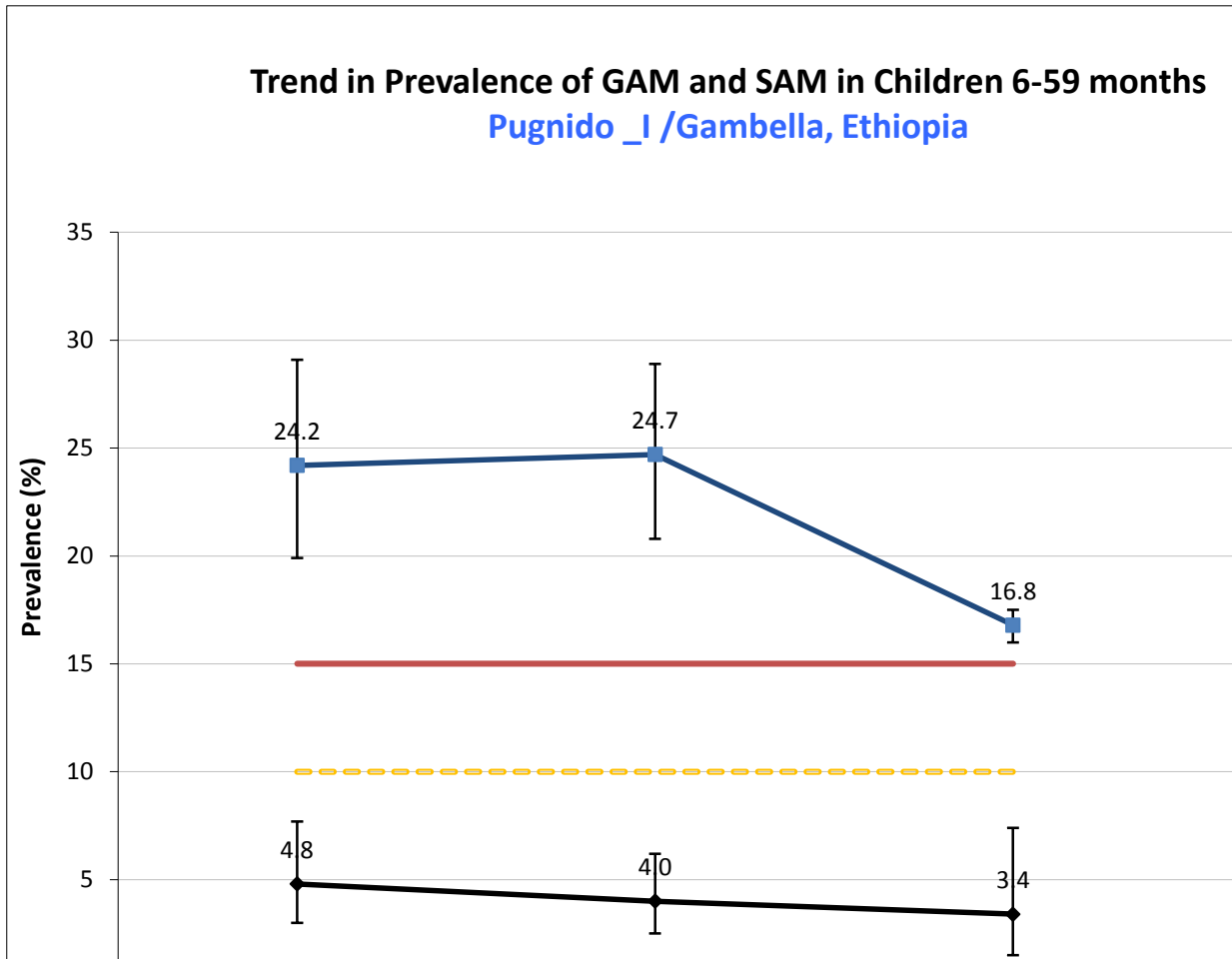
Table 10: Prevalence of acute malnutrition based on WHZ (and/or oedema) and by sex

	All n = 358	Boys n = 179	Girls n = 179
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(60) 16.8 % (13.2 - 21.0 95% C.I.)	(32) 17.9 % (13.0 - 24.1 95% C.I.)	(28) 15.6 % (11.0 - 21.7 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(48) 13.4 % (10.3 - 17.3 95% C.I.)	(25) 14.0 % (9.6 - 19.8 95% C.I.)	(23) 12.8 % (8.7 - 18.5 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(12) 3.4 % (1.9 - 5.8 95% C.I.)	(7) 3.9 % (1.9 - 7.9 95% C.I.)	(5) 2.8 % (1.2 - 6.4 95% C.I.)

*The prevalence of oedema was 0.0 %

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

Figure 4: Prevalence of global and severe acute malnutrition based on WHO Growth Standards in children 6-59 months



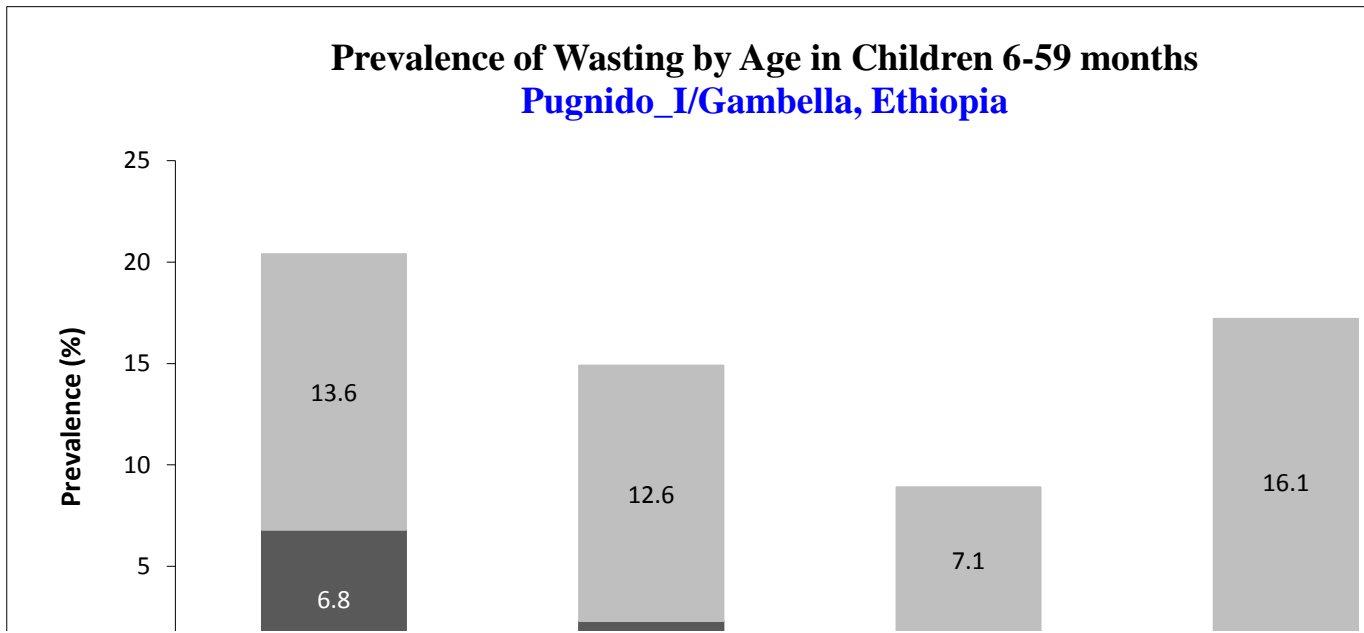
There was significant reduction from 24.7% to 16.8% in the GAM prevalence, however slight reduction but no significant difference in SAM prevalence in the camp when compared to the results of 2016.

Table 11: 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.	%	Age (mo)	Total no.	No.	%
6-17	103	7	6.8	14	13.6	6-17	103	7	6.8
18-29	87	2	2.3	11	12.6	18-29	87	2	2.3
30-41	56	1	1.8	4	7.1	30-41	56	1	1.8
42-53	87	1	1.1	14	16.1	42-53	87	1	1.1
54-59	25	1	4.0	5	20.0	54-59	25	1	4.0
Total	358	12	3.4	48	13.4	Total	358	12	3.4

The youngest children (6-17 months) were the most affected by severe acute malnutrition as compared to other age groups whereas 54-59 months were the most affected group by moderate acute malnutrition.

Figure 5: Prevalence of wasting by age in children 6-59 months for Pugnido_I



Wasting, as in the case of severe was highest in youngest age group and the oldest age group were the highest affected by moderate wasting.

Table 12: 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. 13 (3.6 %)	Not severely malnourished No. 346 (96.4 %)

All the cases of SAM were due to wasting and no oedema was detected (Table 6).

Figure 6: Distribution of WHZ of survey population compared to reference population, Pugnido_I.

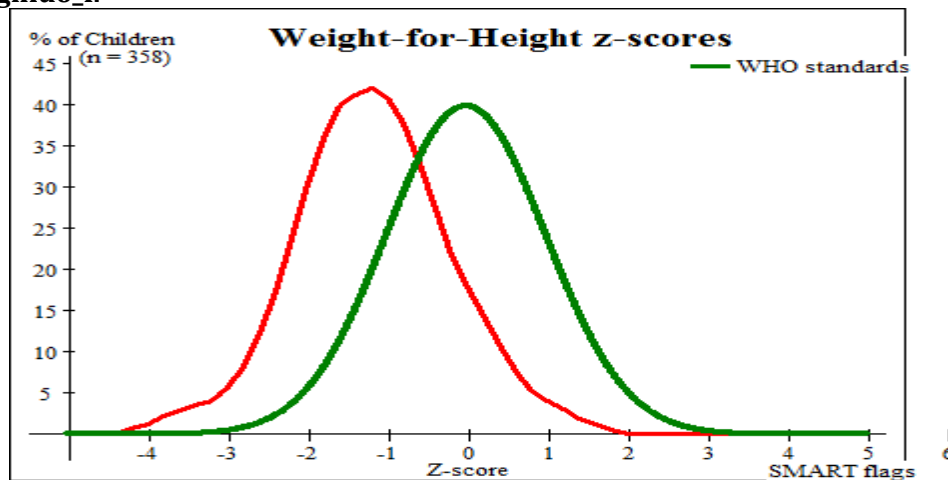


Figure 7 above shows a comparison of the surveyed and reference weight-for-height z-score (WHZ) distribution. The survey distribution (in red) followed a normal distribution and was shifted to the left of the WHO reference, showing an average lower z-scores, and therefore high malnutrition.

Table 13: Prevalence of acute malnutrition based on MUAC cut offs (and/or oedema) and by sex

	All n = 362	Boys n = 182	Girls n = 180
Prevalence of global malnutrition (< 125 mm and/or oedema)	(10) 2.8 % (1.5 - 5.0 95% C.I.)	(5) 2.7 % (1.2 - 6.3 95% C.I.)	(5) 2.8 % (1.2 - 6.3 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(7) 1.9 % (0.9 - 3.9 95% C.I.)	(2) 1.1 % (0.3 - 3.9 95% C.I.)	(5) 2.8 % (1.2 - 6.3 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(3) 0.8 % (0.3 - 2.4 95% C.I.)	(3) 1.6 % (0.6 - 4.7 95% C.I.)	(0) 0.0 % (0.0 - 2.1 95% C.I.)

The prevalence of malnutrition by MUAC was 2.8%, which was much lower than the 16.8% WHZ prevalence.

Table 14: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema

Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting (≥ 115 mm and < 125 mm)				Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	104	1	1.0	4	3.8	99	95.2	0	0.0
18-29	88	1	1.1	3	3.4	84	95.5	0	0.0
30-41	56	0	0.0	0	0.0	56	100.0	0	0.0
42-53	89	1	1.1	0	0.0	88	98.9	0	0.0
54-59	25	0	0.0	0	0.0	25	100.0	0	0.0
Total	362	3	0.8	7	1.9	352	97.2	0	0.0

The most affected age group was children aged 6-17 months when compared to the other categories, focus on IYCF-especially appropriate introduction of complementary feeding should be strengthened.

Table 15: Prevalence of underweight based on weight-for-age z-scores by sex

	All n = 357	Boys n = 177	Girls n = 180
Prevalence of underweight (<-2 z-score)	(59) 16.5 % (13.0 - 20.7 95% C.I.)	(37) 20.9 % (15.6 - 27.5 95% C.I.)	(22) 12.2 % (8.2 - 17.8 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and \geq-3 z-score)	(50) 14.0 % (10.8 - 18.0 95% C.I.)	(30) 16.9 % (12.1 - 23.2 95% C.I.)	(20) 11.1 % (7.3 - 16.5 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(9) 2.5 % (1.3 - 4.7 95% C.I.)	(7) 4.0 % (1.9 - 7.9 95% C.I.)	(2) 1.1 % (0.3 - 4.0 95% C.I.)

A total of 16.5 % (13.0 - 20.7 95% C.I.) were underweight, and 2.5 % (1.3 - 4.7) were severely underweight and there was no difference when compared to the 16.4% (13.2 -20.2) in 2016.

Table 16: 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	102	6	5.9	18	17.6	78	76.5	0	0.0
18-29	87	1	1.1	11	12.6	75	86.2	0	0.0
30-41	56	2	3.6	9	16.1	45	80.4	0	0.0
42-53	87	0	0.0	8	9.2	79	90.8	0	0.0
54-59	25	0	0.0	4	16.0	21	84.0	0	0.0
Total	357	9	2.5	50	14.0	298	83.5	0	0.0

Table 17: Prevalence of stunting based on height-for-age z-scores and by sex Pugnido_I

	All n = 352	Boys n = 176	Girls n = 176
Prevalence of stunting (<-2 z-score)	(32) 9.1 % (6.5 - 12.6 95% C.I.)	(22) 12.5 % (8.4 - 18.2 95% C.I.)	(10) 5.7 % (3.1 - 10.1 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(27) 7.7 % (5.3 - 10.9 95% C.I.)	(18) 10.2 % (6.6 - 15.6 95% C.I.)	(9) 5.1 % (2.7 - 9.4 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(5) 1.4 % (0.6 - 3.3 95% C.I.)	(4) 2.3 % (0.9 - 5.7 95% C.I.)	(1) 0.6 % (0.1 - 3.1 95% C.I.)

The prevalence of stunting was 9.1% (6.5-12.6, 95% C.I), it was low and as observed among the South Sudanese populations (Table 17).

Table 18: Prevalence of stunting by age based on height-for-age z-scores Pugnido_I

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
		No.	%	No.	%	Total no.	No.
6-17	99	3	3.0	9	9.1	87	87.9
18-29	85	1	1.2	6	7.1	78	91.8
30-41	56	1	1.8	8	14.3	47	83.9
42-53	87	0	0.0	4	4.6	83	95.4
54-59	25	0	0.0	0	0.0	25	100.0
Total	352	5	1.4	27	7.7	320	90.9

Children under 40 months appeared to be more affected than the older ones and particularly those between 30 and 41 were more affected for moderate stunting.

Figure 7: Trends in the prevalence of stunting by age in children 6-59 months_ Pugnido_I

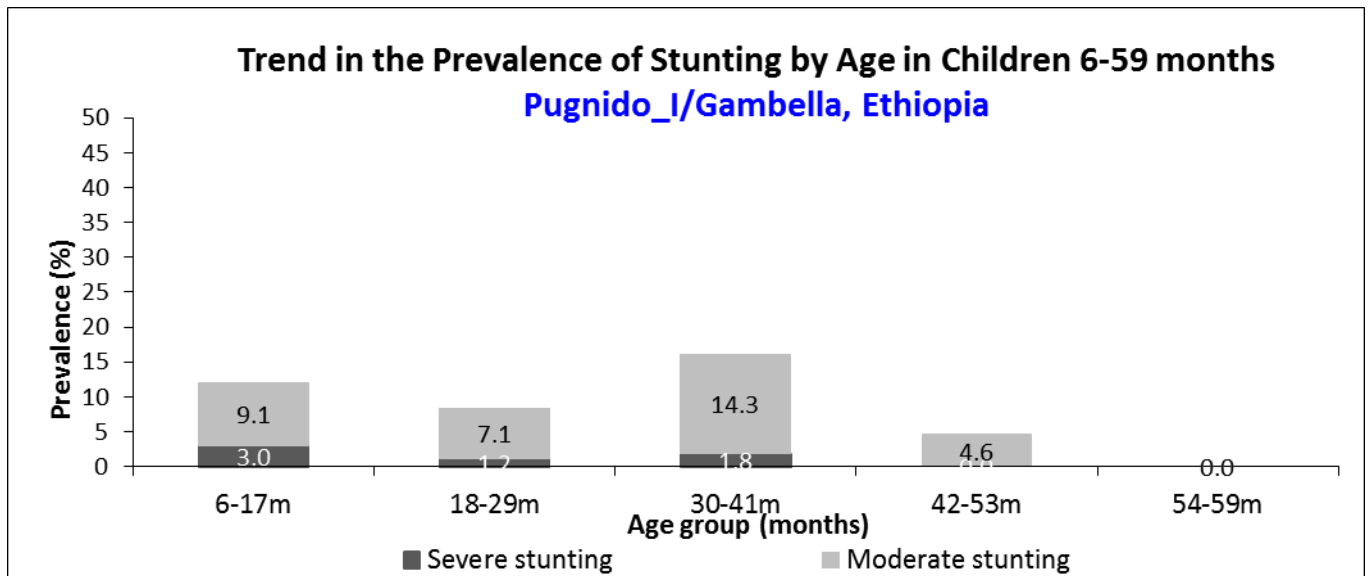
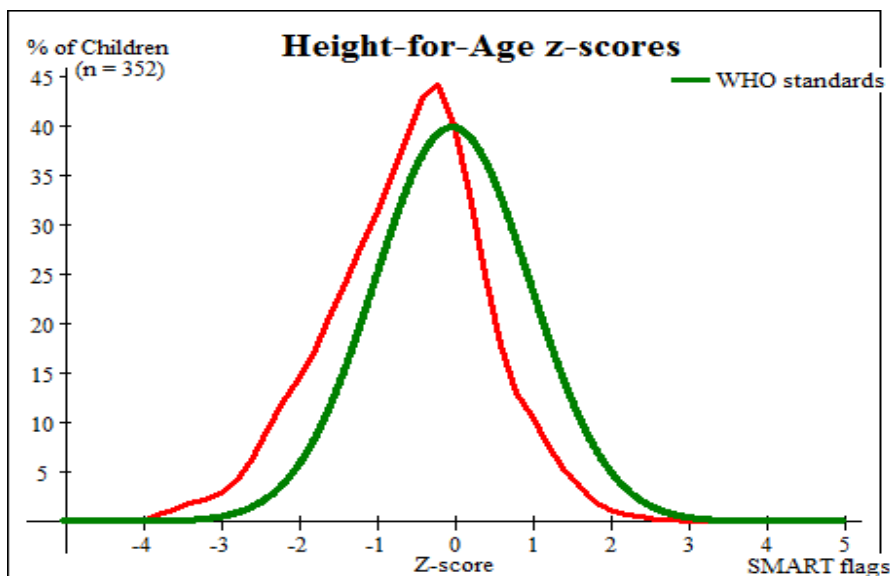


Figure 8: Distribution of height-for-age z-scores (based on WHO Growth Standards)



The height-for-age distribution for the survey (red) was compared to the WHO distribution (green) in figure 9. The distribution followed a typical bell shape, and was also shifted to the left of the reference, indicating an average lower mean z-score for the survey sample.

Table 19: Mean z-scores, Design Effects and excluded subjects Pugnido_I

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	358	-1.19±0.96	1.00	3	1
Weight-for-Age	357	-1.12±0.91	1.00	2	3
Height-for-Age	352	-0.58±0.99	1.98	3	7

* contains for WHZ and WAZ the children with oedema.

Mortality results

Table 20: Mortality rates Pugnido_I

Crude Mortality Rate (CMR) total No. of death /10,000/day	0.18 (0.07 -0.47 95% CI)
Under 5 Mortality (U5MR) total No. of death /10,000/day	0.26 (0.05 -1.47 95% CI)

CMR and U5MR was within the emergency threshold in Pugnido_I refugee camp

FEEDING PROGRAMME COVERAGE RESULTS

Table 21: 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)	11/53	20.8% (10.8-34.1)
Therapeutic feeding programme coverage (WHZ < - 3 OR MUAC < 115mm)	3/14	21.4% (4.7 - 50.8)
Blanket Supplementary (WHZ >= - 2 OR MUAC >= 125)	320/359	89.1% (85.4-92.2)

Estimated programme coverage the selective feeding programmes (TSFP and OTP) supplementary are very low and below the expected coverage standards for refugee settings (>90%).

Blanket supplementary feeding was 89.1%, this was an improvement from 66.0% (61.2 -70.5) in 2016. Community mobilization should be strengthened to ensure that all children are enrolled in the BSFP in a timely manner. Regular nutritional screening by WHZ should be conducted to capture children who were not captured during MUAC screening.

Measles vaccination coverage results

Table 22: Measles vaccination coverage for children aged 9-59 months (or other context-specific target group) (n=300)

	Measles (with card) n=300	Measles (with card <u>or</u> confirmation from mother) n=300
YES	60.1% (54.8-65.2)	94.4% (91.3-96.4)

The measles coverage with card or recall was almost in line with 95% target at 94.4% (91.3-96.4, 95%CI). The result have shown that there was a slight improvement from 92.9% to 94.4% by

from the last year 2016 (Table 12).The coverage with card was very low and there was need to improve the documentation.

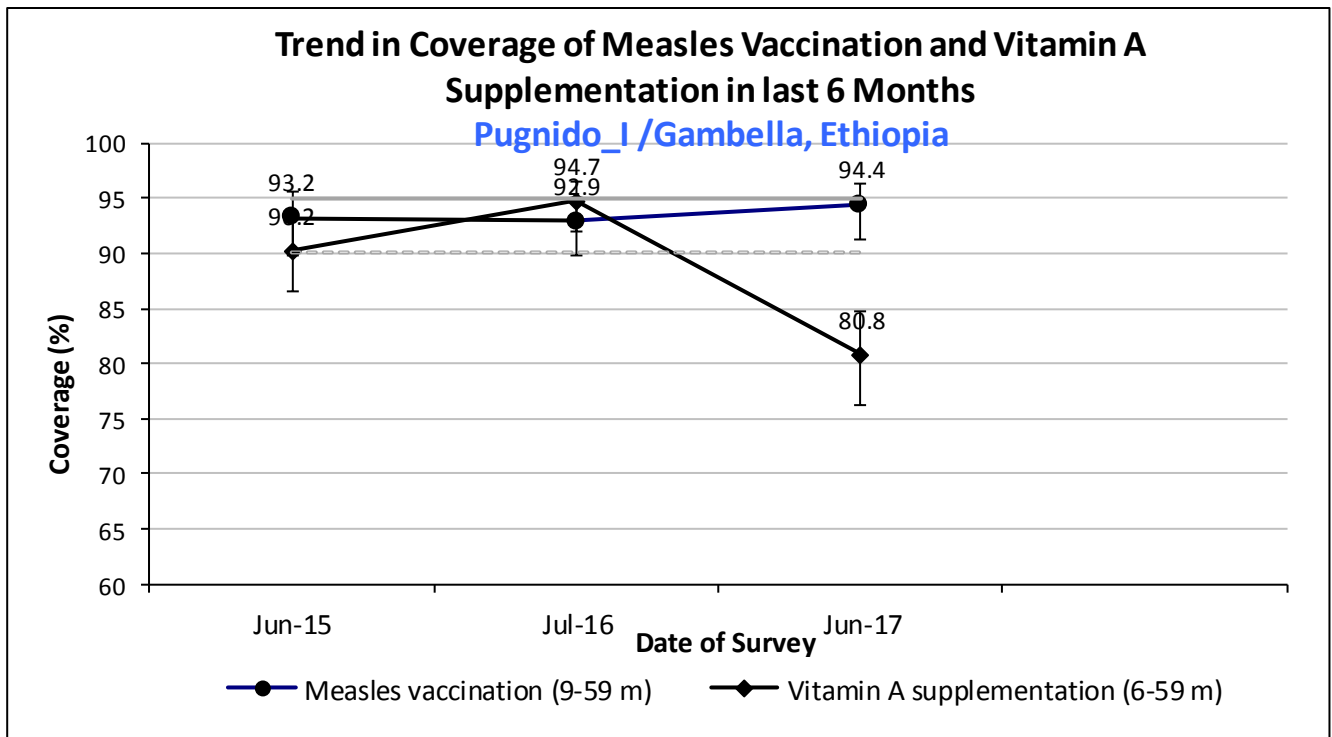
Vitamin A supplementation coverage results

Table 23: Vitamin A supplementation for children aged 6-59 months within past 6 months (or other context-specific target group) (n=317)

	Vitamin A capsule (with card) n=317	Vitamin A capsule (with card <u>or</u> confirmation from mother) n=317
YES	47.4% (42.1- 52.7)	80.8% (76.3-84.7)

Vitamin A coverage by card or confirmation from the mother was 80.8% (76.3-84.7) which was below the UNHCR target > 90%. Comparison with 2016 results shows decrease in the vitamin A supplementation coverages within the past six months. The coverage with card was very low and there was need to improve on documentation.

Figure 9: Coverage of measles vaccination and vitamin A supplementation in children 6-59 months from 2015-2017



DIARRHOEA RESULTS

Table 24: Period prevalence of diarrhoea

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	74/359	20.6% (16.8-25.1)

20.6% (16.8-25.1%) of the sampled children reported having had diarrhoea in the 2 weeks prior to the survey. This shows that percentage of having Diarrhoea in the last two weeks decreased but no significant difference when as compared to 2016 survey 28.2% (24.1 - 32.8).

ANAEMIA RESULTS

Table 25: Prevalence of anaemia and hemoglobin concentration in children 6-59 months of age.

Anaemia in Children 6-59 months	All n =359
Total Anaemia (Hb<11.0 g/dL)	(n=127) 35.4% (30.6-40.4)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(n=72) 20.1% (16.2-24.5)
Moderate Anaemia (7.0-9.9 g/dL)	(n =55) 15.3% (11.9-19.4)
Severe Anaemia (<7.0 g/dL)	0
Mean Hb (g/dL)	11.25 g/dL and (1.2SD) [min 7.3 to max 14.4]

The prevalence of anaemia among children aged 6-59 months was 35.4% (30.6-40.4%). In comparison with 2016 results (54.3% (49.5-59.1)) there was a significant decrease.

Figure 10: Anaemia categories in children 6-59 months from 2015-2017

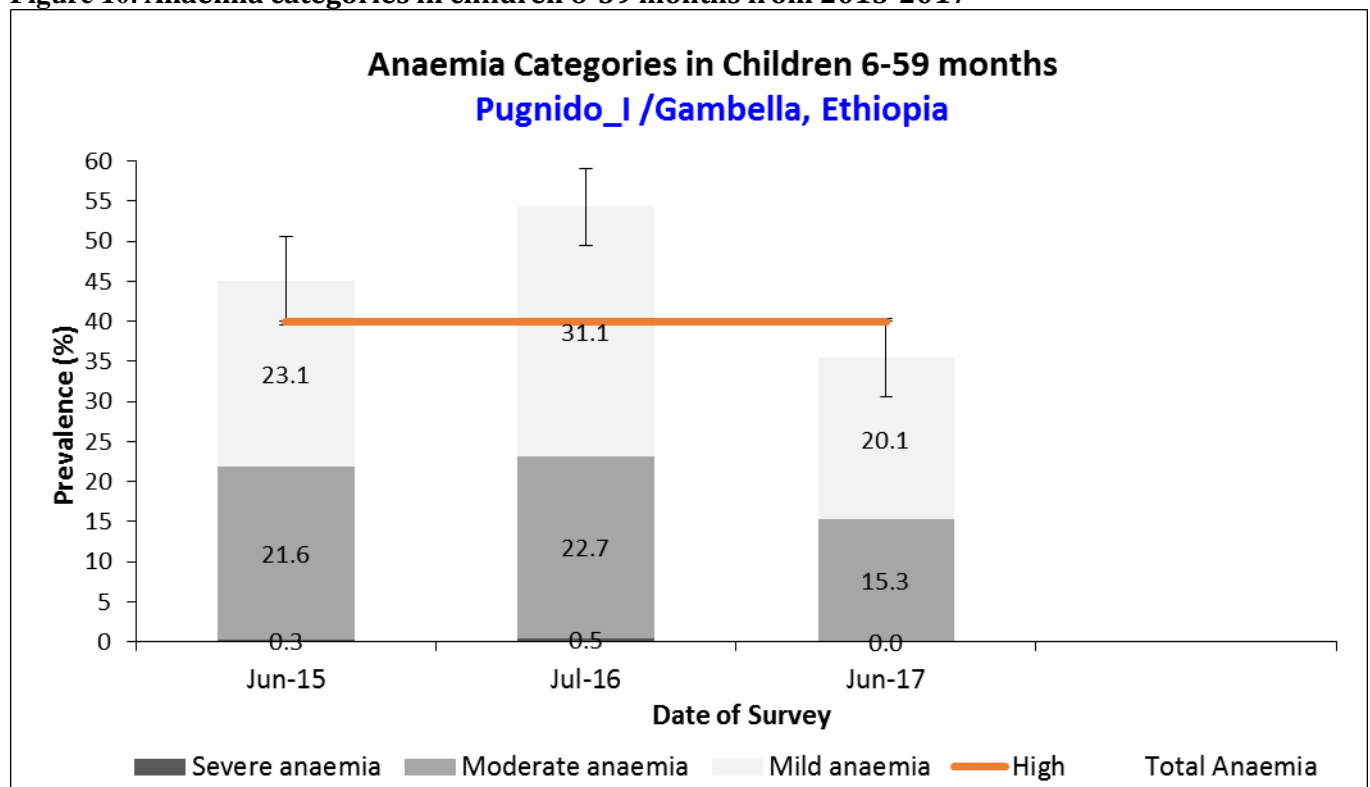


Figure 11: Mean Haemoglobin concentration in children 6-59 months from 2015-2017

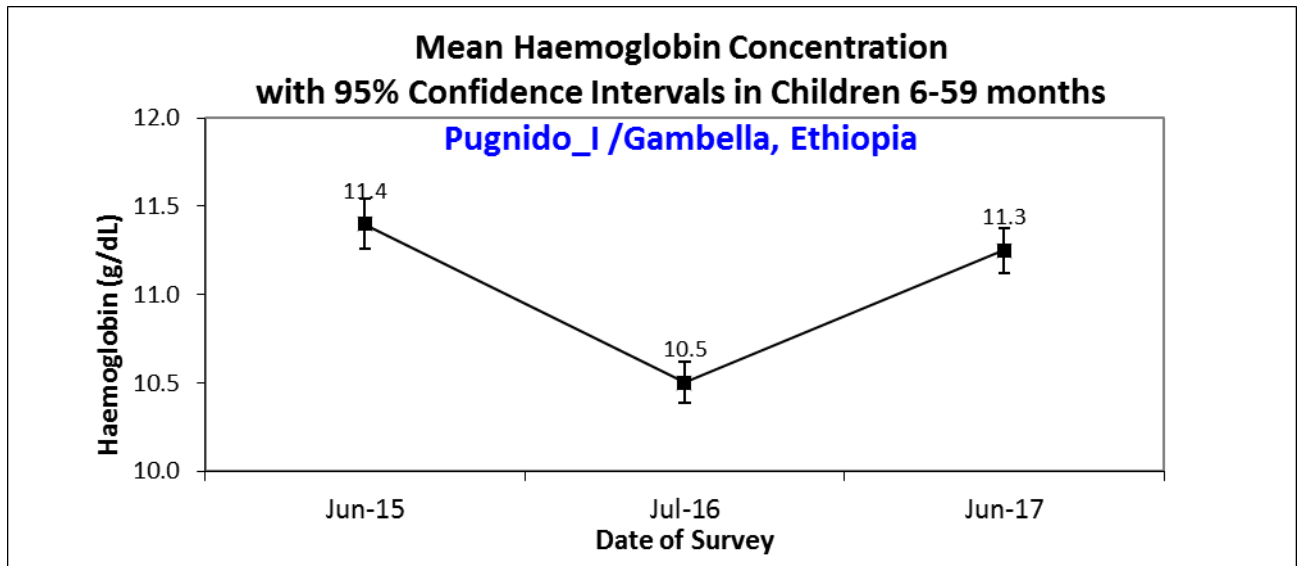


Table 26: Prevalence of anaemia by age in Pugnido_I

Age group	No.	Severe Anaemia (<7.0 g/dL)		Moderate Anaemia (7.0-9.9 g/dL)		Mild Anaemia (Hb 10.0-10.9 g/dL)		Total Anaemia (Hb<11.0 g/dL)		Normal (Hb≥11.0 g/dL)	
		no	%	no	%	no	%	no	%	no	%
6-23	146	0	0	40	27.4 (20.3-35.4)	39	26.7 (19.7-34.7)	79	54.1 (45.7-62.4)	67	45.9 (37.6-54.7)
24-35	66	0	0.0	7	10.6 (4.4-20.6)	11	16.7 (8.6-27.9)	18	27.3 (17.0-29.6)	48	72.7 (60.4-83.0)
36-59	147	0	0.0	8	5.4 (2.4-10.4)	22	15.0 (9.6-21.8)	30	20.4 (14.2-27.8)	117	79.6 (72.2-85.8)
Total	359	0	0	55	15.3 (11.8-19.6)	72	20.1 (16.1-24.7)	127	35.4 (30.5-40.6)	232	64.6 (54.9-69.6)

From the table above; the most affected age group was children aged 6-23 months with a prevalence 54.1% (45.7-62.4%), it has been a similar trend when compared to the previous year's 73.4 % (65.2 -80.5) in 2016 and 66.9% (55.5 – 75.4) in 2015.

Children 0-23 months

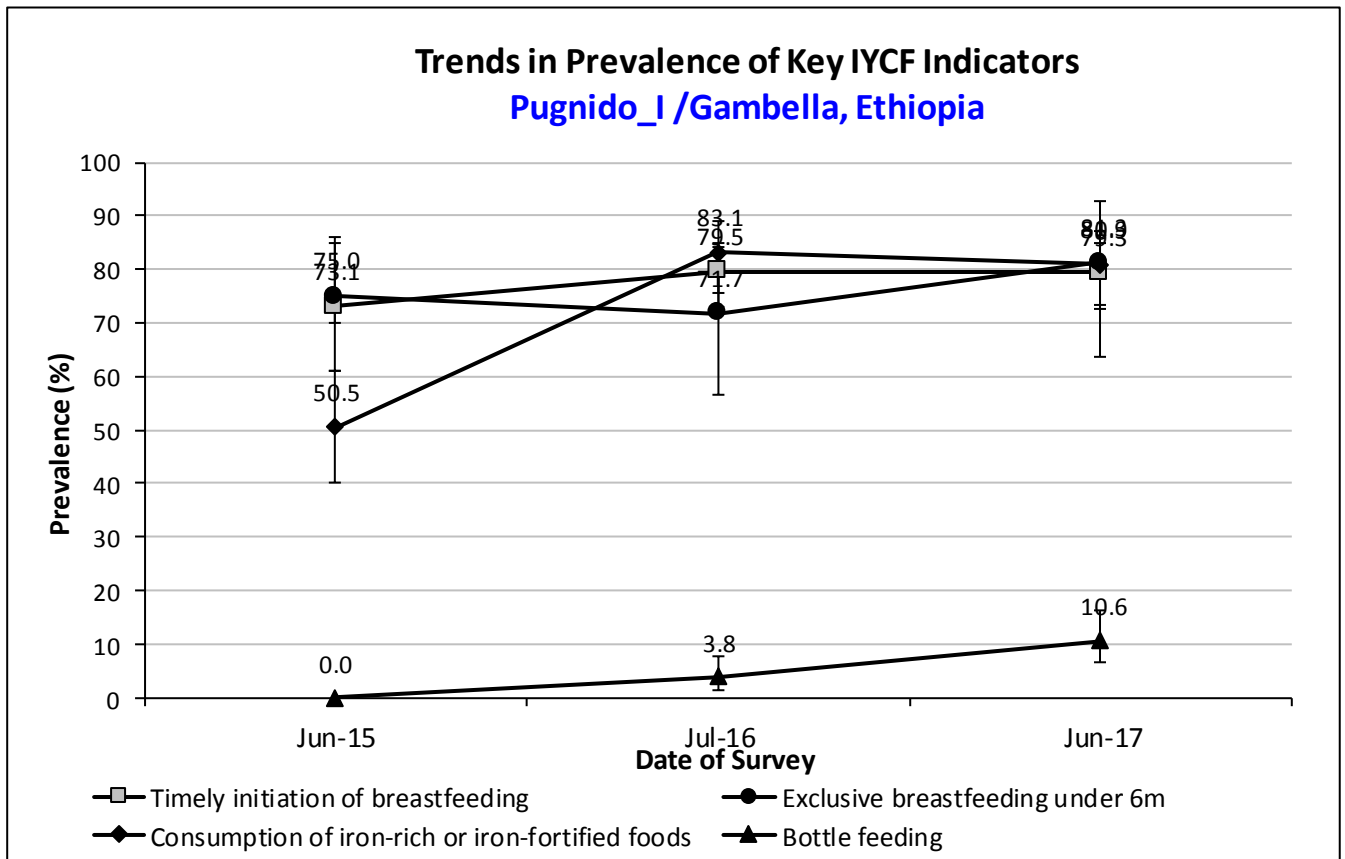
Table 27: Prevalence of Infant and Young Child Feeding Practices Indicators; Pugnido_I

Indicator	Age range	No./ total	Prevalence (%) & 95% CI
Timely initiation of breastfeeding	0-23 months	142/179	79.3% (72.6-85.0)
Exclusive breastfeeding under 6 months	0-5 months	26/32	81.3% (63.5-92.8)
Continued breastfeeding at 1 year	12-15 months	35/36	97.2% (85.5- 99.9)
Continued breastfeeding at 2 years	20-23 months	20/31	64.5% (45.4-80.7)
Introduction of solid, semi-solid or soft foods	6-8 months	11/24	45.8% (25.5-67.2)
Consumption of iron-rich or iron-fortified foods	6-23 months	114/141	80.9% (73.4-87.0)
Bottle feeding	0-23 months	19/179	10.6% (6.5-16.1)

Note that when IYCF indicators are collected in nutritional surveys based on anthropometric sample of children aged 0-59 months, it was 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.

A proportion of 79.3% of children under 2 years were initiated to breastfeeding within one hour of birth, exclusive breastfeeding prevalence was 81.3% (63.5-92.8, 95% C.I) with 97.2% of the sampled children breastfed up to one year. About 64.5% were reported that they have continued breastfeeding at 2 years. More than a quarter (80.9%) of sampled children consumed Iron-rich or iron fortified foods, whereas only 45.8 % of infants between 6-8 months reported to have been introduced to complementary feeding. The proportion of children who were bottle fed the day before the survey were 10.6% (6.5-16.1, 95% C.I).

Figure 12: Nutrition survey results (IYCF indicators) from 2015-2017_Pugnido_I



Prevalence of intake Analysis

Infant formula

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

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	10/180	5.6% (2.7-10.0%)

CSB intake in children aged 6-23 months

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive FBF	22/146	15.1% (9.7-21.9%)

CSB ++ intake in children aged 6-23 months_Tierkidi

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB++	81/145	55.9% (47.4-64.1%)

Women 15-49 years

Table 28: Women physiological status and age, Pugnido_I

Physiological status	Number/total	% of sample
Non-pregnant	207/230	90.0%, (85.4-93.6%)
Pregnant	23/230	10.0%, (6.5-14.6%)
Mean age (range)	26.8 year Range: 15- 48 years	

Of the sampled women aged 15-49 years in the survey, 10.0% were pregnant. The mean age of women was 26.8 years

Table 29: Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 years) _Pugnido_I

Anaemia in non-pregnant women of reproductive age (15-49 years)	All (95% CI) n = 198
Total Anaemia (<12.0 g/dL)	(66) 33.3% (26.8-40.4%)
Mild Anaemia (11.0-11.9 g/dL)	(44) 22.2% (16.6-26.6%)
Moderate Anaemia (8.0-10.9 g/dL)	(22) 11.1% (7.1-16.3%)
Severe Anaemia (<8.0 g/dL)	0
Mean Hb (g/dL)	12.4 g/dL and (1.22SD) [min 8.8 to max 15.8 g/dL]

The prevalence of anaemia among non-pregnant women was 33.3% (26.8-40.4, 95% C.I), which is below the critical threshold (>40%) with a decrease from 43.4% when compared to SENS 2016.

Figure 13: Anaemia categories in women of reproductive age (non-pregnant) from 2015-2017

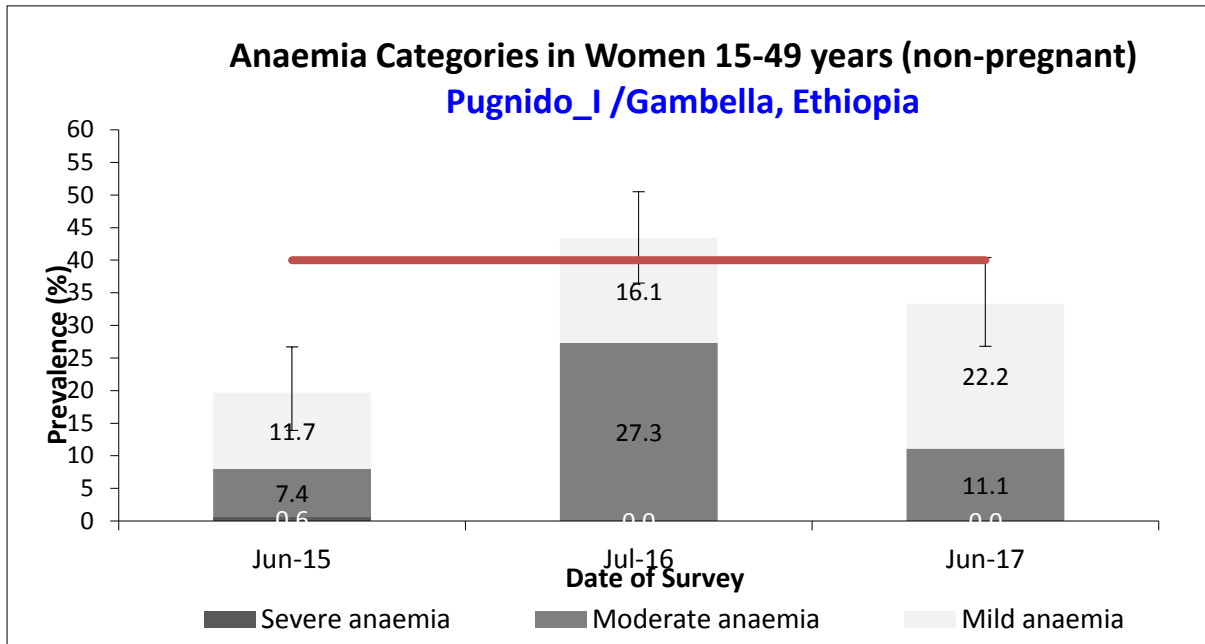


Figure 14: Mean haemoglobin concentration in women of reproductive age (non-pregnant) from 2015-2017

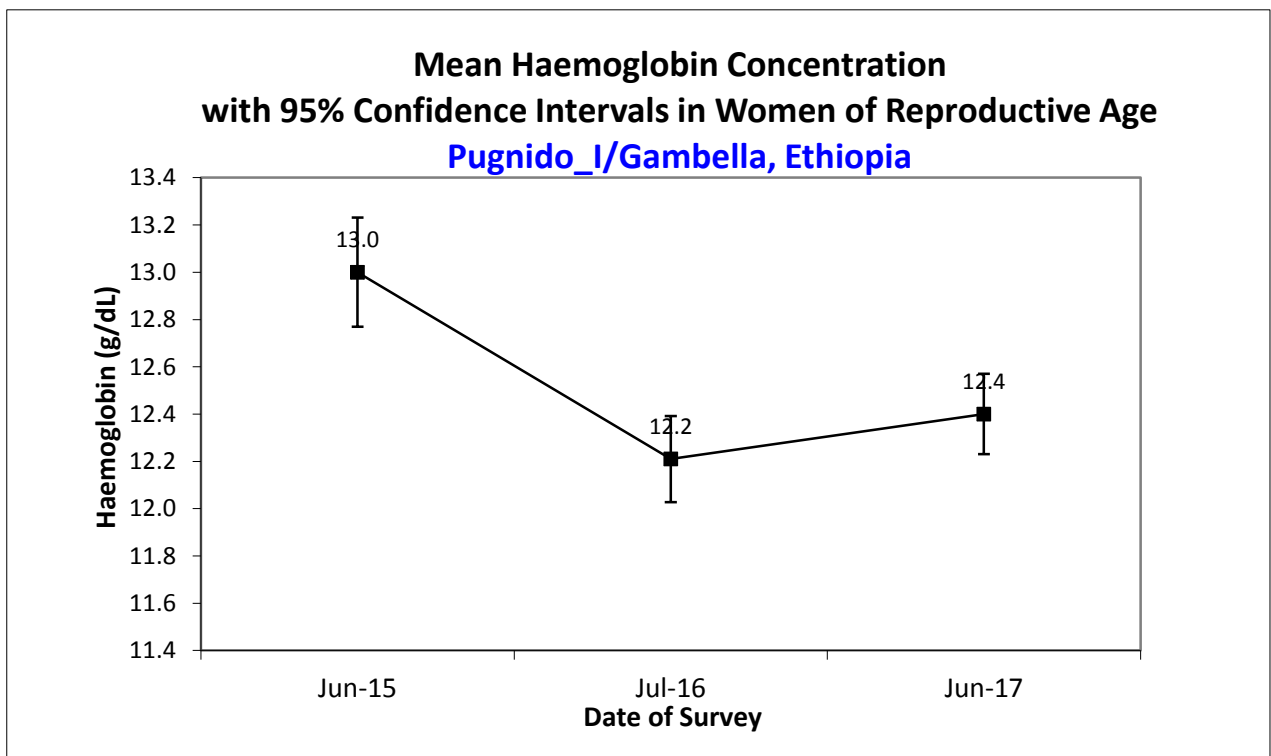


Table 30: ANC enrolment and iron-folic acid pills coverage among pregnant women (15-49 years)

	Number /total	% (95% CI)



Currently enrolled in ANC programme	18/23	78.3% (56.3-92.5%)
Currently receiving iron-folic acid pills	15/23	62.2% (42.7-83.6%)

More than half (62.2%) of pregnant women enrolled in ANC had received iron-folic pills

FOOD SECURITY

Ration Card Coverage

Table 31: Ration card coverage

	Number/total	% (95% CI)
Proportion of households with a ration card	192/192	100.0%

All of the sampled households reported to have ration cards.

Table 32: Reported duration of general food ration 1

Average number of days the food ration lasts (Standard deviation or 95% CI)	Average duration (%) in relation to the theoretical duration of the ration*
23.7 DAYS OUT OF 30 DAYS	79.0%

Table 33: 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	15/192	7.8% (4.4-12.6%)
Proportion of households reporting that the food ration lasted:		
≤75% of the cycle (30 days)	82/192	42.7% (35.1-50.0%)
>75% of the cycle (30 days)	110/192	57.3% (50.0-64.4%)

Negative coping strategies results

Table 34: Coping strategies used by the surveyed population over the past month

	Number/total	% (95% CI)
Proportion of households reporting using the following coping strategies over the past month*:		
Borrowed cash, food or other items <i>without interest</i>	87/191	45.6% (38.1-52.9)
Sold any assets (furniture, seed stocks, tools, other NFI, livestock etc.)	19/192	9.9% (6.1-15.0)
Requested increase remittances or gifts as compared to normal	8/191	4.2% (1.8-8.1)
Reduced the quantity and/or frequency of meals	123/192	64.1%

		(56.8-70.8)
Begged	0	0%
Engaged in potentially risky or harmful activities (brewing, selling of illegal alcohol and cutting trees.)	0	0%
Proportion of households reporting using none of the coping strategies over the past month	45/192	23.4% (17.6-30.1)

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

The most reported coping strategy that was used was reducing the quantity and/or frequency of meals and borrowing of food, cash and other items. None of the households interviewed engaged in any potentially risky or harmful activities such as brewing, selling of illegal alcohol and cutting trees.

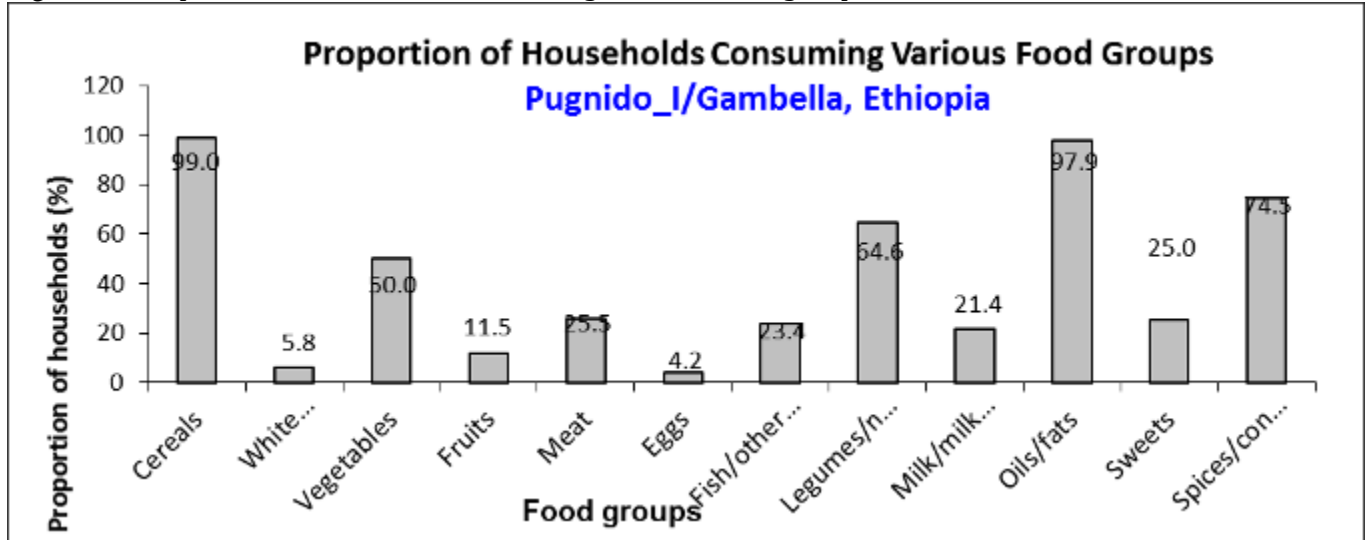
Household dietary diversity results

The HDDS score was 5.03 which shows slight improvement when compared to 4.5 in 2016 and 4.2 in 2015. This maybe attributed by CWW efforts to support kitchen /backyard gardening with the aim of improving dietary diversity at the household level.

Table 35: Average HDDS

Average HDDS	5.03 SD = 1.52
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Figure 15: Proportion of households consuming different food groups within last 24 hours



The most common items reported to be consumed were cereal, 99.0%, oils/fats 97.4%, spices and condiments 74.5% and (68.6%), vegetables (40.5%), Fish, eggs consumption was very low.

Table 36: Consumption of food aid commodities and micronutrient rich foods by households. Pugnido_I

	Number/total	% (95% CI)
Proportion of households <i>not</i> consuming any vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	63/129	32.8% (26.2-39.9%)
Proportion of households consuming either a plant or animal source of vitamin A	99/191	51.8% (44.5-59.1%)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	68/192	35.4% (28.7-42.6%)

**WASH****Water Quality and Quantity**

Table 37: Water Quality Pugnido_I

	Number/total	% (95% CI)
Proportion of households using an improved drinking water source	194/194	100.0%
Proportion of households that use a covered or narrow necked container for storing their drinking water	83/194	42.8% (35.7-50.1)

Only 42.8% (35.7-50.1, 95% CI) reported to have covered or narrow necked drinking water storage containers and 100% reported to be using improved drinking water source.

Table 38: Water Quantity 1: Amount of liters of water used per person per day Pugnido_I

Proportion of households that use:	Number/total	% (95% CI)
≥ 20 lpppd	99/194	51%(43.8-58.3)
15 - <20 lpppd	38/194	19.6%(14.3-25.9)
<15 lpppd	57/194	29.4%(23.1-36.3)
An average water usage in lpppd	21.2 lppd	

29.4% (23.1-36.3%) reported to be receiving <15lpppd while half of the surveyed population receive more than 20lpppd in line with recommendation.

Table 39: Satisfaction with water supply Pugnido_I

	Number/total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	182/194	93.8% (89.4-96.7)

More than 90 % of the sampled household reported that they are satisfied with the drinking water supply. Around 6% were not satisfied with the drinking water supply (whereas 45.5% reported that the source of water drinking water supply was far from their blocks.

Figure 16: Proportion of households that say they are satisfied with the water supply Pugnido_I

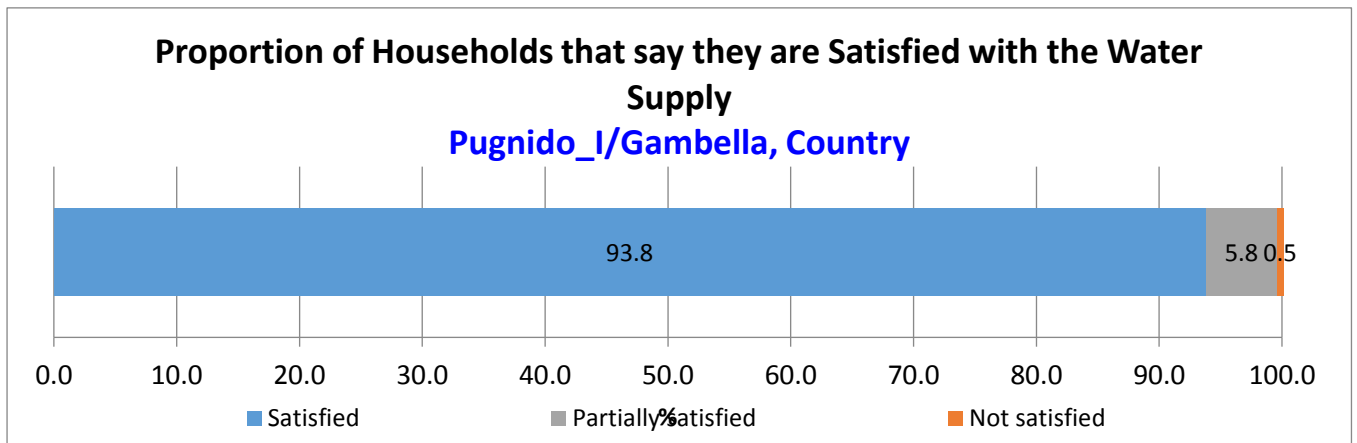


Table 40: Reasons for dissatisfaction with portable water provision Pugnido_I

REASON	Number/total	% (95% CI)
Not enough	3/11	27.3% (6.0-60.9%)
Long waiting for queues	2/11	18.2% (2.3-51.8%)
Long distance	5/11	45.5% (16.8-76.6%)
Irregularity	1/11	9.0% (0.2-41.3%)

Excreta Disposal

Table 41: Safe Excreta disposal Pugnido_I

	Number/total	% (95% CI)
Proportion of households that use:		
Proportion of households using an improved excreta disposal facility (improved toilet facility, not shared)	58/194	29.9% (23.5-36.9)
Proportion of households using a shared family toilet	19/194	9.8% (6.0-14.9)
Proportion of households using a communal toilet	32/194	16.5% (11.6-22.5)
Proportion of households using an unimproved toilet	85/194	43.8% (36.7-51.1)
The proportion of households with children under three years old that dispose of faeces safely.	53/111	47.7% (38.2-57.4)

Most of the beneficiaries reported to be using unimproved toilet facility 43.8% (36.7-51.1%, 95% CI). Further analysis showed only 47.7% of households surveyed with children less than three years of age had their last stools disposed into the toilet 52.3% had their stools disposed of unsafely.

