

Standardised Expanded Nutrition Survey (SENS) FINAL REPORT

**(Nyarugusu, Nduta and Mtendeli Refugee Camps, Kigoma
Region, Tanzania)**

Survey conducted: 16th September – 13th October, 2018

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UNHCR

IN COLLABORATION WITH



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Table of Contents

ACKNOWLEDGEMENTS	ii
Executive summary	vii
Brief interpretation of the results	i
Recommendations and priorities	iii
1 Introduction	1
1.1 Background & Geographic description of survey area	1
1.2 Description of the population	1
1.3 Food security situation	2
1.3.1 Food consumption Score	2
1.3.2 Household Dietary Diversity Score (HDDS)	3
1.3.3 Coping Strategies	3
1.3.4 Livelihood and Food Sources	3
1.3.5 Asset ownership & Wealth	4
1.3.6 Duration and use of Food Aid	5
1.4 Health situation	6
1.5 Nutrition situation	8
2 Survey Objectives	10
2.1 Primary objectives:	11
2.2 Secondary objectives:	11
3 Methodology	11
3.1 Sample size	12
3.2 Sampling procedure: selecting clusters	13
3.3 Sampling procedure: selecting households and individuals	13
3.4 Questionnaire and measurement methods	13
3.4.1 Questionnaire	14
3.5 Measurement methods	14
3.6 Case definitions, inclusion criteria and calculations	16
3.7 Classification of public health problems and targets	19
3.8 Training, coordination and supervision	21
3.8.1 Survey teams and supervision	21
3.8.2 Training	21
3.9 Data collection	21
3.10 Data analysis	22
3.11 Ethical Issues	22
4 Results	22
4.1 Children 6-59 months (Nyarugusu Old Camp)	23
4.1.1 Sample size and clusters	23
4.1.2 Anthropometric results (based on WHO Growth Standards;	23
4.2 Children 6-59 months (Nyarugusu New Camp)	30
4.2.1 Sample size and clusters (Nyarugusu New Camp)	30
4.2.2 Anthropometric results (based on WHO Growth Standards 2006 (Nyarugusu New Camp)	30
4.3 Children 6-59 months (Nduta Camp)	37
4.3.1 Sample size and clusters	37
4.3.2 Anthropometric results (based on WHO Growth Standards 2006)	38
4.4 Children 6-59 months (Mtendeli Camp)	45
4.4.1 Sample size and clusters	45
4.4.2 Anthropometric results (based on WHO Growth Standards 2006;	46
4.5 Feeding programme coverage results	53
4.5.1 Feeding Programme Coverage (Nyarugusu Old Camp)	53
4.5.2 Feeding Programme (Nyarugusu New Camp)	53
4.5.3 Feeding Programme Coverage (Nduta Camp)	54
4.5.4 Feeding programme coverage (Mtendeli Camp)	54
4.6 Vaccination and Supplementation Programmes	54
4.6.1 Vaccination & Supplementation (Nyarugusu Old Camp)	54
4.6.2 Vaccination & Supplementation (Nyarugusu New Camp)	55
4.6.3 Vaccination & Supplementation (Nduta Camp)	56
4.6.4 Vaccination & Supplementation (Mtendeli Camp)	57

4.6.5	Diarrhoea results	58
4.7	Anaemia results Children 6-59 Months.....	59
4.7.1	Anaemia results, 6-59 Months (Nyarugusu Old Camp)	59
4.7.2	Anaemia results, 6-59 Months (Nyarugusu New Camp).....	61
4.7.3	Anaemia results, 6-59 Months (Nduta Camp).....	63
4.7.4	Anaemia results, 6-59Months (Mtendeli Camp)	65
4.8	Infant and Young Child Feeding (IYCF) Children 0-23 months	68
4.8.1	IYCF Indicators (Nyarugusu Old Camp)	68
4.8.2	IYCF Indicators (Nyarugusu New Camp)	69
4.8.3	IYCF Indicators (Nduta Camp)	71
4.8.4	IYCF Indicators (Mtendeli Camp)	73
4.9	Prevalence of Nutrition Supplements/Blended Food intake.....	75
4.9.1	Supplements/Blended Food Intake (Nyarugusu Old Camp)	75
4.9.2	Supplements, Blended, Special Food Intake (Nyarugusu New).....	75
4.9.3	Supplements, Blended, Special Food Intake (Nduta Camp)	76
4.9.4	Supplements, Blended, Special Food Intake (Mtendeli Camp).....	76
4.10	Women 15-49 years	77
4.10.1	Women 15-49 years (Nyarugusu Old Camp)	77
4.10.2	Women 15-49 years (Nyarugusu New Camp)	79
4.10.3	Women 15-49 years (Nduta Camp).....	82
4.10.4	Women 15-49 years (Mtendeli Camp)	84
4.11	Food security.....	86
4.11.1	Food security (Nyarugusu Old Camp)	86
4.11.2	Food security (Nyarugusu New Camp)	89
4.11.3	Food security (Nduta Camp)	92
4.11.4	Food security (Mtendeli Camp).....	95
4.12	WASH.....	98
4.12.1	WASH (Nyarugusu Old Camp).....	98
4.12.2	WASH (Nyarugusu New Camp)	101
4.12.3	WASH (Nduta Camp)	104
4.12.4	WASH (Mtendeli Camp).....	108
4.13	Mosquito Net Coverage	113
4.13.1	Mosquito Net Coverage (Nyarugusu Old Camp)	113
4.13.2	Mosquito Net Coverage (Nyarugusu New Camp).....	115
4.13.3	Mosquito Net Coverage (Nduta Camp).....	117
4.13.4	Mosquito Net Coverage (MTENDELI CAMP)	120
5	Discussion.....	124
5.1	Nutritional status of young children	124
5.2	Programme coverage.....	124
5.3	Anaemia in young children and women.....	124
5.4	IYCF indicators	124
5.5	Food security	125
5.6	WASH.....	126
5.7	Mosquito net coverage	127
6	Conclusions	127
7	Recommendations and priorities.....	128
7.1	Short term Recommendations	128
7.2	Long term Recommendations	128
8	References	130
9	Acknowledgements	130
10	Appendices	133
	Appendix 1: SMART Plausibility Check (PC) Report	133
	Appendix 2: Location of the camps in Kigoma Region.....	136
	Appendix 3: Questionnaire	137

ACRONYMS AND ABBREVIATIONS

ANC	Antenatal Care
AWD	Acute Watery Diarrhoea
BCC	Behaviour change communication
BSFP	Blanket Supplementary Feeding Program
CHWs	Community Health Workers
CI	Confidence Interval
CMR	Crude Mortality Rate
CSB	Corn-Soya Blend
CSB+	Corn-Soya Blend Plus
CSB++	Corn-Soya Blend Plus Plus
DEFF	Design effect
ENA	Emergency Nutrition Assessment
EPI	Expanded Programme on Immunization
Epi Info	Name of CDC software for epidemiological investigations
GAM	Global Acute Malnutrition
GFD	General Food Distribution
GFR	General Food Ratio
HAZ	Height-for-Age z-score
HB	Haemoglobin
HDDS	Household Dietary Diversity Score
HH	Household
HIS	Health Information System
IYCF	Infant and Young Child Feeding
KCAL	Kilocalorie
LLIN	Long-lasting insecticidal net LLIN
Lpppd	Litres per Person per Day
LRTI	Lower Respiratory Tract Infection
MAM	Moderate Acute Malnutrition
MHA	Ministry of Home Affairs
MIYCN	Maternal, Infant and Young Child Nutrition
MNP	Micronutrient Powder
MOH	Ministry of Health
MSF-CH	Médecins Sans Frontières-Swiss
MUAC	Middle Upper Arm circumference
NCHS	National Centre for Health Statistics
ODK	Open Data Kit
OTP	Out-patient Therapeutic Programme
PDM	Post Distribution Monitoring
PLW	Pregnant and Lactating Woman
ProGres	UNHCR registration database for refugees
SAM	Severe Acute Malnutrition
SD	Standard Deviation
SENS	Standardized Expanded Nutrition survey
SFP	Supplementary Feeding Programme
SMART	Standardized Monitoring & Assessment of Relief & Transitions
TFP	Therapeutic Feeding Programme
TRCS	Tanzania Red Cross Society
U5	Children under 5 years old
U5MR	Under-5 Mortality Rate

UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Funds
URTI	Upper Respiratory Tract Infection
WASH	Water Sanitation and Hygiene
WAZ	Weight-for-Age z-score
WFH	Weight-for-Height
WFP	World Food Programme
WHO	World Health Organization
WHZ	Weight-for-Height z-score
WVI	World Vision International

Executive summary

Tanzania is prone to refugee influxes, often of long duration. Despite facing its own economic challenges, for decades Tanzania has welcomed thousands of refugees fleeing conflicts in neighboring countries of Great Lakes Region. The country's geographic proximity to the strife-torn Congo Basin is responsible in part for the ease of access of displaced populations. As well, Tanzania was an early signatory in the region to international agreements on the rights and welfare of refugee and asylum seekers.

As of December, 2018, Tanzania hosts some 284,300 camp-based refugees, 77% of who are children and women, in Nduta, Nyarugusu and Mtendeli Refugee Camps in Kigoma region in Northwest Tanzania. About 74% are from Burundi, and the remaining 26% are primarily from Democratic Republic of Congo.

Following a Tripartite Commission meeting in August 2017, the governments of Tanzania, Burundi, and UNHCR agreed to assist refugees who wish to voluntarily repatriate from Tanzania to Burundi. A subsequent meeting in March 2018 reaffirmed the commitment of both governments and UNHCR to uphold the principle of voluntariness, and noted that while some refugees may opt to return, others will continue to be in need of international protection. The March 2018 Tripartite meeting also produced a work plan entailing the repatriation of approximately 2,000 refugees per week from 5 April to 31 December 2018. As from January to 30th September 2018, a total of 52,260 refugees were assisted to voluntarily repatriate to Burundi from Tanzania in 88 Convoys; bringing the total repatriated from September 2017 to 57,865 of which 57.2% are children.

This is the 5th SENS survey among the refugees in Nyarugusu since the first survey in September 2012, second in September 2014. Assessments in 2016, 2017 and 2018 covered all the three camps of Nyarugusu (old & New Camp), Nduta and Mtendeli. The current survey was conducted as from 16th September to October 13th 2018, with a total of 4 assessments. UNHCR coordinated the survey in collaboration with WFP, UNICEF, WVI, Tanzania Red-cross Society (TRCS), MSF as well as Tanzania Ministry of Health, Community Development, Gender, Elderly and Children (MOHCDGEC). Funding was shared between UNHCR, WFP and UNICEF. UNHCR and WFP were in charge of logistics and daily operations.

The survey objectives are as outlined below:

Primary objectives:

- To determine the prevalence of acute malnutrition in children aged 6-59 months.
- To determine the prevalence of stunting in children aged 6-59 months.
- To determine the coverage of measles vaccination among children aged 9-59 months.
- To determine the coverage of vitamin A supplementation received during the last 6 months among children aged 6-59 months.
- To assess the two-week period prevalence of diarrhoea among children aged 6-59 months.
- To measure the prevalence of anaemia in children aged 6-59 months and in non-pregnant women of reproductive age (15-49 years).
- To investigate IYCF practices among children aged 0-23 months.
- To determine the coverage of ration cards and the duration of the general food ration lasts for recipient households.

- To determine the extent to which negative coping strategies are used by households.
- To assess household dietary diversity.
- To determine the population's access to, and use of, improved water, sanitation and hygiene facilities.
- To determine the ownership of mosquito nets (all types and LLINs) in households.
- To determine the utilisation of mosquito nets (all types and LLINs) by the total population, children 0-59 months and pregnant women.
- To establish recommendations on actions to be taken to address the situation in *Mtendeli, Nduta and Nyarugusu Refugee Camps*.

Secondary objectives:

- To determine the enrolment coverage of therapeutic feeding and targeted supplementary feeding programmes for children 6-59 months.
- To determine enrolment into Antenatal Care clinic and coverage of iron-folic acid supplementation in pregnant women.

Methodology

The surveys were conducted using the UNHCR Standardised Expanded Nutrition Survey (SENS) version 2 (2013), www.sens.unhcr.org and the Standardised Monitoring and Assessments of Relief and Transitions (SMART) guidelines www.smartmethodology.org. Two stage cluster sampling was used to identify the survey respondents, the first stage involved identifying clusters and the second stage was to identify the households. The Emergency Nutrition Assessment (ENA) software version July 9th, 2015 which uses Probability Proportion to Sample Size (PPS) was used to calculate the sample size and to select the clusters. To select households for participation in the survey from the clusters, Simple random sampling was used. The parameters that were used to calculate the sample size are summarized in Table 3 .

The survey had a total of 6 modules, 3 individual level questionnaires and 3 household level questionnaires. The modules are;

- Anthropometry and health; targeting all children (6 to 59 months) in all the sampled households;
- Infant and Young Child Feeding (IYCF); targeting all children 0 to 23 months in all the sampled households
- Anaemia; targeting all children 6 to 59 months and all non-pregnant women 15 to 49 years in every other sampled households;
- Food security; targeting every other sample households
- Water, Sanitation and Hygiene (WASH); targeting all the sampled households.
- Mosquito net coverage; targeting every other sampled households;

Data was collected using smart mobile phones with the ODK application by 6 teams of 6 members per team; each team had two phones configured for household and individual level questionnaires respectively.

RESULTS: -

Summary of results as shown in the **table 1** below, as well as other important results

Table 1 : Summary Results Tanzanian Refugee Camps SENS Sept-Oct 2018.

[illegible]

	Nyarugusu Old (DRC)		Nyarugusu New (BRD)		Nduta		Mtendeli		Classification of public health significance or target (where applicable)
	No./ total	% (95% CI)	No./ tot	% (95% CI)	No./ total	% (95% CI)	No./ total	% (95% CI)	
MUAC <12.5cm (GAM)	14/569	2.5 % (1.5 - 4.1)	32/763	4.2 % (3.1 - 5.6)	17/ 801	2.1 % (1.4 - 3.2)	12/ 763	1.6 % (0.8 - 3.1)	
MUAC 11.5-12.4cm (SAM)	12/569	2.1 % (1.2 - 3.7)	31/763	4.1 % (3.1 - 5.4)	17/ 801	2.1 % (1.4 - 3.2)	10/ 763	1.3 % (0.6 - 2.9)	
MUAC<11.5cm (SAM)	2/569	0.4 % (0.1 - 1.4)	1/763	0.1 % (0.0 - 1.0)	0/ 801	0.0 %	2/ 763	0.3 % (0.1 - 1.1)	
Programme coverage									
Measles vaccination with card (9-59 months)	437/ 530	82.5% (74.0 - 90.9)	627/ 706	88.8 % (83.0 - 94.6)	619/728	85.0 % (77.9– 92.1)	591/ 702	84.2% (76.3 – 92.0)	
Measles vaccination with card or recall (9-59 months)	500/ 530	94.3 % (89.4 – 99.3)	677/ 706	95.9 % (93.1– 98.7)	725/728	99.6 % (99.0– 100.0)	692/ 702	98.6 % (97.0-100.0)	Target of ≥ 95%
Vitamin A supplementation in last 6 months with card (6-59 months)	458/ 586	80.6% (72.2 – 89.0)	663/ 763	86.8 % (81.2– 92.6)	607/801	75.8 % (63.5– 88.1)	616/ 762	80.8 % (73.5 – 88.2)	
Vitamin A supplementation within past 6 months with card or recall	527/ 486	92.8 % (87.8-97.8)	712/ 763	93.3 % (90.3– 96.3)	774/ 801	96.6 % (94.6 - 98.7)	724/ 762	95.0 % (92.6–97.5)	Target of ≥ 90%
Supplementary feeding programme coverage (MUAC, WHZ AND/OR	11/18	61.1% (13.5 - 90.5)	24/42	57% (33.6– 80.7)	20/ 27	74.1% (50.8– 97.4)	16/27	59.3% (34.2 – 84.3)	>90% target

	Nyarugusu Old (DRC)		Nyarugusu New (BRD)		Nduta		Mtendeli		Classification of public health significance or target (where applicable)
	No./total	% (95% CI)	No./tot	% (95% CI)	No./total	% (95% CI)	No./total	% (95% CI)	
OEDEMA)									
Supplementary feeding programme coverage (MUAC AND/OR OEDEMA ONLY)	10/12	83.3% (56.8 – 100)	20/31	64.5% (41.9– 87.2)	13/ 16	81.0% (58.8-100.0)	7/10	70% (25.6 – 100)	
Therapeutic feeding programme coverage (MUAC, WHZ AND/OR OEDEMA)	1/2	50.0% (0.0 – 100%)	1/1	100.0%	0/0	-	0/0	-	>90%Also target
Therapeutic feeding programme coverage (MUAC AND/OR OEDEMA ONLY)	1/2	50.0% (0.0 – 100%)	1/1	100.0%	0/0	-	0/0	-	
Diarrhoea									
Diarrhoea in last 2 weeks	102/565	17.9% (10.8-25.1)	152/762	20.0% (9.0 – 30.9)	51/ 801	6.4% (3.0-9.8)	58/ 762	7.6% (2.5-12.7)	
Anaemia (children 6-59 months)									
Total Anaemia (Hb <11 g/dl)	314/561	56.0% (49.5 – 62.5)	266/754	35.3 % (30.1– 40.5)	295/ 788	37.4 % (32.2– 42.7)	376/753	49.9% (44.2 – 55.6)	High if ≥ 40%
Mild (Hb 10-10.9)	156/561	27.8% (24.6 – 31.1)	187/754	24.8% (20.6– 29.0)	145/ 568	25.5% (21.3-29.7)	207/753	27.5% (22.6 – 32.4)	

	Nyarugusu Old (DRC)		Nyarugusu New (BRD)		Nduta		Mtendeli		Classification of public health significance or target (where applicable)
	No./total	% (95% CI)	No./tot	% (95% CI)	No./total	% (95% CI)	No./total	% (95% CI)	
Moderate (Hb 7-9.9)	152/561	27.1% (21.7 – 32.5)	79/ 754	10.5% (7.5 – 13.4)	88/568	15.5% (11.6-19.4)	163/753	21.7% (16.9 – 26.4)	
Severe (Hb <7)	6/561	1.1% (0.1 – 2.0)	0/754	0.0% (0.0)	0/568	0.0%	6/ 753	0.8% (0.2 – 1.4)	
Mean Hb		10.7 g/dL (10.5-10.9)		11.4g/dL (11.3 -11.6)		11.1g/dL (11.1-11.4)		10.9/dL (11.7-11.1)	
CHILDREN 0-23 months									
IYCF indicators									
Exclusive Breastfeeding under 6 months	56/66	84.8% (76.3 – 93.4)	67/ 102	65.7% (51.5– 79.9)	73/95	76.8% (65.1– 88.6)	97/ 112	87.6% (79.2 – 94.0)	
Timely initiation of breastfeeding (0-23 months)	226/303	74.6% (62.2-87.0)	319/407	78.4% (65.2– 91.5)	362/410	88.3% (83.9-93.1)	380/425	89.4% (84.7– 94.1)	
Introduction to solid, semi-solid or soft foods (6-8 months)	25/39	64.1% (47.1 – 81.1)	46/ 56	82.1% (69.4– 94.9)	57/ 73	78.1% (64.0– 91.2)	37/62	59.7% (43.6 – 75.8)	
Consumption of iron-rich or iron-fortified foods (6-23months)	238/245	97.1% (94.9 – 99.4)	286/299	95.7% (93.0– 98.3)	99/138	71.7% (62.3– 81.2)	296/310	95.5% (92.7-98.3)	
WOMEN 15-49 years									
Anaemia (non-pregnant)									

	Nyarugusu Old (DRC)		Nyarugusu New (BRD)		Nduta		Mtendeli		Classification of public health significance or target (where applicable)
	No./total	% (95% CI)	No./tot	% (95% CI)	No./total	% (95% CI)	No./total	% (95% CI)	
Total Anaemia (Hb <12 g/dl)	57/214	34.6% (25.6 – 43.6)	42/ 318	13.2 % (9.3 – 17.1)	40/ 323	12.4 % (8.0 – 16.8)	62/ 296	21.0 % (16.3 – 25.6)	High if ≥ 40%
Mild (Hb 11-11.9)	45/214	21.0% (15.3 – 26.8)	31/ 318	9.8% (6.1 – 13.4)	32/ 323	9.9% (5.9 – 13.9)	41/ 296	13.9% (9.9 – 17.8)	
Moderate (Hb 8-10.9)	26/214	21.2% (7.8 – 16.5)	11/ 318	3.4 % (1.2 – 5.7)	7/ 323	10.8% (4.8-13.1)	21/ 296	7.1% (1.4 – 10.1)	
Severe (Hb <8)	3/214	1.4% (0.0 – 3.0)	0/318	0.0%	1/ 323	0.3% (0.0 – 1.0)	0/ 296	0.0%	
Mean Hb		12.5g/dL (12.2 – 12.8)		13.2g/dL (13.2-13.5)		13.3 g/dL (13.1 – 13.5)		12.9g/dL (12.7-13.1)	
ANC enrolment and iron-folic acid pills coverage among pregnant women (15-49 years)									
Currently enrolled in ANC programme	31/41	75.6% (62.0-89.3)	35/41	85.4% (72.8 – 98.0)	23/23	100%	18/ 21	85.7% (67.3 – 100.0)	
Currently receiving iron-folic acid pills	31/41	75.6% (62.0-89.3)	34/41	82.9% (69.6 – 96.3)	20/23	87.0% (71.1 – 100.0)	17/ 21	81.0% (61.9 – 100.0)	
FOOD SECURITY									
Food distribution									
Proportion of household with a ration card	258/ 258	100.0%	265/ 267	98.0% (98.2-100.0)	243/ 243	100.0%	245/ 245	100.0%	
Average number of days GFR lasts	23.5 days	(22.2 - 24.8)	22.1 days	(21.4- 22.7)	24.5 days	(23.0– 26.0)	25.9 days	(24.1– 27.6)	

	Nyarugusu Old (DRC)		Nyarugusu New (BRD)		Nduta		Mtendeli		Classification of public health significance or target (where applicable)
	No./total	% (95% CI)	No./tot	% (95% CI)	No./total	% (95% CI)	No./total	% (95% CI)	
out of [30] days ¹									
Average HDDS	5.1	(4.9 - 5.4)	4.6	(4.4 - 4.8)	4.7	(4.5-4.9)	5.1	(4.8-5.3)	
Coping strategies used by the surveyed population over the past month									
Borrowed cash, food or other items	146/256	57.0 (46.9-67.2)	207/267	77.5% (71.2 – 83.9)	180/243	74.1% (66.5 – 81.7)	186/243	76.5% (70.2 – 82.9)	
Sold any assets (furniture, seed stocks, tools, other NFI, livestock etc.)	65/257	25.3 (18.2-32.4)	67/267	25.1% (16.3 – 33.9)	61/243	25.1% (16.2 – 34.0)	62/244	25.4% (16.0 – 34.9)	
Requested increase remittances or gifts as compared to normal	88/256	34.4 (23.9-44.9)	122/265	46.0% (33.7 – 58.4)	79/239	33.1% (23.7 – 42.4)	90/240	37.5% (27.7 – 47.4)	
Reduced the quantity and/or frequency of meals	129/257	50.2 (39.1-61.3)	175/266	65.8% (53.3 – 78.3)	150/237	63.3% (51.4 – 75.1)	138/245	56.3% (44.3 – 68.4)	
Begged	120/257	46.7 (35.7-57.7)	145/267	54.3% (42.2 – 66.4)	107/238	45.0% (36.2 – 53.8)	106/242	43.8% (33.0 – 54.6)	
Engaged in potentially risky or harmful	77/257	30.0 (16.6 – 43.3)	117/267	43.8% (28.0 – 59.6)	133/243	54.7% (39.6 – 70.0)	122/245	49.8% (32.9 – 66.7)	

¹ In contexts where a mix of full rations and half rations are given, only report this value for the households receiving the full ration.

	Nyarugusu Old (DRC)		Nyarugusu New (BRD)		Nduta		Mtendeli		Classification of public health significance or target (where applicable)
	No./total	% (95% CI)	No./tot	% (95% CI)	No./total	% (95% CI)	No./total	% (95% CI)	
activities (Cutting live trees, smuggling, etc.)									
Proportion of households reporting using none of the coping strategies over the past month	52/258	20.2 (11.7 – 28.6)	24/264	9.1% (2.5 – 3.9)	18/236	7.6% (3.2 – 12.0)	18/238	7.6% (3.6 – 11.6)	
Combined results for consumption of food commodities and micronutrient rich foods by households									
Households not consuming any vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	49/257	19.1(12.4–25.8)	102/265	38.5% (30.1 – 46.9)	76/243	31.3% (22.4 – 40.2)	0/238	0.0%	
Proportion of households consuming either a plant or animal source of vitamin A	102/257	39.7(31.2 – 48.2)	80/265	30.2% (23.4–36.9)	92/243	37.9% (29.5 – 46.3)	90/245	36.7% (36.7 – 43.0)	
Households consuming organ meat/flesh meat, or fish/seafood (HAEM FE)	99/257	38.5 (32.2 – 44.8)	53/267	19.9% (14.3–25.5)	29/243	11.9% (7.0 – 16.9)	41/245	16.7% (10.9 – 22.6)	
WASH									
Water quality									

	Nyarugusu Old (DRC)		Nyarugusu New (BRD)		Nduta		Mtendeli		Classification of public health significance or target (where applicable)
	No./total	% (95% CI)	No./tot	% (95% CI)	No./total	% (95% CI)	No./total	% (95% CI)	
Proportion of households using improved drinking water source	437/454	96.3% (89.5– 100.0)	493/497	99.2% (98.1-100.0)	480/480	100%	475/481	98.8% (96.2-100.0)	
Water quantity									
Proportion of households that use:									
≥ 20 lpppd	300/454	66.1% (56.0 – 76.2)	308/497	62.0% (51.4– 72.5)	300/480	62.6% (50.9– 74.1)	311/479	65.0% (53.0 – 76.9)	UNHCR target ≥ 20 lpppd
15 - <20 lpppd	46/ 454	10.1% (7.0 – 13.2)	65/497	13.1% (10.3– 15.8)	51/480	10.6% (7.4 – 13.8)	60/ 479	12.5% (9.1 – 16.0)	
<15 lpppd	108/454	23.8% (15.5 – 32.1)	124/497	25.0 % (14.6– 35.3)	129/480	26.9% (16.1– 37.7)	108/479	22.6% (12.0 – 33.1)	
Average lpppd	31.3 litres	(26.7 - 35.9)	27.3 Litres	(23.5– 31.2)	25.3 Litres	(21.8-28.8)	26.3 litres	(23.0 – 29.5)	
Safe excreta disposal									
Proportion of households that use:									
An improved excreta disposal facility (improved toilet facility, 1 household)	10/454	2.2% (0.0 - 5.1)	323/494	65.4% (48.7– 82.1)	193/480	40.2% (23.6– 56.8)	172/479	2.1% (0.0 – 4.1)	

	Nyarugusu Old (DRC)		Nyarugusu New (BRD)		Nduta		Mtendeli		Classification of public health significance or target (where applicable)
	No./ total	% (95% CI)	No./ tot	% (95% CI)	No./ total	% (95% CI)	No./ total	% (95% CI)	
A shared family toilet (improved toilet facility, 2 household)	6/454	1.3% (0.0 – 4.0)	5/494	1.0% (0.0 – 2.1)	23/480	4.7% (1.5 – 8.0)	20/ 479	4.2% (1.4 – 7.0)	
A communal toilet (improved toilet facility, 3 households or more)	39/454	8.6% (0.0 – 18.7)	3/494	0.6% (0.6 – 1.3)	9/ 480	1.9% (0.2 – 3.5)	10/ 479	2.1% (0.0 – 4.2)	
An unimproved toilet (unimproved toilet facility or public toilet)	399/ 454	87.9% (76.8 – 99.0)	97.4/ 494	33.0% (16.2– 99.3)	225/480	53.1% (35.1– 71.2)	277/ 479	57.8% (40.4 –75.3)	
MOSQUITO NET COVERAGE									
Mosquito net ownership									
Proportion of households owning at least one LLIN	152/ 232	65.5% (59.0 - 72.1)	124/ 262	52.7% (43.1– 62.2)	119/ 245	48.6% (41.4– 55.8)	64/ 248	25.8% (19.1– 32.5)	Target of >80%
Average number of persons per LLIN (Mean)	5.4	-	9.2	-	12.4	-	13.9	-	2 persons per LLIN

Brief interpretation of the results

The overall findings of the nutritional status for refugees in Tanzanian Refugee Camps is within acceptable threshold of UNHCR target of GAM & SAM prevalence of below 10% and below 2% respectively. Compared to 2017, malnutrition prevalence has reduced by a wide margin in all the camps; in particular there was statistically significant reduction in Nduta Camp with GAM prevalence reducing by nearly three times from 6.1% in 2017 to 2.3 in 2018 ($P=0.006$). This might be due to the camps situation is stabilizing with no new arrivals most but more so the relative improved coverage of the existing nutrition and other services provided in the camps including supplementary feeding, micronutrient programme and also decentralization of the nutrition services to ensure it reaches those population allocated in the far zones. It's worth noting too that compared to 2017, a full food ration was provided in 2018.

Prevalence of stunting in children 6-59 months remains above 40% critical threshold in all the camps. In Nduta Camp, Boys are statistically significantly more malnourished compared with females with prevalence of 25.3% and 17.6% respectively ($P=0.006$). The Burundians are more stunted reflecting the situation in the country of origin where the same high rates of stunting is rampant.

Enrolment coverage of targeted Supplementary Feeding Programme for MAM (All criteria) was below the expected target of >90% in all the camps; Mtendeli 59.3%, Nduta 74.1%; Nyarugusu New Camp 57.0% and Nyarugusu Old Camp 61.1%; however, Compared to coverage of nutrition programmes in the region and previous estimates, this coverage relatively high mainly due to effective routine programming, well trained staff and good coverage of community screening and early case identification and referral system in place. Estimation of SAM enrolment coverage in therapeutic feeding programme was not possible due to zero cases of SAM children identified during SENS.

Measles and Vitamin A coverage is considerably improved in all the camps & is within the threshold of above 90% for vitamin A and above 95% for Measles.

Pregnant women attending antenatal care & the women attending ANC and receiving iron-folic acid pills at health facility was above 70% in across the camps; this is relatively low since in a settlement it is expected to register 100% enrolment in the ANC programme.

Anaemia prevalence in children (6 – 59 months) remains above the critical public health threshold of >40% within confidence interval especially among the Congolese population where prevalence of Anaemia has been consistently higher compared to Burundian population; there is need to conducted in-depth study to understand the causes of anaemia in spite of relevant interventions and comparatively high diet diversity. However, there was no statistical difference between 2017 and 2018 anaemia prevalence in all the camps; Age disaggregation of Anaemia, shows the young age group 6-24 months children are statistically more anaemic compared to the older age group 24-59 months in all the camps: - Nyarugusu old Camp 66.9% & 47.5%; Nyarugusu New Camp 41.25 & 35.3% ($p=0.001$); Nduta Camp 47.4% & 31.9% ($P=0.000$); Mtendeli Camp 62.9% & 40.9% ($p=0.000$).

Anaemia prevalence among non-pregnant women (15 – 49 years) was however at medium public health significance hovering at around 30% in Nyarugusu Old Camp & Mtendeli; in Nyarugusu New Camp, the prevalence of anaemia was at 22% and Nduta at 12.4% which is within low public health significance threshold. There was statistically significant improvement in prevalence in Nduta Camp from 28.4% to 12.4% in 2017 and 2018 respectively ($P=0.000$).

Infant and Young Children Feeding (IYCF) practices have deteriorated in all the camps except Mtendeli camp where there was an upward and stable trend of all the indicators in 2018 as well as in 2017; Exclusive Breastfeeding (EBF) prevalence 86.6%, timely Initiation of Breastfeeding rate (TIB) 86.6%. Rates of exclusive breastfeeding among Burundian population is on a second-year downward trend from a high of 87.9% in 2016 to 72.2% in 2017 and 65.7% in 2018; timely initiation of breastfeeding however remains stable above 70%. Nduta IYCF indicators are on the downward trend too with EBF rate of 81.2% in 2017 reducing to 71.7% in 2018; the same slight decreasing trend in timely applies to timely breastfeeding too.

Continued breastfeeding at one year was high in all the camps; however, continued breastfeeding fall drastically after the first year indicating majority of woman cease breastfeeding before the second year. Similarly, Introduction of solid, semi-solid or soft food at 6-8 months is high across the camps; the indicator is used to evaluate the introduction of complementary foods as per WHO recommendations.

Coverage of Ration card is high at nearly 100% in all the camps with negligible report of loss of card which was already report and measure put in place to ensure the households didn't miss their entitlements. Full ration was provided compared to the same time in 2017 where reduced ration was provided at 60%; consequently, the ration is reported to last more time compared to 2017 assessments; 21days in Nyarugusu new camp, Nyarugusu Old camp 23.5 days; Nduta 24.5days and Mtendeli 29.9 days out of the full cycle of 30 days. This compares favourably to an average of 17days in 2017.

The mean HDDS was low with households eating an average of 4.9 out of a total of 12 food groups, this means that households are consuming around one third of the total number of food groups. Low score reflects limited dietary diversity in the sampled households which needs to be addressed. This may be related to household's limited economic power to purchase items, since the HDDS is more or less the same as previous years when the markets were well functioning with a variety of items available as compared to 2018 where all income generating activities were effectively banned including closure of markets as well as money transfer services; small informal markets are however coming up.

An improved drinking water source was used by virtually all the households in the 3 camps (66% to 100%). It is assumed that if a household uses an improved drinking water source, they are more likely to be drinking clean water. Whoever, secondary contamination of water is more likely that not as only 40% of the households' report using a covered or narrow necked container to store their drinking water, making it far less likely to be contaminated as opposed to having open containers without a lid.

The average water usage in lpppd was 25.3 in Nduta, Mtendeli 26.3, Nyarugusu New camp 27.3 & Nyarugusu Old Camp 31.3%. In addition, over 60% of all households across the Camps collected ≥ 20 lpppd in the previous day.

Mtendeli recorded the highest water satisfaction with over 93% of the households giving a positive response an excellent improvement compared with 2017 assessment where Mtendeli fared badly in water accessibility due to the challenges of low water table and poor yield of boreholes. Nduta water satisfaction rate was 73%, Nyarugusu new camp 61% and Nyarugusu old camp the last at 56.9%.

Assessment of the use of improved vs non-improved latrines (whereby improved means

simple pit latrine with floor slab, shared by a maximum of two households), indicated that only less than 10% of the households were using improved excreta disposal facilities; majority use unimproved facilities in three camps of Nyarugusu Old Camp 79.7%, Nduta 67.5 and Mtendeli 57.8%. Situation is better in Nyarugusu New camp where only 33.0% report using unimproved facility, while majority 65.4% of the households have access to improved sanitation facility. Communal toilets are more difficult to keep clean due to little accountability of the users, thus increasing risk of contamination. Hygiene and sanitation remains a challenge especially at a personal and household level; the combined poor sanitation hygiene and sanitation and poor access to latrine to be an important contributory factor to chronic stunting.

Results of mosquito net ownership and utilisation has been generally poor over the 3 years assessment has been carried out. Majority of households neither owned at least one net of any type, or an LLIN, nor reached UNHCR's target coverage for LLINs of 80%; Nyarugusu Old camp ownership of LLIN was the highest at 65.5% of the households; approximately half of the households in Nyarugusu New Camp and Nduta while Mtendeli tails off at only 25.8%. Subsequently, the number of persons per LLIN continue to be suboptimal ranging from 5.4 persons per LLIN in Nyarugusu Old Camp to a high of 13.9 persons per LLIN in Mtendeli; this is abysmal compared to the UNHCR recommended threshold of 2 persons per LLIN; the inadequate and suboptimal mosquito net coverage could be a leading cause of high prevalence of anaemia in the short term as well stunting in the long run

In recent years, focus has shifted to universal coverage of mosquito net utilisation rather than just on under-fives, due to the need for protection for the general population. In Nyarugusu old Camp, approximate 47% of total population reported using LLIN; while approximately 30% in Nyarugusu new camp and Nduta Camp; the coverage in Mtendeli is however quite low at only 18.1%. On the vulnerable groups, more than half of children under five and pregnant woman sleep in an LLIN in Nyarugusu Old Camp; 39.6% & 40% in Nyarugusu New Camp respectively. The situation in Nduta is much less with around 41.3% of children under five and only 6.6% of pregnant woman; the same with Mtendeli 20.5% and 17.7% children under five and pregnant woman respectively.

Recommendations and priorities

Short term

Nutrition & Food Security

- WFP to share monthly monitoring data for stunting which is done during BSFP distribution especially on the use of MNP for children 24-59 months
- UNHCR and WFP to harmonize and integrate all the food and Nonfood distributions including GFD and SFP to occur concurrently to give ample time for mothers to take care of their children.

Health

- Improve on deworming coverage biannually for children above 12 months; deworming indicator to be included in the subsequent SENS.
- UNHCR, UNICEF and UNFPA to discuss and agree on possibility of distributing the mosquito net to children upon receiving measles vaccination when 9 month per national guideline.

WASH

- Improve on water availability in Mtendeli camp
- WASH partners to work together with health partners to educate the community and incorporate demonstrations on issues related to hygiene and sanitation; includes personal hygiene, household cleanliness and promotion of hand washing in Nduta and Mtendeli camp.
- WASH partners to ensure availability of toilet hand washing containers in all the houses and increase toilets at least one toilet per two families.
- To cover all the filled-up toilets and replace with the new once.

Long term

Health

- Health partners to prepare and conduct KAP survey on the family planning issues
- There is need for a formative assessment to see what are the underlying factors that contribute to declining of IYCF indicators and an efficient follow up mechanism on households at community level and reporting of performance progress for accountability that is lacking
-

Food Security and Nutrition

- Strengthen support and set of kitchen garden to improve of food diversity; this could be linked to IYCF activities especially mother to mother support groups.
- UNHCR to hold bilateral discussion with PLAN and TRCS Mtendeli to discuss the modality of distributing infant formula to orphans' infants.

NFI/Shelters

Conduct the need assessment of the community in terms of shelters especially Mtendeli and Nduta camp

1 Introduction

1.1 *Background & Geographic description of survey area*

Due in part to its reputation for peace and stability, the United Republic of Tanzania in collaboration with UNHCR has hosted refugees from neighbouring countries (Democratic Republic of Congo and Burundi) for decades. The refugees are hosted in three refugee camps in north western Tanzania: Nyarugusu (Congolese and Burundians), Nduta and Mtendeli (Both host Burundian refugees). According to UNHCR progress data as of December 2018 there were about 284,300 camp-based refugees, comprising of 74% Burundians, 25.8% Congolese and a small proportion of refugees from other nationalities. Nyarugusu is the largest camp which has a population of about 154,647 refugees, followed by Nduta camp which hosts about 92,420 and Mtendeli camp with about 37,233. The refugee camps are full and restriction on refugee movement, in the last one-year restriction in any income generating activities including any form of transport within the camp; all small-scale shops were closed as well as money transfer services and shops.

As from January to 30th September 2018, a total of 52,26038,390 refugees were assisted to voluntarily repatriate to Burundi from Tanzania in 88 Convoys; bringing the total repatriated from September 2017 to 57,8652, , 260, of which 57.28% are children.

This is the 5th SENS survey among the refugees in Nyarugusu since the first survey in September 2012 second in September 2014. Assessments in 2016, 2017 and 2018 covered all the three camps of Nyarugusu (old & New Camp), Nduta and Mtendeli. The current survey was conducted as from 16th September to October 13th 2018, with a total of 4 assessments.

UNHCR coordinated the survey in collaboration with WFP, UNICEF, WVI, Tanzania Red-cross Society (TRCS), MSF as well as Ministry of home affair and Community Development, Gender, Elderly and Children (MOHCDGEC). Funding was shared between UNHCR, WFP and UNICEF. UNHCR and WFP were in charge of logistics and daily operations.

1.2 *Description of the population*

Table 2 : Total Population and U 5 Children in the refugee camps (UNHCR Pro Gres data May 2018)

CAMP	Total Population	Total HH	Average Household Size	% of under 5 years	Total <5 years
Nyarugusu (Old)	62,214	9,095	6	19	11,627
Nyarugusu (New)	89,693	17,383	5.2	20	17,911
Nduta	96,685	22,423	5.2	22	20,984
Mtendeli	37,483	8,383	5	23	8,580
Total	286,075	57284		21	59,102

1.3 Food security situation

1.3.1 Food consumption Score

FCS slightly went down to 48 from 54 recorded in 2017, probably due to prolonged period of reduced ration distribution [Error! Reference source not found.](#). The proportion of households in the acceptable consumption group has been progressively increasing compared to March and May 2018 PDM exercises. However, the proportion of households with acceptable consumption (80%) remains below the CHS 2017 figure (87%) [Error! Reference source not found.](#).

Figure 1 : Food Consumption Score 2017 & 2018.

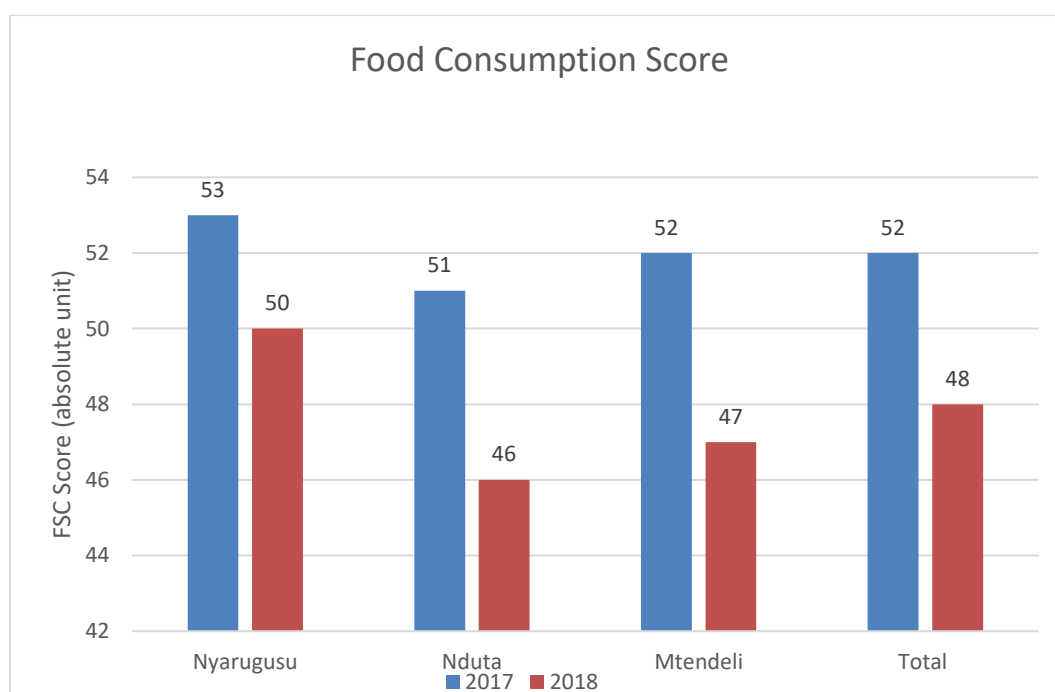
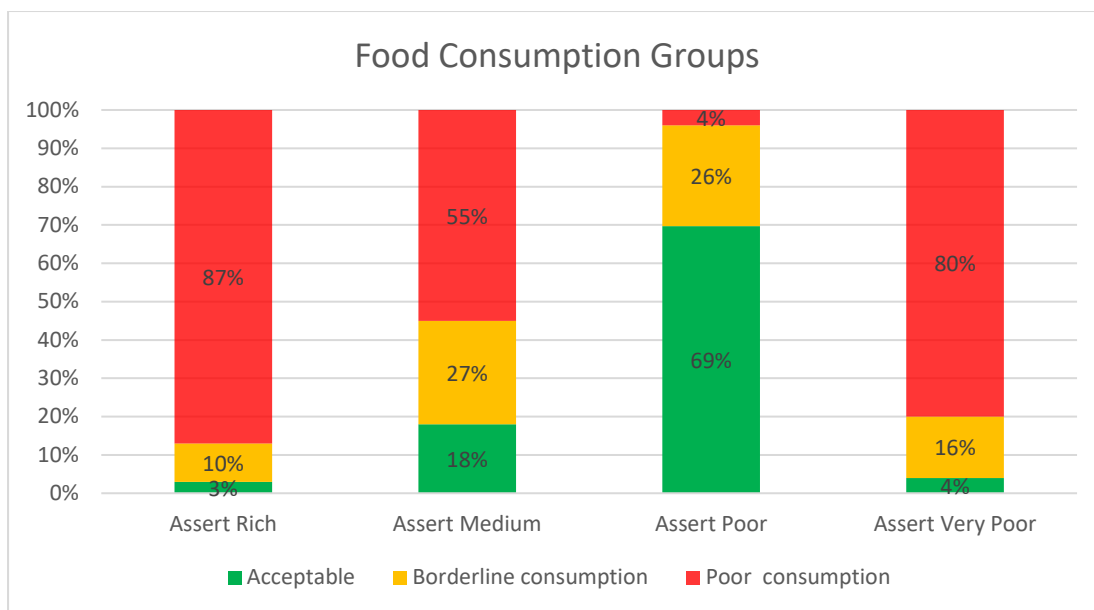


Figure 2 : Food groups in 2018 CHS & PDM assessments 2017 & 2018.



1.3.2 Household Dietary Diversity Score (HDDS)

Household Dietary Diversity Score (HDDS) slightly increased across camps, to an average of 4.3 compared to 4.2 during the May 2018 PDM, 3.7 during the March 2018 PDM and 4.0 during the 2017 CHS. An improvement in HDDS may be attributed to enhanced ration distribution compared to previous assessments when most of the food items in the basket were distributed at a reduced ration.

1.3.3 Coping Strategies

The coping strategies followed 2017 pattern. The majority reduced number of meals (63%), followed by limiting portion size (56%) and borrowing food or money to buy food (40%). A notable decrease is seen in the proportion of households who limited portion size (78 to 56%) and reduced number of meals (83 to 63%) following resumption of 100% cereal ration. The proportion of households exchanging labour for food almost doubled (from 12% to 22%) while other decreased at varying degrees.

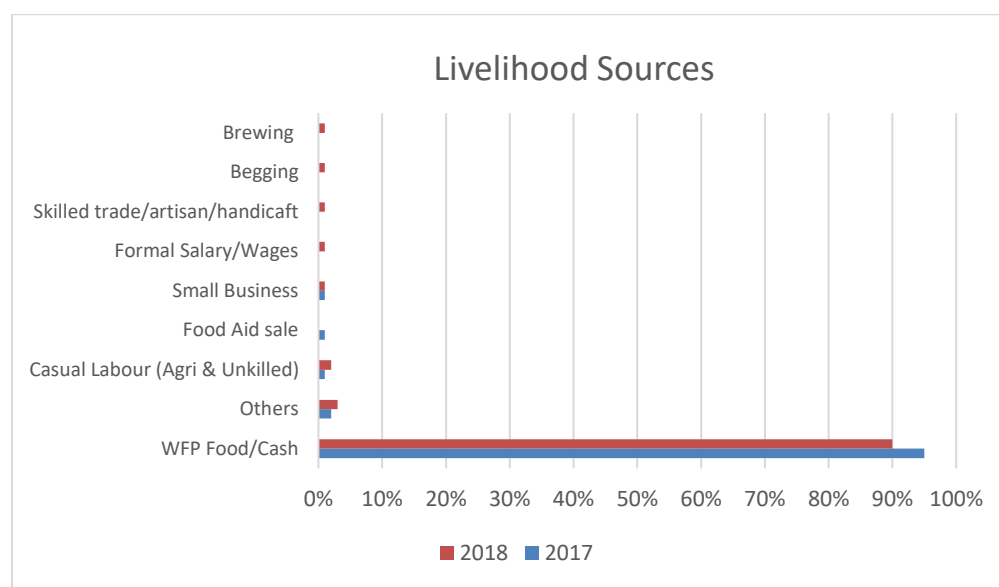
1.3.4 Livelihood and Food Sources

WFP food assistance continues to play as an important role as a main livelihood source (90%).