Figure 17: Proportion of households with children under the age of 3 years whose (last) stools were disposed of safely

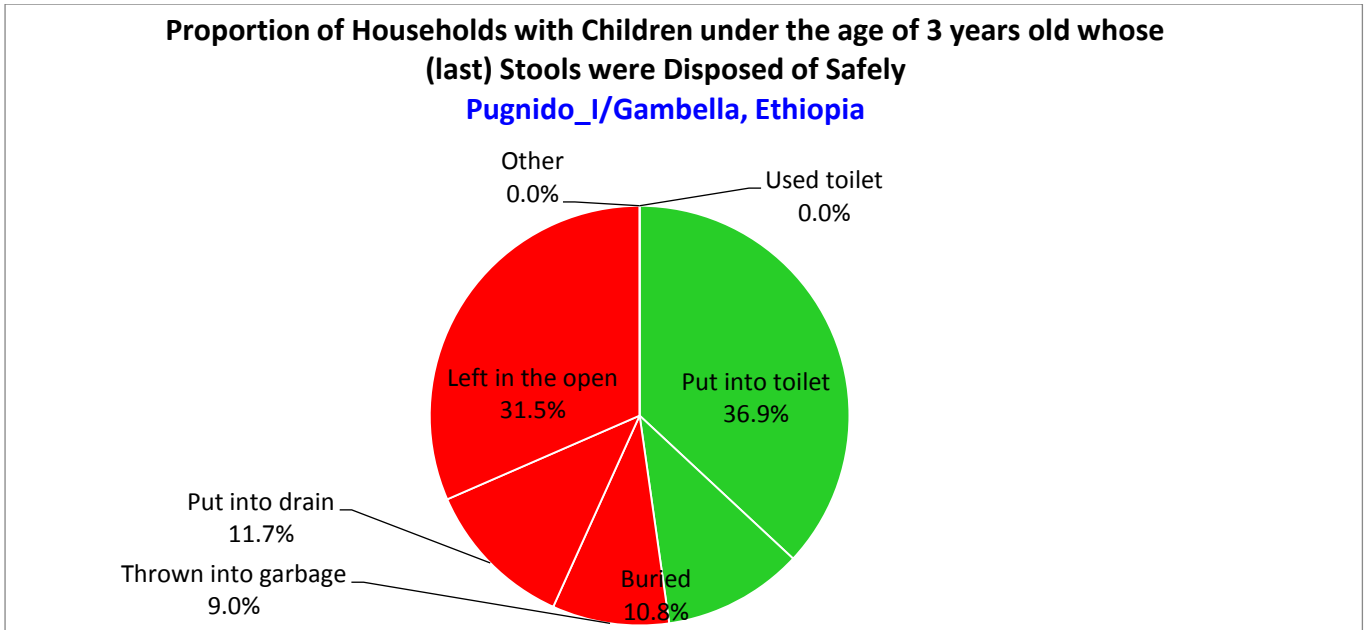
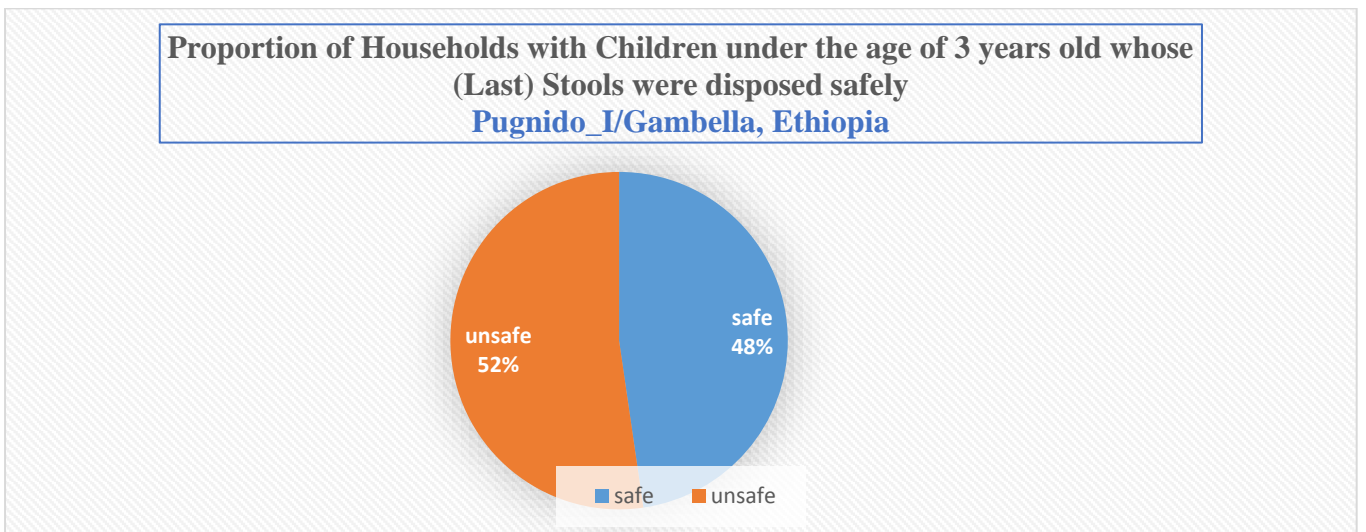


Figure 18: The proportion of households with children under three years old that dispose of faeces safely Pugnido_I



Mosquito Net Coverage

Mosquito net ownership

Table 42: Household Mosquito net ownership Pugnido_I

	Number/total	% (95% CI)
Proportion of households owning at least one mosquito net of any type	80/195	41.3% (34.0- 48.3)
Proportion of households owning at least one LLIN	80/195	41.3% (34.0- 48.3)

Amongst the surveyed Households, 41.3% own at least one mosquito net of any type and all of 41.3% have LLIN.

Figure 19: Household ownership of at least one Mosquito net. Pugnido_I

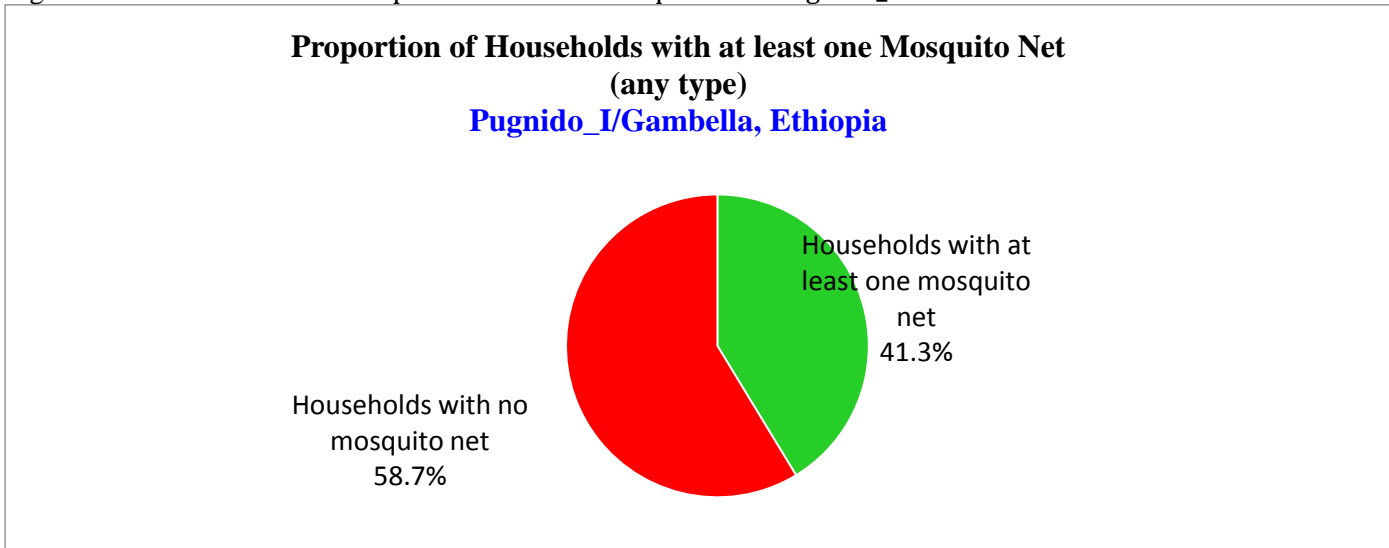


Figure 20: Household ownership of at least one LLIN Pugnido_I

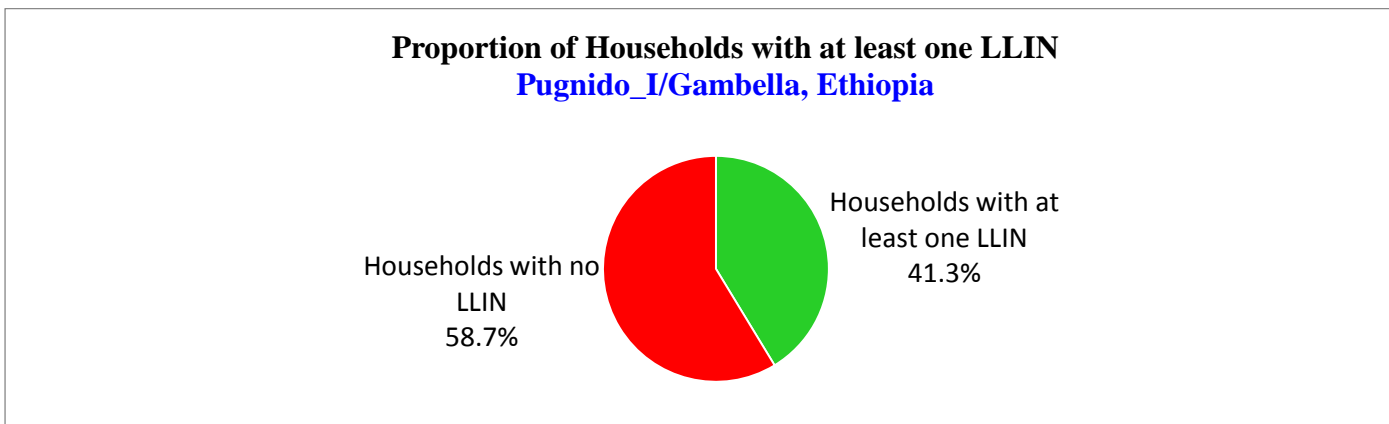


Table 43: Number of nets Pugnido_I

Average number of LLINs per household	Average number of persons per LLIN
1.6	8.9

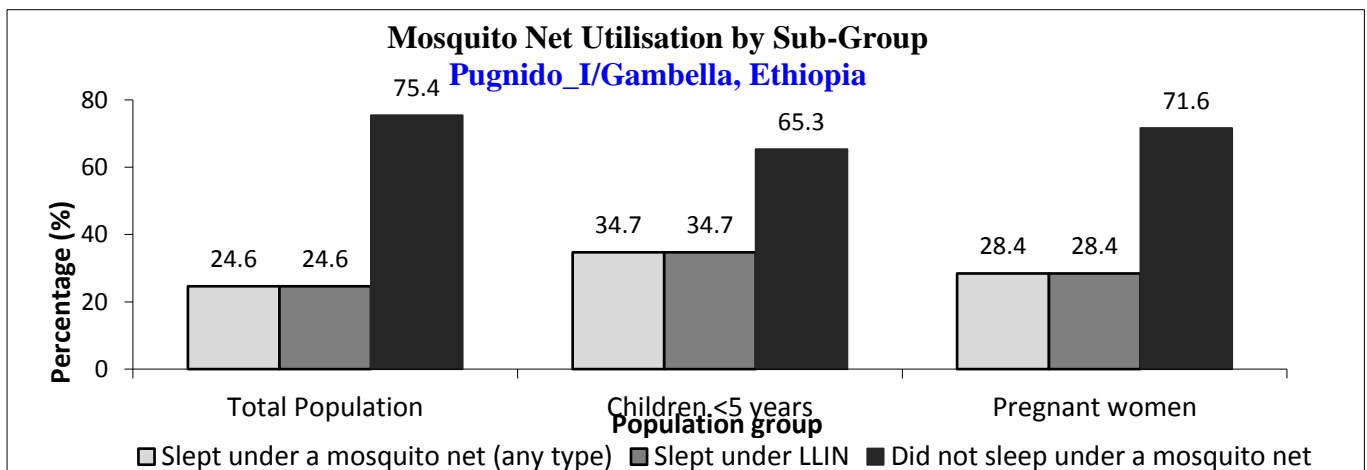
Mosquito net Utilization

Table 44: Mosquito net Utilisation in Pugnido_I

	Total population (all ages)		0-59 months		Pregnant	
	Total No=1135	%	Total No=216	%	Total No=67	%
Slept under net of any type	279	24.6	75	34.7	19	28.4
Slept under LLIN	279	24.6	75	34.7	27	28.4

A quarter of the surveyed population slept under an LLIN mosquito net. Use of LLIN mosquito nets was slightly higher among children aged 0-59 months in comparison to use among pregnant women.

Figure 21: Mosquito Net Utilisation by sub-groups



RESULTS FROM PUGNIDO_II CAMP

Table 45: Demographic characteristics of the study population

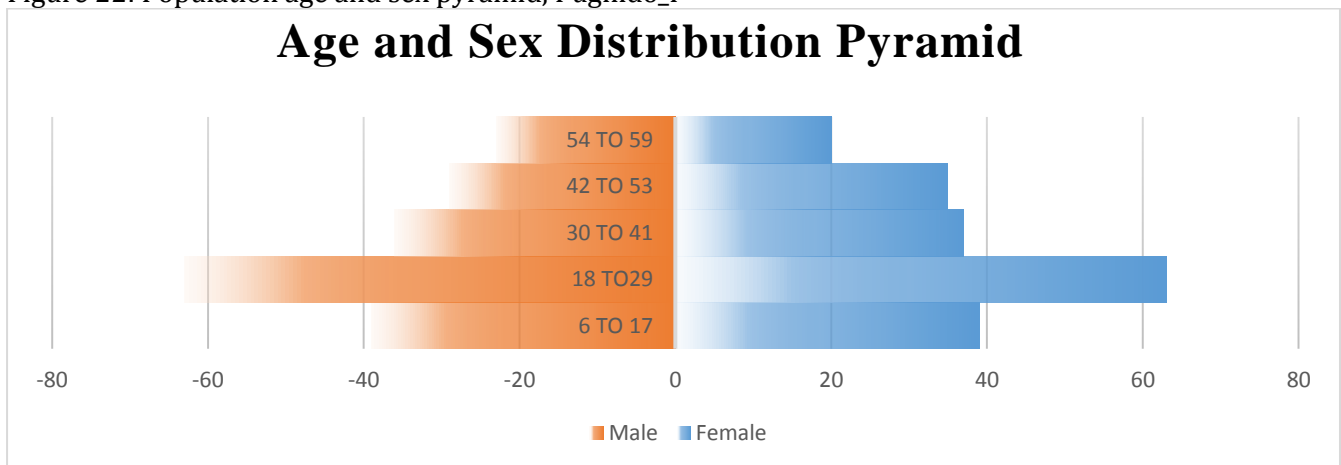
Total population surveyed	2036
Total U5 surveyed	419
Average Household size	5.5
% of children U5	20.6%

Table 46: Distribution of age and sex of sample, Pugnido_II

AGE (mo)	Boys		Girls		Total		Ratio
	no.	%	no.	%	no.	%	Boy: girl
6-17	39	50.0	39	50.0	78	20.3	1.0
18-29	63	50.0	63	50.0	126	32.8	1.0
30-41	37	50.7	36	49.3	73	19.0	1.0
42-53	35	54.7	29	45.3	64	16.7	1.2
54-59	20	46.5	23	53.5	43	11.2	0.9
Total	194	50.5	190	49.5	384	100.0	1.0

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

Figure 22: Population age and sex pyramid, Pugnido_I



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. Results based on NCHS Growth Reference 1977 are presented in annex.

Table 47: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex in Pugnido_II camp

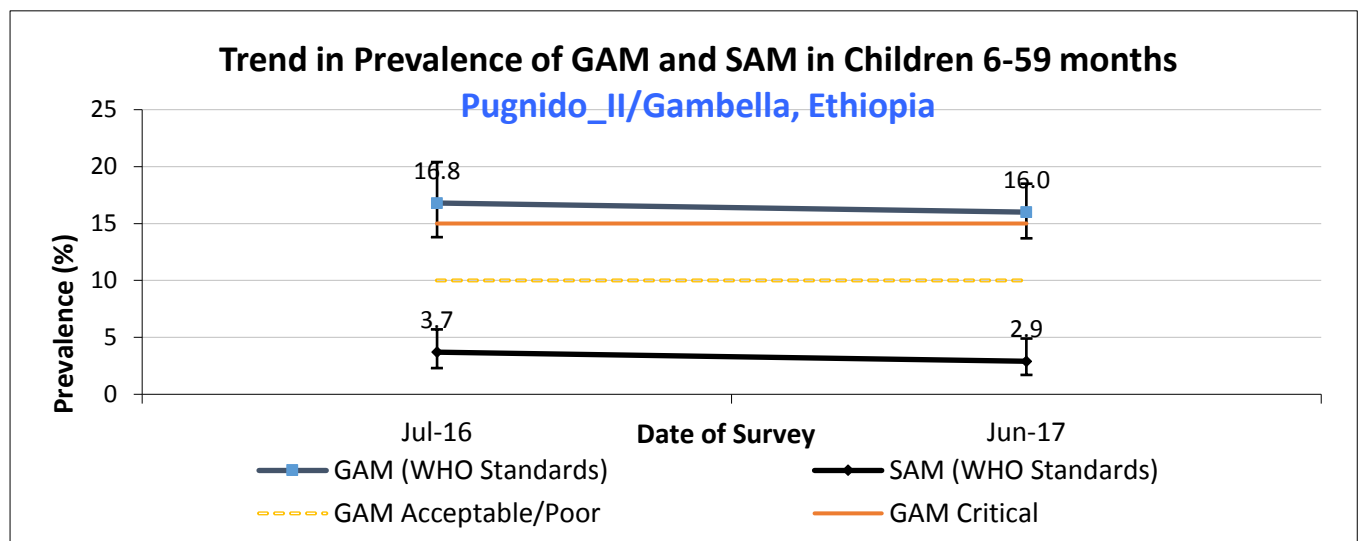
	All n = 376	Boys n = 189	Girls n = 187
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(60) 16.0 % (12.6 - 20.0 95% C.I.)	(28) 14.8 % (10.5 - 20.6 95% C.I.)	(32) 17.1 % (12.4 - 23.2 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(49) 13.0 % (10.0 - 16.8 95% C.I.)	(25) 13.2 % (9.1 - 18.8 95% C.I.)	(24) 12.8 % (8.8 - 18.4 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(11) 2.9 % (1.6 - 5.2 95% C.I.)	(3) 1.6 % (0.5 - 4.6 95% C.I.)	(8) 4.3 % (2.2 - 8.2 95% C.I.)

*The prevalence of oedema was 0.0 %

The prevalence of GAM among children 6-59 months was 16.0% (12.6 - 20.0%, there was a slight reduction but no significant difference when compared to the 2016 prevalence of 16.8%. A slight decrease in SAM from 3.7% in 2016 to 2.9% in 2017.

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

Figure 23: Prevalence of global and severe acute malnutrition based on WHO Growth Standards in children 6-59 months from 2016-2017_Pugnido_II



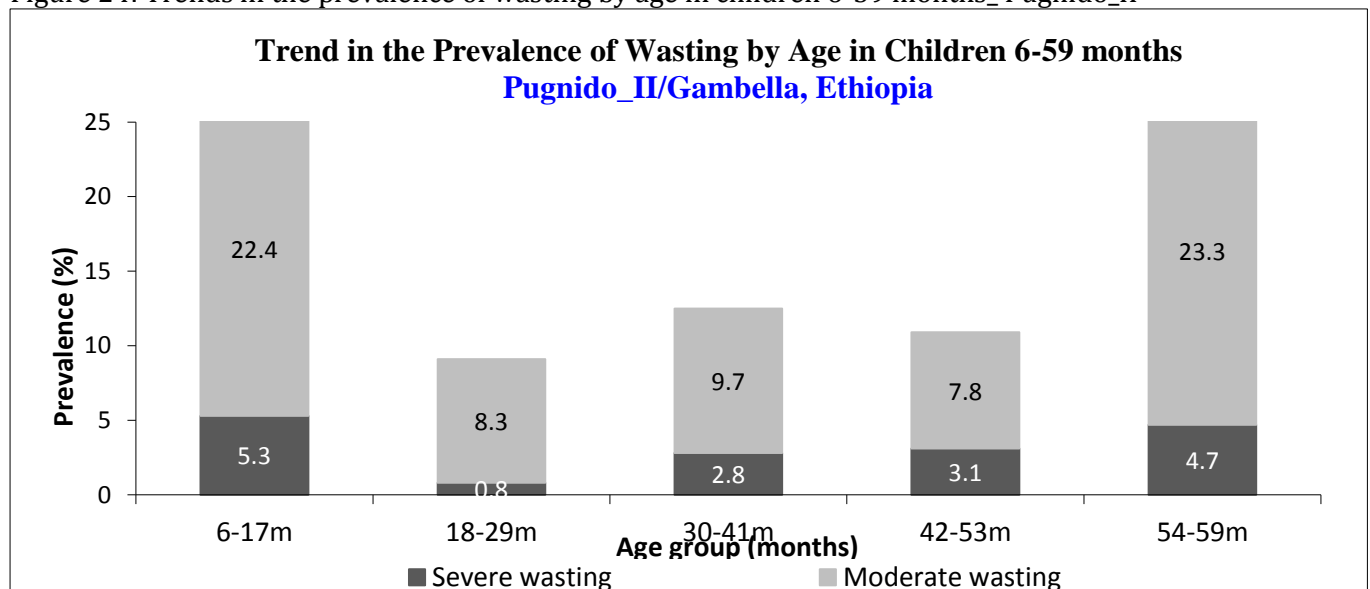
Comparison of results from 2016 shows reduction in GAM and SAM rates, but with no significant difference.

Table 48: 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.	%	Age (mo)	Total no.	No.	%
6-17	76	4	5.3	17	22.4	6-17	76	4	5.3
18-29	121	1	0.8	10	8.3	18-29	121	1	0.8
30-41	72	2	2.8	7	9.7	30-41	72	2	2.8
42-53	64	2	3.1	5	7.8	42-53	64	2	3.1
54-59	43	2	4.7	10	23.3	54-59	43	2	4.7
Total	376	11	2.9	49	13.0	Total	376	11	2.9

The youngest children (6-17 months) are most affected by severe and moderate wasting when compared to other age groups whereas 54-59 months are the most affected group by wasting

Figure 24: Trends in the prevalence of wasting by age in children 6-59 months_ Pugnido_II



Wasting, as in the case of severe was highest in youngest age group and the oldest age group were the highest affected by moderate wasting.

Table 49: Distribution of severe acute malnutrition and oedema based on weight-for-height z-scores Pugnido_II

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 16 (4.2 %)	Not severely malnourished No. 368 (95.8 %)

No oedema was detected in all the survey children.

Figure 25: Distribution of weight-for-height z-scores (based on WHO Growth Standards) Pugnido_II.

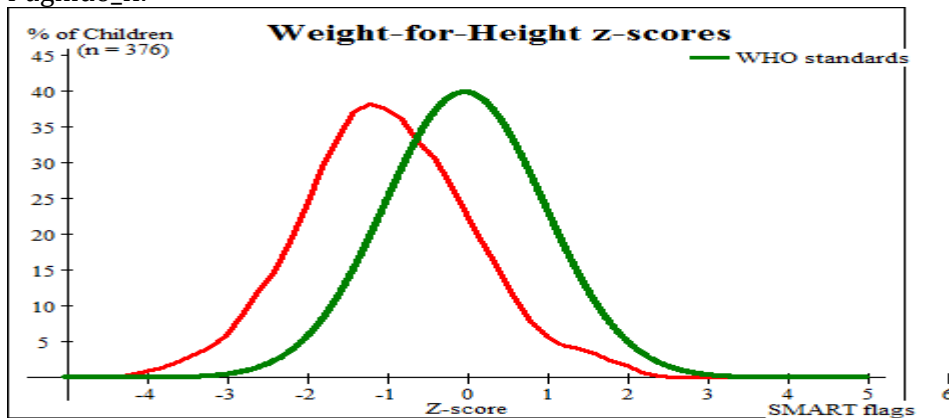


Figure 26 is a comparison of the surveyed and reference weight-for-height z-score (WHZ) distribution. The survey distribution (in red) followed a normal distribution and was shifted to the left of the WHO reference, showing an average lower z-scores, and therefore high malnutrition.

Table 50: Prevalence of acute malnutrition based on MUAC cut offs (and/or oedema) and by sex_ Pugnido_II

	All n = 384	Boys n = 194	Girls n = 190
Prevalence of global malnutrition (< 125 mm and/or oedema)	(8) 2.1 % (1.1 - 4.1 95% C.I.)	(3) 1.5 % (0.5 - 4.4 95% C.I.)	(5) 2.6 % (1.1 - 6.0 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(6) 1.6 % (0.7 - 3.4 95% C.I.)	(2) 1.0 % (0.3 - 3.7 95% C.I.)	(4) 2.1 % (0.8 - 5.3 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(2) 0.5 % (0.1 - 1.9 95% C.I.)	(1) 0.5 % (0.1 - 2.9 95% C.I.)	(1) 0.5 % (0.1 - 2.9 95% C.I.)

The prevalence of GAM measured by MUAC was 2.1% (1.1 -4.1 95% C.I), which was much lower than the 16.0% WHZ prevalence mainly because of the limitation of sensitivity of MUAC which has shown to only identify 20 – 30% of acute malnourished children.

Table 51: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema Pugnido_II

Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	78	2	2.6	5	6.4	71	91.0	0	0.0
18-29	126	0	0.0	1	0.8	125	99.2	0	0.0
30-41	73	0	0.0	0	0.0	73	100.0	0	0.0
42-53	64	0	0.0	0	0.0	64	100.0	0	0.0
54-59	43	0	0.0	0	0.0	43	100.0	0	0.0
Total	384	2	0.5	6	1.6	376	97.9	0	0.0

Children 6-17 months ate the most affected by wasting when compared to the other age categories.

Table 52: Prevalence of underweight based on weight-for-age z-scores by sex Pugnido_II

	All n = 382	Boys n = 192	Girls n = 190
Prevalence of underweight (<-2 z-score)	(47) 12.3 % (9.4 - 16.0 95% C.I.)	(24) 12.5 % (8.5 - 17.9 95% C.I.)	(23) 12.1 % (8.2 - 17.5 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(41) 10.7 % (8.0 - 14.2 95% C.I.)	(22) 11.5 % (7.7 - 16.7 95% C.I.)	(19) 10.0 % (6.5 - 15.1 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(6) 1.6 % (0.7 - 3.4 95% C.I.)	(2) 1.0 % (0.3 - 3.7 95% C.I.)	(4) 2.1 % (0.8 - 5.3 95% C.I.)

The prevalence of underweight was 12.3% (9.4 – 16.0 95% C.I.), and this indicates a slight reduction from 15.4% in 2016. The most affected group was children aged 6-17 and 54-59 by moderate underweight.

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

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	3	3.8	16	20.5	59	75.6	0	0.0
18-29	124	1	0.8	9	7.3	114	91.9	0	0.0
30-41	73	2	2.7	7	9.6	64	87.7	0	0.0
42-53	64	0	0.0	3	4.7	61	95.3	0	0.0
54-59	43	0	0.0	6	14.0	37	86.0	0	0.0
Total	382	6	1.6	41	10.7	335	87.7	0	0.0

Table 54: Prevalence of stunting based on height-for-age z-scores and by sex Pugnido_II

	All n = 380	Boys n = 191	Girls n = 189
Prevalence of stunting (<-2 z-score)	(9) 2.4 % (1.3 - 4.4 95% C.I.)	(7) 3.7 % (1.8 - 7.4 95% C.I.)	(2) 1.1 % (0.3 - 3.8 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(8) 2.1 % (1.1 - 4.1 95% C.I.)	(6) 3.1 % (1.4 - 6.7 95% C.I.)	(2) 1.1 % (0.3 - 3.8 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(1) 0.3 % (0.0 - 1.5 95% C.I.)	(1) 0.5 % (0.1 - 2.9 95% C.I.)	(0) 0.0 % (0.0 - 2.0 95% C.I.)

The prevalence of stunting was 2.4 % (1.3 - 4.4 95% C.I.), which is within the recommended UNHCR and sphere standards

Table 55: Prevalence of stunting by age based on height-for-age z-scores_Pugnido_II

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
		No.	%	No.	%	Total no.	No.
6-17	76	0	0.0	4	5.3	72	94.7
18-29	125	1	0.8	2	1.6	122	97.6
30-41	72	0	0.0	2	2.8	70	97.2
42-53	64	0	0.0	0	0.0	64	100.0
54-59	43	0	0.0	0	0.0	43	100.0
Total	380	1	0.3	8	2.1	371	97.6

Children under 40 months of age appear to be more affected by moderate stunting than the older age category.

Figure 26: Trends in the prevalence of stunting by age in children 6-59 months_ Pugnido_II

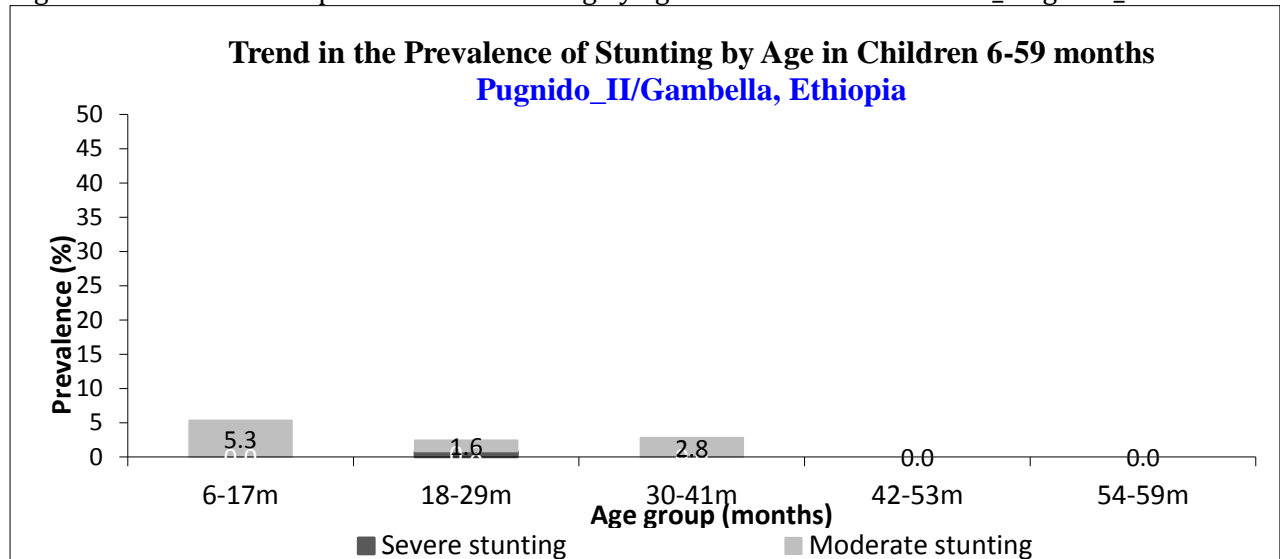
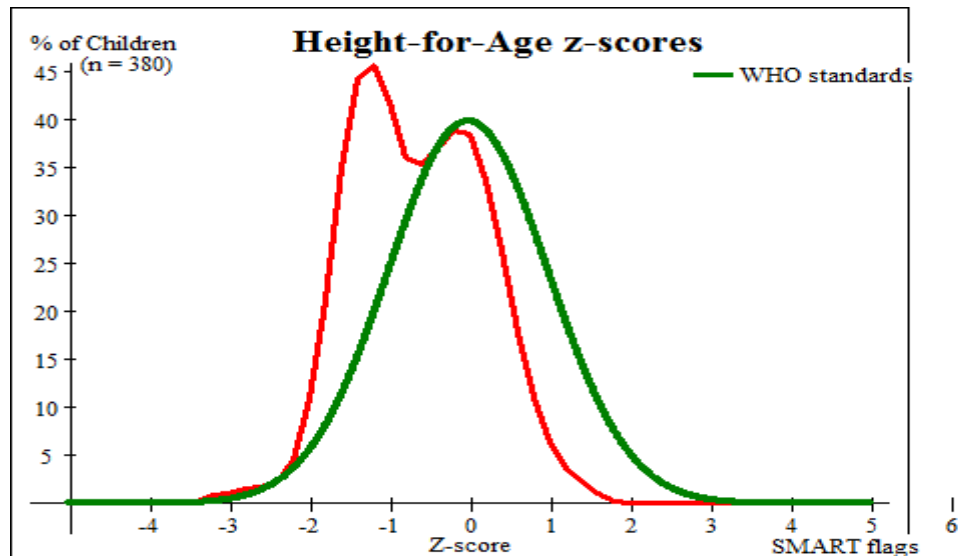


Figure 27: Distribution of height-for-age z-scores (based on WHO Growth Standards)



The height-for-age distribution for the survey (red) was compared to the WHO distribution (green) in Figure 28. The distribution followed a typical bell shape, and was also shifted to the left of the reference, indicating an average lower mean z-score for the survey sample.

Table 56: Mean z-scores, Design Effects and excluded subjects Pugnido_II

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	376	-0.99±1.05	1.00	0	8
Weight-for-Age	382	-1.01±0.91	1.72	0	2
Height-for-Age	380	-0.65±0.81	3.52	0	4

* contains for WHZ and WAZ the children with oedema.

Mortality results

Table 57: Mortality rates for Pugnido_II

Crude Mortality Rate (CMR) total No. of death /10,000/day =	0.33 (0.77 -1.26)
Under 5 Mortality (U5MR) total No. of death /10,000/day	1.04 (0.22 -3.85)

Both the CMR and U5MR was within the emergency threshold in Pugnido_II.

FEEDING PROGRAMME COVERAGE RESULTS

Table 58: Estimated programme coverage for acutely malnourished children Pugnido_II

	Number/total	% (95% CI)
Supplementary feeding programme coverage (WHZ >= - 3 and WHZ < - 2 OR MUAC >= 115 mm and MUAC < 125 mm)	5/51	9.8% (3.3 - 21.4)
Therapeutic feeding programme coverage (WHZ < - 3 or MUAC < 115mm)	3/15	20% (4.3-48.1)

Blanket Supplementary (WHZ \geq - 2 OR MUAC \geq 125)	362 /375	96.5% (94.0-98.1)
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Estimated programme coverage for the supplementary and therapeutic feeding programme was by far lower than expected standards for refugee settings ($>90\%$). Caution should be taken in the interpretation of the coverage results due the sample size of the surveyed children.

BSFP coverage was good and there was an improvement from 89.0% in 2016 to 96.5% in 2017.

Measles vaccination coverage results

Table 59: Measles vaccination coverage for children aged 9-59 months (or other context-specific target group) (n=364) Pugnido_II

	Measles (with card) n=364	Measles (with card <u>or</u> confirmation from mother) n=364
YES	44.5% (39.5-49.6)	88.2% (84.5-91.1)

The measles coverage with card or recall was below the SPHERE standards 95% at 88.2% (84.5-91.1). The result have shown that there was improvement from 59.1 % 2016 to 88.2 % 2017. Measles vaccination by card was very low, documentation in the child card needs to be improved.

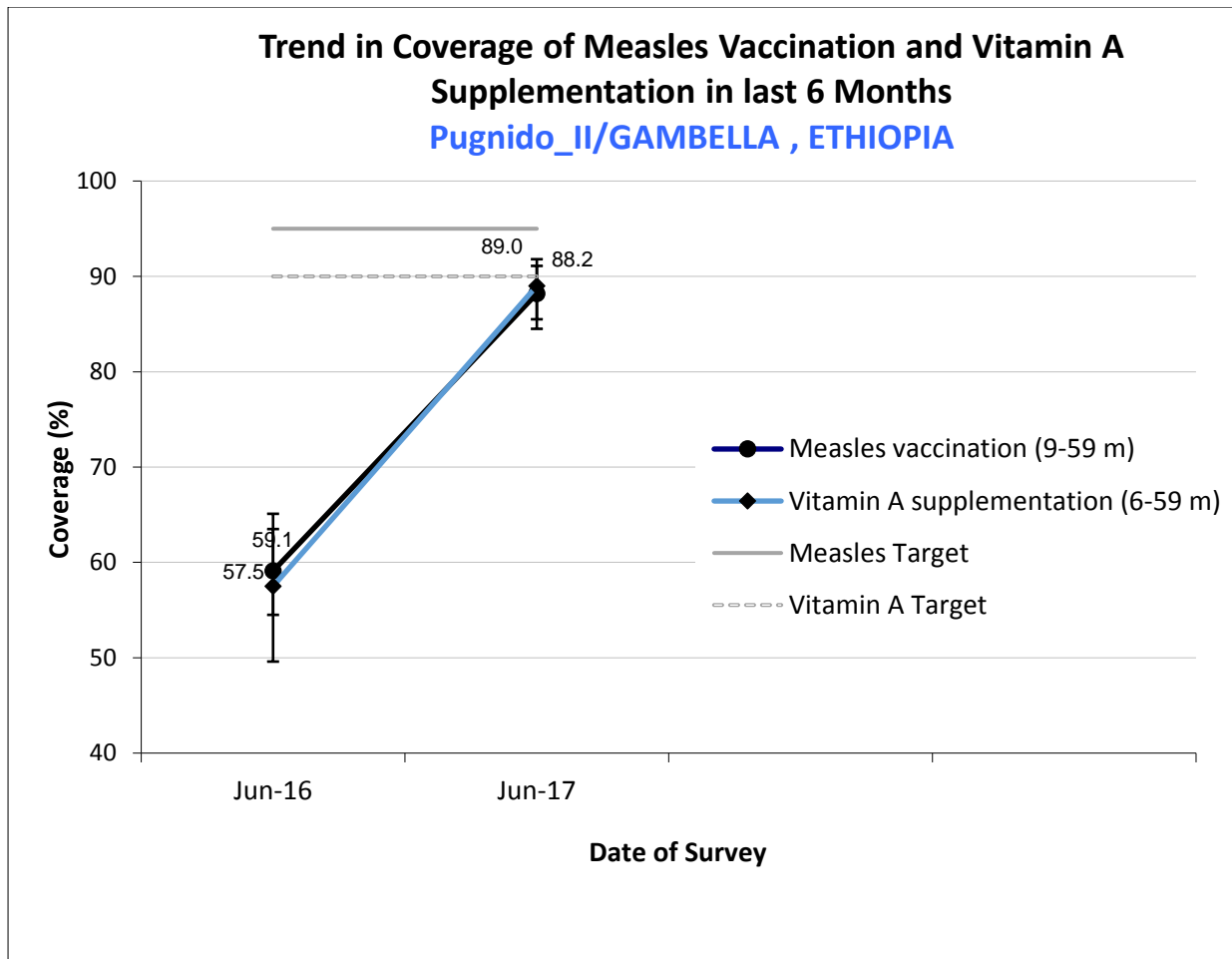
Vitamin A supplementation coverage results

Table 60: Vitamin A supplementation for children aged 6-59 months within past 6 months (or other context-specific target group) (n=383) Pugnido_II

	Vitamin A capsule (with card) n=383	Vitamin A capsule (with card <u>or</u> confirmation from mother) n=383
YES	45.9% (41.0-50.9)	89.0% (85.5-91.8)

Vitamin A coverage by card or confirmation from the mother was 89.0% (85.5-91.8) which was almost in line with the SPHERE standards of $> 90\%$. Comparison with 2016 results shows an improvement from 57.5% in the vitamin A supplementation within the past six months.

Figure 28: Coverage of measles vaccination and vitamin A supplementation in children 6-59 months from 2016-2017



In comparison to the 2016 results there was a significant increase in the measles vaccination and vitamin A supplementation among children 6-59 months.

Diarrhoea results

Table 61: Period prevalence of diarrhoea

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	34/382	8.9% (6.4-12.2)

8.9% (6.4-12.2%) of the sampled children reported having had diarrhoea in the 2 weeks prior to the survey. This shows that the percentage of children having Diarrhoea in the last two weeks decreased significantly as compared to 38.9% (34.7 - 43.2) in 2016 survey.

Anaemia results

Table 62: Prevalence of anaemia and haemoglobin concentration in children 6-59 months of age

Anaemia in Children 6-59 months	All n =381
Total Anaemia (Hb<11.0 g/dL)	(n=125) 32.8% (28.3-37.7)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(n=76) 19.9% (16.2-24.3)
Moderate Anaemia (7.0-9.9 g/dL)	(n =49) 12.9%

	(9.9-16.6)
Severe Anaemia (<7.0 g/dL)	0
Mean Hb (g/dL)	11.28 g/dL and (1.19SD) [min 7.1 to max 14.8]

The prevalence of anaemia was 32.8% (28.3-37.7) among children aged 6-59 months, comparing with the 2016 prevalence of 70.0% there was a significant reduction in the prevalence of anaemia in this camp.

Figure 29: Anaemia categories in children 6-59 months from 2016-2017

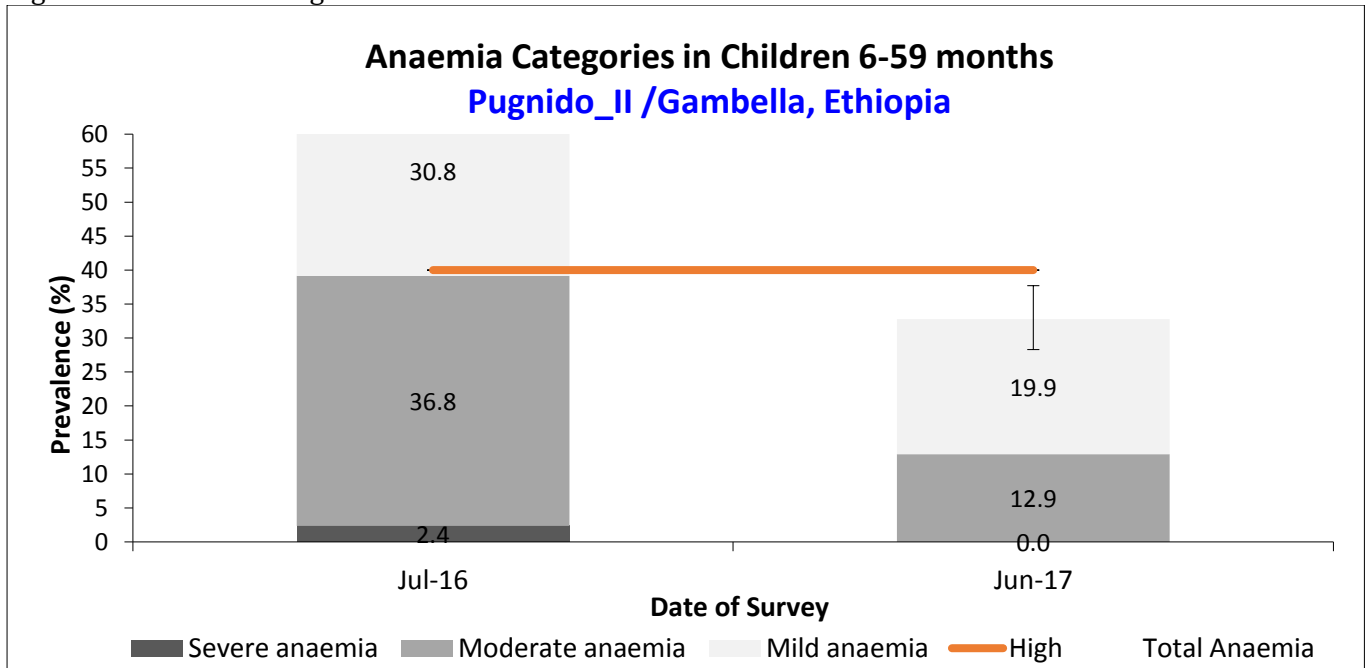


Figure 30: Mean Haemoglobin concentration in children 6-59 months from 2016-2017

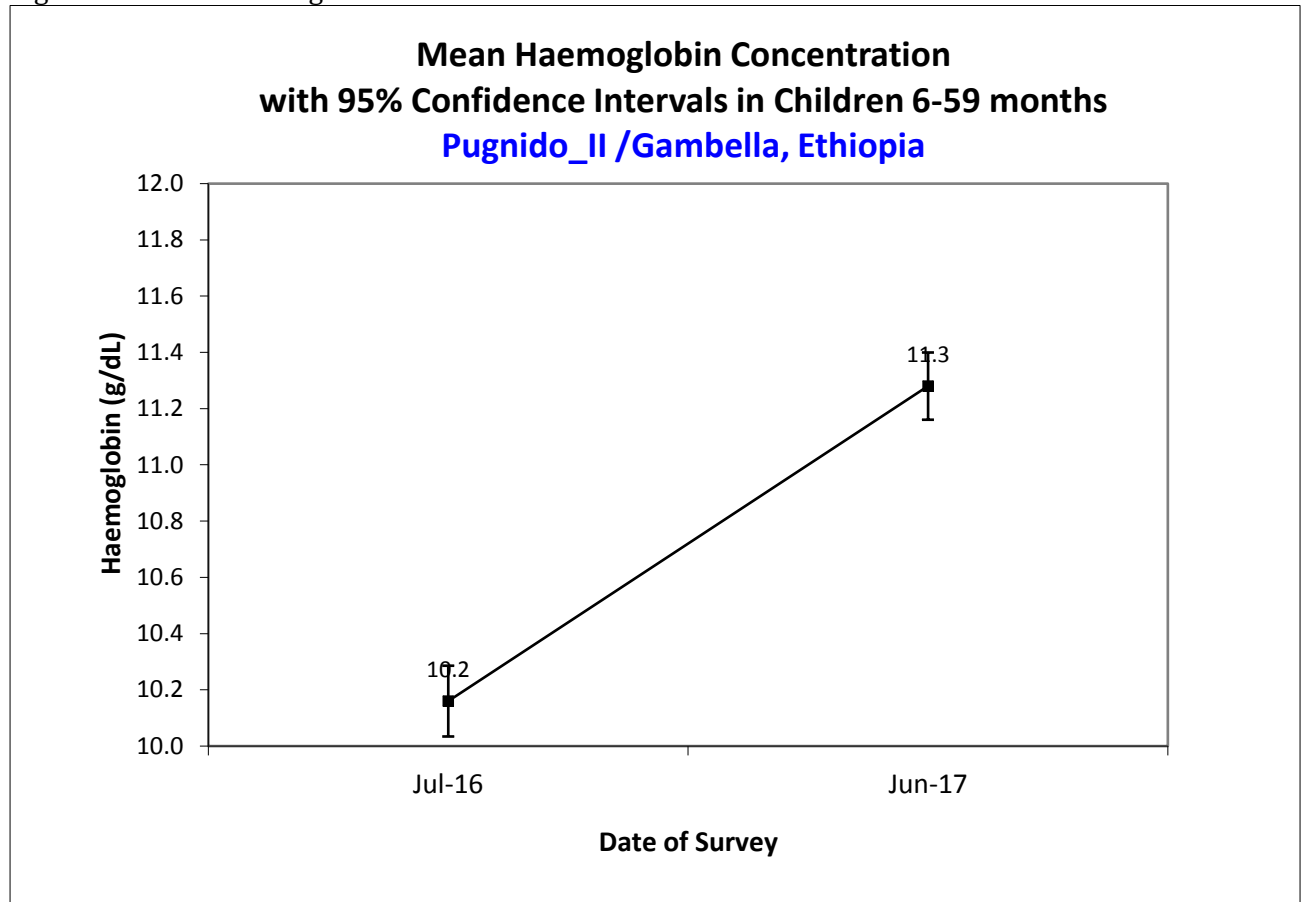


Table 63: Prevalence of anaemia by age

Age group	No.	Severe Anaemia (<7.0 g/dL)		Moderate Anaemia (7.0-9.9 g/dL)		Mild Anaemia (Hb 10.0-10.9 g/dL)		Total Anaemia (Hb<11.0 g/dL)		Normal (Hb≥11.0 g/dL)	
		no	%	no	%	no	%	no	%	no	%
6-23	144	0	0	34	23.6% (16.9-31.4%)	34	23.6% (16.9-31.4%)	68	47.2% (38.9-55.7%)	76	52.8% (44.3-64.1%)
24-35	64	0	0.0%	8	12.5% (5.6-23.2%)	10	15.6% (7.8-26.9%)	18	28.1% (17.6-40.8%)	46	71.9% (59.2-82.4%)
36-59	164	0	0.0%	8	5.4% (2.4-10.4%)	22	15.0% (9.6-21.8%)	36	22.0% (15.9-29.1%)	128	78.0% (70.9-84.1%)
Total	381	0	0	55	15.3% (11.8-19.6)	72	20.1% (16.1-24.7%)	125	32.8% (28.2-37.8%)	256	67.2% (62.2-71.8%)

In the table above, categorization of anaemia by age group shows that children 6-23 months are the most affected by anaemia prevalence of 47.2% (38.9-55.7).

Children 0-23 months

Table 64: Prevalence of Infant and Young Child Feeding Practices Indicators

Indicator	Age range	No./ total	Prevalence (%) & 95% CI
Timely initiation of breastfeeding	0-23 months	135/168	80.4% (73.5-86.1)
Exclusive breastfeeding under 6 months	0-5 months	21/22	95.5% (77.2- 99.9)

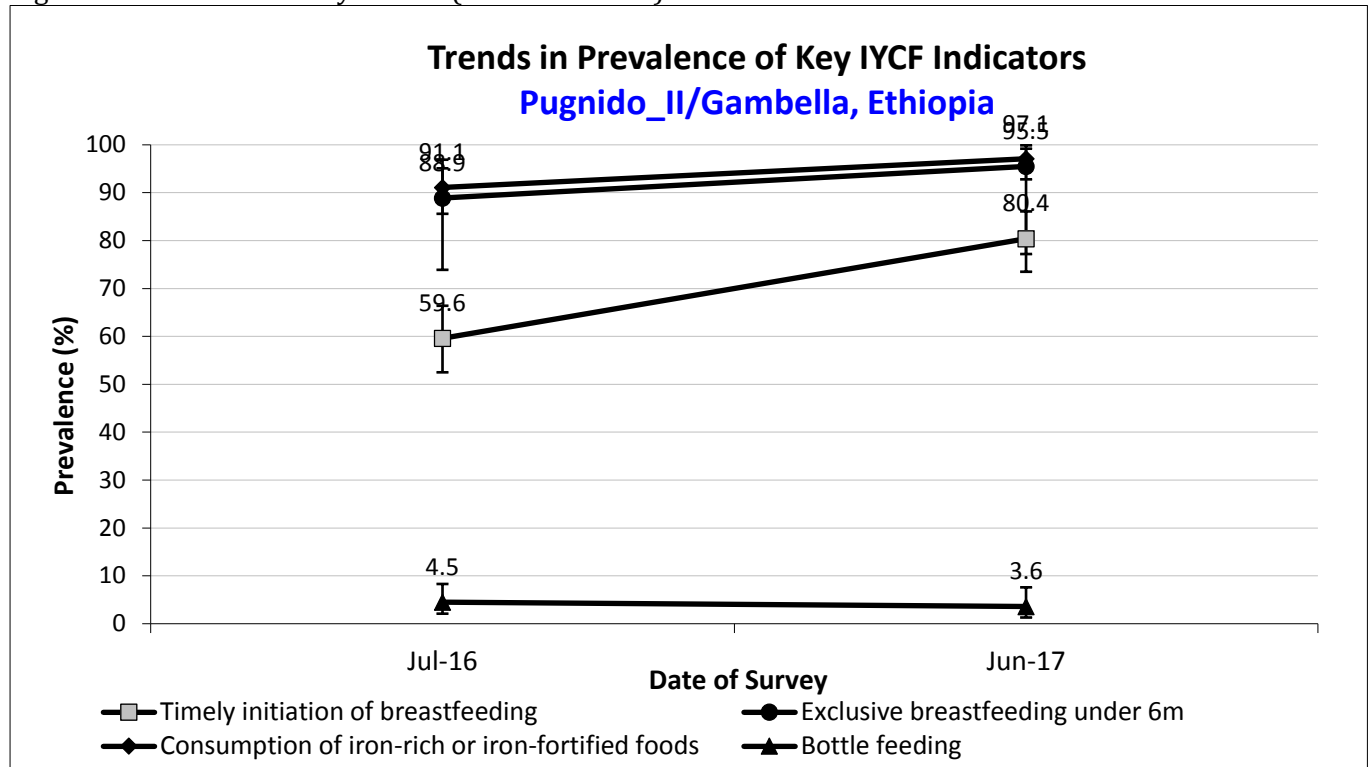
Continued breastfeeding at 1 year	12-15 months	33/33	100%
Continued breastfeeding at 2 years	20-23 months	44/46	95.6% (85.2-99.5)
Introduction of solid, semi-solid or soft foods	6-8 months	2/20	10% (1.2 -31.7)
Consumption of iron-rich or iron-fortified foods	6-23 months	135/139	97.1% (92.8- 99.2)
Bottle feeding	0-23 months	6/168	3.6% (1.3-7.6)

Note that when IYCF indicators are collected in nutritional surveys based on anthropometric sample of children aged 0-59 months, it was 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.

As per the results shown above, 80.4% of children under 2 years have been initiated to breast within one hour after birth and 95.5% of infants and young children reported have been exclusively breastfed. All (100%) of the sampled children were still breastfeeding at 1 year, whilst about 95.6% were reported that they have continued breastfeeding at 2 years. Almost all (97.1%) of sampled children consumed Iron-rich or iron fortified foods, whereas only 10 % of infants between 6-8 months have been reported that they have been introduced to complementary feeding. The proportion of children who were bottle fed the day before the survey were 3.6% (1.3-7.6, 95% C.I).

Caution needs to be taken when interpreting nutrition survey results from previous surveys though important to assess the IYCF situation. 2017 findings have shown an increasing trend in all the key IYCF indicators but there was slight improvement in the use of bottle feeding.

Figure 31: Nutrition survey results (IYCF indicators) from 2016-2017



Prevalence of intake ANALYSIS

Infant formula

Table 10.21: Infant formula intake in children aged 0-23 months, Pugnido_II

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	27/168	16.1% (10.9-22.5%)

Table 10.22: CSB intake in children aged 6-23 months Pugnido_II

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive FBF	37/142	26.1% (19.1-34.1%)

Table 10.23: CSB ++ intake in children aged 6-23 months _ Pugnido_II

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB++	122/145	84.1% (77.2-89.7%)

Women 15-49 years

Women physiological status and age

Table 65: Women physiological status and age, Pugnido_II

Physiological status	Number/total	% of sample
Non-pregnant	179/198	90.4%, (85.4-94.1%)
Pregnant	19/198	9.6%, (5.9-14.6%)
Mean age (range)	27.7year Range: 15- 48 years	

Of the sampled women aged 15-49 years in the survey, 9.6% were pregnant. The mean age of women was 27.7 years.

Anaemia

Table 66: Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 years) _Pugnido_II

Anaemia in non-pregnant women of reproductive age (15-49 years)	All (95% CI) n = 179
Total Anaemia (<12.0 g/dL)	(64) 35.8% (28.7-43.3)
Mild Anaemia (11.0-11.9 g/dL)	(46) 25.7% (19.5-32.7)
Moderate Anaemia (8.0-10.9 g/dL)	(18) 10.1% (6.1-15.4)
Severe Anaemia (<8.0 g/dL)	0
Mean Hb (g/dL)	12.45 g/dL and (1.19SD) [min 10.1 to max 16.0 g/dL]

The prevalence of anaemia among non-pregnant women was 35.8% (28.7-43.3, 95% C.I), which was below the critical threshold (>40%).

Figure 32: Anaemia categories in women of reproductive age (non-pregnant) from 2016-2017 Pugnido_II

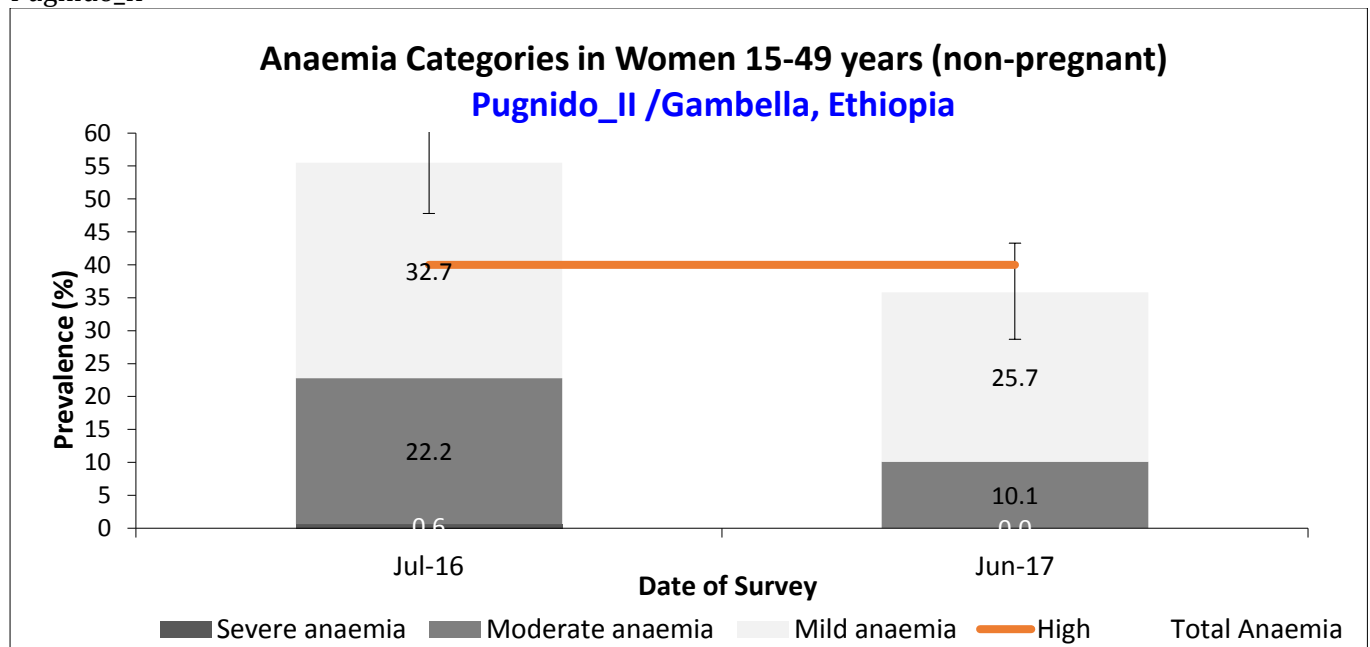
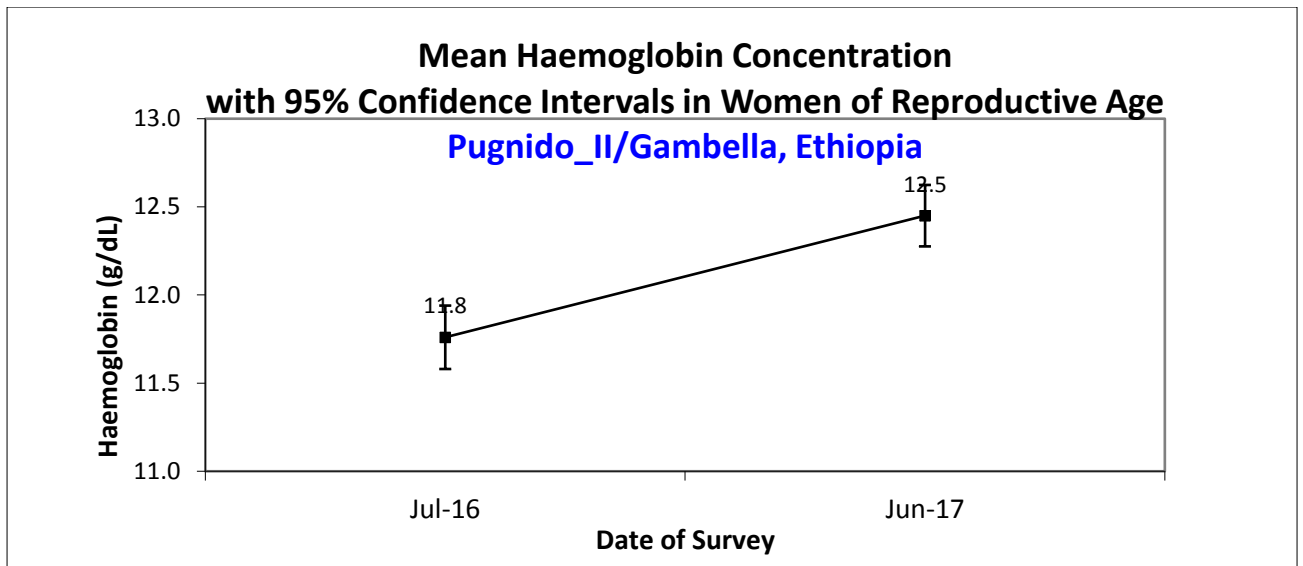


Figure 33: Mean haemoglobin concentration in women of reproductive age (non-pregnant) from 2016-2017 Pugnido_II



ANC enrolment and iron-folic acid pills coverage

Table 67: ANC enrolment and iron-folic acid pills coverage among pregnant women (15-49 years) Pugnido_II

	Number /total	% (95% CI)
Currently enrolled in ANC programme	12/19	63.2% (38.4-83.7)
Currently receiving iron-folic acid pills	10/19	52.6% (28.9-75.5)

More than half (62.2%) of pregnant women enrolled in ANC had received iron-folic pills

Food security

Table 68: Ration card coverage Pugnido_II

	Number/total	% (95% CI)
Proportion of households with a ration card	177/178	99.4% (96.9-99.9)

All of the sampled households except one reported to have ration cards

Table 69: Reported duration of general food ration 1

Average number of days the food ration lasts (Standard deviation or 95% CI)	Average duration (%) in relation to the theoretical duration of the ration*
26.4 DAYS OUT OF 30 DAYS	88.0%

Table 70: Reported duration of general food ration 2 Pugnido_II

	Number/total	% (95% CI)
Proportion of households reporting that the food ration lasts the entire duration of the cycle	21/177	11.9% (7.5-17.6%)
Proportion of households reporting that the food ration lasted:		
≤75% of the cycle (30 days)	116/177	65.5% (58.0-72.5%)
>75% of the cycle (30 days)	61/177	34.5% (27.5-42.0%)

Negative coping strategies results

Table 71: Coping strategies used by the surveyed population over the past month Pugnido_II

	Number/total	% (95% CI)
Proportion of households reporting using the following coping strategies over the past month*:		
Borrowed cash, food or other items <i>without interest</i>	76/178	42.7% (35.3-50.3)
Sold any assets (furniture, seed stocks, tools, other NFI, livestock etc.)	41/177	23.2% (17.2-30.1)
Requested increase remittances or gifts as compared to normal	10/177	5.6% (2.7-10.1)
Reduced the quantity and/or frequency of meals	87/177	49.2% (41.6-56.8)
Begged	5/175	2.9% (0.9-6.5)
Engaged in potentially risky or harmful activities such as brewing of alcohol or cutting trees	8/174	4.6% (2.0-8.9)
Proportion of households reporting using none of the coping strategies over the past month	55/168	32.7% (25.7-40.4)

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

The most commonly used coping strategy was reducing the quantity and/or frequency of meals and borrowing of food, cash and other items. 4.6% of the households reported to have engaged in potentially risky or harmful activities such as brewing of alcohol or cutting trees.

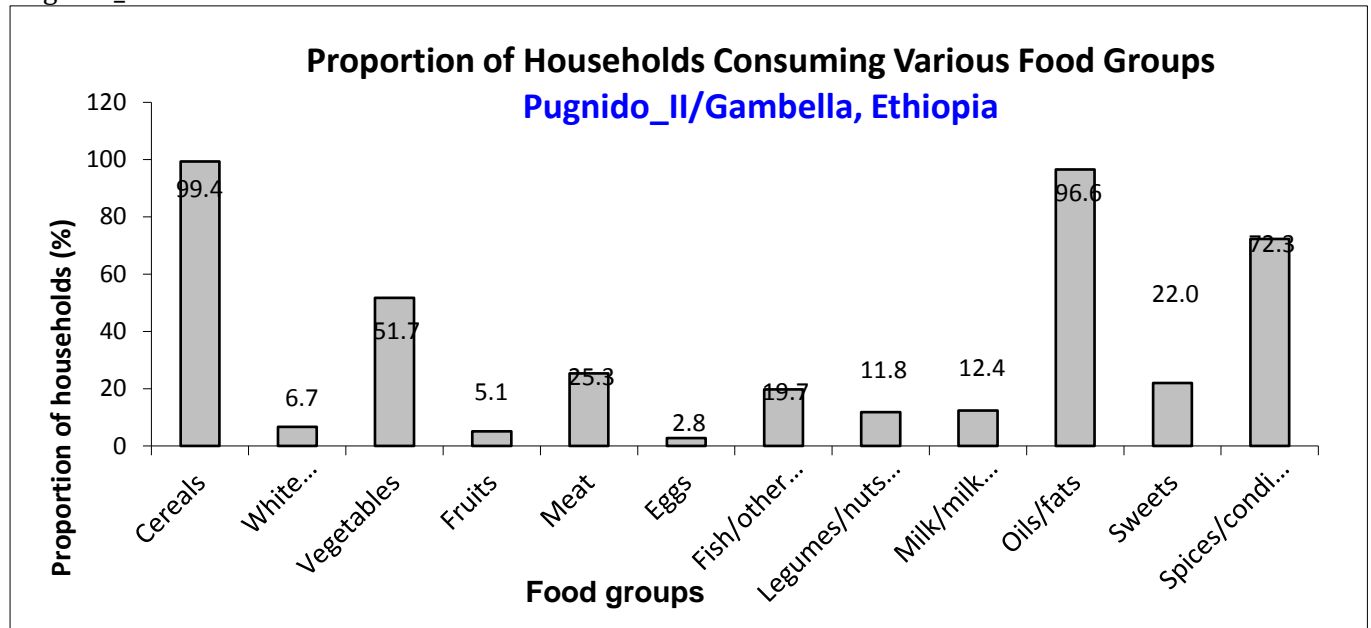
Household dietary diversity results

The average HDDS was 4.25 as per the 2017 results, there was no significant change when compared to 2016 with 4.6.

Table 72: Average HDDS Pugnido_II

Average HDDS	4.25 SD = 1.74
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Figure 34: Proportion of households consuming different food groups within last 24 hours
 Pugnido_II



Most common items reported to be consumed were cereals, (99.4%), oils/fats (96.6%), spice and condiments (72.3%), Fruits, eggs consumption was low.

Table 73: Consumption of food aid commodities and micronutrient rich foods by household's
 _Pugnido_II

	Number/total	% (95% CI)
Proportion of households <i>not consuming any</i> vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	56/178	31.5% (24.7-38.8%)
Proportion of households consuming either a plant or animal source of vitamin A	107/177	60.5% (52.8-67.7%)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	60/178	33.7% (26.8-41.2%)

WASH

Water Quality and Quantity

Table 74: Water Quality Pugnido_II

	Number/total	% (95% CI)
Proportion of households using an improved drinking water source	174/174	100.0%
Proportion of households that use a covered or narrow necked container for storing their drinking water	125/175	71.4% (64.1-77.9)

All the households surveyed reported to have access to improved drinking water source .71.4 % (64.1-77.9) reported to have covered or narrow necked drinking water storage containers.

Table 75: Water Quantity 1: Amount of liters of water used per person per day Pugnido_II

Proportion of households that use:	Number/total	% (95% CI)
≥ 20 lpppd	96/175	54.9% (47.2- 62.4)
15 - <20 lpppd	37/175	21.1% (15.3- 27.9)
<15 lpppd	42/175	24.0% (17.9- 31.0)
An average water usage in lpppd	23.3 lpppd	

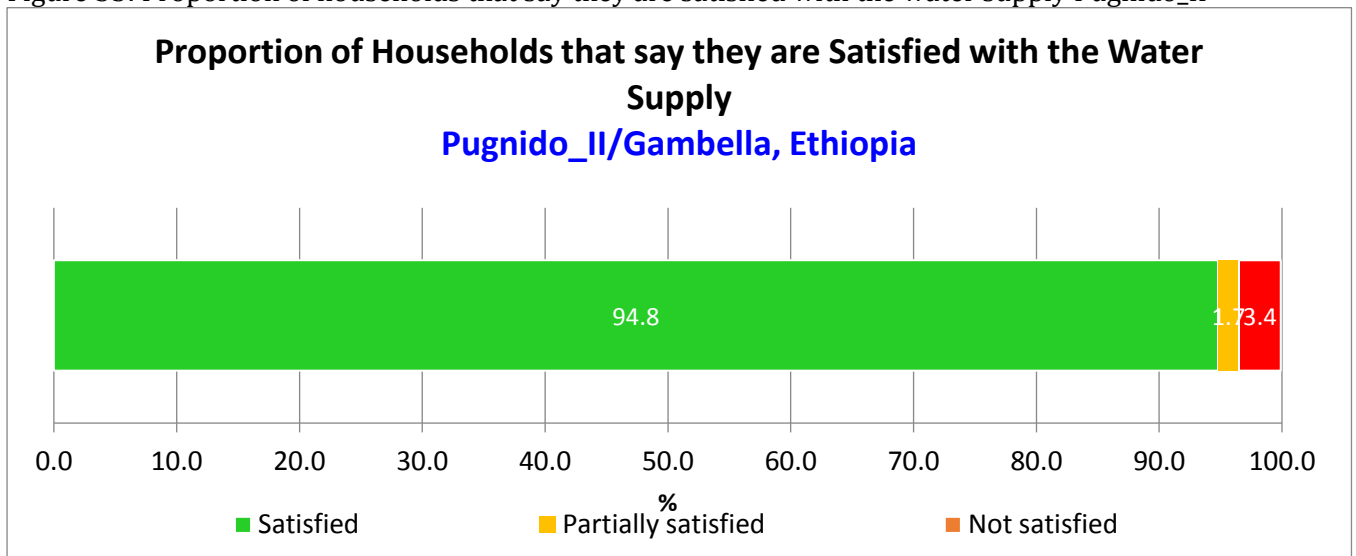
The average water usage was 23.3 Lpppd and was within the SPHERE standards of =>20 lpppd. 24.0% (17.9- 31.0) reported to be receiving <15lpppd and more than half of the surveyed population receive more than 20 lpppd.

Table 76: Satisfaction with water supply Pugnido_II

	Number/total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	166/175	94.8%(90.5- 97.6)

More than 90 % of the sampled household reported that they are satisfied with the drinking water supply. Around 6% were not satisfied with the drinking water supply (whereas 45.5% reported that the drinking water supply was far from their residence

Figure 35: Proportion of households that say they are satisfied with the water supply Pugnido_II



Excreta Disposal

Table 77: Safe Excreta disposal Pugnido_II

	Number/total	% (95% CI)
Proportion of households that use:		
Proportion of households using an improved excreta disposal facility (improved toilet facility, not shared)	45/172	26.2% (19.8-33.4)
Proportion of households using a shared family toilet	1/172	0.6% (0.0 - 3.2)
Proportion of households using a communal toilet	9/172	5.2% (2.4-9.7)
Proportion of households using an unimproved toilet	117/172	68.0% (60.5-74.9)
The proportion of households with children under three years old that dispose of faeces safely.	35/116	30.2% (22.0-39.4)

Most of the beneficiaries are using unimproved toilet facility 68.0% (60.5-74.9%, 95% CI). Further analysis showed only 30.2 % of households surveyed with children less than three years of age had their last stools disposed into the toilet and 69.8% had their stools disposed of unsafely.

Figure 36: Proportion of households with children under the age of 3 years whose (last) stools were disposed of safely Pugnido_II

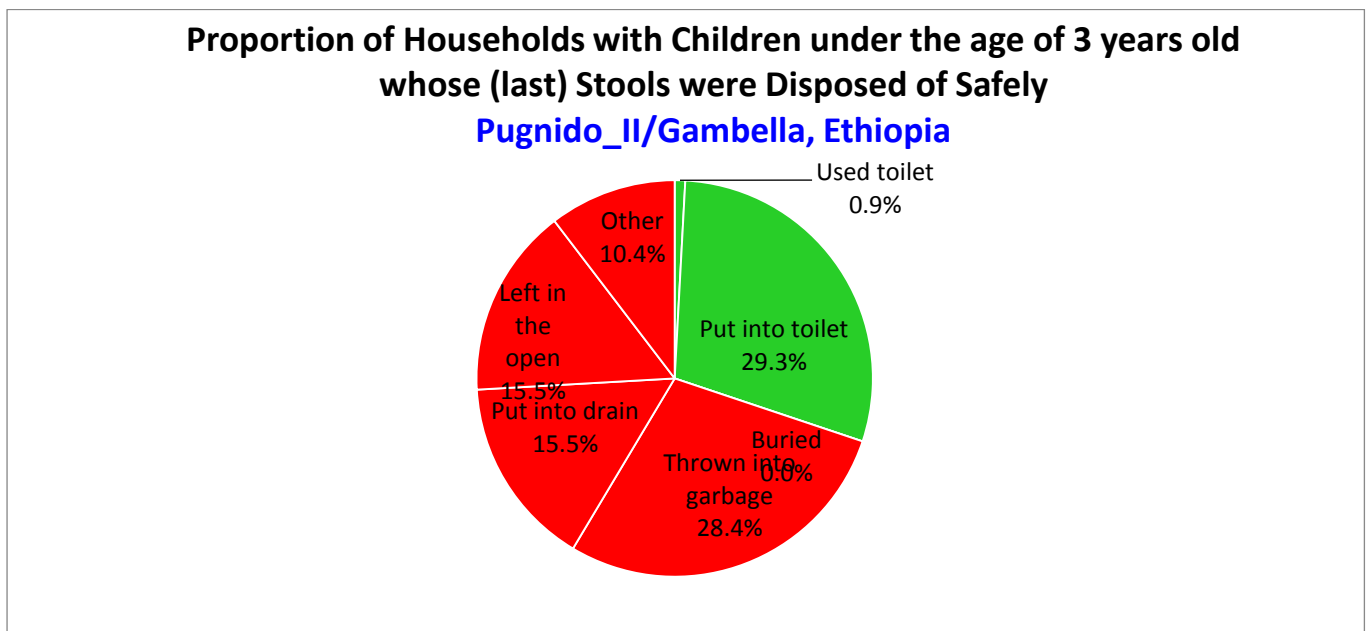
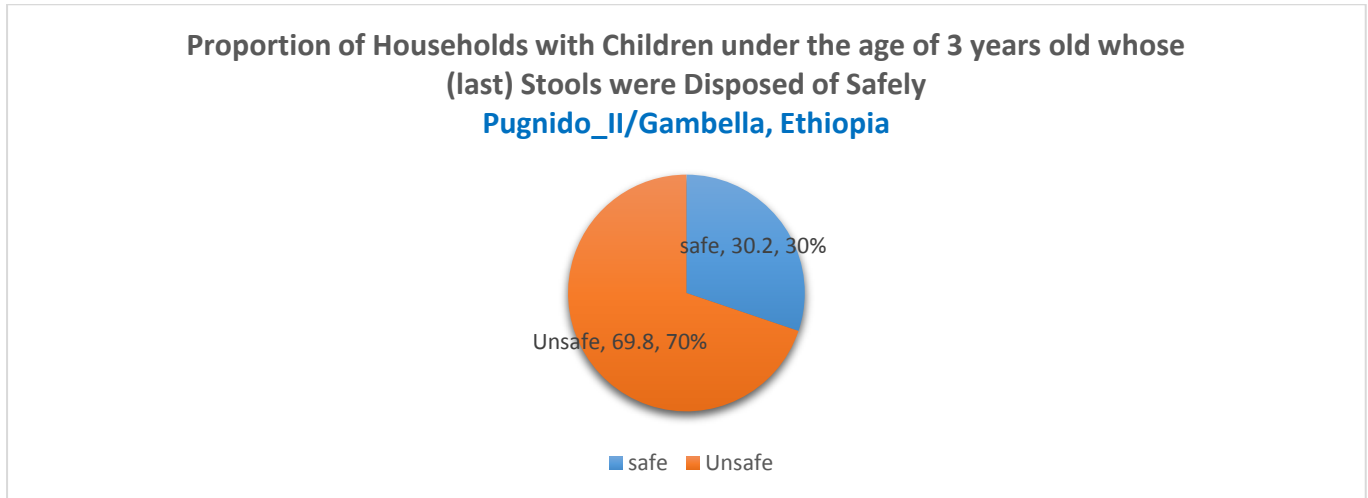


Figure 37: The proportion of households with children under three years old that dispose of faeces safely



Mosquito Net Coverage

Mosquito net ownership

Table 78: Household Mosquito net ownership Pugnido_II

	Number/total	% (95% CI)
Proportion of households owning at least one mosquito net of any type	108/179	60.3% (52.7-67.6)
Proportion of households owning at least one LLIN	107/179	59.8% (52.2-62.0)

Amongst the surveyed Households, 60.3% own at least one mosquito net of any type and about 59.8% have LLIN.

Figure 38: Household ownership of at least one Mosquito net.

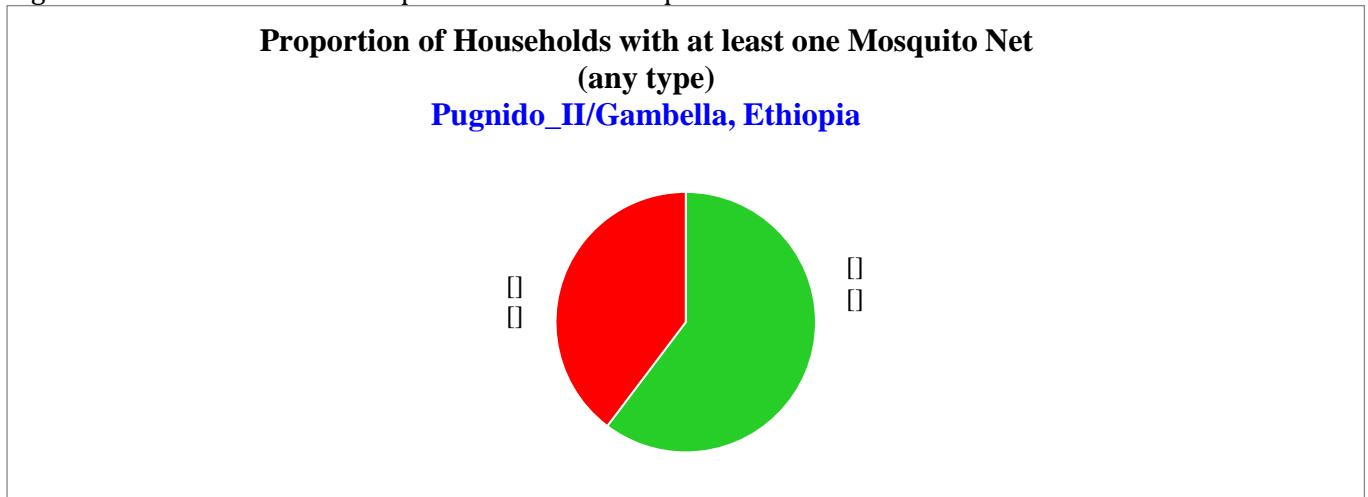


Figure 39: Household ownership of at least one LLIN

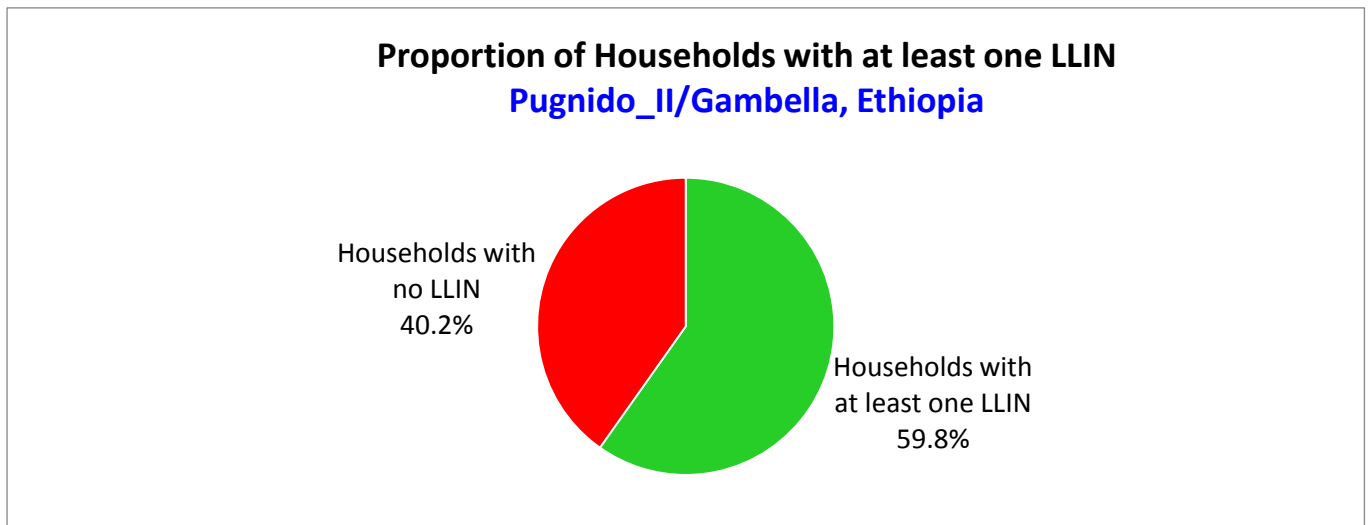


Table 79: Number of nets Pugnido_II

Average number of LLINs per household	Average number of persons per LLIN
1.62	5.8

Mosquito net Utilisation

Table 80: Mosquito net Utilisation Pugnido_II

	Total population (all ages)		0-59 months		Pregnant	
	Total No=1029	%	Total No=220	%	Total No=25	%
Slept under net of any type	468	45.6	115	52.3	19	76.0
Slept under LLIN	468	45.6	115	52.3	19	76.0

A quarter of the surveyed population slept under an LLIN mosquito net. Use of LLIN mosquito nets was slightly higher among children aged 0-59 months in comparison to use among pregnant women.

Figure 40: Mosquito Net Utilization by sub-groups

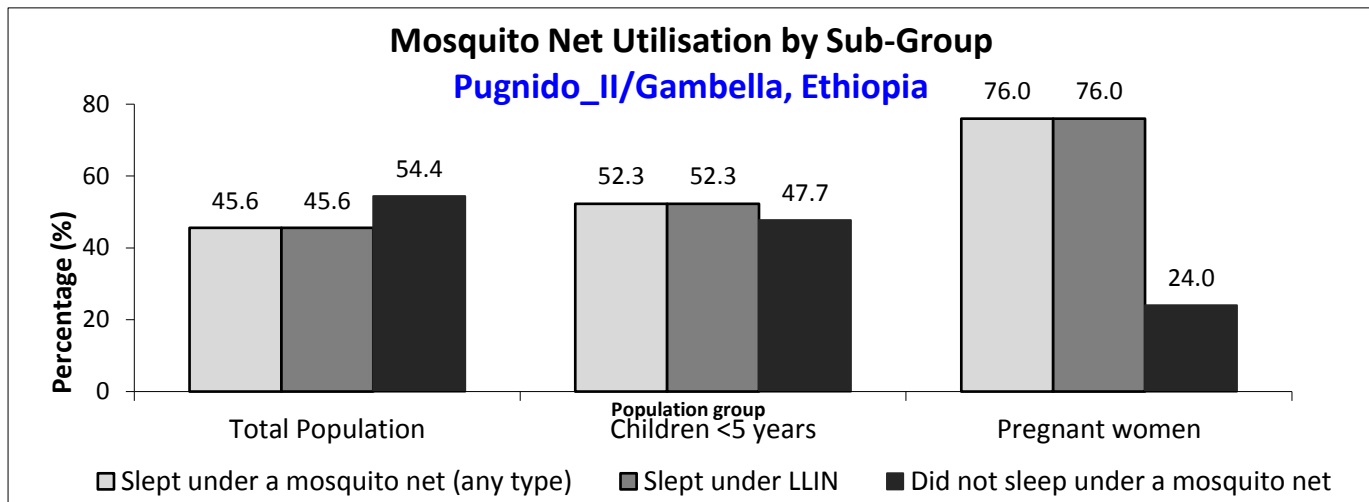


Table 81: Indoor Residual Spraying Household Coverage Pugnido_II

	Number/total	% (95% CI)
Proportion of household covered by IRS	173/179	96.6% (92.8-98.7)

RESULTS FROM KULE CAMP

Table 82: Demographic characteristics of the study population Kule

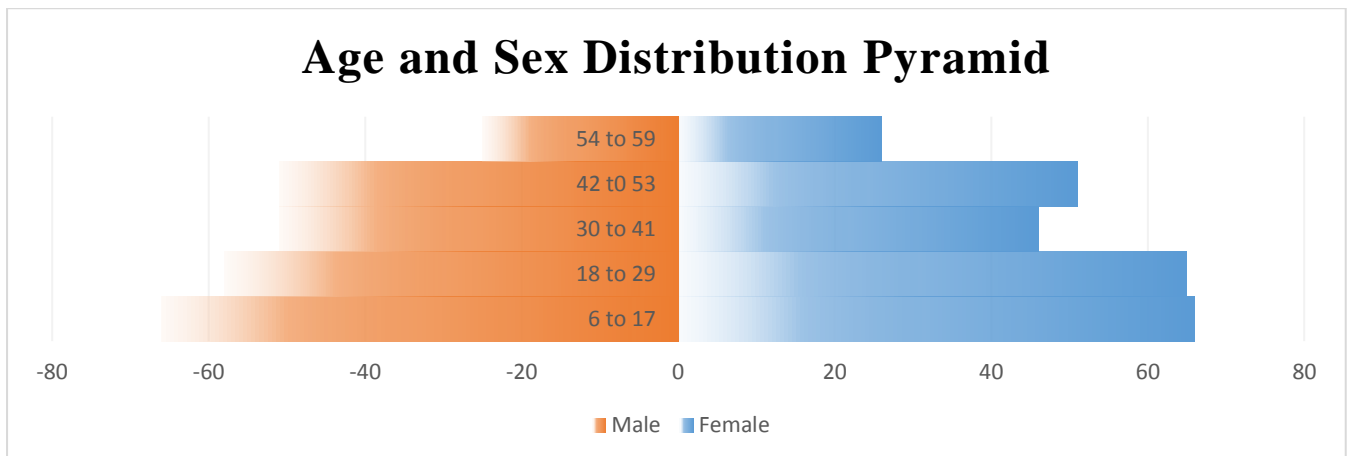
Total population surveyed	3112
Total U5 surveyed	560
Average Household size	6.13
% of children U5	16.3%

Table 83: Distribution of age and sex of sample, Kule

AGE (mo)	Boys		Girls		Total		Ratio
	no.	%	no.	%	no.	%	Boy: Girl
6-17	66	48.9	69	51.1	135	26.6	1.0
18-29	65	52.8	58	47.2	123	24.2	1.1
30-41	46	47.4	51	52.6	97	19.1	0.9
42-53	51	50.0	51	50.0	102	20.1	1.0
54-59	26	51.0	25	49.0	51	10.0	1.0
Total	254	50.0	254	50.0	508	100.0	1.0

The overall sex ratio was 1.0 which indicates an equal distribution of the sexes of different age groups, it shows normal trends and that there was no selection bias

Figure 41: Population age and sex pyramid, Kule



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. Results based on NCHS Growth Reference 1977 are presented in annex.

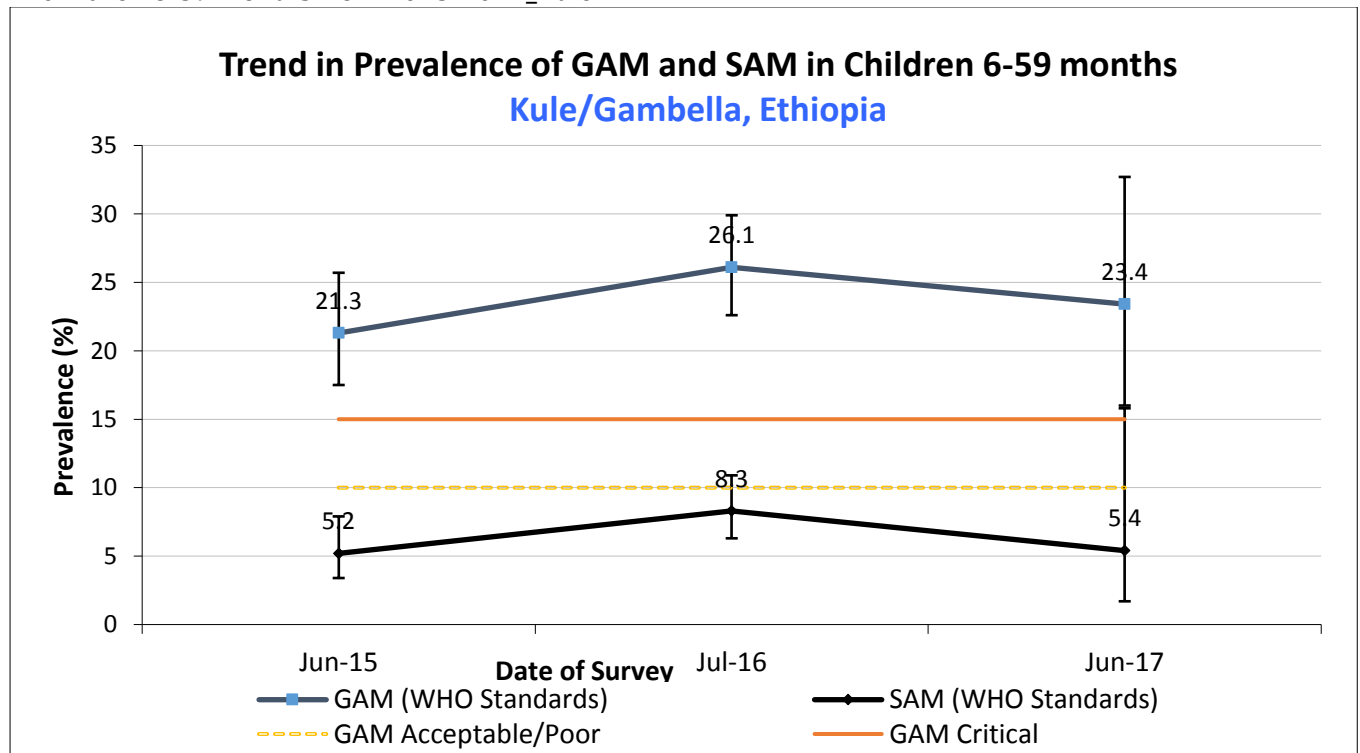
Table 84: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex in Kule camp

	All n = 501	Boys n = 252	Girls n = 249
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(117) 23.4 % (19.9 - 27.3 95% C.I.)	(62) 24.6 % (19.7 - 30.3 95% C.I.)	(55) 22.1 % (17.4 - 27.6 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(90) 18.0 % (14.9 - 21.6 95% C.I.)	(46) 18.3 % (14.0 - 23.5 95% C.I.)	(44) 17.7 % (13.4 - 22.9 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(27) 5.4 % (3.7 - 7.7 95% C.I.)	(16) 6.3 % (3.9 - 10.1 95% C.I.)	(11) 4.4 % (2.5 - 7.7 95% C.I.)

The prevalence of oedema was 0.0 %

The prevalence of GAM was 23.4% (19.9 – 27.3 95%), there was a decrease in SAM from 8.3% to 5.4% but even with the reduction there was no significant difference in both and also between Boys and Girls on the prevalence of acute malnutrition.

Figure 42: Prevalence of global and severe acute malnutrition based on WHO Growth Standards in children 6-59 months from 2015-2017_Kule



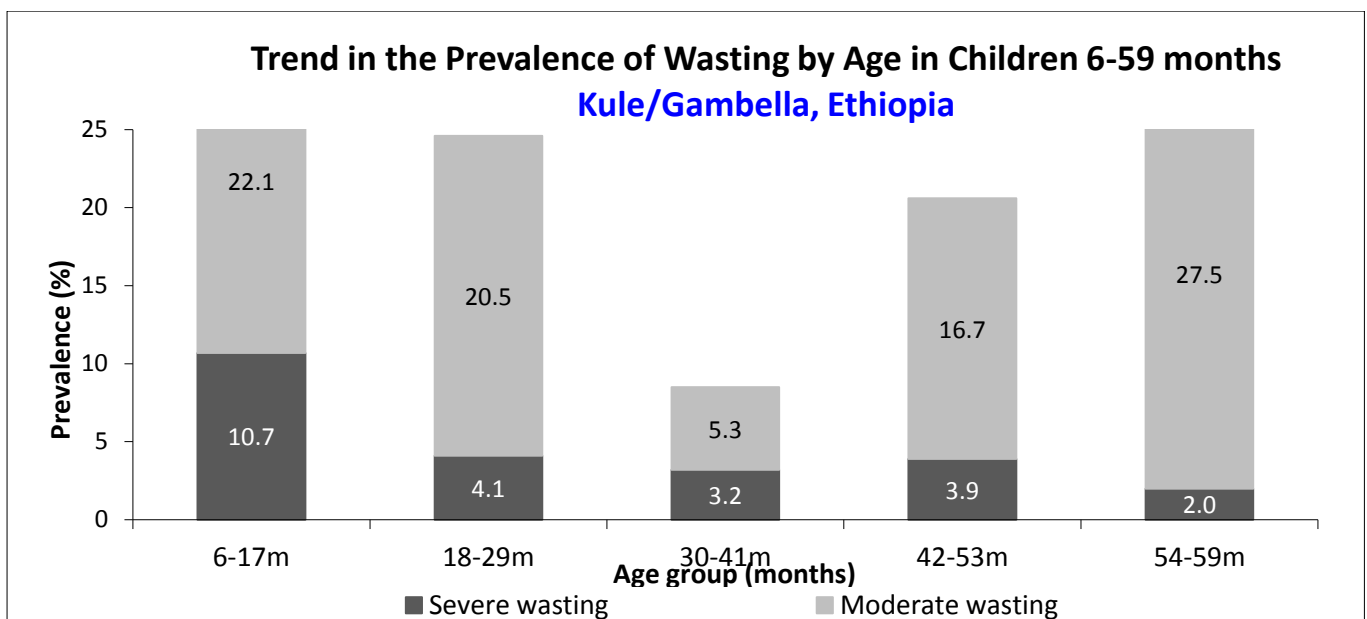
Comparison of results from 2015 shows reduction in GAM and SAM rates (Figure 1).

Table 85: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema kule

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	Age (mo)	Total no.	No.	%
6-17	131	14	10.7	29	22.1	88	67.2	0	0.0
18-29	122	5	4.1	25	20.5	92	75.4	0	0.0
30-41	95	3	3.2	5	5.3	87	91.6	0	0.0
42-53	102	4	3.9	17	16.7	81	79.4	0	0.0
54-59	51	1	2.0	14	27.5	36	70.6	0	0.0
Total	501	27	5.4	90	18.0	384	76.6	0	0.0

The youngest children (6-17 months) was most affected by severe acute malnutrition as compared to other age groups whereas 54-59 months were the most affected group by moderate acute malnutrition.

Figure 43: Trends in the prevalence of wasting by age in children 6-59 months_ Kule



Severe acute malnutrition prevalence was highest in youngest age group and the oldest age group were the highest affected by moderate acute malnutrition (Figure 2).

Table 86: Distribution of severe acute malnutrition and oedema based on weight-for-height z-scores for Kule

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 32 (6.3 %)	Not severely malnourished No. 475 (93.7 %)

All the cases of SAM were due to wasting and no oedema was detected

Figure 44: Distribution of weight-for-height z-scores (based on WHO Growth Standards;) Kule

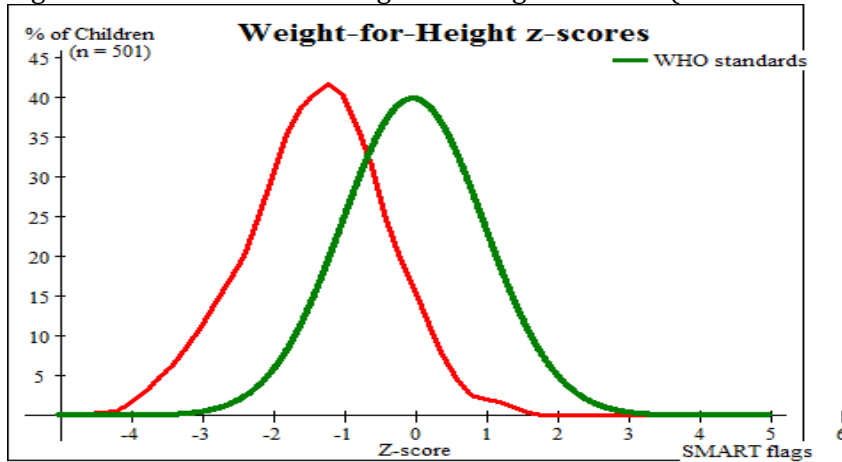


Figure 45 was a comparison of the surveyed and reference weight-for-height z-score (WHZ) distribution. The survey distribution (in red) followed a normal distribution and was shifted to the left of the WHO reference, showing an average lower z-scores, and therefore high malnutrition.

Table 87: Prevalence of acute malnutrition based on MUAC cut offs (and/or oedema) and by sex_Kule

	All n = 510	Boys n = 254	Girls n = 254
Prevalence of global malnutrition (< 125 mm and/or oedema)	(34) 6.7 % (4.8 - 9.2 95% C.I.)	(14) 5.5 % (3.3 - 9.0 95% C.I.)	(20) 7.9 % (5.2 - 11.8 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(26) 5.1 % (3.5 - 7.4 95% C.I.)	(12) 4.7 % (2.7 - 8.1 95% C.I.)	(14) 5.5 % (3.3 - 9.0 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(8) 1.6 % (0.8 - 3.1 95% C.I.)	(2) 0.8 % (0.2 - 2.8 95% C.I.)	(6) 2.4 % (1.1 - 5.1 95% C.I.)

The prevalence of GAM as measured by MUAC was 6.7% (4.8-9.2, 95% C.I), which was much lower than the 23.9% WHZ prevalence. This is because of the low sensitivity of the MUAC with the ability of identifying only 20 – 30% of the acute malnourished children.

Table 88: Prevalence of acute malnutrition by age, based on MUAC cut offs and/or oedema Kule

Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	136	8	5.9	20	14.7	108	79.4	0	0.0
18-29	124	0	0.0	6	4.8	118	95.2	0	0.0
30-41	97	0	0.0	0	0.0	97	100.0	0	0.0
42-53	102	0	0.0	0	0.0	102	100.0	0	0.0
54-59	51	0	0.0	0	0.0	51	100.0	0	0.0
Total	510	8	1.6	26	5.1	476	93.3	0	0.0

Table 89: Prevalence of underweight based on weight-for-age z-scores by sex Kule

	All n = 504	Boys n = 252	Girls n = 252
Prevalence of underweight (<-2 z-score)	(113) 22.4 % (19.0 - 26.3 95% C.I.)	(72) 28.6 % (23.3 - 34.4 95% C.I.)	(41) 16.3 % (12.2 - 21.3 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(91) 18.1 % (14.9 - 21.7 95% C.I.)	(59) 23.4 % (18.6 - 29.0 95% C.I.)	(32) 12.7 % (9.1 - 17.4 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(22) 4.4 % (2.9 - 6.5 95% C.I.)	(13) 5.2 % (3.0 - 8.6 95% C.I.)	(9) 3.6 % (1.9 - 6.6 95% C.I.)

The prevalence of underweight was of 22.4 % (19.0 – 26.3, 95% C.I.) and 4.4 % (2.9 -6.5 95% C.I.) were severely underweight the results show no significant change in the trend of underweight in comparison to 2016 survey.

Table 90: Prevalence of underweight by age, based on weight-for-age z-scores Kule

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	132	9	6.8	30	22.7	93	70.5	0	0.0
18-29	122	10	8.2	20	16.4	92	75.4	0	0.0
30-41	97	2	2.1	17	17.5	78	80.4	0	0.0
42-53	102	1	1.0	19	18.6	82	80.4	0	0.0
54-59	51	0	0.0	5	9.8	46	90.2	0	0.0
Total	504	22	4.4	91	18.1	391	77.6	0	0.0

Table 91: Prevalence of stunting based on height-for-age z-scores and by sex Kule camp

	All n = 501	Boys n = 250	Girls n = 251
Prevalence of stunting (<-2 z-score)	(50) 10.0 % (7.7 - 12.9 95% C.I.)	(33) 13.2 % (9.6 - 18.0 95% C.I.)	(17) 6.8 % (4.3 - 10.6 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(46) 9.2 % (7.0 - 12.0 95% C.I.)	(31) 12.4 % (8.9 - 17.1 95% C.I.)	(15) 6.0 % (3.7 - 9.6 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(4) 0.8 % (0.3 - 2.0 95% C.I.)	(2) 0.8 % (0.2 - 2.9 95% C.I.)	(2) 0.8 % (0.2 - 2.9 95% C.I.)

The prevalence of stunting was 10.0% (7.7 - 12.9, 95% C.I.), which was a low prevalence of chronic malnutrition which was commonly observed in South Sudanese populations (Table 91).

Table 92: Prevalence of stunting by age based on height-for-age z-scores Kule camp

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
		No.	%	No.	%	Total no.	No.
6-17	130	1	0.8	8	6.2	121	93.1
18-29	122	3	2.5	15	12.3	104	85.2
30-41	96	0	0.0	15	15.6	81	84.4
42-53	102	0	0.0	8	7.8	94	92.2
54-59	51	0	0.0	0	0.0	51	100.0
Total	501	4	0.8	46	9.2	451	90.0

Children under 30 months of age appear to be more affected by stunting than the older ones and particularly those 30-41months were more affected by moderate stunting.

Figure 45: Trends in the prevalence of stunting by age in children 6-59 months_ Kule camp

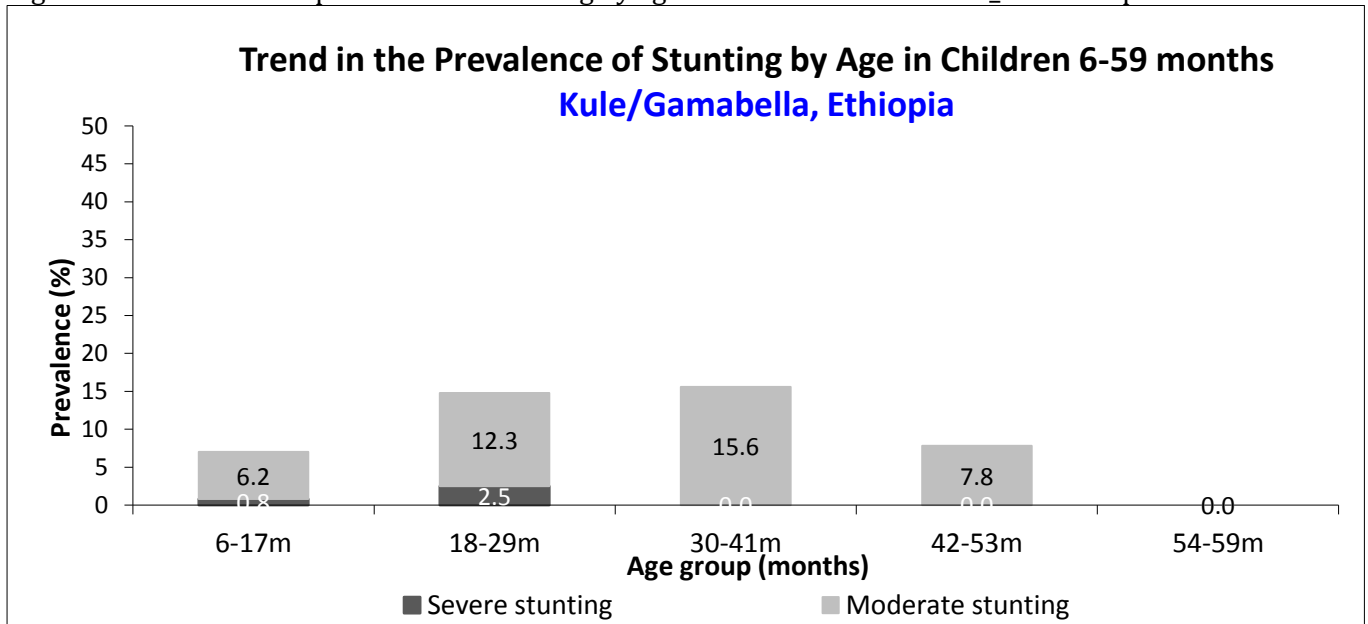
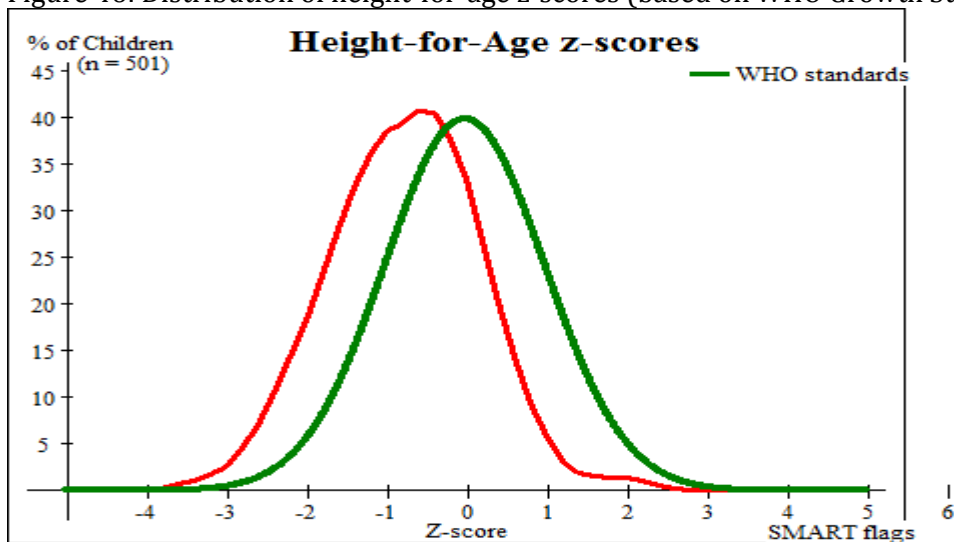


Figure 46: Distribution of height-for-age z-scores (based on WHO Growth Standards)



The height-for-age distribution for the survey (red) was compared to the WHO distribution (green) in Figure 47. The distribution followed a typical bell shape, and was also shifted to the left of the reference, indicating an average lower mean z-score for the survey sample.

Table 93: Mean z-scores, Design Effects and excluded subjects Kule

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	501	-1.38±0.97	1.94	3	6
Weight-for-Age	504	-1.40±0.86	2.72	3	3
Height-for-Age	501	-0.77±0.93	1.00	2	7

* contains for WHZ and WAZ the children with oedema.

Mortality results

Table 94: Mortality rates_Kule

Crude Mortality Rate (CMR) total No. of death /10,000/day	0.39 (0.07 -2.08)
Under 5 Mortality (U5MR) total No. of death /10,000/day	0.77 (0.34 -1.75)

CMR and U5MR are within the emergency threshold in Kule refugee camp

Feeding programme coverage results

Table 95: Estimated programme coverage for acutely malnourished children Kule

	Number/total	% (95% CI)
Supplementary feeding programme coverage (WHZ >= - 3 AND WHZ < - 2 OR MUAC >= 115 mm AND MUAC < 125 mm)	30/95	31.6% (22.4 - 41.9)
Therapeutic feeding programme coverage (WHZ < - 3 OR MUAC < 115mm)	5/35	14.3% (4.8 - 30.3)
Blanket Supplementary (WHZ >= - 2 OR MUAC >= 125)	422/478	88.3% (85.0 - 91.0)

Estimated programme coverage for supplementary and therapeutic feeding programme was lower than expected standards for refugee settings (>90%). The coverage for BSFP was 88.3% and was almost the same as the results of the 2016 SENS.

Measles vaccination coverage results

Table 96: Measles vaccination coverage for children aged 9-59 months (or other context-specific target group) Kule

	Measles (with card) n=364	Measles (with card <u>or</u> confirmation from mother) n=364
YES	24.9% (21.2 - 29.0)	97.0% (95.0 - 98.1)

The measles coverage with card or recall have met the target 95% at 97.0% (95.0 - 98.1). The result have shown that there was improvement from 94.4% to 97.0% by from the last year 2016. By card was still very low and documentation in the child health cards needs to improved.

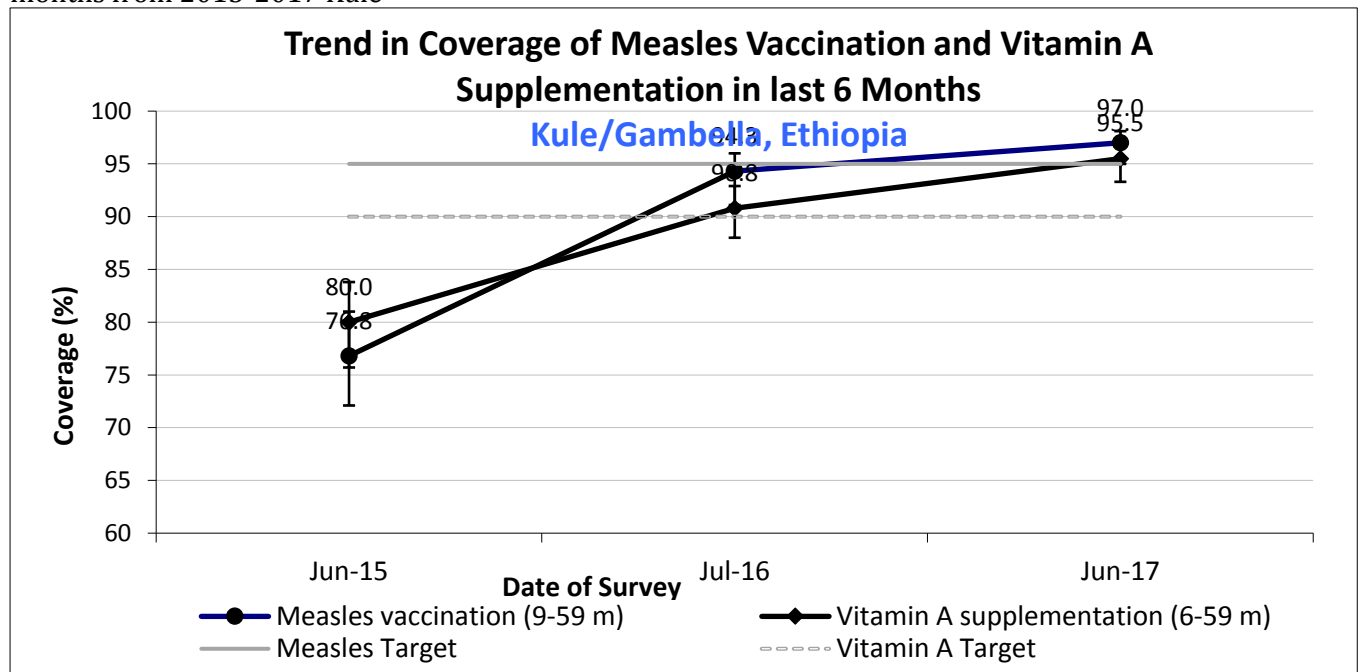
Vitamin A supplementation coverage results

Table 97: Vitamin A supplementation for children aged 6-59 months within past 6 months (or other context-specific target group) Kule

	Vitamin A capsule (with card) n=383	Vitamin A capsule (with card <u>or</u> confirmation from mother) n=383
YES	16.3% (13.3 - 19.7)	95.5% (93.3 - 96.9)

Vitamin A coverage by card or confirmation from the mother was 95.5% (93.3 - 96.9) which was in line with the SPHERE standards of >90%. This in comparison with 2016 results shows an improvement in the vitamin A supplementation coverage within the past six months. By card was still very low and documentation in the child health cards needs to improved.

Figure 47: Coverage of measles vaccination and vitamin A supplementation in children 6-59 months from 2015-2017 Kule



Comparison of results from 2015 show decrease in the measles vaccination and vitamin A supplementation among children 6-59 months (Figure 48).

Diarrhoea results

Table 98: Period prevalence of diarrhoea Kule

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	78/510	15.3% (12.4-18.7)

15.3% (12.4-18.7%) of the sampled children reported to have diarrhoea in the 2 weeks prior to the survey. This shows that percentage of children having diarrhoea in the last two weeks decreased when compared to 2016 survey from 19.6-15.3% of 2017.

Anaemia results

Table 99: Prevalence of anaemia and hemoglobin concentration in children 6-59 months of age Kule

Anaemia in Children 6-59 months	All n =510
Total Anaemia (Hb<11.0 g/dL)	(n=237) 46.7% (42.4 – 51.1)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(n=126) 24.9% (21.3 – 28.8)
Moderate Anaemia (7.0-9.9 g/dL)	(n =126) 21.7% (18.3-25.5)
Severe Anaemia (<7.0 g/dL)	(n =1) 0.2% (0.0 - 1.1)
Mean Hb (g/dL)	10.89 g/dL and (1.27SD) [min 6.7 to max 14.2]

The prevalence of anaemia was 46.7% (42.4 – 51.1) of children aged 6-59 months were anaemic, this when compared to the 2016 results (59.5% (55.4-63.5), there was some significant reduction, however the prevalence are still above the critical threshold (>40).