However, its contribution slightly decreased from 95% recorded in 2017, possibly due to reduced rations. Engagement in casual labour increased from 1% to 2%, consistent its increase as a coping strategy.

The contribution of food aid as a source of food for refugees decreased from 72% to 62% compared to 2017 CHS probably due reduced rations; consequently, food purchase increased by 9% (from 23% to 32%) while dependence on own production increased from marginally from 1% to 2%.

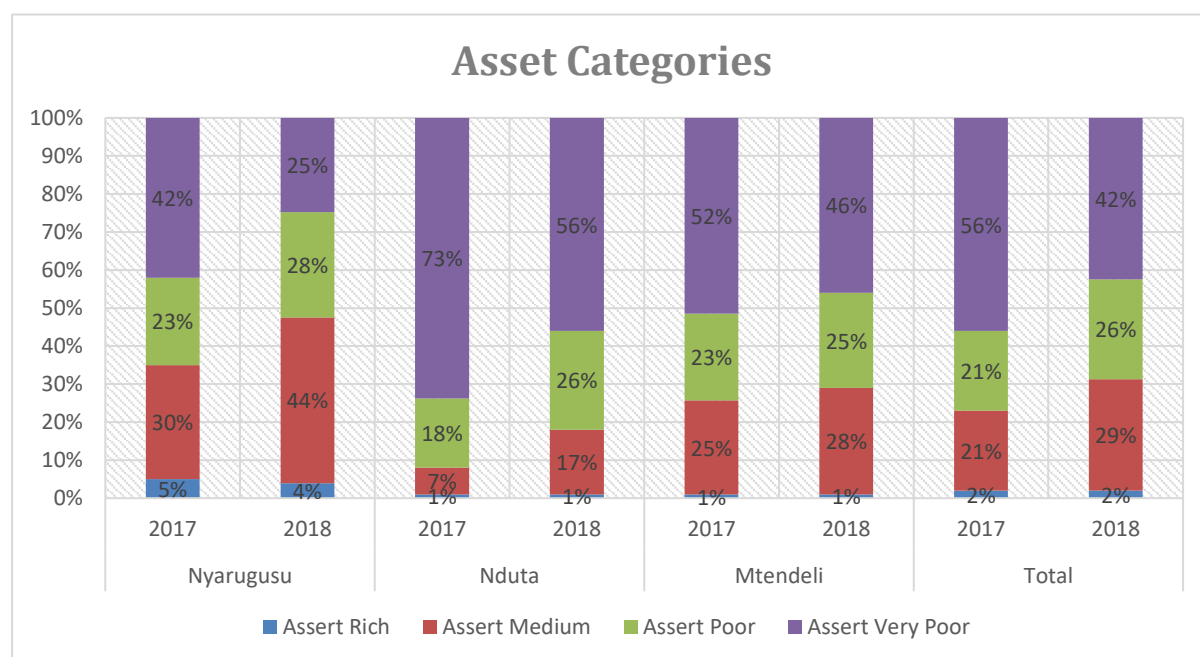
Figure 3: Livelihood sources



1.3.5 Asset ownership & Wealth

There was some improvement in the asset ownership with the proportion of households in the very poor category decreasing from 56% to 42%. In the overall, there was a slight increase in the proportion of household that own livestock (18% to 20%). Households with livestock increased in Nduta and Mtendeli but decreased in Nyarugusu.

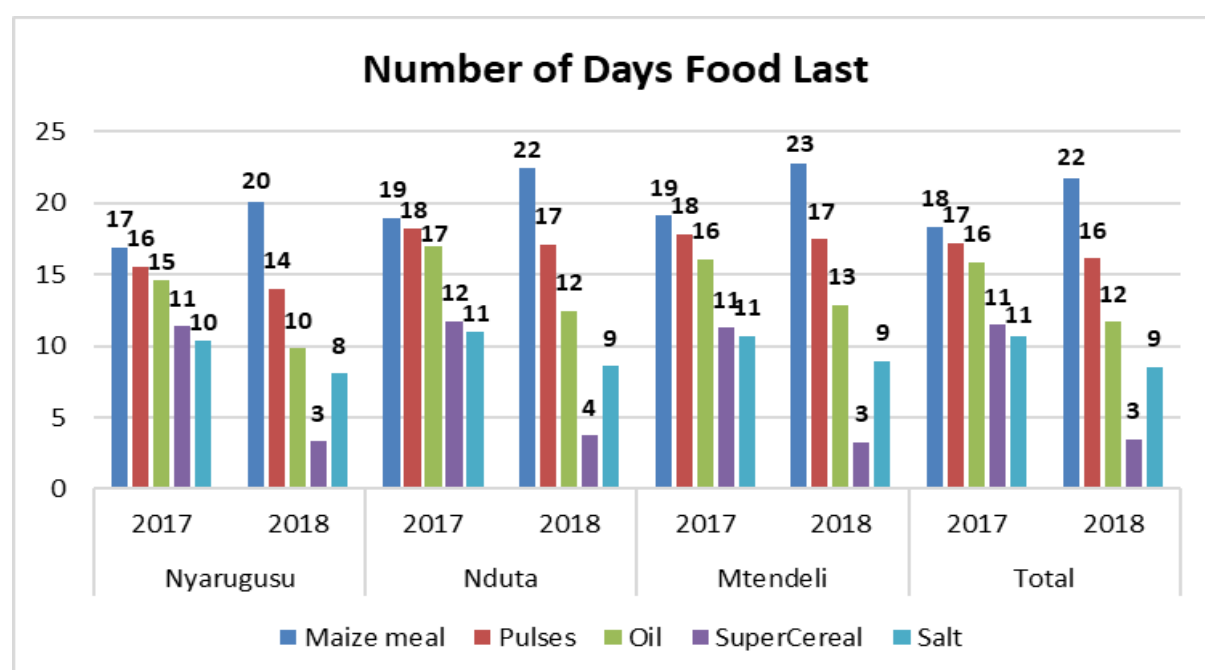
Figure 4: Asset categories 2017 & 2018.



1.3.6 Duration and use of Food Aid

Cereals lasted an average of 22 days compared to 18 days in 2017 CHS round because cereals were distributed at 100% compared to 60% in 2017. Food lasted less time in Nyarugusu compared to Nduta and Mtendeli signifying longer period of food shortage than other camps.

Figure 5: Duration of food ration in 2017 & 2018



1.4 Health situation

Mortality remain below emergency threshold of less for both under five children as well as crude mortality for the whole population. The leading causes of mortality in children under five in past one year are lower respiratory infections (LRTI) 15% and Malaria 23%. Death due to complication brought about by Anaemia is on the rise.

Figure 6: TOP FIVE CAUSES OF MORBIDITY IN CHILDREN UNDER-5

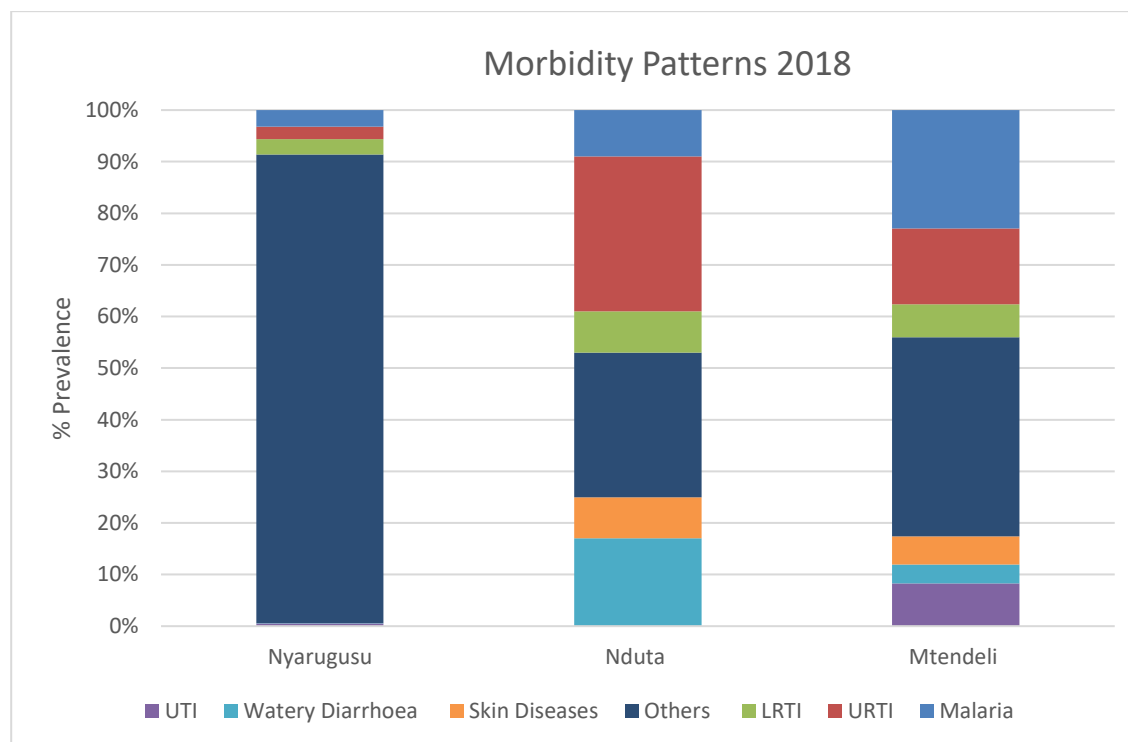


Figure 7: CRUDE AND UNDER-5 MORTALITY RATES NYARUGUSU OLD CAMP

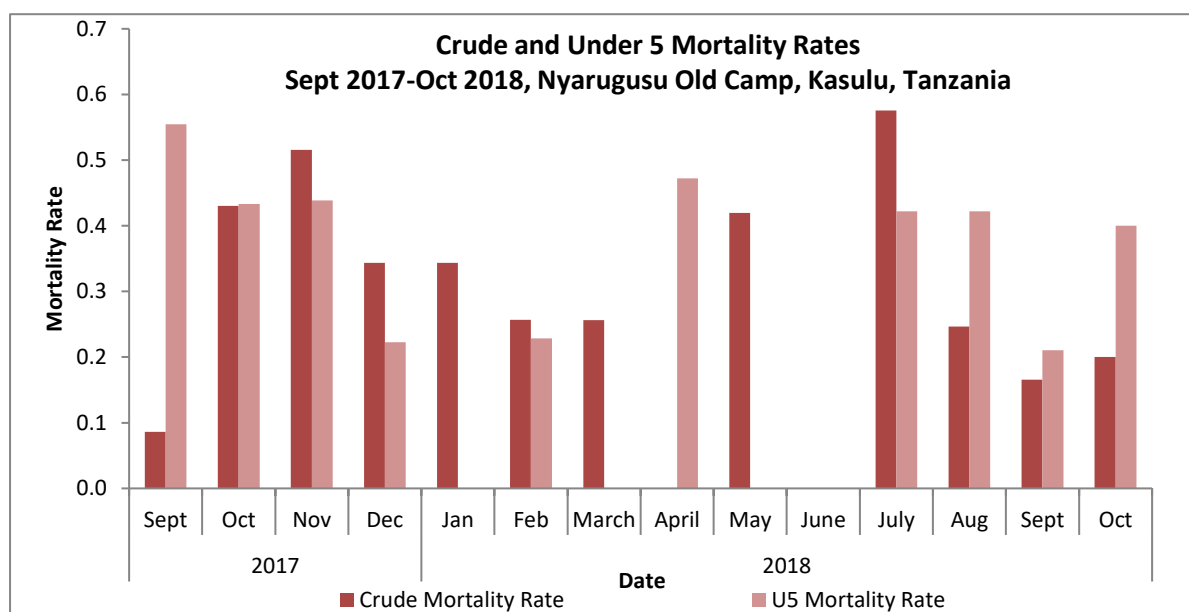


Figure 8: CRUDE AND UNDER-5 MORTALITY RATES NYARUGUSU New CAMP

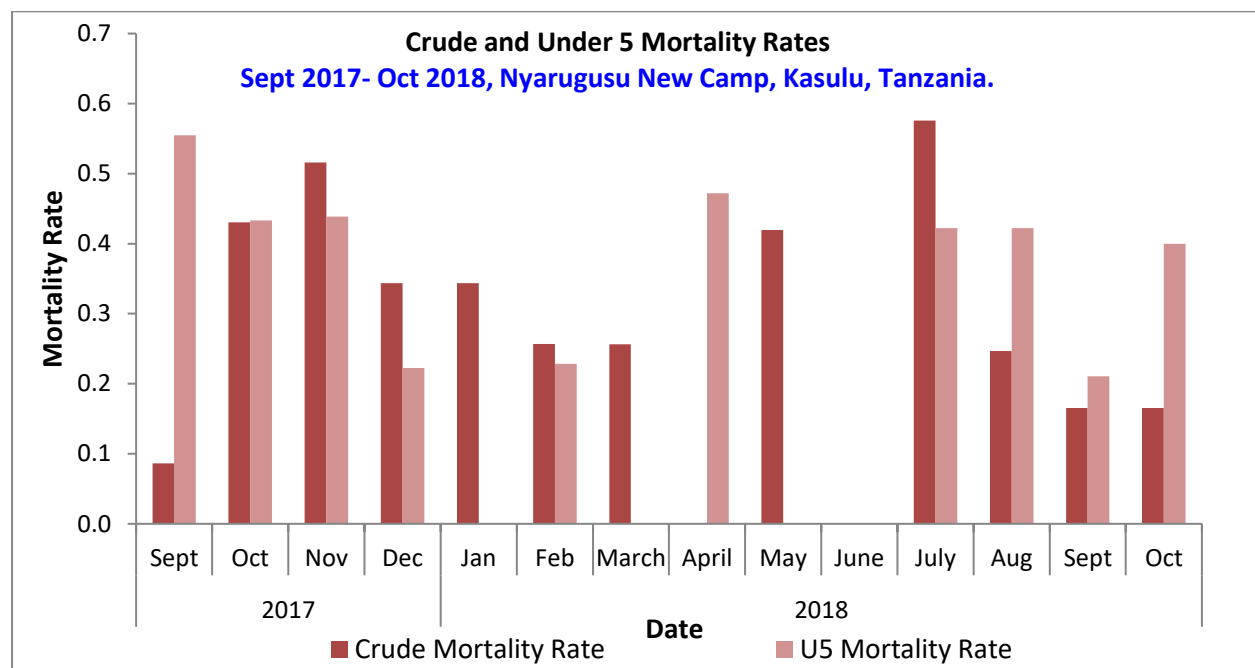


Figure 9: CRUDE AND UNDER-5 MORTALITY RATES (NDUTA CAMP)

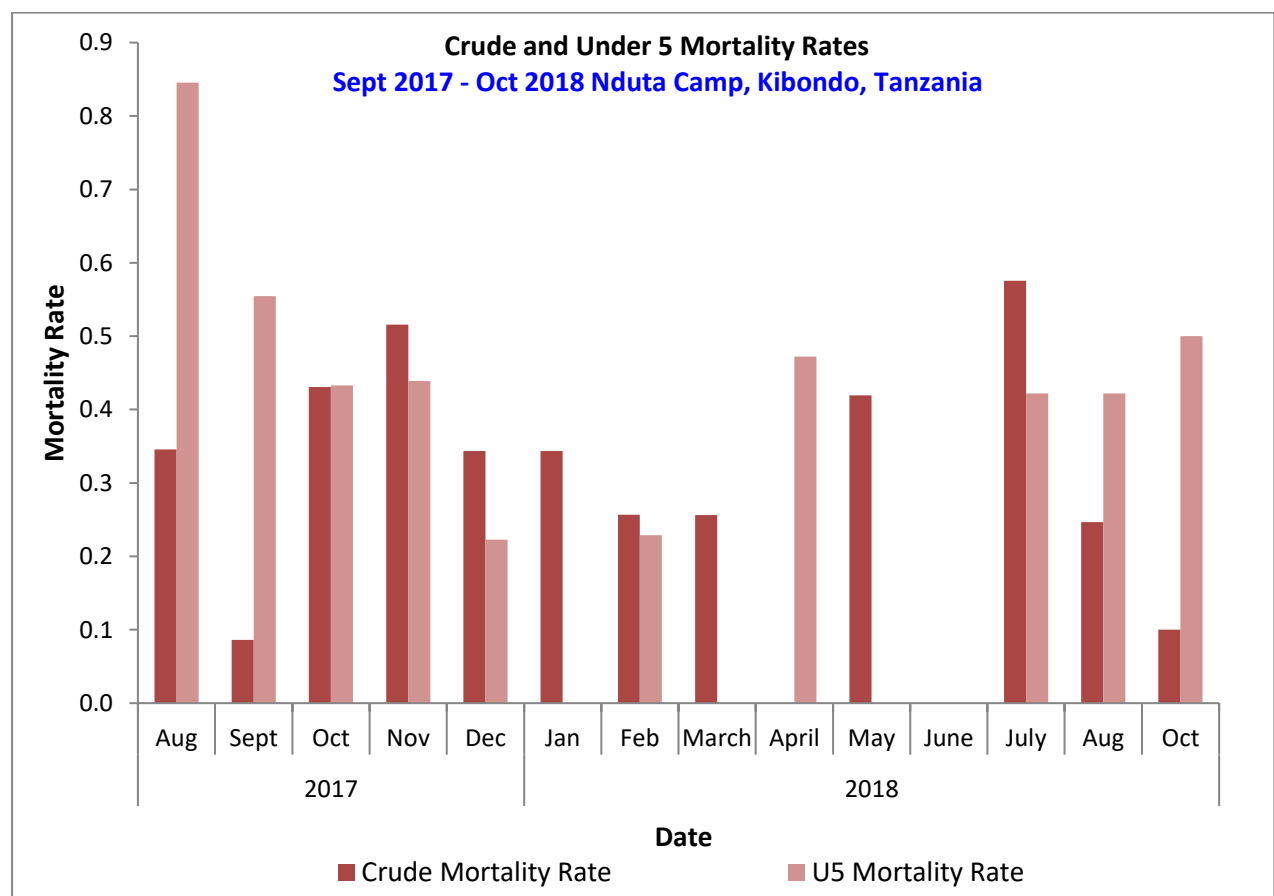
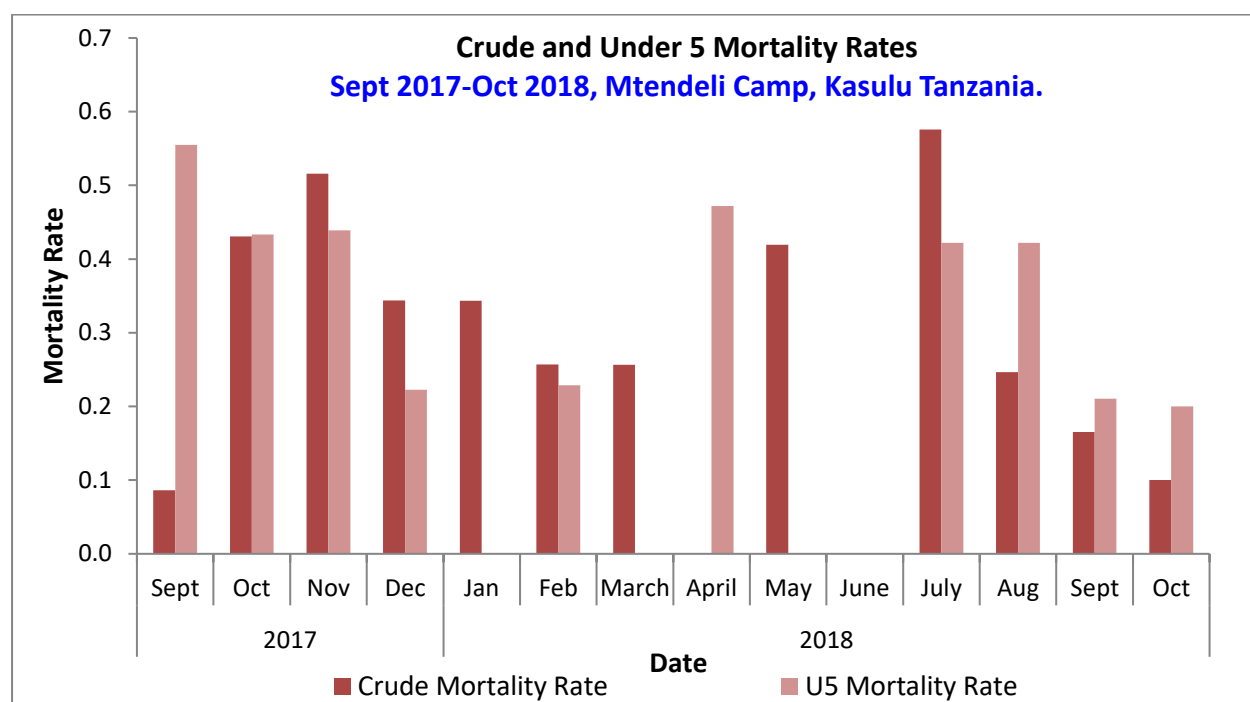


Figure 10 : CRUDE AND UNDER-5 MORTALITY RATES (MTENDELI CAMP CAMP)



1.5 Nutrition situation

Malnutrition rates have reduced across the camps, statistically significant so in Nduta Camp. However, there is a need for harmonising the admission and discharge criteria of SAM cases among the partners. Refugees report sharing Specialized Nutritious Foods (SNF) among household members. It has been reported that SNFs (i.e. SuperCereal and SuperCereal Plus), intended for specific nutritionally vulnerable individuals, are increasingly shared among household members to fill the food gap especially after the ration reductions in 2017, but in 2018 due to banning of all income generating activities, food aid is now used mostly for brewing within the camp. Stunting² remains at or above the threshold for critical public health significance ($\geq 40\%$) in all camps. Malnutrition treatment programmes for MAM and SAM Admissions trends for the past one year is summarized below. There is no discernible peak in admissions, but generally there seems to be an increase in admissions at the onset of the rains towards the end of the year and a reduction during the harvest season mid-year.

Anaemia prevalence remains above the threshold for critical public health significance with rates over 40% across the camps for children (6 – 59 months). Infant and Young Children Feeding (IYCF) practices have relatively deteriorated. Rates of exclusive breastfeeding declined in all camps over the past year, particularly in Nyarugusu, which dropped from approximately 89% in 2016 to 71% in 2017.

Figure 11: NUMBER OF ADMISSIONS TO TREATMENT PROGRAMMES FOR MAM AND SAM IN

² WHO 2006 Growth Standards; children 6 – 59 months old.

CHILDREN 6-59 MONTHS (Nyarugusu Old Camp)

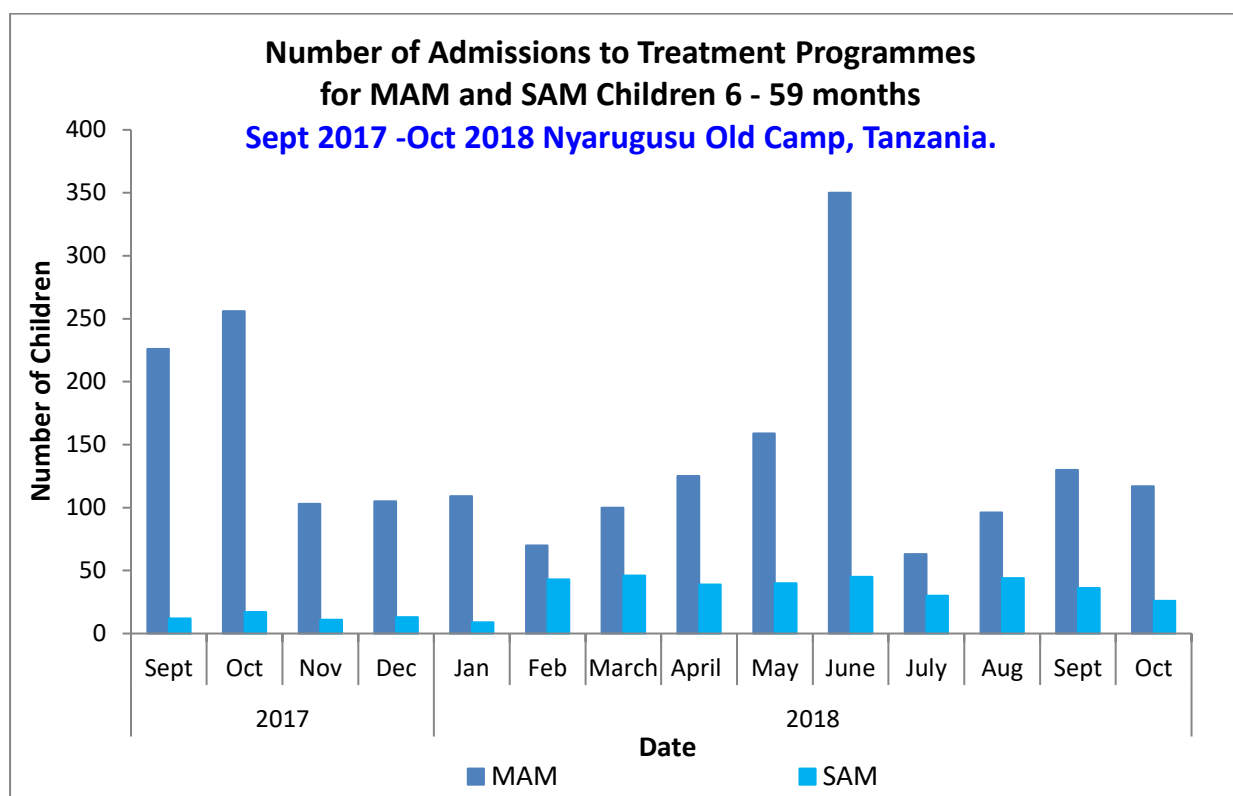


Figure 12: NUMBER OF ADMISSIONS TO TREATMENT PROGRAMMES FOR MAM AND SAM IN CHILDREN 6-59 MONTHS (Nyarugusu New Camp)

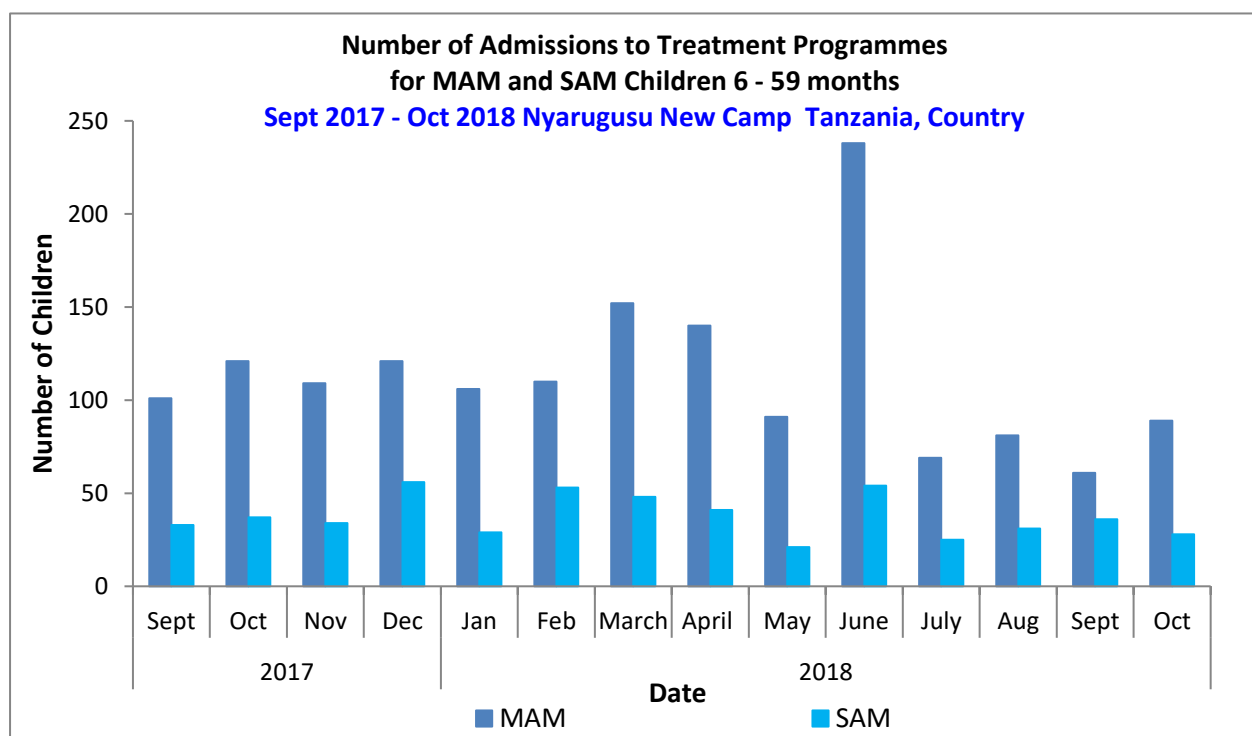


Figure 13: NUMBER OF ADMISSIONS TO TREATMENT PROGRAMMES FOR MAM AND SAM IN CHILDREN 6-59 MONTHS (Nduta Camp)

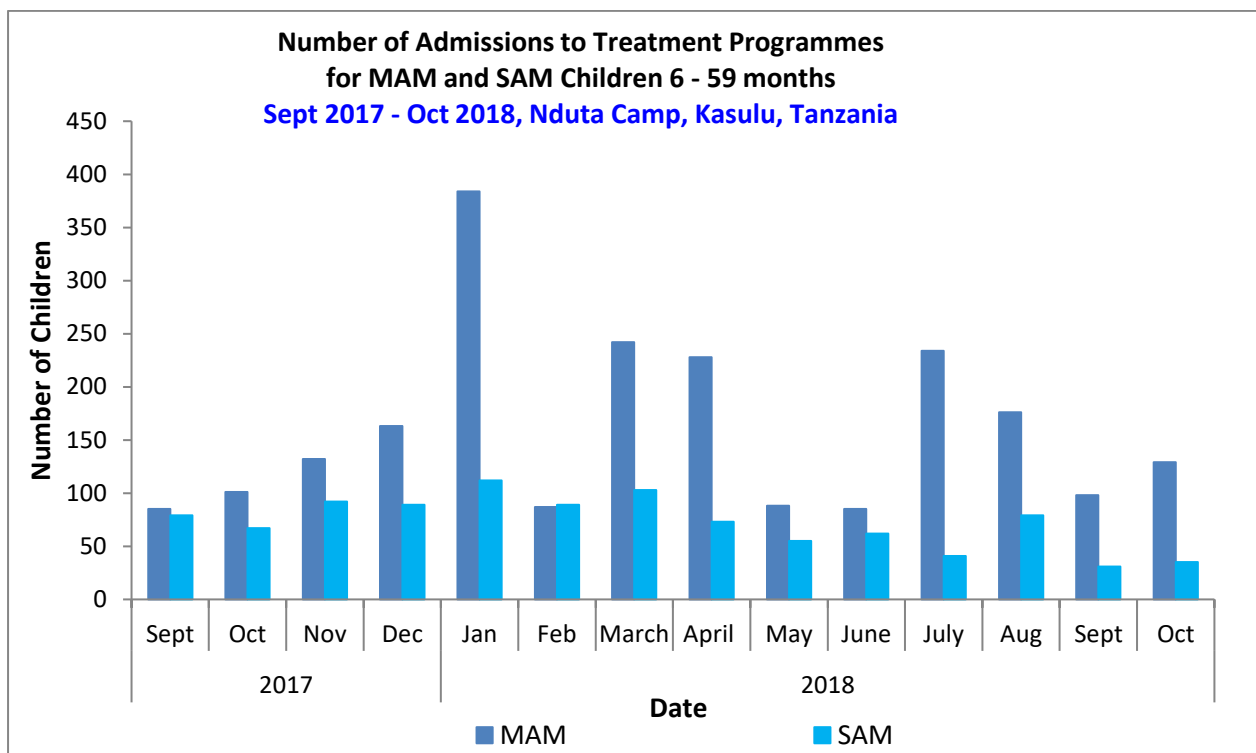
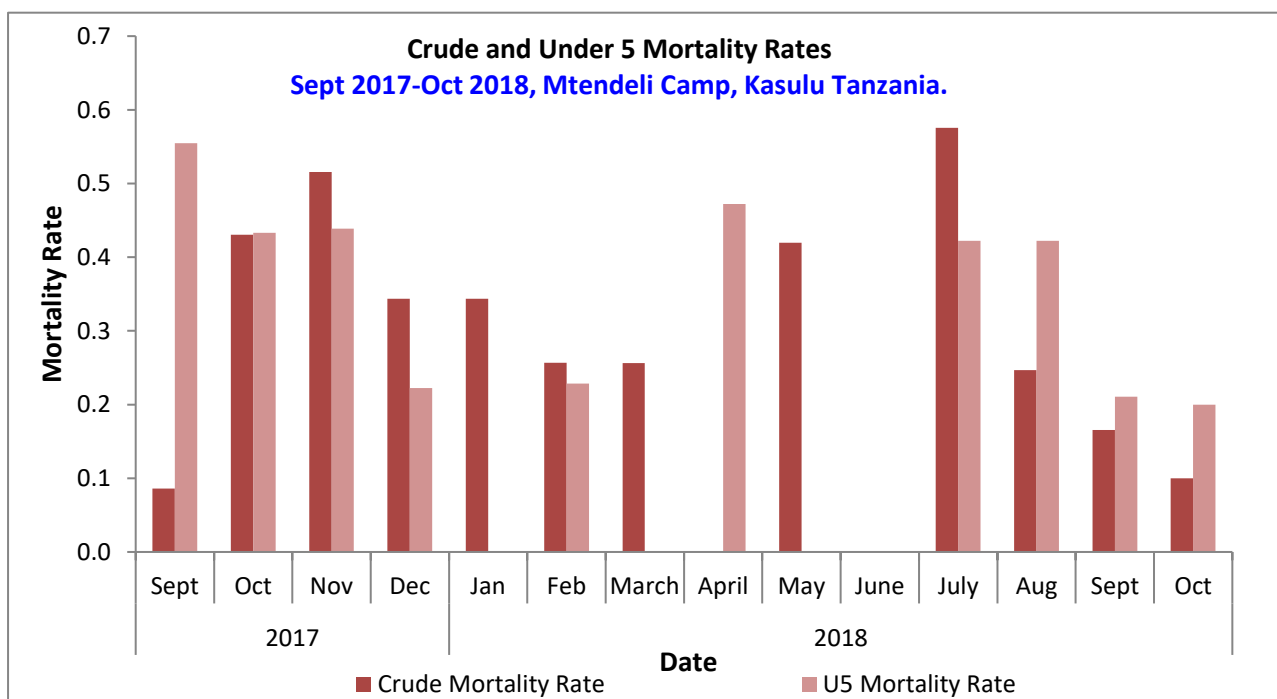


Figure 14: NUMBER OF ADMISSIONS TO TREATMENT PROGRAMMES FOR MAM AND SAM IN CHILDREN 6-59 MONTHS (Mtendeli Camp).



2 Survey Objectives

2.1 *Primary objectives:*

- To measure the prevalence of acute malnutrition in children aged 6-59.
- To measure the prevalence of stunting in children aged 6-59 months.
- To determine the coverage of measles vaccination among children aged 9-59 months.
- To determine the coverage of vitamin A supplementation received during the last 6 months among children aged 6-59 months.
- To assess the two-week period prevalence of diarrhoea among children aged 6- 59 months.
- To measure the prevalence of anaemia in children aged 6-59 months and in women of reproductive age between 15-49 years (non-pregnant).
- To investigate IYCF practices among children aged 0-23 months.
- To determine the coverage of ration cards and the duration the general food ration lasts for recipient households.
- To determine the extent to which negative coping strategies are used by households.
- To assess household dietary diversity.
- To determine the population's access to, and use of, improved water, sanitation and hygiene facilities.
- To determine the ownership of mosquito nets (all types and LLINs) in households.
- To determine the utilisation of mosquito nets (all types and LLINs) by the total population, children 0-59 months and pregnant women.
- To establish recommendations on actions to be taken to address the situation in Tanzania Refugee Camps.

2.2 *Secondary objectives:*

- To determine the enrolment coverage of therapeutic feeding and targeted supplementary feeding programmes for children 6-59 months.
- To determine enrolment into Antenatal Care clinic and coverage of iron-folic acid supplementation in pregnant women.

3 Methodology

A two-stage cluster survey was conducted using the Standardized Monitoring and Assessment of Relief and Transitions (SMART) methodology to collect and analyse data on child

anthropometry. Information on other indicators were collected and analysed using UNHCR's Standardised Expanded Nutrition Survey (SENS) Guidelines for Refugee Populations (Version 1.3, March 2012) (see www.sens.unhcr.org).

3.1 Sample size

The sample size for children 6-59 months was calculated using the Standardized Monitoring and Assessment of Relief and Transitions (ENA for SMART) software (July 9th 2015 version) in accordance with UNHCR SENS guidelines. The calculation was based on the PROGRESS population and the results of the SENS conducted in August - September 2017 for the refugee population living in Nyarugusu, Nduta and Mtendeli. *Table 6* presents the key parameters that were input in the ENA SMART software in order to generate the sample sizes.

Table 3 : Sample Size Calculation for Tanzania refugee camps PROGRESS 2018:

Camp	Total Popn	Total HHLDs	Ave HHLD Sizes ³	% of < 5 years ⁴	Total < 5 years	Est. Prevalence of GAM %	%+/- Desired precision	% of non-resp	Child 6-59 Months	HHL Ds
Nyarugusu (Old)	62,214	9,095	6.0	20.0%	9,095	3.8%	2.3	10%	433	446
Nyarugusu (New)	89,692	17,383	5.2	17.3%	17,383	4.5%	2.9	10%	431	512
Nduta	96,685	22,423	5.2	22.3%	22,423	9.0%	3	10%	419	465
Mtendeli	37,483	8,383	5.0	21.9%	8,383	6.9%	3	10%	448	485
	308,611	57,284			62,695				1731	1908

For each indicator used, households and individual were sampled as per *Table 4*.

Table 4: Final sample sizes of the households surveyed in Nyarugusu, Nduta and Mtendeli camps - Sept/Oct 2018

Survey modules	Nyarugusu -Old Camp	Nyarugusu -New Camp	Mtendeli Camp	Nduta
Households included for Anthropometry and Health module and mortality (ENA for SMART)	446	512	465	485
Households included for children Anaemia module (UNHCR SENS guidelines)	446	512	465	485
Households included for IYCF module (UNHCR SENS Guidelines)	446	512	465	485

³ The household size has been adjusted upwards based on analysis of 2016 SENS data where it was apparent children under five were over sampled perhaps due the PROGRESS underestimation of the household size.

⁴ The % of children under five has been maintained as 2016 survey, which is slightly lower than calculated from progress data- this is to ensure adequate number of households are reached.

Households included for women Anaemia module (UNHCR SENS guidelines)	232	256	233	243
Households included for Food Security module (UNHCR SENS Guidelines)	232	256	233	243
Households included for WASH module (UNHCR SENS Guidelines)	446	512	465	485
Households included for mosquito net module (UNHCR SENS Guidelines)	232	256	233	243

3.2 Sampling procedure: selecting clusters

Cluster were based on existing villages. A complete list of the total population per village was obtained from UNCR Progress (July 2018). The same was cross checked with respective agencies on ground to eliminate vacated villages/blocks due to ongoing repartition.

To determine the number of clusters to be included in the survey, number of teams, time taken per household as well the available time to conduct the survey was put into consideration. To assign clusters, the probability proportional to size (PPS) was employed using the ENA software version July 9th, 2015.

3.3 Sampling procedure: selecting households and individuals

Once clusters were identified, the next stage was the selection of households to participate in the survey. The cluster was equivalent to village; where a village was deemed large (above 500 households), the blocks were listed and one randomly picked by listing. One day in each camp was assigned for labelling & marking of all the households in each the identified clusters; the household labelling also provided opportunity to further sensitise and mobilize the community at the households' level.

From the list of the households, ENA software was used to pick the required households using simple random sampling in the second stage sampling.

All the eligible household members were included in the survey; that is all children 0 to 59 months, and women 15 to 49 years in sampled households. The interview was conducted in most cases with the mother in the household or in her absence with an adult member of the household who was knowledgeable with the everyday running of the household. In the event of an absent household or individual, the team members returned to the household once during the course of the day. If the household or individual was not found after the follow up visit, the household or individual was counted as an absentee and was not replaced. If an individual or household refused to participate, it was considered a refusal and the individual or household was not replaced with another. Abandoned and empty households were not marked during listing. However, if a selected household was abandoned, the household was replaced by another. If a selected child was disabled with a physical deformity preventing certain anthropometric measurements, the child was still included in the assessment for the relevant indicators

3.4 Questionnaire and measurement methods

3.4.1 Questionnaire

Mobile phone formatted for ODK questionnaires were used with Kiswahili as the default language, and English as the second option. The questionnaires were set with ranges for age, height, haemoglobin as a way of minimising mistakes when collecting data. In addition, skip options were provided as necessary. Piloting was conducted before the survey. The team leader administered household questionnaire while, an interviewer administered individual question. The whole process was overseen by a supervisor who went through the entire questionnaire in the phone and ticked reviewed as appropriate.

Six module specific questionnaires were designed to provide information on the relevant Indicators for the different target groups, as indicated in the survey objectives and based on the standard SENS questionnaires (see Appendix 5 for all questionnaires). Questionnaires covered all SENS modules and included the following areas and measurements.

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

3.5 *Measurement methods*

Household level indicators

- Food security, WASH and Mosquito net: The questionnaire was based on the standard SENS questionnaires. For WASH, irrelevant latrine and water source options were not included.

Individual-level indicators

- Sex of children: sex was recorded as male or female.
- Birth date or age in months for children 0-59 months: The exact date of birth (day, month and year) was recorded from either a child health card or birth notification if available. If no reliable proof of age was available (minority of children) age was estimated in months using a local event calendar or by comparing the selected child with a sibling whose age was known, and was recorded in months on the questionnaire. If the child's age could absolutely not be determined by using a local events calendar or by probing, the child's length/height was measured and a cut off between 65.0 and 110.0 cm was used for inclusion. The UNHCR Manifest was not used for recording age.

- Age of women 15-49 years: Reported age was recorded in years.
- Weight of children 6-59 months: Measurements were taken to the nearest 100 grams using an electronic scale (SECA scale). The scale was placed on wooden platform laid on a firm flat ground before measurements were taken. The double-weighing technique was used to weigh young children unable to stand on their own or unable to understand instructions not to move while on the scale. Clothes were removed during weighing although where necessary, light undergarments were allowed.
- Height/Length of children 6-59 months: Children's height or length was taken to the closest millimetre using a wooden height board. Height was used to decide on whether a child should be measured lying down (length) or standing up (height). Children less than 87cm were measured lying down, while children ≥ 87 cm were measured standing up
- Oedema in children 6-59 months: The presence of bilateral oedema was assessed by applying gentle thumb pressure on to the tops of both feet of the child for three seconds. If a shallow indent remained in both feet, oedema was recorded as present. The survey coordinators verified all oedema cases reported by the survey teams.
- MUAC of children 6-59 months: MUAC was measured at the mid-point of the left upper arm between the elbow and the shoulder and taken to the closest millimetre using standard tapes.
- Child enrolment in selective feeding programme for children 6-59 months: This was assessed for the outpatient therapeutic programme and for the supplementary feeding programme using card or recall. The programme products were shown when recall was used; plumpy nut for the OTP and plumpy sup for the TSFP.
- Measles vaccination in children 9-59 months: Measles vaccination was assessed by checking for the measles vaccine on the Expanded Programme on Immunisation (EPI) card or by carers recall if no EPI card was available. For ease of data collection, all children aged 6-59 months were assessed for measles but analysis was only done on children aged 9-59 months.
- Vitamin A supplementation in last 6 months in children 6-59 months: Whether the child received a vitamin A capsule over the past six months was recorded from an EPI card or health card if available, or by asking the caregiver to recall if no card was available. A vitamin A capsule was shown to the caregiver when asked to recall.
- Haemoglobin (Hb) concentration in children 6-59 months and women 15-49 years (non-pregnant): Hb concentration was taken from a capillary blood sample from the fingertip and recorded to the closest gram per decilitre by using the portable HemoCue Hb 301 Analyser. The third drop was collected after wiping the first two drops.
- Diarrhoea in last 2 weeks in children 6-59 months: an episode of diarrhoea was defined as three loose stools or more in 24 hours. Caregivers were asked if their child had suffered episodes of diarrhoea in the past two weeks.
- ANC enrolment and iron and folic acid pills coverage in pregnant women: Whether the woman was enrolled in the ANC programme and was receiving iron-folic acid pills was assessed by use of the ANC card or by recall. An iron-folic acid pill was shown to the pregnant woman when asked to recall.
- Infant and young child feeding practices in children 0-23 months: Infant and young child feeding practices were assessed based on standard WHO recommendations (WHO 2010). Infant formula feeding and bottle use was also assessed.
- Referrals: Children aged 6-59 months were referred to the health post for treatment when MUAC was <11.5 cm, when oedema was present or when haemoglobin was <7.0 g/dL. Women of reproductive age were referred to the hospital for treatment if haemoglobin was <8.0 g/dL.

3.6 Case definitions, inclusion criteria and calculations

In this survey, a household was defined as a group of people who cook and eat together from the same pot. Table 5 shows the definition and classification of the nutritional indicators used. Main results are reported according the WHO Growth Standards 2006.

Table 5 : NUTRITIONAL STATUS AND ANAEMIA INDICATORS AND CUT-OFFS USED

Indicator		Children 6-59 months	Women 15-49 years Non-Pregnant
Acute Malnutrition ⁵	Global acute malnutrition	WHZ <-2 and/or oedema	
	Moderate acute malnutrition	WHZ <-2 and ≥-3	--
	Severe acute malnutrition	WHZ <-3 and/or oedema	--
Stunting ¹	Total stunting	HAZ <-2	-
	Moderate stunting	HAZ <-2 and ≥-3	--
	Severe stunting	HAZ <-3	--
Underweight ¹	Total underweight	WAZ <-2	
	Moderate underweight	WAZ <-2 and ≥-3	--
	Severe underweight	WAZ <-3	--
Acute Malnutrition (MUAC)	--	<12.5cm and/or oedema	
	--	≥11.5cm and <12.5cm	--
	--	<11.5cm and/or oedema	--
Anaemia	Total anaemia	Hb <11.0 g/dL	Hb <12.0 g/dL
	Mild anaemia	Hb 10.0 - 10.9 g/dL	Hb 11.0 - 11.9 g/dL
	Moderate anaemia	Hb 7.0 - 9.9 g/dL	Hb 8.0 - 10.9 g/dL
	Severe anaemia	Hb <7.0 g/dL	Hb <8.0 g/dL

Selective Feeding Programme Coverage (children 6-59 months)

Selective feeding programme coverage was assessed using the direct method as follows:

Targeted supplementary feeding programme

Coverage of TSFP programme (%) =

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

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

⁵ Calculated using NCHS Growth Reference 1977 and WHO Growth Standards 2006 **WHZ**: weight-for-height z-score, **HAZ**: height-for-age z-score, **WAZ**: weight-for-age z-score

Therapeutic feeding programme

Coverage of OTP programme (%) =

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

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

Infant and Young Child Feeding (IYCF) Indicators (children 0-23 months)

Infant and young child feeding practices were assessed based on standard WHO recommendations (WHO, 2010) as follows:

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

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

Children 0-23 months of age

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

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

Infants 0–5 months of age

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

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

Children 12–15 months of age

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

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

Infants 6–8 months of age

- **Consumption of iron-rich or iron-fortified foods: WHO core indicator 8** - Proportion of children 6–23 months of age who receive an iron-rich or iron-fortified food that is specially designed for infants and young children, or that is fortified in the home.