Figure 48: Anaemia categories in children 6-59 months from 2015-2017

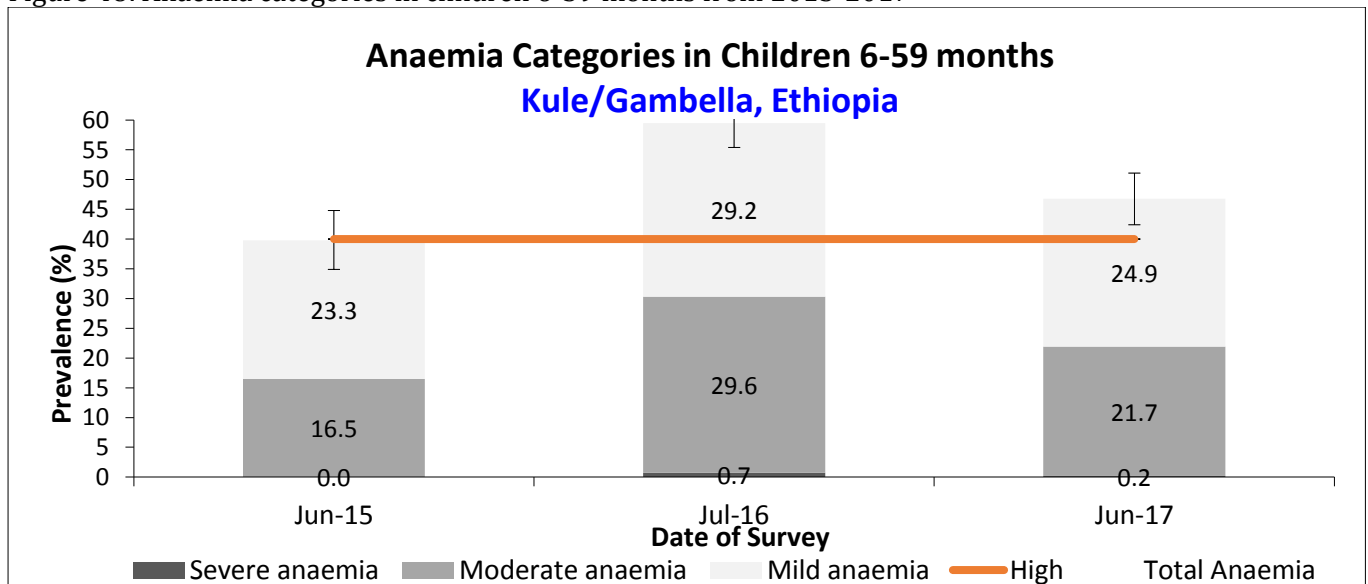


Figure 49: Mean Haemoglobin concentration in children 6-59 months from 2015-2017 Kule

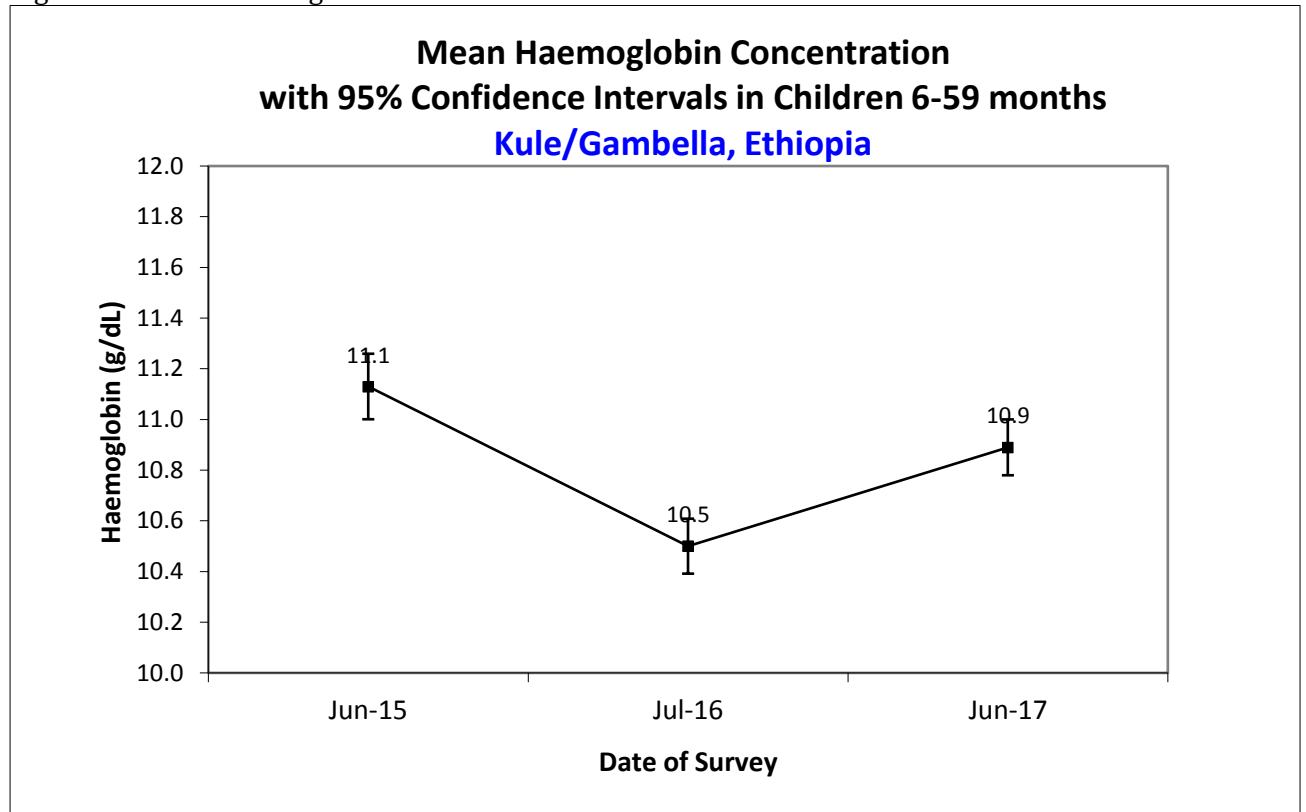


Table 100: Prevalence of anaemia by age

Age group	No.	Severe Anaemia (<7.0 g/dL)		Moderate Anaemia (7.0-9.9 g/dL)		Mild Anaemia (Hb 10.0-10.9 g/dL)		Total Anaemia (Hb<11.0 g/dL)		Normal (Hb≥11.0 g/dL)	
		no	%	no	%	n	%	no	%	no	%
6-23	196	0	0.0%	64	32.7% (26.1-39.7%)	57	27.0% (21.0-33.8%)	117	59.7% (52.5-66.6%)	79	40.3% (33.4-47.5%)
24-35	88	0	0.0%	18	20.5% (12.6-30.4%)	27	30.7% (21.3-41.4%)	45	51.1% (40.2-61.9%)	43	48.9% (38.1-59.1%)
36-59	223	1	0.4% (0.0-2.5)	28	12.6% (8.5-17.6%)	46	20.6% (15.5-26.5%)	75	33.6% (27.5-40.2%)	148	66.4% (59.8-72.5%)
Total	507	1	0.2% (0.0-1.3)	110	21.7% (18.2-25.6)	126	24.9% (21.2-28.9%)	237	46.7% (42.3-51.2%)	270	53.3% (48.8-57.7%)

Children 6-23 months are most affected with anaemia at 59.7% (52.5-66.6%), this follows a similar trend when compared to 76.1% in 2016.

Children 0-23 months

Table 101: Prevalence of Infant and Young Child Feeding Practices Indicators

Indicator	Age range	No./ total	Prevalence (%) & 95% CI
Timely initiation of breastfeeding	0-23 months	229/243	94.2% (90.5 - 96.8)
Exclusive breastfeeding under 6 months	0-5 months	34/48	70.8% (55.9 - 83.0)
Continued breastfeeding at 1 year	12-15 months	47/49	95.9% (86.0- 99.5)
Continued breastfeeding at 2 years	20-23 months	39/46	84.8% (71.1 - 93.6)
Introduction of solid, semi-solid or soft foods	6-8 months	13/41	31.7% (18.1 - 48.1)
Consumption of iron-rich or iron-fortified foods	6-23 months	177/190	93.2% (88.6- 96.3)
Bottle feeding	0-23 months	44/243	18.1% (13.5 - 23.5)

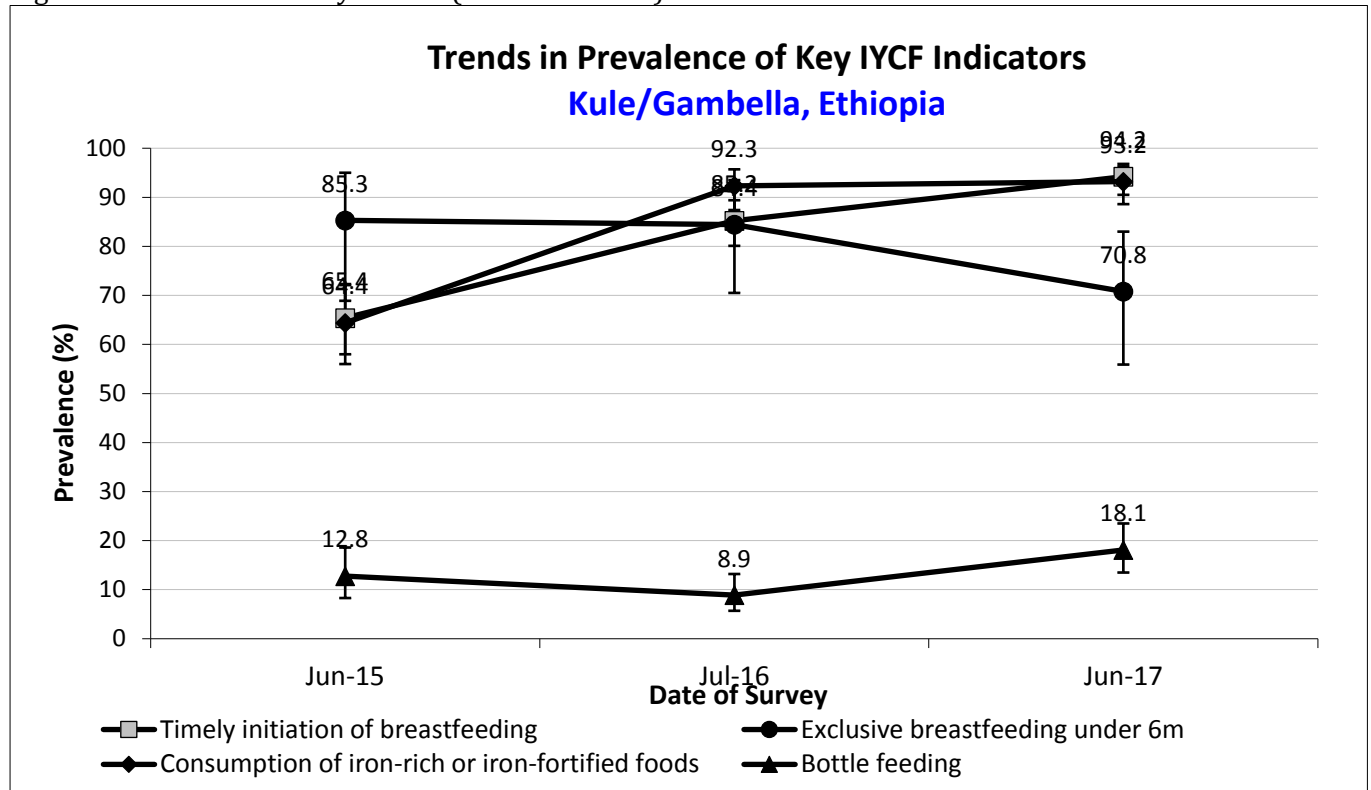
Note that when IYCF indicators are collected in nutritional surveys based on anthropometric sample of children aged 0-59 months, it was not feasible to achieve a large enough sample size for some of the indicators to be estimated as precisely as desired, especially for indicators covering a very narrow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

As per the results shown above, 94.2% of children under 2 years were initiated to breastfeeding within one hour of birth, 70.8% of children 0-5 months were reported to have been exclusively breastfed.

About 95.9% of the sampled children were still breastfeeding at 1 year, whilst about 84.8% were reported that they have continued breastfeeding at 2 years. (97.1%) of the sampled children consumed Iron-rich or iron fortified foods, whereas only 31.7% of infants between 6-8 months had been introduced to complementary feeding. The proportion of children who were bottle fed the day before the survey were 18.1% (13.5-23.5, 95% C.I).

Caution needs to be taken when interpreting nutrition survey results from previous surveys though important to assess the IYCF situation. 2017 findings have shown an improvement in the trend in initiation of breastfeeding and consumption of iron rich food. There was an increase in the use of bottle feed from 8.9% in 2016 to 18.1% in 2017.

Figure 50: Nutrition survey results (IYCF indicators) from 2015-2017



Prevalence of intake ANALYSIS

Infant formula

Table: 11.21: Infant formula intake in children aged 0-23 months, Kule

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	28/244	11.5% (7.8-16.2%)

Table 11.22 CSB intake in children aged 6-23 months Kule

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive FBF	74/195	37.9% (31.1-45.2%)

Table 11.23:CSB ++ intake in children aged 6-23 months _Kule

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB++	147/195	75.4% (68.7-81.3%)

Women 15-49 years

Table 102: Women physiological status and age, Kule

Physiological status	Number/total	% of sample
Non-pregnant	259/289	89.6%, (85.5-92.9%)
Pregnant	27/289	9.3%, (6.3-13.3%)
Mean age (range)	26.5year Range: 15- 48 years	

Of the sampled women aged 15-49 years in the survey, 9.3% were pregnant. The mean age of women was 26.5 years.

Anaemia

Table 103: Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 years) _Kule

Anaemia in non-pregnant women of reproductive age (15-49 years)	All (95% CI) n = 261
Total Anaemia (<12.0 g/dL)	(92) 35.3% (29.5 - 41.4)
Mild Anaemia (11.0-11.9 g/dL)	(66) 25.3% (20.1 - 31.0)
Moderate Anaemia (8.0-10.9 g/dL)	(26) 9.9% (6.6 - 14.3)
Severe Anaemia (<8.0 g/dL)	0
Mean Hb (g/dL)	12.3 g/dL and (1.19SD) [min 8.1 to max 15.3 g/dL]

The prevalence of anaemia among non-pregnant women was 35.3% (29.5 - 41.4, 95% C.I), this was below the critical threshold (>40%). When compared with the 2016 results its shows a reduction from 44.6% though no significant difference.

Figure 51: Anaemia categories in women of reproductive age (non-pregnant) from 2015-2017 Kule

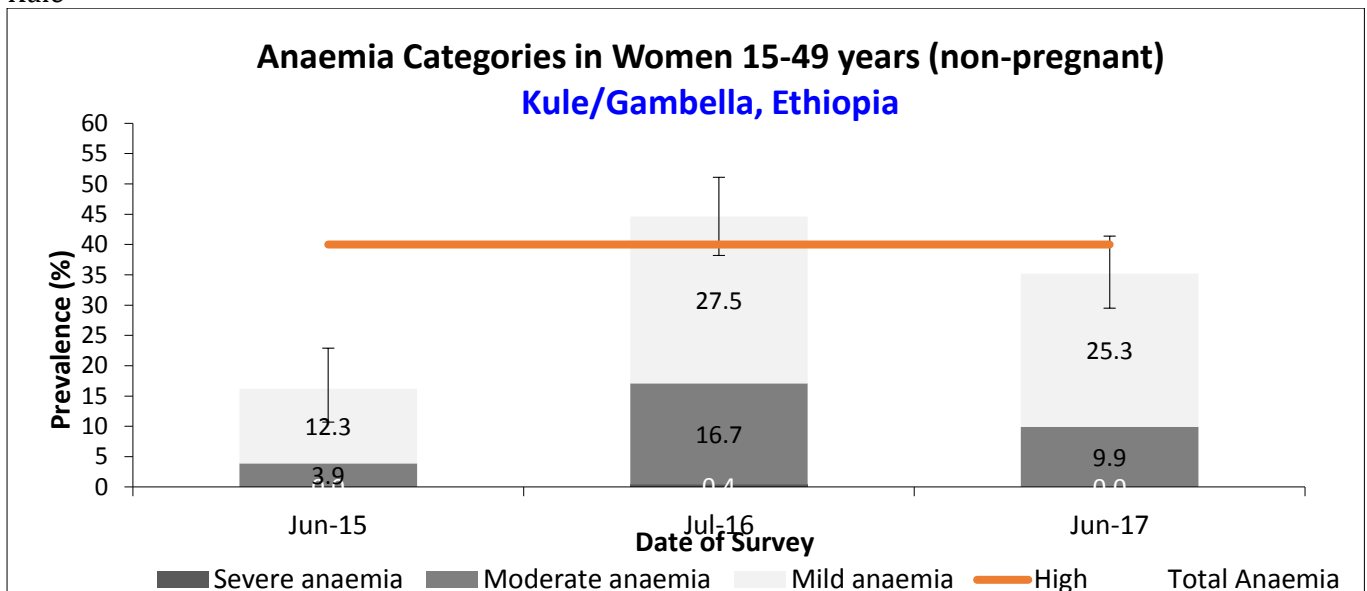


Figure 52: Mean haemoglobin concentration in women of reproductive age (non-pregnant) from 2015-2017 Kule

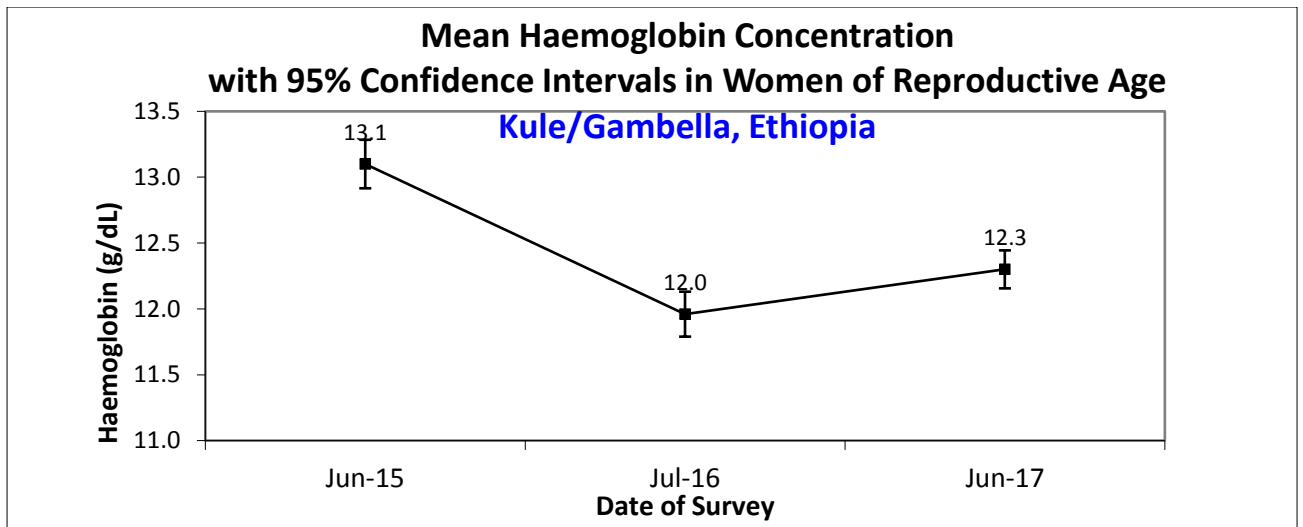


Table 104: ANC enrolment and iron-folic acid pills coverage among pregnant women (15-49 years)

	Number /total	% (95% CI)
Currently enrolled in ANC programme	25/27	92.6% (75.7- 99.1)
Currently receiving iron-folic acid pills	25/27	92.6% (75.7- 99.1)

92.6% of the pregnant women are enrolled in the enrolled ANC and receiving iron-folic pills

Food security

Ration Card Coverage

Table 105: Ration card coverage Kule

	Number/total	% (95% CI)
Proportion of households with a ration card	210/210	100%

All of the sampled households reported to have ration cards.

Table 106: Reported duration of general food ration 1

Average number of days the food ration lasts (Standard deviation or 95% CI)	Average duration (%) in relation to the theoretical duration of the ration*
17.9 days out of 30 days	59.6%

Table 107: 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	6/210	2.9% (1.1-6.1%)
Proportion of households reporting that the food ration lasted:		
≤75% of the cycle (30 days)	26/210	12.4% (8.2-17.6%)
>75% of the cycle (30 days)	184/210	87.6% (82.4-91.8%)

The GFD ration lasted for 17.9 days out of the 30 days, translating to 60% of the days are covered, Only 12. % reported that their ration lasted at least above 25 days.

Negative coping strategies results

Table 108: Coping strategies used by the surveyed population over the past month Kule

	Number/total	% (95% CI)
Proportion of households reporting using the following coping strategies over the past month*:		
Borrowed cash, food or other items <i>without interest</i>	49/210	23.3% (17.8 – 29.6)
Sold any assets (furniture, seed stocks, tools, other NFI, livestock etc.)	19/209	9.1% (5.6 – 13.8)
Requested increase remittances or gifts as compared to normal	23/209	11% (7.11 – 16.1)
Reduced the quantity and/or frequency of meals	76/209	36.4% (29.8-43.3)
Begged	12/210	5.7% (2.9 – 9.7)
Engaged in potentially risky or harmful activities (list activities)	6/210	2.9% (1.1-6.1)
Proportion of households reporting using none of the coping strategies over the past month	104/207	50.2% (43.2- 57.2)

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

The most commonly used coping strategy are ; reducing the quantity and/or frequency of meals and borrowing of food, cash and other items. 50.2% of the surveyed households reported that that they did not use any coping strategies, mentioned above.

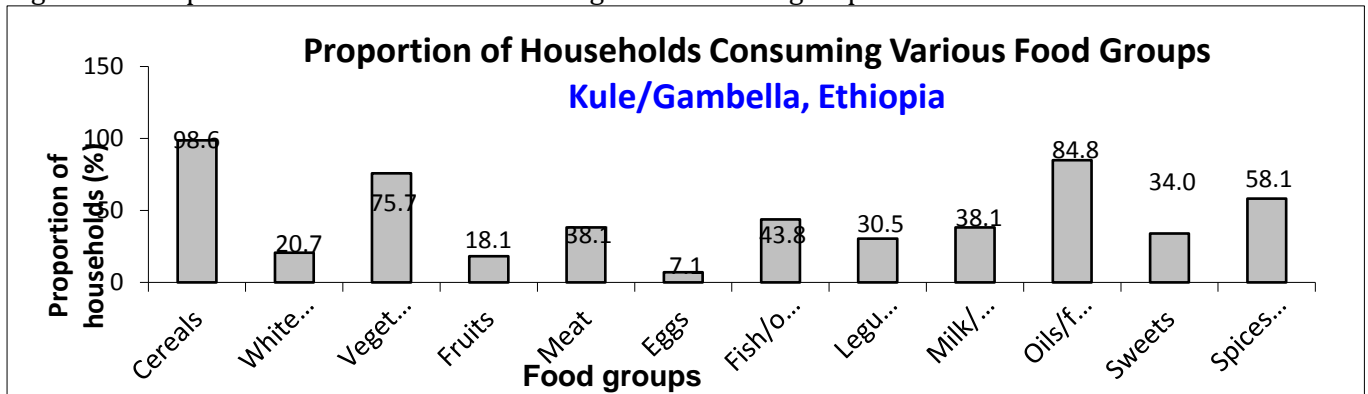
Household dietary diversity results

The average HDDS was 5.41 as per the results and this shows some improvement from 4.45 in the 2016 SENS and can be attributed to the Fresh food voucher programme that was ongoing in Kule refugee camp. Fig 12 below shows an improvement in the consumption of vegetable from 63% in 2016 to 75.7% in 2017.

Table 109: Average HDDS_ Kule

Average HDDS	5.41 SD = 2.52
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Figure 53: Proportion of households consuming different food groups within last 24 hours



Most common items reported to be consumed were cereals, (98.6%), oils/fats (84.8%), vegetables (75.7%), Fruits, eggs consumption was low.

Table 110: Consumption of food aid commodities and micronutrient rich foods by household's Kule

	Number/total	% (95% CI)
Proportion of households <i>not</i> consuming any vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	42/208	20.2% (15.0-26.3%)
Proportion of households consuming either a plant or animal source of vitamin A	159/206	77.2% (70.8-82.7%)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	109/208	52.4% (45.4-59.4%)

WASH

Water Quality and Quantity

Table 111: Water Quality Kule

	Number/total	% (95% CI)
Proportion of households using an improved drinking water source	210/210	100.0%
Proportion of households that use a covered or narrow necked container for storing their drinking water	113/210	53.8% (46.8 – 60.7)

About 53.8%(46.8 – 60.7, 95% CI) of households reported to have covered or narrow necked drinking water storage containers and 100% had improved drinking water source.

Table 112: Water Quantity: Amount of liters of water used per person per day Kule

Proportion of households that use:	Number/total	% (95% CI)
≥ 20 lpppd	57/210	27.1% (21.3 - 33.7)
15 - <20 lpppd	36/210	17.1% (12.3 - 22.9)
<15 lpppd	117/210	55.7% (48.7 - 62.5)
An average water usage in lpppd	16.1 lpppd	

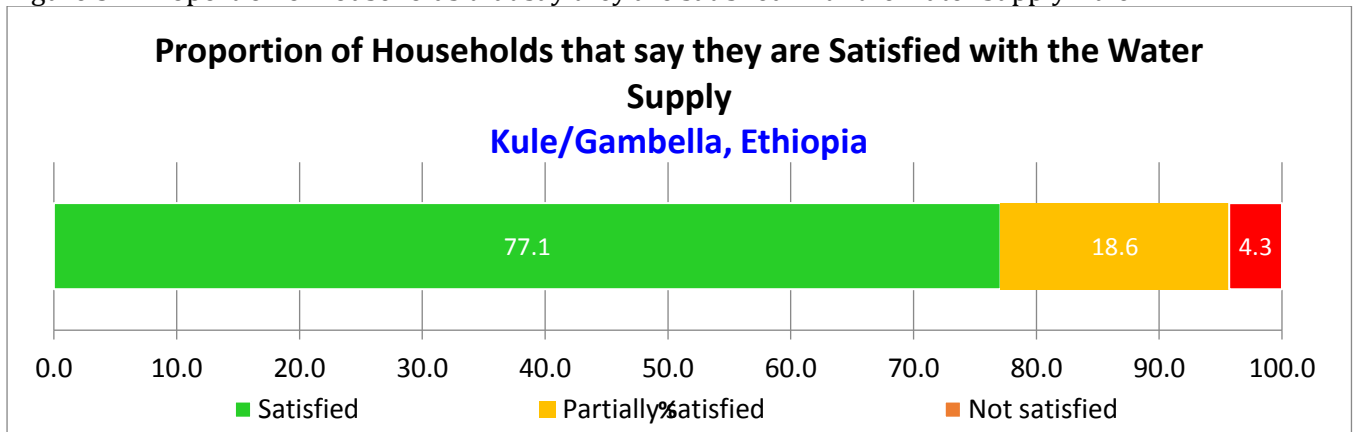
More than half of the surveyed households (55.7% (48.7 - 62.5) reported that their water utilization was <15lpppd.

Table 113: Satisfaction with water supply Kule

	Number/total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	162/210	77.1% (70.8 - 82.6)

The average water usage was 16.1lpppd which was below the UNHCR standard of >20 lpppd in the camps. 77.1 % of the sampled household reported that they are satisfied with the drinking water supply. About 4% were not satisfied with the drinking water supply whereas 38.5% reported that they are not satisfied due to the irregularity of water supply.

Figure 54: Proportion of households that say they are satisfied with the water supply Kule



Excreta Disposal

Table 114: Safe Excreta disposal Kule

	Number/total	% (95% CI)
Proportion of households that use:		
Proportion of households using an improved excreta disposal facility (improved toilet facility, not shared)	122/208	58.7% (51.6 - 65.4)
Proportion of households using a shared family toilet	13/208	6.3% (3.4 - 10.5)
Proportion of households using a communal toilet	53/208	25.5% (19.7 - 32.0)
Proportion of households using an unimproved toilet	20/210	9.6% (6.0-14.5)
The proportion of households with children under three years old that dispose of faeces safely.	133/156	85.3% (78.7 - 90.4)

At least half of the surveyed households are using improved toilet facility 58.7% (51.6-65.4%, 95% CI). Further analysis showed about 85.3% of households surveyed with children less than three years of age had their last stools disposed into the toilet and other 14.7% had their stools disposed of unsafely.

Figure 55: Proportion of households with children under the age of 3 years whose (last) stools were disposed of safely Kule

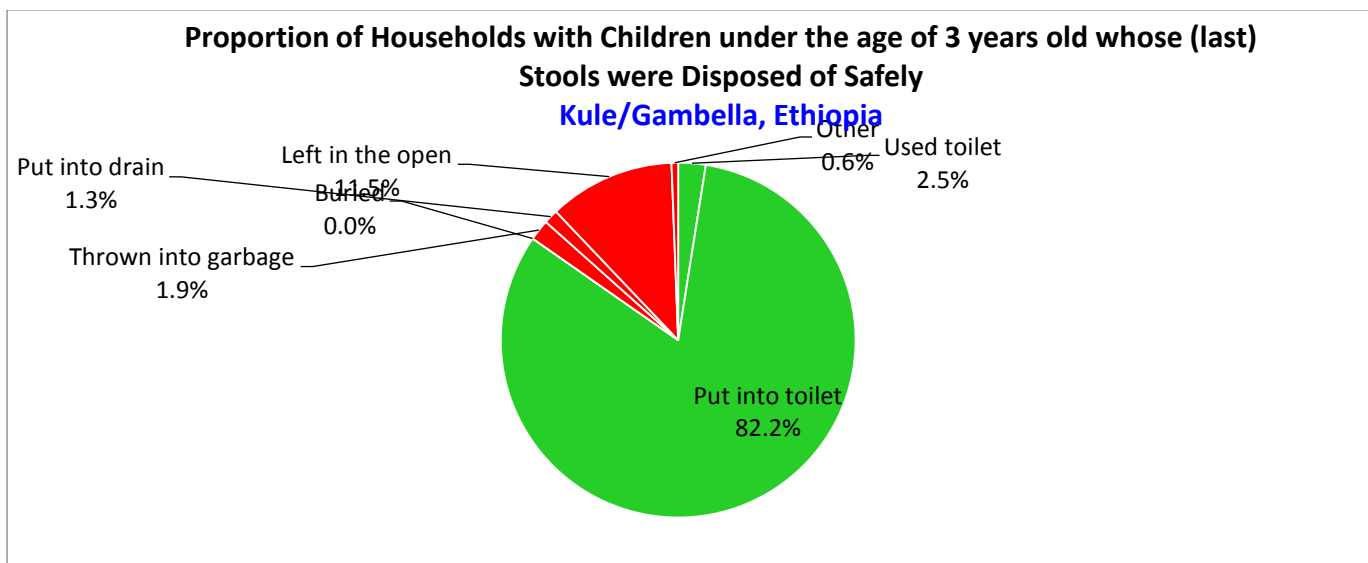
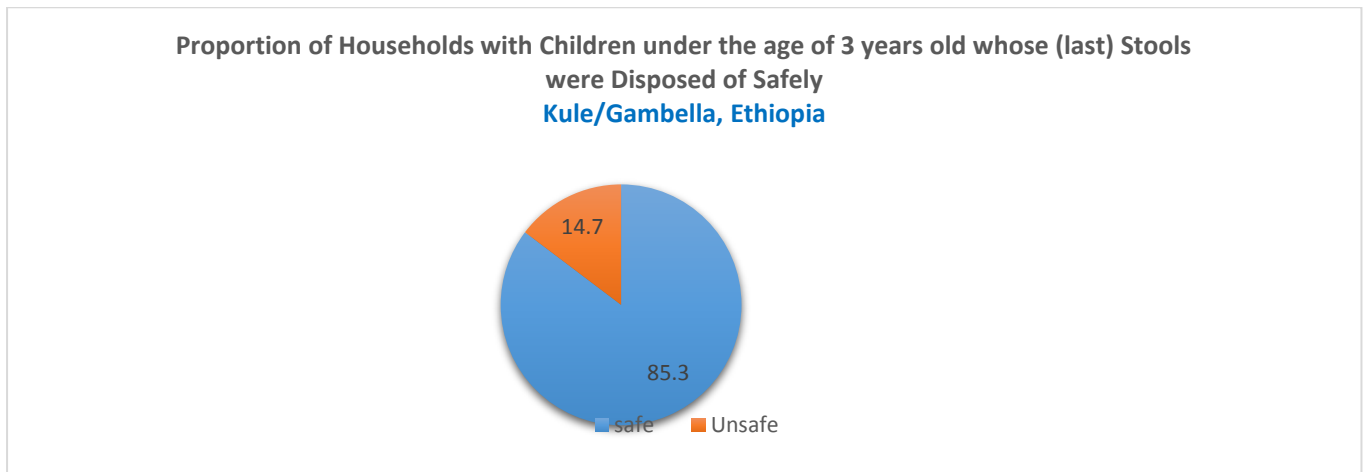


Figure 56: The proportion of households with children under three years old that dispose of faeces safely Kule



Mosquito Net Coverage

Table 115: Household Mosquito net ownership Kule

	Number/total	% (95% CI)
Proportion of households owning at least one mosquito net of any type	114/211	54.0% (47.0-60.9)
Proportion of households owning at least one LLIN	113/211	53.6% (46.6-60.4)

Amongst the surveyed Households, 54.0% own at least one mosquito net of any type and about 53.6% have LLIN.

Figure 57: Household ownership of at least one Mosquito net Kule

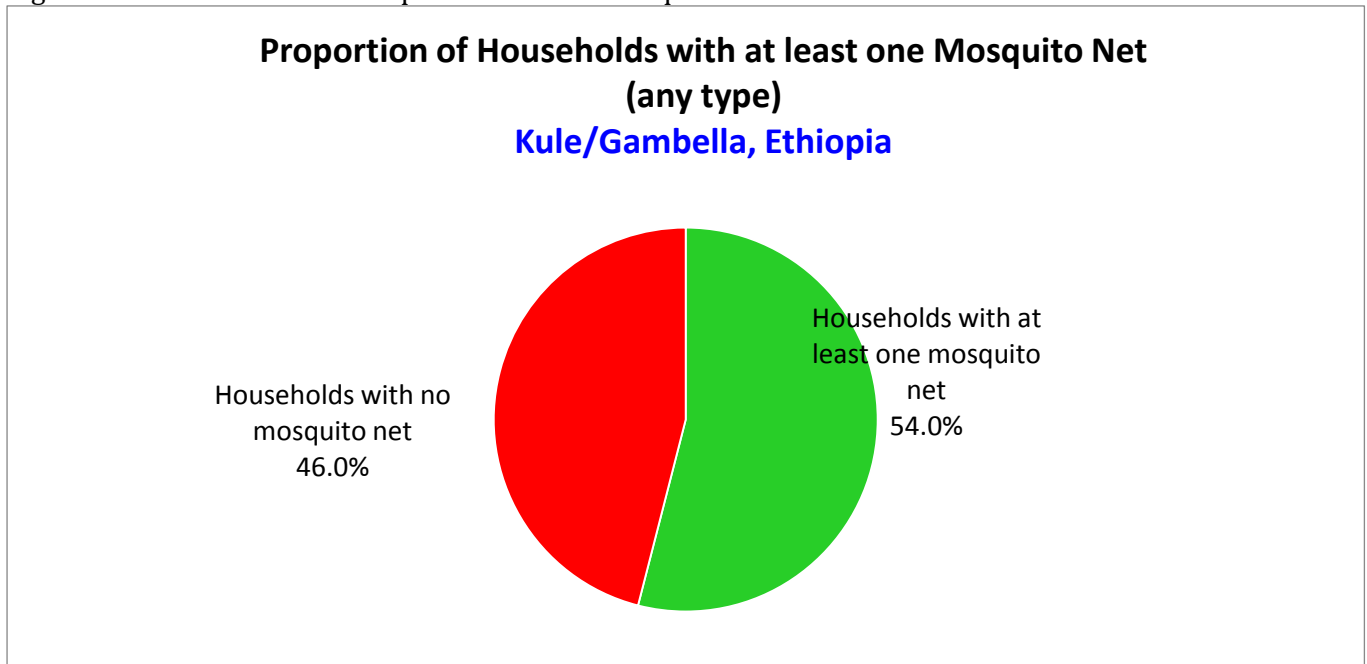


Figure 58: Household ownership of at least one LLIN

Proportion of Households with at least one LLIN
Kule/Gambella, Ethiopia

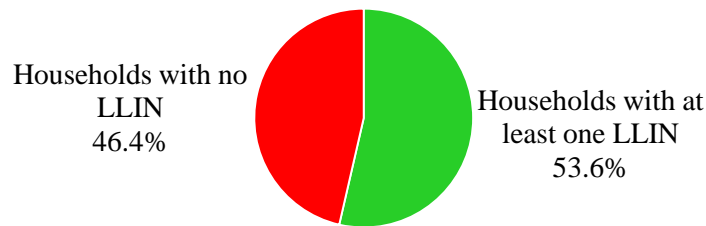


Table 116: Number of nets Kule

Average number of LLINs per household	Average number of persons per LLIN
1.5	9.2

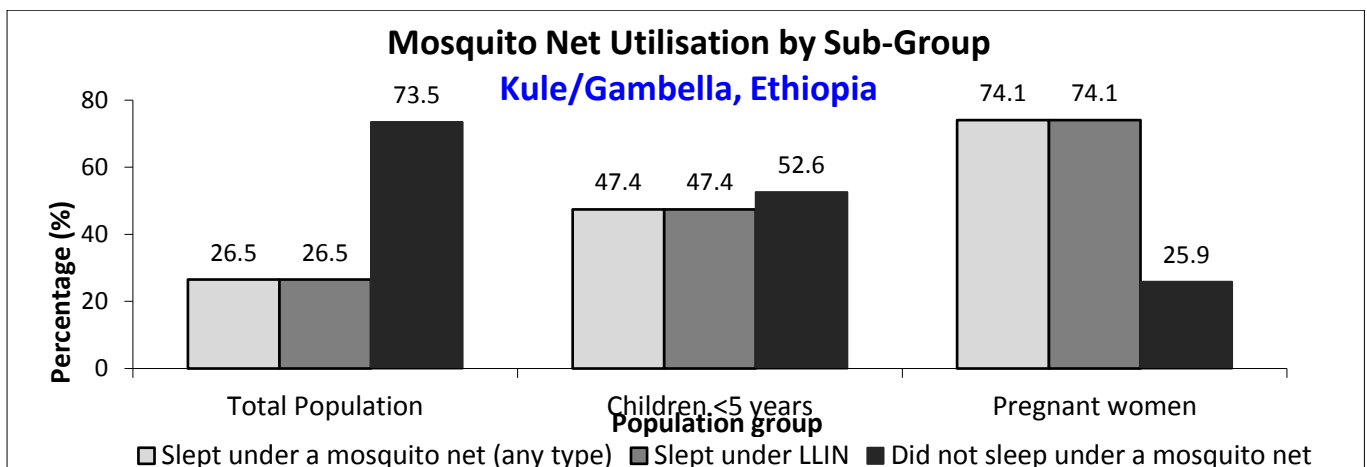
Mosquito net Utilisation

Table 117: Mosquito net Utilisation Kule

	Total population (all ages)		0-59 months		Pregnant	
	Total No=1587	%	Total No=310	%	Total No=27	%
Slept under net of any type	421	26.5	148	47.4	20	74.1
Slept under LLIN	421	26.5	148	47.4	20	74.1

A quarter of the surveyed population slept under an LLIN mosquito net. Use of LLIN mosquito nets was higher among pregnant women in comparison to use among pregnant women.

Figure 59: Mosquito Net Utilization by sub-groups Kule



RESULTS FROM TIERKIDI CAMP

Table 118: Demographic characteristics of the study population

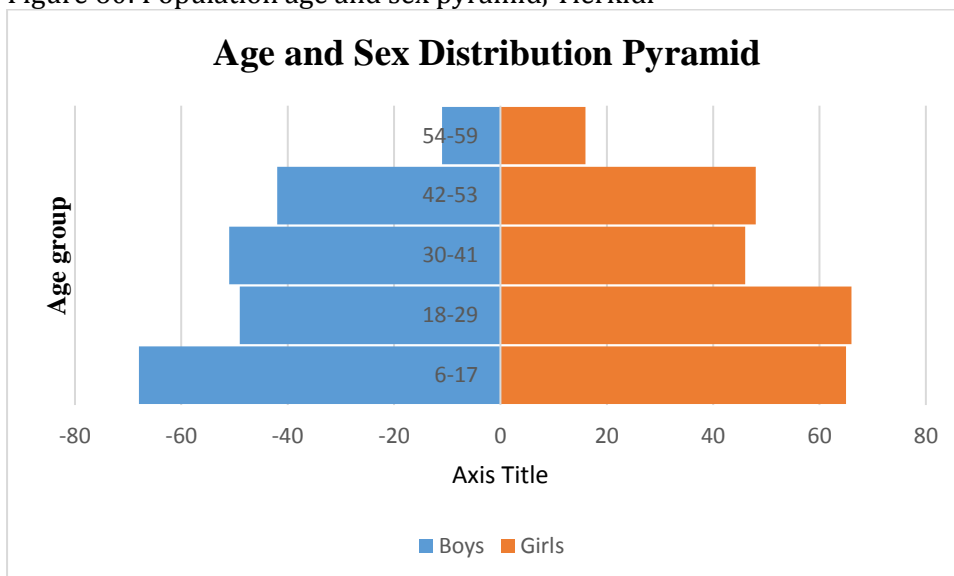
Total population surveyed	2829
Total U5 surveyed	490
Average Household size	6.3
% of children U5	17.3%

Table 119: Distribution of age and sex of sample, Tierkidi

AGE (mo)	Boys		Girls		Total		Ratio
	no.	%	no.	%	no.	%	Boy: girl
6-17	68	51.1	65	48.9	133	28.8	1.0
18-29	49	42.6	66	57.4	115	24.9	0.7
30-41	51	52.6	46	47.4	97	21.0	1.1
42-53	42	46.7	48	53.3	90	19.5	0.9
54-59	11	40.7	16	59.3	27	5.8	0.7
Total	221	47.8	241	52.2	462	100.0	0.9

The overall sex ratio was 0.9 which indicates equal distribution of the sex of different age groups, it show normal trends and that there was no selection bias

Figure 60: Population age and sex pyramid, Tierkidi



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).

Table 120: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex in Tierkidi camp

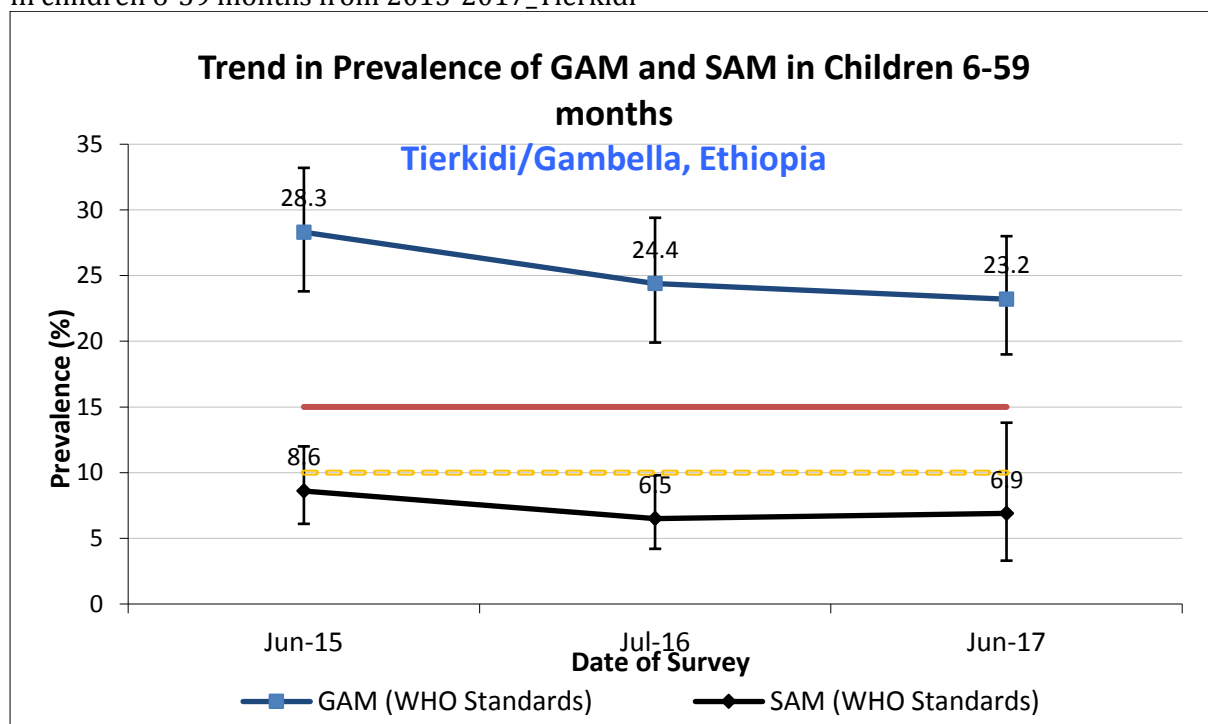
	All n = 448	Boys n = 209	Girls n = 239
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(104) 23.2 % (19.5 - 27.3 95% C.I.)	(60) 28.7 % (23.0 - 35.2 95% C.I.)	(44) 18.4 % (14.0 - 23.8 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(73) 16.3 % (13.2 - 20.0 95% C.I.)	(42) 20.1 % (15.2 - 26.0 95% C.I.)	(31) 13.0 % (9.3 - 17.8 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(31) 6.9 % (4.9 - 9.7 95% C.I.)	(18) 8.6 % (5.5 - 13.2 95% C.I.)	(13) 5.4 % (3.2 - 9.1 95% C.I.)

*The prevalence of oedema was 0.0 %

The prevalence of GAM was 23.2% (19.5 - 27.3 95% C.I.), when compared to the 2016 SENS there was a slight reduction with no significant difference. There was no change in the prevalence of SAM when compared to 2016.

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

Figure 61: Prevalence of global and severe acute malnutrition based on WHO Growth Standards in children 6-59 months from 2015-2017_Tierkidi



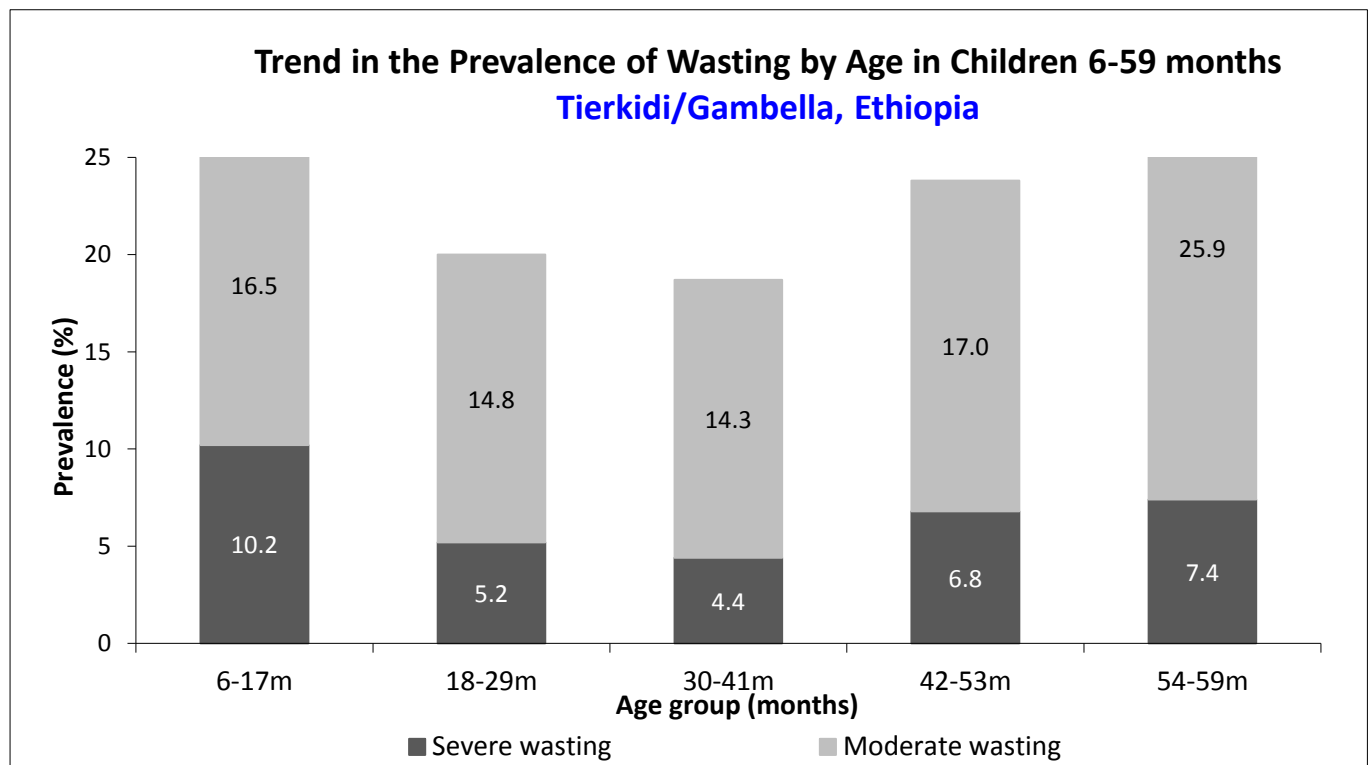
Comparison of results from 2015 shows reduction in GAM and SAM prevalence (Figure 62).

Table 121: 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.	%	Age (mo)	Total no.	No.	%
6-17	127	13	10.2	21	16.5	93	73.2	0	0.0
18-29	115	6	5.2	17	14.8	92	80.0	0	0.0
30-41	91	4	4.4	13	14.3	74	81.3	0	0.0
42-53	88	6	6.8	15	17.0	67	76.1	0	0.0
54-59	27	2	7.4	7	25.9	18	66.7	0	0.0
Total	448	31	6.9	73	16.3	344	76.8	0	0.0

The youngest children (6-17 months) are most affected by severe acute malnutrition as compared to other age groups whereas 54-59 months were the most affected group by moderate acute malnutrition.

Figure 62: Trends in the prevalence of wasting by age in children 6-59 months_ Tierkidi



Severe acute malnutrition rate was highest in youngest age group and the oldest age group were the highest affected by moderate acute malnutrition.

Table 122: Distribution of severe acute malnutrition and oedema based on weight-for-height z-scores for Tierkidi

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 40 (8.7 %)	Not severely malnourished No. 421 (91.3 %)

All the cases of SAM were due to wasting and no oedema was detected.

Figure 63: Distribution of weight-for-height z-scores (based on WHO Growth Standards), Tierkidi.

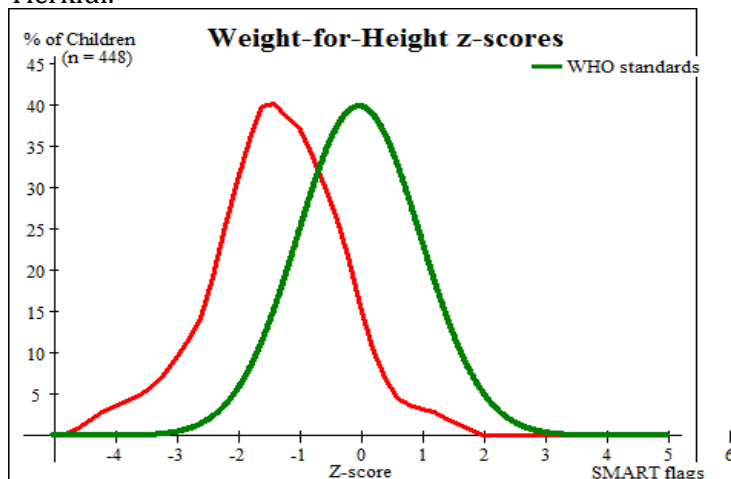


Figure 64 was a comparison of the surveyed and reference weight-for-height z-score (WHZ) distribution. The survey distribution (in red) followed a normal distribution and was shifted to the left of the WHO reference, showing an average lower z-scores, and therefore high malnutrition.

Table 123: Prevalence of acute malnutrition based on MUAC cut offs (and/or oedema) and by sex_ Tierkidi

	All n = 463	Boys n = 221	Girls n = 241
Prevalence of global malnutrition (< 125 mm and/or oedema)	(27) 5.8 % (4.0 - 8.4 95% C.I.)	(13) 5.9 % (3.5 - 9.8 95% C.I.)	(13) 5.4 % (3.2 - 9.0 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(22) 4.8 % (3.2 - 7.1 95% C.I.)	(11) 5.0 % (2.8 - 8.7 95% C.I.)	(11) 4.6 % (2.6 - 8.0 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(5) 1.1 % (0.5 - 2.5 95% C.I.)	(2) 0.9 % (0.2 - 3.2 95% C.I.)	(2) 0.8 % (0.2 - 3.0 95% C.I.)

The prevalence of GAM as measured by MUAC was 5.8 % (4.0 – 8.4 95% C.I.), which was much lower than the 23.2% WHZ prevalence, mainly because of the limitation of sensitivity of MUAC which has shown to only identify 20 – 30% of acute malnourished children.

Table 124: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema



Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	133	3	2.3	19	14.3	111	83.5	0	0.0
18-29	116	1	0.9	1	0.9	114	98.3	0	0.0
30-41	97	1	1.0	0	0.0	96	99.0	0	0.0
42-53	90	0	0.0	2	2.2	88	97.8	0	0.0
54-59	27	0	0.0	0	0.0	27	100.0	0	0.0
Total	463	5	1.1	22	4.8	436	94.2	0	0.0

Children 6-17 months are the most affected by moderate wasting.

Table 125: Prevalence of underweight based on weight-for-age z-scores by sex

	All n = 453	Boys n = 215	Girls n = 238
Prevalence of underweight (<-2 z-score)	(117) 25.8 % (22.0 - 30.0 95% C.I.)	(67) 31.2 % (25.3 - 37.6 95% C.I.)	(50) 21.0 % (16.3 - 26.6 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(91) 20.1 % (16.7 - 24.0 95% C.I.)	(50) 23.3 % (18.1 - 29.3 95% C.I.)	(41) 17.2 % (13.0 - 22.5 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(26) 5.7 % (3.9 - 8.3 95% C.I.)	(17) 7.9 % (5.0 - 12.3 95% C.I.)	(9) 3.8 % (2.0 - 7.0 95% C.I.)

25.8 % (22.0 - 30.0 95% C.I.) were underweight, and 5.7 % (3.9 - 8.3 95% C.I.) were severely underweight. The results show slight reduction in underweight in comparison to 2016 survey.

Table 126: 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	130	11	8.5	24	18.5	95	73.1	0	0.0
18-29	112	9	8.0	27	24.1	76	67.9	0	0.0
30-41	95	4	4.2	21	22.1	70	73.7	0	0.0
42-53	89	1	1.1	14	15.7	74	83.1	0	0.0
54-59	27	1	3.7	5	18.5	21	77.8	0	0.0
Total	453	26	5.7	91	20.1	336	74.2	0	0.0

Prevalence of moderate wasting was almost equally distributed among all the age categories.

Table 127: Prevalence of stunting based on height-for-age z-scores and by sex_Tierkidi

	All n = 440	Boys n = 213	Girls n = 227
Prevalence of stunting (<-2 z-score)	(56) 12.7 % (9.9 - 16.2 95% C.I.)	(29) 13.6 % (9.6 - 18.9 95% C.I.)	(27) 11.9 % (8.3 - 16.8 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(48) 10.9 %	(25) 11.7 %	(23) 10.1 %

	(8.3 - 14.2 95% C.I.)	(8.1 - 16.8 95% C.I.)	(6.8 - 14.7 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(8) 1.8 % (0.9 - 3.5 95% C.I.)	(4) 1.9 % (0.7 - 4.7 95% C.I.)	(4) 1.8 % (0.7 - 4.4 95% C.I.)

The prevalence of stunting was 12.7 % (9.9 - 16.2 95% C.I.), which is low and follows the same trends in the Mass MUAC screening data in the camps.

Table 128: Prevalence of stunting by age based on height-for-age z-score for Tierkidi

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
		No.	%	No.	%	Total no.	No.
6-17	125	2	1.6	13	10.4	110	88.0
18-29	107	5	4.7	15	14.0	87	81.3
30-41	94	0	0.0	14	14.9	80	85.1
42-53	88	1	1.1	6	6.8	81	92.0
54-59	26	0	0.0	0	0.0	26	100.0
Total	440	8	1.8	48	10.9	384	87.3

Children under 30 months of age appear to be more affected by stunting than the older ones and particularly those 30-41 months were more affected by moderate stunting.

Figure 64: Trends in the prevalence of stunting by age in children 6-59 months for Tierkidi

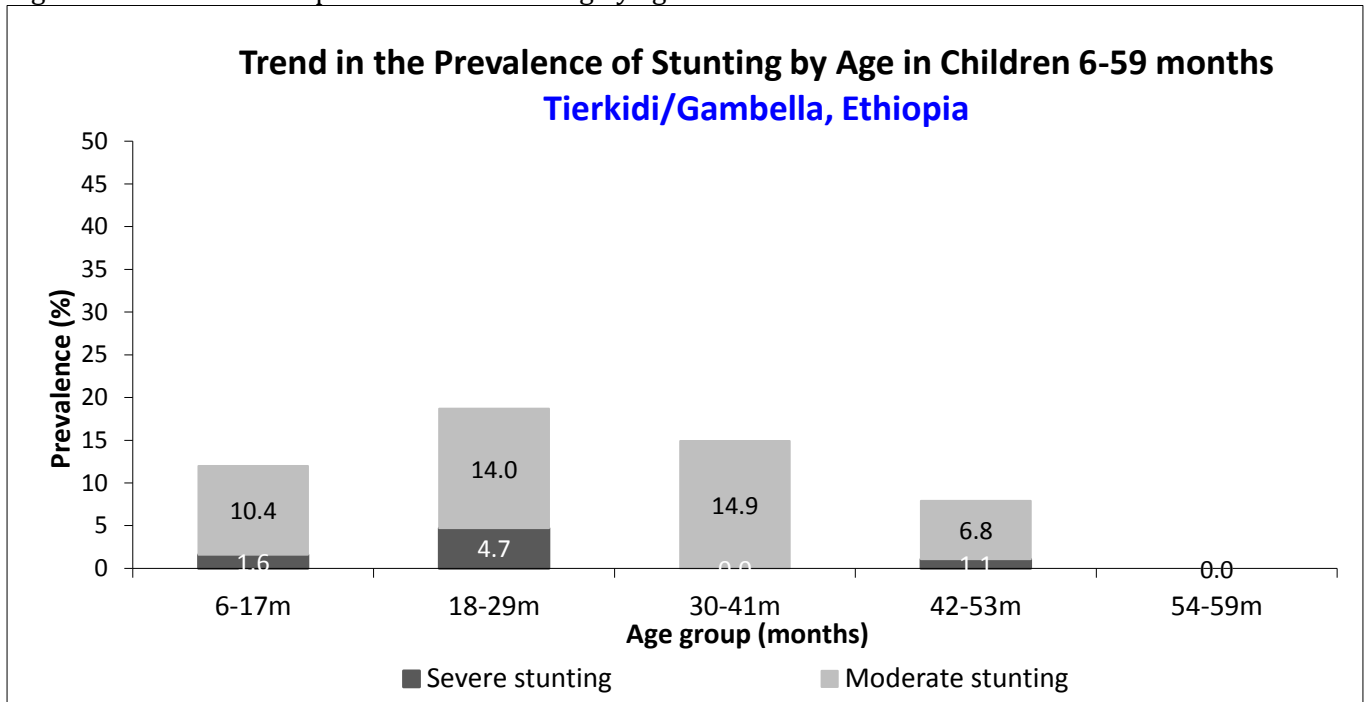
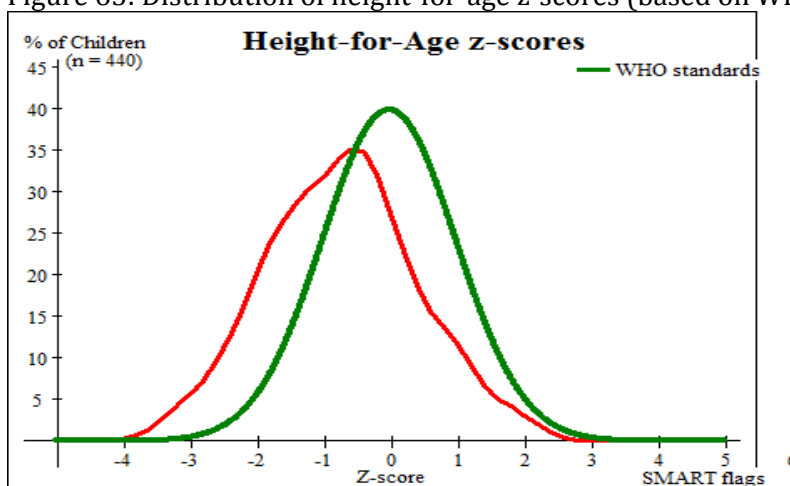


Figure 65: Distribution of height-for-age z-scores (based on WHO Growth Standards)



The height-for-age distribution for the survey (red) was compared to the WHO distribution (green) in Figure 66. The distribution followed a typical bell shape, and was also shifted to the left of the reference, indicating an average lower mean z-score for the survey sample.

Table 129: Mean z-scores, Design Effects and excluded subjects for Tierkidi

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	448	-1.37±1.04	1.00	1	13
Weight-for-Age	453	-1.36±1.02	1.62	1	8
Height-for-Age	440	-0.73±1.12	1.00	1	21

* contains for WHZ and WAZ the children with oedema.

Mortality results

Table 130: Mortality rates for Tierkidi

Crude Mortality Rate (CMR) total No. of death /10,000/day	0.39 (0.07 -2.08)
Under 5 Mortality (U5MR) total No. of death /10,000/day	1.20 (0.15 -8.93)

CMR and U5MR were within the emergency threshold however results have to be interpreted with caution due to the wide confidence interval.

Feeding programme coverage results

Table 131: Estimated programme coverage for acutely malnourished children Tierkidi

	Number/total	% (95% CI)
Supplementary feeding programme coverage (WHZ >= - 3 AND WHZ < - 2 OR MUAC >= 115 mm AND MUAC < 125 mm)	11/78	14.1% (7.3-23.8)
Therapeutic feeding programme coverage (WHZ < - 3 OR MUAC < 115mm)	7/21	18.4% (7.7 - 34.3)
Blanket Supplementary (WHZ >= - 2 OR MUAC >= 125)	379/457	82.9% (79.1 - 86.2)

Estimated programme coverage for the selective feeding programmes (SFP and OTP) are lower than expected standards for refugee settings (>90%). In comparison to the 2016 SENS there was a decrease, however this results need to be interpreted with caution due to the small sample obtained during the survey, a proper coverage assessment is recommended to determine the actual figures.

Blanket feeding programme

BSFP coverage was 82.9% and there was no major change in comparison to last year.

Measles vaccination coverage results

Table 132: Measles vaccination coverage for children aged 9-59 months (or other context-specific target group) _Tierkidi

	Measles (with card) n=364	Measles (with card <u>or</u> confirmation from mother) n=364
YES	56.9% (52.1-61.5)	88.2% (84.7-90.9)

The measles coverage with card or recall was fall short to meet the target (>95%) at 88.2% (84.7 90.9). By card was 56.9% and shows a great improvement when compared to 8.7% in the 2016 SENS.

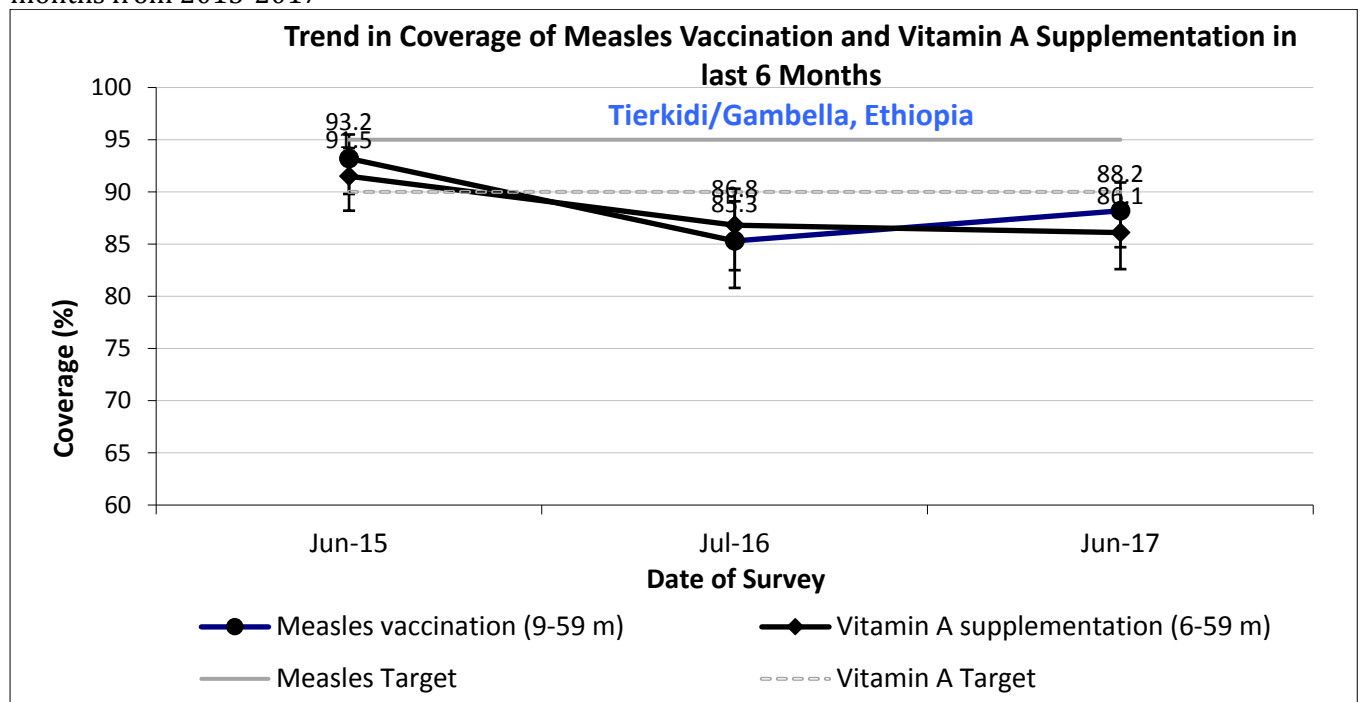
Vitamin A supplementation coverage results

Table 133: Vitamin A supplementation for children aged 6-59 months within past 6 months (or other context-specific target group _Tierkidi

	Vitamin A capsule (with card) n=383	Vitamin A capsule (with card <u>or</u> confirmation from mother) n=383
YES	56.2% (51.6-60.6)	86.1% (82.6 - 88.9)

Vitamin A coverage by card or confirmation from the mother was 86.1% (82.6 - 88.9) which was lower than the SPHERE standards of >90%. Comparison with 2016 results shows no change in the vitamin A supplementation within the past six months. By card was 56.2% which indicates an improvement in the documentation in the child’s card.

Figure 66: Coverage of measles vaccination and vitamin A supplementation in children 6-59 months from 2015-2017



Though there was no difference in the above in 2017 when compared to 2016. In comparison to the 2015 results there was a decrease in the measles vaccination among children 9-59 months and vitamin A supplementation among children 6-59 months

Diarrhoea results

Table 134: Period prevalence of diarrhoea _Tierkidi

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	75/460	16.3% (13.2 – 20.0)

16.3% (13.2 – 20.0) of the surveyed children are reported to have diarrhoea in the 2 weeks prior to the survey. This shows that percentage of having Diarrhoea in the last two weeks has decreased significantly as compared to 2016 survey 42.9% (37.4 - 48.6).

Anaemia results

Table 135: Prevalence of anaemia and haemoglobin concentration in children 6-59 months of age _Tierkidi

Anaemia in Children 6-59 months	All n =459
Total Anaemia (Hb<11.0 g/dL)	(n=241) 52.5% (47.9 – 57.0)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(n=123) 26.8% (22.9 – 31.0)
Moderate Anaemia (7.0-9.9 g/dL)	(n =117) 25.5% (21.7 – 29.7)
Severe Anaemia (<7.0 g/dL)	(n =1) 0.2% (0 -1.2)
Mean Hb (g/dL)	10.76 g/dL and (1.32SD) [min 5.9 to max 14.5]

The prevalence of anaemia was 52.5 % (47.9 – 57.0) among children aged 6-59 months. In Comparison with 2016 anaemia results there was a significant increase in anaemia levels among children 6-59 months of age.

Figure 67: Anaemia categories in children 6-59 months from 2015-2017

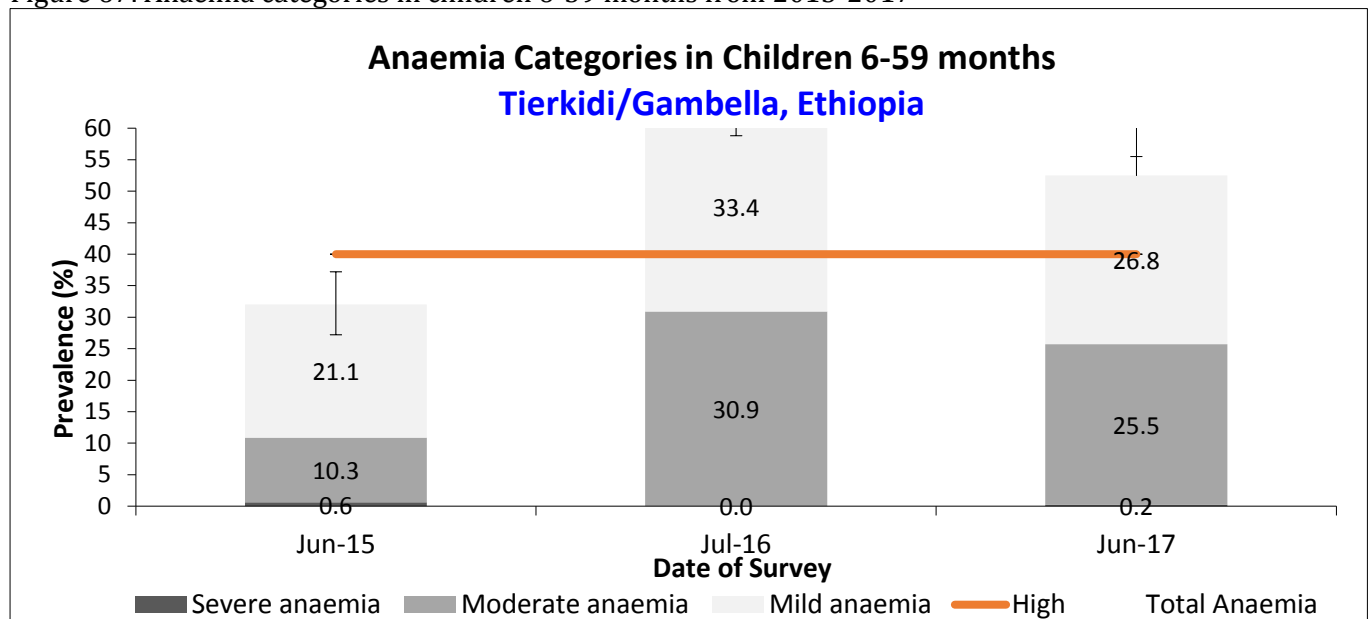


Figure 68: Mean Haemoglobin concentration in children 6-59 months from 2015-2017 _Tierkidi

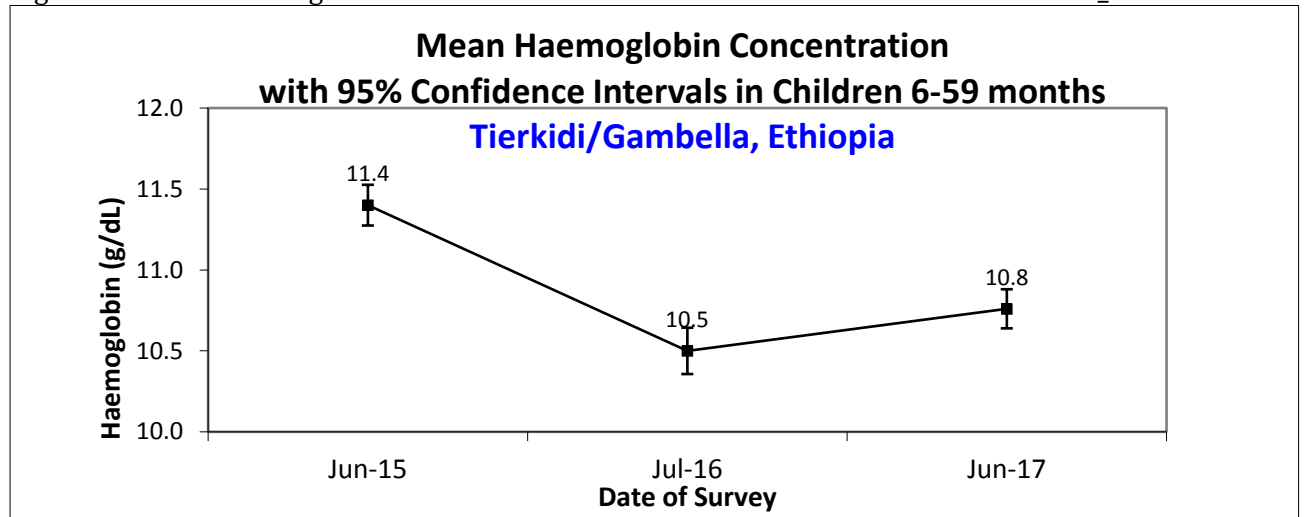


Table 136: Prevalence of anaemia by age _Tierkidi

Age group	No.	Severe Anaemia (<7.0 g/dL)		Moderate Anaemia (7.0-9.9 g/dL)		Mild Anaemia (Hb 10.0-10.9 g/dL)		Total Anaemia (Hb<11.0 g/dL)		Normal (Hb≥11.0 g/dL)	
		no	%	no	%	no	%	no	%	no	%
6-23	193	1	0.5 (0.0-2.9)	58	30.1 (23.7-37.1)	62	32.1 (25.6-39.2)	121	62.7 (55.5-69.5)	72	37.3 (30.5-44.5)
24-35	94	0	0.0	28	29.8 (20.8-40.1)	26	27.7 (18.9-37.8)	54	57.4 (46.8-67.6)	40	42.6% (32.4-53.2)
36-59	172	1	0.4 (0.0-2.5)	31	18 (12.6-24.6)	35	20.3 (14.6-27.1)	66	38.4 (31.1-46.1)	106	61.6% (53.9-68.9)
Total	459	1	0.2 (0.0-1.4)	117	25.5 (21.6-29.8)	123	26.8 (22.8-31.1)	241	52.5 (47.8-57.1)	218	47.5% (42.9-52.2)

The prevalence of anaemia by age group shows children 6-23 months are most affected with anaemia at 62.7% (55.5-69.5%). There was no significant difference when compared with the 2016 results where the prevalence was 67.2%.

Children 0-23 months

Table 137: Prevalence of Infant and Young Child Feeding Practices Indicators, Tierkidi

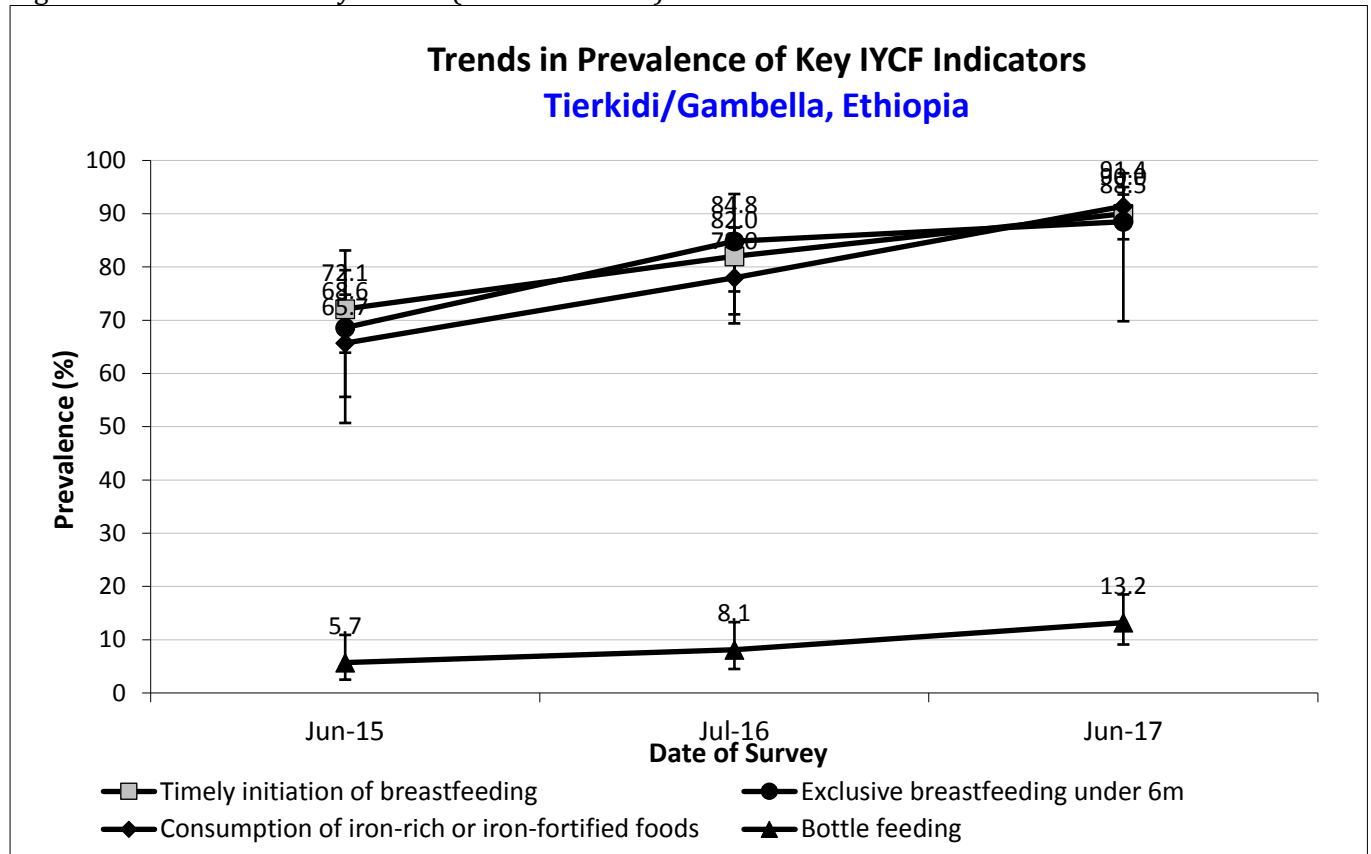
Indicator	Age range	No./ total	Prevalence (%) & 95% CI
Timely initiation of breastfeeding	0-23 months	197/219	90.0% (85.2- 93.6)
Exclusive breastfeeding under 6 months	0-5 months	23/26	88.5% (69.8 - 97.6)
Continued breastfeeding at 1 year	12-15 months	39/42	92.8% (80.5-98.5)
Continued breastfeeding at 2 years	20-23 months	28/35	80.0% (63.1- 91.6)
Introduction of solid, semi-solid or soft foods	6-8 months	9/39	23.1% (11.1-39.3%)
Consumption of iron-rich or iron-fortified foods	6-23 months	171/187	91.4% (86.5-95.0%)
Bottle feeding	0-23 months	29/219	13.2% (9.1 - 18.5%)

Note that when IYCF indicators are collected in nutritional surveys based on anthropometric sample of children aged 0-59 months, it was 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.

The IYCF indicator results above indicate that 90.0% of children under 2 years were initiated to breastfeeding within one hour of birth and 88.5% of infants and young children reported to have been exclusively breastfed. About 92.8% of the surveyed children were still breastfeeding at 1 year, whilst about 80.8% were reported that they have continued breastfeeding at 2 years. 91.4% of the children were reported to have consumed on Iron-rich or iron fortified foods, whereas only 23.1% of infants between 6-8 months have been reported that they have been started complementary feeding. The proportion of children were bottle fed the day before the survey were 13.2% (9.1-18.5, 95% C.I), which was an increase when compared to 8.1% in the 2016 SENS.

Caution needs to be taken when interpreting nutrition survey results from previous surveys though important to assess the IYCF situation.

Figure 69: Nutrition survey results (IYCF indicators) from 2015-2017



Prevalence of intake ANALYSIS

Infant formula

Table 12.21: Infant formula intake in children aged 0-23 months, _Tierkidi

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	12/219	5.5% (2.9-9.4%)

Table 12.22: CSB intake in children aged 6-23 months _Tierkidi

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive FBF	27/192	14.1% (9.5-19.8%)

Table 12.23: CSB ++ intake in children aged 6-23 months _Tierkidi

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB++	141/193	71.1% (66.2-79.2%)

Women 15-49 years

Table 138: Women physiological status and age, Tierkidi

Physiological status	Number/total	% of sample
Non-pregnant	300/322	93.2%, (89.9-95.5%)
Pregnant	21/322	6.5%, (4.3-9.8%)
Mean age (range)	26.9year Range: 15- 48 years	

Of the sampled women aged 15-49 years in the survey, 6.5% were pregnant. The mean age of women was 26.9 years.

Anaemia

Table 139: Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 years) _Tierkidi.

Anaemia in non-pregnant women of reproductive age (15-49 years)	All (95% CI) n = 299
Total Anaemia (<12.0 g/dL)	(106) 35.5% (30.0 - 41.2)
Mild Anaemia (11.0-11.9 g/dL)	(66) 22.1% (17.5 - 27.2)
Moderate Anaemia (8.0-10.9 g/dL)	(38) 12.7%(9.1 - 17.0)
Severe Anaemia (<8.0 g/dL)	(2) 0.7%(0.1-2.4)
Mean Hb (g/dL)	12.34 g/dL and (1.19SD) [min 6.6 to max 16.8 g/dL]

The prevalence of anaemia among non-pregnant women was 35.5% (30.0 - 41.2, 95%C.I), which was below the critical threshold (>40%). There was a significant difference compared to the 2016 results with a prevalence of 55.6% (47.8 -63.2).

Figure 70: Anaemia categories in women of reproductive age (non-pregnant) from 2015-2017 Tierkidi.

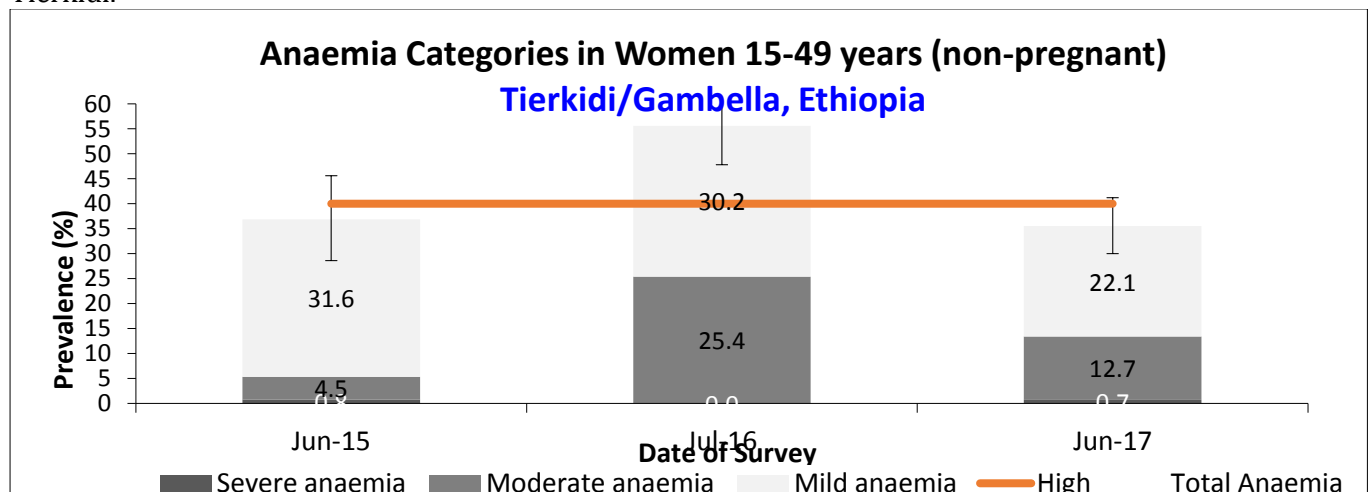


Figure 71: Mean haemoglobin concentration in women of reproductive age (non-pregnant) from 2015-2017

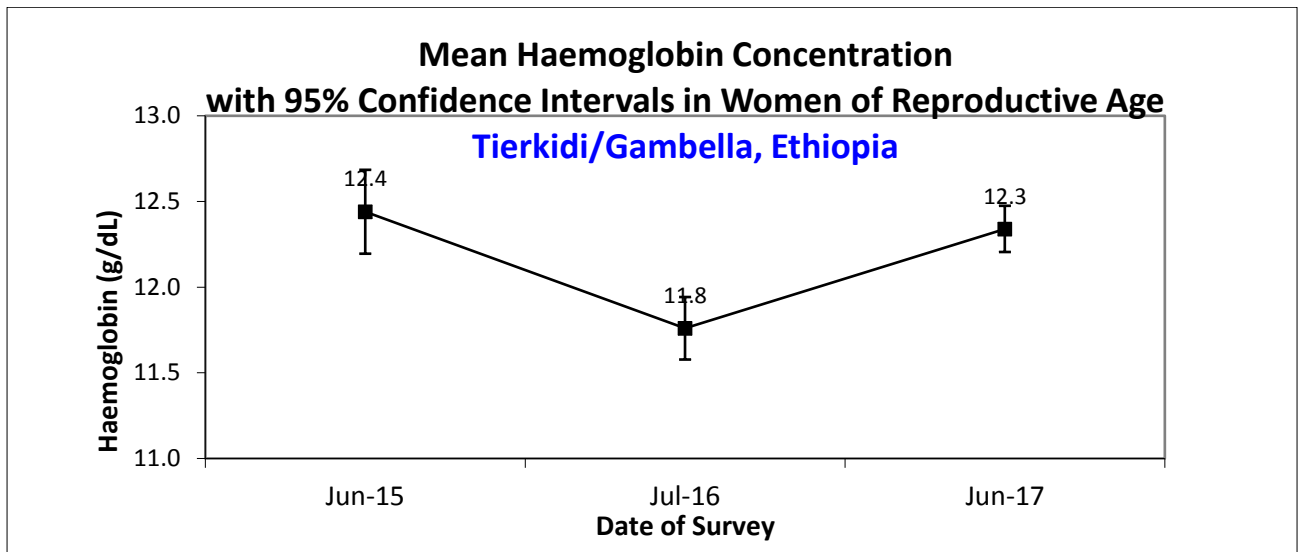


Table 140: ANC enrolment and iron-folic acid pills coverage among pregnant women (15-49 years) _Tierkidi

	Number /total	% (95% CI)
Currently enrolled in ANC programme	17/21	80.9% (58.1- 94.5)
Currently receiving iron-folic acid pills	14/21	66.7% (43.0- 85.4)

More than half (62.2%) of pregnant women enrolled in ANC had received iron-folic pills

Food security

Ration card coverage

Table 141: Ration card coverage _Tierkidi

	Number/total	% (95% CI)
Proportion of households with a ration card	222/223	99.6% (97.5-99.9)

99.6% of the surveyed households except one reported to have ration cards

Table 142: Reported duration of general food ration 1- Tierkidi

Average number of days the food ration lasts (Standard deviation or 95% CI)	Average duration (%) in relation to the theoretical duration of the ration*
24.1 DAYS OUT OF 30 DAYS	80.3%

Table 143: Reported duration of general food ration 2_Tierkidi

	Number/total	% (95% CI)
Proportion of households reporting that the food ration lasts the entire duration of the cycle	20/222	9.0% (5.6-13.6%)
Proportion of households reporting that the food ration lasted:		
≤75% of the cycle (30 days)	19/222	8.6% (5.2-13.0%)
>75% of the cycle (30 days)	203/222	91.4% (87.0-94.8%)

Negative coping strategies results

Table 144: Coping strategies used by the surveyed population over the past month _Tierkidi

	Number/total	% (95% CI)
Proportion of households reporting using the following coping strategies over the past month*:		
Borrowed cash, food or other items <i>without interest</i>	91/223	40.8% (34.3 – 47.6)
Sold any assets (furniture, seed stocks, tools, other NFI, livestock etc.)	31/223	13.9% (9.6 - 19.2)
Requested increase remittances or gifts as compared to normal	13/223	5.8% (3.1 – 9.8)
Reduced the quantity and/or frequency of meals	84/223	37.7% (31.3 - 44.4)
Begged	7/223	3.1% (1.3 – 6.4)
Engaged in potentially risky or harmful activities (list activities)	7/223	3.1% (1.3 – 6.4)
Proportion of households reporting using none of the coping strategies over the past month	93/223	41.7% (35.2 – 48.5)

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

The most commonly used coping strategy reported by most of the surveyed households are reducing the quantity and/or frequency of meals and borrowing of food, cash and other items.

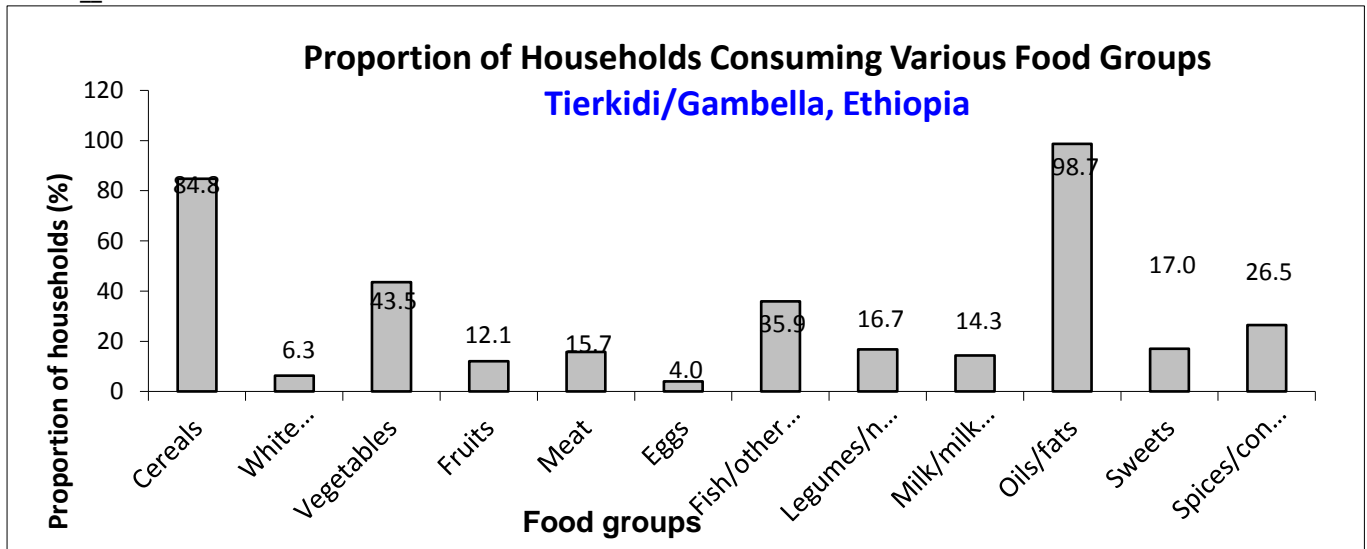
Household dietary diversity results

The average HDDS was 3.75 among the households surveyed, there was no change despite the introduction of the fresh food vouchers in Tierkidi when compared to the 2016 SENS results with 3.8.

Table 145: Average HDDS _Tierkidi

Average HDDS	3.75 SD = 2.0
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Figure 72: Proportion of households consuming different food groups within last 24 hours_Tierkidi.



Most common items reported to be consumed were oils/fats (98.7%), cereals (84.8%) vegetables (43.5%), Fruits, eggs consumption was low.

Table 146: Consumption of food aid commodities and micronutrient rich foods by households_Tierkidi

	Number/total	% (95% CI)
Proportion of households <i>not</i> consuming any vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	73/223	32.7%% (26.6-39.3%)
Proportion of households consuming either a plant or animal source of vitamin A	105/221	47.5% (40.8-54.3%)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	96/208	43.0% (36.5-49.8%)

WASH

Water Quality and Quantity

Table 147: Water Quality for Tierkidi.

	Number/total	% (95% CI)
Proportion of households using an improved drinking water source	219/219	100.0%
Proportion of households that use a covered or narrow necked container for storing their drinking water	56/219	25.6% (19.9 - 31.9)

All the households surveyed reported to have access to improved source of drinking water.25.6% (19.9 – 31.9, 95% CI) of households reported to have covered or narrow necked drinking water storage containers.

Table 148: Water Quantity 1: Amount of liters of water used per person per day for Tierkidi.

Proportion of households that use:	Number/total	% (95% CI)
≥ 20 lpppd	59/219	26.9% (21.2-33.3)
15 - <20 lpppd	30/219	24.2% (18.7 - 30.4)
<15 lpppd	107/219	48.9% (42.1 - 55.7)
An average water usage in lpppd	17.41 lpppd	

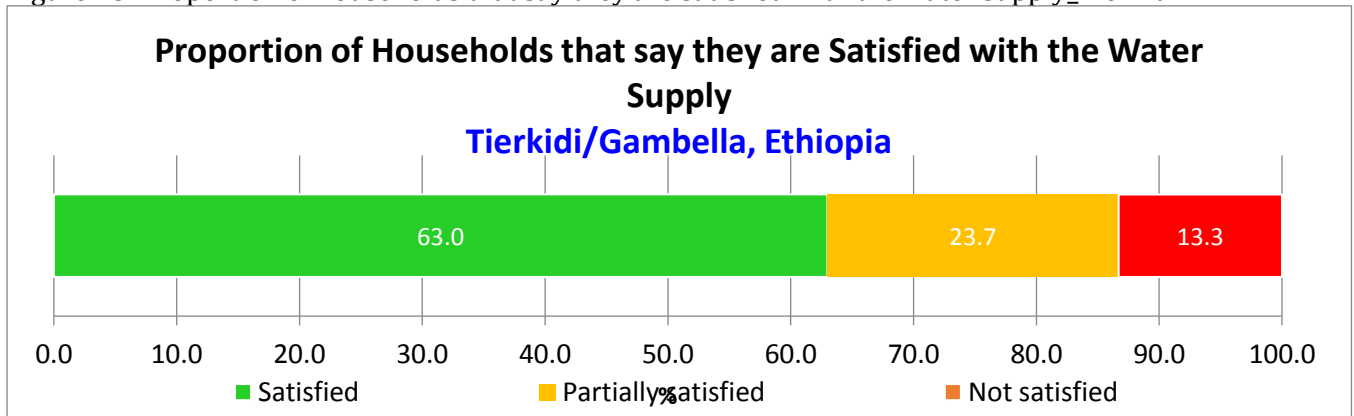
The average water usage was 17.4 lpppd, which was below the expected > 20 lpppd. Almost half of the respondents 48.9% (42.1 - 55.7) reported that their water utilization was <15lpppd.

Table 149: Satisfaction with water supply_Tierkidi

	Number/total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	138/219	63.0% (56.3 - 69.4)

A least 63.0 % of the sampled household reported that they are satisfied and 13.2% were not satisfied with the drinking water supply whereas 65.8% of the sampled households reported that the water was not enough.

Figure 73: Proportion of households that say they are satisfied with the water supply_Tierkidi



Excreta Disposal

Table 150: Safe Excreta disposal_Tierkidi

	Number/total	% (95% CI)
Proportion of households that use:		
Proportion of households using an improved excreta disposal facility (improved toilet facility, not shared)	159/210	75.7% (69.3 - 81.4)
Proportion of households using a shared family toilet	7/210	3.3% (1.4-6.7)
Proportion of households using a communal toilet	14/210	6.7% (3.7 - 10.9)
Proportion of households using an unimproved toilet	30/210	14.3% (9.9 - 19.8)

The proportion of households with children under three years old that dispose of faeces safely.	128/147	87.1% (80.6 – 92.0)
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Most of the surveyed households reported using improved toilet facility 75.7% (69.3-81.4%, 95% CI). Further anlays showed about 87.1 % of households surveyed with children less than three years of age dispose faeces safely.

Figure 74: Proportion of households with children under the age of 3 years whose (last) stools were disposed of safely _Tierkidi.

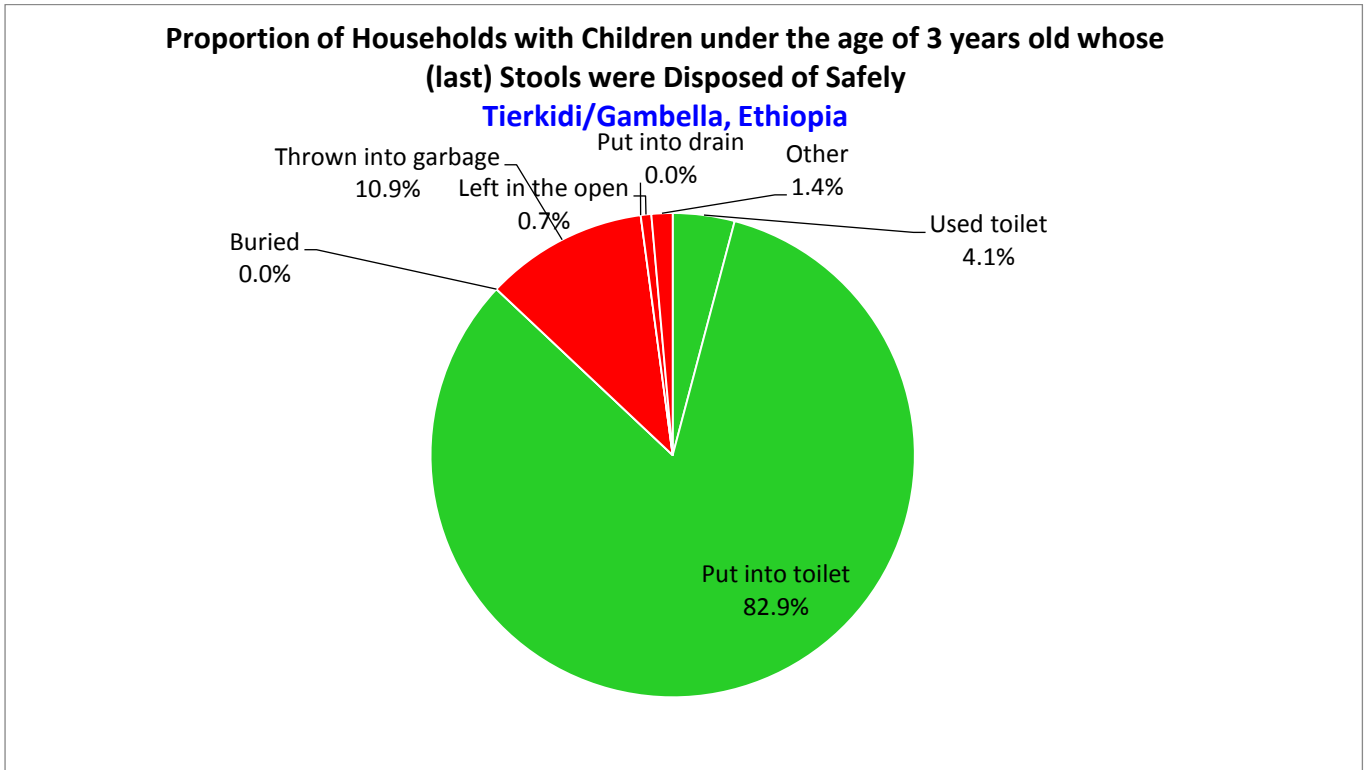
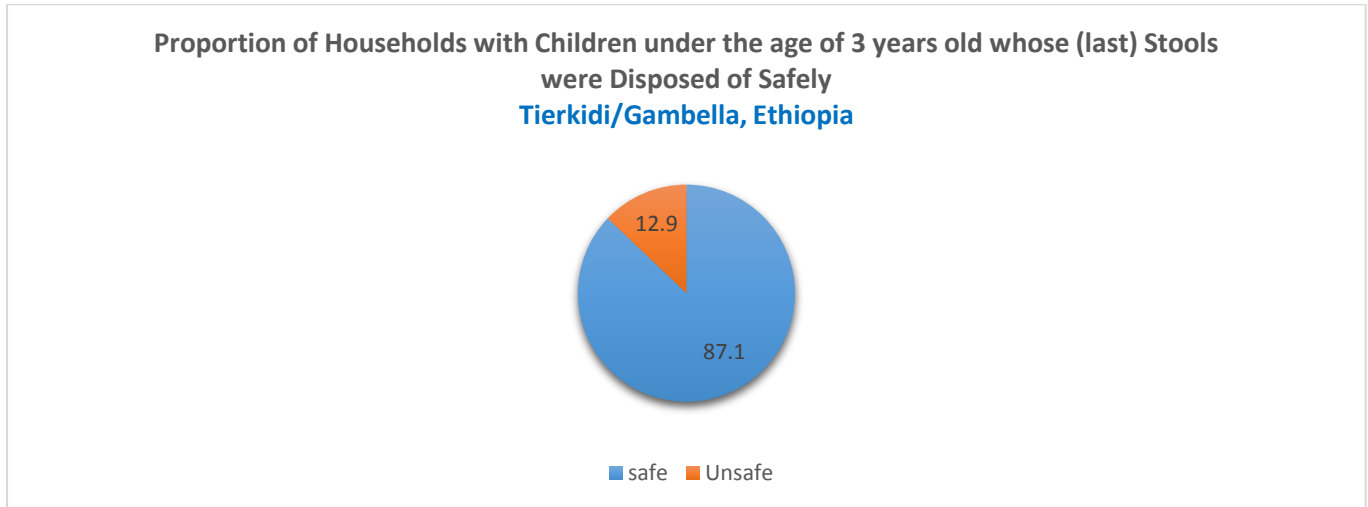


Figure 75: The proportion of households with children under three years old that dispose of faeces safely for Tierkidi



Mosquito Net Coverage

Table 151: Household Mosquito net ownership _Tierkidi

	Number/total	% (95% CI)
Proportion of households owning at least one mosquito net of any type	77/224	34.4% (28.2-40.9)
Proportion of households owning at least one LLIN	77/224	34.4% (28.2-40.9)

Amongst the surveyed Households, 34.4% own at least one mosquito net of any type and all of (34.4%) have LLIN.

Figure 76: Household ownership of at least one Mosquito net.

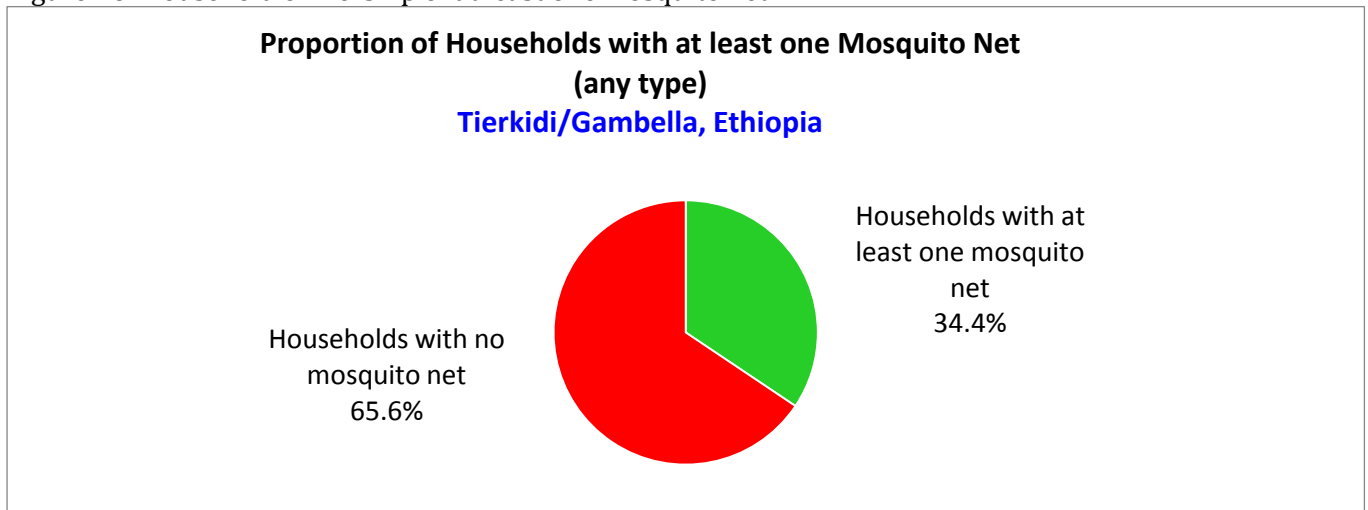


Figure 77: Household ownership of at least one LLIN _Tierkidi

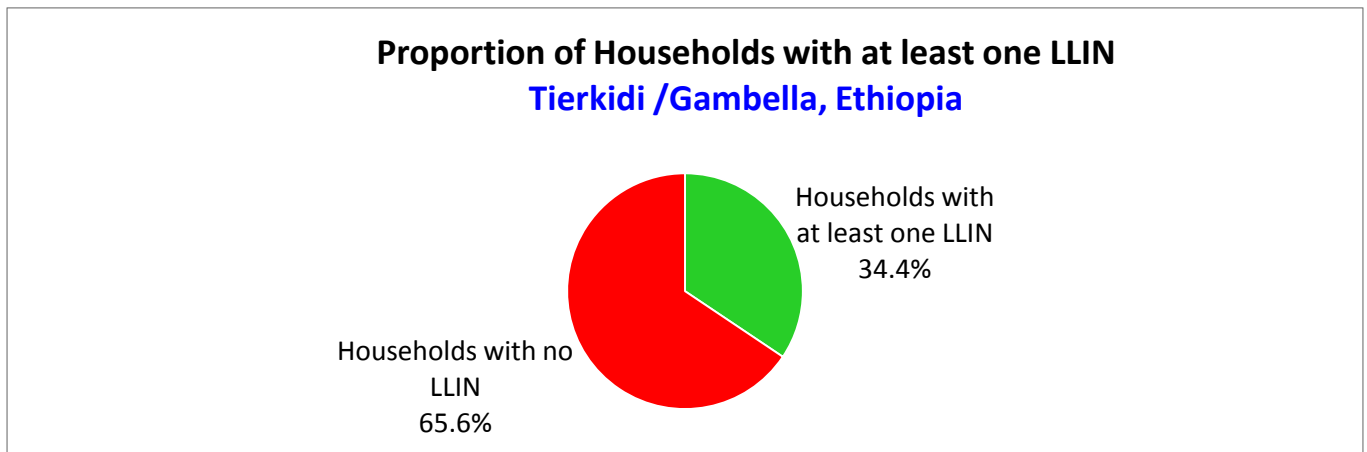


Table 152: Number of nets _Tierkidi

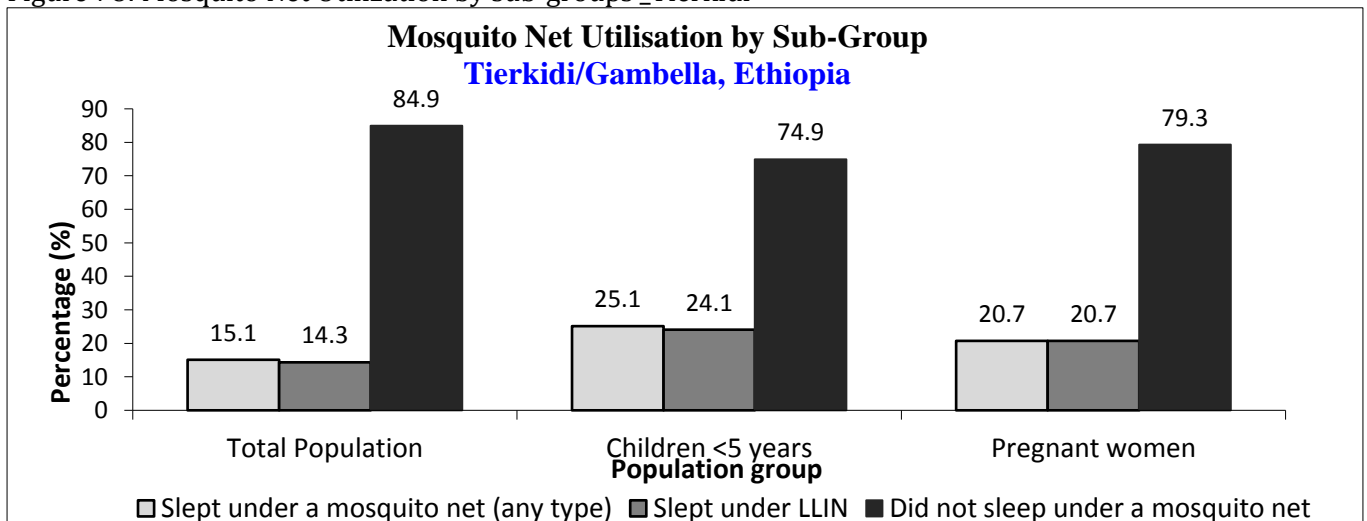
Average number of LLINs per household	Average number of persons per LLIN
1.5	13.1

Table 153: Mosquito net Utilisation

	Total population (all ages)		0-59 months		Pregnant	
	Total No=1541	%	Total No=311	%	Total No=29	%
Slept under net of any type	233	15.1	78	25.1	6	20.7
Slept under LLIN	229	14.3	75	24.1	6	20.7

A quarter of the surveyed population slept under an LLIN mosquito net. Use of LLIN mosquito nets was higher among pregnant women in comparison to use among pregnant women.

Figure 78: Mosquito Net Utilization by sub-groups _Tierkidi



RESULTS FROM JEWI CAMP

Table 154: Demographic characteristics of the study population _Jewi

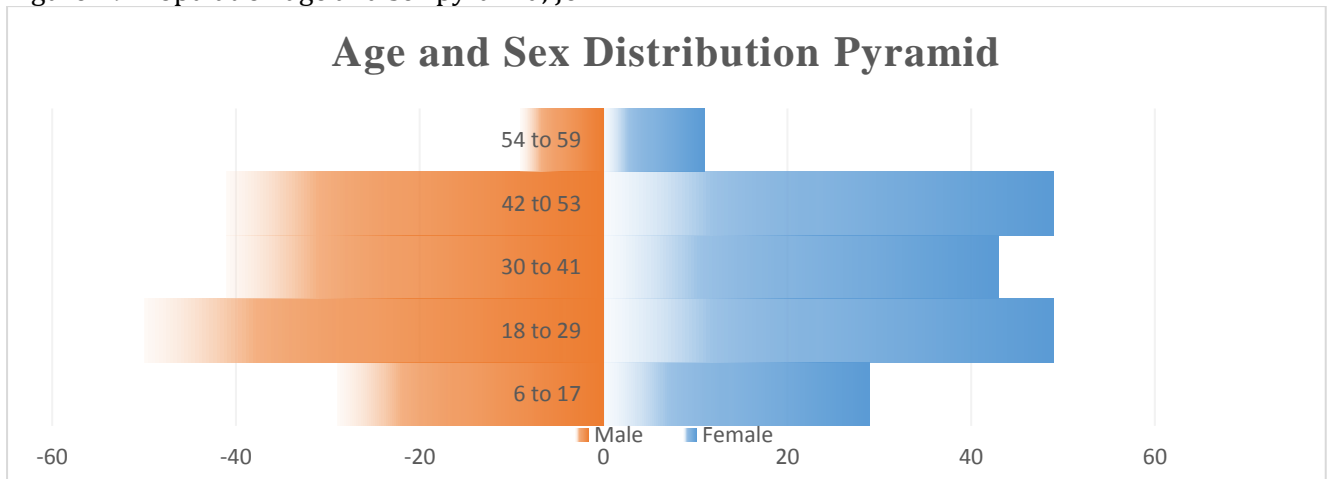
Total population surveyed	2488
Total U5 surveyed	542
Average Household size	6.04
% of children U5	21.8%

Table 155: Distribution of age and sex of sample, _Jewi

AGE (mo)	Boys		Girls		Total		Ratio
	no.	%	no.	%	no.	%	Boy: girl
6-17	29	50.0	29	50.0	58	16.5	1.0
18-29	50	50.5	49	49.5	99	28.2	1.0
30-41	41	48.8	43	51.2	84	23.9	1.0
42-53	41	45.6	49	54.4	90	25.6	0.8
54-59	9	45.0	11	55.0	20	5.7	0.8
Total	170	48.4	181	51.6	351	100.0	0.9

The overall sex ratio was 0.9 which indicates an equal distribution of the sex of different age groups, it show normal trends and that there was no selection bias.

Figure 79: Population age and sex pyramid, Jewi



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).

Table 156: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex _Jewi camp

	All n = 336	Boys n = 163	Girls n = 173
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(84) 25.0 % (20.7 - 29.9 95% C.I.)	(41) 25.2 % (19.1 - 32.3 95% C.I.)	(43) 24.9 % (19.0 - 31.8 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(66) 19.6 % (15.7 - 24.2 95% C.I.)	(30) 18.4 % (13.2 - 25.1 95% C.I.)	(36) 20.8 % (15.4 - 27.5 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(18) 5.4 % (3.4 - 8.3 95% C.I.)	(11) 6.7 % (3.8 - 11.7 95% C.I.)	(7) 4.0 % (2.0 - 8.1 95% C.I.)

*The prevalence of oedema was 0.0 %

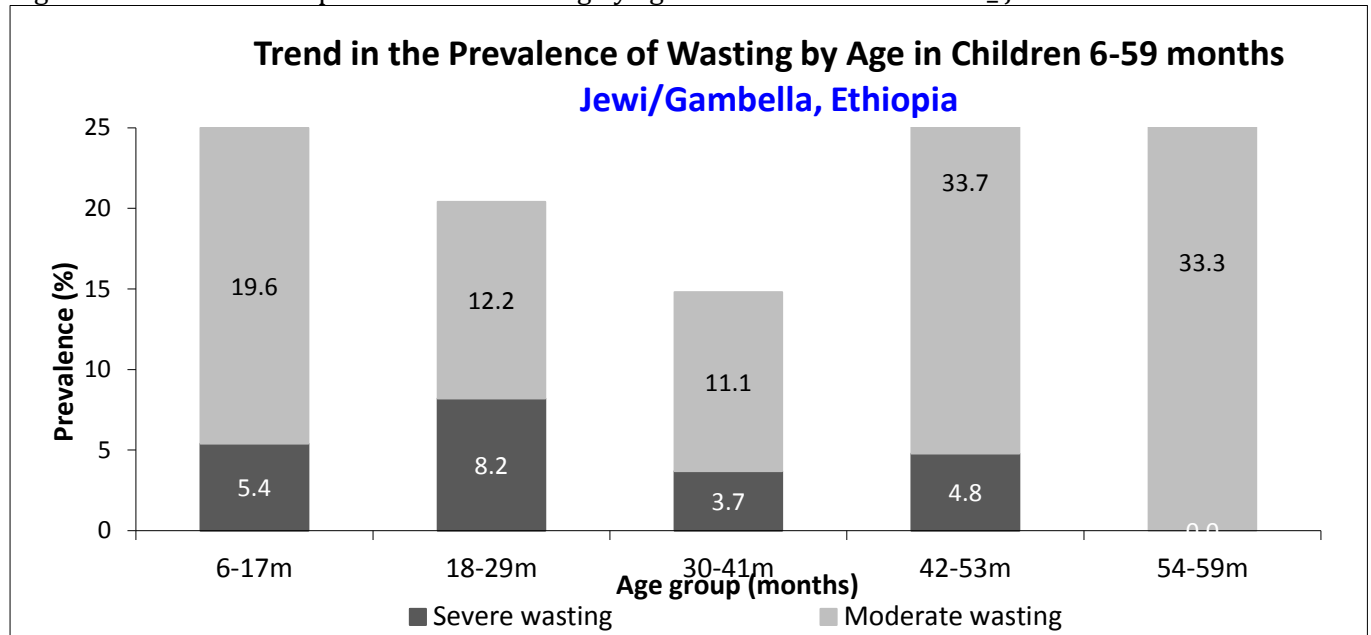
The prevalence of GAM was 25.0% and SAM of 5.4%, no SENS was conducted in 2016 due security incidence. There was no significant difference seen between boys and girls on the prevalence of acute malnutrition.

Table 157: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema _Jewi

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	Age (mo)	Total no.	No.	%
6-17	56	3	5.4	11	19.6	42	75.0	0	0.0
18-29	98	8	8.2	12	12.2	78	79.6	0	0.0
30-41	81	3	3.7	9	11.1	69	85.2	0	0.0
42-53	83	4	4.8	28	33.7	51	61.4	0	0.0
54-59	18	0	0.0	6	33.3	12	66.7	0	0.0
Total	336	18	5.4	66	19.6	252	75.0	0	0.0

Children 18-29 months was most affected by severe wasting as compared to other age groups whereas children above 42 months were the most affected group by moderate wasting.

Figure 80: Trends in the prevalence of wasting by age in children 6-59 months_ Jewi



Severe acute malnutrition rate was highest in youngest age group and the oldest age group were the highest affected by moderate acute malnutrition (Figure 81).

Table 13.5: Distribution of severe acute malnutrition and oedema based on weight-for-height z-scores_ Jewi

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 21 (6.1 %)	Not severely malnourished No. 322 (93.9 %)

All the cases of SAM were due to wasting and no oedema was detected.

Figure 81: Distribution of weight-for-height z-scores (based on WHO Growth Standards), Jewi.