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

Children 6–23 months of age

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

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

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

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

- **Infant formula intake** – Proportion of children 0-23 months consuming infant formula

Children 0-23 months of age consuming infant formula
Children 0-23 months of age

- **Consumption of FBF+** - Proportion of children 6-59 months consuming CSB+

Children 6-59 months of age consuming CSB+
Children 6-59 months of age

- **Consumption of FBF super** – Proportion of children 6 to 59 months consuming CSB++

Children 6-59 months of age consuming CSB++
Children 6 to 59 months

WASH

The table below provides an overview of the definitions of drinking water and sanitation (toilet) facilities used in the survey and available in Nyarugusu, Nduta and Mtendeli refugee camps.

Table 6: DEFINITIONS OF DRINKING WATER AND SANITATION (TOILET) ACILITIES

Drinking Water	Improved source	Unimproved source
	Piped water into dwelling, plot or yard	Unprotected spring
	Public tap/standpipe	Small water vendor (cart with small tank or drum)
	Protected dug well with hand pump	Tanker truck
		Surface water (river, dam, lake, pond,

		stream, canal, irrigation channels).
**Tankering water may be used early on in an emergency response by UNHCR or partners. For the water to be considered “improved” it must be chlorinated. Where water is sold from a tanker by a private contractor, it is considered “unimproved”.		
Sanitation facility definition		
	Improved category	Unimproved category
	VIP latrine	Pit latrine without slab (slab with holes) /open pit
	Pit latrine with slab	Bucket
	Composting toilet	No facilities or bush or field
Sanitation facility classification based on definition and sharing		
Improved excreta disposal facility	A toilet in the above “improved” category AND one that is not shared with other families*,**	
Shared family toilet	A toilet in the above “improved” category AND one used by 2 families / households only (for a maximum of 12 people)**	
Communal toilet	A toilet in the above “improved” category AND one used by 3 families / households or more	
Unimproved toilet	A toilet in the above “unimproved” category OR a public toilet which any member of the public can use e.g. in hospitals or markets	
<p>*To maintain consistency with other survey instruments (e.g. the multiple indicator cluster survey), UNHCR SENS WASH module classifies an “improved excreta disposal facility” as a toilet in the above “improved” category AND one that is not shared with other families / households.</p>		
<p>**According to UNHCR WASH monitoring system, an “improved excreta disposal facility” is defined differently than in survey instruments and is defined as a toilet in the above “improved” category AND one that is shared by a <i>maximum</i> of 2 families / households or no more than <i>12 individuals</i>. Therefore, the following two categories from the above SENS survey definitions are considered “improved excreta disposal facility” for UNHCR WASH monitoring system: “improved excreta disposal facility” and “shared family toilet”.</p>		

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

3.7 **Classification of public health problems and targets**

Anthropometric data: UNHCR states that the target for the prevalence of global acute malnutrition (GAM) for children 6-59 months of age by camp, country and region should be <10% and the target for the prevalence of severe acute malnutrition (SAM) should be <2%. For stable camps, the target is to have GAM <5%. **Error! Reference source not found.** Table 10 below shows the classification of public health significance of the anthropometric results for children under-5 years of age.

Table 7: CLASSIFICATION OF PUBLIC HEALTH SIGNIFICANCE FOR CHILDREN UNDER 5 YEARS OF AGE (WHO 1995,

2000)

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

Table 8: Performance indicators for selective feeding programmes (UNHCR Strategic Plan for Nutrition and Food Security 2008-2012) *

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

* Also meet SPHERE standards for performance

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

Table 9 : Recommended targets for measles vaccination and vitamin A supplementation in last 6 months (UNHCR SENS Guidelines).

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

Anaemia data: The UNHCR Strategic Plan for Nutrition and Food Security (2008-2010) states that the targets for the prevalence of anaemia in children 6-59 months of age and in women 15-49 years of age should be low i.e. <20%. The severity of the public health situation for the prevalence of anaemia is classified according to WHO criteria as shown in Table 13.

Table 10: Classification of public health significance (WHO, 2000)

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

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

Table 11: UNHCR WASH Programme Standard

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

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

Table 12: UNHCR Mosquito Net Programme Standards

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

3.8 *Training, coordination and supervision*

3.8.1 Survey teams and supervision

The survey was conducted by a total of 6 teams; each team had six members with the whole survey having a total of thirty-six staff. A team consist of Supervisor, team leader, Interviews (2), haemoglobin measurer, Anthropometric measurers (2). Two sets of Android phones were used:- One phone for individual questionnaires and another for household level questionnaires.

3.8.2 Training

Training for all team the members except anthropometric measurers lasted for a period of 5 days. The first three days were dedicated to the theoretical and review of questionnaire training, the fourth day was used for piloting and the fifth day was used for standardisation. Training topics were shared between the Survey Coordinator, Survey Supervisors and the UNHCR Nutrition office (Nutrition and IYCF module) and associate (health module). The survey coordinator was in charge setting up the mobile phones to collect data, configuring the Open Data Kit (ODK) on the phones and setting up the server for data synchronisation and exporting.

The topics covered were general survey objectives, overview of survey design, sampling, anthropometric measurements, signs and symptoms of malnutrition, data collection using the mobile phones and interview skills, WASH interview, IYCF interview, mosquito net coverage interview and anaemia assessment skills.

Anthropometric staff were recruited and trained in the camps for a period of two days inclusive of standardization. For the standardization exercise, a total of 10 households were visited two times by the survey teams with each eligible child measured two times by each team. For the Pilot survey, each team visited a total of four households and conducted all the survey modules questionnaires. The standardisation was conducted in a village which were not sampled to participate in the survey. A feedback session was conducted after the teams returned from the exercise to address challenges encountered.

3.9 *Data collection*

Data collection was done as per the table 6 below. The team interacted with the households during the household marking in addition to daily introduction by the team leaders assisted by the team members who were recruited from the respective communities. The questionnaires were developed

on excel and converted to ODK format using X form software. Data was collected using the ODK for Android platform using a total of 14 HTC- One phones. Each of the six teams had two phones for individual and household questionnaire respectively. Two phones were on standby in case the phones with the team encountered problems.

Figure 15: Survey data collection days per camp.

Refugee Camp	Survey collection dates
Nyarugusu Old Camp (Congolese)	17 th -21 st Sept 2018
Nyarugusu New Camp (Burundians)	24 th – 28 th Sept 2018
Nduta	2 nd - 6 th Oct 2018
Mtendeli	9 th – 13 th Oct 2018

3.10 Data analysis

At the end of each day's data collection, the Survey Coordinator and the Survey Supervisors checked each and every questionnaire for completeness and then finalised the questionnaires checking supervisors' box in the ODK phone. Once the questionnaires were finalised, they were sent to the server for synchronisation and exporting. After exporting the data, the anthropometric data plausibility check was conducted to identify areas and teams that need more supervision or to be strengthened. Teams that require more supervision were given more attention the following day.

The ODK exports data in CSV format, for cleaning and analysis the data was saved in Microsoft Excel 1997 to 2003 format. Anthropometric data was also cleaned using flexible cleaning criterion (+/- 3 SD from the observed mean; also known as SMART flags in the ENA for SMART software). SMART flags were excluded in the analysis. Anthropometry indices were analysed using the ENA for SMART July 9th 2015 version was used. Epi Info version 7.2.2.1 was used to analyse all the other data.

3.11 Ethical Issues

The survey ensured data collection from patients was done with strict adherence to ethical respect to each individual participant's autonomy. The survey was conducted in an ethical manner that was in line with the best research practice. Two important ethical issues were adhered to when conducting the survey: confidentiality and informed consent. The respondent's right to confidentiality was respected and any legal requirements on data protection adhered to. The respondents as well as community and government leaders were fully informed about the aims of the survey, and the respondent's consent to participate in the survey was obtained and recorded prior to the start of interview process. The respondents were informed they had a right to stop participation at any point.

4 Results

Table 13 : DEMOGRAPHIC CHARACTERISTICS OF THE STUDY POPULATION

	<i>Nyarugusu Old Camp</i>	<i>Nyarugusu Old Camp</i>	<i>Nduta Camp</i>	<i>Mtendeli Camp</i>
Total households surveyed	522	497	480	479

Total population surveyed	3412	3035	3784	2728
Total U5 surveyed	569	763	801	763
Average household size	6.5	6.1	7.9	5.7
% of U5	16.7	25.1	21.1	17.6%

4.1 **Children 6-59 months (Nyarugusu Old Camp)**

4.1.1 **Sample size and clusters**

Table 14 : TARGET AND ACTUAL NUMBER CAPTURED

	Target (No.)	Total surveyed (No.)	% of the target
Children 6-59 months	573	569	99.3%
Clusters (where applicable)	30	30	100%

Table 15: CHILDREN 6-59 MONTHS - DISTRIBUTION OF AGE AND SEX OF SAMPLE

	Boys		Girls		Total		Ratio
AGE (mo)*	no.	%	no.	%	no.	%	Boy: Girl
6-17 months	74	45.1	90	54.9	164	28.8	0.8
18-29 months	54	48.2	58	51.8	112	19.7	0.9
30-41 months	77	49.4	79	50.6	156	27.4	1.0
42-53 months	38	41.8	53	58.2	91	16.0	0.7
54-59 months	23	50.0	23	50.0	46	8.1	1.0
Total	266	46.7	303	53.3	569	100.0	0.9

* Percentage of children with no exact birthday: 1 %

The overall gender and age ratio are within the expected ranges. The prevalence of Global wasting as measured by weight for height Z-Score reduced by half compared to previous year 2017; the reduction however is not significant. Based on Gender, males are more malnourished than females Table 16, while based on age group, the malnutrition clustered among children of age groups 6-17, 30-41 & 42-53 Figure 18; overall GAM rate has been below 5% in the last 5 years and there has been zero cases of Severe Acute Malnutrition (SAM) except in 2012 Figure 17.

Based on MUAC; GAM & SAM prevalence were 2.5%, and 0.4% respectively; Females were 3 times more malnourished compared to males: - 3.6% and 1.1% respectively Table 20.

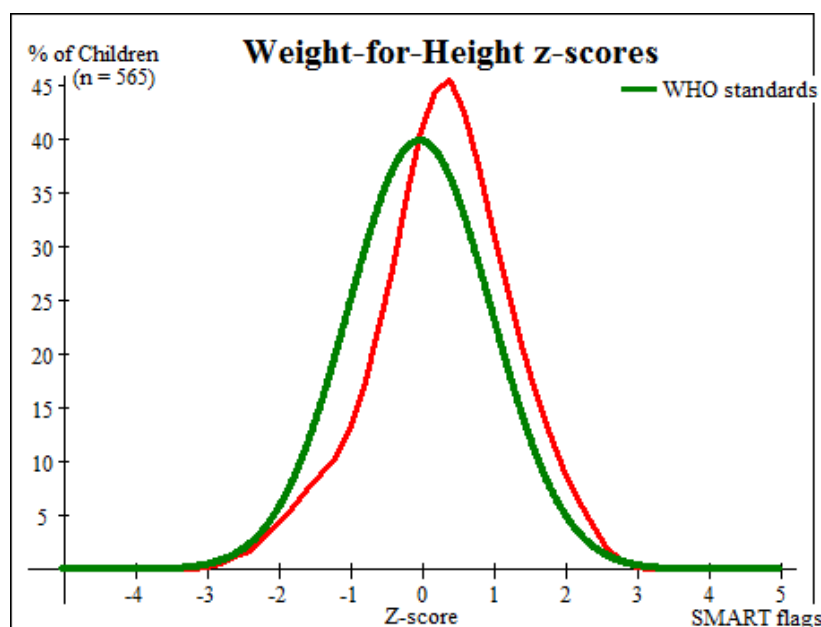
4.1.2 **Anthropometric results (based on WHO Growth Standards;**

Table 16 : PREVALENCE OF ACUTE MALNUTRITION BASED ON WEIGHT-FOR-HEIGHT Z-SCORES (AND/OR OEDEMA) AND BY SEX

	All n = 565	Boys n = 265	Girls n = 300
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(9) 1.6 % (0.7 - 3.7 95% C.I.)	(5) 1.9 % (0.7 - 5.1 95% C.I.)	(4) 1.3 % (0.3 - 6.3 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(9) 1.6 % (0.7 - 3.7 95% C.I.)	(5) 1.9 % (0.7 - 5.1 95% C.I.)	(4) 1.3 % (0.3 - 6.3 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)

The prevalence of oedema is %

Figure 16 : DISTRIBUTION OF WEIGHT-FOR-HEIGHT Z-SCORES (BASED ON WHO GROWTH STANDARDS; THE REFERENCE POPULATION IS SHOWN IN GREEN AND THE SURVEYED POPULATION IS SHOWN IN RED) OF SURVEY POPULATION COMPARED TO REFERENCE POPULATION



The Wasting curve is slightly shifted to the right representing a better nutrition status of the children compared to the standard reference population; similarly, the mean on the higher side at 0.29 ± 0.95 .

Figure 17 : TRENDS IN THE PREVALENCE OF GLOBAL AND SEVERE ACUTE MALNUTRITION BASED ON WHO GROWTH STANDARDS IN CHILDREN 6-59 MONTHS FROM 2016-2018.

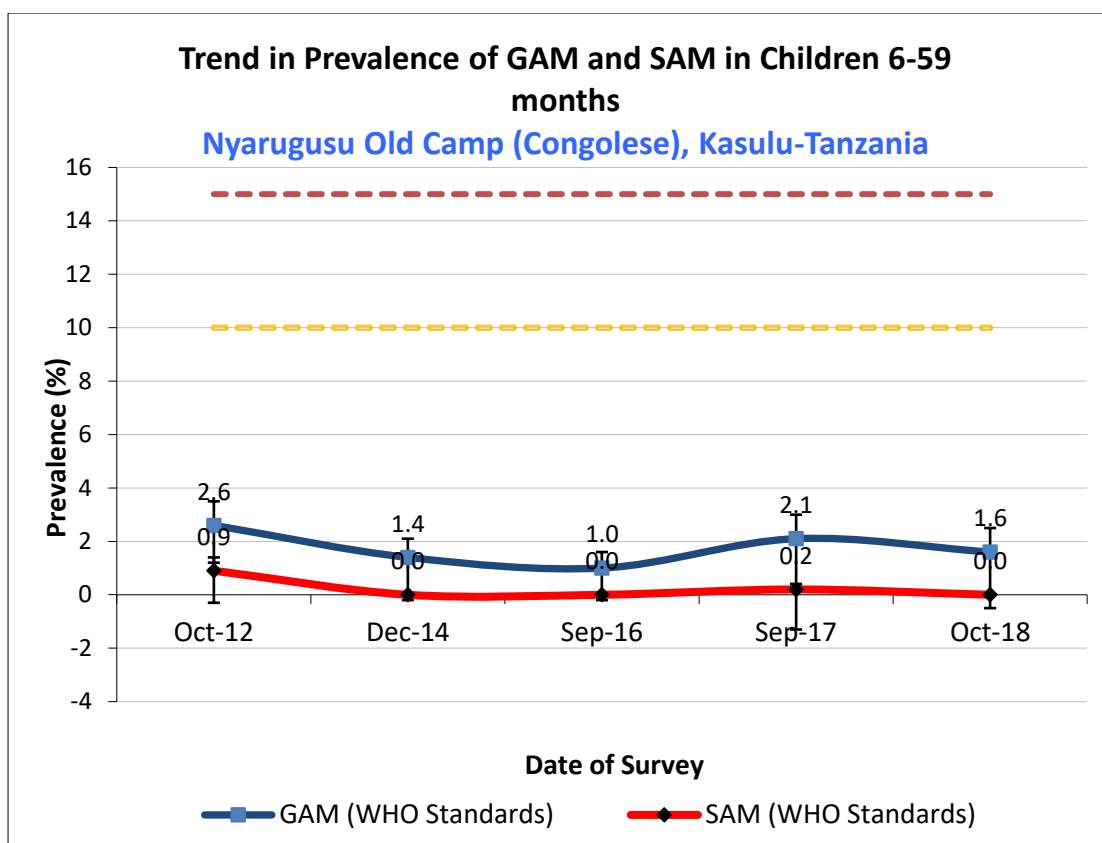


Table 17 : PREVALENCE OF ACUTE MALNUTRITION BY AGE, BASED ON WEIGHT-FOR-HEIGHT Z-SCORES AND/OR OEDEMA.

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (>= -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
Age (mo)	Total no.								
6-17	162	0	0.0	3	1.9	159	98.1	0	0.0
18-29	112	0	0.0	0	0.0	112	100.0	0	0.0
30-41	154	0	0.0	4	2.6	150	97.4	0	0.0
42-53	91	0	0.0	2	2.2	89	97.8	0	0.0
54-59	46	0	0.0	0	0.0	46	100.0	0	0.0
Total	565	0	0.0	9	1.6	556	98.4	0	0.0

Figure 18 : TREND IN THE PREVALENCE OF WASTING BY AGE IN CHILDREN 6-59 MONTHS

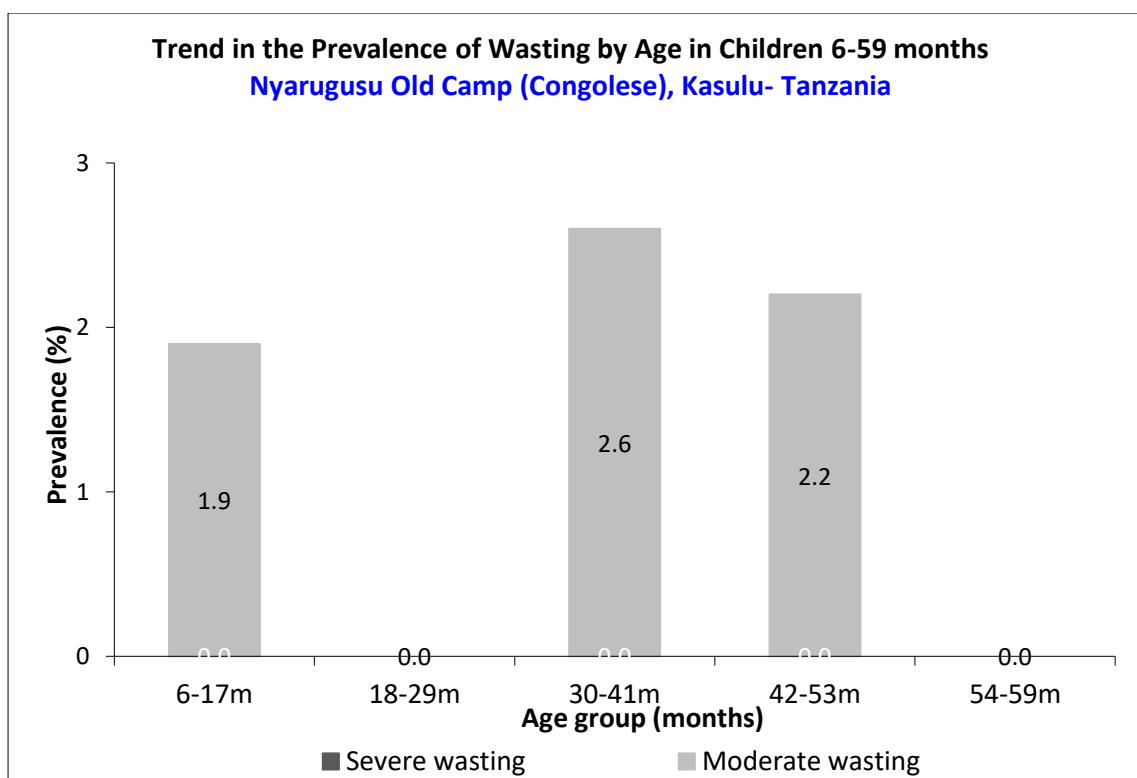


Table 18 : DISTRIBUTION OF SEVERE ACUTE MALNUTRITION AND OEDEMA BASED ON WEIGHT-FOR-HEIGHT Z-SCORES

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 2 (0.4 %)	Not severely malnourished No. 567 (99.6 %)

Table 19 : PREVALENCE OF MUAC MALNUTRITION

	All n = 569	Boys n = 266	Girls n = 303
Prevalence of MUAC < 125 mm and/or oedema	(14) 2.5 % (1.5 - 4.1 95% C.I.)	(3) 1.1 % (0.4 - 3.3 95% C.I.)	(11) 3.6 % (2.0 - 6.5 95% C.I.)
Prevalence of MUAC < 125 mm and >= 115 mm, no oedema	(12) 2.1 % (1.2 - 3.7 95% C.I.)	(2) 0.8 % (0.2 - 3.0 95% C.I.)	(10) 3.3 % (1.8 - 5.9 95% C.I.)
Prevalence MUAC < 115 mm and/or oedema	(2) 0.4 % (0.1 - 1.4 95% C.I.)	(1) 0.4 % (0.1 - 2.8 95% C.I.)	(1) 0.3 % (0.0 - 2.4 95% C.I.)

Table 20 : PREVALENCE OF MUAC MALNUTRITION BY AGE, BASED ON MUAC CUT OFF'S AND/OR OEDEMA

Age (mo)	Total no.	MUAC < 115 mm		MUAC ≥ 115 mm and < 125 mm		MUAC ≥ 125 mm		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	164	1	0.6	9	5.5	154	93.9	0	0.0
18-29	112	1	0.9	1	0.9	110	98.2	0	0.0
30-41	156	0	0.0	1	0.6	155	99.4	0	0.0
42-53	91	0	0.0	1	1.1	90	98.9	0	0.0
54-59	46	0	0.0	0	0.0	46	100.0	0	0.0
Total	569	2	0.4	12	2.1	555	97.5	0	0.0

Table 21 : PREVALENCE OF UNDERWEIGHT BASED ON WEIGHT-FOR-AGE Z-SCORES BY SEX

	All n = 569	Boys n = 266	Girls n = 303
Prevalence of underweight (<-2 z-score)	(54) 9.5 % (7.4 - 12.1 95% C.I.)	(28) 10.5 % (7.0 - 15.6 95% C.I.)	(26) 8.6 % (6.0 - 12.0 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and ≥-3 z-score)	(46) 8.1 % (6.2 - 10.5 95% C.I.)	(22) 8.3 % (5.1 - 13.1 95% C.I.)	(24) 7.9 % (5.4 - 11.5 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(8) 1.4 % (0.6 - 3.1 95% C.I.)	(6) 2.3 % (1.0 - 5.2 95% C.I.)	(2) 0.7 % (0.2 - 2.6 95% C.I.)

Table 22 : PREVALENCE OF STUNTING BASED ON HEIGHT-FOR-AGE Z-SCORES AND BY SEX

	All n = 564	Boys n = 263	Girls n = 301
Prevalence of stunting (<-2 z-score)	(222) 39.4 % (33.2 - 45.9 95% C.I.)	(117) 44.5 % (35.9 - 53.4 95% C.I.)	(105) 34.9 % (28.1 - 42.3 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and ≥-3 z-score)	(155) 27.5 % (23.1 - 32.4 95% C.I.)	(78) 29.7 % (24.5 - 35.4 95% C.I.)	(77) 25.6 % (19.9 - 32.2 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(67) 11.9 % (8.6 - 16.1 95% C.I.)	(39) 14.8 % (9.6 - 22.2 95% C.I.)	(28) 9.3 % (5.9 - 14.4 95% C.I.)

Stunting remains consistent high in the last 5 years above critical threshold of 40% within its confidence interval in the last 5 years; prevalence in males is higher than females. Stunting per age group is spread more or less evenly across the age groups with slight reduction in the older age group approaching 5 years Table 23 & Figure 20.

Figure 19 : TRENDS IN THE PREVALENCE OF GLOBAL AND SEVERE STUNTING BASED ON WHO GROWTH STANDARDS IN CHILDREN 6-59 MONTHS FROM 2016-2018.

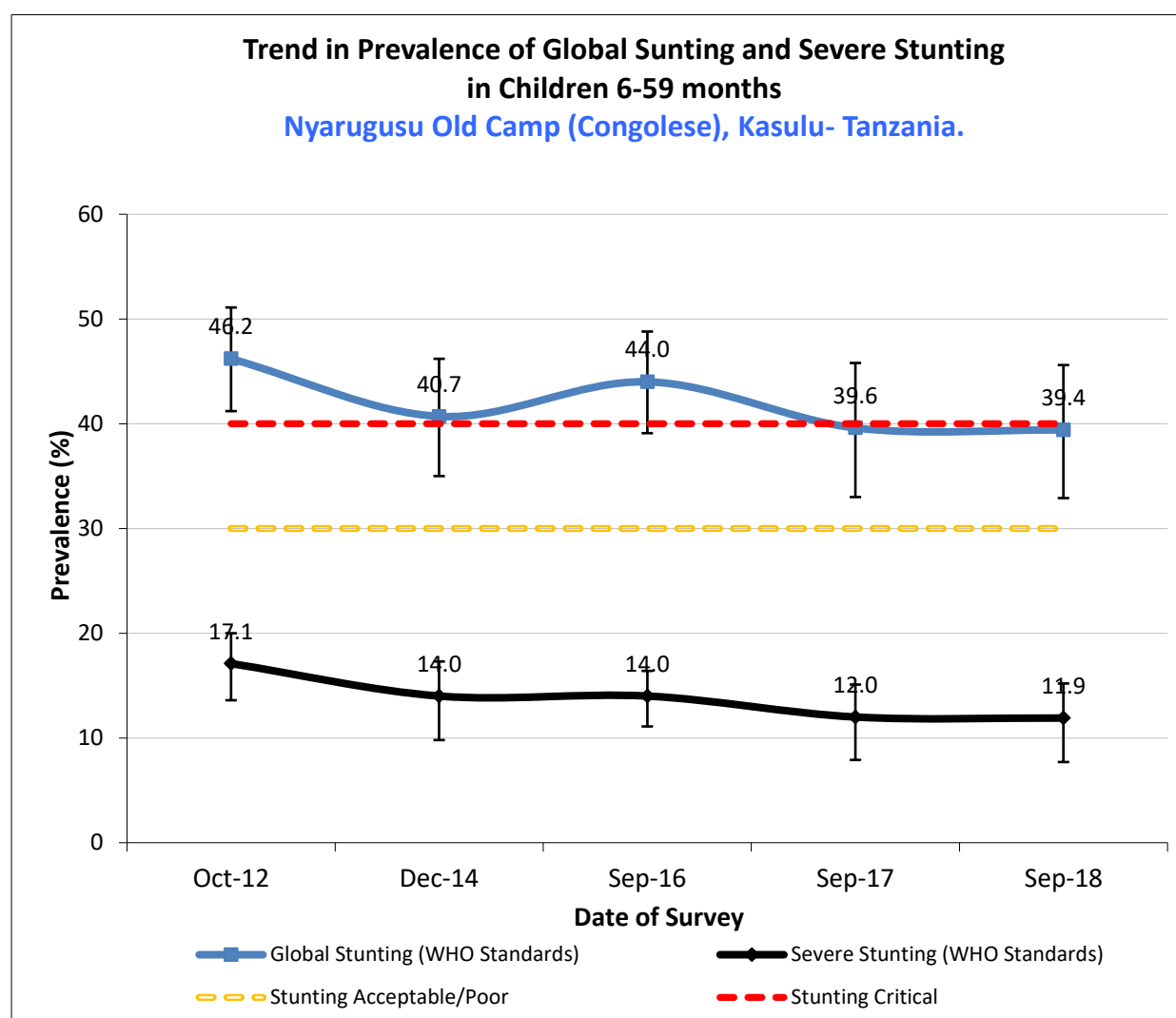


Table 23 : PREVALENCE OF STUNTING BY AGE BASED ON HEIGHT-FOR-AGE Z-SCORES

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (>= -2 z score)	
		No.	%	No.	%	No.	%
6-17	163	20	12.3	42	25.8	101	62.0
18-29	111	16	14.4	33	29.7	62	55.9
30-41	153	15	9.8	49	32.0	89	58.2
42-53	91	10	11.0	24	26.4	57	62.6
54-59	46	6	13.0	7	15.2	33	71.7
Total	564	67	11.9	155	27.5	342	60.6

Figure 20 : TRENDS IN THE PREVALENCE OF STUNTING BY AGE IN CHILDREN 6-59 MONTHS

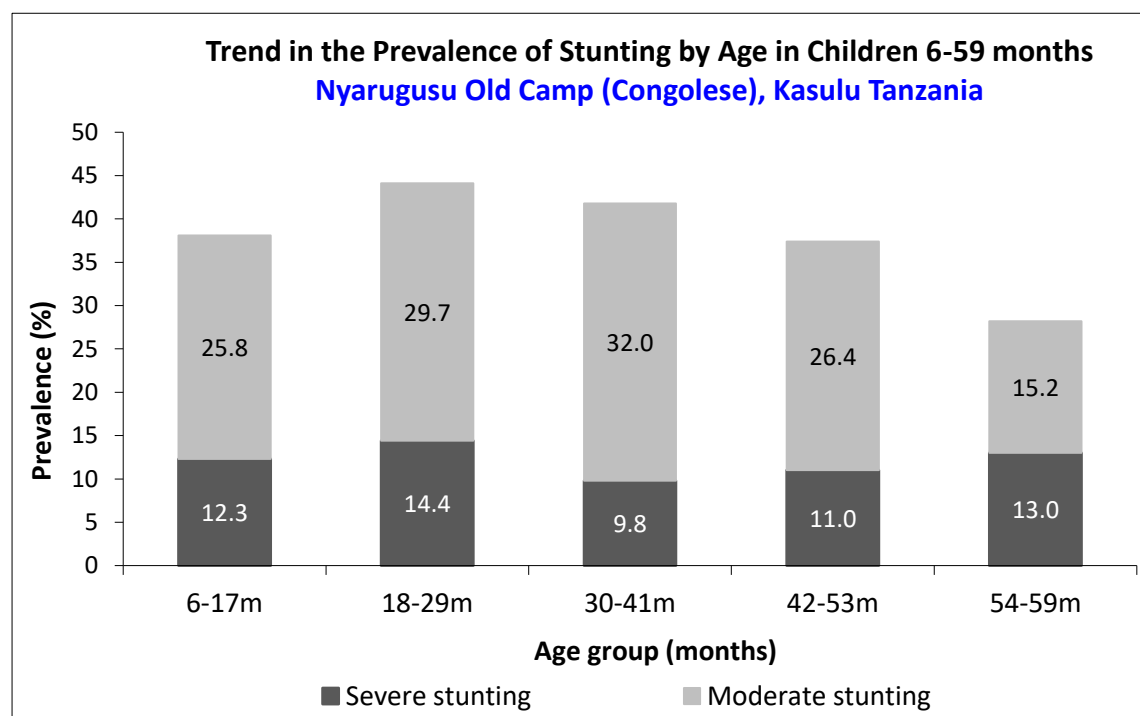
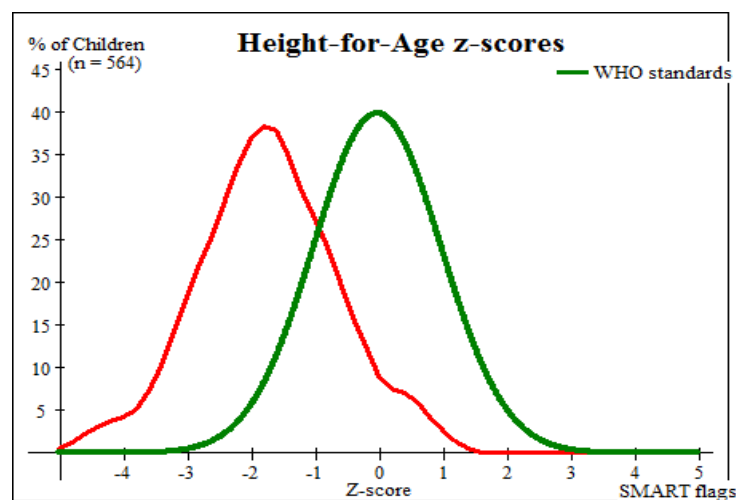


Figure 21: DISTRIBUTION OF HEIGHT-FOR-AGE Z-SCORES (BASED ON WHO GROWTH STANDARDS; THE REFERENCE POPULATION IS SHOWN IN GREEN AND THE SURVEYED POPULATION IS SHOWN IN RED) OF SURVEY POPULATION COMPARED TO REFERENCE POPULATION



Compared to the reference population, the children in Nyarugusu New Camp are stunted with a mean of -1.73 ± 1.09

Table 24 : MEAN Z-SCORES, DESIGN EFFECTS AND EXCLUDED SUBJECTS

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	565	0.29±0.95	1.62	0	4
Weight-for-Age	569	-0.76±0.91	1.00	0	0
Height-for-Age	564	-1.73±1.09	2.32	0	5

* contains for WHZ and WAZ the children with oedema.

4.2 Children 6-59 months (Nyarugusu New Camp)

4.2.1 Sample size and clusters (Nyarugusu New Camp)

Table 25 : TARGET AND ACTUAL NUMBER CAPTURED

	Target (No.)	Total surveyed (No.)	% of the target
Children 6-59 months	674	763	113%
Clusters (where applicable)	30	30	100%

Table 26 : CHILDREN 6-59 MONTHS - DISTRIBUTION OF AGE AND SEX OF SAMPLE

AGE (mo)	Boys		Girls		Total		Ratio Boy: Girl
	no.	%	no.	%	no.	%	
6-17	86	41.1	123	58.9	209	27.4	0.7
18-29	76	45.8	90	54.2	166	21.8	0.8
30-41	94	50.5	92	49.5	186	24.4	1.0
42-53	70	47.9	76	52.1	146	19.1	0.9
54-59	35	62.5	21	37.5	56	7.3	1.7
Total	361	47.3	402	52.7	763	100.0	0.9

Percentage of children with no exact birthday: 0 %

Gender representation was equal, the overall sex ratio was 0.9, which is within the recommended range (0.8-1.2) hence the sample was unbiased. However, the age group 6-17 & 18-29 were under represented while the older age group 54-59 were overrepresented Table 26.

4.2.2 Anthropometric results (based on WHO Growth Standards 2006 (Nyarugusu New Camp))

The prevalence of Global Acute Malnutrition (GAM) in children 6-59 months is shown in Table 27. Girls are three times more malnourished than boys, there was no case of severe acute malnutrition (SAM). Trend analysis indicate the GAM rate is similar to previous year 2017 rate but above the lowest rate of 0.9% in 2016 Figure 22.

Table 27: PREVALENCE OF ACUTE MALNUTRITION BASED ON WEIGHT-FOR-HEIGHT Z-SCORES (AND/OR OEDEMA) AND BY SEX.

	All n = 756	Boys n = 358	Girls n = 398
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(19) 2.5 % (1.6 - 4.0 95% C.I.)	(6) 1.7 % (0.8 - 3.6 95% C.I.)	(13) 3.3 % (1.8 - 5.8 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(19) 2.5 % (1.6 - 4.0 95% C.I.)	(6) 1.7 % (0.8 - 3.6 95% C.I.)	(13) 3.3 % (1.8 - 5.8 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)

The prevalence of oedema is 0.0%

Figure 22 : TRENDS IN THE PREVALENCE OF GLOBAL AND SEVERE ACUTE MALNUTRITION BASED ON WHO GROWTH STANDARDS IN CHILDREN 6-59 MONTHS FROM 2016-2018.

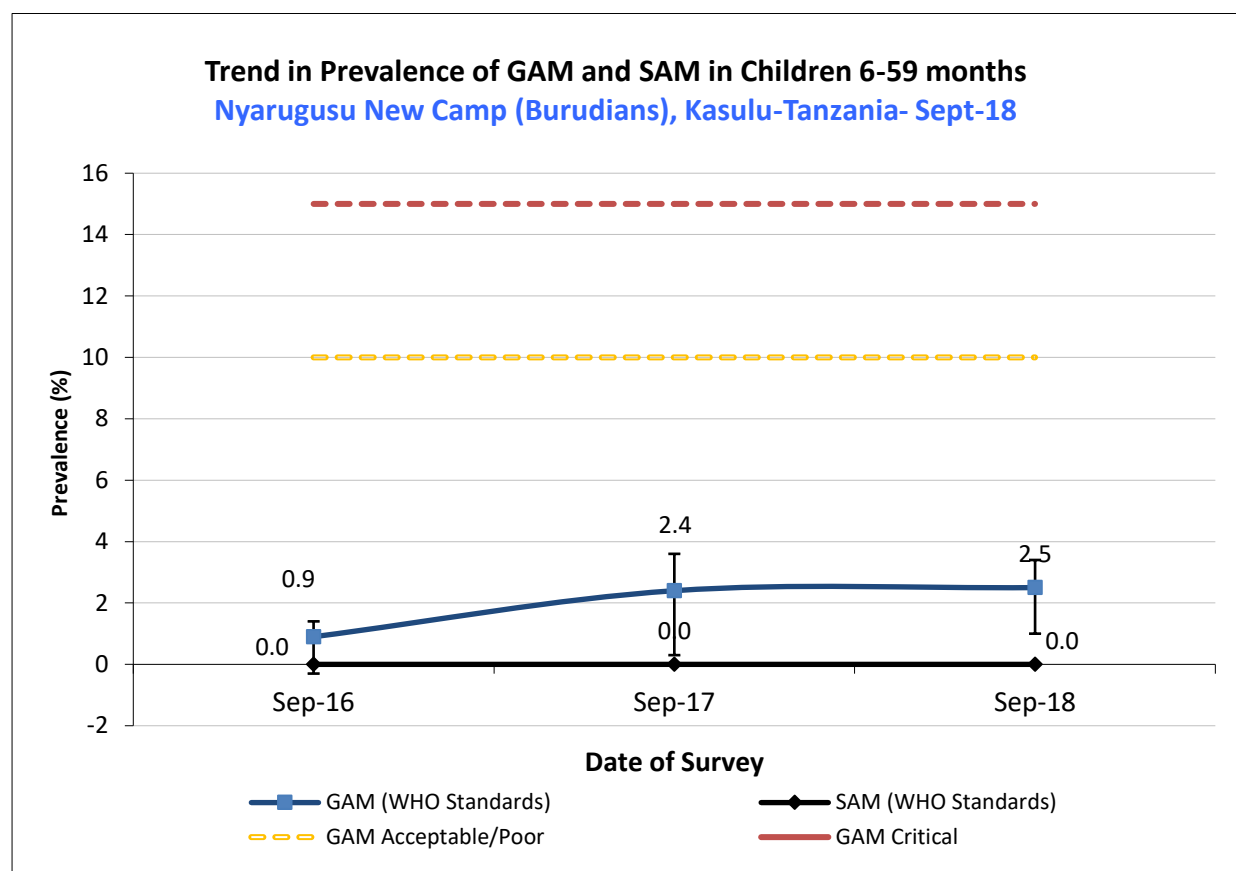


Table 28 presents the prevalence of acute malnutrition by age; the youngest two age group seems to be the most affected by moderate wasting. Trends in moderate and acute wasting by age are presented in

Figure 23.

Table 28 : PREVALENCE OF ACUTE MALNUTRITION BY AGE, BASED ON WEIGHT-FOR-HEIGHT Z-SCORES AND/OR OEDEMA

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (>= -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	209	0	0.0	3	1.4	206	98.6	0	0.0
18-29	165	0	0.0	7	4.2	158	95.8	0	0.0
30-41	182	0	0.0	4	2.2	178	97.8	0	0.0
42-53	144	0	0.0	5	3.5	139	96.5	0	0.0
54-59	56	0	0.0	0	0.0	56	100.0	0	0.0
Total	756	0	0.0	19	2.5	737	97.5	0	0.0

Figure 23 : TREND IN THE PREVALENCE OF WASTING BY AGE IN CHILDREN 6-59 MONTHS

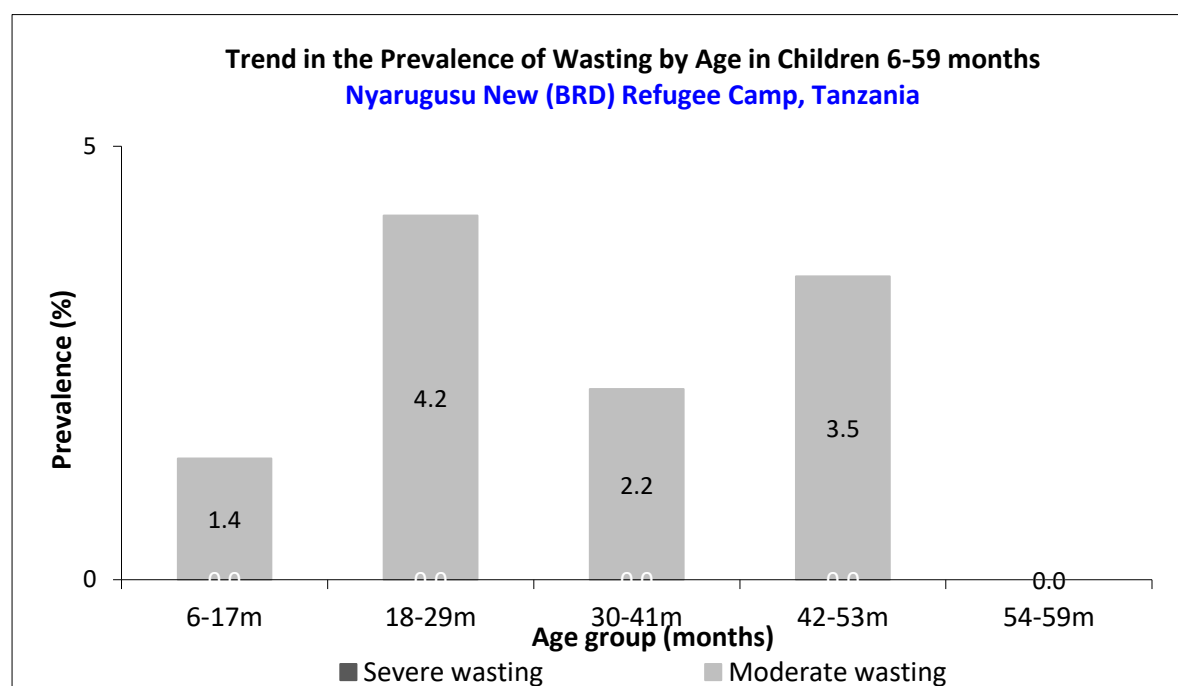
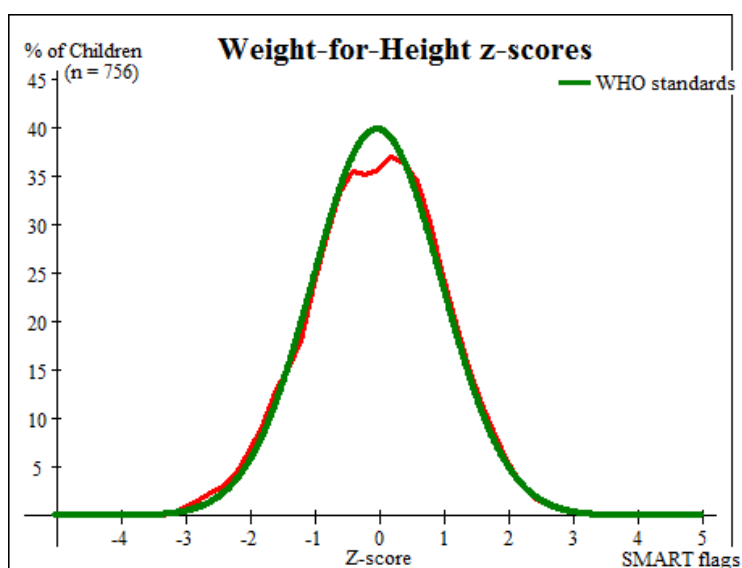


Table 29 : DISTRIBUTION OF SEVERE ACUTE MALNUTRITION AND OEDEMA BASED ON WEIGHT-FOR-HEIGHT Z-SCORES

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 6 (0.8 %)	Not severely malnourished No. 757 (99.2 %)

Figure 24 : DISTRIBUTION OF WEIGHT-FOR-HEIGHT Z-SCORES OF SURVEY POPULATION (RED) COMPARED TO REFERENCE POPULATION (GREEN) (BASED ON WHO GROWTH STANDARDS)



The distribution for weight- for height z-scores for the sample more or less matches the WHO standard of the population of children aged 6-59 months illustrating the fairly good nutrition status in the camp

Figure 24.

Acute Malnutrition based on MUAC is higher than based on WHZ at 4.2% compared with 2.5%

respectively; in addition, based on MUAC, SAM rate is 0.1%; girls are still more malnourished compared to males.

Table 30 : PREVALENCE OF MUAC MALNUTRITION

	All n = 763	Boys n = 361	Girls n = 402
Prevalence of MUAC < 125 mm and/or oedema	(32) 4.2 % (3.1 - 5.6 95% C.I.)	(12) 3.3 % (2.0 - 5.4 95% C.I.)	(20) 5.0 % (3.2 - 7.7 95% C.I.)
Prevalence of MUAC < 125 mm and >= 115 mm, no oedema	(31) 4.1 % (3.1 - 5.4 95% C.I.)	(11) 3.0 % (1.8 - 5.1 95% C.I.)	(20) 5.0 % (3.2 - 7.7 95% C.I.)
Prevalence MUAC < 115 mm and/or oedema	(1) 0.1 % (0.0 - 1.0 95% C.I.)	(1) 0.3 % (0.0 - 2.1 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)

Table 31 : PREVALENCE OF MUAC MALNUTRITION BY AGE, BASED ON MUAC CUT OFF'S AND/OR OEDEMA

Age (mo)	Total no.	MUAC < 115 mm		MUAC >= 115 mm and < 125 mm		MUAC >= 125 mm		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	209	1	0.5	20	9.6	188	90.0	0	0.0
18-29	166	0	0.0	8	4.8	158	95.2	0	0.0
30-41	186	0	0.0	1	0.5	185	99.5	0	0.0
42-53	146	0	0.0	1	0.7	145	99.3	0	0.0
54-59	56	0	0.0	1	1.8	55	98.2	0	0.0
Total	763	1	0.1	31	4.1	731	95.8	0	0.0

Prevalence of underweight is presented in Table 32, and stunting in Table 33. There was no significant difference between girls and boys in terms stunting. Within its confidence interval, stunting has remained above 40% critical threshold in the past 3 assessments Figure 25. Generally, based on age, moderate stunting is approximately equally distributed; however, the oldest age

group 54-59 month are two times less severely stunted compared to the other age groups

Figure 92.

Table 32: PREVALENCE OF UNDERWEIGHT BASED ON WEIGHT-FOR-AGE Z-SCORES BY SEX

	All n = 760	Boys n = 360	Girls n = 400
Prevalence of underweight (<-2 z-score)	(130) 17.1 % (14.0 - 20.7 95% C.I.)	(69) 19.2 % (15.1 - 24.0 95% C.I.)	(61) 15.3 % (11.3 - 20.3 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(118) 15.5 % (12.8 - 18.7 95% C.I.)	(64) 17.8 % (13.9 - 22.5 95% C.I.)	(54) 13.5 % (10.0 - 17.9 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(12) 1.6 % (0.9 - 2.6 95% C.I.)	(5) 1.4 % (0.6 - 3.3 95% C.I.)	(7) 1.8 % (0.9 - 3.4 95% C.I.)

Table 33 : PREVALENCE OF STUNTING BASED ON HEIGHT-FOR-AGE Z-SCORES AND BY SEX

	All n = 759	Boys n = 358	Girls n = 401
Prevalence of stunting (<-2 z-score)	(346) 45.6 % (40.8 - 50.4 95% C.I.)	(173) 48.3 % (41.6 - 55.1 95% C.I.)	(173) 43.1 % (37.1 - 49.4 95% C.I.)
Prevalence of moderate stunting (<- 2 z-score and >=-3 z-score)	(238) 31.4 % (28.2 - 34.7 95% C.I.)	(119) 33.2 % (28.9 - 37.9 95% C.I.)	(119) 29.7 % (24.6 - 35.3 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(108) 14.2 % (11.2 - 17.9 95% C.I.)	(54) 15.1 % (10.7 - 20.9 95% C.I.)	(54) 13.5 % (9.5 - 18.8 95% C.I.)

Figure 25: TRENDS IN THE PREVALENCE OF GLOBAL AND SEVERE STUNTING BASED ON WHO GROWTH STANDARDS IN CHILDREN 6-59 MONTHS FROM 2016-2018.