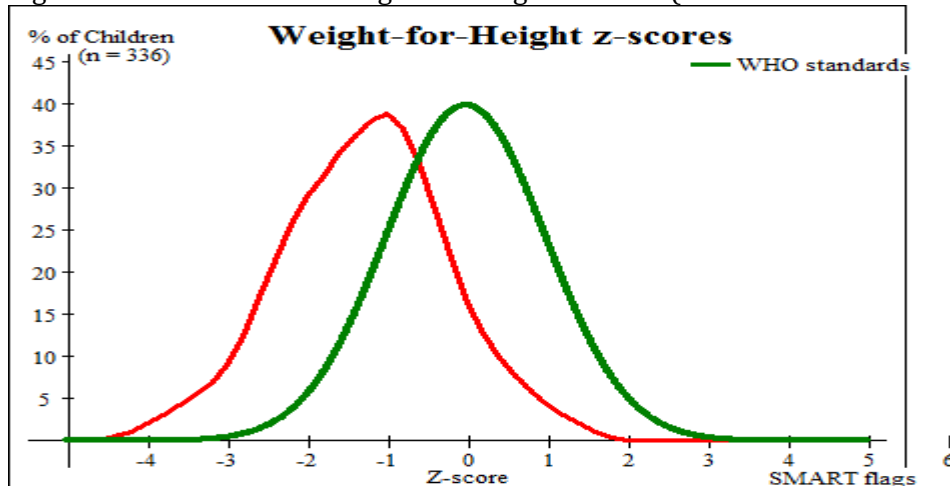


Figure 82 was a comparison of the surveyed and reference weight-for-height z-score (WHZ) distribution. The survey distribution (in red) followed a normal distribution and was shifted to the left of the WHO reference, showing an average lower z-scores, and therefore high malnutrition.

Table 158: Prevalence of acute malnutrition based on MUAC cut offs (and/or oedema) and by sex_ Jewi

	All n = 351	Boys n = 170	Girls n = 181
Prevalence of global malnutrition (< 125 mm and/or oedema)	(15) 4.3 % (2.6 - 6.9 95% C.I.)	(6) 3.5 % (1.6 - 7.5 95% C.I.)	(9) 5.0 % (2.6 - 9.2 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(6) 1.7 % (0.8 - 3.7 95% C.I.)	(4) 2.4 % (0.9 - 5.9 95% C.I.)	(2) 1.1 % (0.3 - 3.9 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(9) 2.6 % (1.4 - 4.8 95% C.I.)	(2) 1.2 % (0.3 - 4.2 95% C.I.)	(7) 3.9 % (1.9 - 7.8 95% C.I.)

The prevalence of GAM as measured by MUAC was 4.3% (2.6 – 6.9, 95% C.I.), which is much lower than the 25.0% WHZ. This is due to the fact that MUAC can only identify 20% to 30% of acutely malnourished children due to its low sensitivity.

Table 159: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema for Jewi

Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	58	2	3.4	5	8.6	51	87.9	0	0.0
18-29	99	1	1.0	0	0.0	98	99.0	0	0.0
30-41	84	1	1.2	1	1.2	82	97.6	0	0.0
42-53	90	4	4.4	0	0.0	86	95.6	0	0.0
54-59	20	1	5.0	0	0.0	19	95.0	0	0.0
Total	351	9	2.6	6	1.7	336	95.7	0	0.0

Table 160: Prevalence of underweight based on weight-for-age z-scores by sex

	All n = 333	Boys n = 164	Girls n = 169
Prevalence of underweight (<-2 z-score)	(62) 18.6 % (14.8 - 23.1 95% C.I.)	(34) 20.7 % (15.2 - 27.6 95% C.I.)	(28) 16.6 % (11.7 - 22.9 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(54) 16.2 % (12.6 - 20.6 95% C.I.)	(30) 18.3 % (13.1 - 24.9 95% C.I.)	(24) 14.2 % (9.7 - 20.3 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(8) 2.4 % (1.2 - 4.7 95% C.I.)	(4) 2.4 % (1.0 - 6.1 95% C.I.)	(4) 2.4 % (0.9 - 5.9 95% C.I.)

A total of 18.6 % (14.8 – 23.1 95% C.I.) were underweight, and 2.4% (1.2 – 4.7, 95% C.I.) were severely underweight.

Table 161: Prevalence of underweight by age, based on weight-for-age z-scores _ Jewi

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	55	0	0.0	9	16.4	46	83.6	0	0.0
18-29	96	3	3.1	25	26.0	68	70.8	0	0.0
30-41	81	3	3.7	10	12.3	68	84.0	0	0.0
42-53	85	1	1.2	9	10.6	75	88.2	0	0.0
54-59	16	1	6.3	1	6.3	14	87.5	0	0.0
Total	333	8	2.4	54	16.2	271	81.4	0	0.0

Table 162: Prevalence of stunting based on height-for-age z-scores and by sex_Jewi

	All n = 312	Boys n = 151	Girls n = 161
Prevalence of stunting (<-2 z-score)	(35) 11.2 % (8.2 - 15.2 95% C.I.)	(18) 11.9 % (7.7 - 18.1 95% C.I.)	(17) 10.6 % (6.7 - 16.3 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(33) 10.6 % (7.6 - 14.5 95% C.I.)	(17) 11.3 % (7.1 - 17.3 95% C.I.)	(16) 9.9 % (6.2 - 15.5 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(2) 0.6 % (0.2 - 2.3 95% C.I.)	(1) 0.7 % (0.1 - 3.7 95% C.I.)	(1) 0.6 % (0.1 - 3.4 95% C.I.)

The prevalence of stunting was 11.2 % (8.2 – 15.2 95% C.I.), which was a low prevalence of chronic malnutrition which was commonly observed in South Sudanese populations.

Table 163: Prevalence of stunting by age based on height-for-age z-scores_Jewi

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
		No.	%	No.	%	Total no.	No.
6-17	55	0	0.0	4	7.3	51	92.7
18-29	83	1	1.2	19	22.9	63	75.9
30-41	74	0	0.0	5	6.8	69	93.2
42-53	84	1	1.2	5	6.0	78	92.9
54-59	16	0	0.0	0	0.0	16	100.0
Total	312	2	0.6	33	10.6	277	88.8

Children under within the age 18-29 months, are the most affected by moderate stunting than the older ones.

Figure 82: Trends in the prevalence of stunting by age in children 6-59 months_Jewi

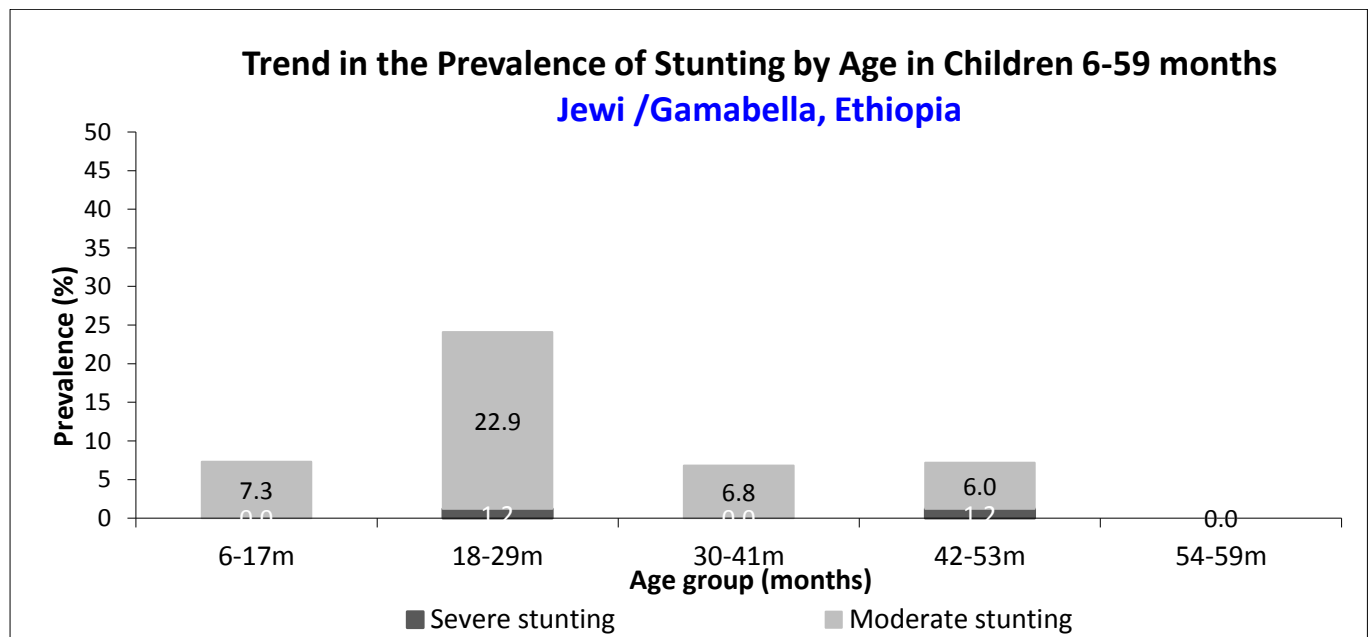
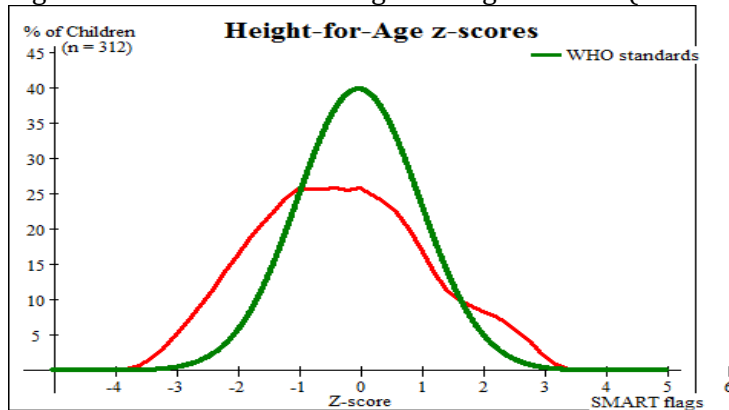


Figure 83: Distribution of height-for-age z-scores (based on WHO Growth Standards)



The height-for-age distribution for the survey (red) was compared to the WHO distribution (green) in Figure 84. The distribution followed a typical bell shape, and was also shifted to the left of the reference, indicating an average lower mean z-score for the survey sample.

Table 164: Mean z-scores, Design Effects and excluded subjects_Jewi

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	336	-1.27±1.02	1.00	8	7
Weight-for-Age	333	-1.02±1.10	1.00	16	2
Height-for-Age	312	-0.33±1.35	2.34	17	22

* contains for WHZ and WAZ the children with oedema.

Mortality results

Table 165: Mortality rates_Jewi

Crude Mortality Rate (CMR) total No. of death /10,000/day	0.49 (0.18 - 1.35)
Under 5 Mortality (U5MR) total No. of death /10,000/day	1.13 (0.44 -2.84)

CMR and U5MR was within the emergency threshold however this results are to be interpreted with caution due to the wide confidence interval.

Feeding programme coverage results

Table 166: Estimated programme coverage for acutely malnourished children_Jewi

	Number/total	% (95% CI)
Supplementary feeding programme coverage (WHZ >= - 3 AND WHZ < - 2 OR MUAC >= 115 mm AND MUAC < 125 mm)	7/35	7.5% (3.1 - 14.9)
Therapeutic feeding programme coverage (WHZ < - 3 OR MUAC < 115mm)	10/35	28.6% (14.6 - 46.3)
Blanket Supplementary (WHZ >= - 2 OR MUAC >= 125)	366/487	75.2% (71.0 - 78.9)

The estimated programme coverage for selective feeding programmes (SFP and OTP) are very low and below than expected standards for refugee settings (>90%).

The blanket feeding programme coverage for 75.2%

Measles vaccination coverage results

Table 167: Measles vaccination coverage for children aged 9-59 months _Jewi

	Measles (with card) n=329	Measles (with card <u>or</u> confirmation from mother) n=329
YES	31.9% (27.1 – 37.1)	92.4% (89.0 - 94.8)

The measles coverage with card or recall was fall short to meet the target (>95%) at 92.4% (89.0 - 94.8) of >95%, by card was very low, documentation needs to improve in the child health cards.

Vitamin A supplementation coverage results

Table 168: Vitamin A supplementation for children aged 6-59 months within past 6 month's _Jewi

	Vitamin A capsule (with card) n=498	Vitamin A capsule (with card <u>or</u> confirmation from mother) n=498
YES	25.7% (22.1 – 29.7)	89.8% (86.8 – 92.1)

Vitamin A coverage by card or confirmation from the mother was 89.8% (86.8 – 92.1) which was lower than the SPHERE target > 90%. By card was 25.7% was very low documentation needs to improve in the child health cards.

Diarrhoea results

Table 169: Period prevalence of diarrhoea _Jewi

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	123/499	24.6% (21.1 - 28.6)

24.6% (21.1 - 28.6) of the sampled children reported to have diarrhoea in the 2 weeks prior to the survey.

Anaemia results children 6-59 months

Table 170: Prevalence of anaemia and haemoglobin concentration in children 6-59 months of age _Jewi

Anaemia in Children 6-59 months	All n =494
Total Anaemia (Hb<11.0 g/dL)	(n=238) 48.2% (43.8 – 52.6)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(n=123) 24.9% (21.3 – 28.9)
Moderate Anaemia (7.0-9.9 g/dL)	(n =113) 22.9% (19.4 – 26.8)
Severe Anaemia (<7.0 g/dL)	(n =2) 0.4% (0.1 – 1.5)
Mean Hb (g/dL)	10.86 g/dL and (1.27SD) [min 6.5 to max 15.2]

The prevalence of anaemia was 48.2% (43.8 – 52.6) of children aged 6-59 months were anaemic, which is above the critical threshold of >40%.

Table 171: Prevalence of anaemia by age_Jewi

Age group	No.	Severe Anaemia (<7.0 g/dL)		Moderate Anaemia (7.0-9.9 g/dL)		Mild Anaemia (Hb 10.0-10.9 g/dL)		Total Anaemia (Hb<11.0 g/dL)		Normal (Hb≥11.0 g/dL)	
		no	%	no	%	no	%	no	%	no	%
6-23	92	1	1.1 (0.0-5.9)	32	34.8 (25.1-45.4)	26	28.3 (19.4-38.6)	59	64.1 (53.5-73.9)	33	35.9 (26.1-46.5)
24-35	96	1	1.0 (0.0-5.7)	21	21.9 (14.1-31.5)	16	16.7 (9.8-25.6)	38	39.6 (29.7-50.1)	58	60.4 (49.9-70.3)
36-59	156	0	0	27	17.3 (11.7-24.2)	35	22.4 (16.2-29.8)	62	39.7 (32.0-47.9)	94	60.3 (52.1-68.0)
Total	494	2	0.4 (0.1-1.6)	113	22.9 (21.2-29.0)	123	24.9 (19.3-26.9)	238	48.2 (43.7-52.7)	256	51.8 (47.3-56.3)

Anaemia prevalence was highest among children 6-23 months with levels of 64.1% (53.5-73.9%).

Children 0-23 months

Table 172: Prevalence of Infant and Young Child Feeding Practices Indicators_Jewi

Indicator	Age range	No./ total	Prevalence (%) & 95% CI
Timely initiation of breastfeeding	0-23 months	71/105	67.6% (57.8 – 76.4)
Exclusive breastfeeding under 6 months	0-5 months	14/17	82.4% (56.6 – 92.6)
Continued breastfeeding at 1 year	12-15 months	8/14	57.1% (28.9 – 82.2)
Continued breastfeeding at 2 years	20-23 months	16/20	80.0% (56.3 – 94.3)
Introduction of solid, semi-solid or soft foods	6-8 months	2/19	10.5% (1.3 – 33.1)
Consumption of iron-rich or iron-fortified foods	6-23 months	56/89	62.9% (52.0 – 72.9)
Bottle feeding	0-23 months	4/106	3.8% (1.0 – 9.4)

Note that when IYCF indicators are collected in nutritional surveys based on anthropometric sample of children aged 0-59 months, it was 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.

As per the results shown above, 67.6% of children under 2 years have been initiated to breastfeeding within one hour after birth and 82.4% of children 0-5 months reported to have been exclusively breastfed in the surveyed households. About 57.1% of the surveyed children were continued breastfeeding at 1 year, whilst about 80.0% were reported to have continued breastfeeding at 2 years. More than half (62.9%) of the sampled children consumed Iron-rich or

iron fortified foods, whereas only 10.5% of infants between 6-8 months have been reported that they have been introduced to complementary feeding. The proportion of children who were bottle fed the day before the survey were 3.8% (1.0-9.4, 95% C.I)

Prevalence of intake ANALYSIS

Infant formula

Table 13.21: Infant formula intake in children aged 0-23 months, Jewi

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	5/107	4.7% (1.5-10.6%)

Table 13.22: CSB intake in children aged 6-23 months_Jewi

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive FBF	6/90	6.7% (2.5-13.9%)

Table 13.23: CSB ++ intake in children aged 6-23 months_Jewi

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB++	39/90	43.3% (32.9-54.2%)

Women 15-49 years

Table 173: Women physiological status and age_Jewi

Physiological status	Number/total	% of sample
Non-pregnant	193/215	89.8%, (84.9-93.5%)
Pregnant	22/215	10.2%, (6.5-15.1%)
Mean age (range)	28.7year Range: 15- 48 years	

Of all the surveyed women aged 15-49 years in the survey, 10.2% were pregnant. The mean age of women was 28.7 years.

Anaemia

Table 174: Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 years) _Jewi.

Anaemia in non-pregnant women of reproductive age (15-49 years)	All (95% CI) n = 189
Total Anaemia (<12.0 g/dL)	(52) 27.5% (21.3 – 34.5)
Mild Anaemia (11.0-11.9 g/dL)	(32) 16.9% (11.9 –23.0)
Moderate Anaemia (8.0-10.9 g/dL)	(20) 10.6% (6.6 -15.9)
Severe Anaemia (<8.0 g/dL)	(0) 0%
Mean Hb (g/dL)	12.54 g/dL and (1.28SD) [min 8.7 to max 17.7 g/dL]

The prevalence of anaemia among non-pregnant women was 27.5% (21.3 – 34.5), 95% C.I), which was below the critical threshold (>40%).

Table 175: ANC enrolment and iron-folic acid pills coverage among pregnant women (15-49 years)

	Number /total	% (95% CI)
Currently enrolled in ANC programme	10/21	47.6% (25.7- 70.2)
Currently receiving iron-folic acid pills	9/22	40.9% (20.7- 63.7)

Only 47.6% of pregnant women enrolled in ANC and about 40.9% had received iron-folic pills , the coverage for both indicators are low , awareness and integration of the of the ANC services need to be strengthened.

Food security

Ration card coverage

Table 176: Ration card coverage_Jewi

	Number/total	% (95% CI)
Proportion of households with a ration card	192/193	99.5% (97.2-99.9)

Almost all (99.5%) of the sampled households did have a ration card.

Table 177: Reported duration of general food ration 1_Jewi

Average number of days the food ration lasts (Standard deviation or 95% CI)	Average duration (%) in relation to the theoretical duration of the ration*
21.96 DAYS OUT OF 30 DAYS	73.2%

Table 178: Reported duration of general food ration 2_Jewi

	Number/total	% (95% CI)
Proportion of households reporting that the food ration lasts the entire duration of the cycle	12/191	6.3% (3.3-10.7%)
Proportion of households reporting that the food ration lasted:		

≤75% of the cycle (30 days)	112/191	58.6% (51.3-65.7%)
>75% of the cycle (30 days)	79/191	41.4% (34.3-48.7%)

Negative coping strategies results

Table 179: Coping strategies used by the surveyed population over the past month _Jewi

	Number/total	% (95% CI)
Proportion of households reporting using the following coping strategies over the past month*:		
Borrowed cash, food or other items <i>without interest</i>	75/193	38.9% (31.9-46.1)
Sold any assets (furniture, seed stocks, tools, other NFI, livestock etc.)	20/192	10.4% (6.5-15.6)
Requested increase remittances or gifts as compared to normal	9/193	4.6% (2.2-8.7)
Reduced the quantity and/or frequency of meals	48/193	24.9% (18.9-31.6)
Begged	24/192	12.5% (8.2-18.0)
Engaged in potentially risky or harmful activities (list activities)	13/193	6.7% (3.6-11.2)
Proportion of households reporting using none of the coping strategies over the past month	82/191	42.9% (35.8-50.3)

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

The most commonly used coping strategy that was reported to be used to fill the food gap was borrowing of food, cash and other items and reducing the quantity and/or frequency of meals. 6.7% of the surveyed household reported to have used harmful activities, whereas 42.9% reported that they didn't use of the above coping mechanisms.

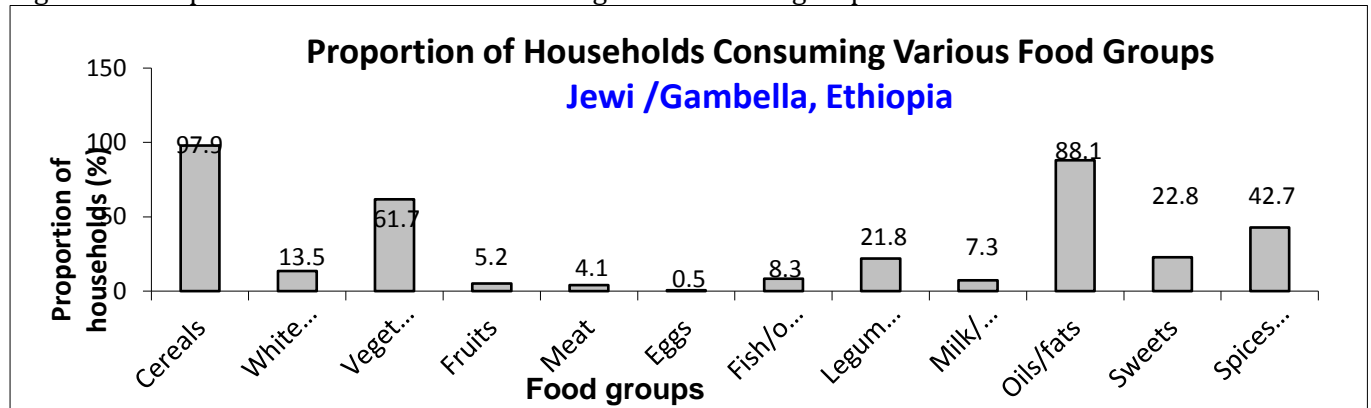
Household dietary diversity results

The average HDDS was 3.74 and this was low when compared to the other camps.

Table 180: Average HDDS_Jewi

Average HDDS	3.74 SD = 1.37
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Figure 84: Proportion of households consuming different food groups within last 24 hours



Most common items reported to be consumed were cereals (97.9%), oils/fats (88.1) and vegetables (61.7%), Fruits, meat and eggs consumption was low.

Table 181: Consumption of food aid commodities and micronutrient rich foods by household's Jewi

	Number/total	% (95% CI)
Proportion of households <i>not consuming any</i> vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	63/193	32.6%% (26.1-39.7%)
Proportion of households consuming either a plant or animal source of vitamin A	120/191	62.8% (55.6-69.7%)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	21/193	10.9% (6.9-16.2%)

WASH

Water Quality and Quantity

Table 182: Water Quality_Jewi

	Number/total	% (95% CI)
Proportion of households using an improved drinking water source	192/193	99.5% (97.2-99.9)
Proportion of households that use a covered or narrow necked container for storing their drinking water	111/193	57.5% (50.2-64.6)

99.5% of the surveyed households have access to improved water source, and 57.5% (50.2-64.6, 95% CI) of households reported to have covered or narrow necked drinking water storage containers.

Table 183: Water Quantity 1: Amount of liters of water used per person per day_Jewi

Proportion of households that use:	Number/total	% (95% CI)
≥ 20 lpppd	73/193	37.8% (30.9-45.1)
15 - <20 lpppd	33/193	17.1% (12.1-23.2)
<15 lpppd	87/193	45.1% (37.9-52.4)
An average water usage in lpppd	17.66 lpppd	

The average water usage was 17.7 lpppd this was lower than the expected >20 lpppd, More than one third of households 45.1% (37.9-52.4) reported that their water utilization was <15lpppd, which was below the minimum sphere standard.

Table 184: Satisfaction with water supply_Jewi

	Number/total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	120/193	62.2% (54.9-69.0)

At least 62.2 % of the surveyed households reported that they are satisfied with the drinking water supply. Around 5.7% were not satisfied with the drinking water supply whereas 32.3% of the sampled households complain that the water was not enough and about 37.1% were reported that there was irregular supply

Figure 85: Proportion of households that say they are satisfied with the water supply

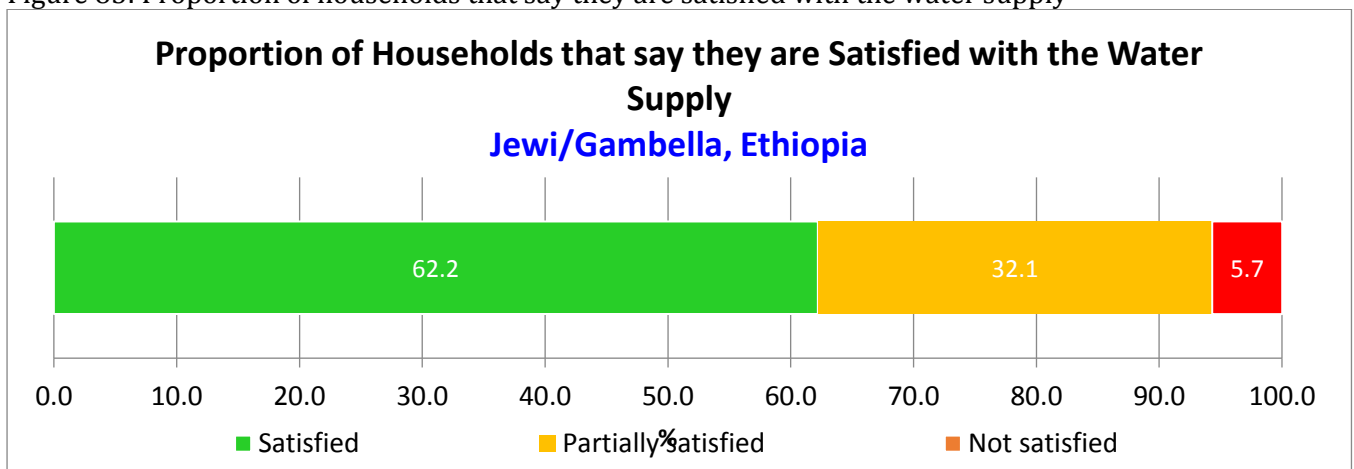


Table 185: Safe Excreta disposal for Jewi

	Number/total	% (95% CI)
Proportion of households that use:		
Proportion of households using an improved excreta disposal facility (improved toilet facility, not shared)	171/192	89.1% (83.8-93.1)
Proportion of households using a shared family toilet	1/192	0.5% (0.0-2.9)
Proportion of households using a communal toilet	13/192	6.8% (3.7-11.3)
Proportion of households using an unimproved toilet	7/192	3.6% (1.5-7.4)
The proportion of households with children under three years old that dispose of faeces safely.	114/133	85.7% (78.6-91.2)

Most of the households reported to be using improved toilet facility 89.1% (83.8-93.1%, 95% CI). Further analysis showed about 85.7% of households surveyed with children less than three years of age had their last stools disposed into the toilet and other 14.3% had their stools disposed of unsafely.

Figure 86: Proportion of households with children under the age of 3 years whose (last) stools were disposed of safely

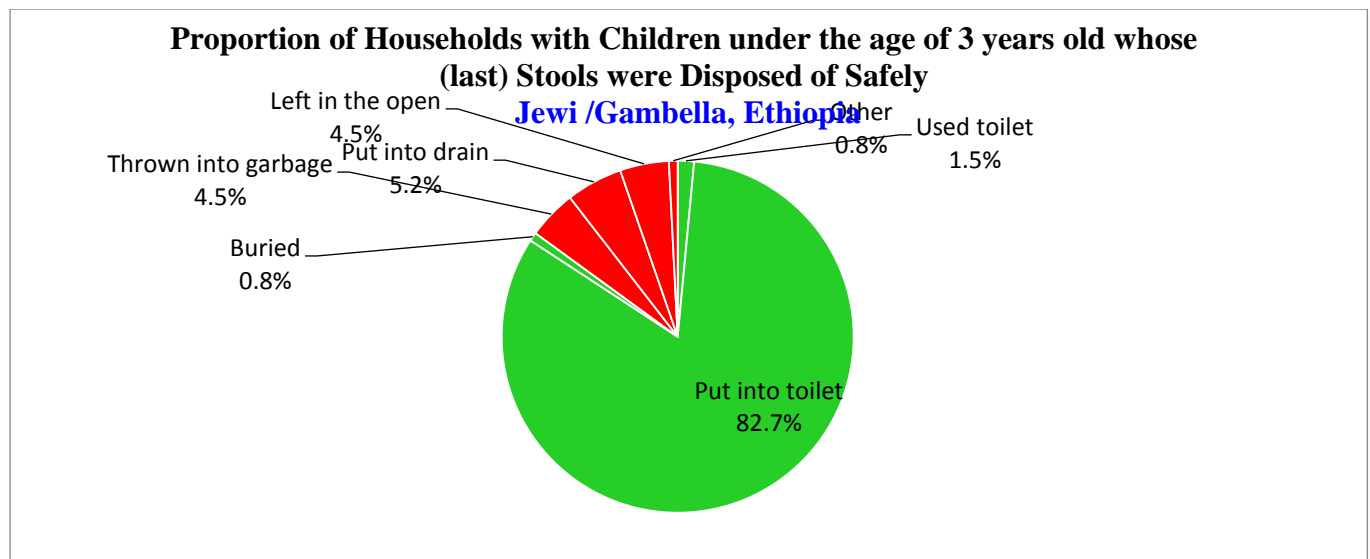
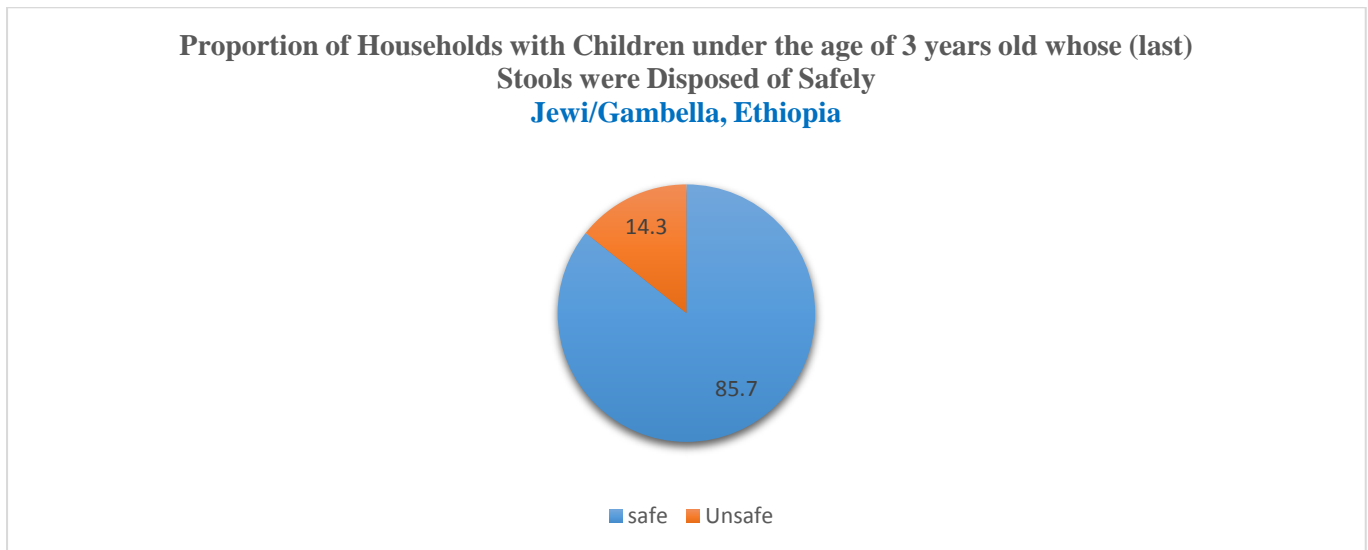


Figure 87: The proportion of households with children under three years old that dispose of faeces safely_Jewi



Mosquito Net Coverage

Mosquito net ownership

Table 186: Household Mosquito net ownership_Jewi

	Number/total	% (95% CI)
Proportion of households owning at least one mosquito net of any type	62/196	31.6% (25.2-38.6)
Proportion of households owning at least one LLIN	60/196	30.6% (24.2-37.6)

Amongst the surveyed Households only 31.6% own at least one mosquito net of any type and about (30.6%) have LLIN.

Figure 88: Household ownership of at least one Mosquito net_Jewi

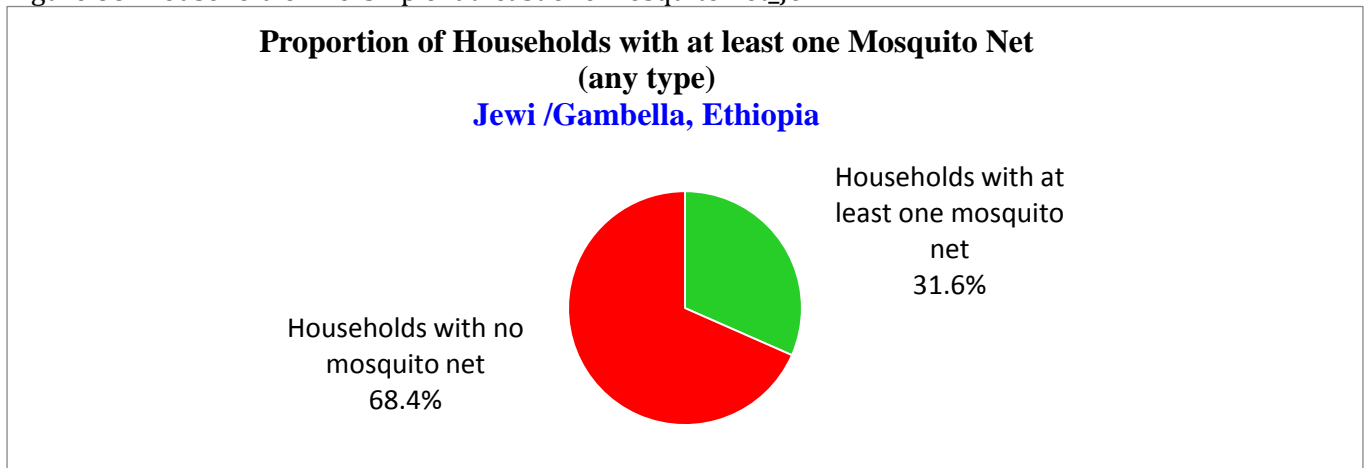


Figure 89: Household ownership of at least one LLIN_Jewi

Proportion of Households with at least one LLIN Jewi /Gambella, Ethiopia

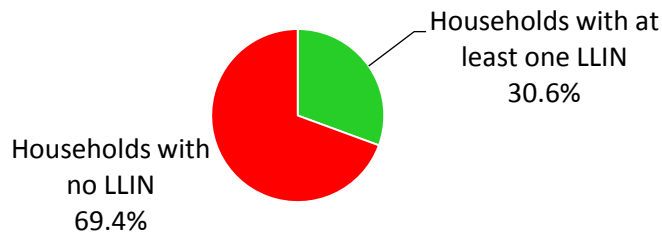


Table 187: Number of nets _Jewi

Average number of LLINs per household	Average number of persons per LLIN
1.5	13.1

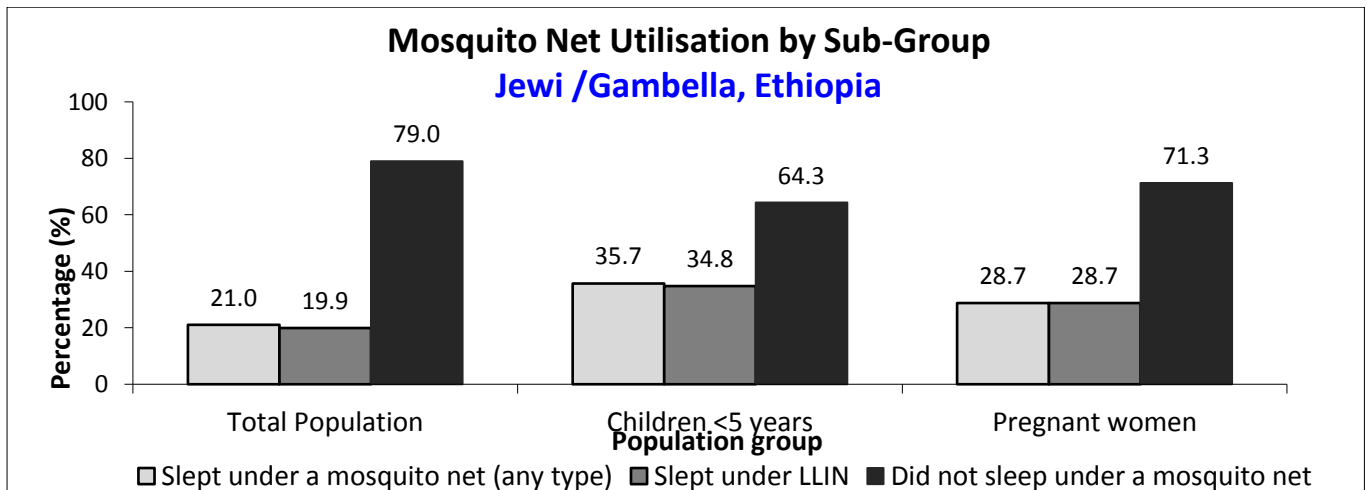
Mosquito net Utilisation

Table 188: Mosquito net Utilisation _Jewi

	Total population (all ages)		0-59 months		Pregnant	
	Total No=1082	%	Total No=277	%	Total No=35	%
Slept under net of any type	228	21	81	35.7	10	28.7
Slept under LLIN	216	19.9	79	34.8	10	28.7

Less than a quarter, 28.7% of the surveyed population slept under an LLIN mosquito net. Use of LLIN mosquito nets was higher among under 5 in comparison to use among pregnant women.

Figure 90: Mosquito Net Utilization by sub-groups _Jewi



RESULTS FROM NGUENYYIELCAMP

Table 189: Demographic characteristics of the study population

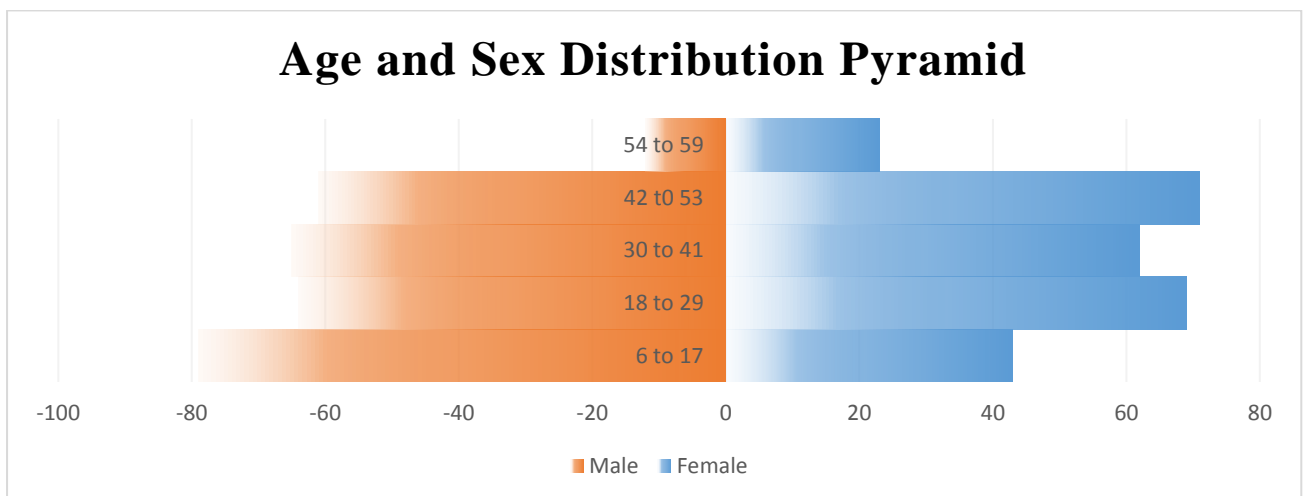
Total population surveyed	2901
Total U5 surveyed	592
Average Household size	5.2%
% of children U5	20.4%

Table 190: Distribution of age and sex of sample, Nguenyyiel

AGE (mo)	Boys		Girls		Total		Ratio
	no.	%	no.	%	no.	%	Boy: girl
6-17	79	64.8	43	35.2	122	22.2	1.8
18-29	64	48.1	69	51.9	133	24.2	0.9
30-41	65	51.2	62	48.8	127	23.1	1.0
42-53	61	46.2	71	53.8	132	24.0	0.9
54-59	12	34.3	23	65.7	35	6.4	0.5
Total	170	48.4	181	51.6	351	100.0	0.9

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

Figure 91: Population age and sex pyramid, Nguenyyiel



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. Results based on NCHS Growth Reference 1977 are presented in annex.

Table 191: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex in _Nguenyiel camp

	All n = 539	Boys n = 276	Girls n = 263
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(159) 29.5 % (25.8 - 33.5 95% C.I.)	(90) 32.6 % (27.3 - 38.3 95% C.I.)	(69) 26.2 % (21.3 - 31.9 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(116) 21.5 % (18.3 - 25.2 95% C.I.)	(62) 22.5 % (17.9 - 27.7 95% C.I.)	(54) 20.5 % (16.1 - 25.8 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(43) 8.0 % (6.0 - 10.6 95% C.I.)	(28) 10.1 % (7.1 - 14.3 95% C.I.)	(15) 5.7 % (3.5 - 9.2 95% C.I.)

*The prevalence of oedema was 0.0 %

The prevalence of GAM was 29.5% in the camp, this was very high above almost twice the >15% emergency threshold and SAM was also critical, it was four times the emergency threshold of >2%.

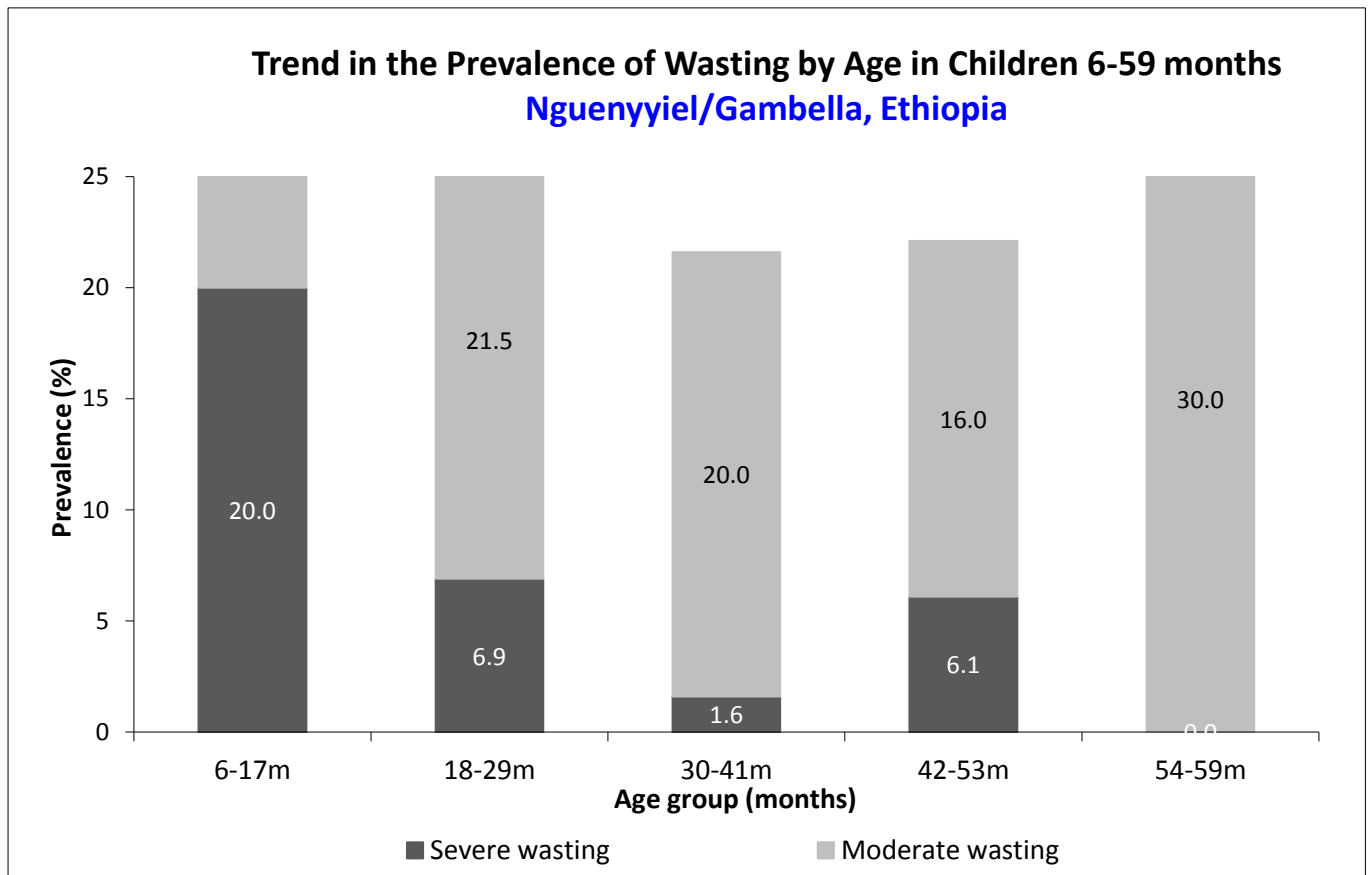
There was no significant difference seen between Boys and Girls on the prevalence of acute malnutrition.

Table 192: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema _Nguenyiel camp

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (>= -2 z score)		Oedema	
		No.	%	No.	%	Age (mo)	Total no.	No.	%
6-17	120	24	20.0	32	26.7	64	53.3	0	0.0
18-29	130	9	6.9	28	21.5	93	71.5	0	0.0
30-41	125	2	1.6	25	20.0	98	78.4	0	0.0
42-53	131	8	6.1	21	16.0	102	77.9	0	0.0
54-59	33	0	0.0	10	30.3	23	69.7	0	0.0
Total	539	43	8.0	116	21.5	380	70.5	0	0.0

The youngest children (6-17 months) was most affected by severe wasting as compared to other age groups whereas children 16- 17 months and those above 54 months were the most affected group by moderate acute malnutrition.

Figure 92: Trends in the prevalence of wasting by age in children 6-59 months_ Nguenyiel



Severe wasting rate was highest in youngest age group and the oldest age group were the highest affected by moderate wasting.

Table 193: Distribution of severe acute malnutrition and oedema based on weight-for-height z-scores_Nguenyiel

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 46 (8.5 %)	Not severely malnourished No. 497 (91.5 %)

All the cases of SAM were due to wasting and no oedema was detected.

Figure 93: Distribution of weight-for-height z-scores (based on WHO Growth Standards), Nguennyiel.

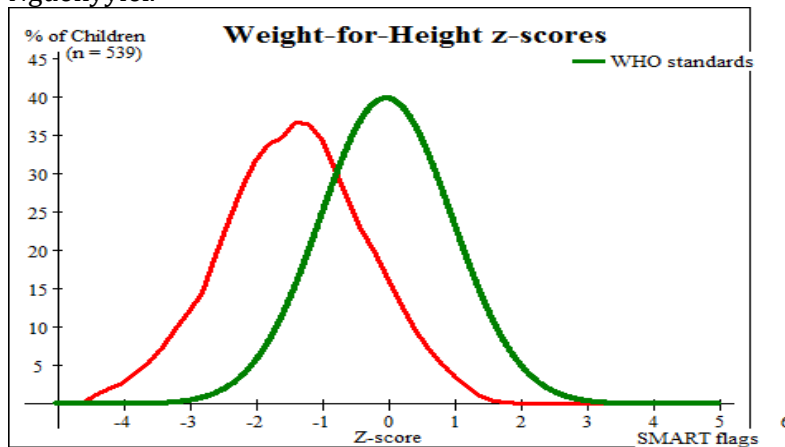


Figure 94 is a comparison of the surveyed and reference weight-for-height z-score (WHZ) distribution. The survey distribution (in red) followed a normal distribution and was shifted to the left of the WHO reference, showing an average lower z-scores, and therefore high malnutrition.

Table 194: Prevalence of acute malnutrition based on MUAC cut offs (and/or oedema) and by sex_ Nguennyiel

	All n = 549	Boys n = 281	Girls n = 268
Prevalence of global malnutrition (< 125 mm and/or oedema)	(60) 10.9 % (8.6 - 13.8 95% C.I.)	(30) 10.7 % (7.6 - 14.8 95% C.I.)	(30) 11.2 % (8.0 - 15.5 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(43) 7.8 % (5.9 - 10.4 95% C.I.)	(21) 7.5 % (4.9 - 11.2 95% C.I.)	(22) 8.2 % (5.5 - 12.1 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(17) 3.1 % (1.9 - 4.9 95% C.I.)	(9) 3.2 % (1.7 - 6.0 95% C.I.)	(8) 3.0 % (1.5 - 5.8 95% C.I.)

The prevalence of GAM as measured by MUAC was 10.9% (8.6-13.8, 95% C.I.), which was much lower than the 29.5% WHZ prevalence, and was consistent with findings of nutrition surveys in South Sudan.

Table 195: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema
 _Nguenyyiel camp

Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	122	12	9.8	25	20.5	85	69.7	0	0.0
18-29	133	2	1.5	12	9.0	119	89.5	0	0.0
30-41	127	1	0.8	3	2.4	123	96.9	0	0.0
42-53	132	2	1.5	2	1.5	128	97.0	0	0.0
54-59	35	0	0.0	1	2.9	34	97.1	0	0.0
Total	549	17	3.1	43	7.8	489	89.1	0	0.0

Children 6-17 months of are the most affected by severe and moderate wasting when compared to the other age groups.

Table 196: Prevalence of underweight based on weight-for-age z-scores by sex

	All n = 539	Boys n = 277	Girls n = 262
Prevalence of underweight (<-2 z-score)	(127) 23.6 % (20.2 - 27.3 95% C.I.)	(77) 27.8 % (22.9 - 33.4 95% C.I.)	(50) 19.1 % (14.8 - 24.3 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(90) 16.7 % (13.8 - 20.1 95% C.I.)	(53) 19.1 % (14.9 - 24.2 95% C.I.)	(37) 14.1 % (10.4 - 18.9 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(37) 6.9 % (5.0 - 9.3 95% C.I.)	(24) 8.7 % (5.9 - 12.6 95% C.I.)	(13) 5.0 % (2.9 - 8.3 95% C.I.)

A total of 23.6 % (20.2 – 27.3 95% C.I.) were underweight, and 6.9% (5.0 – 9.3, 95% C.I.) were severely underweight.

Table 197: Prevalence of underweight by age, based on weight-for-age z-scores_ Nguenyyiel

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	120	15	12.5	31	25.8	74	61.7	0	0.0
18-29	131	13	9.9	23	17.6	95	72.5	0	0.0
30-41	124	4	3.2	20	16.1	100	80.6	0	0.0
42-53	131	5	3.8	12	9.2	114	87.0	0	0.0
54-59	33	0	0.0	4	12.1	29	87.9	0	0.0
Total	539	37	6.9	90	16.7	412	76.4	0	0.0

Table 198: Prevalence of stunting based on height-for-age z-scores and by sex_ Nguenyyiel

	All n = 523	Boys n = 264	Girls n = 259

Prevalence of stunting (<-2 z-score)	(62) 11.9 % (9.4 - 14.9 95% C.I.)	(33) 12.5 % (9.0 - 17.0 95% C.I.)	(29) 11.2 % (7.9 - 15.6 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(56) 10.7 % (8.3 - 13.6 95% C.I.)	(30) 11.4 % (8.1 - 15.8 95% C.I.)	(26) 10.0 % (6.9 - 14.3 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(6) 1.1 % (0.5 - 2.5 95% C.I.)	(3) 1.1 % (0.4 - 3.3 95% C.I.)	(3) 1.2 % (0.4 - 3.3 95% C.I.)

The prevalence of stunting was 11.9 % (9.4 – 14.9 95% C.I.), which was a low prevalence of chronic malnutrition which was commonly observed in South Sudanese populations.

Table 199: Prevalence of stunting by age based on height-for-age z-scores_Nguenyiyiel

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
		No.	%	No.	%	Total no.	No.
6-17	121	2	1.7	19	15.7	100	82.6
18-29	126	2	1.6	16	12.7	108	85.7
30-41	120	1	0.8	11	9.2	108	90.0
42-53	121	1	0.8	9	7.4	111	91.7
54-59	35	0	0.0	1	2.9	34	97.1
Total	523	6	1.1	56	10.7	461	88.1

Children under 30 months of age appear to be more affected by stunting than the older ones and particularly those 6-17 months were more affected by moderate stunting.

Figure 94: Trends in the prevalence of stunting by age in children 6-59 months_ Nguenyiyiel

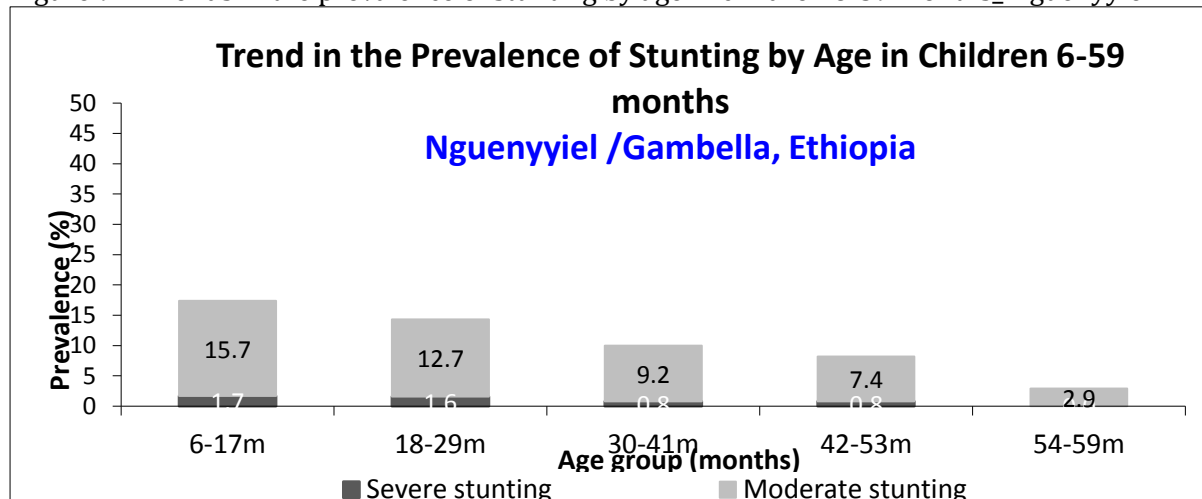
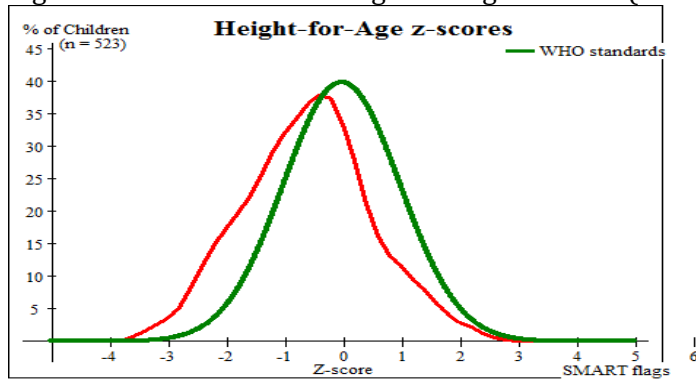


Figure 95: Distribution of height-for-age z-scores (based on WHO Growth Standards)



The height-for-age distribution for the survey (red) was compared to the WHO distribution (green) in Figure 96. The distribution followed a typical bell shape, and was also shifted to the left of the reference, indicating an average lower mean z-score for the survey sample.

Table 200: Mean z-scores, Design Effects and excluded subjects for Nguenyiel

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	539	-1.41±1.06	1.00	6	4
Weight-for-Age	539	-1.32±1.06	1.00	4	6
Height-for-Age	523	-0.61±1.08	1.00	2	24

* contains for WHZ and WAZ the children with oedema.

Mortality results

Table 201: Mortality rates_Nguenyiel

Crude Mortality Rate (CMR) total No. of death /10,000/day	0.23 (0.10 -0.53)
Under 5 Mortality (U5MR) total No. of death /10,000/day	0.36 (0.03 -4.25)

CMR and U5MR was within the emergency threshold however this result are be interpreted with caution due to the wide confidence interval.

Feeding programme coverage results

Table 202: Estimated programme coverage for acutely malnourished children _Nguenyiel

	Number/total	% (95% CI)
Supplementary feeding programme coverage (WHZ >= - 3 AND WHZ < - 2 OR MUAC >= 115 mm AND MUAC < 125 mm)	15/126	11.9% (6.8-18.9)
Therapeutic feeding programme coverage (WHZ < - 3 OR MUAC < 115mm)	15/48	31.3% (18.7-46.3)
Blanket Supplementary (WHZ >= - 2 OR MUAC >= 125)	444/541	82.1% (78.5-85.2)

Estimated programme coverage for the selective feeding programmes (supplementary, therapeutic feeding) and way below the standards for refugee settings (>90%). These results

need to be interpreted with caution due to the small sample obtained during the survey, a coverage assessment is recommended to determine the actual figures.
Blanket feeding programme was 82.1%.