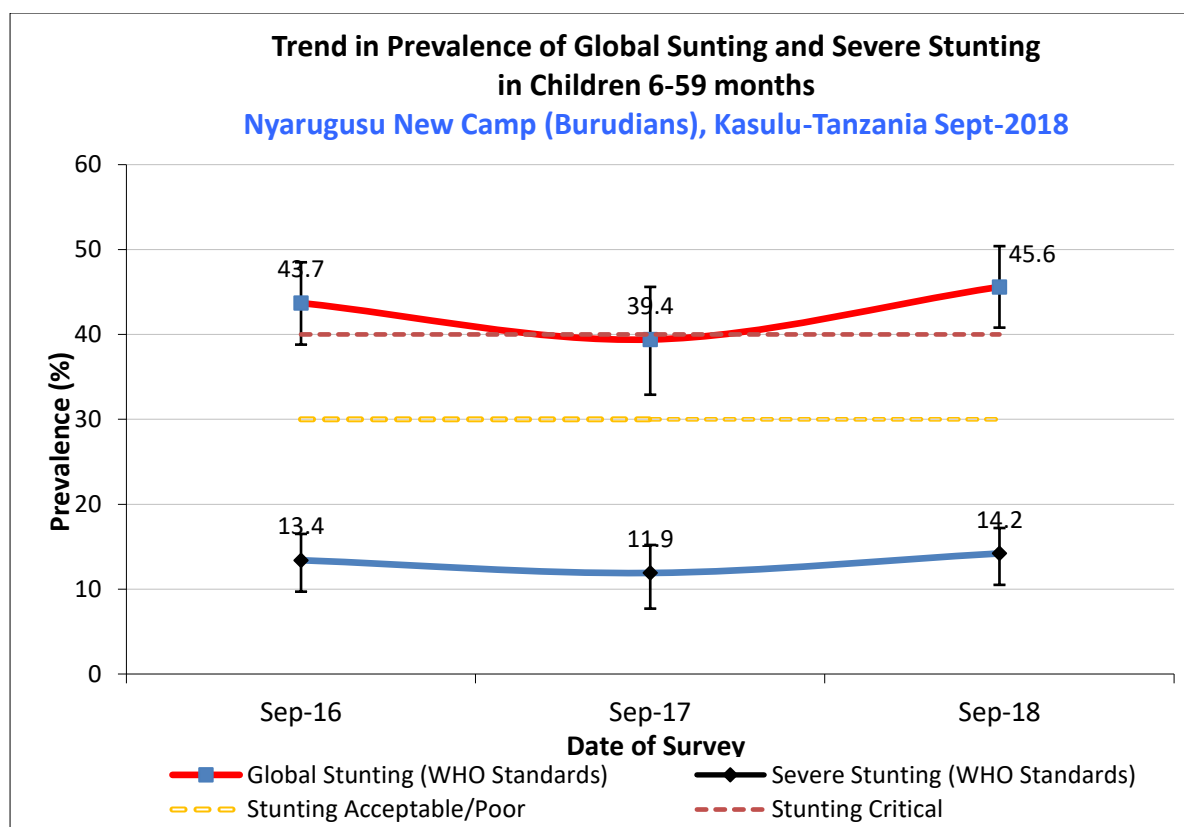


Table 34 : PREVALENCE OF STUNTING BY AGE BASED ON HEIGHT-FOR-AGE Z-SCORES

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (>= -2 z score)	
		No.	%	No.	%	No.	%
6-17	206	25	12.1	57	27.7	124	60.2
18-29	165	33	20.0	58	35.2	74	44.8
30-41	186	25	13.4	67	36.0	94	50.5
42-53	146	21	14.4	38	26.0	87	59.6
54-59	56	4	7.1	18	32.1	34	60.7
Total	759	108	14.2	238	31.4	413	54.4

Figure 26: TRENDS IN THE PREVALENCE OF STUNTING BY AGE IN CHILDREN 6-59 MONTHS

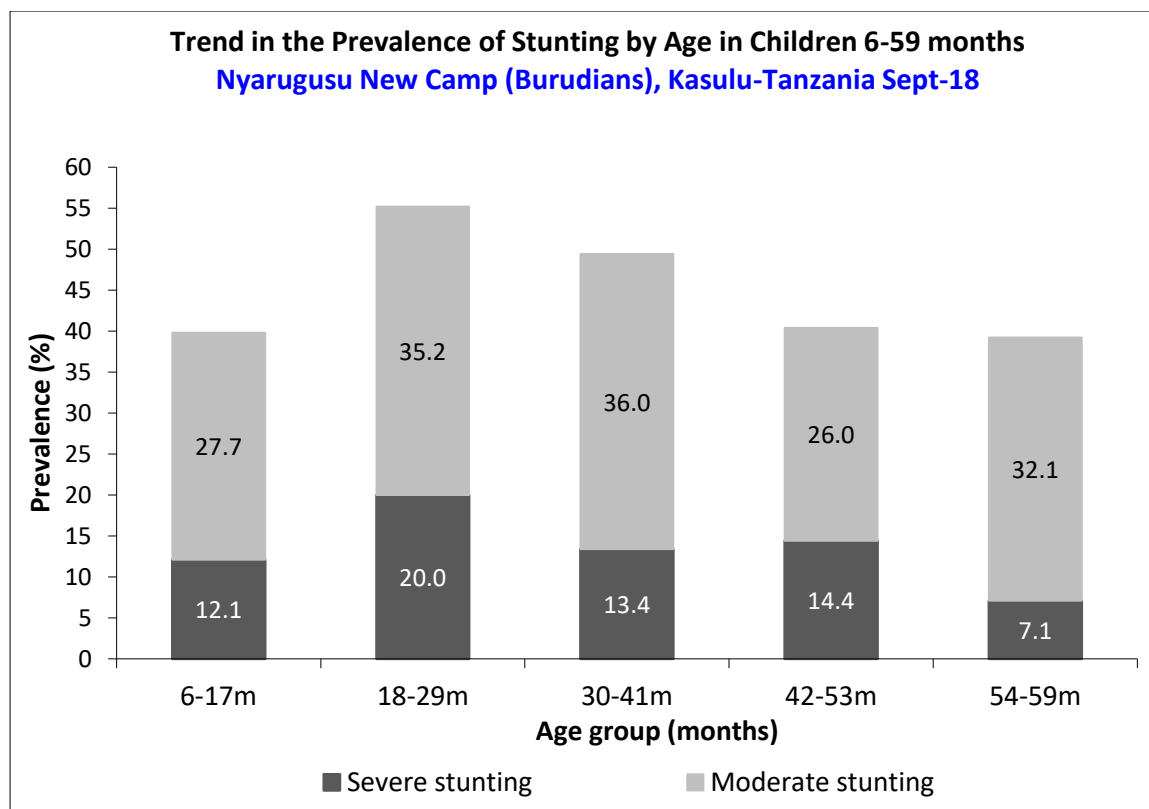
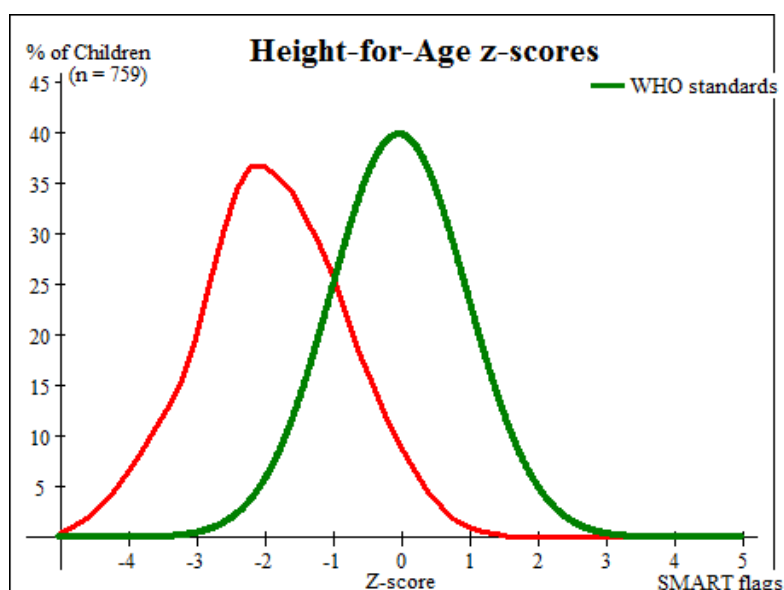


Figure 27 : DISTRIBUTION OF HEIGHT-FOR-AGE Z-SCORES (BASED ON WHO GROWTH STANDARDS OF SURVEY POPULATION COMPARED TO REFERENCE POPULATION ; THE REFERENCE POPULATION IS SHOWN IN GREEN AND THE SURVEYED POPULATION IS SHOWN IN RED)



The height for age distribution of children surveyed is shifted to the left, demonstrating a lower height-for-age compared to the WHO reference for children 6-59 months; the mean -1.87 Z-scores compared to 0.0 for the standard. The survey population distribution curve is also wider indicating greater variance compared to the reference population Figure 27.

Table 35 : MEAN Z-SCORES, DESIGN EFFECTS AND EXCLUDED SUBJECTS

Indicator	n	Mean z-scores \pm SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	756	-0.02 \pm 1.01	1.05	0	7
Weight-for-Age	760	-1.08 \pm 0.94	1.40	0	3
Height-for-Age	759	-1.87 \pm 1.06	1.70	0	4

* contains for WHZ and WAZ the children with oedema⁶.

4.3 Children 6-59 months (Nduta Camp)

4.3.1 Sample size and clusters

The samples collected from is in accordance of UNHCR SENS guidelines which recommends a coverage of at least 80% of the planned figure of number of children aged 6 – 59 months.

Table 36 : TARGET AND ACTUAL NUMBER CAPTURED

	Target (No.)	Total surveyed (No.)	% of the target
Children 6-59 months	611	801	131.3%
Clusters (where applicable)	30	30	1005

⁶ SMART flags and ranges used like -/+3 from the observed mean

Table 37 : CHILDREN 6-59 MONTHS - DISTRIBUTION OF AGE AND SEX OF SAMPLE

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:Girl
6-17 months	107	50.0	107	50.0	214	26.7	1.0
18-29 months	102	52.6	92	47.4	194	24.2	1.1
30-41 months	82	44.3	103	55.7	185	23.1	0.8
42-53 months	71	50.4	70	49.6	141	17.6	1.0
54-59 months	27	40.3	40	59.7	67	8.4	0.7
Total	389	48.6	412	51.4	801	100.0	0.9

Percentage of children with no exact birthday: 0 %

The overall sex ratio was 0.9 and therefore within the recommended range (0.8-1.2) which confirms that both sexes were equally distributed, and the sample was unbiased; age groups 30-41 & 54-59 were relatively under represented

Table 37.

4.3.2 Anthropometric results (based on WHO Growth Standards 2006)

Anthropometric results are analysed and presented based on WHO Growth Standards and excluding z-scores from Observed mean (SMART flags);

Malnutrition rate in Nduta camp statistically significantly reduced by nearly three times from 6.1% in 2017 to 2.3% in 2018 (P=0.06)

Figure 28. Similarly, boys were statistically more wasted than girls, 3.4% & 1.2% respectively (P=0.034). There was no significant difference in terms of gender though the prevalence of GAM in boys was higher than that of girls. Based on age groups, 18-29 month were more wasted compared to the other groups with age group 30-41 being the least affected

Figure 30.

Table 38 : PREVALENCE OF ACUTE MALNUTRITION BASED ON WEIGHT-FOR-HEIGHT Z-SCORES (AND/OR OEDEMA) AND BY SEX

	All n = 792	Boys n = 385	Girls n = 407
--	-----------------------	------------------------	-------------------------

Prevalence of global malnutrition (<-2 z-score and/or oedema)	(18) 2.3 % (1.3 - 3.9 95% C.I.)	(13) 3.4 % (2.0 - 5.7 95% C.I.)	(5) 1.2 % (0.5 - 2.8 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and ≥ -3 z-score, no oedema)	(18) 2.3 % (1.3 - 3.9 95% C.I.)	(13) 3.4 % (2.0 - 5.7 95% C.I.)	(5) 1.2 % (0.5 - 2.8 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)

The prevalence of oedema is 0.0%

Figure 28 : TRENDS IN THE PREVALENCE OF GLOBAL AND SEVERE ACUTE MALNUTRITION BASED ON WHO GROWTH STANDARDS IN CHILDREN 6-59 MONTHS FROM 2016-2018.

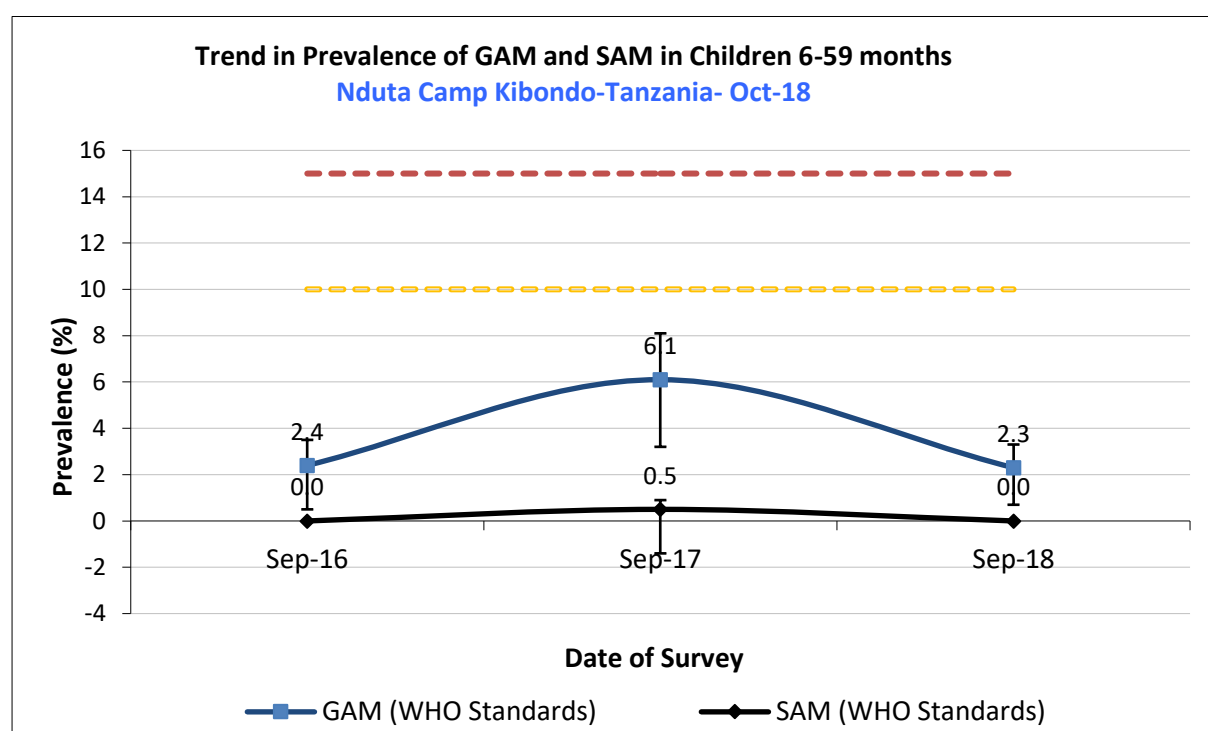


Figure 29 : PREVALENCE OF ACUTE MALNUTRITION BY AGE, BASED ON WEIGHT-FOR-HEIGHT Z-SCORES AND/OR OEDEMA

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (≥ -3 and <-2 z-score)		Normal (≥ -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	209	0	0.0	5	2.4	204	97.6	0	0.0
18-29	194	0	0.0	9	4.6	185	95.4	0	0.0
30-41	183	0	0.0	1	0.5	182	99.5	0	0.0

42-53	140	0	0.0	2	1.4	138	98.6	0	0.0
54-59	66	0	0.0	1	1.5	65	98.5	0	0.0
Total	792	0	0.0	18	2.3	774	97.7	0	0.0

Figure 30 : TREND IN THE PREVALENCE OF WASTING BY AGE IN CHILDREN 6-59 MONTHS

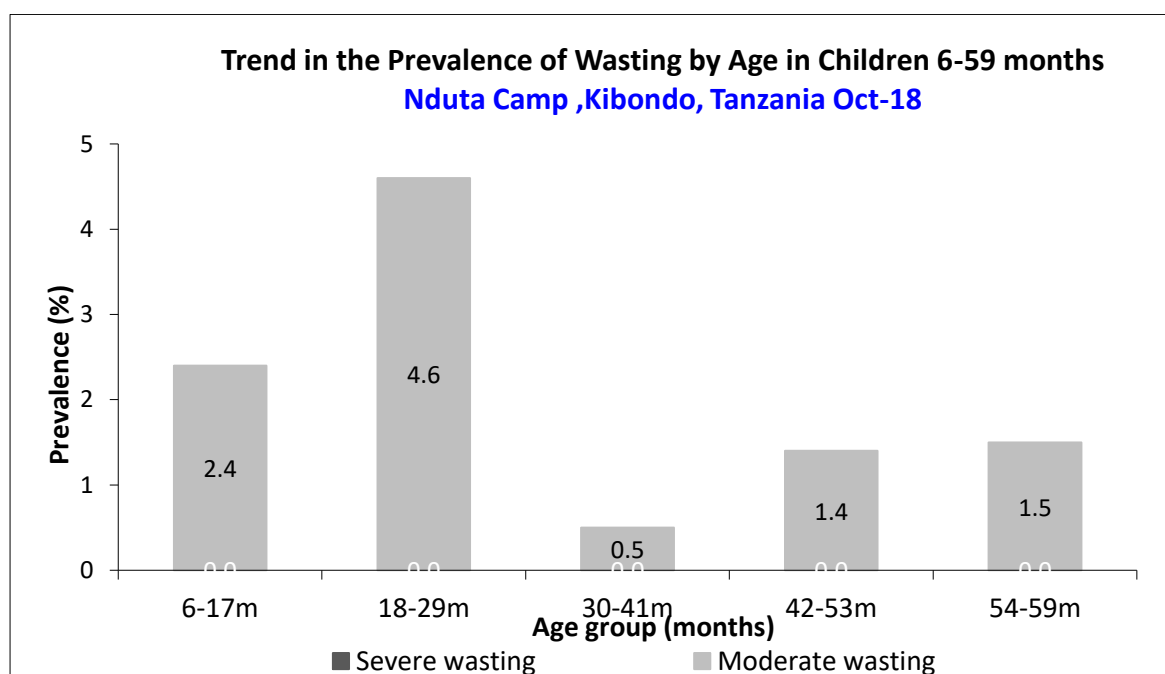
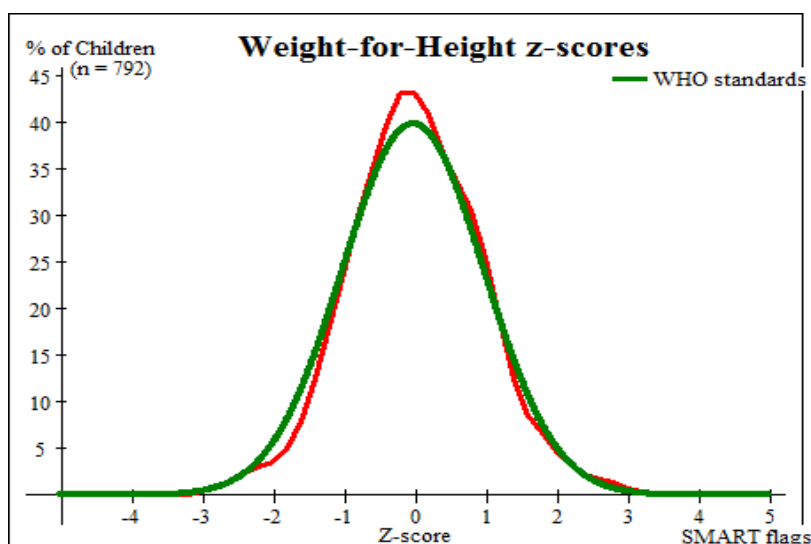


Table 39 : DISTRIBUTION OF SEVERE ACUTE MALNUTRITION AND OEDEMA BASED ON WEIGHT-FOR-HEIGHT Z-SCORES

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 3 (0.4 %)	Not severely malnourished No. 797 (99.6 %)

Figure 31 : DISTRIBUTION OF WEIGHT-FOR-HEIGHT Z-SCORES (BASED ON WHO GROWTH STANDARDS; THE REFERENCE POPULATION IS SHOWN IN GREEN AND THE SURVEYED POPULATION IS SHOWN IN RED) OF SURVEY POPULATION COMPARED TO REFERENCE POPULATION



The survey distribution (in red) followed a normal distribution of the WHO reference, with mean of 0.02 more or less close to the reference population mean of 0.0 and

Showing the nutrition status in the camp is there fairly good.

Table 40 : PREVALENCE OF MUAC MALNUTRITION

	All n = 801	Boys n = 389	Girls n = 412
Prevalence of MUAC < 125 mm and/or oedema	(17) 2.1 % (1.4 - 3.2 95% C.I.)	(7) 1.8 % (0.9 - 3.5 95% C.I.)	(10) 2.4 % (1.3 - 4.4 95% C.I.)
Prevalence of MUAC < 125 mm and >= 115 mm, no oedema	(17) 2.1 % (1.4 - 3.2 95% C.I.)	(7) 1.8 % (0.9 - 3.5 95% C.I.)	(10) 2.4 % (1.3 - 4.4 95% C.I.)
Prevalence MUAC < 115 mm and/or oedema	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)

Prevalence of GAM as measured by MUAC was 2.1%, close to 2.3% based on Z-score.

Table 41 : PREVALENCE OF MUAC MALNUTRITION BY AGE, BASED ON MUAC CUT OFF'S AND/OR OEDEMA

Age (mo)	Total no.	MUAC < 115 mm		MUAC >= 115 mm and < 125 mm		MUAC > = 125 mm		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	214	0	0.0	8	3.7	206	96.3	0	0.0
18-29	194	0	0.0	6	3.1	188	96.9	0	0.0
30-41	185	0	0.0	1	0.5	184	99.5	0	0.0
42-53	141	0	0.0	2	1.4	139	98.6	0	0.0
54-59	67	0	0.0	0	0.0	67	100.0	0	0.0
Total	801	0	0.0	17	2.1	784	97.9	0	0.0

A total of 21.3 % (18.1 – 21.3, 95% C.I.) were underweight, and 3.7 % (2.2 – 6.1 95% C.I.) were severely underweight **Table 42**. Boy are statistically more underweight compared to girls (p=0.016).

Table 42 : PREVALENCE OF UNDERWEIGHT BASED ON WEIGHT-FOR-AGE Z-SCORES BY SEX

	All n = 793	Boys n = 383	Girls n = 410
Prevalence of underweight (<-2 z-score)	(169) 21.3 % (18.1 - 24.9 95% C.I.)	(97) 25.3 % (20.6 - 30.7 95% C.I.)	(72) 17.6 % (14.1 - 21.7 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(140) 17.7 % (15.0 - 20.6 95% C.I.)	(81) 21.1 % (17.3 - 25.6 95% C.I.)	(59) 14.4 % (11.3 - 18.2 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(29) 3.7 % (2.2 - 6.1 95% C.I.)	(16) 4.2 % (2.2 - 7.9 95% C.I.)	(13) 3.2 % (1.9 - 5.4 95% C.I.)

Stunting remains critical above 40% threshold [Error! Reference source not found.](#); in the terms of trends in the last 3 surveys, there has been no much improvement. Based on gender, Boys are statistically significantly more stunted compared to Girls (p=0.006). In terms of age group, 18-29-month children are more stunted while children 30-41 are least stunted Figure 32.

Table 43 : PREVALENCE OF STUNTING BASED ON HEIGHT-FOR-AGE Z-SCORES AND BY SEX

	All n = 786	Boys n = 380	Girls n = 406
Prevalence of stunting (<-2 z-score)	(446) 56.7 % (52.0 - 61.4 95% C.I.)	(239) 62.9 % (56.9 - 68.5 95% C.I.)	(207) 51.0 % (44.9 - 57.1 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(277) 35.2 % (31.2 - 39.5 95% C.I.)	(142) 37.4 % (32.0 - 43.1 95% C.I.)	(135) 33.3 % (27.4 - 39.7 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(169) 21.5 % (17.8 - 25.7 95% C.I.)	(97) 25.5 % (21.0 - 30.7 95% C.I.)	(72) 17.7 % (13.6 - 22.7 95% C.I.)

Figure 32: TRENDS IN THE PREVALENCE OF GLOBAL AND SEVERE STUNTING BASED ON WHO GROWTH STANDARDS IN CHILDREN 6-59 MONTHS FROM 2016-2018.

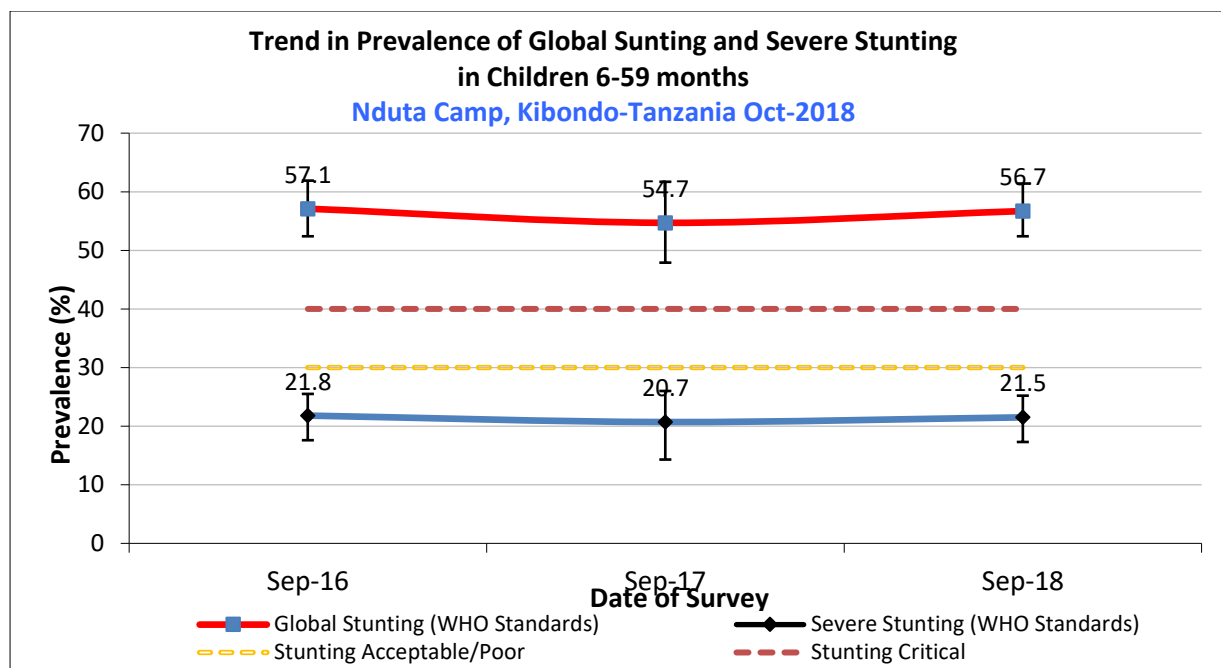


Table 44 : PREVALENCE OF STUNTING BY AGE BASED ON HEIGHT-FOR-AGE Z-SCORES

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
		No.	%	No.	%	No.	%
6-17	210	23	11.0	62	29.5	125	59.5
18-29	190	57	30.0	68	35.8	65	34.2
30-41	181	50	27.6	69	38.1	62	34.3
42-53	139	24	17.3	48	34.5	67	48.2
54-59	66	15	22.7	30	45.5	21	31.8
Total	786	169	21.5	277	35.2	340	43.3

Figure 33 : TRENDS IN THE PREVALENCE OF STUNTING BY AGE IN CHILDREN 6-59 MONTHS

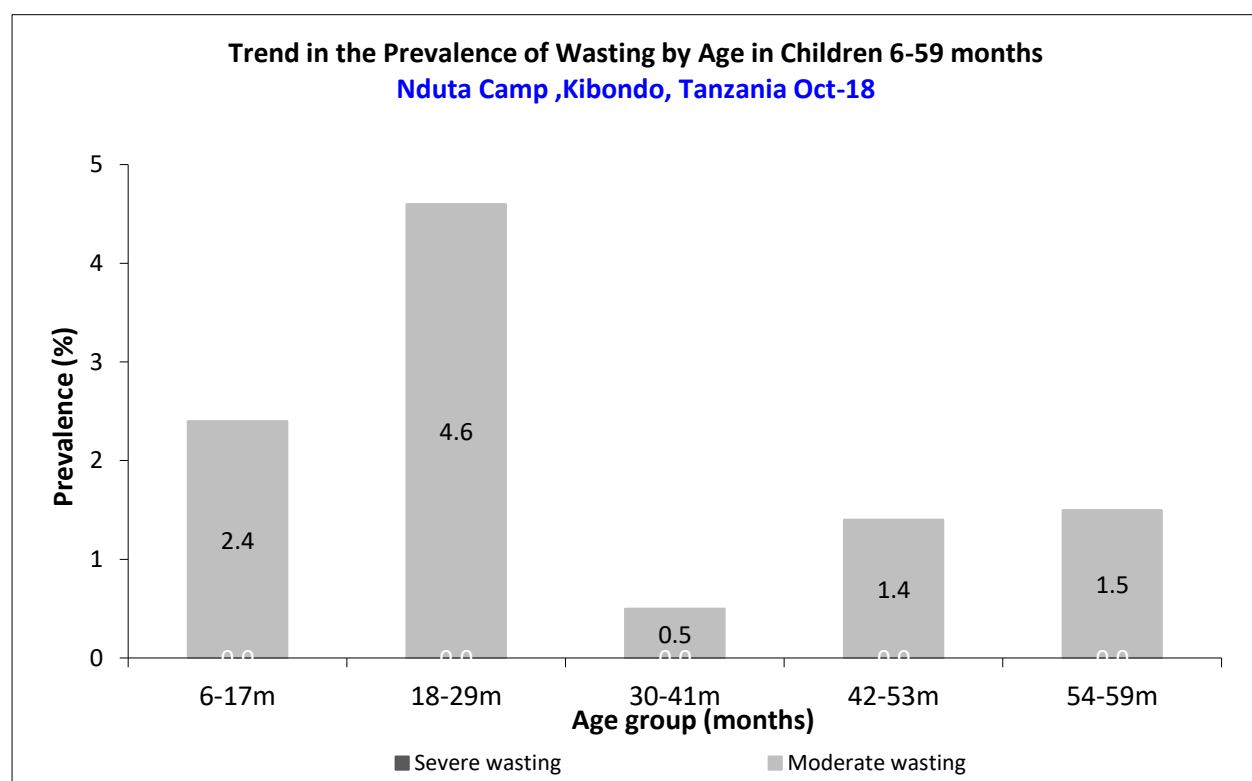
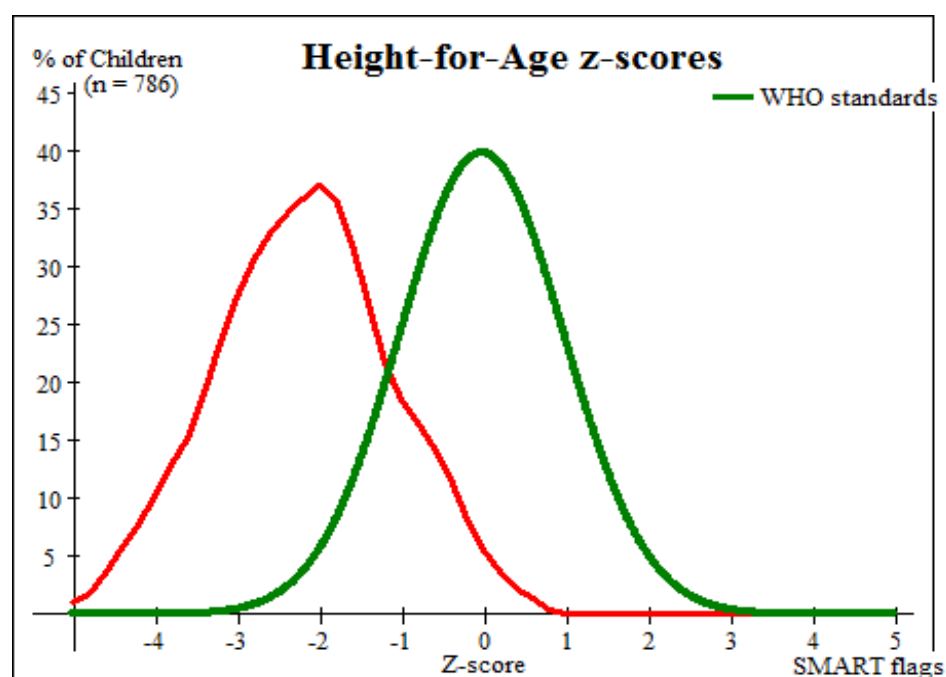


Figure 34 : DISTRIBUTION OF HEIGHT-FOR-AGE Z-SCORES



The height-for-age distribution for the survey (red) is compared to the WHO distribution (green) in Figure 32. 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 45 : MEAN Z-SCORES, DESIGN EFFECTS AND EXCLUDED SUBJECTS

Indicator	n	Mean z-scores \pm SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	792	0.02 \pm 0.94	1.31	96	8
Weight-for-Age	793	-1.21 \pm 0.98	1.32	95	8
Height-for-Age	786	-2.18 \pm 1.06	1.68	95	15

* contains for WHZ and WAZ the children with oedema⁷.

4.4 Children 6-59 months (Mtendeli Camp)

4.4.1 Sample size and clusters

Table 46: TARGET AND ACTUAL NUMBER CAPTURED

	Target (No.)	Total surveyed (No.)	% of the target
Children 6-59 months	645	763	118.3%
Clusters	30	30	100%

⁷ SMART flags and ranges used like ± 3 from the observed mean

Table 47: CHILDREN 6-59 MONTHS - DISTRIBUTION OF AGE AND SEX OF SAMPLE

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy: Girl
6-17 months	112	52.1	103	47.9	215	28.2	1.1
18-29 months	88	56.8	67	43.2	155	20.3	1.3
30-41 months	112	55.4	90	44.6	202	26.5	1.2
42-53 months	72	54.1	61	45.9	133	17.4	1.2
54-59 months	35	60.3	23	39.7	58	7.6	1.5
Total	419	54.9	344	45.1	763	100.0	1.2

Percentage of children with no exact birthday: 0 %

Age documentation was available for all of the sampled children. The overall sex ratio was 1.2, within the recommended range (0.8-1.2) which confirms that both sexes were equally distributed, and the sample was unbiased **Table 48**. The age group 54-59 months was underrepresented compared to the other age groups. This is often the case in nutrition assessments, surveys where there may be less proof of age for older children as caregivers tend to recall best the birth date of smaller children.

4.4.2 Anthropometric results (based on WHO Growth Standards 2006;

Table 48: PREVALENCE OF ACUTE MALNUTRITION BASED ON WEIGHT-FOR-HEIGHT Z-SCORES (AND/OR OEDEMA) AND BY SEX

	All n = 754	Boys n = 414	Girls n = 340
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(22) 2.9 % (1.9 - 4.4 95% C.I.)	(9) 2.2 % (1.1 - 4.4 95% C.I.)	(13) 3.8 % (2.1 - 6.8 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(22) 2.9 % (1.9 - 4.4 95% C.I.)	(9) 2.2 % (1.1 - 4.4 95% C.I.)	(13) 3.8 % (2.1 - 6.8 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)

The prevalence of oedema is 0.0%

Trend analysis show no significant difference between prevalence in 2017 & 2018 despite the decrease from 4.0% to 2.9%,

Figure 35.

Figure 35 : TRENDS IN THE PREVALENCE OF GLOBAL AND SEVERE ACUTE MALNUTRITION BASED ON WHO GROWTH STANDARDS IN CHILDREN 6-59 MONTHS FROM 2016-2018.

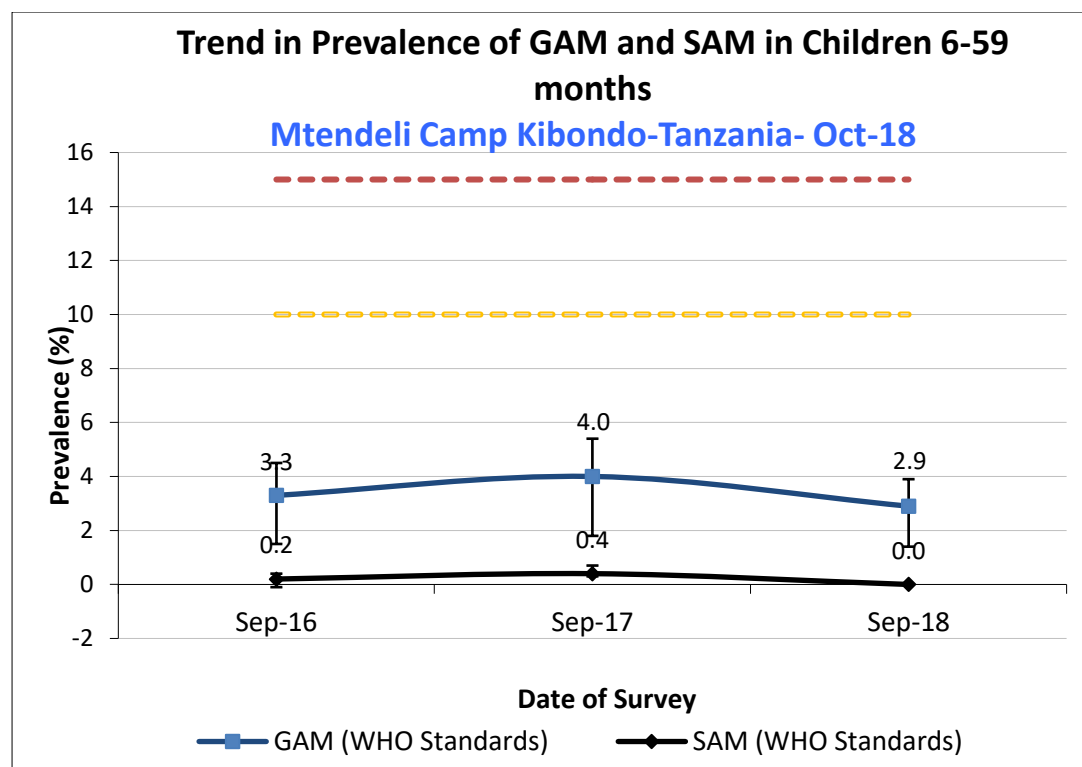


Table 49, presents the prevalence of acute malnutrition by age group. The second oldest age group (42-53m) appear to be the most affected by moderate wasting. However, these results should be interpreted with caution due to the small sample size. Trends in moderate and acute wasting by age group are presented in

Figure 36.

Table 49 : PREVALENCE OF ACUTE MALNUTRITION BY AGE, BASED ON WEIGHT-FOR-HEIGHT Z-SCORES AND/OR OEDEMA

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	214	0	0.0	6	2.8	208	97.2	0	0.0
18-29	154	0	0.0	5	3.2	149	96.8	0	0.0
30-41	200	0	0.0	4	2.0	196	98.0	0	0.0
42-53	128	0	0.0	6	4.7	122	95.3	0	0.0
54-59	58	0	0.0	1	1.7	57	98.3	0	0.0
Total	754	0	0.0	22	2.9	732	97.1	0	0.0

Figure 36: TREND IN THE PREVALENCE OF WASTING BY AGE IN CHILDREN 6-59 MONTHS

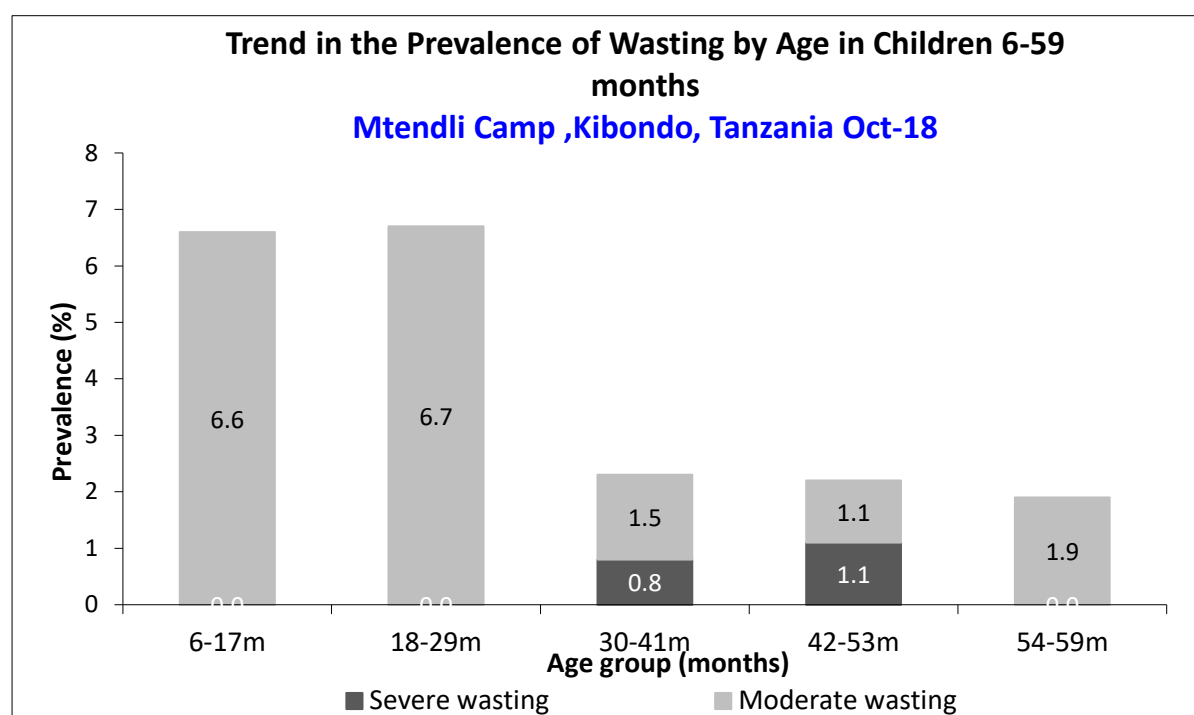


Table 50 : DISTRIBUTION OF SEVERE ACUTE MALNUTRITION AND OEDEMA BASED ON WEIGHT-FOR-HEIGHT Z-SCORES

	<-3 z-score	>= -3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 7 (0.9 %)	Not severely malnourished No. 756 (99.1 %)

Figure 37: Distribution of Weight-For-Height Z-Scores of Survey Population (Red) Compared to Reference Population (Green) Based on Who Growth Standards

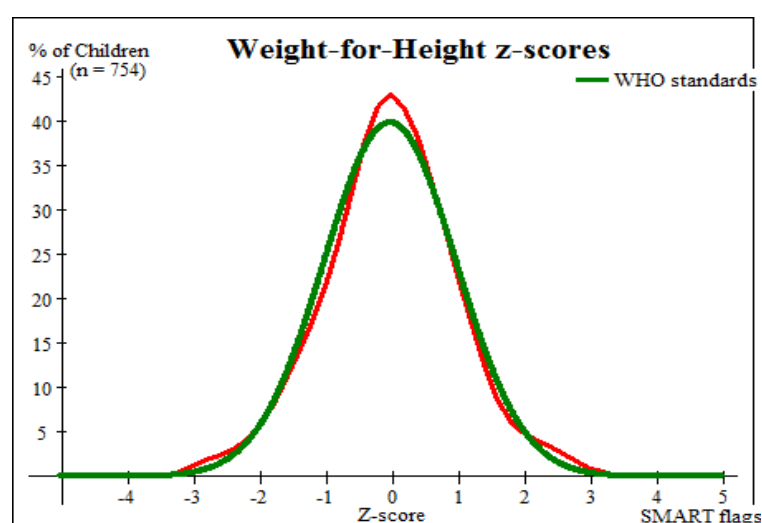


Figure 37 shows that the distribution for weight-for-height z-scores for the survey sample is closely matching the standard population, illustrating a more or less similar good nutrition status compared to the international WHO Standard population of children aged 6-59 months. The mean of sample population is -0.01 ± 1.01 which compares favourably to the standard population mean of 0.0.

MUAC is being used in the community for screening and admission to therapeutic and supplementary feeding programmes. As commonly found in certain populations, the prevalence of acute malnutrition when measured by MUAC is less compared to WHZ, however, there was 2 cases of SAM compared to zero cases based on WHZ Table 51. As per MUAC, moderate wasting

predominately affected children 6-17 months old Table 52.

Table 51 : PREVALENCE OF MUAC MALNUTRITION

	All n = 763	Boys n = 419	Girls n = 344
Prevalence of MUAC < 125 mm and/or oedema	(12) 1.6 % (0.8 - 3.1 95% C.I.)	(4) 1.0 % (0.4 - 2.4 95% C.I.)	(8) 2.3 % (1.0 - 5.6 95% C.I.)
Prevalence of MUAC < 125 mm and >= 115 mm, no oedema	(10) 1.3 % (0.6 - 2.9 95% C.I.)	(3) 0.7 % (0.2 - 2.1 95% C.I.)	(7) 2.0 % (0.7 - 5.4 95% C.I.)
Prevalence MUAC < 115 mm and/or oedema	(2) 0.3 % (0.1 - 1.1 95% C.I.)	(1) 0.2 % (0.0 - 1.9 95% C.I.)	(1) 0.3 % (0.0 - 2.2 95% C.I.)

Table 52 : PREVALENCE OF MUAC MALNUTRITION BY AGE, BASED ON MUAC CUT OFF'S AND/OR OEDEMA

Age (mo)	Total no.	MUAC < 115 mm		MUAC >= 115 mm and < 125 mm		MUAC > = 125 mm		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	215	2	0.9	6	2.8	207	96.3	0	0.0
18-29	155	0	0.0	2	1.3	153	98.7	0	0.0
30-41	202	0	0.0	2	1.0	200	99.0	0	0.0
42-53	133	0	0.0	0	0.0	133	100.0	0	0.0
54-59	58	0	0.0	0	0.0	58	100.0	0	0.0
Total	763	2	0.3	10	1.3	751	98.4	0	0.0

The prevalence of underweight (WAZ <-2) is presented in [Error! Reference source not found.](#), and stunting in

Table 53. There was no significant difference in the prevalence of stunting between boys and Girls.

Table 53: PREVALENCE OF UNDERWEIGHT BASED ON WEIGHT-FOR-AGE Z-SCORES BY SEX

	All n = 761	Boys n = 417	Girls n = 344
Prevalence of underweight (<-2 z-score)	(141) 18.5 % (16.1 - 21.2 95% C.I.)	(76) 18.2 % (15.0 - 22.0 95% C.I.)	(65) 18.9 % (15.5 - 22.9 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(121) 15.9 % (13.4 - 18.8 95% C.I.)	(65) 15.6 % (12.0 - 19.9 95% C.I.)	(56) 16.3 % (13.0 - 20.2 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(20) 2.6 % (1.8 - 3.9 95% C.I.)	(11) 2.6 % (1.5 - 4.6 95% C.I.)	(9) 2.6 % (1.5 - 4.6 95% C.I.)

Table 54: PREVALENCE OF STUNTING BASED ON HEIGHT-FOR-AGE Z-SCORES AND BY SEX

	All n = 757	Boys n = 417	Girls n = 340
Prevalence of stunting (<-2 z-score)	(368) 48.6 % (43.6 - 53.7 95% C.I.)	(213) 51.1 % (44.4 - 57.7 95% C.I.)	(155) 45.6 % (39.1 - 52.2 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(224) 29.6 % (25.9 - 33.6 95% C.I.)	(126) 30.2 % (25.4 - 35.5 95% C.I.)	(98) 28.8 % (23.7 - 34.6 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(144) 19.0 % (15.5 - 23.1 95% C.I.)	(87) 20.9 % (16.8 - 25.6 95% C.I.)	(57) 16.8 % (12.4 - 22.2 95% C.I.)

Trends in the prevalence of global and severe stunting have remained consistently above critical threshold of 40% in last 3 years **Figure 38**.

Overall, in terms of age disaggregation, children 18-29 months & 30-41 months old appeared most affected by stunting; both severe and moderate, (**Figure 39 & Table 55**). The height for age distribution of children surveyed is shifted to the left, demonstrating a lower height-for-age compared to the WHO reference for children 6-59 months; The survey population distribution curve is also wider indicating greater variance compared to the reference population **Figure 40**.

Figure 38: TRENDS IN THE PREVALENCE OF GLOBAL AND SEVERE STUNTING BASED ON WHO GROWTH STANDARDS IN CHILDREN 6-59 MONTHS FROM 2016-2018.

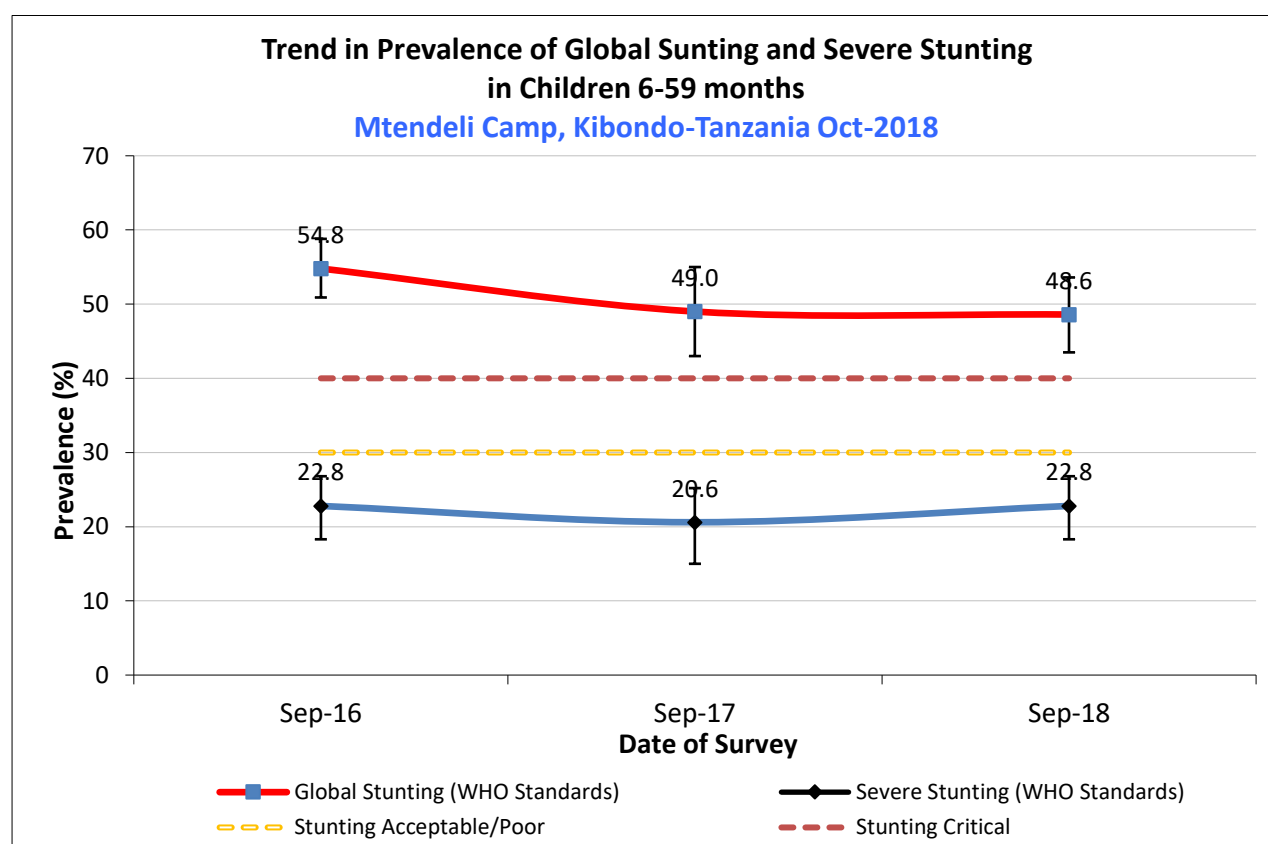


Table 55: PREVALENCE OF STUNTING BY AGE BASED ON HEIGHT-FOR-AGE Z-SCORES

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (>= -2 z score)	
		No.	%	No.	%	No.	%
6-17	209	21	10.0	55	26.3	133	63.6
18-29	155	41	26.5	51	32.9	63	40.6
30-41	202	50	24.8	61	30.2	91	45.0
42-53	133	19	14.3	34	25.6	80	60.2
54-59	58	13	22.4	23	39.7	22	37.9
Total	757	144	19.0	224	29.6	389	51.4

Figure 39: TRENDS IN THE PREVALENCE OF STUNTING BY AGE IN CHILDREN 6-59 MONTHS

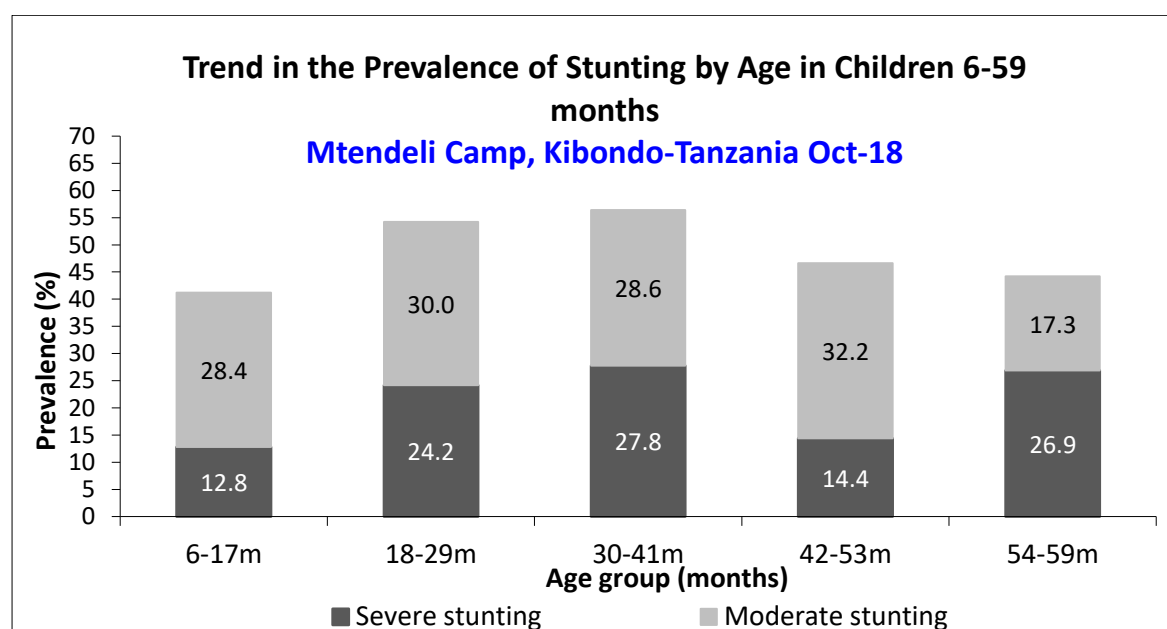


Figure 40 : DISTRIBUTION OF HEIGHT-FOR-AGE Z-SCORES (BASED ON WHO GROWTH STANDARDS; THE REFERENCE POPULATION IS SHOWN IN GREEN AND THE SURVEYED POPULATION IS SHOWN IN RED) OF SURVEY POPULATION COMPARED TO REFERENCE POPULATION

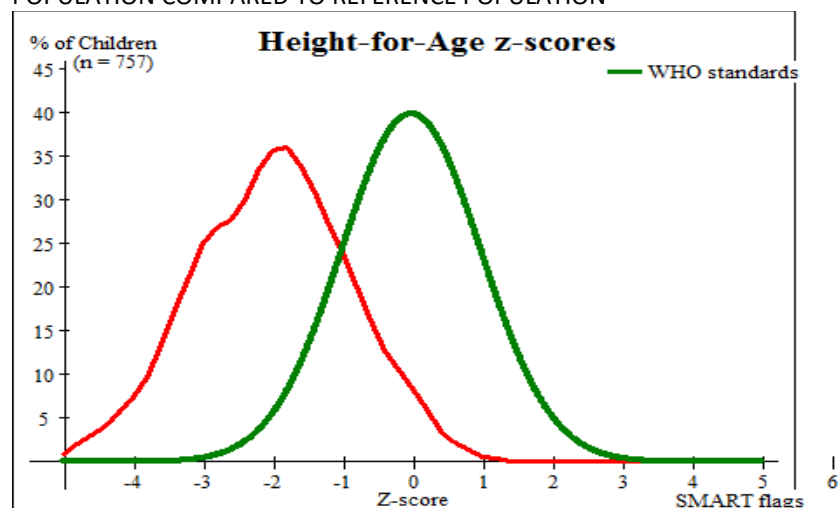


Table 56 : MEAN Z-SCORES, DESIGN EFFECTS AND EXCLUDED SUBJECTS

Indicator	n	Mean z-scores \pm SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	754	-0.01 \pm 1.01	1.00	0	9
Weight-for-Age	761	-1.13 \pm 1.01	1.00	0	2
Height-for-Age	757	-2.01 \pm 1.09	1.87	0	6

* contains for WHZ and WAZ the children with oedema.

4.5 Feeding programme coverage results

Feeding programme coverage results should be interpreted with caution due to the small number of cases that were sampled during the survey especially for SAM children.

4.5.1 Feeding Programme Coverage (Nyarugusu Old Camp)

Table 57: PROGRAMME COVERAGE FOR ACUTELY MALNOURISHED CHILDREN

	Number/total	% (95% CI)
Supplementary feeding programme coverage based on all admission criteria (MUAC and WHZ*)	11/18	61.1% (13.5 - 90.5)
Supplementary feeding programme coverage based on MUAC only	10/12	83.3% (56.8 – 100)
Therapeutic feeding programme coverage based on all admission criteria (MUAC, WHZ* and/or oedema)	1/2	50.0% (0.0 – 100%)
Therapeutic feeding programme coverage based on MUAC and/or oedema only	1/2	50.0% (0.0 – 100%)

*WHZ flags excluded from analysis

4.5.2 Feeding Programme (Nyarugusu New Camp)

Table 58: PROGRAMME COVERAGE FOR ACUTELY MALNOURISHED CHILDREN BASED ON ALL ADMISSION CRITERIA (MUAC, WHZ AND/OR OEDEMA)

	Number/total	% (95% CI)
Supplementary feeding programme coverage based on all admission criteria (MUAC and WHZ*)	24/42	57% (33.6 – 80.7)
Supplementary feeding programme coverage based on MUAC only	20/31	64.5% (41.9 – 87.2)
Therapeutic feeding programme coverage based on all admission criteria (MUAC, WHZ* and/or oedema)	1/1	100.0%
Therapeutic feeding programme coverage based on MUAC and/or oedema only	1/1	100.0%

*WHZ flags excluded from analysis

4.5.3 Feeding Programme Coverage (Nduta Camp)

Table 59 : PROGRAMME COVERAGE FOR ACUTELY MALNOURISHED CHILDREN

	Number/total	% (95% CI)
Supplementary feeding programme coverage based on all admission criteria (MUAC and WHZ*)	20/27	74.1% (50.8 – 97.4)
Supplementary feeding programme coverage based on MUAC only	13/16	81% (58.8 – 100.0)
Therapeutic feeding programme coverage based on all admission criteria (MUAC, WHZ* and/or oedema)	0/0	-
Therapeutic feeding programme coverage based on MUAC and/or oedema only	0/0	-

4.5.4 Feeding programme coverage (Mtendeli Camp)

Table 60 : PROGRAMME COVERAGE FOR ACUTELY MALNOURISHED CHILDREN

	Number/total	% (95% CI)
Supplementary feeding programme coverage based on all admission criteria (MUAC and WHZ*)	16/27	59.3% (34.2 – 84.3)
Supplementary feeding programme coverage based on MUAC only	7/10	70% (25.6 – 100)
Therapeutic feeding programme coverage based on all admission criteria (MUAC, WHZ* and/or oedema)	0/0	-
Therapeutic feeding programme coverage based on MUAC and/or oedema only	0/0	-

4.6 Vaccination and Supplementation Programmes

4.6.1 Vaccination & Supplementation (Nyarugusu Old Camp)

Table 61 : MEASLES VACCINATION COVERAGE FOR CHILDREN AGED 9-59 MONTHS (N=530)

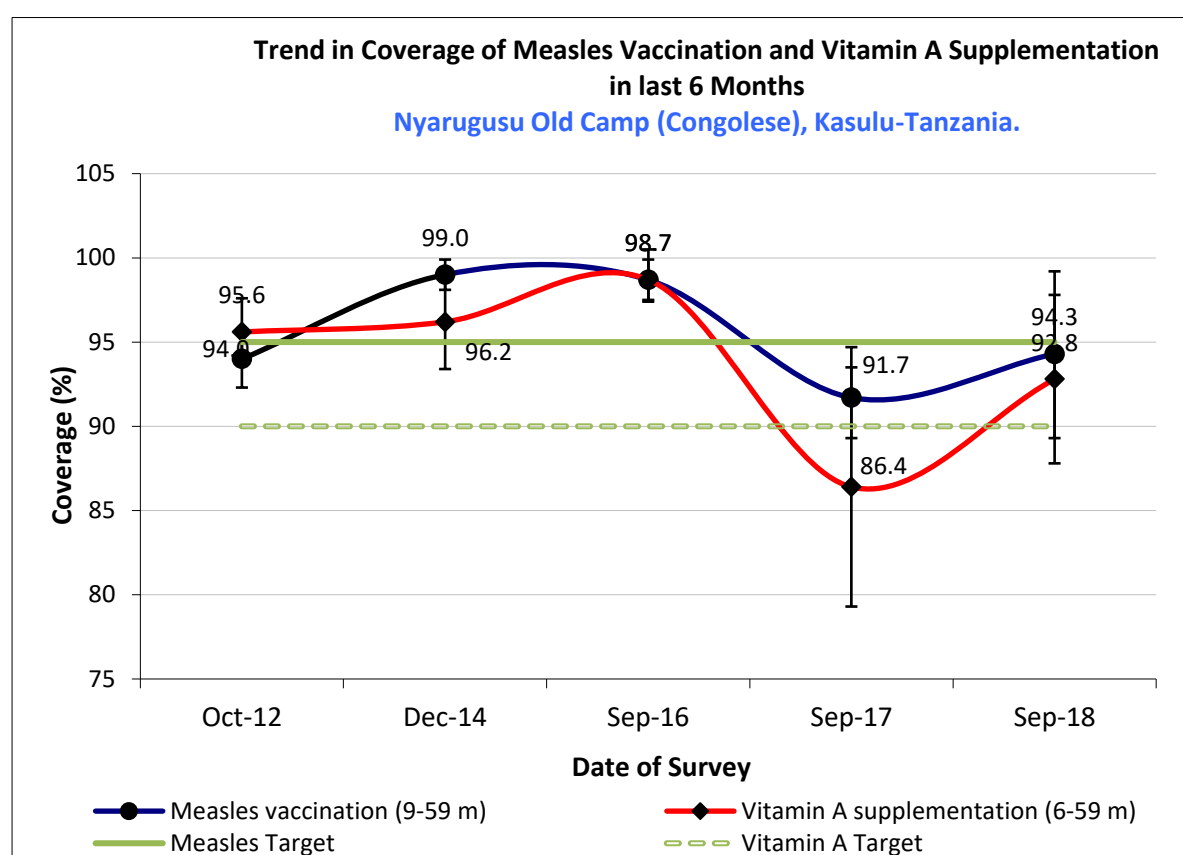
	Measles (with card) n=437	Measles (with card <u>or</u> confirmation from mother) n=500
YES	82.5% (74.0 - 90.9 95% CI)	94.3 % (89.4 – 99.3 95% CI)

Table 62 : VITAMIN A SUPPLEMENTATION FOR CHILDREN AGED 6-59 MONTHS WITHIN PAST 6 MONTHS (N=586)

	Vitamin A capsule (with card) n=458	Vitamin A capsule (with card <u>or</u> confirmation from mother) n=527
YES	80.6% (72.2 – 89.0 95% CI)	92.8 % (87.8-97.8 95% CI)

Figure 41 : TRENDS IN THE COVERAGE OF MEASLES VACCINATION AND VITAMIN A

SUPPLEMENTATION IN LAST 6 MONTHS IN CHILDREN 6-59 MONTHS FROM 2012 -2018



4.6.2 Vaccination & Supplementation (Nyarugusu New Camp)

Measles vaccination as well as vitamin A supplementation coverage for children 9-59 months has been consistently and high within the threshold above 95% & 90% for Measles and Vitamin A respectively Table 149.

Table 63 : MEASLES VACCINATION COVERAGE FOR CHILDREN AGED 9-59 MONTHS (OR OTHER CONTEXT-SPECIFIC TARGET GROUP) (N=706)

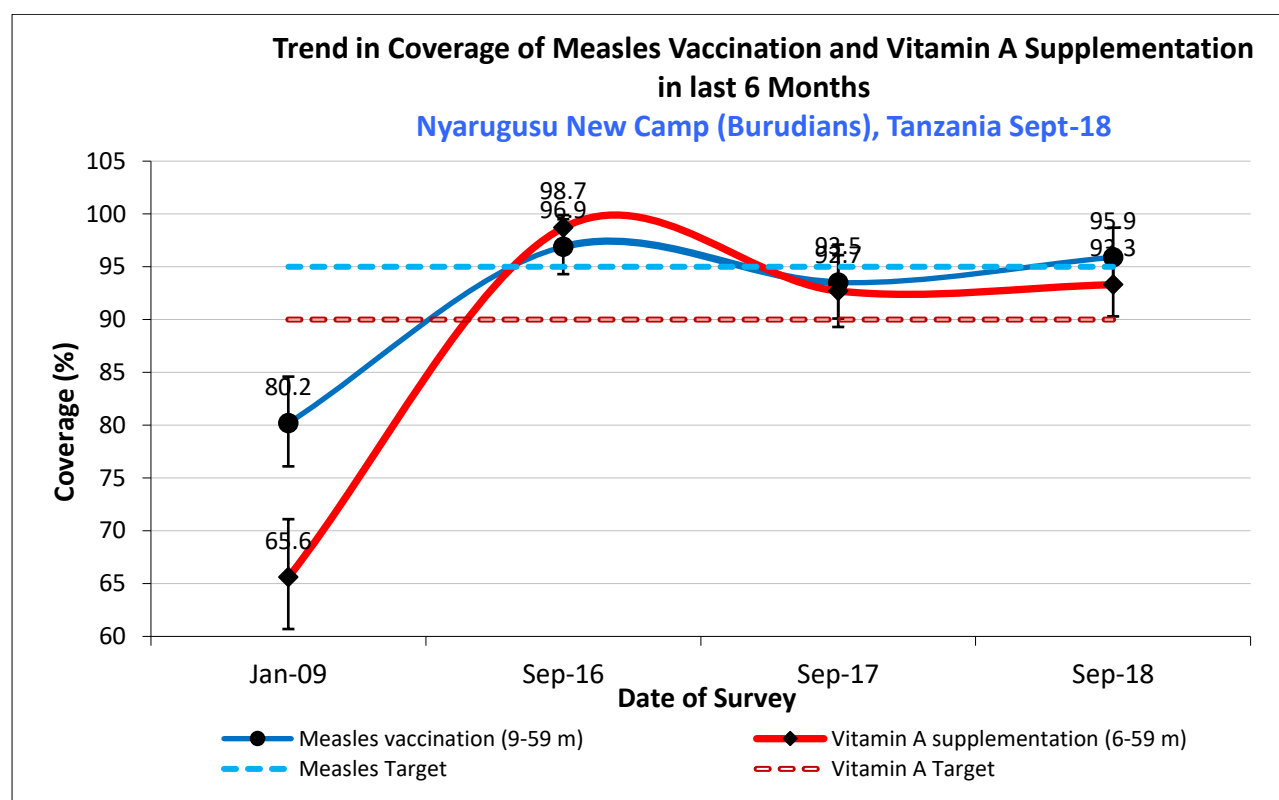
	Measles (with card) n=627	Measles (with card <u>or</u> confirmation from mother) n=677
YES	88.8 % (83.0 – 94.6 95% CI)	95.9 % (93.1 – 98.7 95% CI)

Table 64: VITAMIN A SUPPLEMENTATION FOR CHILDREN AGED 6-59 MONTHS WITHIN PAST 6 MONTHS (OR OTHER CONTEXT-SPECIFIC TARGET GROUP) (N= 763)

	Vitamin A capsule (with card) n=663	Vitamin A capsule (with card <u>or</u> confirmation from mother) n=712
YES	86.8 % (81.2 – 92.6 95% CI)	93.3 % (90.3 – 96.3 95% CI)

Figure 42 : TRENDS IN THE COVERAGE OF MEASLES VACCINATION AND VITAMIN A

SUPPLEMENTATION IN LAST 6 MONTHS IN CHILDREN 6-59 MONTHS FROM 2016-2018



4.6.3 Vaccination & Supplementation (Nduta Camp)

Table 65 : MEASLES VACCINATION COVERAGE FOR CHILDREN AGED 9-59 MONTHS (OR OTHER CONTEXT-SPECIFIC TARGET GROUP) (N=728)

	Measles (with card) n=619	Measles (with card <u>or</u> confirmation from mother) n=725
YES	85.0 % (77.9 – 92.1 95% CI)	99.6 % (99.0 – 100.0 95% CI)

The measles coverage with card or recall was in line with the recommendation which is above 95% target at 99.6% (99.0 – 100.0 %, 95% CI) Table 65; similarly, coverage of vitamin A is optimal at 96.6% (94.6 – 98.7 95% CI) against the UNHCR threshold of 90% Table 66.

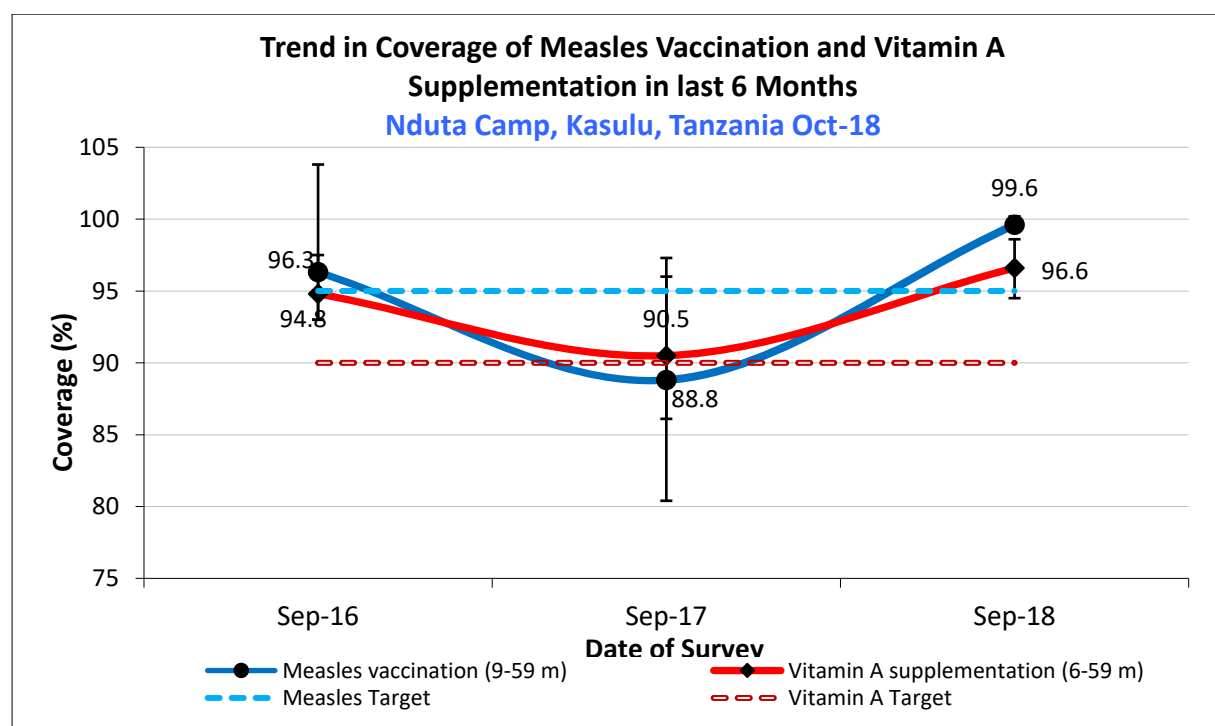
Trend analysis indicated the last three surveys, coverage of measles vaccination and vitamin A supplementation has been within the thresholds

Table 79.

Table 66 : VITAMIN A SUPPLEMENTATION FOR CHILDREN AGED 6-59 MONTHS WITHIN PAST 6 MONTHS (OR OTHER CONTEXT-SPECIFIC TARGET GROUP) (N=801)

	Vitamin A capsule (with card) n=607	Vitamin A capsule (with card <u>or</u> confirmation from mother) n=774
YES	75.8% (63.5 – 88.1 95% CI)	96.6 % (94.6 – 98.7 95% CI)

Figure 43 : TRENDS IN THE COVERAGE OF MEASLES VACCINATION AND VITAMIN A SUPPLEMENTATION IN LAST 6 MONTHS IN CHILDREN 6-59 MONTHS FROM 2016-2018.



4.6.4 Vaccination & Supplementation (Mtendeli Camp)

Table 67 : MEASLES VACCINATION COVERAGE FOR CHILDREN AGED 9-59 MONTHS (N=702)

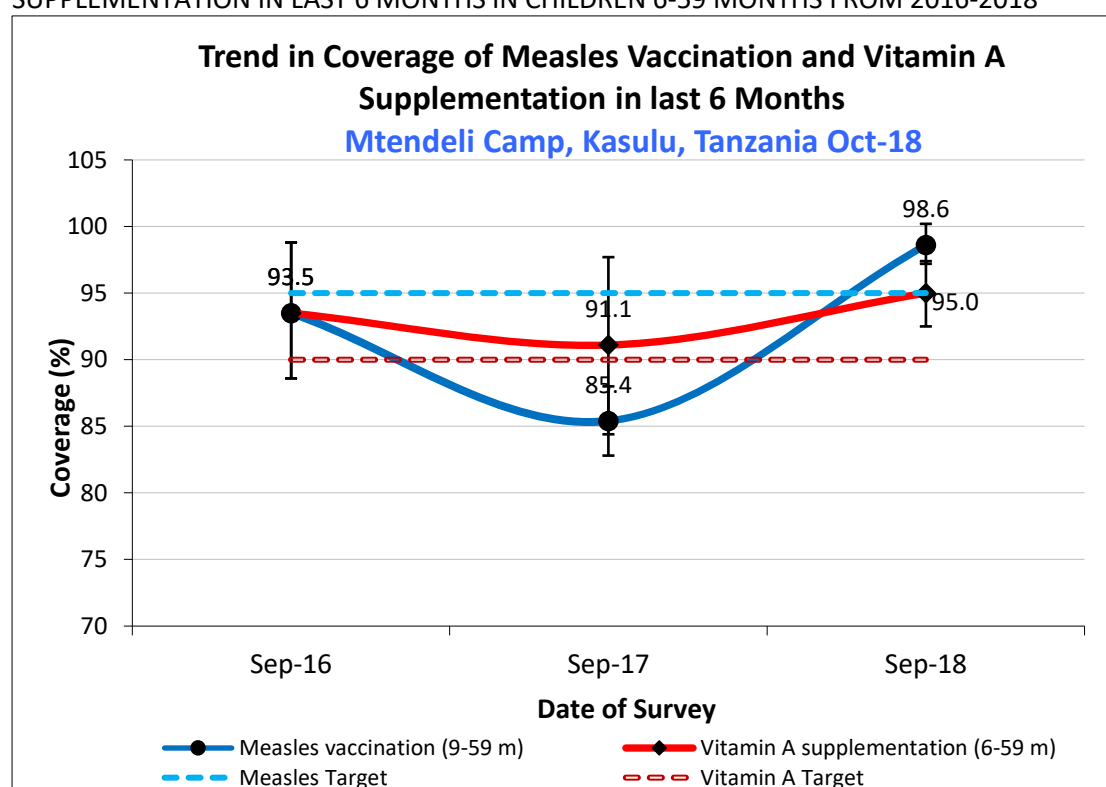
	Measles (with card) n=591	Measles (with card <u>or</u> confirmation from mother) n=692
YES	84.2% (76.3 – 92.0 95% CI)	98.6 % (97.0 – 100.0 95% CI)

Vitamin A supplementation coverage by card and recall increased insignificantly from 85.4% in 2017 compared to 2018 prevalence of 95.0% Figure 44.

Table 68 : VITAMIN A SUPPLEMENTATION FOR CHILDREN AGED 6-59 MONTHS WITHIN PAST 6 MONTHS (OR OTHER CONTEXT-SPECIFIC TARGET GROUP) (N=762)

	Vitamin A capsule (with card) n=616	Vitamin A capsule (with card <u>or</u> confirmation from mother) n=724
YES	80.8 % (73.5 – 88.2 95% CI)	95.0% (92.6 – 97.5 5% CI)

Figure 44 : TRENDS IN THE COVERAGE OF MEASLES VACCINATION AND VITAMIN A SUPPLEMENTATION IN LAST 6 MONTHS IN CHILDREN 6-59 MONTHS FROM 2016-2018



4.6.5 Diarrhoea results

Table 69 : PERIOD PREVALENCE OF DIARRHOEA

Diarrhoea in the last two weeks	Number/total	% (95% CI)
Nyarugusu Old Camp	102/565	17.9 (10.8 – 25.1)
Nyarugusu New Camp	152/762	20.0% (9.0 – 30.9)
Nduta Camp	51/801	6.4% (3.0 – 9.8)
Mtendeli Camp	58/762	7.6% (2.5 – 12.7)

4.7 Anaemia results Children 6-59 Months

4.7.1 Anaemia results, 6-59 Months (Nyarugusu Old Camp)

Total Anaemia prevalence in children under five has been on rise since the first & the lowest rate of 37.8% in 2012 survey to a high of 56.0% in 2018 Table 82; however, compared to 2017 rate of 47.0%, it isn't statistically different from 2018; concomitantly the mean HB concentration has been on a decline from 11.6g/dl to 10.7g/dl Figure 48. In terms of age group, the younger age group aged 6-23months are distinctly more anaemic compared to the older age group 24-59 months

FIGURE 45.

FIGURE 45 : TRENDS IN THE PREVALENCE OF TOTAL ANAEMIA & SEVERE ANAMIA PER AGE GROUP IN CHILDREN 6-59 MONTHS FROM 2012 -2018

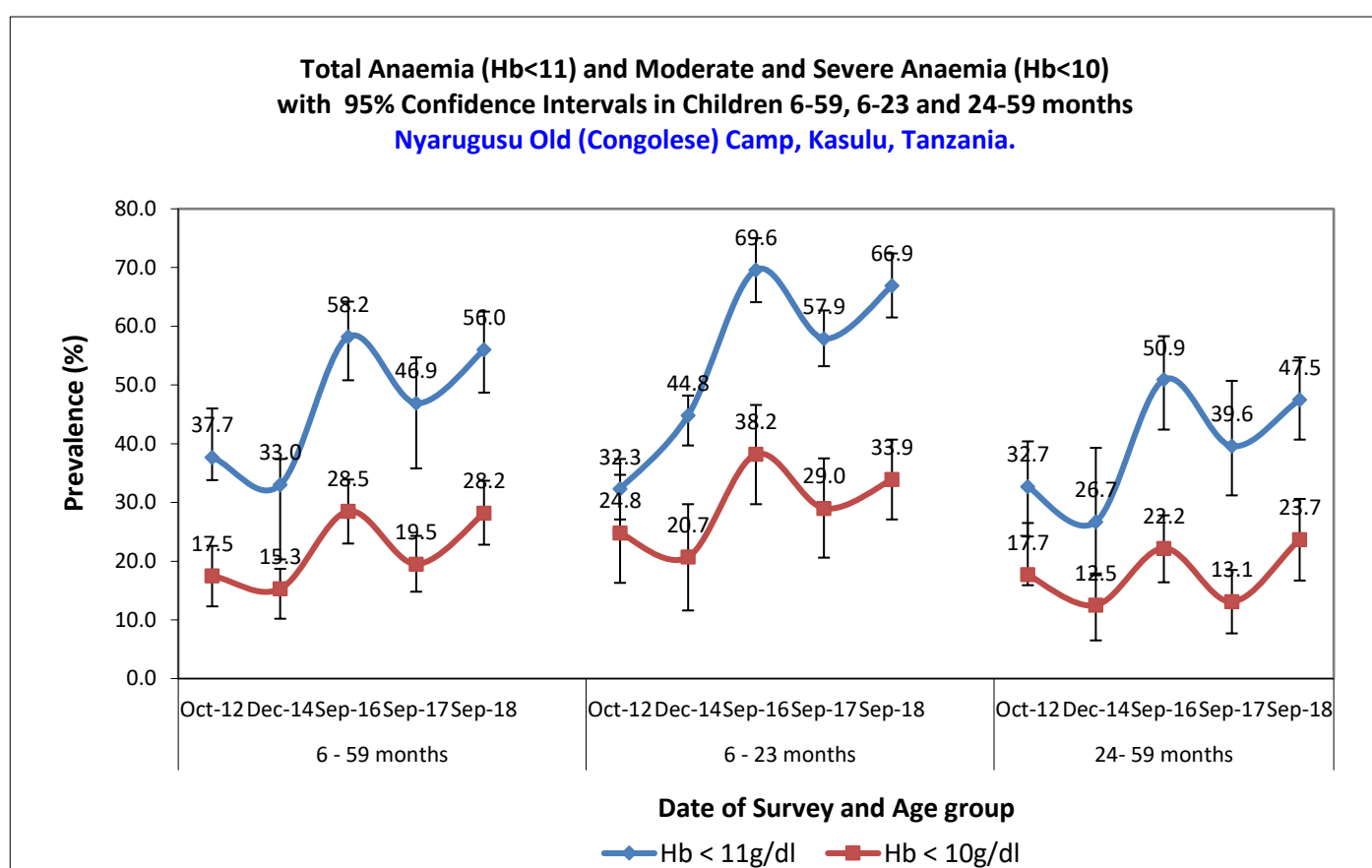


Table 70 : PREVALENCE OF TOTAL ANAEMIA, ANAEMIA CATEGORIES, AND MEAN HAEMOGLOBIN CONCENTRATION IN CHILDREN 6-59 MONTHS OF AGE AND BY AGE GROUP

	6-59 months n = 561	6-23 months n=245	24-59 months n=316
Total Anaemia (Hb<11.0 g/dL)	(314) 56.0% (49.5 – 62.5 95% CI)	(164) 66.9% (59.7 - 74.2 95% CI)	(150) 47.5 % (38.7 – 56.3 95% CI)
Mild Anaemia (Hb 10.0- 10.9 g/dL)	(156) 27.8% (24.6 – 31.1 95% CI)	(81) 33.1% (26.5 – 39.6 95% CI)	(75) 23.7% (19.4-28.1 95% CI)

Moderate Anaemia (7.0-9.9 g/dL)	(152) 27.1% (21.7 – 32.5 95% CI)	(79) 32.3% (25.5 – 39.0 95% CI)	(73) 23.1% (16.2 – 30.1 95% CI)
Severe Anaemia (<7.0 g/dL)	(6) 1.1% (0.1 – 2.0 95% CI)	(4) 1.6% (0.03- 3.2 95% CI)	(2) 0.6% (0 -1.5 95% CI)
Mean Hb (g/dL) (SD / 95% CI) [range]	10.7 g/dL (10.5 – 10.9 95% CI) [5.0, 16.2] [min, max]	10.4 g/dL (10.2 – 10.6 95% CI) [5.0, 13.3] [min, max]	10.9 g/dL (10.7 – 11.2 95% CI) [6.5, 16.2] [min, max]

Table 71 : Prevalence of MODERATE AND SEVERE anaemia in children 6-59 months of age AND BY AGE GROUP

	6-59 months n = 561	6-23 months n=245	24-59 months n=316
Moderate and Severe Anaemia (Hb<10.0 g/dL)	(158) 28.2 % (22.7- 33.6 95% CI)	(83) 33.9% (27.1- 40.7 95% CI)	(75) % (16.8 – 30.7 95% CI)

Figure 46: TRENDS IN ANAEMIA CATEGORIES IN CHILDREN 6-59 MONTHS FROM 2012-2018.

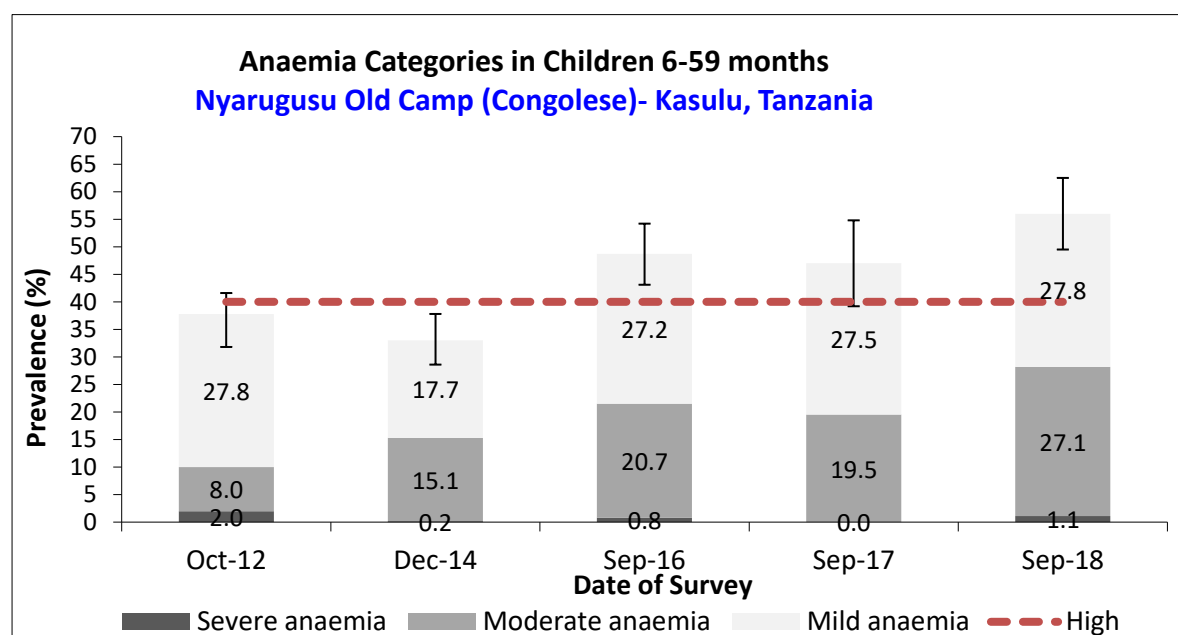


Figure 47 : TREND IN TOTAL ANAEMIA (<11 G/DL), AND MODERATE AND SEVERE ANAEMIA (<10 G/DL) WITH 95% CI IN CHILDREN 6-59 MONTHS FROM 2012-2018.

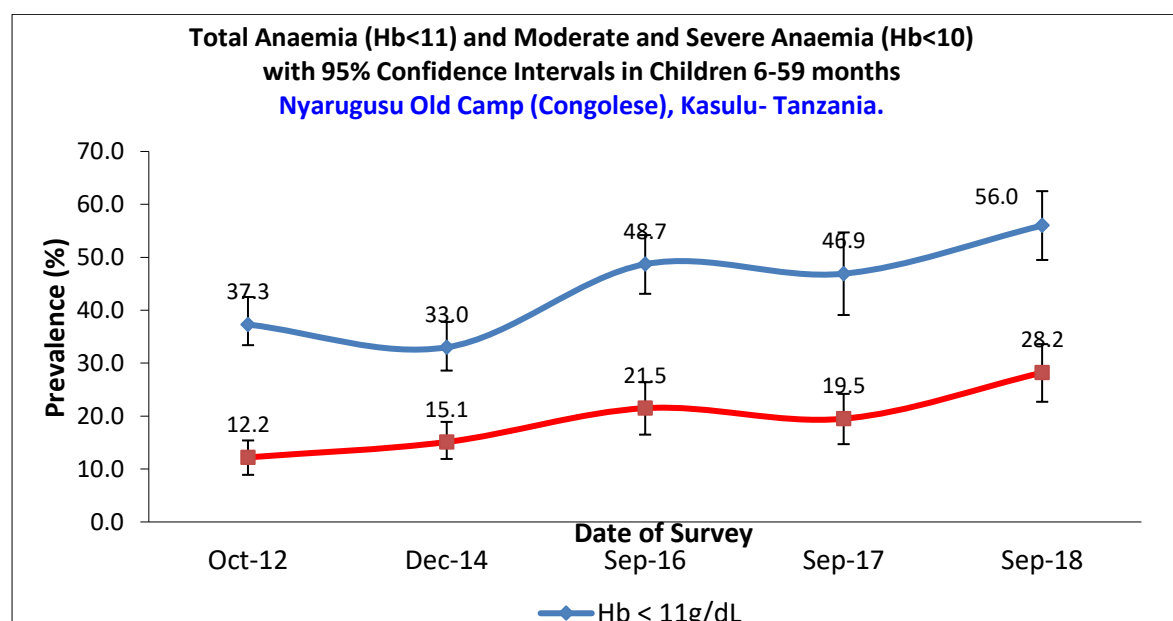
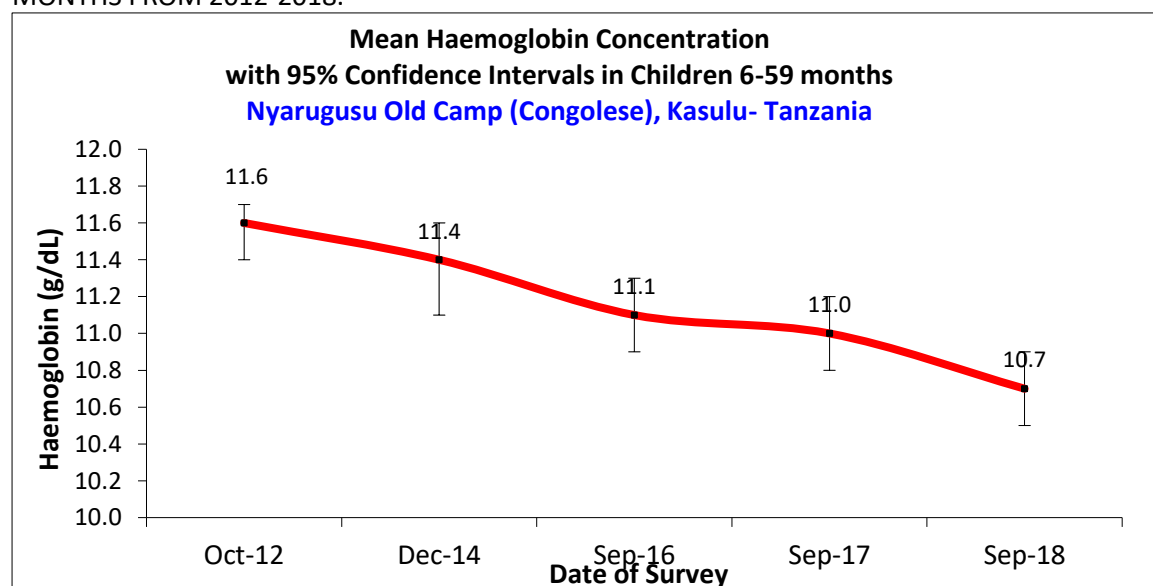


Figure 48: TREND IN MEAN HAEMOGLOBIN CONCENTRATION WITH 95% CI IN CHILDREN 6-59 MONTHS FROM 2012-2018.



4.7.2 Anaemia results, 6-59 Months (Nyarugusu New Camp)

The prevalence of anaemia in Children 6-59 months was 35.3 % (30.1 – 40.5 95% CI). There was no case of severe anaemia. The breakdown by severity is shown in

Table 72. Comparison with the results of Sept 2017 show insignificant decrease from 41.2% to 35.3% in the current survey. Trend analysis shows a decreasing trend but not statistically significant Figure 49. Consecutively, trends in haemoglobin concentration in the last three years has been on the upward trend Figure 51.

Table 72 : PREVALENCE OF TOTAL ANAEMIA, ANAEMIA CATEGORIES, AND MEAN HAEMOGLOBIN CONCENTRATION IN CHILDREN 6-59 MONTHS OF AGE AND BY AGE GROUP

	6-59 months n = 754	6-23 months n=299	24-59 months n=455
Total Anaemia (Hb<11.0 g/dL)	(266) 35.3 % (30.1 – 40.5 95% CI)	(134) 44.8% (38.2 – 51.4 95% CI)	(132) 29.0 % (22.6 – 35.4 95% CI)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(187) 24.8% (20.6 – 29.0 95% CI)	(92) 30.8% (25.1 – 36.5 95% CI)	(95) 20.9 % (15.2 – 26.5 95% CI)
Moderate Anaemia (7.0-9.9 g/dL)	(79) 10.5% (7.5 – 13.4 95% CI)	(42) 14.1 % (9.7 – 18.3 95% CI)	(37) 8.1% (5.1 – 11.2 95% CI)
Severe Anaemia (<7.0 g/dL)	(0) 0% (95% CI)	(0) 0% (95% CI)	(0) 0% (95% CI)
Mean Hb (g/dL) (SD / 95% CI) [range]	11.4 g/dL (11.3 – 11.6 95% CI) [min 7.7, 15.2 max]	11.1g/dL (11.0 – 11.3 95% CI) [min 7.7, max 15.0]	11.6g/dL (7.7 – 15.2 95% CI) [min 7.7, max 15.2]

Table 73 : PREVALENCE OF MODERATE AND SEVERE ANAEMIA IN CHILDREN 6-59 MONTHS OF AGE AND BY AGE GROUP

	6-59 months n = 754	6-23 months n=299	24-59 months n=455
Moderate and Severe Anaemia (Hb<10.0 g/dL)	(79) 10.5% (7.6 – 13.4 95% CI)	(42) 14.1% (9.8 – 18.3 95% CI)	(37) 8.1 % (5.1 – 11.2 95% CI)

Figure 49 : TRENDS IN ANAEMIA CATEGORIES IN CHILDREN 6-59 MONTHS FROM 2016-2018.

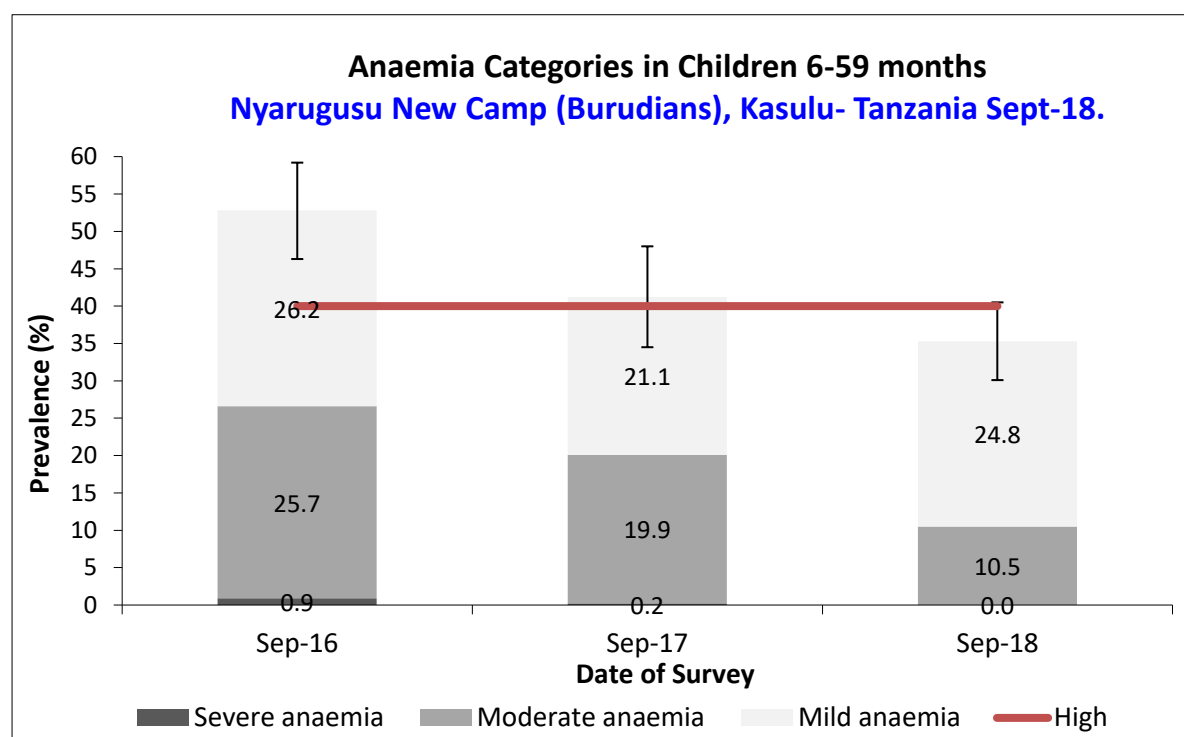


Figure 50 : TREND IN TOTAL ANAEMIA (<11 G/DL), AND MODERATE AND SEVERE ANAEMIA (<10 G/DL) WITH 95% CI IN CHILDREN 6-59 MONTHS FROM 2016-2018.