Measles vaccination coverage results

Table 203: Measles vaccination coverage for children aged 9-59 months _ Nguenyiel

	Measles (with card) n=329	Measles (with card <u>or</u> confirmation from mother) n=329
YES	50.9% (46.6-55.2)	75.7% (71.8-79.2)

The measles coverage with card or recall fall short to meet the target (>95%) at 75.7% (71.8-79.2). Half of the surveyed children had documentation of the vaccinations, documentation needs to be strengthened to avoid double dosing.

Vitamin A supplementation coverage results

Table 204: Vitamin A supplementation for children aged 6-59 months within past 6 months Nguenyiel

	Vitamin A capsule (with card) n=498	Vitamin A capsule (with card <u>or</u> confirmation from mother) n=498
YES	45.1% (41.1-49.3)	72.8%(68.9-76.4)

Vitamin A coverage by card or confirmation from the mother was 72.8 %(68.9-76.4) which was lower than the SPHERE target > 90%.By card was 45.1%, similar to the measles vaccination documentation needs to be improved.

Diarrhoea results

Table 205: Period prevalence of diarrhoea Nguenyiel

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	220/548	40.2% (36.1-44.3)

40.2% (36.1- 44.3) of the sampled children reported to have diarrhoea in the 2 weeks prior to the survey. This was a major risk factor in the onset of malnutrition and deterioration the already malnourished children, Sensitization of proper use of WASH facilities and handwashing at critical times need to emphasized at the key contact points.

Anaemia results children 6-59 months

Table 206: Prevalence of anaemia and haemoglobin concentration in children 6-59 months of age_ Nguenyiel

Anaemia in Children 6-59 months	All n =545
Total Anaemia (Hb<11.0 g/dL)	(n=236) 43.3% (39.2 – 47.5)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(n=152) 27.9% (24.3 – 31.8)
Moderate Anaemia (7.0-9.9 g/dL)	(n =81) 14.7% (12.1 – 18.0)
Severe Anaemia (<7.0 g/dL)	(n =3) 0.6% (0.2 – 1.6)
Mean Hb (g/dL)	11.12 g/dL and (1.32SD) [min 6.3 to max 15.0]

The prevalence of anaemia among children 6-59 months was 43.3% (39.2 – 47.5), this was slightly above the critical threshold of >40%.

Table 207: Prevalence of anaemia by age_ Nguenyiel

Age group	No.	Severe Anaemia (<7.0 g/dL)		Moderate Anaemia (7.0-9.9 g/dL)		Mild Anaemia (Hb 10.0-10.9 g/dL)		Total Anaemia (Hb<11.0 g/dL)		Normal (Hb≥11.0 g/dL)	
		no	%	no	%	no	%	no	%	no	%
6-23	177	2	1.1 (0.1-4.0)	44	24.9 (18.7-31.9)	54	30.5 (23.8-37.9)	100	56.5 (48.9-63.9)	77	43.5 (36.1-51.1)
24-35	96	0	0%	18	15.3 (9.3-23.0)	35	29.7 (21.6-38.8)	53	44.9 (35.7-54.3)	65	55.1% (45.7-64.3)
36-59	250	1	0.4 (0.0-2.2)	19	7.6 (4.6-11.6)	63	25.2 (19.9-31.1)	83	33.2 (27.4-39.4)	167	66.8% (60.6-72.6)
Total	545	3	0.6 (0.1-1.7)	81	14.9 (12.0-18.2)	152	27.9 (24.2-31.9)	236	43.3 (39.1-47.6)	309	56.7% (52.4-60.9)

In the above table, children 6-23 months are most affected with anaemia at 56.5% (48.9-63.9%), this follows in similar trends as observed in the other refugee camps.

Children 0-23 months

Table 208: Prevalence of Infant and Young Child Feeding Practices Indicators_ Nguenyiel

Indicator	Age range	No./ total	Prevalence (%) & 95% CI
Timely initiation of breastfeeding	0-23 months	154/205	75.1% (68.6 – 80.9)
Exclusive breastfeeding under 6 months	0-5 months	25/28	89.3% (71.8 – 97.7)
Continued breastfeeding at 1 year	12-15 months	45/45	100%
Continued breastfeeding at 2 years	20-23 months	28/34	82.4% (65.5 – 93.2)
Introduction of solid, semi-solid or soft foods	6-8 months	9/30	30.0% (14.7 – 49.4)
Consumption of iron-rich or iron-fortified foods	6-23 months	25/32	78.1% (60.0 – 90.7)

Bottle feeding	0-23 months	11/204	5.4% (2.7 – 9.4)
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Note that when IYCF indicators are collected in nutritional surveys based on anthropometric sample of children aged 0-59 months, it was 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.

IYCF indicators above indicate that 75.1% of children under 2 years were initiated to breastfeeding within one hour of birth and 89.3% of infants and young children reported to be exclusively breastfed in the surveyed households. 100% of the children continued to breast at 1 year, whilst about 82.4% were reported that they have continued breastfeeding at 2 years. Two third of (78.1%) of the children were fed on Iron-rich or iron fortified foods, whereas only 30.0% of infants between 6-8 months have been reported that they have been started complementary feeding. The proportion of children who were bottle fed the day before the survey were 5.4% (2.7 – 9.4, 95% C.I).

Prevalence of intake ANALYSIS

Infant formula

Table14.21: Infant formula intake in children aged 0-23 months _ Nguenyiel

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	33/204	16.2% (11.4-21.9%)

Table 14.22: CSB intake in children aged 6-23 months _ Nguenyiel

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive FBF	41/176	23.3% (17.3-30.3%)

Table 14:23 CSB ++ intake in children aged 6-23 months __ Nguenyiel

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB++	119/175	68.0% (60.5-74.8%)

Women 15-49 years

Table 209: Women physiological status and age_ Nguenyiel

Physiological status	Number/total	% of sample
Non-pregnant	196/228	85.9%, (80.7-90.2%)
Pregnant	32/228	14.0%, (9.8-19.2%)
Mean age (range)	26.9year Range: 15- 48 years	

Of the sampled women aged 15-49 years in the survey, 14.0% were pregnant. The mean age of women was 26.9 years.

Anaemia

Table 210: Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 years) _Nguenyyiel

Anaemia in non-pregnant women of reproductive age (15-49 years)	All (95% CI) n = 197
Total Anaemia (<12.0 g/dL)	(56) 28.4% (22.2 – 35.3)
Mild Anaemia (11.0-11.9 g/dL)	(43) 21.8% (16.3 – 28.3)
Moderate Anaemia (8.0-10.9 g/dL)	(13) 6.6% (3.6 – 11.0)
Severe Anaemia (<8.0 g/dL)	(0) 0%
Mean Hb (g/dL)	12.8 g/dL and (1.32SD) [min 9.5 to max 16.5 g/dL]

The prevalence of anaemia among non-pregnant women was 28.4% (22.2 – 35.3), 95%CI, which was below the critical threshold (>40%).

Table 211: ANC enrolment and iron-folic acid pills coverage among pregnant women (15-49 years) _ Nguenyyiel

	Number /total	% (95% CI)
Currently enrolled in ANC programme	18/32	56.3% (37.6-73.6)
Currently receiving iron-folic acid pills	17/32	53.1% (34.7-70.9)

Only 56.3% % of pregnant women enrolled in ANC and 53.1% % were receiving iron-folic pills. There is need to strengthen the linkages and referrals of the ANC with other services such as the BSFP. Nguenyyiel being the most recently established camp sensitization of the health and nutrition services should be strengthened.

Food security

Ration card coverage

Table 212: Ration card coverage Nguenyyiel

	Number/total	% (95% CI)
Proportion of households with a ration card	279/279	100%

100 % of the surveyed households have a ration cards

Table 213: Reported duration of general food ration 1 _Nguenyyiel

Average number of days the food ration lasts (Standard deviation or 95% CI)	Average duration (%) in relation to the theoretical duration of the ration*
20.5 DAYS OUT OF 30 DAYS	68.2%

Table 214: Reported duration of general food ration 2_ Nguenyyiel

	Number/total	% (95% CI)
Proportion of households reporting that the food ration lasts the entire duration of the cycle	45/278	16.2% (12.1-21.1%)
Proportion of households reporting that the food ration lasted:		
≤75% of the cycle (30 days)	197/278	70.9% (65.1-76.1%)
>75% of the cycle (30 days)	81/278	29.1% (23.9-34.9%)



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Negative coping strategies results

Table 215: Coping strategies used by the surveyed population over the past month_ Nguenyiyiel

	Number/total	% (95% CI)
Proportion of households reporting using the following coping strategies over the past month*:		
Borrowed cash, food or other items <i>without interest</i>	144/279	51.6% (45.6-57.6)
Sold any assets (furniture, seed stocks, tools, other NFI, livestock etc.)	29/278	10.4% (7.1-14.6)
Requested increase remittances or gifts as compared to normal	10/278	3.6% (1.7-6.5)
Reduced the quantity and/or frequency of meals	91/277	32.8% (27.4-38.7)
Begged	68/278	24.5% (19.5-29.9)
Engaged in potentially risky or harmful activities (list activities)	4/278	1.4% (0.4-3.6)
Proportion of households reporting using none of the coping strategies over the past month	70/277	25.3% (20.3-30.8)

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

The most commonly used coping strategy reported to be used to fill the food gap was borrowing of food, cash and other items and reducing the quantity and/or frequency of meals. About 25.3% of surveyed households reported not using any of the above coping mechanisms.

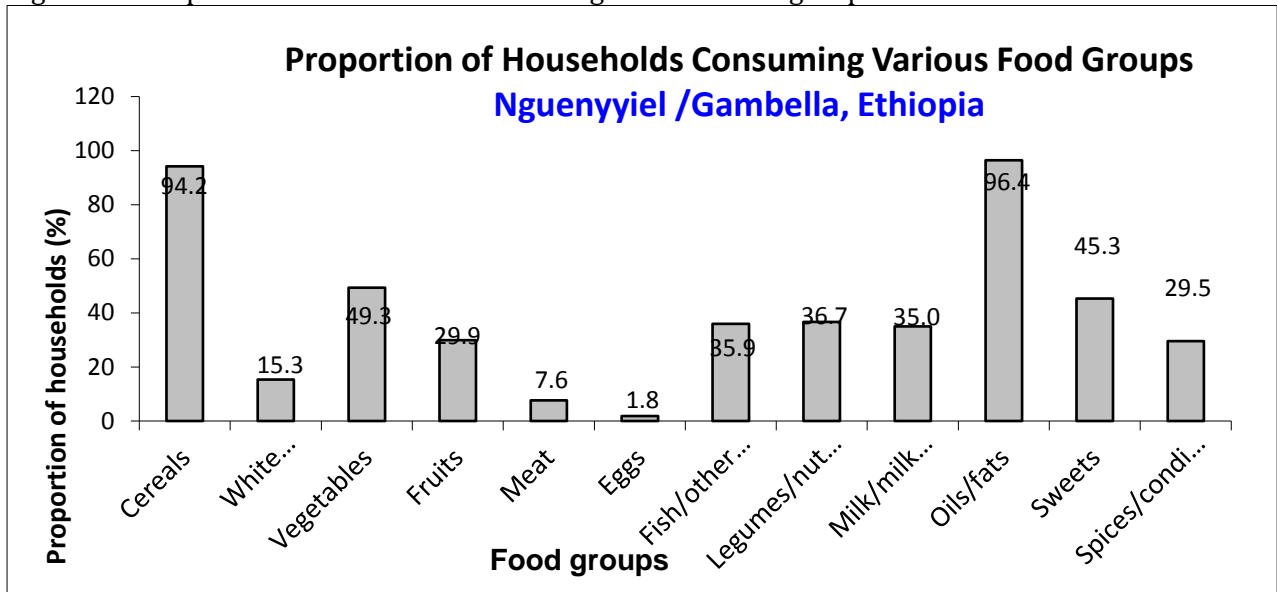
Household dietary diversity results

The average HDDS was 4.77 which fall within the same range of some the old camps.

Table 216: Average HDDS

Average HDDS	4.77 SD = 1.73
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Figure 96: Proportion of households consuming different food groups within last 24 hours



Most common items reported to be consumed were cereals (97.9%), oils/fats (88.1), fruits, meat and eggs consumption was low.

Table 217: Consumption of food aid commodities and micronutrient rich foods by household's _Nguenyyiel

	Number/total	% (95% CI)
Proportion of households <i>not</i> consuming any vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	80/275	29.1% (23.8-34.8%)
Proportion of households consuming either a plant or animal source of vitamin A	170/276	61.6% (55.6-67.4%)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	108/276	39.1% (33.3-45.2%)

WASH

Water Quality and Quantity

Table 218: Water Quality _Nguenyyiel

	Number/total	% (95% CI)
Proportion of households using an improved drinking water source	238/279	85.3% (80.6-89.2)
Proportion of households that use a covered or narrow necked container for storing their drinking water	150/279	53.8% (47.7-59.7)

85.3% had improved drinking water source. 53.8% (47.7-59.7) of households reported to have covered or narrow necked drinking water storage containers.

Table 219: Water Quantity 1: Amount of liters of water used per person per day _Nguenyyiel.

Proportion of households that use:	Number/total	% (95% CI)
≥ 20 lpppd	73/279	26.2% (21.1-31.7)
15 - <20 lpppd	62/279	22.2% (17.5-27.6)
<15 lpppd	144/279	51.6% (45.6-57.6)
An average water usage in lpppd	16.71lpppd	

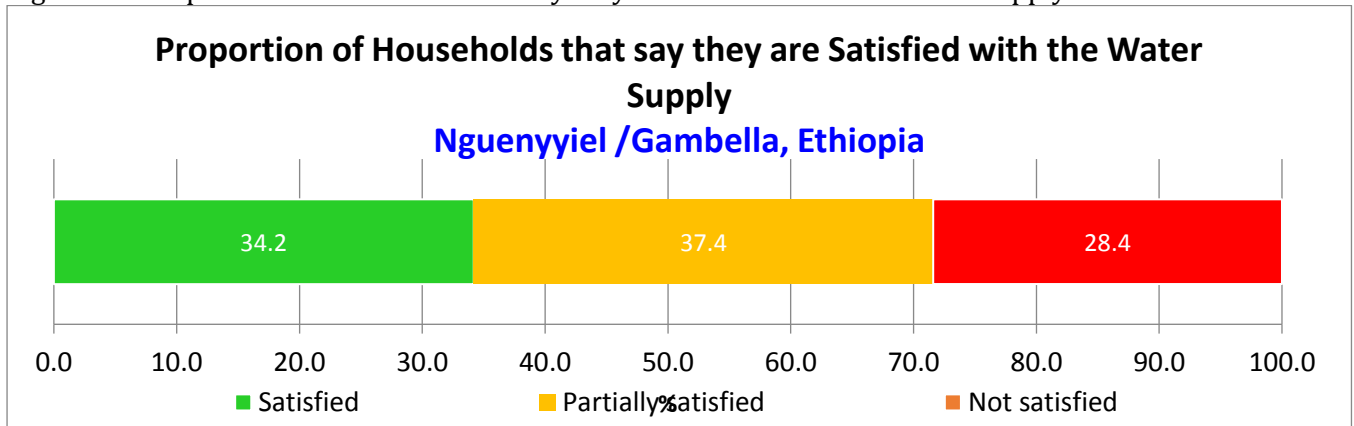
The average water usage was 16.7 lppd, and more than half of households 51.6% (45.6-57.6)] reported that their water utilization was <15lpppd, which was below the minimum sphere standard.

Table 220: Satisfaction with water supply _Nguenyyiel

	Number/total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	95/278	34.2% (28.6-40.7)

Only 34.2% of the sampled household reported that they are satisfied with the drinking water supply. Around 65.8% either were not satisfied or partially satisfied with the drinking water supply whereas 52.9% of the sampled households complained that the water was not satisfied with water supply.

Figure 97: Proportion of households that say they are satisfied with the water supply



Excreta Disposal

Table 221: Safe Excreta disposal_Nguenyiel

	Number/total	% (95% CI)
Proportion of households that use:		
Proportion of households using an improved excreta disposal facility (improved toilet facility, not shared)	1/276	0.4% (0.0-2.0)
Proportion of households using a shared family toilet	21/276	7.6% (4.8-11.4)
Proportion of households using a communal toilet	163/276	59.1% (53.0-64.9)
Proportion of households using an unimproved toilet	91/276	33.0% (27.5-38.9)
The proportion of households with children under three years old that dispose of faeces safely.	96/185	51.9% (44.4-59.3)

Improved excreta disposal facility almost non-existed at 0.4% (0.0-2.0%). 33.0% reported to be using unimproved toilet.

Further analysis showed about 51.9% of households surveyed with children less than three years of age had their last stools disposed into the toilet and other 48.1% had their stools disposed of unsafely.

Figure 98: Proportion of households with children under the age of 3 years whose (last) stools were disposed of safely

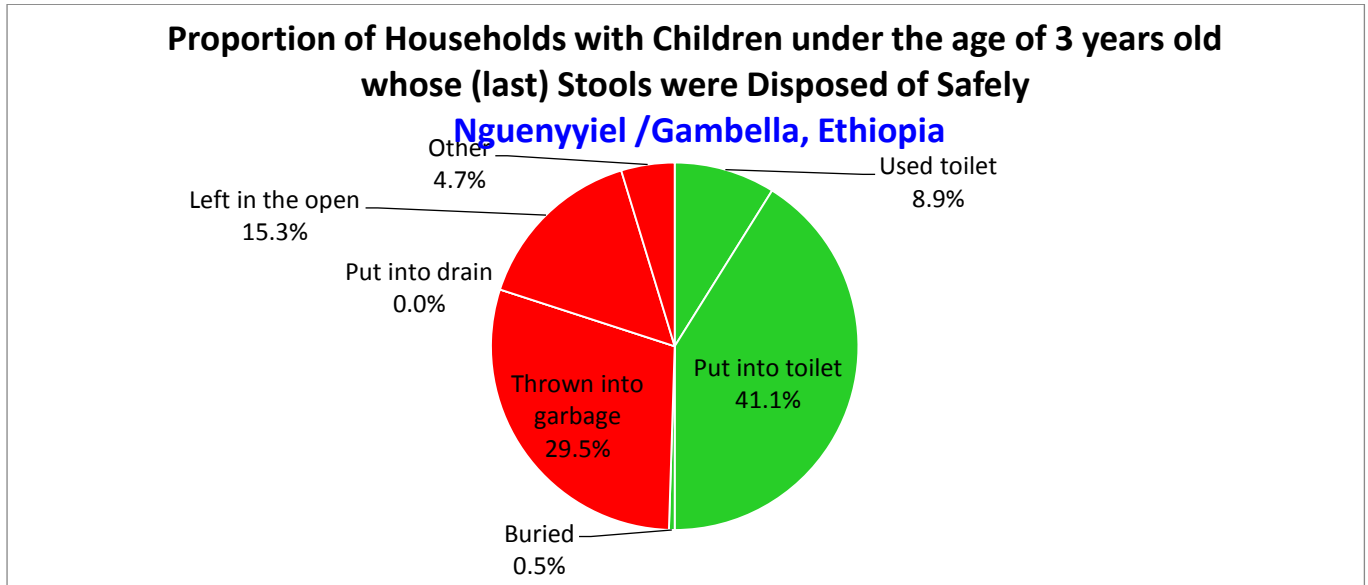
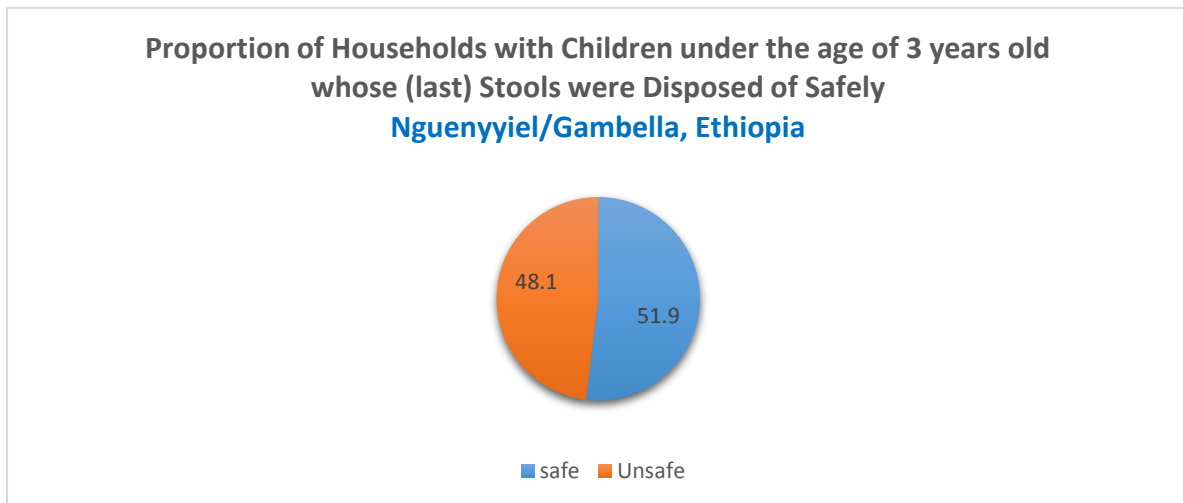


Figure 99: The proportion of households with children under three years old that dispose of faeces safely



Mosquito Net Coverage

Mosquito net ownership

Table 222: Household Mosquito net ownership in Nguennyiel

	Number/total	% (95% CI)
Proportion of households owning at least one mosquito net of any type	50/276	18.1% (13.8-23.2)
Proportion of households owning at least one LLIN	46/276	16.7% (12.5-21.6)

Amongst the surveyed Households only 18.1% own at least one mosquito net of any type and about (16.7%) have LLIN. This was very low and way below the UNHCR standard of mosquito net coverage of >80%.

Figure 100: Household ownership of at least one Mosquito net in Nguennyiel

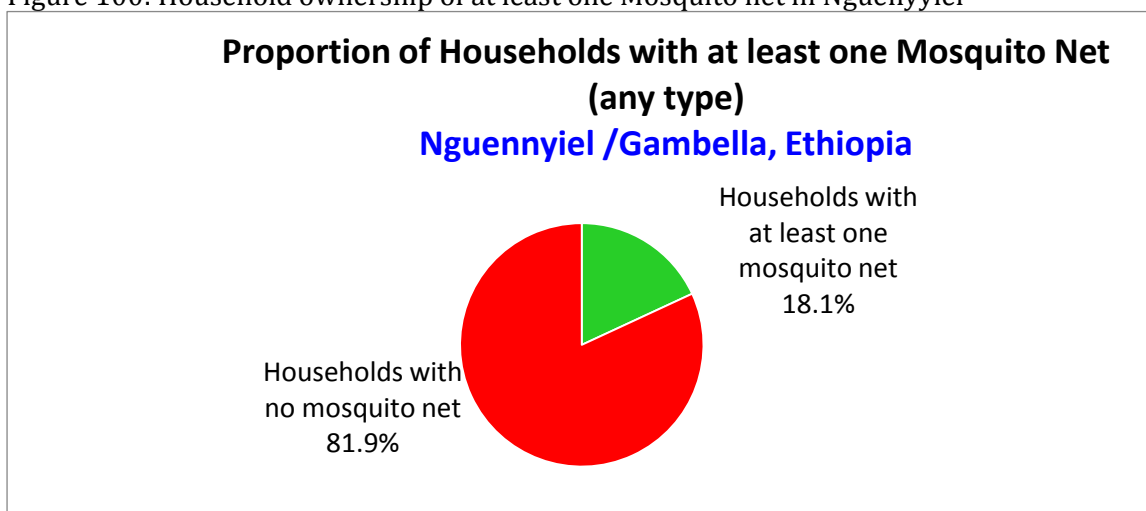


Figure 101: Household ownership of at least one LLIN in Nguennyiel

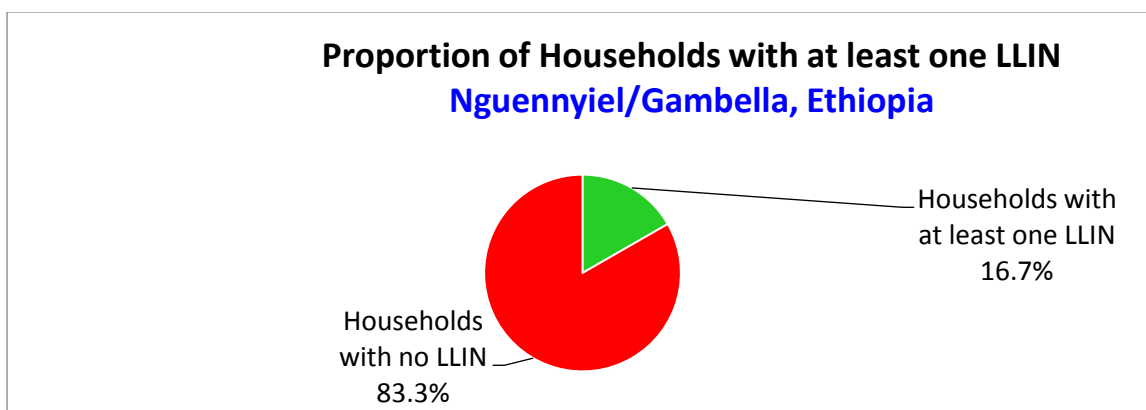


Table 223: Number of nets in Nguennyiel

Average number of LLINs per household	Average number of persons per LLIN
1.5	13.1

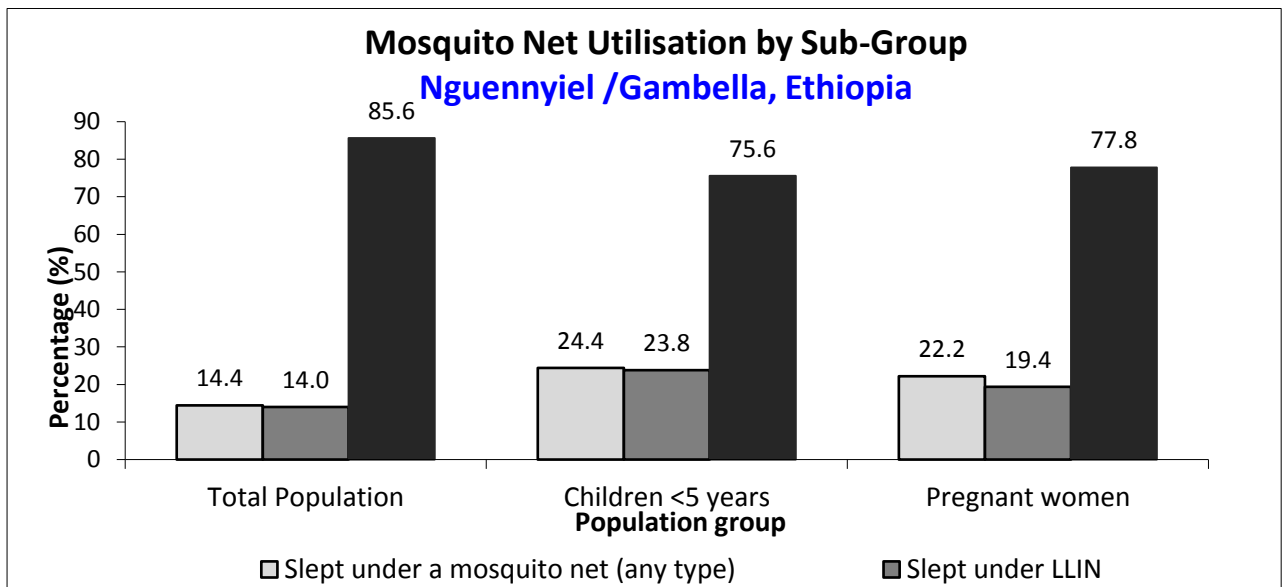
Mosquito net Utilisation

Table 224: Mosquito net Utilisation _Nguennyiel

	Total population (all ages)		0-59 months		Pregnant	
	Total No=1618	%	Total No=377	%	Total No=36	%
Slept under net of any type	233	14.4	92	24.4	8	22.2
Slept under LLIN	227	14.0	90	23.8	7	19.4

Mosquito net utilization (Any type of mosquito net or LLIN) was very low in Nguennyiel camp.

Figure 102: Mosquito Net Utilization by sub-groups_Nguennyiel



RESULTS FROM OKUGO CAMP

Table 225: Demographic characteristics of the study population_Okugo

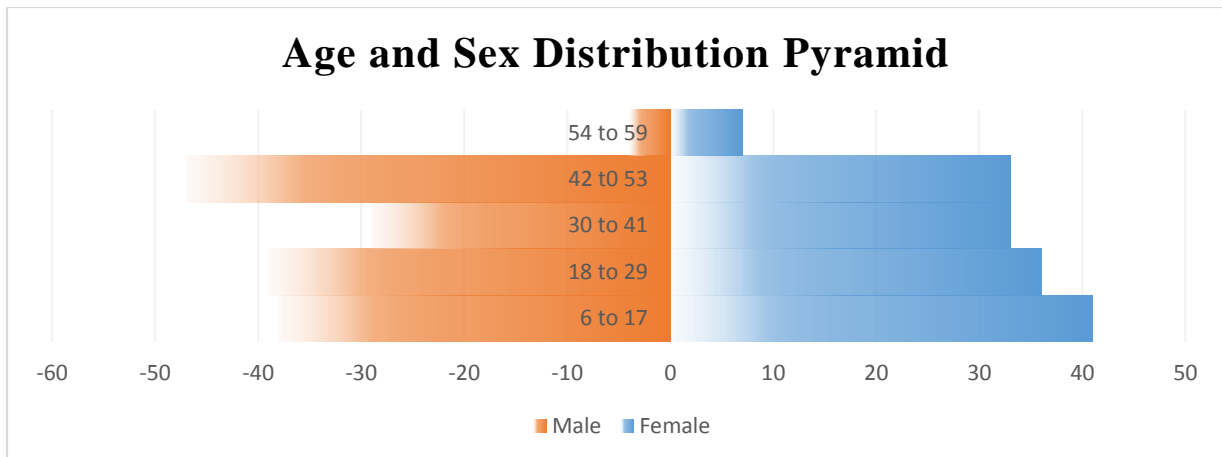
Total population surveyed	1476
Total U5 surveyed	336
Average Household size	4.5
% of children U5	22.8%

Table 15.2: Distribution of age and sex of sample, _Okugo

AGE (mo)	Boys		Girls		Total no.	Ratio Boy: girl
	no.	%	no.	%		
6-17	38	48.1	41	51.9	79	0.9
18-29	39	52.0	36	48.0	75	1.1
30-41	29	46.8	33	53.2	62	0.9
42-53	47	58.8	33	41.3	80	1.4
54-59	4	36.4	7	63.6	11	0.6
Total	157	51.1	150	48.9	307	1.0

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

Figure 103: Population age and sex pyramid, Okugo



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. Results based on NCHS Growth Reference 1977 are presented in annex.

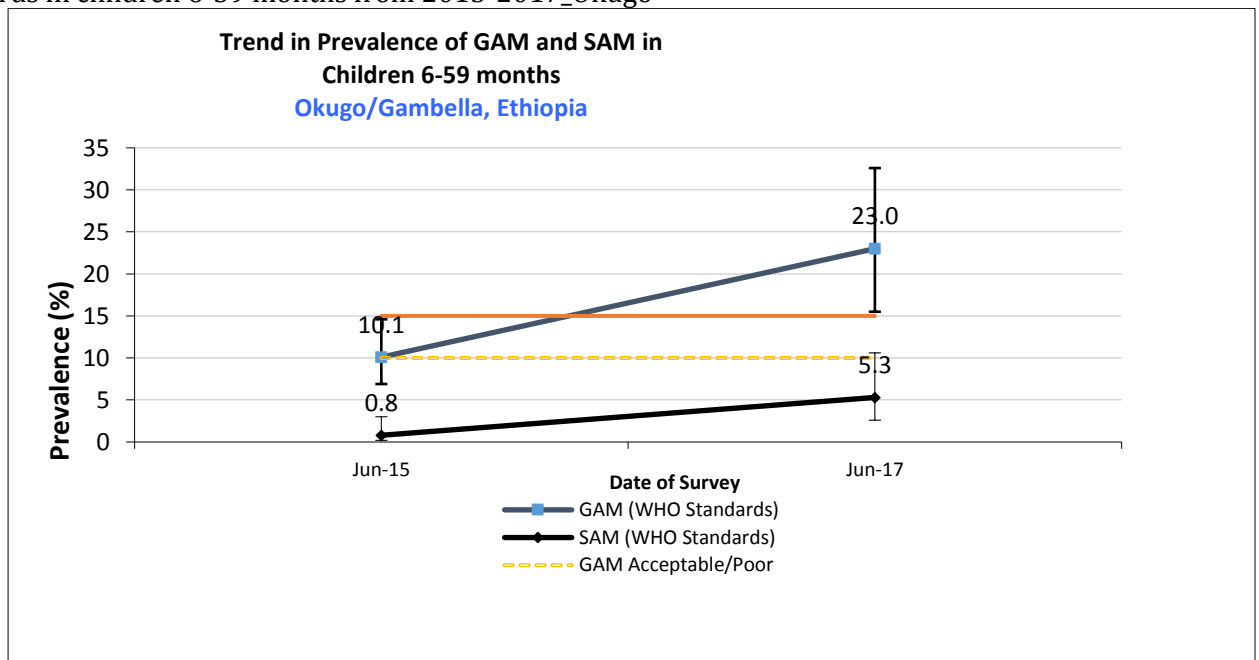
Table 226: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex in _Okugo camp

	All n = 292	Boys n = 152	Girls n = 140
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(68) 23.3 % (18.8 - 28.5 95% C.I.)	(39) 25.7 % (19.4 - 33.1 95% C.I.)	(29) 20.7 % (14.8 - 28.2 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(52) 17.8 % (13.8 - 22.6 95% C.I.)	(29) 19.1 % (13.6 - 26.1 95% C.I.)	(23) 16.4 % (11.2 - 23.4 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(16) 5.5 % (3.4 - 8.7 95% C.I.)	(10) 6.6 % (3.6 - 11.7 95% C.I.)	(6) 4.3 % (2.0 - 9.0 95% C.I.)

*The prevalence of oedema was 0.0 %

The prevalence of GAM was 23.3%, as compared to the 2015 SENS (there was no SENS in 2016), there is significant increase from 10.1% (6.9 - 14.6). SAM also increased significantly from 0.8 (0.2 - 3.0) to 5.5% (3.4 - 8.7). There was no significant difference seen between Boys and Girls on the prevalence of acute malnutrition.

Figure 104: Prevalence of global and severe acute malnutrition based on WHO Growth Standards in children 6-59 months from 2015-2017_Okugo



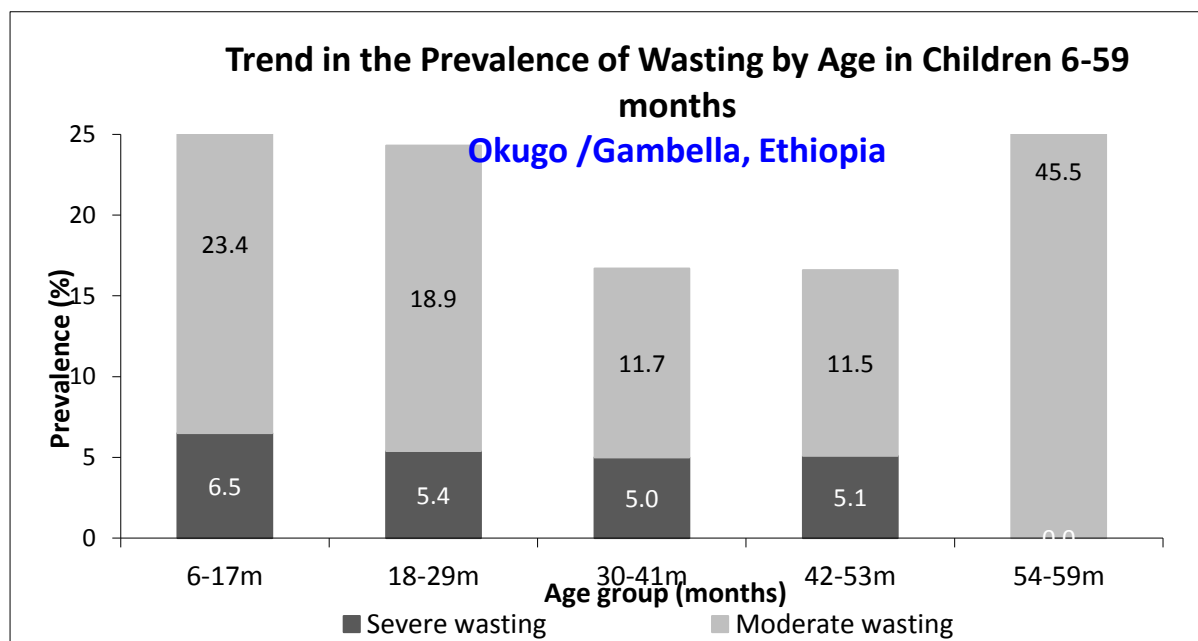
In comparison with the 2015 results 2017 shows significant increase in the prevalence of in GAM.

Table 227: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema_Okugo

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	Age (mo)	Total no.	No.	%
6-17	77	5	6.5	18	23.4	54	70.1	0	0.0
18-29	74	4	5.4	14	18.9	56	75.7	0	0.0
30-41	60	3	5.0	7	11.7	50	83.3	0	0.0
42-53	78	4	5.1	9	11.5	65	83.3	0	0.0
54-59	11	0	0.0	5	45.5	6	54.5	0	0.0
Total	300	16	5.3	53	17.7	231	77.0	0	0.0

The youngest children (6-17 months) are the most affected by severe wasting when compared to other age groups whereas children above 54 months are the most affected group by moderate wasting.

Figure 105: Trends in the prevalence of wasting by age in children 6-59 months_ Okugo



Severe acute malnutrition rate was highest in youngest age group and the oldest age group were the highest affected by moderate acute malnutrition.

Table 228: Distribution of severe acute malnutrition and oedema based on weight-for-height z-scores_Okugo

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 19 (6.2 %)	Not severely malnourished No. 287 (93.8 %)

All the cases of SAM were due to wasting and no oedema was detected.

Figure 106: Distribution of weight-for-height z-scores (based on WHO Growth Standards), Okugo.

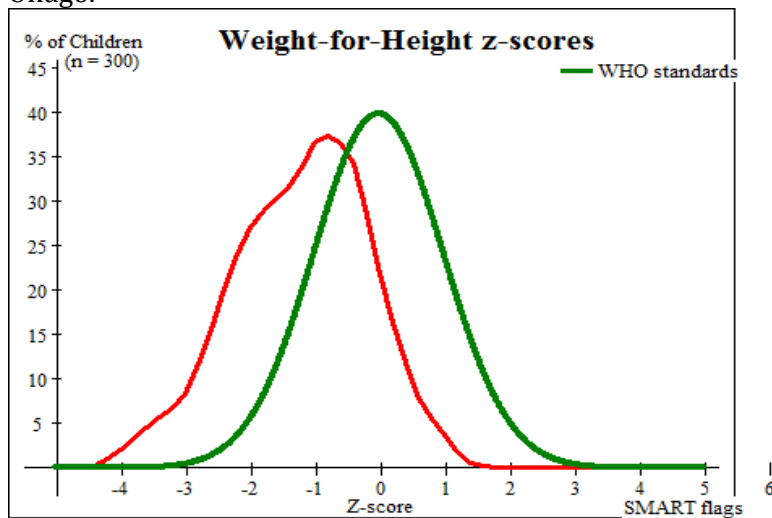


Figure 91 was a comparison of the surveyed and reference weight-for-height z-score (WHZ) distribution. The survey distribution (in red) followed a normal distribution and was shifted to the left of the WHO reference, showing an average lower z-scores, and therefore high malnutrition.

Figure 107: Prevalence of acute malnutrition based on MUAC cut offs (and/or oedema) and by sex_Okugo

	All n = 297	Boys n = 154	Girls n = 143
Prevalence of global malnutrition (< 125 mm and/or oedema)	(14) 4.7 % (2.8 - 7.8 95% C.I.)	(7) 4.5 % (2.2 - 9.1 95% C.I.)	(7) 4.9 % (2.4 - 9.8 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(12) 4.0 % (2.3 - 6.9 95% C.I.)	(6) 3.9 % (1.8 - 8.2 95% C.I.)	(6) 4.2 % (1.9 - 8.9 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(2) 0.7 % (0.2 - 2.4 95% C.I.)	(1) 0.6 % (0.1 - 3.6 95% C.I.)	(1) 0.7 % (0.1 - 3.9 95% C.I.)

The prevalence of GAM as measured by MUAC was 4.9% (2.8-7.8), which was much lower than the WHZ prevalence mainly because of the limitation of sensitivity of MUAC which has shown to only identify 20 – 30% of acute malnourished children.

Table 229: Prevalence of acute malnutrition by age, based on MUAC cut offs and/or oedema Okugo.

Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	79	1	1.3	9	11.4	69	87.3	0	0.0
18-29	75	0	0.0	3	4.0	72	96.0	0	0.0
30-41	62	1	1.6	0	0.0	61	98.4	0	0.0
42-53	80	1	1.3	0	0.0	79	98.8	0	0.0
54-59	11	0	0.0	0	0.0	11	100.0	0	0.0
Total	307	3	1.0	12	3.9	292	95.1	0	0.0

Table 230: Prevalence of underweight based on weight-for-age z-scores by sex_Okugo

	All n = 291	Boys n = 152	Girls n = 139
Prevalence of underweight (<-2 z-score)	(55) 18.9 % (14.8 - 23.8 95% C.I.)	(35) 23.0 % (17.0 - 30.3 95% C.I.)	(20) 14.4 % (9.5 - 21.2 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(41) 14.1 % (10.6 - 18.6 95% C.I.)	(28) 18.4 % (13.1 - 25.3 95% C.I.)	(13) 9.4 % (5.5 - 15.3 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(14) 4.8 % (2.9 - 7.9 95% C.I.)	(7) 4.6 % (2.2 - 9.2 95% C.I.)	(7) 5.0 % (2.5 - 10.0 95% C.I.)

The prevalence of wasting was 18.9 % (14.8 –23.8 95% C.I.) were underweight, and 4.8% (2.9 – 7.9) were severely underweight. The results show slight increase in trend of underweight in comparison to 2015 survey.

Table 231: Prevalence of underweight by age, based on weight-for-age z-scores_Okugo

Age (mo)	Total no.	Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	75	5	6.7	14	18.7	56	74.7	0	0.0
18-29	74	6	8.1	13	17.6	55	74.3	0	0.0
30-41	61	3	4.9	8	13.1	50	82.0	0	0.0
42-53	79	2	2.5	5	6.3	72	91.1	0	0.0
54-59	11	0	0.0	1	9.1	10	90.9	0	0.0
Total	300	16	5.3	41	13.7	243	81.0	0	0.0

Children below 30 months are affected by both severe and moderate wasting when compared to the older age groups.

Table 232: Prevalence of stunting based on height-for-age z-scores and by sex_Okugo

	All n = 278	Boys n = 146	Girls n = 132
Prevalence of stunting (<-2 z-score)	(35) 12.6 % (9.2 - 17.0 95% C.I.)	(23) 15.8 % (10.7 - 22.5 95% C.I.)	(12) 9.1 % (5.3 - 15.2 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(31) 11.2 % (8.0 - 15.4 95% C.I.)	(19) 13.0 % (8.5 - 19.4 95% C.I.)	(12) 9.1 % (5.3 - 15.2 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(4) 1.4 % (0.6 - 3.6 95% C.I.)	(4) 2.7 % (1.1 - 6.8 95% C.I.)	(0) 0.0 % (0.0 - 2.8 95% C.I.)

The prevalence of stunting was 12.6 % (9.2 -17.0) which was a low prevalence of chronic malnutrition which was commonly observed in South Sudanese populations.

Table 233: Prevalence of stunting by age based on height-for-age z-score_Okugo

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
		No.	%	No.	%	Total no.	No.
6-17	74	2	2.7	6	8.1	66	89.2
18-29	65	1	1.5	7	10.8	57	87.7
30-41	59	0	0.0	13	22.0	46	78.0
42-53	77	1	1.3	5	6.5	71	92.2
54-59	11	0	0.0	1	9.1	10	90.9
Total	286	4	1.4	32	11.2	250	87.4

Children under 30 months of age appear to be more affected by stunting than the older ones and particularly those 30-41 months were more affected by both forms of stunting.

Figure 108: Trends in the prevalence of stunting by age in children 6-59 months_Okugo

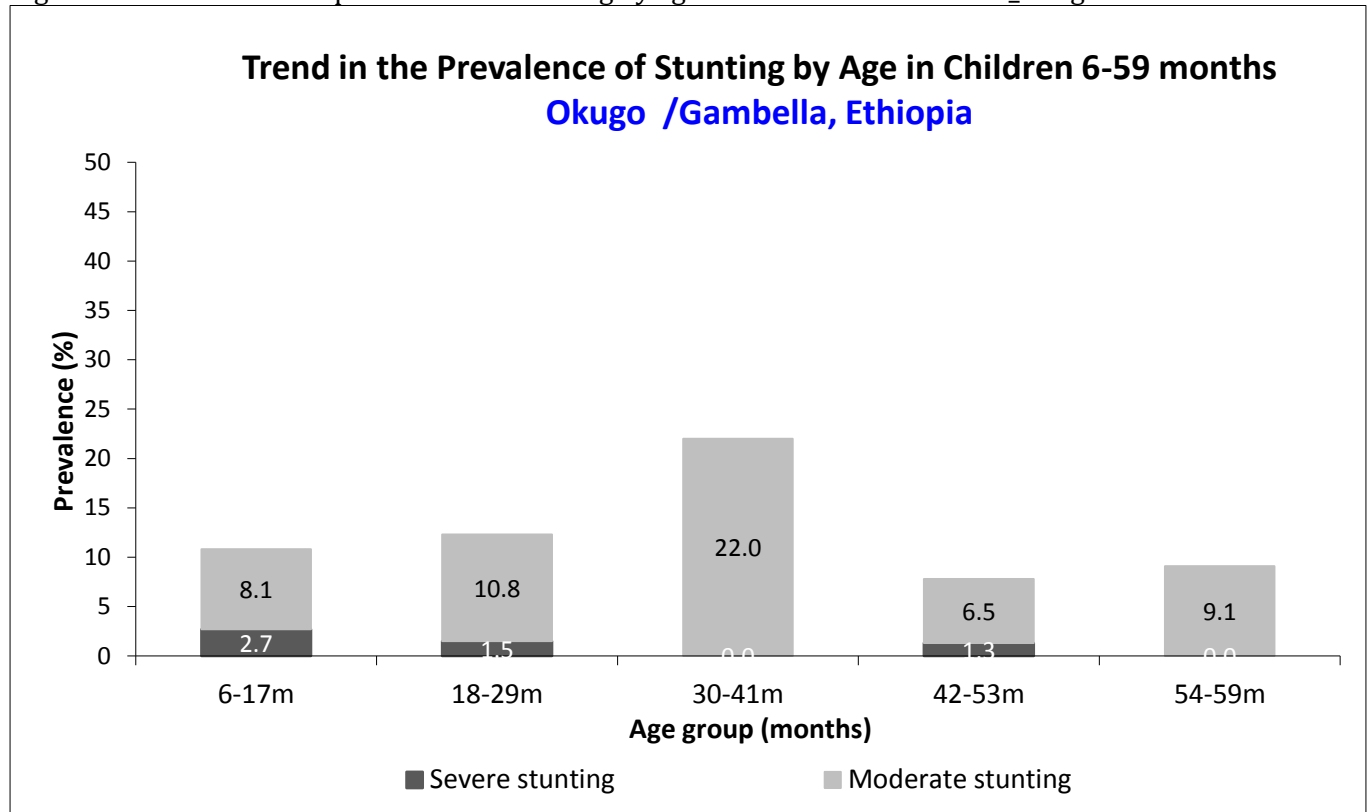
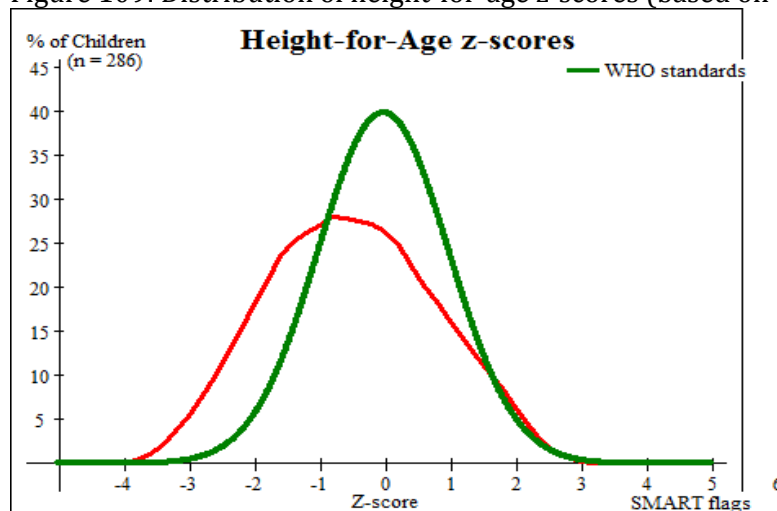


Figure 109: Distribution of height-for-age z-scores (based on WHO Growth Standards)



The height-for-age distribution for the survey (red) was compared to the WHO distribution (green) in Figure 5. The distribution followed a typical bell shape, and was also shifted to the left of the reference, indicating an average lower mean z-score for the survey sample.

Table 15.12: Mean z-scores, Design Effects and excluded subjects_Okugo

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	300	-1.22±1.02	1.23	1	6
Weight-for-Age	300	-1.11±1.15	3.73	1	6
Height-for-Age	286	-0.51±1.25	1.94	1	20

* contains for WHZ and WAZ the children with oedema.

Mortality results

Table 234: Mortality rates_Okugo

Crude Mortality Rate (CMR) total No. of death /10,000/day	0.23 (0.08 -0.66)
Under 5 Mortality (U5MR) total No. of death /10,000/day	0.00 (0.00 -1.30)

CMR and U5MR are within the emergency threshold in Okugo refugee camp.

Feeding programme coverage results

Table 235: 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)	5/55	9.1% (3.0-20.0)
Therapeutic feeding programme coverage (WHZ < - 3 OR MUAC < 115mm)	1/18	5.6% (0.1-27.3)
Blanket Supplementary (WHZ >= - 2 OR MUAC >= 125)	89/300	29.7% (24.6-35.2)

The estimated programme coverage for the selective feeding programmes (SFP and OTP) ARE were by far lower than expected standards for refugee settings (>90%). This coverage shows a decrease when compared to the 2015 results.

Blanket supplementary feeding programme in Okugo, unlike in other camps covered only children 6-23 months. This was because prevalence of GAM in 2015 was <10%, and thus, BSFP recommended to the only young children. The coverage however was very low and there is need to strengthen community mobilization to ensure all legible children are enrolled. With the twofold increase in GAM this year, there is need to target all children 6-59 months.

Measles vaccination coverage results

Table 236: Measles vaccination coverage for children aged 9-59 months_Okugo

The measles coverage with card or recall fall short to meet the target (>95%) at 88.5% (84.3-

	Measles(with card) n=296	Measles (with card <u>or</u> confirmation from mother)n=296
YES	9.1% (6.1-12.9)	88.5% (84.3-91.9)

91.9), however there was significant improvement from 48.9% to 88.5% by from the past year 2015. By card was very low, with 9.1%, documentation needs to be improved at the health facility.

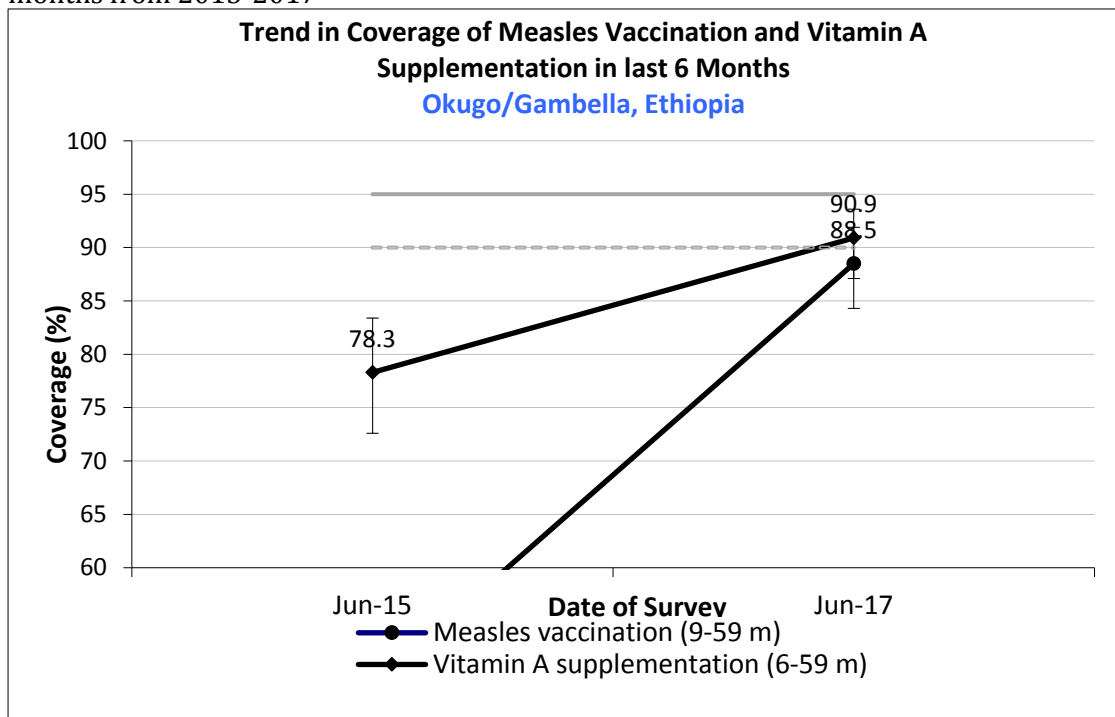
Vitamin A supplementation coverage results

Table 237: Vitamin A supplementation for children aged 6-59 months within past 6 months_Okugo

	Vitamin A capsule (with card) n=307	Vitamin A capsule (with card <u>or</u> confirmation from mother) n=307
YES	1.9% (0.9-4.2)	90.9% (87.1-93.6)

Vitamin A coverage by card or confirmation from the mother was 90.9% (87.1-93.6) which is in with SPHERE standards of > 90%. Comparison to the 2015 results it shows significant increase in the vitamin A supplementation within the past six months. By card was very low and this needs to be improved.

Figure 110: Coverage of measles vaccination and vitamin A supplementation in children 6-59 months from 2015-2017



In comparison to the 2015 results there was a significant increase in the measles vaccination and vitamin A supplementation among children 6-59 months.

Diarrhoea results

Table 238: Period prevalence of diarrhoea_Okugo

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	81/304	26.6% (22.0-31.9)

26.6% (22.0-31.9) of the surveyed children reported to have had diarrhoea in the 2 weeks prior to the survey. This shows that percentage of having Diarrhoea in the last two weeks has increased significantly when compared to 2015 survey from 10%.

Anaemia results 6- 59 months

Table 239: Prevalence of anaemia and haemoglobin concentration in children 6-59 months of age_Okugo

Anaemia in Children 6-59 months	All n =307
Total Anaemia (Hb<11.0 g/dL)	(n=174) 56.7% (51.1 - 62.1)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(n=73) 23.8% (19.4 - 28.8
Moderate Anaemia (7.0-9.9 g/dL)	(n =94) 30.6% (25.7 - 36.0)
Severe Anaemia (<7.0 g/dL)	(n =7) 2.3% (1.1 - 4.6)
Mean Hb (g/dL)	10.51 g/dL and (1.53SD) [min 4.5 to max 14.2]

The prevalence of anaemia was 56.7% (51.1 - 62.1) among children aged 6-59 months Comparison with 2015. There was a significant increase in comparison with the 2015 SENS from 37.5%.