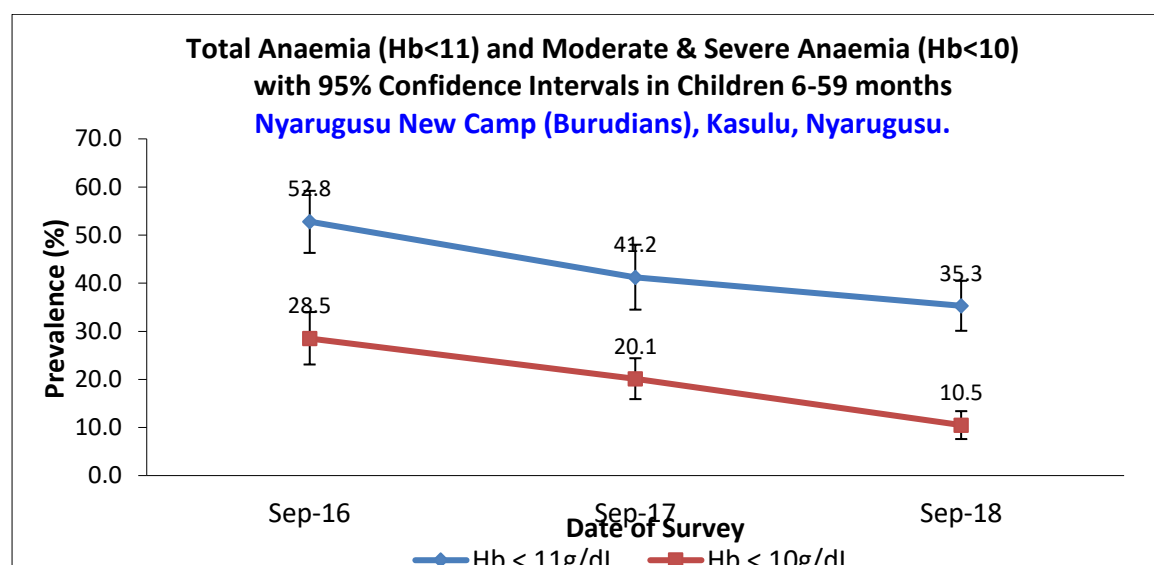
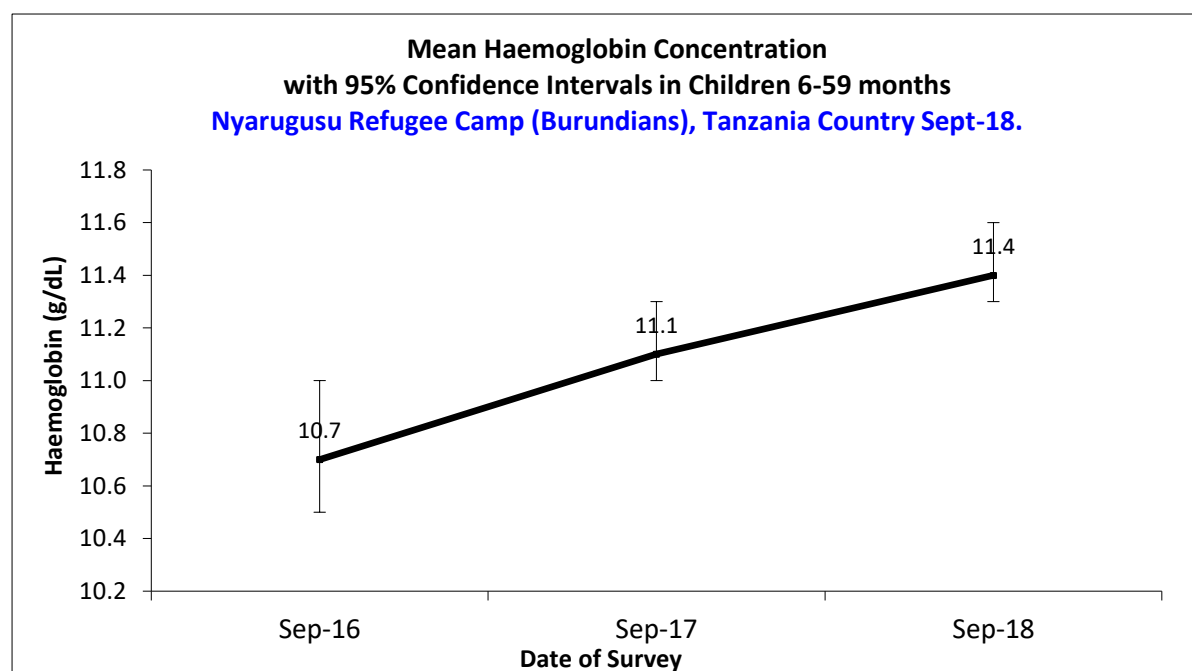


Figure 51 : TREND IN MEAN HAEMOGLOBIN CONCENTRATION WITH 95% CI IN CHILDREN 6-59 months from 2016-2018.



4.7.3 Anaemia results, 6-59 Months (Nduta Camp)

The total anaemia prevalence in children 6-59 months was 26.1%, an improvement from 37.4% in 2017, nevertheless, the decrease is not statistically significant in terms of age groups, the younger age group of 6-23 months are statistically more anaemic compared to the older age group 24-59 months 47.4% and 31.9 respectively (P=0.003) Table 74.

Mean haemoglobin concentration is on the upward trend in the last year; an inverse relation with reducing prevalence of anaemia as expected

Figure 54.

Table 74 : PREVALENCE OF TOTAL ANAEMIA, ANAEMIA CATEGORIES, AND MEAN HAEMOGLOBIN CONCENTRATION IN CHILDREN 6-59 MONTHS OF AGE AND BY AGE GROUP

	6-59 months n = 788	6-23 months n=310	24-59 months n=478
Total Anaemia (Hb<11.0 g/dL)	(295) 37.4 % (32.2 – 42.7 95% CI)	(147) 47.4% (40.0 – 54.8 95% CI)	(148) 31.9% (25.4 – 36.5 95% CI)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(174) 22.1% (18.5 – 25.7 95% CI)	(84) 27.1 % (22.2 – 32.0 95% CI)	(90) 18.8% (14.2 – 23.2 95% CI)
Moderate Anaemia (7.0-9.9 g/dL)	(119) 15.1% (11.2 – 19.0 95% CI)	(61) 19.5% (14.0 – 25.3 95% CI)	(58) 12.1% (7.8 – 16.5 95% CI)
Severe Anaemia (<7.0 g/dL)	(2) 0.3% (0.0 – 0.6 95% CI)	(2) 0.7 % (0.0 – 1.5 CI)	(0) 0.0% (95% CI)
Mean Hb (g/dL) (SD / 95% CI) [range]	11.2 g/dL (11.1 – 11.3 95% CI) [Min 6.0, max 15.]	10.8g/dL (10.6 – 11.0 95% CI) [min 6.0, max 13.7]	11.4 g/dL (11.3 – 11.6 95% CI) [min 7.2, max 15.0]

Table 75: PREVALENCE OF MODERATE AND SEVERE ANAEMIA IN CHILDREN 6-59 MONTHS OF AGE AND BY AGE GROUP

	6-59 months n = 788	6-23 months n=310	24-59 months n=478
Moderate and Severe Anaemia (Hb<10.0 g/dL)	(121) 15.4 % (11.4 – 19.3 95% CI)	(63) 20.3% (14.4 – 26.2 95% CI)	(58) 12.1 % (7.8 – 16.5 95% CI)

Figure 52: TRENDS IN ANAEMIA CATEGORIES IN CHILDREN 6-59 MONTHS FROM 2016-2018.

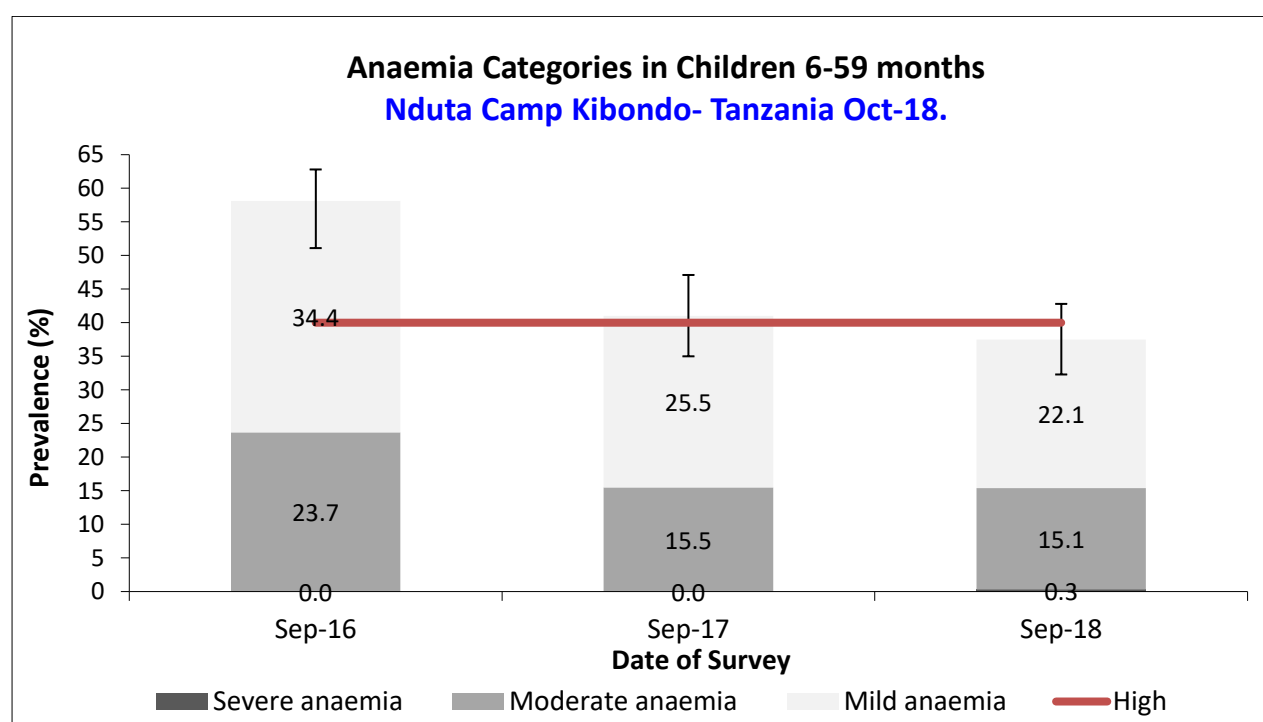


Figure 53 : - TREND IN TOTAL ANAEMIA (<11 G/DL), AND MODERATE AND SEVERE ANAEMIA (<10 G/DL) WITH 95% CI IN CHILDREN 6-59 MONTHS FROM 2016-2018.

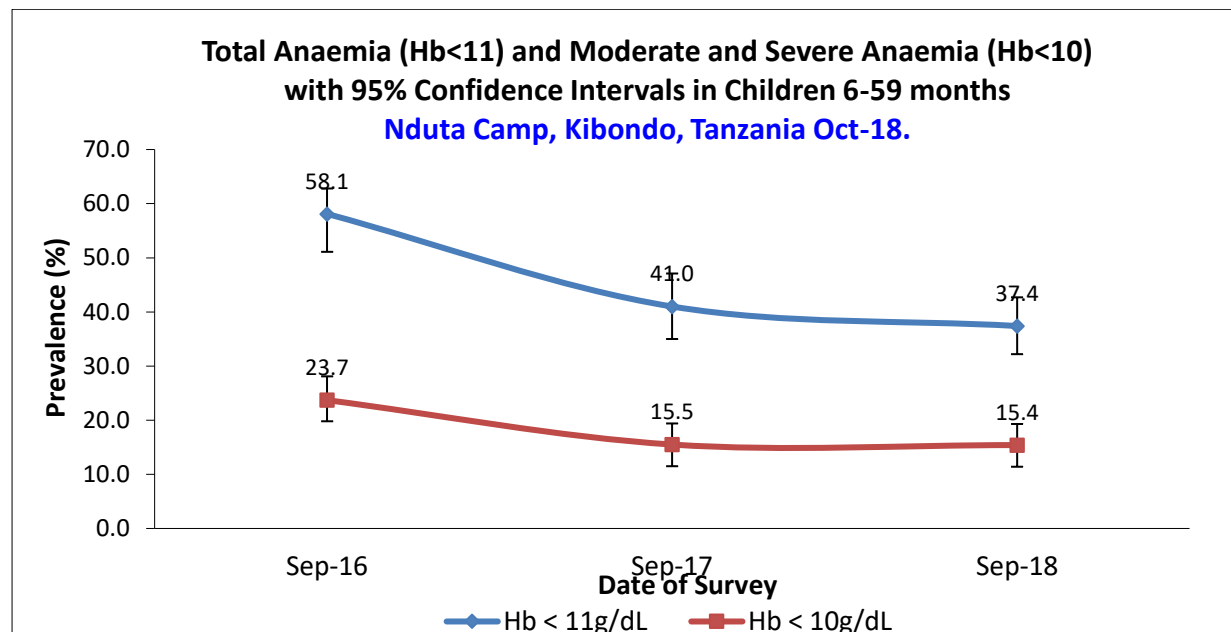
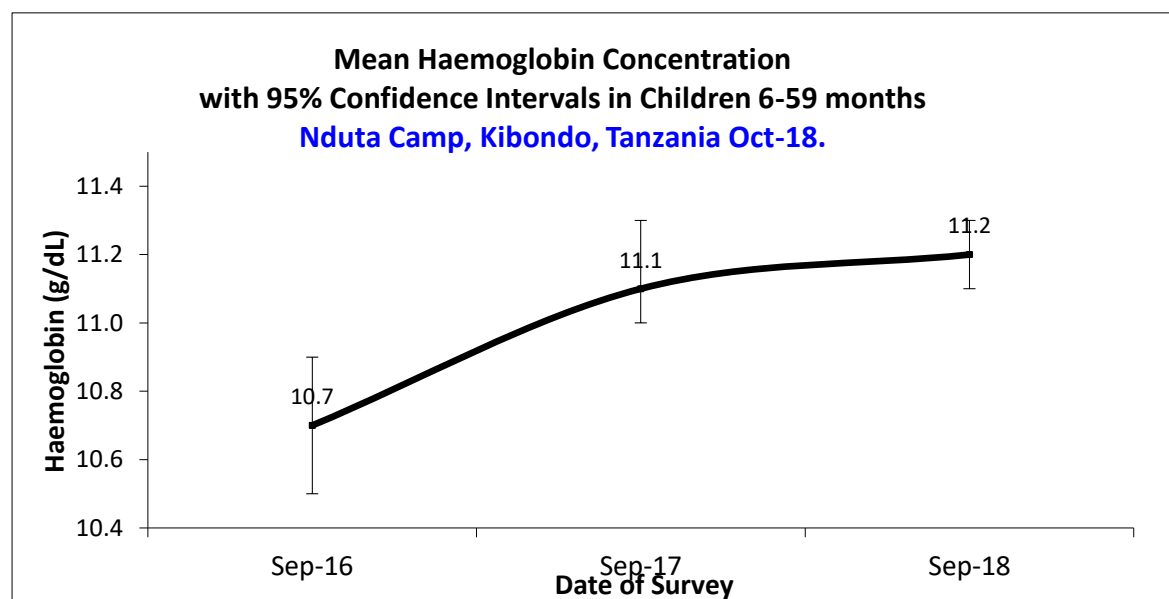


Figure 54 : TREND IN MEAN HAEMOGLOBIN CONCENTRATION WITH 95% CI IN CHILDREN 6-59 MONTHS FROM 2016-2018.



4.7.4 Anaemia results, 6-59Months (Mtendeli Camp)

Prevalence of anaemia in children 6-59 months remains consistently above the 40% critical threshold with statistically significant deterioration in Mtendeli camp from 41.5% in 2017 to a high of 49.9% in 2018 (P=0.019). In terms of age disaggregation, the younger age group 6-59 months is statistically significantly more anaemic compared with the older age group 24-59 months children (P=0.000). In

line with the increased prevalence of Anaemia, the mean haemoglobin concentration reduced from 11.1 g/dl to 10.9g/dl.

Table 76 : PREVALENCE OF TOTAL ANAEMIA, ANAEMIA CATEGORIES, AND MEAN HAEMOGLOBIN CONCENTRATION IN CHILDREN 6-59 MONTHS OF AGE AND BY AGE GROUP

	6-59 months n = 753	6-23 months n=310	24-59 months n=443
Total Anaemia (Hb<11.0 g/dL)	(376) 49.9% (44.2 – 55.6 95% CI)	(195) 62.9% (56.0 – 69.8 95% CI)	(181) 40.9% (34.4 – 47.4 95% CI)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(207) 27.5% (22.6 – 32.4 95% CI)	(89) 28.7% (22.0 – 35.5 95% CI)	(118) 26.6% (21.1 – 32.2 95% CI)
Moderate Anaemia (7.0-9.9 g/dL)	(163) 21.7% (16.9 – 26.4 95% CI)	(104) 33.6% (25.8 – 41.3 95% CI)	(59) 13.3% (9.5 – 17.1 95% CI)
Severe Anaemia (<7.0 g/dL)	(6) 0.8% (0.2 – 1.4 95% CI)	(2) 0.7% (0.0 – 1.6 95% CI)	(4) 0.9% (0.0 – 1.8 95% CI)
Mean Hb (g/dL) (SD / 95% CI) [range]	10.9g/dL (10.7 – 11.1 95% CI) [min 5.1, max 18.3]	10.5g/dL (10.3 – 10.7 95% CI) [min 5.3, max 18.3]	11.1g/dL (11.0 – 11.3 95% CI) [min 5.1, max 14.6]

Table 77 : PREVALENCE OF MODERATE AND SEVERE ANAEMIA IN CHILDREN 6-59 MONTHS OF AGE AND BY AGE GROUP

	6-59 months n = 753	6-23 months n=310	24-59 months n=443
Moderate and Severe Anaemia (Hb<10.0 g/dL)	(169) 22.4% (17.4 – 27.5 95% CI)	(106) 34.2% (26.5 – 41.9 95% CI)	(63) 14.2% (10.2 – 18.2 95% CI)

Figure 55: TRENDS IN ANAEMIA CATEGORIES IN CHILDREN 6-59 MONTHS FROM 2016-2018.

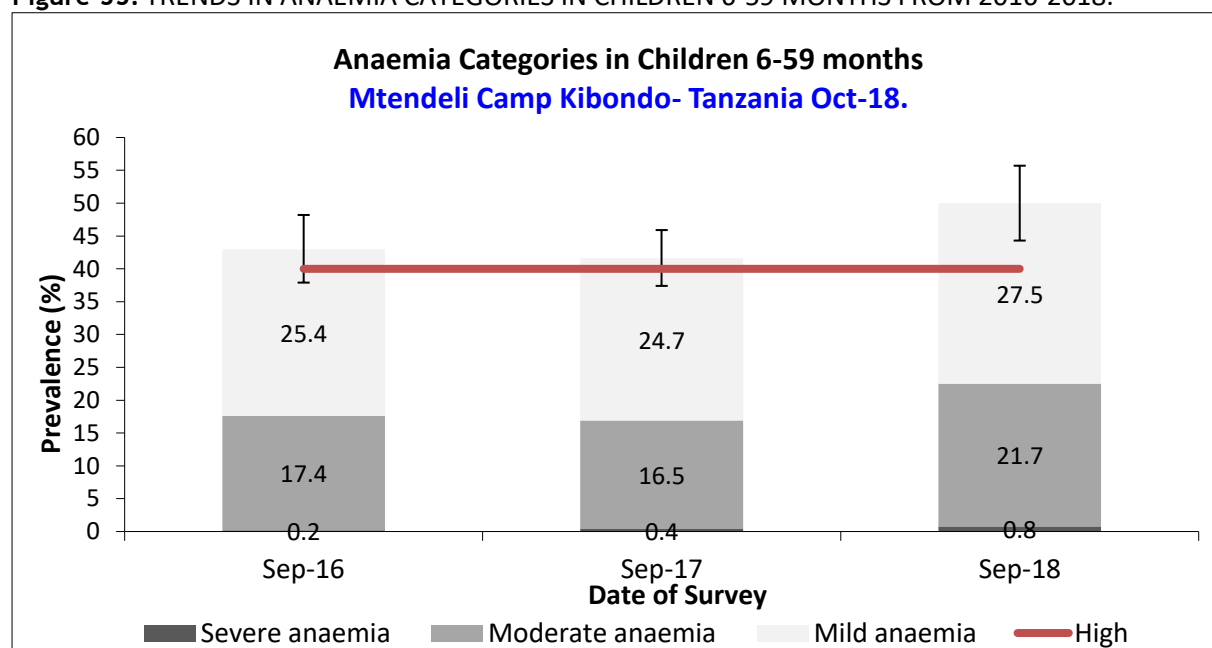


Figure 56 : TREND IN TOTAL ANAEMIA (<11 G/DL), AND MODERATE AND SEVERE ANAEMIA (<10 G/DL) WITH 95% CI IN CHILDREN 6-59 MONTHS FROM 2016-2018.

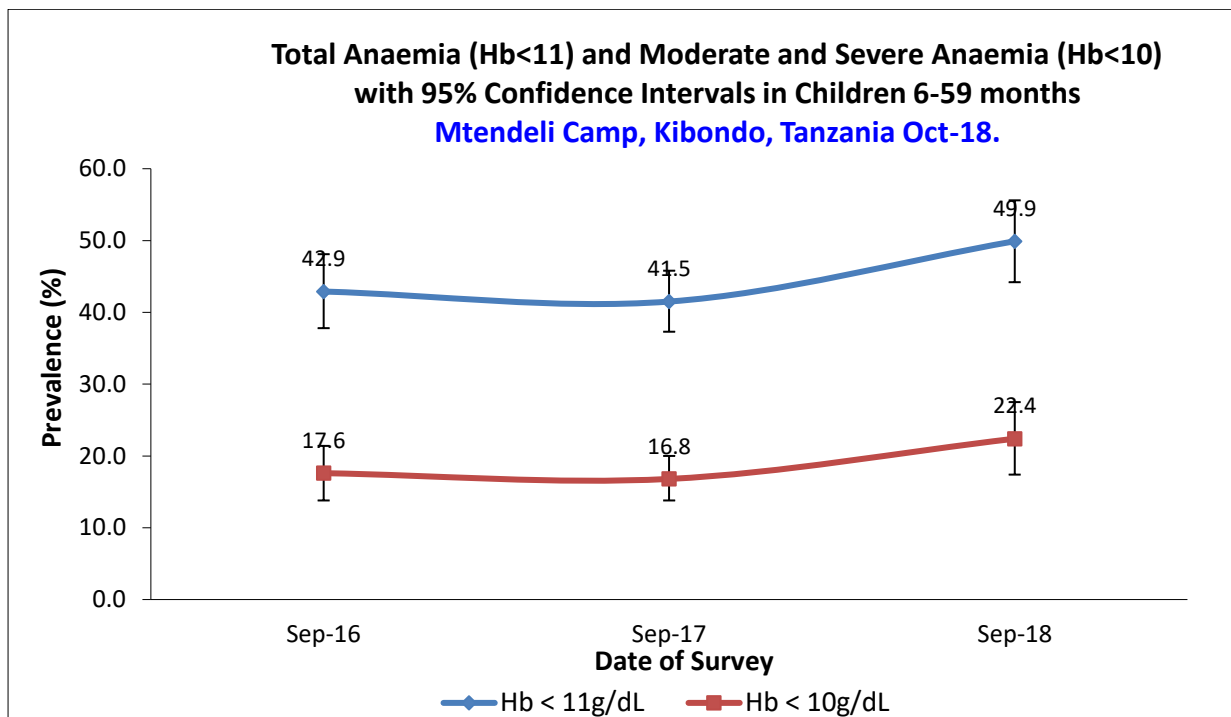
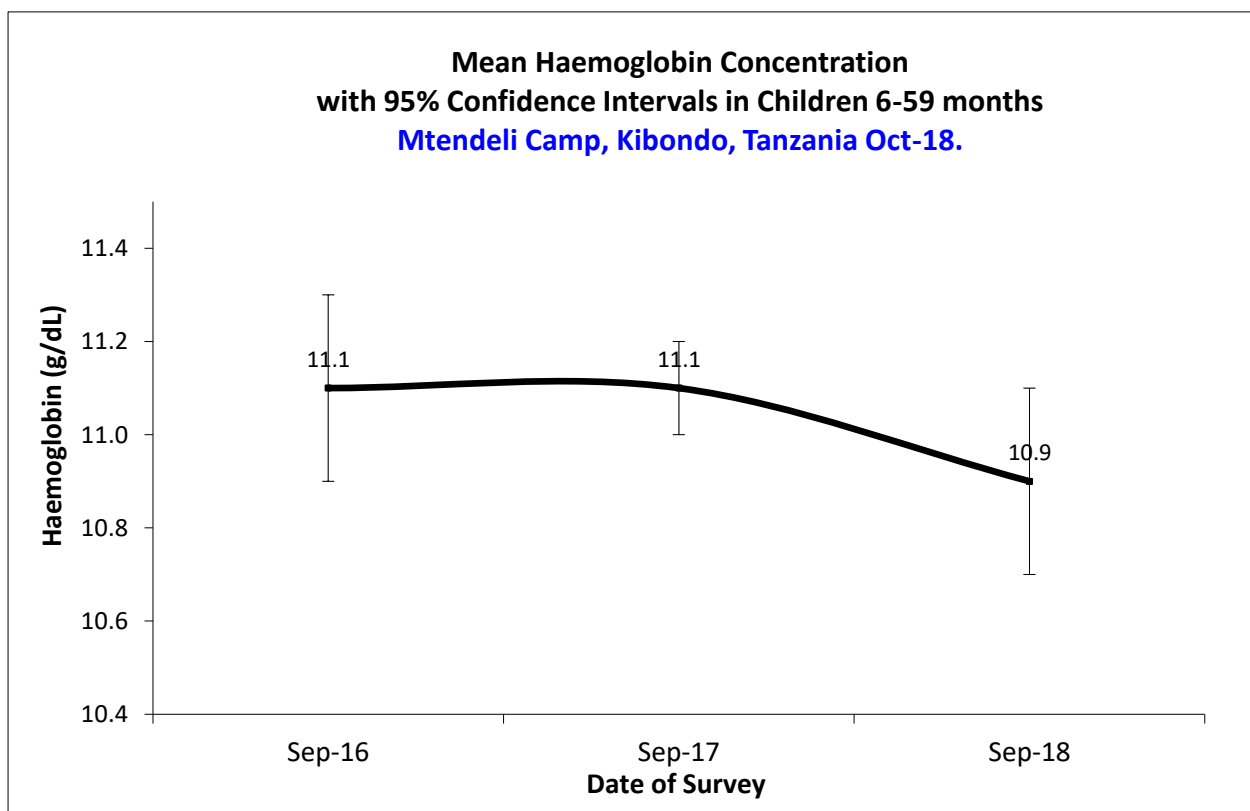


Figure 57 : TREND IN MEAN HAEMOGLOBIN CONCENTRATION WITH 95% CI IN CHILDREN 6-59 MONTHS FROM 2016-2018.



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

4.8.1 IYCF Indicators (Nyarugusu Old Camp)

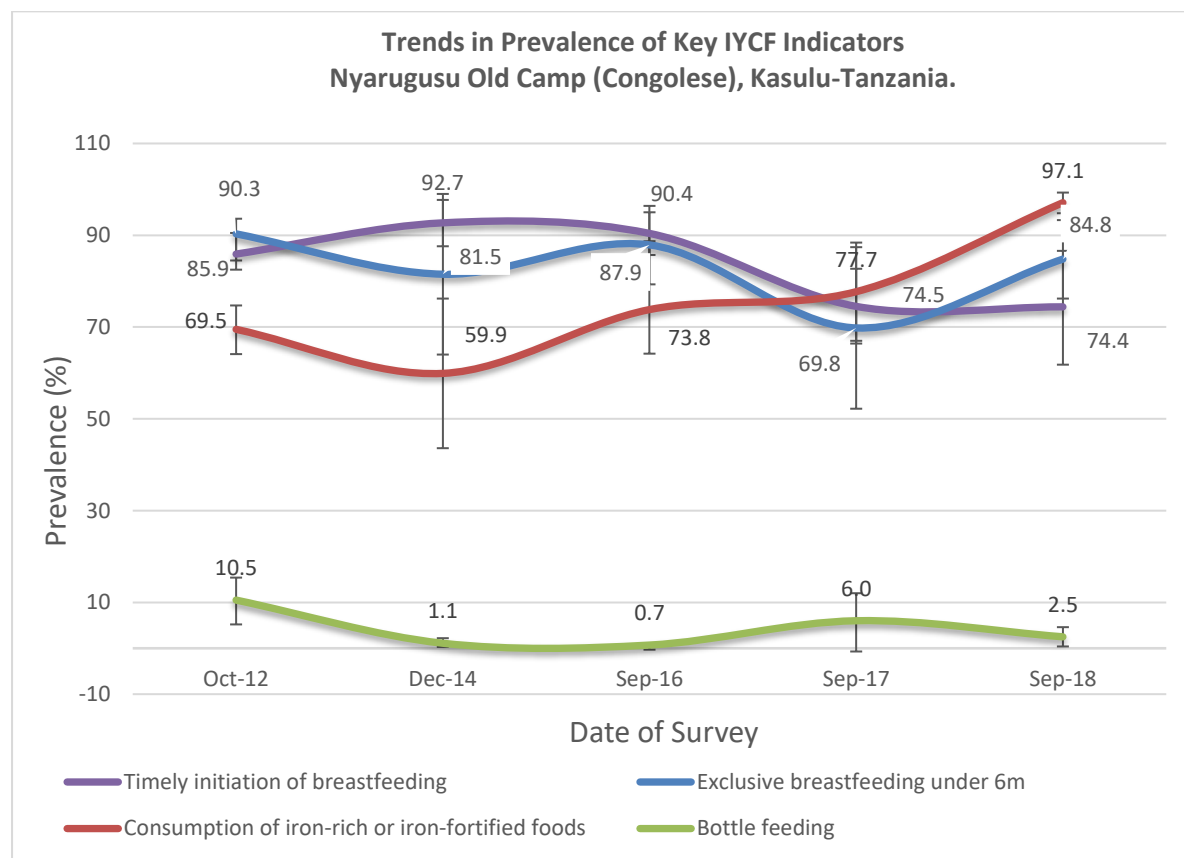
IYCF indicators Table 78 remain optimal especially when compared to the dire suboptimal indicators in the host country and indeed in the countries of origin of the refugees. However, exclusive breastfeeding rates is much improved to 84.8% in 2018 from a low of 69.8% in 2017; the improvement is not statistically significant. While most of the indicators have been relatively high, continued breastfeeding at two years have been consistently below 40% across the 5 years of assessments.

Consumption of iron rich and fortified food among children has been consistently high; it would have been expected that prevalence of anaemia would be inversely proportional to the consumption of iron fortified & rich food; therefore, it could be an indication that the high anaemia prevalence in the camps is not related to diet per se, notwithstanding the low food diversity in the households.

Table 78 : PREVALENCE OF INFANT AND YOUNG CHILD FEEDING PRACTICES INDICATORS

Indicator	Age range	Number/ total	Prevalence (%)	95% CI
Timely initiation of breastfeeding	0-23 months	226/303	74.6	62.2-87.0
Exclusive breastfeeding under 6 months	0-5 months	56/66	84.8	76.3 – 93.4
Continued breastfeeding at 1 year	12-15 months	41/49	83.7	71.0 – 96.4
Continued breastfeeding at 2 years	20-23 months	22/61	36.1	23.6 – 48.6
Introduction of solid, semi-solid or soft foods	6-8 months	25/39	64.1	47.1 – 81.1
Consumption of iron-rich or iron-fortified foods	6-23 months	238/245	97.1	94.9 – 99.4
Bottle feeding	0-23 months	8/315	2.5	0.4 – 4.6

Figure 58: KEY IYCF INDICATORS FROM 2012-2018.



4.8.2 IYCF Indicators (Nyarugusu New Camp)

Error! Reference source not found. summarizes the results of the IYCF indicators assessed. Information on IYCF indicators were based on previous day recall.

The proportion of mothers reporting early initiation of breastfeeding was fairly high at 78.4% (65.2 – 91.5), and similar to 2017 findings of 74.5%. Exclusive breastfeeding rate of children 0-6 months was approximately 65.7%; continued breastfeeding at one year is similar high at 79.3%. However, continued breastfeeding is fall drastically to 34.9% indicating majority of woman cease breastfeeding before the second year.

Introduction of solid, semi-solid or soft food at 6-8 months was high at 82.1% (69.4- 94.9); the indicator is used to evaluate the introduction of complementary foods as per WHO recommendations. Majority of children receive some sort of iron-rich or iron fortified food Bottle feeding is negligible as to be an IYCF concern.

Table 79 : PREVALENCE OF INFANT AND YOUNG CHILD FEEDING PRACTICES INDICATORS

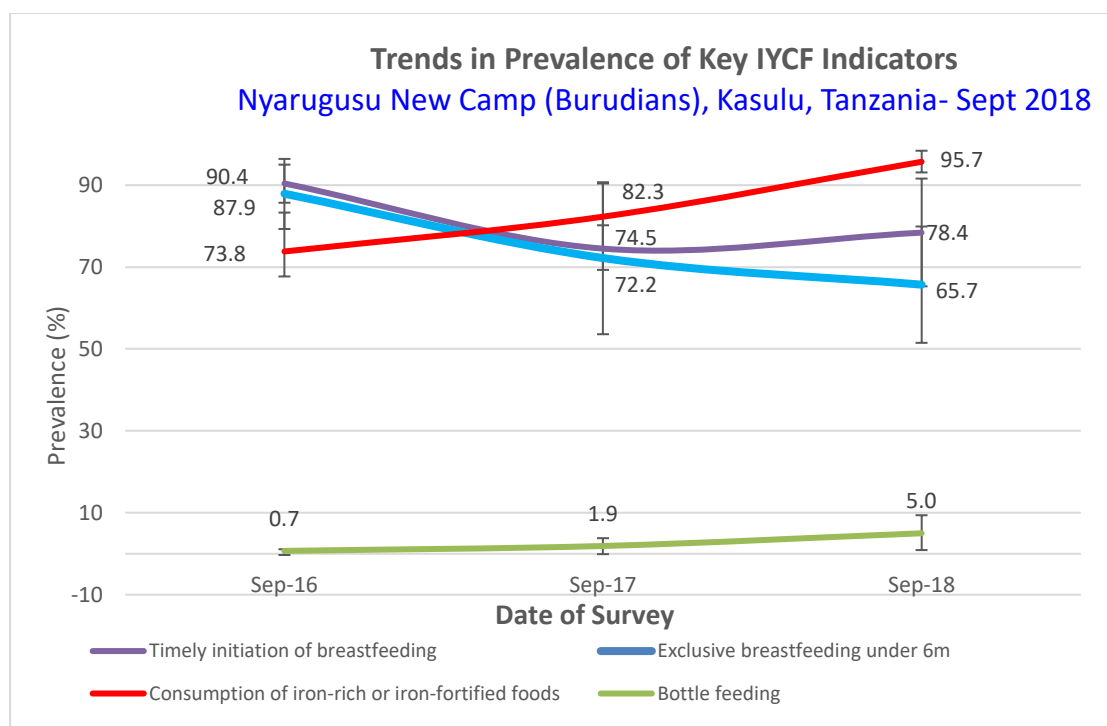
Indicator	Age range months	Number/ total	Prevalence (%)	95% CI
Timely initiation of breastfeeding	0-23	319/407	78.4%	65.2 – 91.5
Exclusive breastfeeding under 6 months	0-5	67/102	65.7%	51.5 – 79.9
Continued breastfeeding at 1 year	12-15	46/58	79.3%	67.3 – 91.3
Continued breastfeeding at 2 years	20-23	22/63	34.9%	22.8 – 47.1
Introduction of solid, semi-solid or soft foods	6-8	46/56	82.1%	69.4 – 94.9
Consumption of iron-rich or iron-fortified foods	6-23	286/299	95.7%	93.0 – 98.3
Bottle feeding	0-23	4/406	1.0%	0.0 – 1.9

Trend analysis indicates an overall increasing trend in both timely of breastfeeding and exclusive breastfeeding with slight drop in the year 2017

Figure 59.

The confidence intervals are an integral part of the results when analysing trends over the years. When IYCF indicators are collected in nutritional surveys, it is not feasible to achieve a large enough sample size for some of the indicators to be estimated as precisely as desired, especially for indicators covering a very narrow age range (e.g. 12-15 months, 6-8 months). Hence, trend analyses need to be interpreted with caution. Nevertheless, trend analyses are useful for assessing the situation and major differences seen from year to year should warrant further investigation.

Figure 59 : KEY IYCF INDICATORS FROM 2016-2018



4.8.3 IYCF Indicators (Nduta Camp)

Table 80 summarises the results of the IYCF indicators assessed. Information on IYCF indicators were based on previous day recall.

Proportion of mothers reporting timely initiation of breastfeeding high at 88.3%; exclusive breastfeeding of children 0-6 months is likewise relatively high. Continued breastfeeding at one year is high at 81.4%, but drops drastically in the second year to 58.6% indicating approximately half of the mothers do not breastfeed to the recommend 24 months.

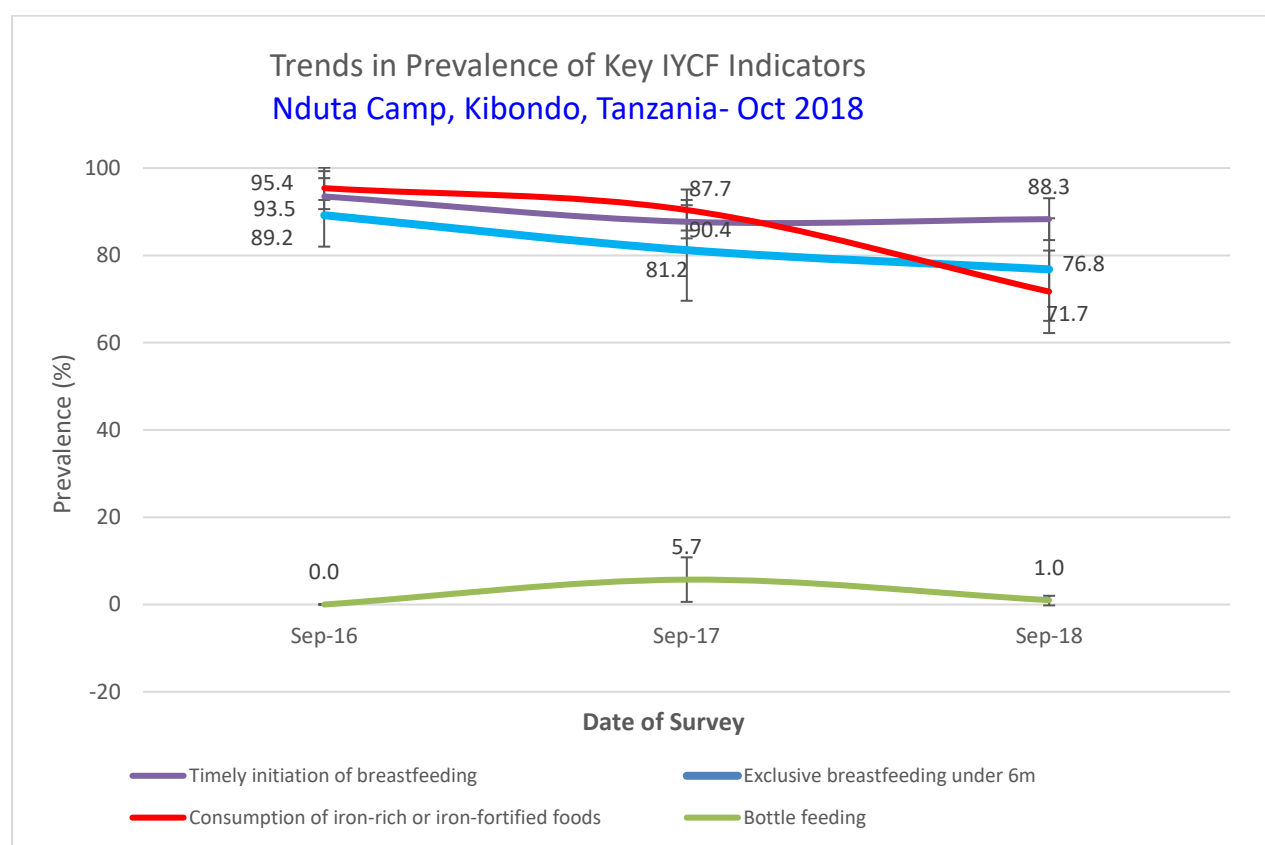
Approximately 78.1% of infants 6-8 are introduced to solid and semisolid/soft food at the optimal time. Consumption of Iron rich/fortified foods for the age group 6-23 months is fairly good at 71.7.

Trend analysis in the last three years show relatively high and stable timely initiation of breastfeeding, exclusive breastfeeding but a declining consumption of iron rich/fortified foods Figure 60.

Table 80 : PREVALENCE OF INFANT AND YOUNG CHILD FEEDING PRACTICES INDICATORS

Indicator	Age range	Number/ total	Prevalence (%)	95% CI
Timely initiation of breastfeeding	0-23 months	362/410	88.3%	83.5 – 93.1
Exclusive breastfeeding under 6 months	0-5 months	73/95	76.8%	65.1 – 88.6
Continued breastfeeding at 1 year	12-15 months	48/59	81.4%	69.9 – 92.8
Continued breastfeeding at 2 years	20-23 months	41/70	58.6%	43.3 – 73.8
Introduction of solid, semi-solid or soft foods	6-8 months	57/73	78.1%	64 – 91.2
Consumption of iron-rich or iron-fortified foods	6-23 months	99/138	71.7%	62.3 – 81.2
Bottle feeding	0-23 months	4/410	1.0%	0.0 – 2.2

Figure 60 : KEY IYCF INDICATORS FROM 2016-2018



4.8.4 IYCF Indicators (Mtendeli Camp)

[Error! Reference source not found.](#) summarizes the results of the IYCF indicators assessed, based on previous day recall.

The proportion of mothers reporting early initiation of breastfeeding is high at 89.4% (84.7 – 94.1) more or less similar to previous two assessments; likewise, exclusive breastfeeding of infants 0-6 months has also remained relatively high at above 85% in the past three years.

Continuation of breastfeeding at 12 months remains high at over 80% of the children, which reduces to approximately to half at the age of two years meaning that over half of woman stop breastfeeding earlier than the recommended 2 years.

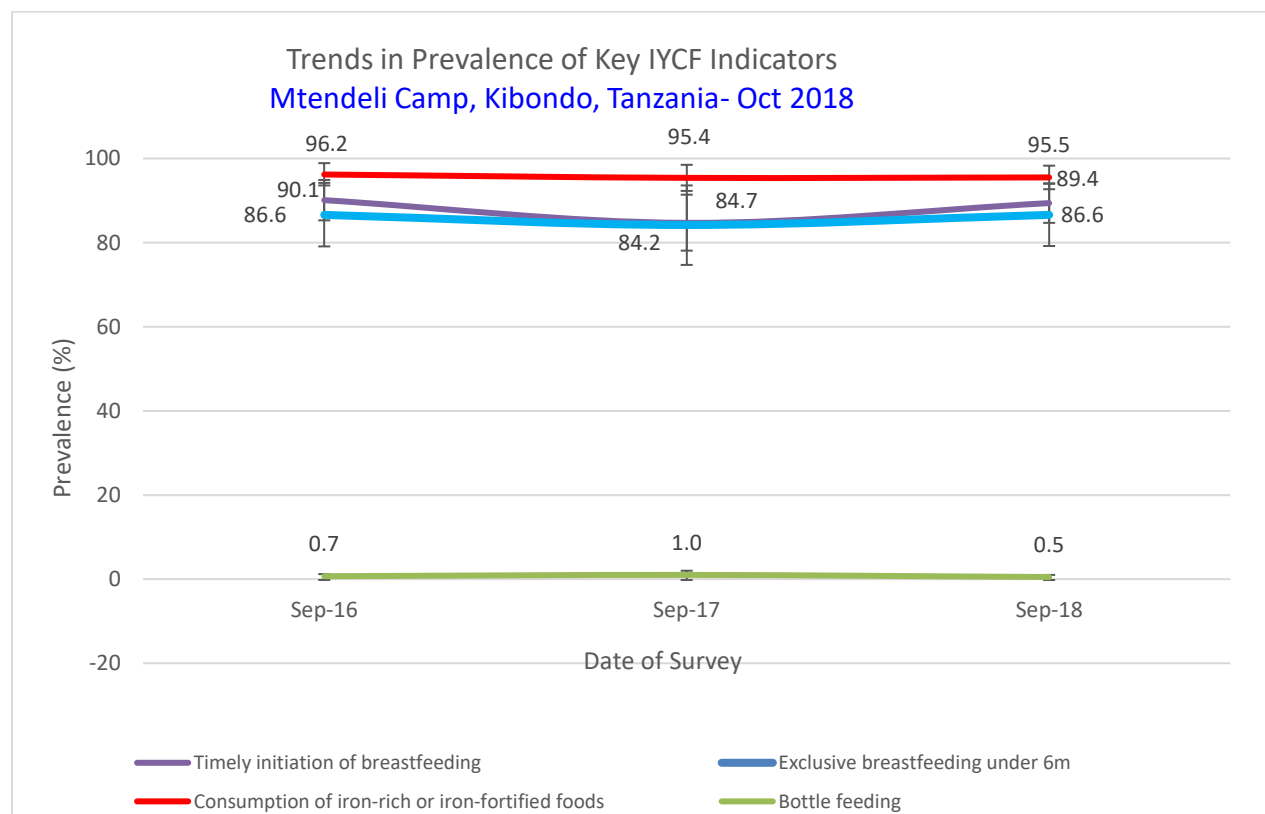
Introduction of solid, semi solid or soft food at 6-8 months is also low at 59.7% meaning introduction of complementary food is suboptimal, being introduced too late. Majority of the children (95.5) received iron-rich or iron fortified food; bottle feeding remains negligible.

Table 81: PREVALENCE OF INFANT AND YOUNG CHILD FEEDING PRACTICES INDICATORS

Indicator	Age range	Number/ total	Prevalence (%)	95% CI
Timely initiation of breastfeeding	0-23 months	380/425	89.4%	84.7 – 94.1
Exclusive breastfeeding under 6 months	0-5 months	97/112	86.6%	79.2 – 94.0
Continued breastfeeding at 1 year	12-15 months	56/64	87.5%	79.6 – 95.4
Continued breastfeeding at 2 years	20-23 months	34/63	54.0%	40.0 – 68.0
Introduction of solid, semi-solid or soft foods	6-8 months	37/62	59.7%	43.6 – 75.8
Consumption of iron-rich or iron-fortified foods	6-23 months	296/310	95.5%	92.7 – 98.3
Bottle feeding	0-23 months	2/426	0.5%	0.0 – 1.2

Trend analysis indicates an overall trend stable situation all the IYCF indicators in the past three years [Error! Reference source not found.](#).

Figure 61 : - KEY IYCF INDICATORS FROM 2016-2018



4.9 Prevalence of Nutrition Supplements/Blended Food intake

4.9.1 Supplements/Blended Food Intake (Nyarugusu Old Camp)

4.9.1.1 Nutrition Supplements

The coverage of nutrition supplements among children under 5 years is relatively high including Micronutrient powder for age group above 24 months [Error! Reference source not found.](#); however, prevalence of anaemia in children continue to be high though on disaggregation of data the younger age group of 6-24 are proportionately more affected compared to the older age group who are the target for the MNP; technically, the younger age group are supposed to be covered by the blanket distribution of CSB++.

Table 82 : INFANT FORMULA INTAKE IN CHILDREN AGED 0-23 MONTHS

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	1/313	0.3% (0.0 – 1.0)

4.9.1.2 Fortified blended foods

Table 83 : Intake of Fortified, Blended & Special Supplements (CSB+, CSB++, MNP)

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB+	177/246	72.0% (58.9 – 85.0)
Proportion of children aged 6-23 months who receive CSB++	225/246	91.5% (87.1 – 95.8)
Proportion of children aged 24-59 months who receive MNP	309/321	96.3 (93.1 – 99.5)

4.9.2 Supplements, Blended, Special Food Intake (Nyarugusu New)

Infant formula

Table 84: Infant formula intake in children aged 0-23 months

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	0/407	0.0%

Fortified blended foods

The proportion of children receiving CSB+ (6-23months were receiving from the general ration), was more than half [Error! Reference source not found.](#). However, virtually all the children received CSB++ intended for all children 6-23 months at 94.1% (95% CI 90.9 – 97.2) [Error! Reference source](#)

not found.. Equally, the coverage of Micro Nutrient powder (MNP) is high at 98.7% of children above 24 months.

Table 85 : Intake of Fortified, Blended & Special Supplements (CSB+, CSB++, MNP)

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB+	170/303	56.1% (39.7 – 72.6)
Proportion of children aged 6-23 months who receive CSB++	285/303	94.1% (90.9 – 97.2)
Proportion of children aged >24 months who receive MNP	450/456	98.7% (97.7 – 99.7)

4.9.3 Supplements, Blended, Special Food Intake (Nduta Camp)

Use of Infant formula remains negligible in the camp **Error! Reference source not found.**; half of children 6-23 months receives CSB+ from (from GFD) **Error! Reference source not found.**; concurrently the proportion of children receiving CSB++ was high at 95.6% **Error! Reference source not found.** Coverage of MNP is universal for children above 24 months **Error! Reference source not found.**

4.9.3.1 Infant formula

Table 86 : INFANT FORMULA INTAKE IN CHILDREN AGED 0-23 MONTHS

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	0/410	0.0%

4.9.3.2 Fortified blended foods

Table 87 : Intake of Fortified, Blended & Special Supplements (CSB+, CSB++, MNP)

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB+	154/315	48.9% (30.5 – 67.3)
Proportion of children aged 6-23 months who receive CSB++	301/315	95.6%
Proportion of children aged >24 months who receive MNP	485/485	100.0%

4.9.4 Supplements, Blended, Special Food Intake (Mtendeli Camp)

Infant formula

Table 88 : Intake of Fortified, Blended & Special Supplements (CSB+, CSB++, MNP)

	Number/total	% (95% CI)
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Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	0/426	0%
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The proportion of children receiving CSB+ was low, only a half of the 6-23months children were receiving CSB+ (from the general ration) **Error! Reference source not found.**, nevertheless the proportion of children receiving CSB++ was 94.9% (91.8 – 98.0 95% CI), meaning that practically all the children 6-23 months received this product, intended for all children 6-23 months **Error! Reference source not found.** & **Error! Reference source not found.**.

4.9.4.1 Fortified, blended and Special foods

Table 89 : FBF INTAKE IN CHILDREN AGED 6-23 MONTHS [PRODUCT TO BE ADAPTED: THE FBF (CSB+)]

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive FBF	160/314	51.0% (32.4 – 69.5)
Proportion of children aged 6-23 months who receive FBF++	298/314	94.9% (91.8 – 98.0)
Proportion of children aged >24 months who receive MNP	444/448	99.1% (97.8 – 100.0)

4.10 Women 15-49 years

4.10.1 Women 15-49 years (Nyarugusu Old Camp)

Prevalence of anaemia in woman in Nyarugusu Old camp showed no improvement compared to previous year's **Figure 62**; similarly, there was insignificant deterioration in mean HB concentration **Figure 63**.

Table 90 : WOMEN PHYSIOLOGICAL STATUS AND AGE

Physiological status	Number/total	% of sample
Non-pregnant	215/257	83.7
Pregnant	41/257	16.0
Mean age (range)	33 yrs. [15-49]	

Table 91 : PREVALENCE OF ANAEMIA AND HAEMOGLOBIN CONCENTRATION IN NON-PREGNANT WOMEN OF REPRODUCTIVE AGE (15-49 YEARS)

Anaemia in non-pregnant women of reproductive age (15-49 years)	All n = 214
Total Anaemia (<12.0 g/dL)	(57) 34.6% (25.6 – 43.6 95% CI)
Mild Anaemia (11.0-11.9 g/dL)	(45) 21.0% (15.3 – 26.8 95% CI)

Moderate Anaemia (8.0-10.9 g/dL)	(26) 21.2% (7.8 – 16.5 95% CI)
Severe Anaemia (<8.0 g/dL)	(3) 1.4% (0.0 – 3.0 95% CI)
Mean Hb (g/dL) (SD / 95% CI) [range]	12.5g/dL (12.2 – 12.8 95% CI) [min 5.2, max 15.7]

Figure 62 : TRENDS IN ANAEMIA CATEGORIES IN WOMEN OF REPRODUCTIVE AGE (NON-PREGNANT) FROM 2012-2018.

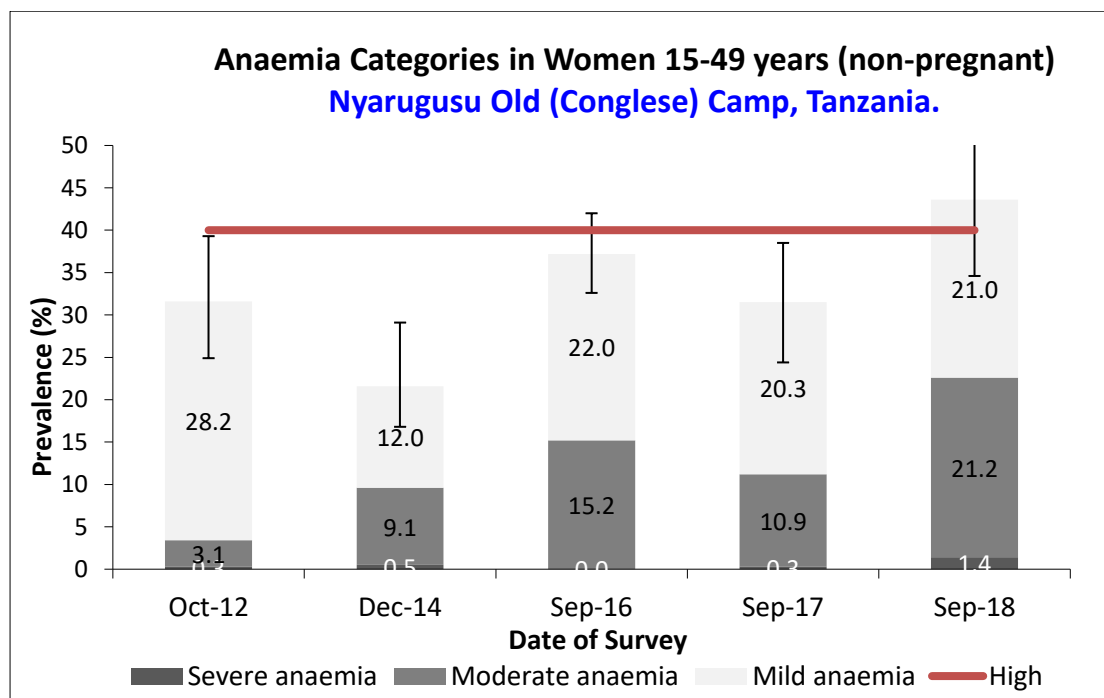


Figure 63 : TREND IN MEAN HAEMOGLOBIN CONCENTRATION WITH 95% CI IN WOMEN OF REPRODUCTIVE AGE (NON-PREGNANT) FROM 2012-2018.

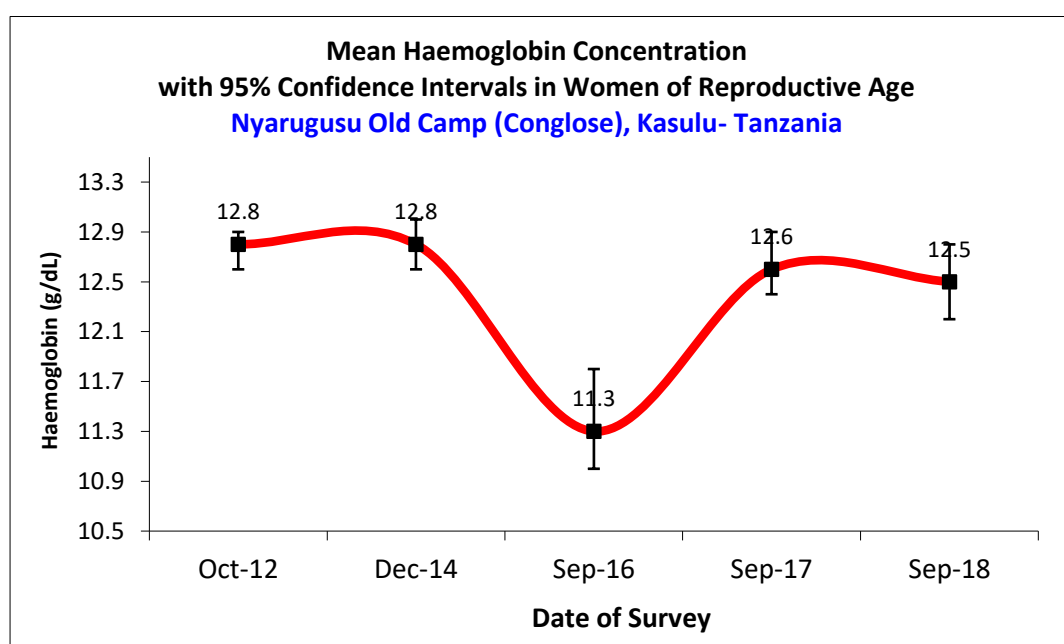


Table 92 : ANC ENROLMENT AND IRON-FOLIC ACID PILLS COVERAGE AMONG PREGNANT WOMEN (15-49 YEARS)

	Number /total	% (95% CI)
Currently enrolled in ANC programme	31/41	75.6% (62.0-89.3)
Currently receiving iron-folic acid pills	31/41	75.6% (62.0-89.3)

4.10.2 Women 15-49 years (Nyarugusu New Camp)

Table 93: WOMEN PHYSIOLOGICAL STATUS AND AGE

Physiological status	Number/total	% of sample
Non-pregnant	321/363	88.4%
Pregnant	42/363	11.6%
Mean age (range)	26.1 years (15 - 48)	

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

The prevalence of anaemia in non-pregnant women 15-49 is currently at low public health significance according to WHO classifications Table 94. The majority of anaemic women are either mild or moderately anaemic, there was no case of severe anaemia. Trends analysis shows declining anaemia rates among the woman; however, the decrease is not statistically significant

Figure 64 : TRENDS IN ANAEMIA CATEGORIES IN WOMEN OF REPRODUCTIVE AGE (NON-PREGNANT) FROM 2016-2018. In line with declining prevalence of anaemia, the haemoglobin concentration is on the upward trends Figure 65.

Table 94 : PREVALENCE OF ANAEMIA AND HAEMOGLOBIN CONCENTRATION IN NON-PREGNANT WOMEN OF REPRODUCTIVE AGE (15-49 YEARS).

Anaemia in non-pregnant women of reproductive age (15-49 years)	All n = 318
Total Anaemia (<12.0 g/dL)	(51) 16.0 % (12.2 – 19.9 95% CI)
Mild Anaemia (11.0-11.9 g/dL)	(37) 11.6% (7.6 – 15.7 95% CI)
Moderate Anaemia (8.0-10.9 g/dL)	(14) 4.4 % (2.1 – 6.7 95% CI)
Severe Anaemia (<8.0 g/dL)	(0) 0.0% (95% CI)
Mean Hb (g/dL) (SD / 95% CI) [range]	13.2g/dL (13.0 – 13.3 95% CI) [min 8.9, max 16.5]

Figure 64 : TRENDS IN ANAEMIA CATEGORIES IN WOMEN OF REPRODUCTIVE AGE (NON-PREGNANT) FROM 2016-2018.

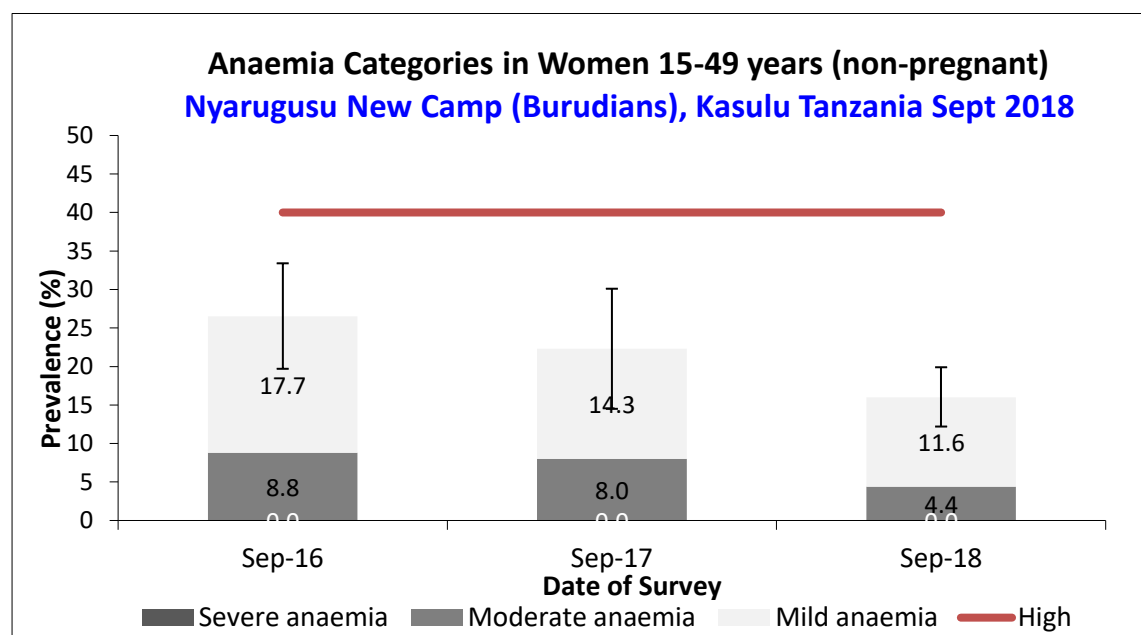


Figure 65 : TREND IN MEAN HAEMOGLOBIN CONCENTRATION WITH 95% CI IN WOMEN OF REPRODUCTIVE AGE (NON-PREGNANT) FROM 2016-2018.

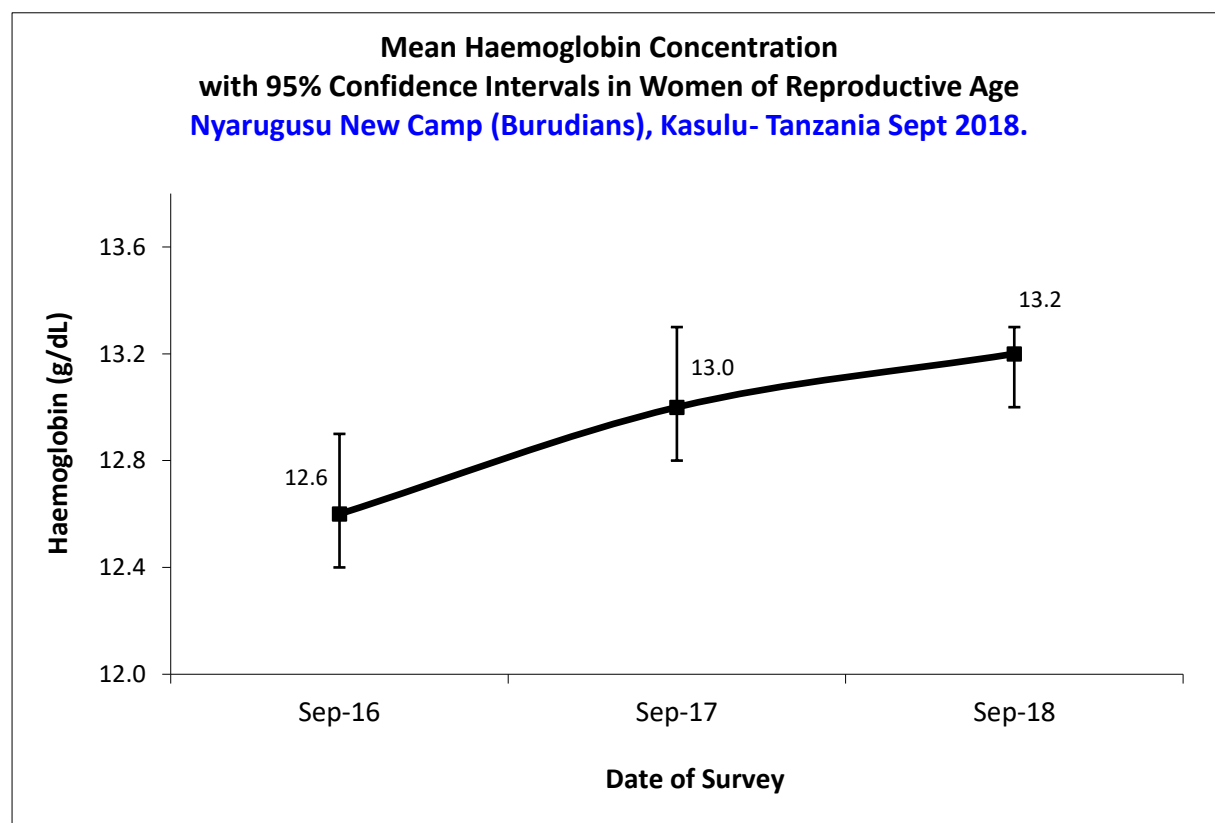


Table 95 : ANC ENROLMENT AND IRON-FOLIC ACID PILLS COVERAGE AMONG PREGNANT WOMEN (15-49 YEARS)

	Number /total	% (95% CI)
Currently enrolled in ANC programme	35/41	85.4% (72.8 – 98.0)
Currently receiving iron-folic acid pills	34/41	82.9% (69.6 – 96.3)

4.10.3 Women 15-49 years (Nduta Camp)

Table 96 : WOMEN PHYSIOLOGICAL STATUS AND AGE

Physiological status	Number/total	% of sample
Non-pregnant	323	93.4
Pregnant	23	6.6
Mean age (range)	26.3	

4.10.3.1 Anaemia in non-pregnant women (15-49 years)- (Nduta Camp)

The prevalence of anaemia in Nduta Camp among non-pregnant women 15-49 is currently at low public health significance according to WHO classifications. The majority of anaemic women are either mild or moderately anaemic with one case of severe anaemia Figure 83.

There was statistically significant reduction in Anaemia in Nduta camp from 28.4% in 2017 to 12.4% in 2018, (P=0.000). Trends in the last 3 years also shows a sharp significant reduction in 2018 compared to previous two years [Figure 67](#); concomitantly, trends in haemoglobin concentration have been on the upward trend [Figure 68](#).

Figure 66 : PREVALENCE OF ANAEMIA AND HAEMOGLOBIN CONCENTRATION IN NON-PREGNANT WOMEN OF REPRODUCTIVE AGE (15-49 YEARS)

Anaemia in non-pregnant women of reproductive age (15-49 years)	All n = 323
Total Anaemia (<12.0 g/dL)	(40) 12.4 % (8.0 – 16.8 95% CI)
Mild Anaemia (11.0-11.9 g/dL)	(32) 9.9% (5.9 – 13.9 95% CI)
Moderate Anaemia (8.0-10.9 g/dL)	(7) 2.2 % (0.2 – 4.1 95% CI)
Severe Anaemia (<8.0 g/dL)	(1) 0.3% (0.0 – 1.0 95% CI)
Mean Hb (g/dL) (SD / 95% CI) [range]	13.3g/dL (13.1 – 13.5 95% CI) [min 7.6, max, 17.3]

Figure 67 : TRENDS IN ANAEMIA CATEGORIES IN WOMEN OF REPRODUCTIVE AGE (NON-PREGNANT) FROM 2016-2016.

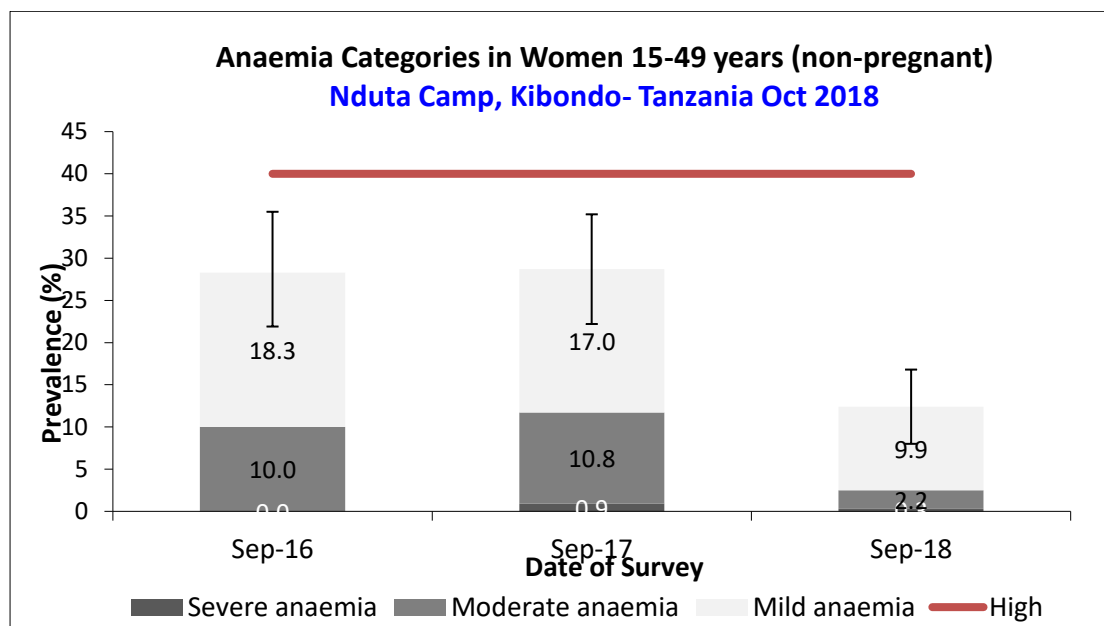
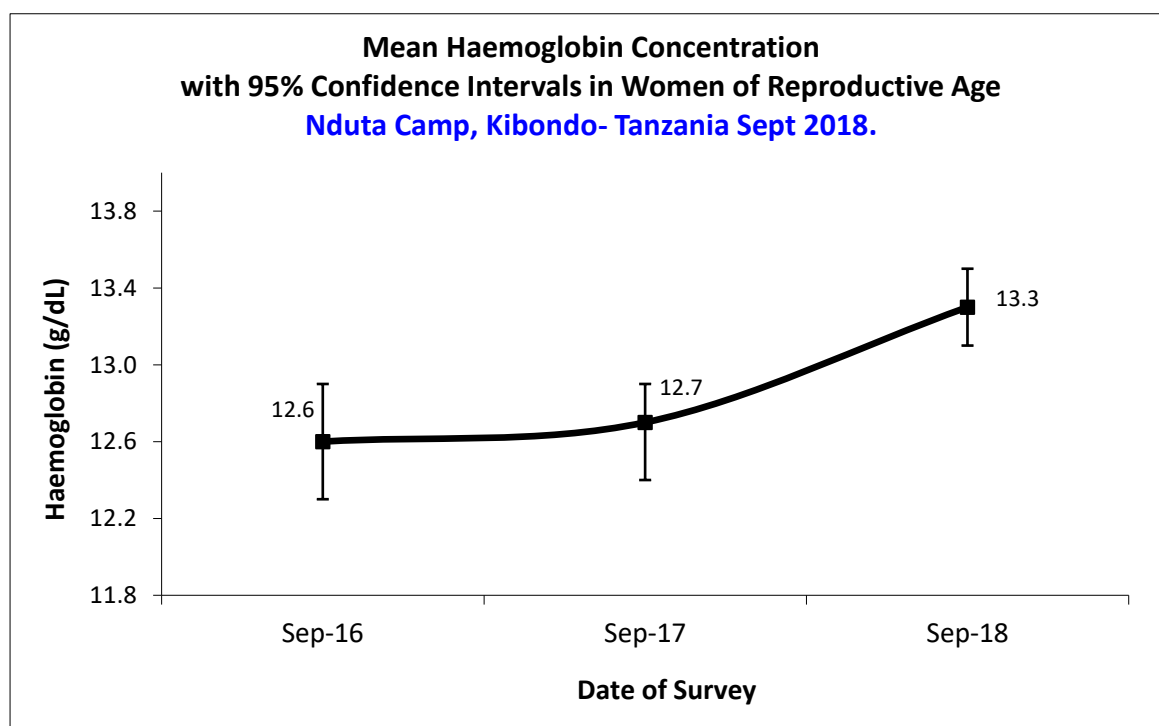


Figure 68 : TREND IN MEAN HAEMOGLOBIN CONCENTRATION WITH 95% CI IN WOMEN OF REPRODUCTIVE AGE (NON-PREGNANT) FROM 2016-2018.



Among pregnant woman ANC enrolment is universal, while iron folic acid supplementation is high at 87.0%.

Table 97 : ANC ENROLMENT AND IRON-FOLIC ACID PILLS COVERAGE AMONG PREGNANT WOMEN (15-49 YEARS)

	Number /total	% (95% CI)
Currently enrolled in ANC programme	23/23	100%
Currently receiving iron-folic acid pills	20/23	87.0% (71.1 – 100.0)

4.10.4 Women 15-49 years (Mtendeli Camp)

The physiological status of the women sampled is shown in [Error! Reference source not found.](#) below.

Table 98 : WOMEN PHYSIOLOGICAL STATUS AND AGE

Physiological status	Number/total	% of sample
Non-pregnant	318	93.4
Pregnant	21	6.6
Mean age (range)	26.4 Yrs. (15 - 49)	

4.10.4.1 Anaemia in non-pregnant women (15-49 years)- (Mtendeli)

The prevalence of anaemia in non-pregnant women 15-49 is currently at medium public health significance according to WHO classifications, [Table 99](#). THE majority of the anaemic women are either mild or moderately anaemic.

Trends in anaemia categories were assessed from 2016-2018, [Figure 69](#). Prevalence of Anaemia has been on the downward trend in the past three years since the peak in 2016. Anaemia decreased significantly ($p < 0.006$) in 2018 compared to the rate in 2017. Accordingly, the haemoglobin concentration has been on the upward trend [Figure 70](#).

Table 99: PREVALENCE OF ANAEMIA AND HAEMOGLOBIN CONCENTRATION IN NON-PREGNANT WOMEN OF REPRODUCTIVE AGE (15-49 YEARS)

Anaemia in non-pregnant women of reproductive age (15-49 years)	All n = 296
Total Anaemia (<12.0 g/dL)	(62) 21.0 % (16.3 – 25.6 95% CI)
Mild Anaemia (11.0-11.9 g/dL)	(41) 13.9% (9.9 – 17.8 95% CI)
Moderate Anaemia (8.0-10.9 g/dL)	(21) 7.1% (1.4 – 10.1 95% CI)
Severe Anaemia (<8.0 g/dL)	(0) 0% (95% CI)
Mean Hb (g/dL) (SD / 95% CI) [range]	12.9 g/dL (12.7 – 13.1 95% CI) [min 9.7, max 16.2]

Figure 69: TRENDS IN ANAEMIA CATEGORIES IN WOMEN OF REPRODUCTIVE AGE (NON-PREGNANT) FROM 2016-2018.

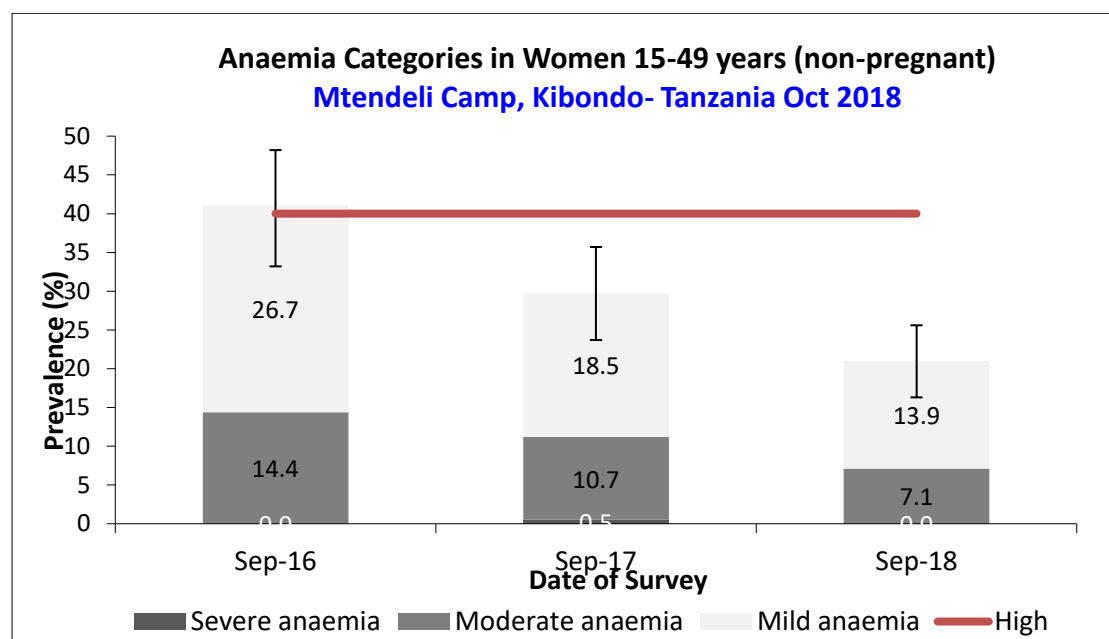


Figure 70 : TREND IN MEAN HAEMOGLOBIN CONCENTRATION WITH 95% CI IN WOMEN OF REPRODUCTIVE AGE (NON-PREGNANT) FROM 2016-2018.

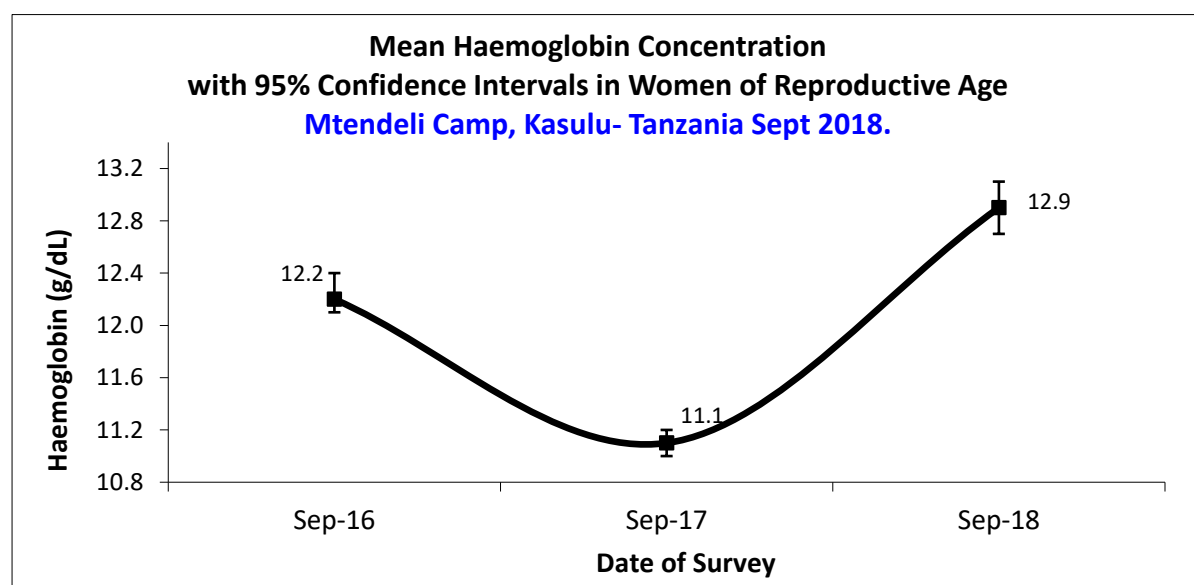


Table 100 : ANC ENROLMENT AND IRON-FOLIC ACID PILLS COVERAGE AMONG PREGNANT WOMEN (15-49 YEARS)

	Number /total	% (95% CI)
Currently enrolled in ANC programme	18/21	85.7% (67.3 – 100.0)
Currently receiving iron-folic acid pills	17/21	81.0% (61.9 – 100.0)

4.11 Food security

4.11.1 Food security (Nyarugusu Old Camp)

Table 101 : FOOD SECURITY SAMPLING INFORMATION

Household data	Planned	Actual	% of target
Total households surveyed for Food Security	223	258	116.0%

4.11.1.1 Access to food assistance results

Compared to last year 2017, where ration was cut by up to 60%, in the 2018, full ration was provided with negligible reduction in a few months. However, in a bid to spur the ongoing repatriation of refugee especially back to Burundi all livelihood activities were sharply curtailed with government ban on all income generating activities including local markets & transport; more so cash transfer cutting off one means of support refugee had access to from relative living abroad. The immediate consequence was growth of myriad local brewing to cope with idleness due to lack of alternative activities; this has had unintended effect of diversion of food aid especially CSB meant for children for brewing purposes; on the other hand, it had positive impact of decrease avenues of selling the same.

Ration card cover is 100%; full ration have been provided and is reflected in the number of days households report the food last close to 80% of expected duration compared to less than half in the previous survey; however only a paltry 7.9% report the ration last the entire duration; while on the positive side, over 95.5% of the households report the ration last more than 75% Figure 76, Figure 77, Figure 87.

Table 102 : RATION CARD COVERAGE

	Number/total	% (95% CI)
Proportion of households with a ration card	258/258	100%

Table 103 : REPORTED DURATION OF GENERAL FOOD RATION ¹⁸

Average number of days the food ration lasts (Standard deviation or 95% CI)	Average duration (%) in relation to the theoretical duration of the ration*
23.5 (22.2 – 24.8) days out of 30	78.3%

¹⁸ In contexts where a mix of full rations and half rations are given, only report this value for the households receiving the full ration.

Table 104 : 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	11/139	7.9% (0.6– 15.3)
Proportion of households reporting that the food ration lasted:		
≤75% of the cycle [30 DAYS]	3/139	2.2% (0.0 - 4.5)
>75% of the cycle [30 DAYS]	136/139	95.5% (95.5-100.0)

4.11.1.2 Negative coping strategies results

In terms coping strategies, over 50% of the residence report borrowing & reduced quantity of food consumed, while 30% report to potentially risky activities like smuggling, prostitution and more widely practiced brewing & sale of local alcoholic drinks; only 20% of the residence report not using any of the negative coping strategies *Table 46*.

Table 105 : COPING STRATEGIES USED BY THE SURVEYED POPULATION OVER THE PAST MONTH

	Number/total	% (95% CI)
Proportion of households reporting using the following coping strategies over the past month*:		
Borrowed cash, food or other items <i>with or without interest</i>	146/256	57.0 (46.9-67.2)
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)	65/257	25.3 (18.2-32.4)
Requested increased remittances or gifts as compared to normal	88/256	34.4 (23.9-44.9)
Reduced the quantity and/or frequency of meals	129/257	50.2 (39.1-61.3)
Begged	120/257	46.7 (35.7-57.7)
Engaged in potentially risky or harmful activities [LOCAL BREWS, PROSTITUTION, STEALING, SMUGGLING]	77/257	30.0 (16.6 – 43.3)
Proportion of households reporting using none of the coping strategies over the past month	52/258	20.2 (11.7 – 28.6)

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

4.11.1.3 Household dietary diversity results

Food dietary diversity remains low at only 5.1 (4.9-5.4) out of a total of 12 food groups indicating that the majority of the Congolese household had poor diversity which would be not unexpected since most do not engage opportunistic & kitchen garden or other related small-scale farming. However, Congolese have better stunting rates compared to Burundians despite the relatively low diet diversity

The last general food distribution ended 17 days prior to the start of the survey data collection. The survey was conducted during the annual lean season, during which the overall food availability is limited. It is hence likely that the household dietary diversity score is lower than it would be e.g. after the harvest. No extraordinary event that may have affected household dietary intake, such a drought or a festivity.

Table 106 : AVERAGE HDDS

	Mean (Standard deviation or 95% CI)
Average HDDS	5.1 (4.9-5.4)

* Maximum HDDS is 12.

Consumption of plant or animal source of vitamin A and animal source of haem iron are low at 39.7% and 38.5% respectively.

Figure 71 : - PROPORTION OF HOUSEHOLDS CONSUMING DIFFERENT FOOD GROUPS WITHIN LAST 24 HOURS

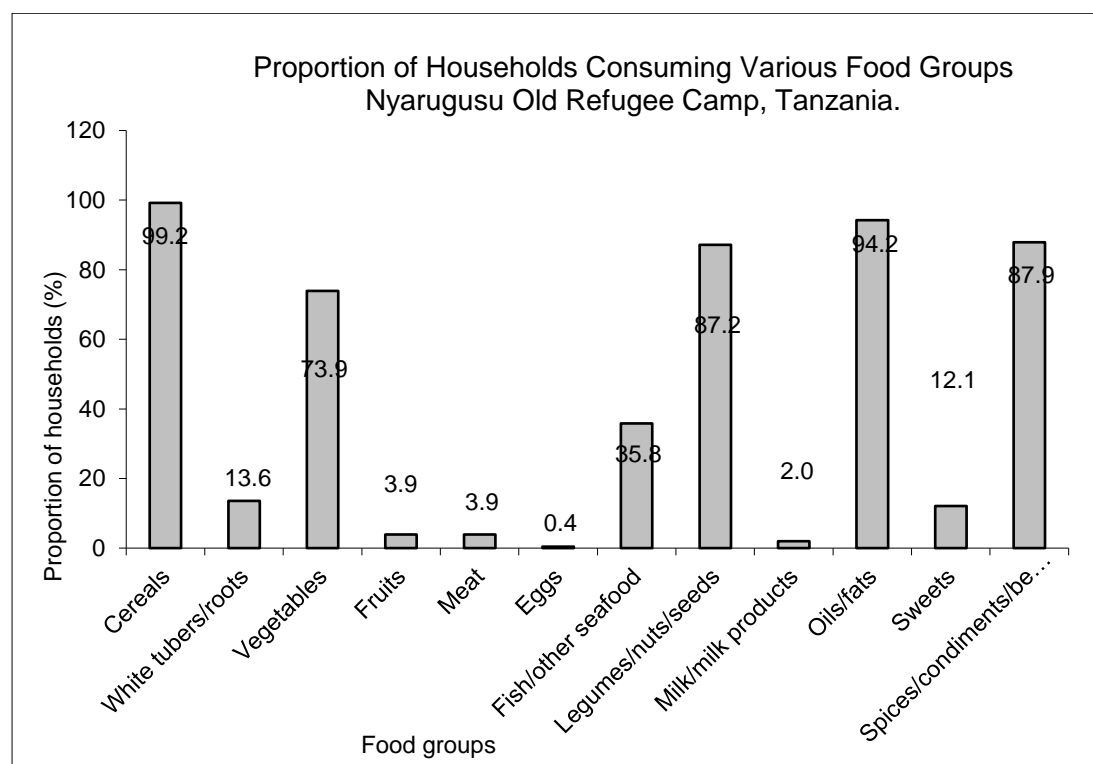


Table 107 : CONSUMPTION OF MICRONUTRIENT RICH FOODS BY HOUSEHOLDS

	Number/total	% (95% CI)
Proportion of households <i>not consuming any</i> vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	49/257	19.1 (12.4 – 25.8)
Proportion of households consuming either a plant or animal source of vitamin A	102/257	39.7 (31.2 – 48.2)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	99/257	38.5 (32.2 – 44.8)

4.11.2 Food security (Nyarugusu New Camp)

Table 108 : FOOD SECURITY SAMPLING INFORMATION

Household data	Planned	Actual	% of target
Total households surveyed for Food Security	251	267	106.4%

4.11.2.1 Access to food assistance results (Nyarugusu New Camp)

Data was collected on the last completed General Food distribution (GFD) prior to the data collection which was the GFD three weeks prior to the survey (Aug GFD). Coverage of ration for all the household is universal within the confidence interval, the two cases that had no card reported to have lost the card **Table 109**. On average, the ratio lasted 73.7% (22.1days) of the intended duration of time **Table 110**.

Only 4.5% of the residents report the ratio last the entire 30 days, majority (77.2%) report the ratio last less than 75% of the duration, while 22.9% last more than 75% **Table 111**.

Table 109: RATION CARD COVERAGE

	Number/total	% (95% CI)
Proportion of households with a ration card	265/267	98% (98.2 – 100.0)

[0] said it was because they were not given one at registration, even if they were included in the targeting criteria; [100%] said it was because they lost their ration card; [0%] said it was because they traded or sold their card; [0%] said it was because they were new arrivals who were eligible but were not yet registered; [0%] said it was because they were not included in the targeting criteria; and [0%] gave other reasons.

Table 110: REPORTED DURATION OF GENERAL FOOD RATION ¹⁹

Average number of days the food ration lasts (Standard deviation or 95% CI)	Average duration (%) in relation to the theoretical duration of the ration*
22.1 (21.4 – 22.7) days out of 30	73.7%

*Intended duration =15 days

⁹ In contexts where a mix of full rations and half rations are given, only report this value for the households receiving the full ration.

Table 111 : 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	8/177	4.5% (0.0 – 10.2)
Proportion of households reporting that the food ration lasted:		
≤75% of the cycle 30 DAYS	127/177	77.2% (70.5 – 83.8)
>75% of the cycle 30 DAYS	50/177	22.9% (16.2 – 29.5)

4.11.2.2 Negative coping strategies results (Nyarugusu New Camp)

The top two coping strategies in the past one month prior to the survey were borrowing (77.5%) and reduced quantity and/or frequency of meals (65.8%); the proportion of household reporting engaging in risky/harmful activities is close to half a worrying trend over the years, other common coping strategies used by the households are provided in **Table 112**.

Table 112: COPING STRATEGIES USED BY THE SURVEYED POPULATION OVER THE PAST MONTH

	Number/total	% (95% CI)
Proportion of households reporting using the following coping strategies over the past month*:		
Borrowed cash, food or other items <i>with or without interest</i>	207/267	77.5% (71.2 – 83.9)
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)	67/267	25.1% (16.3 – 33.9)
Requested increased remittances or gifts as compared to normal	122/265	46.0% (33.7 – 58.4)
Reduced the quantity and/or frequency of meals	175/266	65.8% (53.3 – 78.3)
Begged	145/267	54.3% (42.2 – 66.4)
Engaged in potentially risky or harmful activities [SMUGGLING, BREWING, SEX TRADE,]	117/267	43.8% (28.0 – 59.6)
Proportion of households reporting using none of the coping strategies over the past month	24/264	9.1% (2.5 – 3.9)

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

4.11.2.3 Household dietary diversity results (Nyarugusu New Camp)

Household dietary diversity is a useful proxy for dietary intake and household food access. The household dietary diversity score (HDDS) was low at 4.6 out of a total of 12 food groups Table 113 indicating that the majority of the households surveyed had poor dietary diversity.

The last general food distribution ended 20 days prior to the start of the survey data collection. The survey was conducted during the annual lean season, during which the overall food availability is

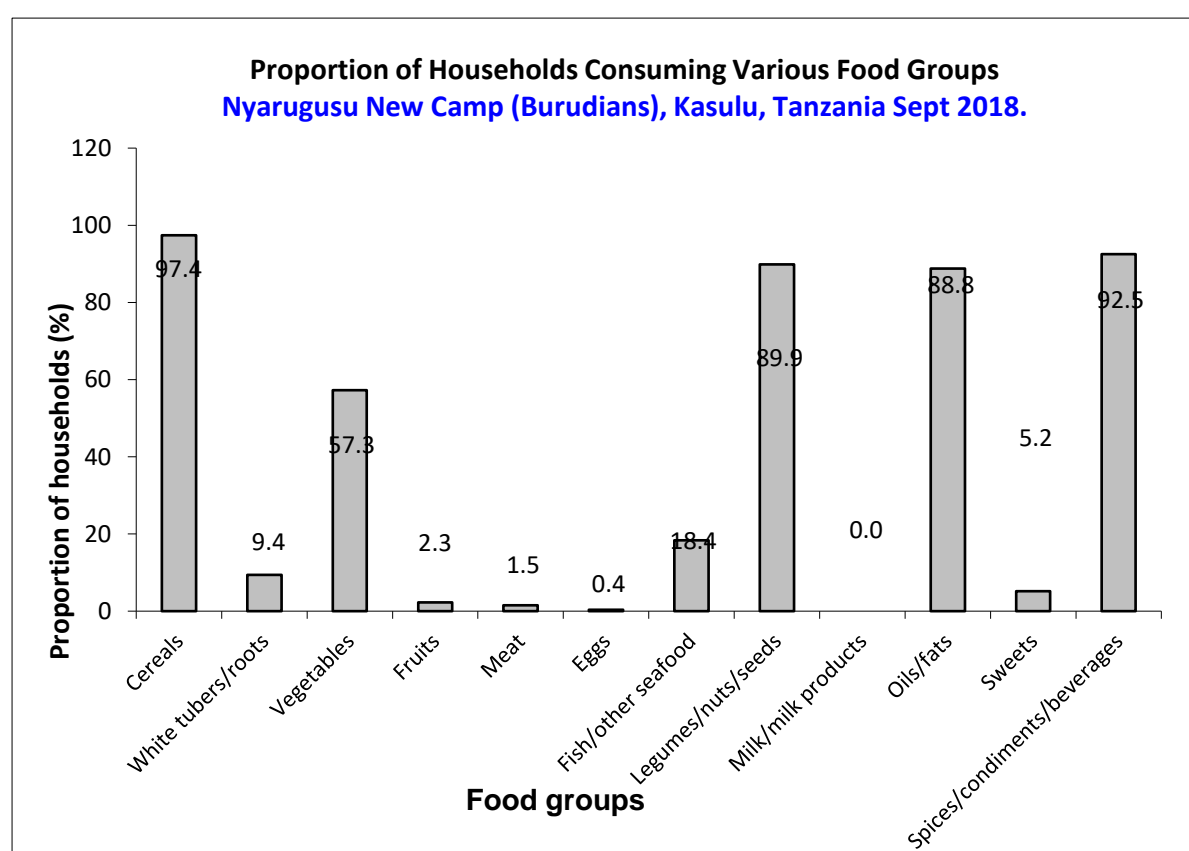
limited. It is hence likely that the household dietary diversity score is lower than it would be e.g. after the harvest. No extraordinary event occurred that might have affected household dietary intake, such as a drought or a festivity.

Table 113 : AVERAGE HDDS

	Mean (Standard deviation or 95% CI)
Average HDDS	4.6 (4.4 – 4.8)

* Maximum HDDS is 12.