Figure 111: Anaemia categories in children 6-59 months from 2015-2017_Okugo

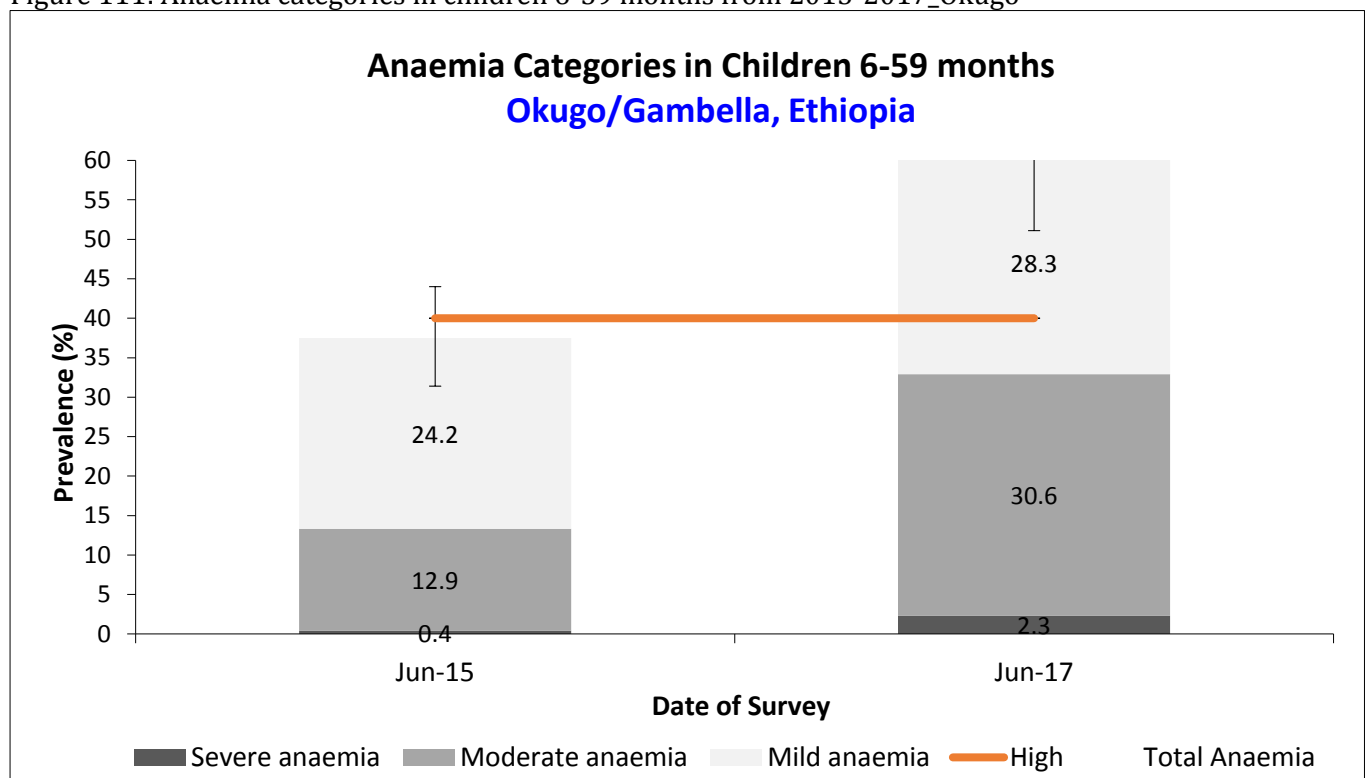


Figure 112: Mean Haemoglobin concentration in children 6-59 months from 2015-2017

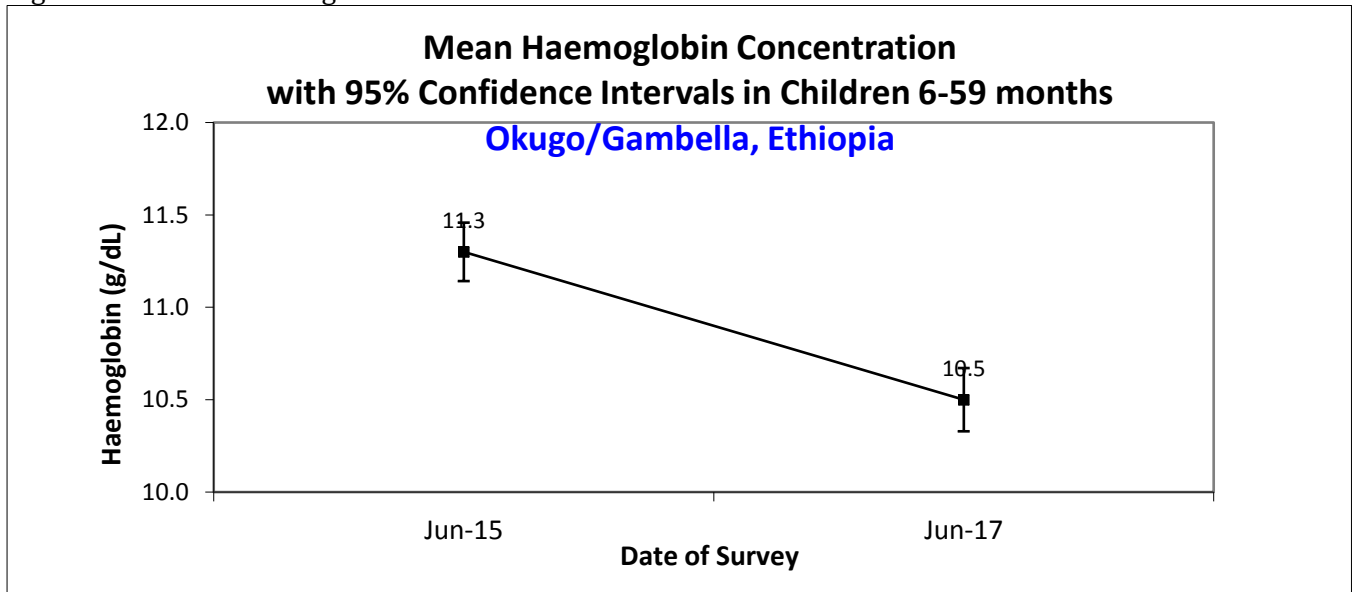


Table 240: Prevalence of anaemia by age_Okugo

Age group	No.	Severe Anaemia (<7.0 g/dL)		Moderate Anaemia (7.0-9.9 g/dL)		Mild Anaemia (Hb 10.0-10.9 g/dL)		Total Anaemia (Hb<11.0 g/dL)		Normal (Hb≥11.0 g/dL)	
		no	%	no	%	no	%	no	%	no	%
6-23	106	1	0.9 (0.0-5.1)	48	45.3 (35.6-55.2)	31	29.2 (20.8-38.9)	80	75.5 (66.2-83.3)	26	24.5 (16.7-33.8)
24-35	61	3	4.9 (1.0-13.7)	16	26.2 (15.8-39.1)	17	27.9 (17.1-40.1)	36	59.0 (45.7-71.4)	25	41.0 (28.6-54.3)
36-59	140	3	2.1 (0.4-6.1)	30	21.4% (14.9-24.9)	25	17.9 (11.9-25.2)	58	41.4 (33.2-50.1)	82	58.6 (49.9-66.8)
Total	307	7	2.3 (1.0-4.8)	94	30.6 (25.6-36.2)	73	23.8 (19.2-29.0)	174	56.7 (50.9-62.3)	133	43.3 (37.7-49.1)

The prevalence of anaemia by age group shows children 6-23 months are most affected with anaemia at 75.5% (66.2-83.3%) and was the highest when compared to all the other refugee camps in Gambella.

Children 0-23 months

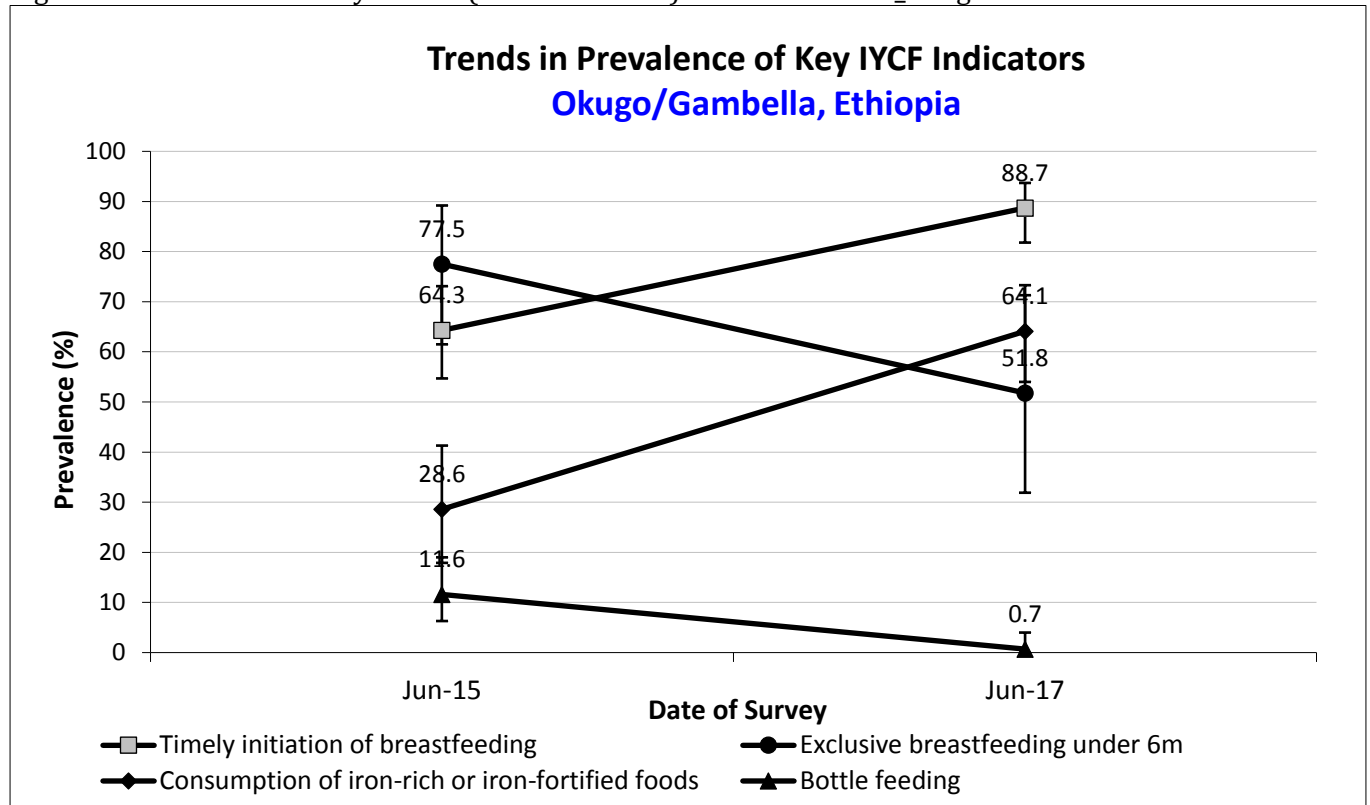
Table 241: Prevalence of Infant and Young Child Feeding Practices Indicators

Indicator	Age range	No./ total	Prevalence (%) & 95% CI
Timely initiation of breastfeeding	0-23 months	110/124	88.7% (81.8 – 93.7)
Exclusive breastfeeding under 6 months	0-5 months	14/27	51.8% (31.9 – 71.3)
Continued breastfeeding at 1 year	12-15 months	38/39	97.4% (86.5 – 99.9)
Continued breastfeeding at 2 years	20-23 months	15/15	100%
Introduction of solid, semi-solid or soft foods	6-8 months	6/11	54.5% (23.4 – 83.3)
Consumption of iron-rich or iron-fortified foods	6-23 months	66/103	64.1% (54.0 – 73.3)
Bottle feeding	0-23 months	1/134	0.7% (0.0 – 4.0)

Note that when IYCF indicators are collected in nutritional surveys based on anthropometric sample of children aged 0-59 months, it was 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.

The IYCF indicator results above 88.7% of children under 2 years were initiated to breastfeeding within one hour of birth and only about half (51.8%) of infants and young children reported to be exclusively breastfed in the surveyed households. 97.4 % of the children continued breastfeeding at 1 year, whilst 100% were reported that they have continued breastfeeding at 2 years. More than half (64.1%) of the surveyed children consumed Iron-rich or iron fortified foods, whereas about 54% of infants between 6-8 months have been reported that they have been started complementary feeding. The proportion of children who were bottle fed the day before the survey were 0.7% (0.0 – 4.0, 95% C.I).

Figure 113: Nutrition survey results (IYCF indicators) from 2015-2017_Okugo



Prevalence of intake ANALYSIS

Infant formula

Table 15.21: Infant formula intake in children aged 0-23 months, Okugo

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	1/134	0.75% (0.0-4.1%)

Table 15.22: CSB intake in children aged 6-23 months_Okugo

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive FBF	33/104	31.7% (22.9-41.6%)

Table 15.23: CSB ++ intake in children aged 6-23 months_Okugo

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB++	48/106	45.3% (35.6-55.3%)

Women 15-49 years

Table 242: Women physiological status and age_Okugo

Physiological status	Number/total	% of sample
Non-pregnant	153/162	94.4%, (89.7-97.4%)
Pregnant	9/162	5.6%, (2.6-10.3%)
Mean age (range)	26.3years Range: 15- 48 years	

Of the sampled women aged 15-49 years in the survey, 5.6% were pregnant. The mean age of women was 26.3 years.

Anaemia

Table 243: Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 years) _Okugo

Anaemia in non-pregnant women of reproductive age (15-49 years)	All (95% CI) n = 150
Total Anaemia (<12.0 g/dL)	(43) 28.7% (21.6 – 36.6)
Mild Anaemia (11.0-11.9 g/dL)	(24) 16.0% (10.5 – 22.9)
Moderate Anaemia (8.0-10.9 g/dL)	(16) 10.7% (6.2 – 16.7)
Severe Anaemia (<8.0 g/dL)	(3) 2.0% (0.4 – 5.7)
Mean Hb (g/dL)	12.5 g/dL and (1.64SD) [min 5.2 to max 16.1 g/dL]

The prevalence of anaemia among non-pregnant women was 28.7% (21.6 – 36.6), 95% C.I), which was below the critical threshold (>40%).

Figure 114: Anaemia categories in women of reproductive age (non-pregnant) from 2015-2017

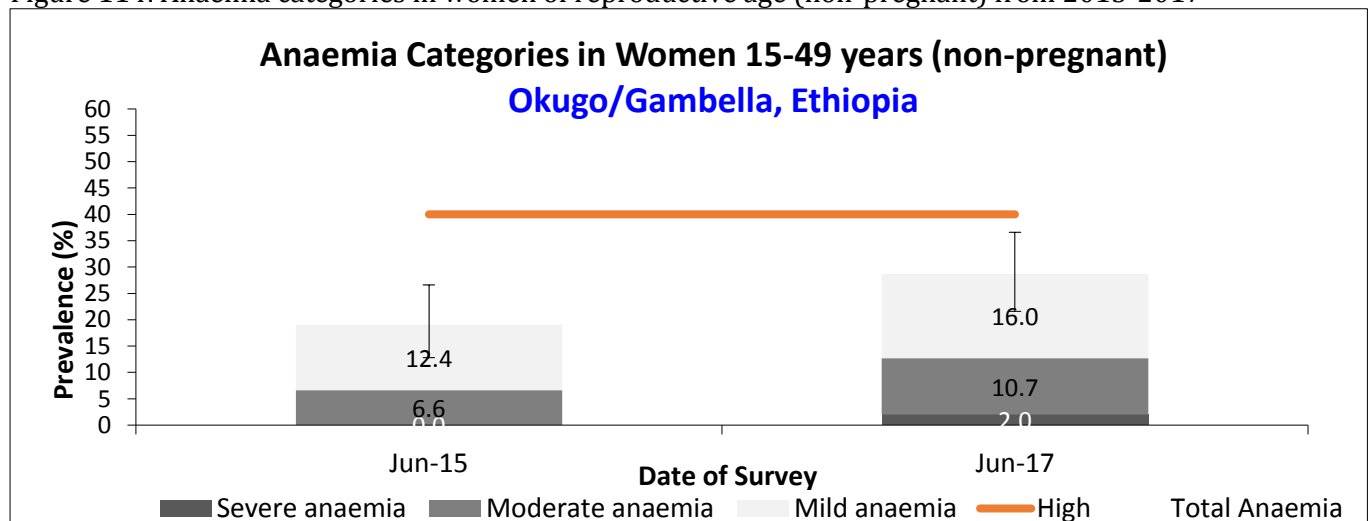


Figure 115: Mean haemoglobin concentration in women of reproductive age (non-pregnant) from 2015-2017

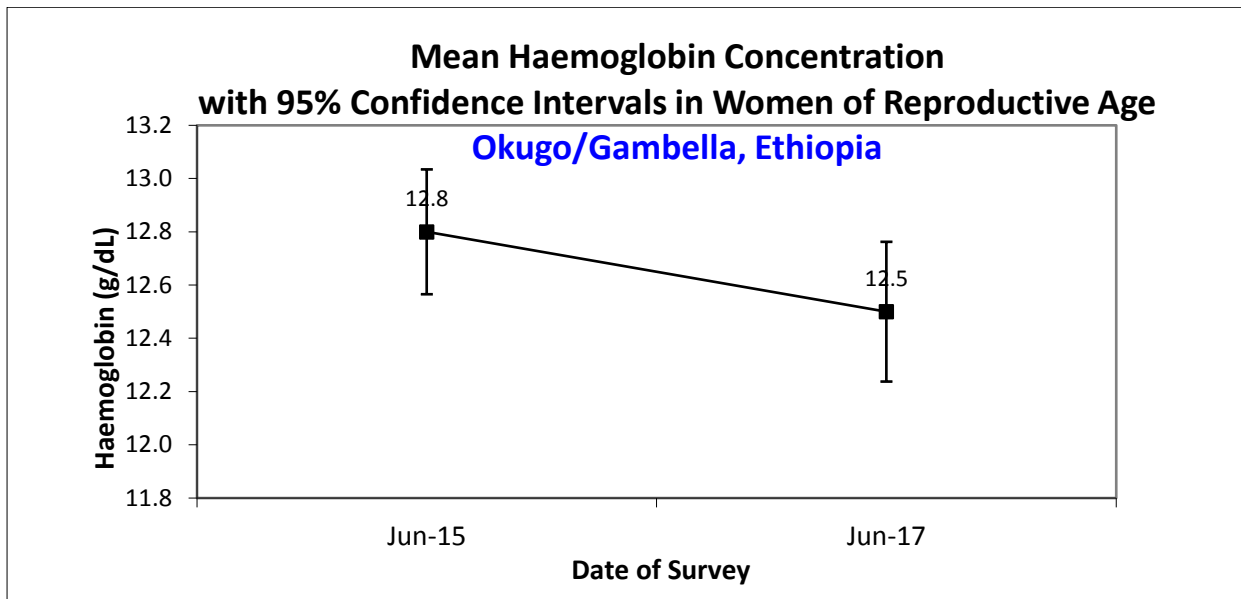


Table 244: ANC enrolment and iron-folic acid pills coverage among pregnant women (15-49 years)

	Number /total	% (95% CI)
Currently enrolled in ANC programme	5/9	55.6% (21.2-86.3)
Currently receiving iron-folic acid pills	5/9	55.6% (21.2-86.3)

55.6% of pregnant women enrolled in ANC and all of them were receiving iron-folic pills

Food security

Ration card coverage

Table 245: Ration card coverage_Okugo

	Number/total	% (95% CI)
Proportion of households with a ration card	180/181	99.5% (97.0-99.9)

Almost all 99.5% of the surveyed households have a ration cards.

Table 246: Reported duration of general food ration 1

Average number of days the food ration lasts (Standard deviation or 95% CI)	Average duration (%) in relation to the theoretical duration of the ration*
16.7DAYS OUT OF 30 DAYS	55.7%

The average duration of the food ration was 16.7 days, this covers only 56% of the intended food cycle of 30 days. This could be attributed to sharing of food at the households with new arrivals that came to the camp just before the survey.

Table 247: Reported duration of general food ration 2_Okugo

	Number/total	% (95% CI)
Proportion of households reporting that the food ration lasts the entire duration of the cycle	22/180	12.2% (7.8-17.9%)
Proportion of households reporting that the food ration lasted:		
≤75% of the cycle (30 days)	141/180	78.3% (71.6-84.1%)
>75% of the cycle (30 days)	39/180	21.7% (15.9-28.4%)

Negative coping strategies results

Table 248: Coping strategies used by the surveyed population over the past month for Okugo

	Number/total	% (95% CI)
Proportion of households reporting using the following coping strategies over the past month*:		
Borrowed cash, food or other items <i>without interest</i>	67/181	37% (30.0-44.5%)
Sold any assets (furniture, seed stocks, tools, other NFI, livestock etc.)	0	0%
Requested increase remittances or gifts as compared to normal	1/181	0.6%(0.0-3.0)
Reduced the quantity and/or frequency of meals	106/181	58.6%(51.0-65.8)
Begged	24/108	13.3%(8.7-19.1)
Engaged in potentially risky or harmful activities (list activities)	13/181	7.2% (3.9-11.9)
Proportion of households reporting using none of the coping strategies over the past month	60/180	33.3%(26.5-40.7)

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

The most commonly used coping strategies reported to be used to fill the food gap was reducing the quantity and/or frequency of meals and borrowing of food, cash and other items.

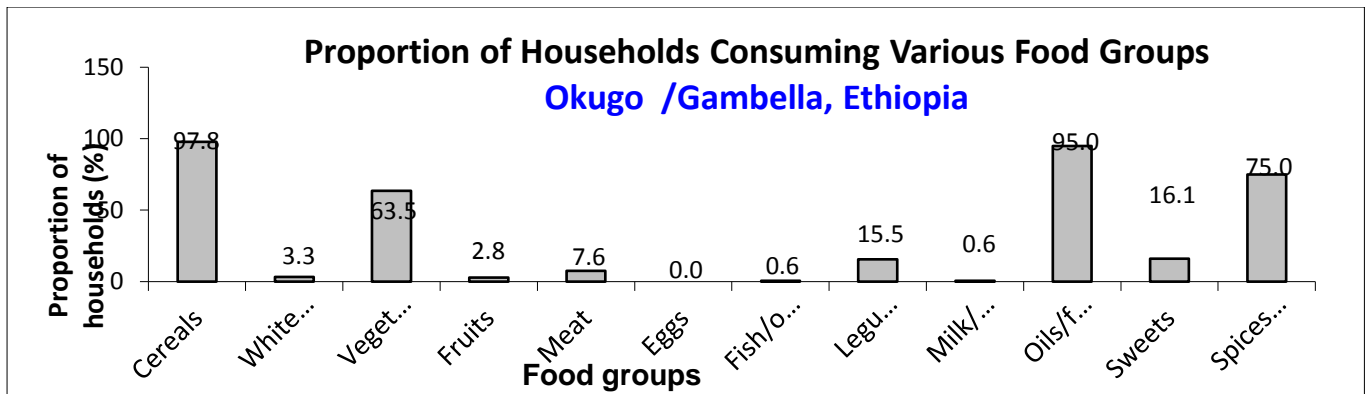
Household dietary diversity results

The average HDDS was 3.74.

Table 249: Average HDDS

Average HDDS	3.74 (SD 1.24)
---------------------	-------------------

Figure 116: Proportion of households consuming different food groups within last 24 hours



Most common items reported to be consumed were cereals (97.9%), oils/fats (88.1), spices and condiments (75.0%) and vegetables (63.5%).Fruits, meat and eggs consumption was very low.

Table 250: Consumption of food aid commodities and micronutrient rich foods by household's Okugo

	Number/total	% (95% CI)
Proportion of households <i>not</i> consuming any vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	62/181	34.3% (27.4-41.7%)
Proportion of households consuming either a plant or animal source of vitamin A	75/181	41.7% (34.4-49.2%)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	5/181	2.8% (0.9-6.3%)

WASH

Water Quality and Quantity

Table 251: Water Quality_Okugo

	Number/total	% (95% CI)
Proportion of households using an improved drinking water source	181/181	100%
Proportion of households that use a covered or narrow necked container for storing their drinking water	112/181	61.9% (54.4-68.9)

All the surveyed households reported to have access to improved drinking water source.61.9% (54.4-68.9) of households reported to have covered or narrow necked drinking water storage containers.

Table 252: Water Quantity 1: Amount of liters of water used per person per day_Okugo

Proportion of households that use:	Number/total	% (95% CI)
≥ 20 lpppd	55/180	30.6% (23.9-37.8)
15 - <20 lpppd	26/180	14.4% (9.6-20.4)
<15 lpppd	99/180	55% (47.4-62.4)
An average water usage in lpppd	16.5lpppd	

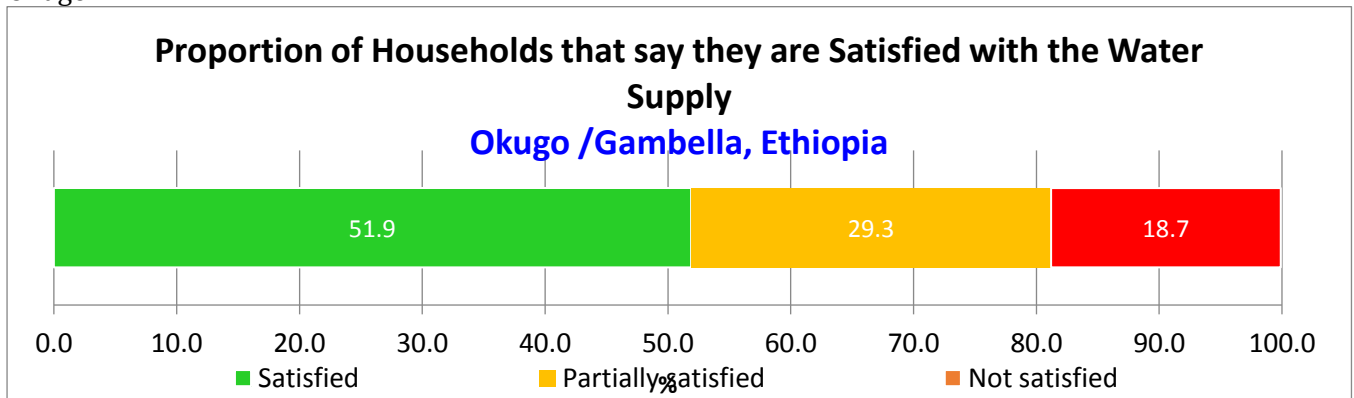
The average water usage was 16.5 lppd, More than half of households 55% (47.4-62.4 reported that their water utilization was <15lppd, which was below the minimum sphere standard.

Table 253: Satisfaction with water supply for Okugo

	Number/total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	94/181	51.9% (44.4-59.4)

Only 51.9% of the sampled household reported that they are satisfied with the drinking water supply. Around 48.1% either were not satisfied or partially satisfied with the drinking water whereas 52.8% of the sampled households complain that the water was not enough and about 22.6% long waiting queue.

Figure 117: Proportion of households that say they are satisfied with the water supply for Okugo.



Excreta disposal.

Table 254: Safe Excreta disposa in Okugo

	Number/total	% (95% CI)
Proportion of households that use:		
Proportion of households using an improved excreta disposal facility (improved toilet facility, not shared)	68/181	37.6% (30.5-45.1)
Proportion of households using a shared family toilet	6/181	3.3% (1.2-7.1)
Proportion of households using a communal toilet	26/181	14.4% (9.6-20.3)
Proportion of households using an unimproved toilet	81/181	44.8% (37.4-52.3)
The proportion of households with children under three years old that dispose of faeces safely.	47/93	50.5% (40.0-61.1)

Coverage of improved excreta disposal facility was low at 37.6% (30.5-45.1%) with 44.8% using an unimproved toilet facilities.

Further analysis showed that 50.5% of households surveyed with children less than three years of age had their last stools disposed safely and other 49.5% had their stools disposed of unsafely.

Figure 118: Proportion of households with children under the age of 3 years whose (last) stools were disposed of safely_Okugo

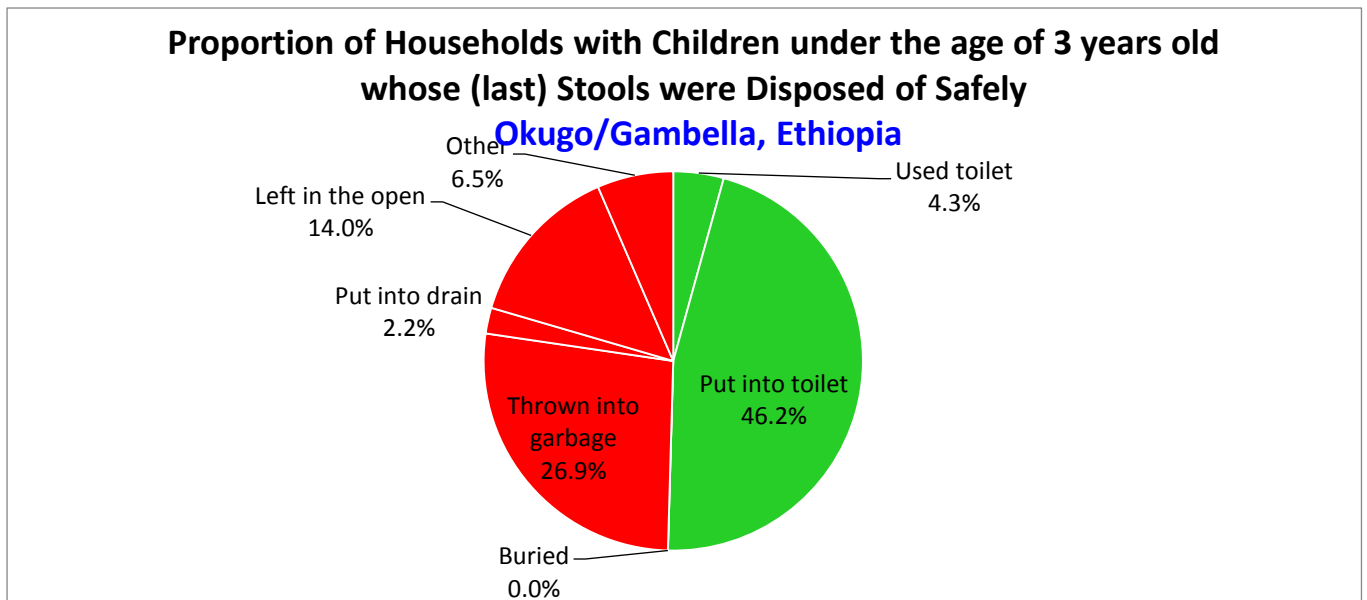
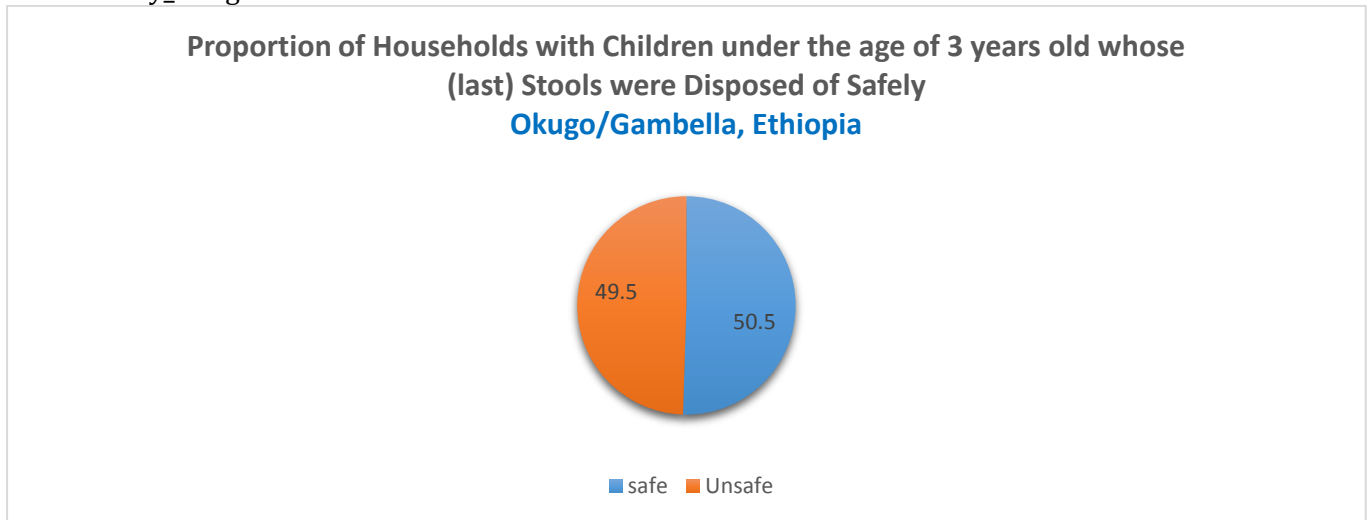


Figure 119: The proportion of households with children under three years old that dispose of faeces safely_Okugo



Mosquito Net Coverage

Mosquito net ownership

Table 255: Household Mosquito net ownership_Okugo

	Number/total	% (95% CI)
Proportion of households owning at least one mosquito net of any type	88/183	48.1% (40.6-55.6)
Proportion of households owning at least one LLIN	86/183	47.0% (39.6-54.5)

Amongst the surveyed households 48.1% of them own at least one mosquito net of any type and 47% have LLIN.

Figure 120: Household ownership of at least one Mosquito net_Okugo

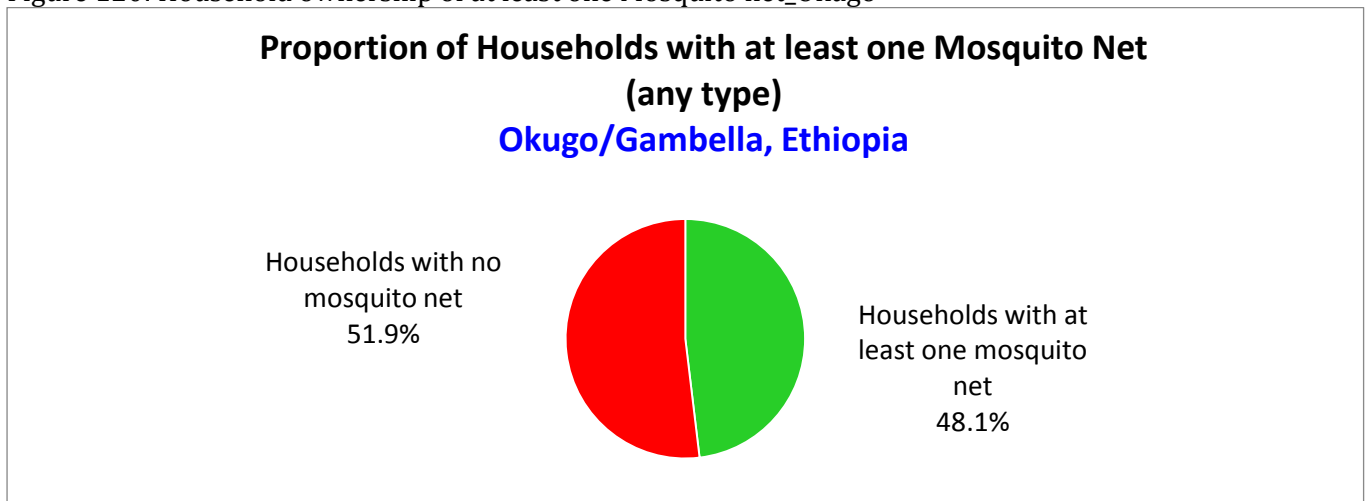


Figure 121: Household ownership of at least one LLIN

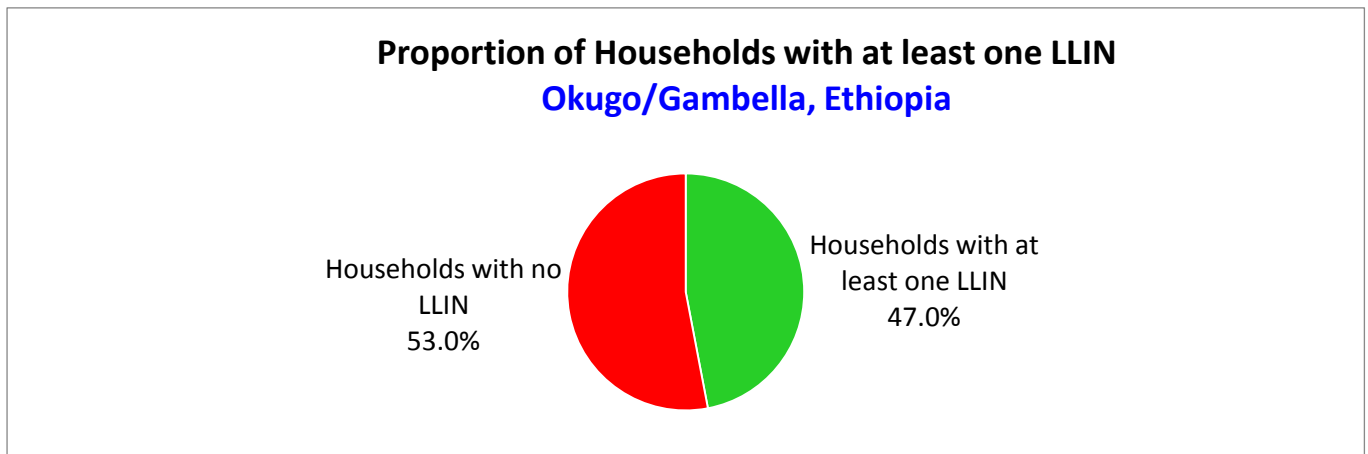
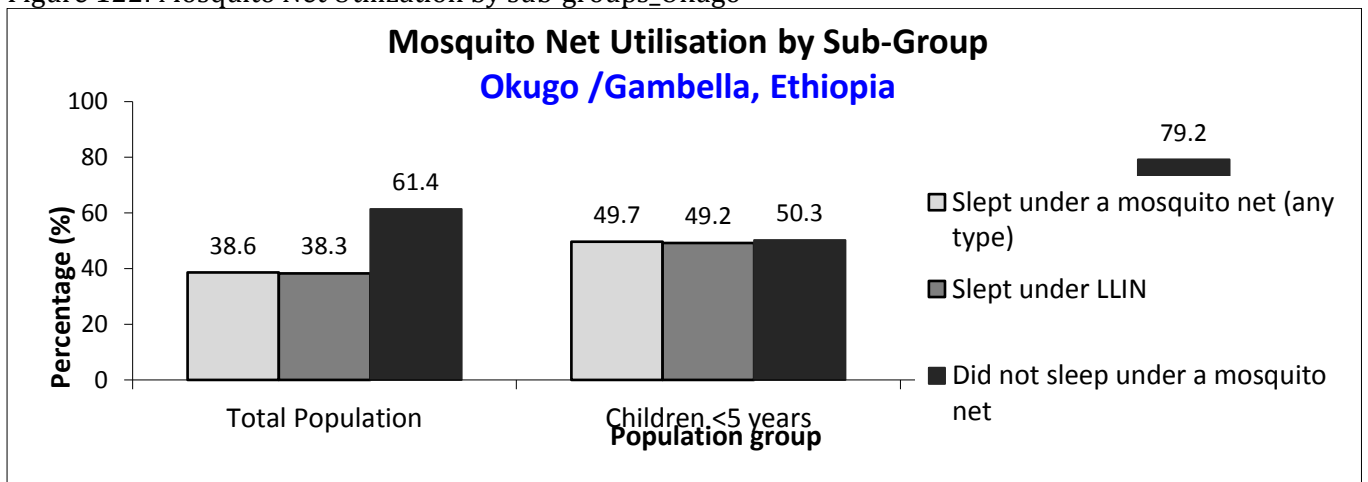


Table 256: Mosquito net Utilisation Okugo

	Total population (all ages)		0-59 months		Pregnant	
	Total No=763	%	Total No=187	%	Total No=24	%
Slept under net of any type	295	38.6	93	49.7	5	20.8
Slept under LLIN	292	38.3	92	49.2	5	20.8

Mosquito net utilization (Any type of mosquito net or LLIN) was seen to be low as only below half of the population slept under any mosquito net.

Figure 122: Mosquito Net Utilization by sub-groups_Okugo



LIMITATIONS OF THE SURVEY

- Results indicated for the coverage of selective feeding programme (TSFP, BSFP and TFP) to be interpreted with caution due to a small sample size obtained during survey. However it can give an overview of enrolment in the selective feeding programme.
- IYCF indicators were collected based on anthropometric sample of children aged 0-59 months, it was 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.

DISCUSSIONS

- Acute malnutrition:** Prevalence of GAM and SAM in the seven refugee camps in Gambella were above the WHO emergency threshold of 15% and 2% of critical as per UNHCR respectively. The findings depicted that, there was no statistically significant difference between the findings obtained from previous year's surveys in for Pugnido_II, Kule and Tierkidi, except for Pugnido_I with reduced prevalence of GAM from 24.7% in 2016 to 16.8% in 2017. Prevalence of severe acute malnutrition showed a slight reduction in Pugnido_I, Pugnido_II, Kule and Tierkidi as the change did not show statistically significant difference. In Okugo the situation deteriorated with prevalence of GAM increase from 10.1% reported in 2015 (no SENS in 2016) to 23.3% and SAM from 0.8% to 5.5% in 2017. It should be noted that Okugo received new arrivals in late 2016 and this is possible linked to the deteriorated nutritional status in this particular camp.
- Mortality:** The mortality indicators remained acceptable as were within the sphere standards; crude mortality rates are <1 deaths per 10,000 per day and under five mortality rate <2 deaths per 10,000 per day. Despite of new arrivals, mortality rates were at acceptable levels in new camps. This indicates how comprehensive efforts were put in receiving new arrivals with focus of saving their lives and improve their health and nutrition well-being.
- Anaemia in children:** Prevalence of anaemia among children aged 6 - 59 months was above 40% of public health significance (WHO classification) in five camps in Kule, Tierkidi, Jewi, Nguenyiel and Okugo categorised as high by classification of public health significance. The prevalence was however ranged 20-39% considered as medium public health significance in Pugnido I and Pugnido II at 35.4% and 32.8%. Despite high prevalence a significant reduction in the four camps of Pugnido_I, Pugnido_II, Kule and Tierkidi was noted when compared to 2016 survey report. The prevalence among children 6-23 months was high across all the seven camps ranging from 47.2% in Pugnido II to 74.6% in Okugo camp. The mean Hb among children 6-59 months ranged from 12.3 to 12.8g/dl in all the surveyed camps. Reduction in prevalence of anaemia is possible linked to blanket supplementary feeding among all children aged 6 – 59 months.
- Anaemia in women (Non-pregnant):** The prevalence of anaemia among women of reproductive age (15 - 49 years) was below the critical threshold 40% in all the camps, Pugnido_I 33.3% and , Tierkidi 35.5%, Pugnido_II 35.8%, Kule 35.3%, Jewi 27.5%, Nguenyiel 43.3% and Okugo 28.7%. The level of reduction in Anaemia prevalence among both groups might be attributed to restoration of CSB+ with micronutrient food dense and other interventions aimed at reduction of the high level anaemia prevalence reported last year.
- Enrolment in selective feeding programme (TSFP, BSFP and TFP):**
Despite the critical prevalence of GAM in the seven camps, enrolment coverage of acute malnourished children was very low ranging from 5.6% to 31.3% at OTP and 7.5% to 31.6% in TSFP. The main reason for the low coverage was the use of MUAC during nutritional screening of children attending at BSFP. MUAC has found to be able to identify only 20 to 30% of the acute malnourished children due to its poor sensitivity when as compared to WHZ. Regular nutritional screening using the latter would help to increase coverage of feeding program enrolment of both MAM and SAM.
- Infant and young child feeding indicators:** Timely initiation of breastfeeding was below 90% for most of the camps except Kule and Tierkidi with 94.2% and 90.0%. Exclusive breastfeeding among 0-6 months was above 80% in most camps except Kule with 70.8% and Okugo with 51.8%. Introduction of semi solid and solid foods for infants above 6 months

ranged from 10% to 54.5%. This may suggest poor practice of IYCF as the delayed introduction of complementary food keeps infants unsatisfied with only breast milk and may lead to deterioration of their nutritional status by lacking adequate macro and micronutrient, and hence, high prevalence of GAM as well as anaemia.

- **Vitamin A supplementation:** The supplementation of vitamin A was relatively good with coverage ranging from 73% to 96%. The coverage was above 90% in Okugo and Kule and less than 90% in the rest of the camps. There is need to strengthen the EOS campaign in the camps and also recording of the vaccinations given to children in the health facilities.
- **Measles vaccination:** The coverage by card and or recall was above the SPHERE standards of 95% in 3 camps of Pugnido I, Kule, and Jewi. The coverages in the other camps were; 88.5% in Okugo, 88.2% in Tierkidi, 88.2% in Pugnido II and 75.7% in Nguennyiel, the newly established camp. Coverage by card ranged from 9.1% to 60.1%. There is need to strengthen recording of the vaccinations given to children in the health facilities.
- **Morbidity:** Diarrhoea in the past two weeks among all the surveyed children ranged between 8.9% and 40.2%. The highest prevalence was recorded in Nguennyiel refugee camp, with 40.2%, followed by 26.6 in Okugo, 24.5% in Jewi and lowest in Pugnido II. Wash infrastructure in Nguennyiel were not stable yet the focus was responding to emergency and lifesaving among new arrivals.
- **Food security:** All the household surveyed reports to have ration cards across all the camps with the average number of days ranging from 16.7 to 23.7 which the ration received from WFP could last. The average household dietary diversity score (HDDS) ranged from 3.8 to 5.4 compared to 12 expected from the twelve food groups. Most household reported to use negative coping mechanisms to cover the gap for completion of the remaining days before the next food distribution cycle. The coping strategies were borrowing food with or without interest, reducing the amount of food and also engaging in other risky activities.
- **WASH;** All the camps had access to improved water sources, the proportion of households using improved water sources was 100% including Nguennyiel camp where water tracking was being done through UNHCR accredited partner. The average water consumption in litres per person per day was 21.2 in Pugnido I, 23.3 in Pugnido II, 16.1 in Kule, 17.4 in Tierkidi, 17.7 in Jewi, 16.7 in Nguennyiel and 16.5 in Okugo. The average was below the 20lpppd in most of the camps. Access to improved toilet facility was poor in Pugnido II, Nguennyiel and Pugnido I camps with the coverage of 32% 53.2% and 56.2%. Generally there were problems related to sanitation indicators as a substantial proportion of households reported to use unimproved toilets. Efforts to improve these should be made as it has a direct implication on the health and nutrition situation of children.
- **Mosquito net coverage;** Mosquito net coverage was reported to be very low across all the camps, the proportion of households with at least one mosquito nets ranges from 18.1% to 60.3%. The lowest was Nguennyiel with 18.1% which was way below the UNHCR standards of at least 80% coverage. The average LLINS per household ranges from 1.3 - 1.6, which was below the standards of 1 mosquito net per 2 people. These poses a public health risk in the malaria prevalence in the Gambella operation.

CONCLUSIONS

The prevalence of global acute malnutrition in the seven refugee camps in Gambella operation has persistently remained critically above the emergency threshold of $\geq 15\%$ (WHO classification) as well as UNHCR acceptable standard of $< 10\%$ in stable camps since 2014. Prevalence was very high in the newly established camp of Nguennyiel that received majority of the new arrivals in late 2016 and also a double-increase in Okugo probably attributed by the same reason as Nguennyiel. Prevalence of anaemia was high above the 40% of public health significance (critical) among children aged 6-59 months in five camps out of seven, while among children aged 6-23 months it was above the 40% public health significance (critical) in all the seven camps. IYCF indicators requires improvement especially the introduction of solid and semi solid food is a concern as this provides a window of opportunity to prevent the onset of malnutrition after successfully periods of exclusive breastfeeding have been achieved.

Most of the indicators such as food security WASH, Mosquito net coverage are below the SPHERE and UNHCR standards for refugee programming. It is crucial for the Gambella operation to strengthen multi sectoral approach is addressing the high level of malnutrition and also ensuring adequate funding for the provision of live saving activities such as WASH, health and nutrition. There is need to implement robust livelihood intervention to ensure self-reliance and economic empowerment among the refugees, this will also cushion the population from the effects of the ongoing ration cuts in the WFP general food basket that poses a risk in the overall household food security leading to inadequate dietary intake and therefore a major factor in the already critical nutrition situation.

The ultimate cause of high levels of malnutrition among the refugees camp in Gambella cannot be solely deduced from the nutrition survey findings; although it's rather clear that it can be attributed to many existing causes including: new arrivals refugee coming in a deteriorated nutrition situation, inadequate access to food; poor hygiene practices, access to portable water, poor maternal care and child feeding practices especially introduction of appropriate complimentary foods, access and utilisation of health and nutrition services. As such it is necessary to have strong surveillance system to try and solve the causes as they arise.

RECOMMENDATIONS

Immediate term

Health and Nutrition programmes

- Strengthen the supervision of the nutrition outreach activities by community outreach agents (COAs), at the community level, focusing on active case finding, referral, enrolment in nutrition programme and systematic follow up of absentees to avoid defaulters.
- Strengthen the monthly two stage MUAC and WHZ screening and also the quarterly exhaustive WHZ screening to ensure early detection and referral for treatment of acute malnourished children in the respective nutrition programmes.
- Urgent need to harmonize the community mobilization strategy to ensure integration of the health, nutrition and WASH activities, to avoid missed opportunities and overburdening of the refugees with similar information from different sets of COAs, (health and nutrition) and hygiene promoters.
- Capacity building of the community outreach agents on the basic cross cutting issues especially key messaging on WASH, health and nutrition to ensure their effectiveness and efficiency in health education at the household level.
- Enhance the UNHCR/WFP/ARRA /UNICEF quarterly joint regular monitoring and supervision of the nutrition programmes to identify capacity needs and a monthly follow up of the key findings and action plans to address gaps in program delivery in a timely manner.
- Conduct community awareness of the existing health and nutrition services and strengthen integration with other services to ensure that the population is aware, especially the pregnant and lactating women and children to ensure early health seeking behaviors especially among the new arrivals,
- Scaling up of the blanket supplementary feeding programmes (BSFP) to cover all children 6-59 months in Okugo refugee camp due to the high prevalence of global acute malnutrition (GAM being above 15% of emergency thresholds) as per the SENS, the current target group was children 6-23 months.
- Scale up the number of mother to mother support groups, to ensure adequate coverage of all the pregnant and lactating women at the community level following the current MTMSGs methodology.
- Strengthen and improve IYCF health education sessions to be audience focused and also more emphasis on appropriate introduction of complementary feeding among children who have completed 6 months through cooking demonstrations at the community and also in the BFS.
- Capacity building of the nutrition staff on the key treatment IMAM.IYCF guidelines and more focus on provision of quality of care to all malnourished children in the camps. Mentoring of the nutrition staff on the nutrition programming, in order to improve the quality of care and reporting was needed across all the camps.

Food Security

- Improve timely distribution of the general food assistance to the refugees across all the camps, to prevent negative coping strategies that are often used when the food ration gets finished at the household levels.
- Joint UNHCR/WFP advocacy for funding for food for all the refugees to avoid ration cuts and also find alternative durable solutions, to support self-reliance and livelihood activities to prevent the dependency of refugees on humanitarian assistance.

- UNHCR/ARRA and WFP to strengthen food basket market monitoring to ensure that the refugees receive their rightful entitlements especially with the current ration cuts.

Water, Sanitation and Hygiene (WASH)

- Advocacy for funding for WASH activities to ensure implementation of adequate water provision and sanitation facilities (water usage lpppd, and latrine coverage was very low) to meet the SPHERE and UNHCR standards in all the camps.
- Strengthen hygiene promotion and education on proper hygiene, safe storage of water, hand washing at critical moments, with the aim of reducing diarrhoea among children.
- Increase water storage capacity in camps that have inadequate storage facilities and prioritize distribution of water storage Jerri cans for the households.

Mosquito net coverage

- Urgent distribution of mosquito nets to the refugees especially in the newly established camp, Nguennyiel camp, where the refugees are still living in the emergency shelters.
- Prioritize indoor residual spraying of the household in the older camps.

Mid-Terms Actions

- Conduct an impact assessment of the fresh food voucher programmes already implemented by DCA targeting the households with pregnant and lactating women in Kule and Tierkidi, to be used as baseline future programming.
- Conduct a nutrition causal analysis in Gambella to determine the risk factors of the persistent high prevalence of acute malnutrition and anaemia for the past years in Gambella and to come up with recommendations to improve the situation.
- Strengthen the multi-sectoral collaboration within all the sectors to foster integration of the services, launch the UNHCR/SCUK infant and young child feeding (multi-sectoral IYFC friendly framework for actions) to start off the process of integration with other sectors.
- Explore the possibility of introducing cash based interventions in the refugee camps in Gambella to replace a percentage of food, in order to reduce the sale of food and improve dietary diversity and household food security at the household.

Longer Term

- UNHCR/ARRA and partners to develop capacity building strategy for refugees to leverage on continuity of health and nutrition service delivery during insecurity situations that may restrict qualified staff from accessing the camps.
- Review the anaemia preventions and treatment strategy implementation in the camps, to ensure proper follow up and treatment of the children and women with severe and moderate anaemia.
- Strengthen IYCF programmes and integration with other nutrition services and scale up the community based mother to mother support groups with the introduction of MUAC screening in the support groups.
- Need for continued funding (multi-year funding) to support nutrition sensitive sectors that include WASH, health Nutrition including complimentary diets, Food, livelihoods (Nutrition agricultural sensitive projects) to close the gap of recurring malnutrition.

ANNEXES

Plausibility check for: ETH_GAM_PUGNIDO1

Standard/Reference used for z-score calculation: WHO standards 2006

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Flagged data (% of out of range subjects)	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
			0	5	10	20	0 (0.3 %)
Overall Sex ratio (Significant chi square)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
			0	2	4	10	0 (p=0.916)
Age ratio (6-29 vs 30-59) (Significant chi square)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
			0	2	4	10	4 (p=0.007)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	0 (4)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	0 (4)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	0 (5)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>=1.20	
			and	and	and	or	
	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	5	10	20	0 (0.96)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	0 (0.03)
Kurtoswas WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	1 (0.24)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	0 (p=)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	5 %

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

Plausibility check for_PUGNIDO 2

Standard/Reference used for z-score calculation: WHO standards 2006

(If it was not mentioned, flagged data was included in the evaluation. Some parts of the 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	>2.5-5.0	>5.0-7.5	>7.5	
			0	5	10	20	0 (2.1 %)
Overall Sex ratio (Significant chi square)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
			0	2	4	10	0 (p=0.838)



Age ratio (6-29 vs 30-59) Incl	p	>0.1	>0.05	>0.001	<=0.001
(Significant chi square)		0	2	4	10
					4 (p=0.005)
Dig pref score - weight Incl	#	0-7	8-12	13-20	> 20
		0	2	4	10
					2 (8)
Dig pref score - height Incl	#	0-7	8-12	13-20	> 20
		0	2	4	10
					0 (7)
Dig pref score - MUAC Incl	#	0-7	8-12	13-20	> 20
		0	2	4	10
					0 (6)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20
.			and	and	and
.					or
	Excl	SD	>0.9	>0.85	>0.80
					<=0.80
			0	5	10
					0 (1.05)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6
					>=±0.6
			0	1	3
					0 (0.13)
KurtoswasWHZ	Excl	#	<±0.2	<±0.4	<±0.6
					>=±0.6
			0	1	3
					0 (0.10)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001
					<=0.001
			0	1	3
					0 (p=)
OVERALL SCORE WHZ =			0-9	10-14	15-24
					>25
					6 %

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

Plausibility check for: TIERKIDI

Standard/Reference used for z-score calculation: WHO standards 2006

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 (2.8 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	0 (p=0.376)
Age ratio(6-29 vs 30-59)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	4 (p=0.001)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	0 (3)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	2 (10)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	4 (13)
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 (1.04)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	0 (-0.19)
Kurtoswas WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	3 (0.41)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	0 (p=)

OVERALL SCORE WHZ = 0-9 10-14 15-24 >25 **18 %**

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

Plausibility check for: NGUENYIEL

Standard/Reference used for z-score calculation: WHO standards 2006

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Flagged data (% of out of range subjects)	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
			0	5	10	20	0 (0.7 %)
Overall Sex ratio (Significant chi square)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
			0	2	4	10	0 (p=0.521)
Age ratio(6-29 vs 30-59) (Significant chi square)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
			0	2	4	10	0 (p=0.693)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	0 (4)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	2 (10)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	0 (4)
Standard Dev WHZ .	Excl	SD	<1.1	<1.15	<1.20	>=1.20	
			and	and	and	or	
Excl	SD	>0.9	>0.85	>0.80	<=0.80		
			0	5	10	20	0 (1.06)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	0 (-0.05)
Kurtoswas WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	1 (-0.21)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	0 (p=)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	3 %

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

Plausibility check for_JEWI

Standard/Reference used for z-score calculation: WHO standards 2006

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Flagged data (% of out of range subjects)	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
			0	5	10	20	5 (2.6 %)
Overall Sex ratio (Significant chi square)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
			0	2	4	10	0 (p=0.210)

Age ratio(6-29 vs 30-59) Incl p >0.1 >0.05 >0.001 <=0.001
(Significant chi square) 0 2 4 10 2 (p=0.069)

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

Dig pref score - height Incl # 0-7 8-12 13-20 > 20
0 2 4 10 4 (14)

Dig pref score - MUAC Incl # 0-7 8-12 13-20 > 20
0 2 4 10 2 (11)

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 (1.05)

Skewness WHZ Excl # <±0.2 <±0.4 <±0.6 >=±0.6
0 1 3 5 0 (-0.06)

KurtoswasWHZ Excl # <±0.2 <±0.4 <±0.6 >=±0.6
0 1 3 5 0 (0.08)

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

OVERALL SCORE WHZ = 0-9 10-14 15-24 >25 13 %

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

Plausibility check for_Okugo

Standard/Reference used for z-score calculation: WHO standards 2006

Overall data quality

Criteria Flags* Unit Excel. Good Accept Problematic Score

Flagged data Incl % 0-2.5 >2.5-5.0 >5.0-7.5 >7.5
(% of out of range subjects) 0 5 10 20 0 (2.2 %)

Overall Sex ratio Incl p >0.1 >0.05 >0.001 <=0.001
(Significant chi square) 0 2 4 10 0 (p=0.762)

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=0.849)

Dig pref score - weight Incl # 0-7 8-12 13-20 > 20
0 2 4 10 2 (9)

Dig pref score - height Incl # 0-7 8-12 13-20 > 20
0 2 4 10 4 (18)

Dig pref score - MUAC Incl # 0-7 8-12 13-20 > 20
0 2 4 10 2 (9)

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 1 (-0.27)

Kurtoswas WHZ Excl # <±0.2 <±0.4 <±0.6 >=±0.6
0 1 3 5 1 (-0.31)

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

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

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

Appendix 2

Survey questionnaire



GAMBELLA_2017_SE
NS QUESTIONNAIRE

Events calendar



ETH_GAM_042017_E
vent calendar.doc

Add the list of SENS participants?