Figure 72 : PROPORTION OF HOUSEHOLDS CONSUMING DIFFERENT FOOD GROUPS WITHIN LAST 24 HOURS



Analysis of consumption of micronutrient rich foods is presented in **Table 113**. Consumption of foods from animal sources was quite low at only 20%, majority of the household member did not eat any flesh food in the previous 24hrs; consumption of vitamin A rich food was also low at 30.2% of the households.

Table 114 : CONSUMPTION OF MICRONUTRIENT RICH FOODS BY HOUSEHOLDS

	Number/total	% (95% CI)
Proportion of households <i>not consuming any</i> vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	102/265	38.5% (30.1 – 46.9)
Proportion of households consuming either a plant or animal source of vitamin A	80/265	30.2% (23.4 – 36.9)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	53/267	19.9% (14.3 – 25.5)

4.11.3 Food security (Nduta Camp)

Table 115 : FOOD SECURITY SAMPLING INFORMATION

Household data	Planned	Actual	% of target
	242	243	100.4%

4.11.3.1 Access to food assistance results (Nduta Camp)

Data collection was done for the last completed General Food Distribution (GFD) which was 23 days prior to the survey. Coverage of ration cards is 100.0% **Table 116**, and the average duration the ration is reported to last among the households is 81.7% of the intended 30-day duration **Table 117**.

A paltry 12.8% of the households report the ratio last the entire duration of 30 days; while 54.7% report the food last more than 75% of the intended duration; 45.4% of the households report the food last less than 75% of the duration *Table 125*.

Table 116 : RATION CARD COVERAGE

	Number/total	% (95% CI)
Proportion of households with a ration card	243/243	100.0%

Table 117: REPORTED DURATION OF GENERAL FOOD RATION 1¹⁰

Average number of days the food ration lasts (Standard deviation or 95% CI)	Average duration (%) in relation to the theoretical duration of the ration*
24.5 (23.0 – 26.0) days out of 30days	81.7%

Table 118: REPORTED DURATION OF GENERAL FOOD RATION 2

¹⁰ In contexts where a mix of full rations and half rations are given, only report this value for the households receiving the full ration.

	Number/total	% (95% CI)
Proportion of households reporting that the food ration lasts the entire duration of the cycle	22/172	12.8% (1.0 - 24.6)
Proportion of households reporting that the food ration lasted:		
≤75% of the cycle of 30 DAYS	78/172	45.4% (33.0 – 57.7)
>75% of the cycle of 30 DAYS	94/172	54.7% (42.3 – 67.0)

4.11.3.2 Negative coping strategies results

The two most common coping strategies were borrowing cash, food (74.1%) and reduction of quantity and frequency of meals (63.3%). Incredibly, over half of the household's report engaging in potentially risky behaviour especially brewing and sale of local's alcoholic drinks & prostitution. Only 7.6% of the households report not using any of the coping strategies Table 119.

Table 119 : COPING STRATEGIES USED BY THE SURVEYED POPULATION OVER THE PAST MONTH

	Number/total	% (95% CI)
Proportion of households reporting using the following coping strategies over the past month*:		
Borrowed cash, food or other items <i>with or without interest</i>	180/243	74.1% (66.5 – 81.7)
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)	61/243	25.1% (16.2 – 34.0)
Requested increased remittances or gifts as compared to normal	79/239	33.1% (23.7 – 42.4)
Reduced the quantity and/or frequency of meals	150/237	63.3% (51.4 – 75.1)
Begged	107/238	45.0% (36.2 – 53.8)
Engaged in potentially risky or harmful activities [smuggling; prostitution; stealing; local brewing]	133/243	54.7% (39.6 – 70.0)
Proportion of households reporting using none of the coping strategies over the past month	18/236	7.6% (3.2 – 12.0)

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

4.11.3.3 Household dietary diversity results (Nduta Camp)

The last general food distribution ended [23] days prior to the start of the survey data collection.

The mean household dietary diversity score (HDDS) was low at 4.7 out of a total of a total of 12 food groups Table 120, indicating that the majority of the households surveyed had poor dietary diversity.

The survey was conducted during the annual lean season, during which the overall food availability is

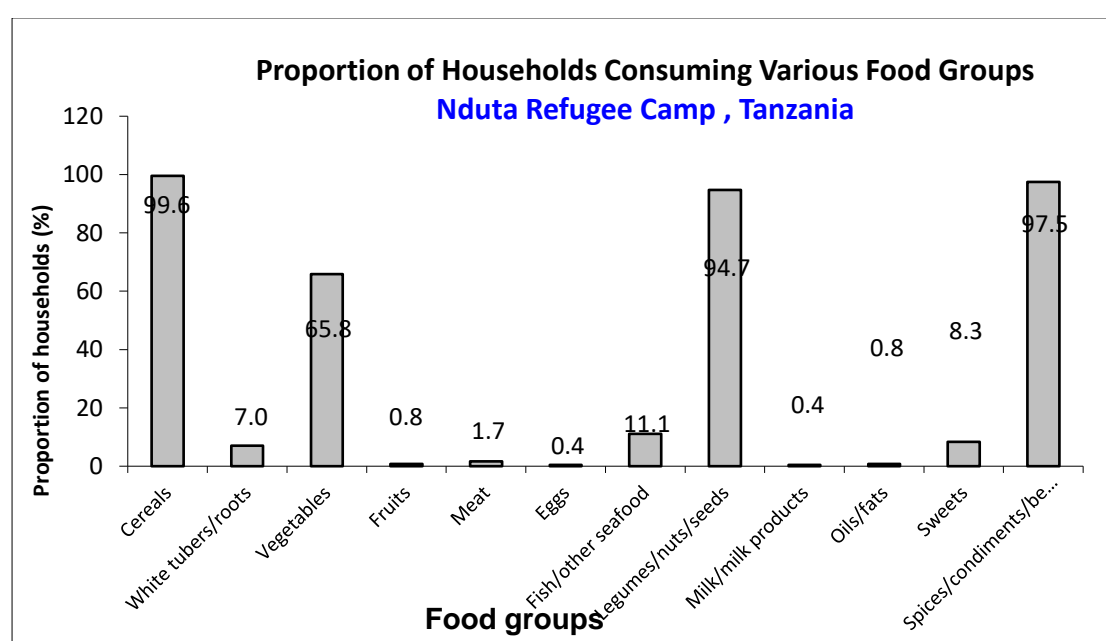
limited. It is hence likely that the household dietary diversity score is lower than it would be e.g. after the harvest. No extraordinary event occurred that may have affected household dietary intake, such as a drought or a festivity.

Table 120 : AVERAGE HDDS

	Mean (Standard deviation or 95% CI)
Average HDDS	4.7 (4.5 – 4.9)

* Maximum HDDS is 12.

Figure 73 : PROPORTION OF HOUSEHOLDS CONSUMING DIFFERENT FOOD GROUPS WITHIN LAST 24 HOURS



Analysis was conducted on the consumption of micronutrient rich foods presented in **Table 121**. Consumption of animal protein is paltry at only 11.9%; the same applies to the proportion of households consuming either a plant or animal source of vitamin A at 37.9%. Proportion of households consuming any vegetables is good at over 70%.

Table 121 : CONSUMPTION OF MICRONUTRIENT RICH FOODS BY HOUSEHOLDS

	Number/ total	% (95% CI)
Proportion of households <i>not consuming any</i> vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	76/243	31.3% (22.4 – 40.2)
Proportion of households consuming either a plant or animal source of vitamin A	92/243	37.9% (29.5 – 46.3)
Proportion of households consuming organ meat/flesh meat, /or fish/seafood (food sources of haem iron)	29/243	11.9% (7.0 – 16.9)

4.11.4 Food security (Mtendeli Camp)

Table 122 : FOOD SECURITY SAMPLING INFORMATION

Household data	Planned	Actual	% of target
Total households surveyed for Food Security	243	245	102.8%

4.11.4.1 Access to food assistance results

Data was collected on the last completed General Food Distribution (GFD) prior to data collection, i.e. the GFD in the last month of October. Coverage of ration cards for all households interviewed was excellent at 100% [Table 123](#), the ration is report to have lasted an average of 86.3% of the intended 30-day duration [Table 124](#). The ration lasted less than the expected 30 days for the majority of households; 43.5% report ration lasting less than 75% of the duration, while 56.5% report the ration lasting more than 75% of the expected duration, nevertheless, 20.7% of the household report the ration last the entire duration of 30days [Table 125](#).

Table 123: RATION CARD COVERAGE

	Number/total	% (95% CI)
Proportion of households with a ration card	245/245	100%

Table 124 : REPORTED DURATION OF GENERAL FOOD RATION 1¹¹

Average number of days the food ration lasts (Standard deviation or 95% CI)	Average duration (%) in relation to the theoretical duration of the ration*
25.9 (24.1 – 27.6) days	86.3%

Table 125 : 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	40/193	20.7% (4.9 – 36.6)
Proportion of households reporting that the food ration lasted:		
≤75% of the cycle [INSERT DAYS]	84/193	43.5% (30.4 – 56.7)
>75% of the cycle [INSERT DAYS]	109/193	56.5% (43.3 – 69.6)

¹¹ In contexts where a mix of full rations and half rations are given, only report this value for the households receiving the full ration.

4.11.4.2 Negative coping strategies results (Mtendeli Camp)

Overwhelming majority (76.5%) report borrowing cash/food/other items as a negative coping strategy; 56.3% report reduced quantity and frequency of meals while around 40% report begging and remittance. Over half of households' report engaging in potentially harmful activities and a paltry 7.6% report using none of the coping strategies.

Table 126 : COPING STRATEGIES USED BY THE SURVEYED POPULATION OVER THE PAST MONTH

	Number/total	% (95% CI)
Proportion of households reporting using the following coping strategies over the past month*:		
Borrowed cash, food or other items <i>with or without interest</i>	186/243	76.5% (70.2 – 82.9)
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)	62/244	25.4% (16.0 – 34.9)
Requested increased remittances or gifts as compared to normal	90/240	37.5% (27.7 – 47.4)
Reduced the quantity and/or frequency of meals	138/245	56.3% (44.3 – 68.4)
Begged	106/242	43.8% (33.0 – 54.6)
Engaged in potentially risky or harmful activities [SMUGGLING; LOCAL BREWS; SMUGGLING; STEALING]	122/245	49.8% (32.9 – 66.7)
Proportion of households reporting using none of the coping strategies over the past month	18/238	7.6% (3.6 – 11.6)

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

4.11.4.3 Household dietary diversity results (Mtendeli Camp)

The following information needs to be added as text in the results:

Household dietary diversity is a useful proxy for dietary intake and household food access. The mean household dietary diversity score (HDDS) was low at 5.1 out of a total of a total of 12 food groups [Table 127](#), indicating that the majority of the households surveyed had poor dietary diversity.

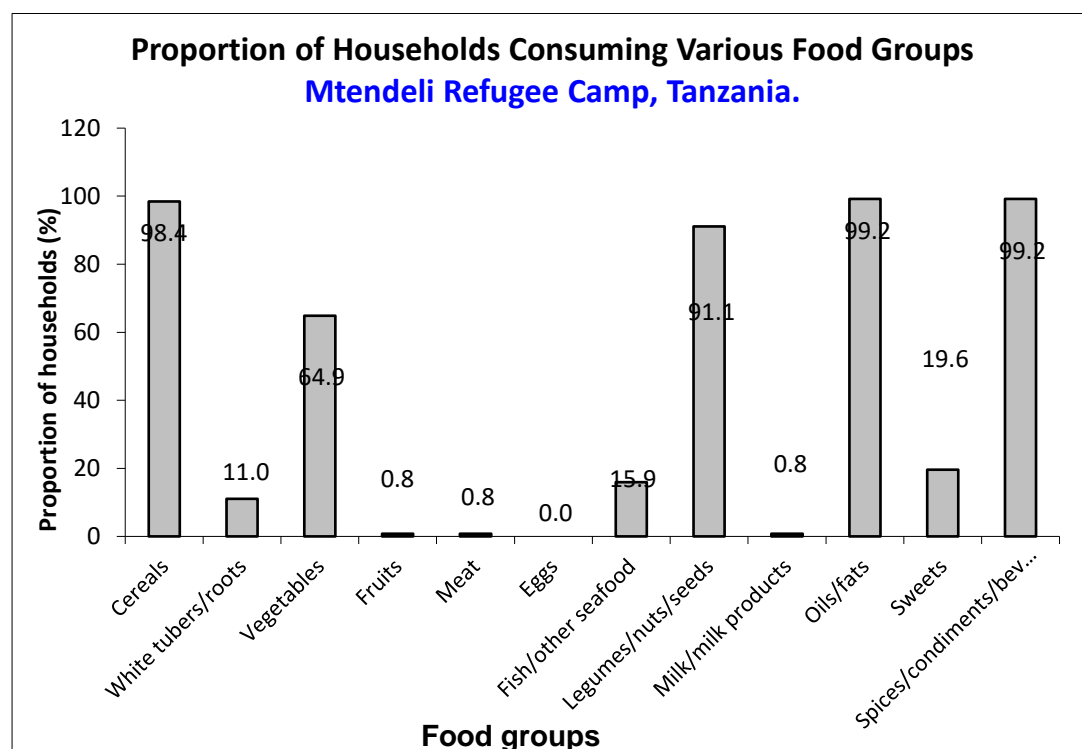
The most common food groups consumed in the 24 hours before the survey is presented in Figure 74. The last general food distribution ended 13 days prior to the start of the survey data collection. The survey was conducted during the annual lean season, during which the overall food availability is limited. It is hence likely that the household dietary diversity score is lower than it would be e.g. after the harvest.” There was no extraordinary event that may have affected household dietary intake, such a drought or a festivity.

Table 127 : AVERAGE HDDS

	Mean (Standard deviation or 95% CI)
Average HDDS	5.1 (4.8 – 5.3)

* Maximum HDDS is 12.

Figure 74 : PROPORTION OF HOUSEHOLDS CONSUMING DIFFERENT FOOD GROUPS WITHIN LAST 24 HOURS



Analysis was conducted on consumption of micronutrient rich foods **Table 128**.

Consumption of high protein foods, fruits and vegetables is excellent with a prevalence of 100%. Consumption of vitamin A rich food and animal sources of haem iron was also low at only 36.7% and 16.7% respectively;

Table 128 : CONSUMPTION OF MICRONUTRIENT RICH FOODS BY HOUSEHOLDS

	Number/total	% (95% CI)
Proportion of households <i>not consuming any</i> vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	0/238	0.0%
Proportion of households consuming either a plant or animal source of vitamin A	90/245	36.7% (36.7 – 43.0)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	41/245	16.7% (10.9 – 22.6)

4.12 WASH

4.12.1 WASH (Nyarugusu Old Camp)

Table 129 : WASH SAMPLING INFORMATION

Household data	Planned	Actual	% of target
Total households surveyed for WASH	521	522	100.2%

Nyarugusu old camp have excellent water quality coverage with over 96% of the households having access to improved water source; the only worry is suboptimal storage of water at households' level with less than half of the households reporting using covered/narrow necked containers a proxy for less contamination of the water.

Approximately 67.6% of the households have access to the UNHCR recommended above 20 litres per person per day (lpppd), while as per sphere standard, over three quarters of the households have access to the recommended minimum of 15 lpppd. Approximately 20% of the residents use less than 15 lpppd **Figure 25**. Average water usage in lpppd is 31.4 (27.4-35.4) litres. Above 60% report satisfaction with both water quality and quantity **Table 132** &

Figure 75; the main reported reasons for the water dissatisfaction is inadequate water (30.1%) and irregular supply (44.8%) **Figure 76**.

Table 130 : WATER QUALITY

	Number/total	% (95% CI)
Proportion of households using an improved drinking water source	505/522	96.7 (90.8 – 100.0)
Proportion of households that use a covered or narrow necked container for storing their drinking water	233/522	44.6 (33.7 – 55.6)

Table 131 : WATER QUANTITY: AMOUNT OF LITRES OF WATER USED PER PERSON PER DAY

Proportion of households that use:	Number/total	% (95% CI)
≥ 20 lpppd	353/522	67.6 (58.9 – 76.4)
15 – <20 lpppd	58/522	11.1 (8.1 – 14.2)
<15 lpppd	111/522	21.3 (13.8 - 28.7)

Add the average water usage in lppd is 31.4 (27.4 - 35.4)

Table 132 : SATISFACTION WITH WATER SUPPLY

	Number/total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	297/522	56.9 (47.6 – 66.2)

Figure 75 : PROPORTION OF HOUSEHOLDS THAT SAY THEY ARE SATISFIED WITH THE WATER SUPPLY

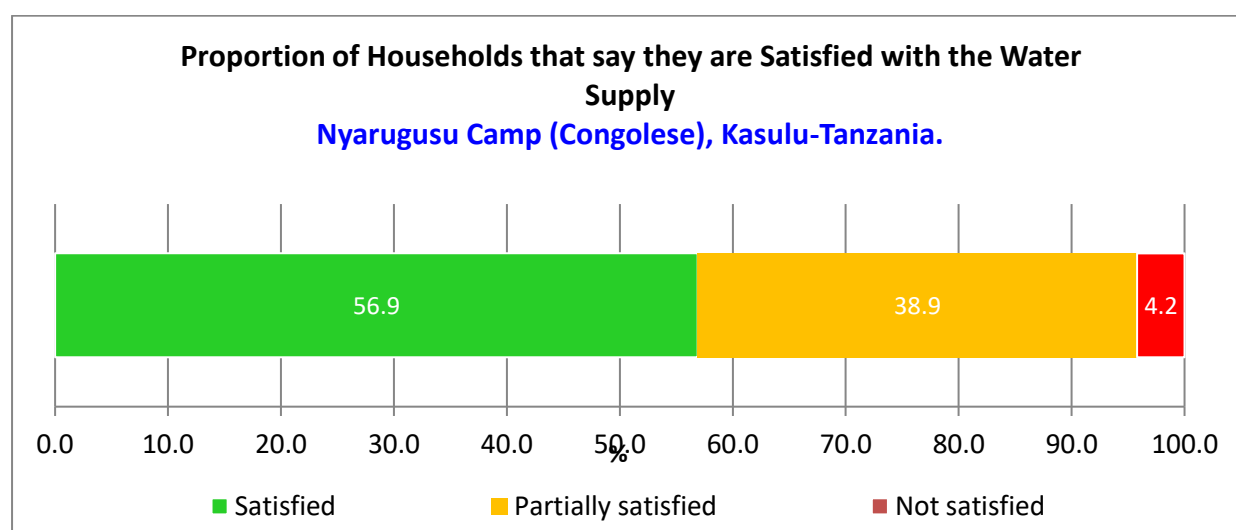
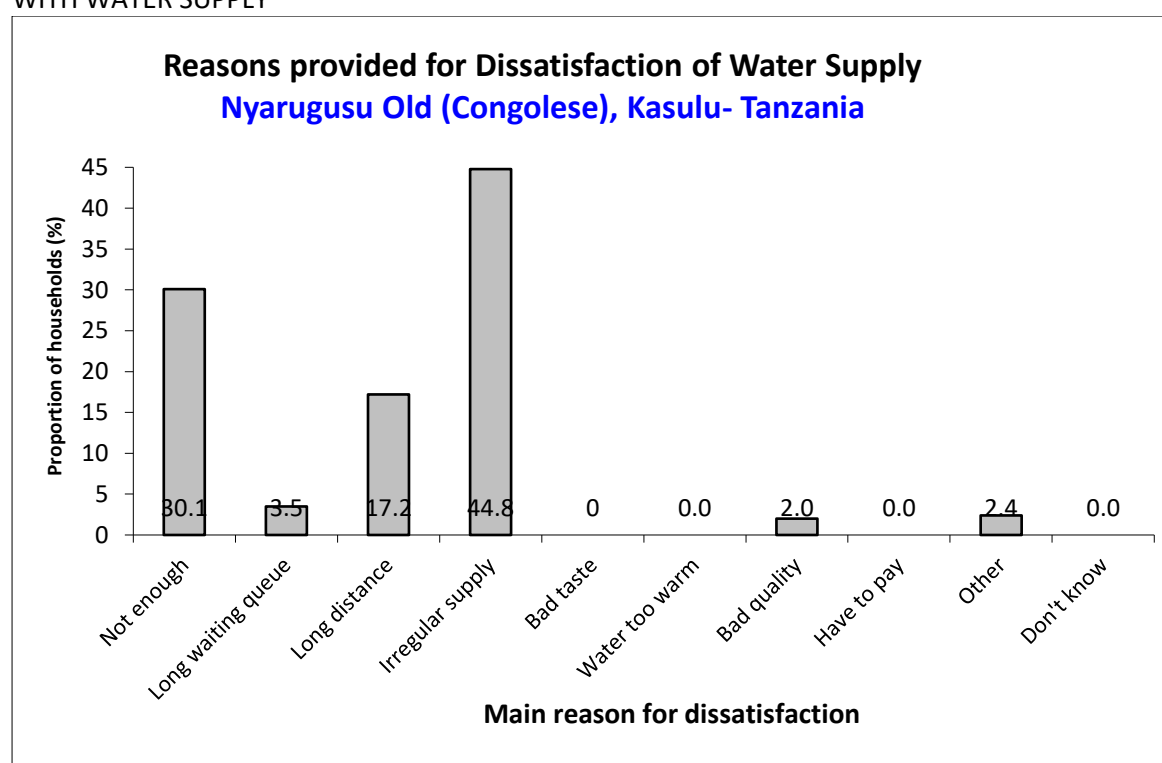


Figure 76 : MAIN REASON FOR DISSATISFACTION AMONG HOUSEHOLDS NOT SATISFIED WITH WATER SUPPLY



Access to safe excreta facilities remains a challenge; majority of the households (96.4%) use unimproved toilet facility/public toilet, with less than 14% having access to an improved or shared excreta disposal facility the most preferred option in terms ease of maintaining hygiene as it shared by 1 or 2 households and have concrete flow that easy to clean. However, majority of households with children under 3 years old (96.4%) disposal of children faeces safely.

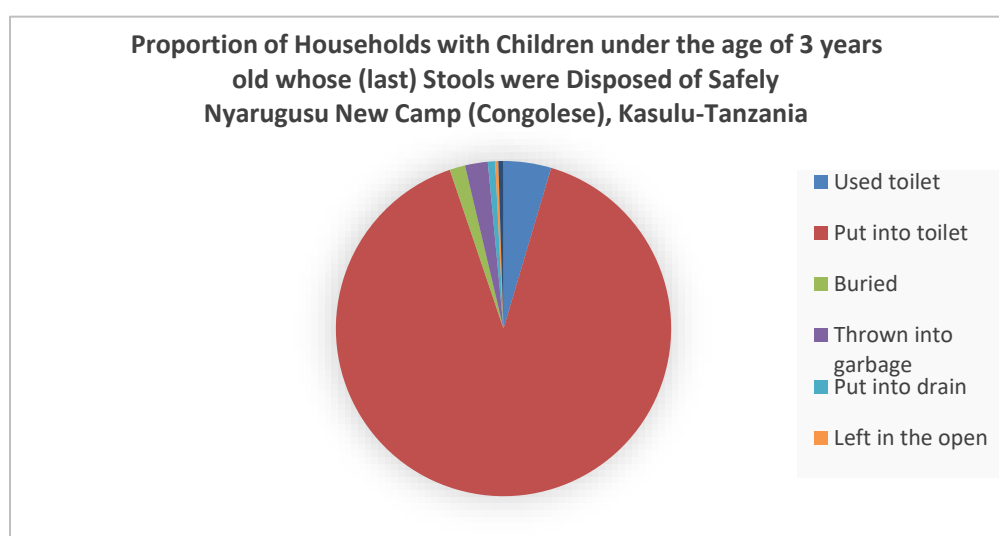
Table 133: SAFE EXCRETA DISPOSAL

	Number/total	% (95% CI)
Proportion of households that use:		
An improved excreta disposal facility (improved toilet facility, 1 household) ***	61/522	11.7 (1.7 - 21.7)
A shared family toilet (improved toilet facility, 2 households) **	6/522	1.2 (0.0 – 3.5)
A communal toilet (improved toilet facility, 3 households or more)	39/522	7.4 (0.0 – 16.0)
An unimproved toilet (unimproved toilet facility or public toilet)	416/522	79.7 (64.9 – 94.5)
Proportion of households with children under three years old that dispose of faeces safely	400/415	96.4 (93.5 – 99.3)

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

According to UNHCR WASH monitoring system, an “improved excreta disposal facility**” is defined differently than in survey instruments and is defined as a toilet in the “improved” category **AND** one that is shared by a *maximum* of 2 families / households or no more than 12 individuals. Therefore, the following two categories from the SENS survey definitions are considered “improved excreta disposal facility” for UNHCR WASH monitoring system: “improved excreta disposal facility (improved toilet facility, 1 household)” and “shared family toilet (improved toilet facility, 2 households)”.

Figure 77: PROPORTION OF HOUSEHOLDS WITH CHILDREN UNDER THE AGE OF 3 YEARS WHOSE (LAST) STOOLS WERE DISPOSED OF SAFELY



4.12.2 WASH (Nyarugusu New Camp)

Table 134: WASH SAMPLING INFORMATION

Household data	Planned	Actual	% of target
Total households surveyed for WASH	501	497	97.1%

Practically all the households were using an improved source of water; nevertheless, safe and hygienic storage of water remains a challenge with only 34.6% of the households reporting storing water in narrow necked/covered containers [Error! Reference source not found.](#).

Table 135: WATER QUALITY

	Number/total	% (95% CI)
Proportion of households using an improved drinking water source	493/497	99.2% (98.1 – 100.0)
Proportion of households that use a covered or narrow necked container for storing their drinking water	172/497	34.6% (24.3 – 45.0)

Over 60% of the households have access to a minimum of 20litres of water per person per day (lpppd) as per the UNHCR standards; based on SPHERE standards, over three quarters have access to above 15 lpppd; subsequently, average water usage in lpppd is 27.3 (23.5-31.2) litres. Additionally, majority of the households 61.6% report satisfaction with water quality as well as quantity *Error! Reference source not found.*, with the main reasons for dissatisfaction being irregular supply and inadequate quantity.

Table 136 : WATER QUANTITY: AMOUNT OF LITRES OF WATER USED PER PERSON PER DAY

Proportion of households that use:	Number/total	% (95% CI)
≥ 20 lpppd	308/497	62.0% (51.4 – 72.5)
15 – <20 lpppd	65/497	13.1% (10.3 – 15.8)
<15 lpppd	124/497	25.0 % (14.6 – 35.3)

Add the average water usage in lpppd 27.3litres (23.5 – 31.2).

Table 137 : SATISFACTION WITH WATER SUPPLY

	Number/total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	306/497	61.6% (49.4 – 73.7)

Figure 78 : PROPORTION OF HOUSEHOLDS THAT SAY THEY ARE SATISFIED WITH THE WATER SUPPLY

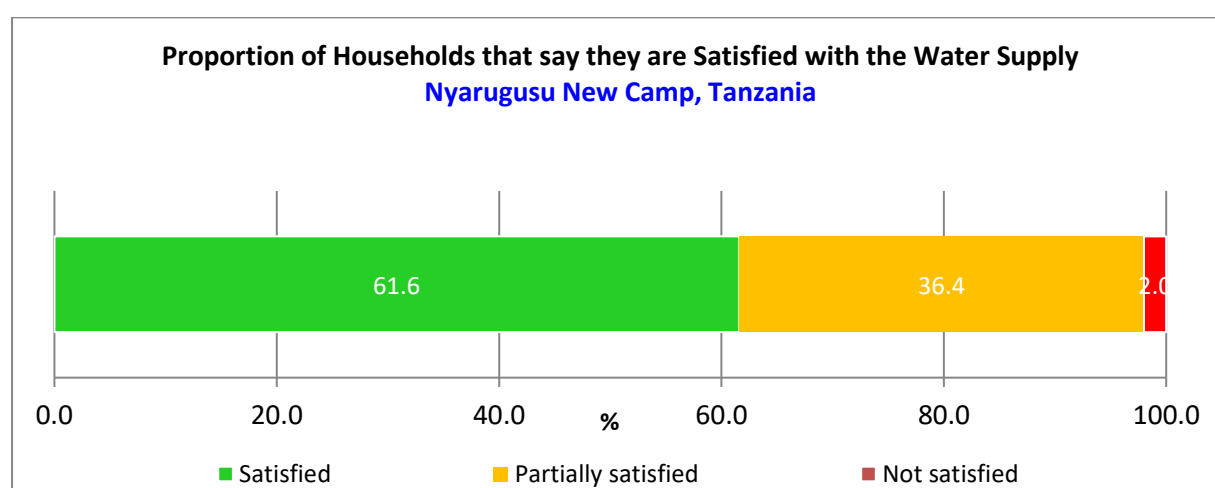
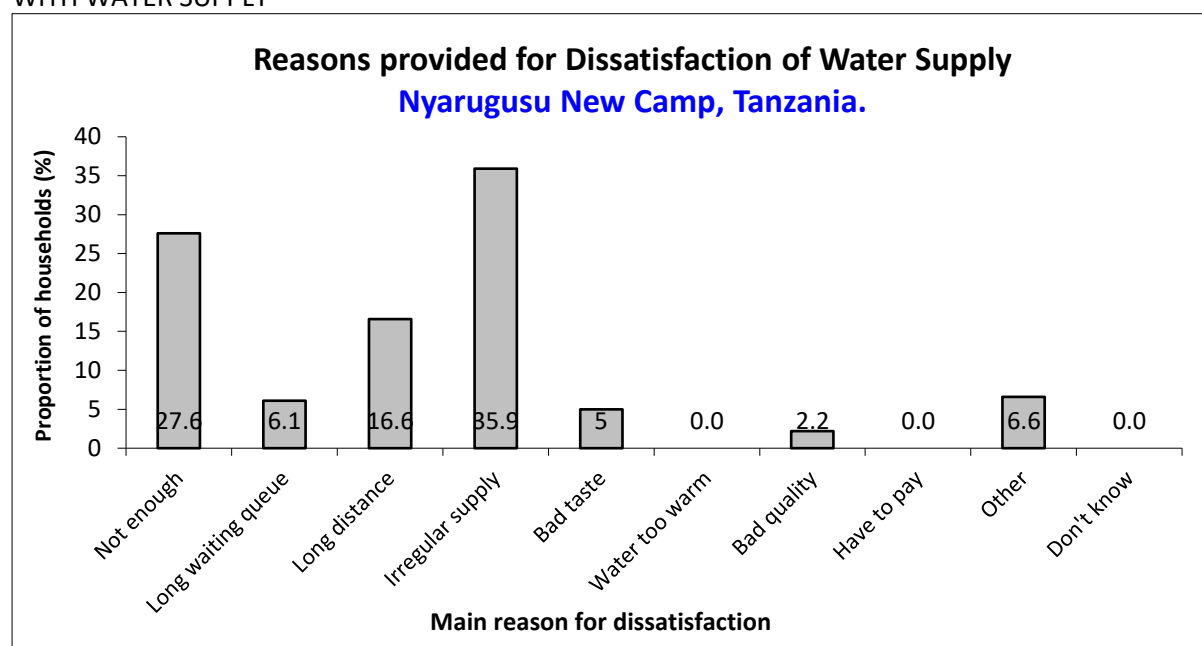


Figure 79 : MAIN REASON FOR DISSATISFACTION AMONG HOUSEHOLDS NOT SATISFIED WITH WATER SUPPLY



The proportion of households using improved toilet facilities (i.e. pit latrine with floor slab shared by 2 households or less) are above 50% at 65.4%; [Table 95](#) present the full details.

The vast majority of households with children under three years old dispose of faeces safely (97%).

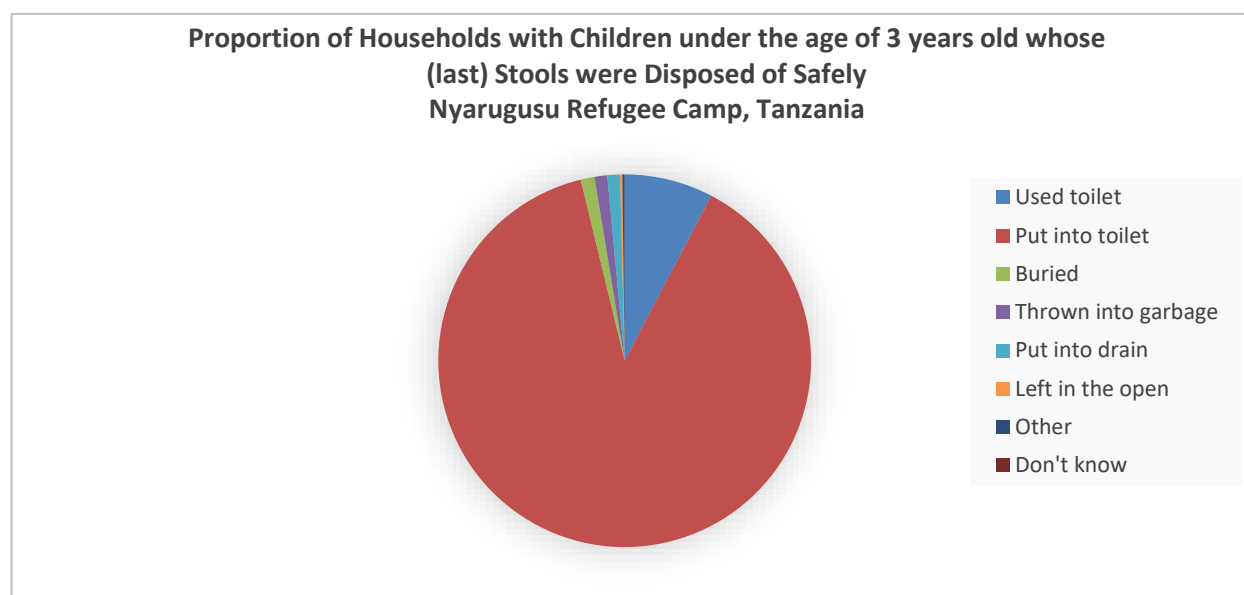
Table 138: SAFE EXCRETA DISPOSAL

	Number/total	% (95% CI)
Proportion of households that use:		
An improved excreta disposal facility (improved toilet facility, 1 household) ***	323/494	65.4% (48.7 – 82.1)
A shared family toilet (improved toilet facility, 2 households) **	5/494	1.0% (0.0 – 2.1)
A communal toilet (improved toilet facility, 3 households or more)	3/494	0.6% (0.0 – 1.3)
An unimproved toilet (unimproved toilet facility or public toilet)	163/494	33.0% (16.2 – 49.8)
Proportion of households with children under three years old that dispose of faeces safely	443/455	97.4% (95.4 – 99.3)

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

According to UNHCR WASH monitoring system, an **“improved excreta disposal facility” is defined differently than in survey instruments and is defined as a toilet in the “improved” category AND one that is shared by a *maximum* of 2 families / households or no more than 12 individuals. Therefore, the following two categories from the SENS survey definitions are considered “improved excreta disposal facility” for UNHCR WASH monitoring system: “improved excreta disposal facility (improved toilet facility, 1 household)” and “shared family toilet (improved toilet facility, 2 households)”.

Figure 80: PROPORTION OF HOUSEHOLDS WITH CHILDREN UNDER THE AGE OF 3 YEARS WHOSE (LAST) STOOLS WERE DISPOSED OF SAFELY



4.12.3 WASH (Nduta Camp)

Table 139 : WASH SAMPLING INFORMATION

Household data	Planned	Actual	% of target
Total households surveyed for WASH	483	480	100.6%

The entire households in Nduta camp have access to improved drinking water sources; storage however remains a major challenge with only approximately 38.1% of households using narrow necked or covered water containers a proxy for safe storage of water to avoid contaminations [Table 140](#).

In terms of water quality, majority of the households (62.6) have access the UNHCR threshold of above or equal to 20 lpppd; over 73.2% have access to sphere specified above 15 lpppd. Concomitantly, average water per household per day is 25.3 (21.8 – 28.8) litres

Table 141.

Majority of the households (73.1%) report satisfaction with water quality and quantity; the three most common reason for water dissatisfaction were irregular supply (43%), & long distance to the water point (27.2%), inadequate supply (21.1%) [Figure 81](#) & [Figure 82](#).

Table 140 : WATER QUALITY

	Number/total	% (95% CI)
Proportion of households using an improved drinking water source	480/480	100%
Proportion of households that use a covered or narrow necked container for storing their drinking water	183/480	38.1% (27.0 – 49.3)

Table 141: WATER QUANTITY: AMOUNT OF LITRES OF WATER USED PER PERSON PER DAY

Proportion of households that use:	Number/total	% (95% CI)
≥ 20 lpppd	300/480	62.6% (50.9 – 74.1)
15 – <20 lpppd	51/480	10.6% (7.4 – 13.8)
<15 lpppd	129/480	26.9% (16.1 – 37.7)

Add the average water usage in lppd is 25.3 (21.8 – 28.8) litres.

Table 142 : SATISFACTION WITH WATER SUPPLY

	Number/total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	351/480	73.1% (63.4 – 82.8)

Figure 81: PROPORTION OF HOUSEHOLDS THAT SAY THEY ARE SATISFIED WITH THE WATER SUPPLY

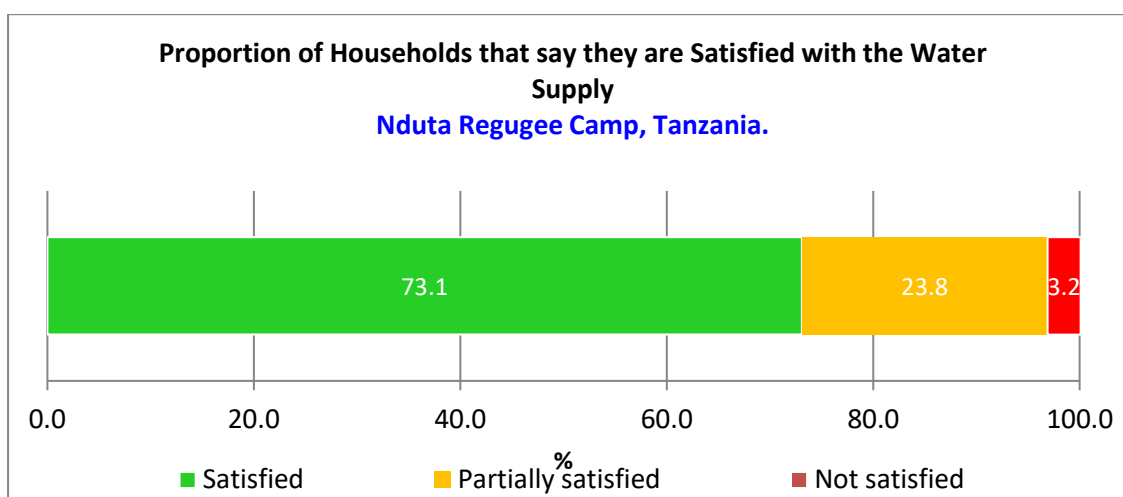
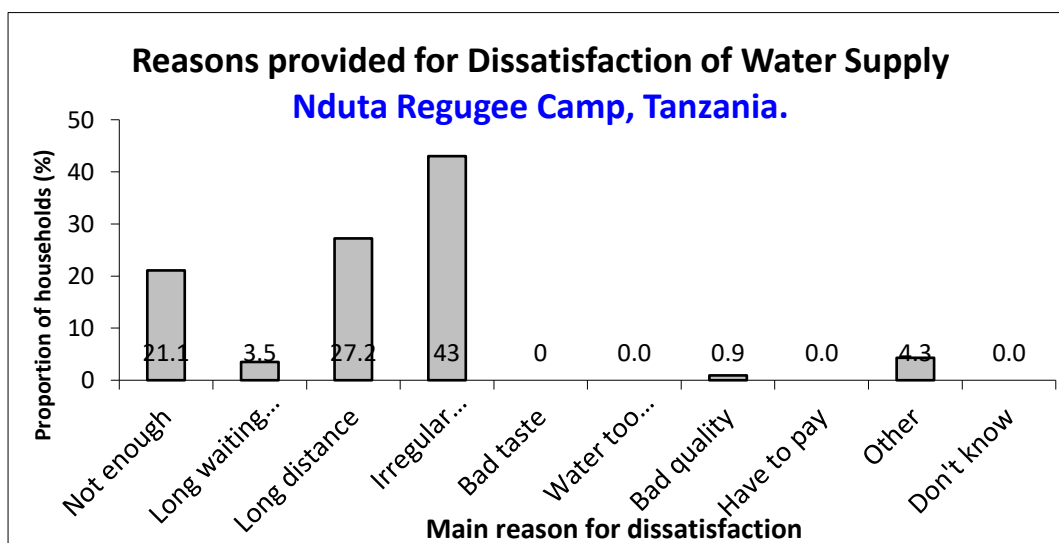


Figure 82: MAIN REASON FOR DISSATISFACTION AMONG HOUSEHOLDS NOT SATISFIED WITH WATER SUPPLY



Access to improve excreta facility remains low at 28.1%, majority of the residents (67.5%) use unimproved excreta facility. However, virtually all households with children under three-year dispose of faeces in a safe way Table 143.

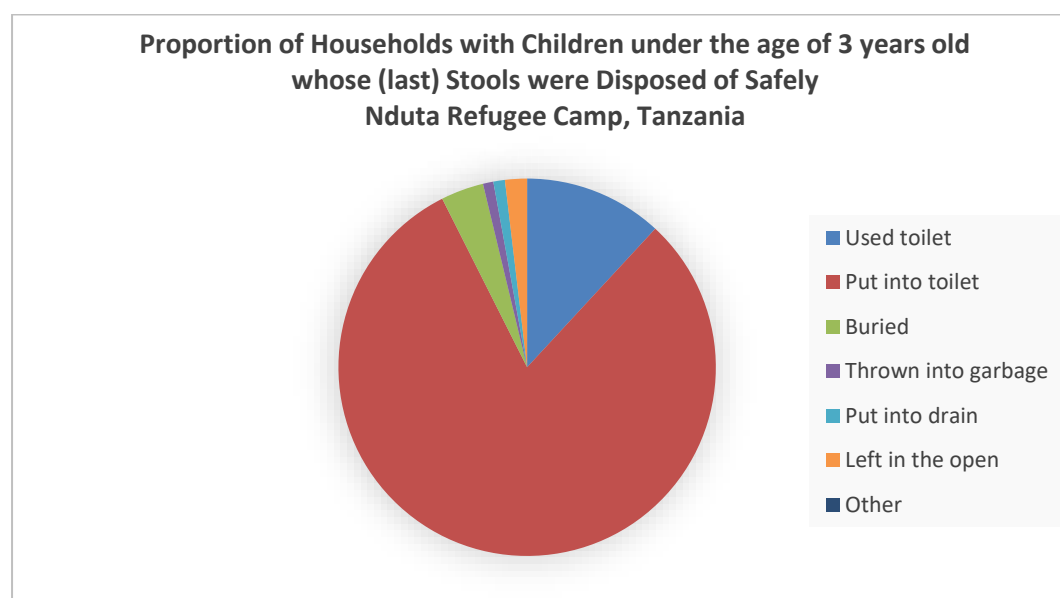
Table 143 : SAFE EXCRETA DISPOSAL

	Number/total	% (95% CI)
Proportion of households that use:		
An improved excreta disposal facility (improved toilet facility, 1 household) ***	32/114	28.1% (4.6 – 51.5)
A shared family toilet (improved toilet facility, 2 households) **	3/114	2.6% (0.0 – 5.7)
A communal toilet (improved toilet facility, 3 households or more)	2/114	1.8% (0.0 – 4.2)
An unimproved toilet (unimproved toilet facility or public toilet)	77/114	67.5% (42.6 – 92.5)
Proportion of households with children under three years old that dispose of faeces safely	105/108	97.2% (94.2 – 100.3)

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

According to UNHCR WASH monitoring system, an **“improved excreta disposal facility” is defined differently than in survey instruments and is defined as a toilet in the “improved” category AND one that is shared by a *maximum* of 2 families / households or no more than 12 *individuals*. Therefore, the following two categories from the SENS survey definitions are considered “improved excreta disposal facility” for UNHCR WASH monitoring system: “improved excreta disposal facility (improved toilet facility, 1 household)” and “shared family toilet (improved toilet facility, 2 households)”.

Figure 83 : PROPORTION OF HOUSEHOLDS WITH CHILDREN UNDER THE AGE OF 3 YEARS WHOSE (LAST) STOOLS WERE DISPOSED OF SAFELY



4.12.4 WASH (Mtendeli Camp)

Table 144 : WASH SAMPLING INFORMATION

Household data	Planned	Actual	% of target
Total households surveyed for WASH	486	479	98.6%

Coverage and access to safe and quality water is universal in the Mtendeli Camp; nevertheless, safe storage remains a challenge as only 37.0% of the households are using narrow necked or covered containers Table 145.

Table 145 : WATER QUALITY

	Number/total	% (95% CI)
Proportion of households using an improved drinking water source	479/479	100.0%
Proportion of households that use a covered or narrow necked container for storing their drinking water	177/479	37.0% (25.2 – 48.7)

The mean water usage was 26.3 litres, and majority (65.0%) of the households surveyed had access to above 20 litres per person per day (lpppd), while those with access to the SPHERE standard recommended threshold were 77.5%. Overall, just over 20% had access to less than 15 lpppd Table 146. Accordingly, overwhelming majority (93.1%) of the household are satisfied with water quality and quantity Table 147 &

Figure 84. The minority 7% who report dissatisfaction with water quantity and quality give reasons as long distance to water point (50%), inadequate amount of water (17.9%) and perceived poor taste (10.7%)

FIGURE 85.

Table 146 : WATER QUANTITY: AMOUNT OF LITRES OF WATER USED PER PERSON PER DAY

Proportion of households that use:	Number/total	% (95% CI)
≥ 20 lpppd	311/479	65.0% (53.0 – 76.9)
15 – <20 lpppd	60/479	12.5% (9.1 – 16.0)
<15 lpppd	108/479	22.6% (12.0 – 33.1)

The average water usage is lppd 26.3 (23.0 – 29.5)litres

Table 147 : SATISFACTION WITH WATER SUPPLY

	Number/total	% (95% CI)
Proportion of households that say they are	446/479	93.1% (88.3 – 97.9)

satisfied with the drinking water supply		
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Figure 84: PROPORTION OF HOUSEHOLDS THAT SAY THEY ARE SATISFIED WITH THE WATER SUPPLY.

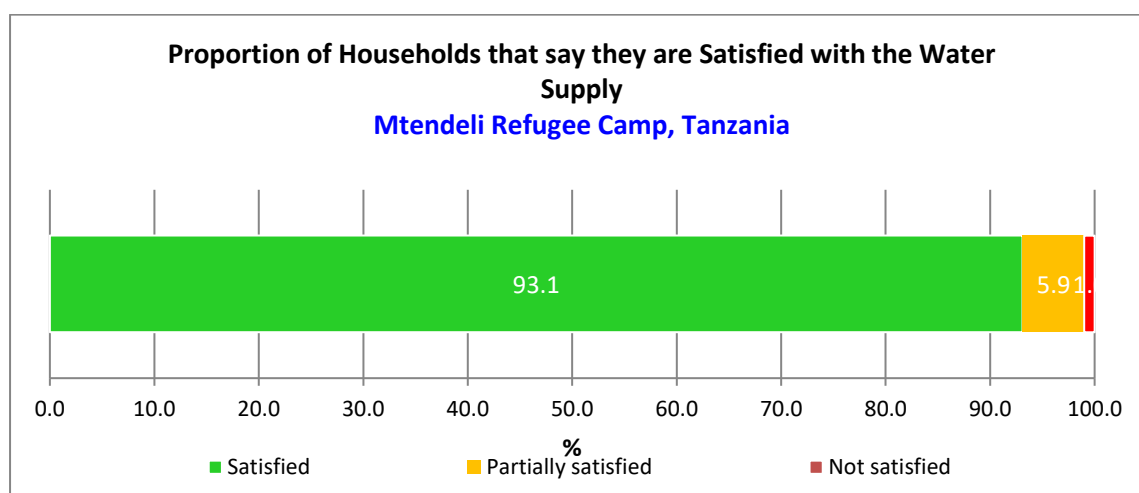
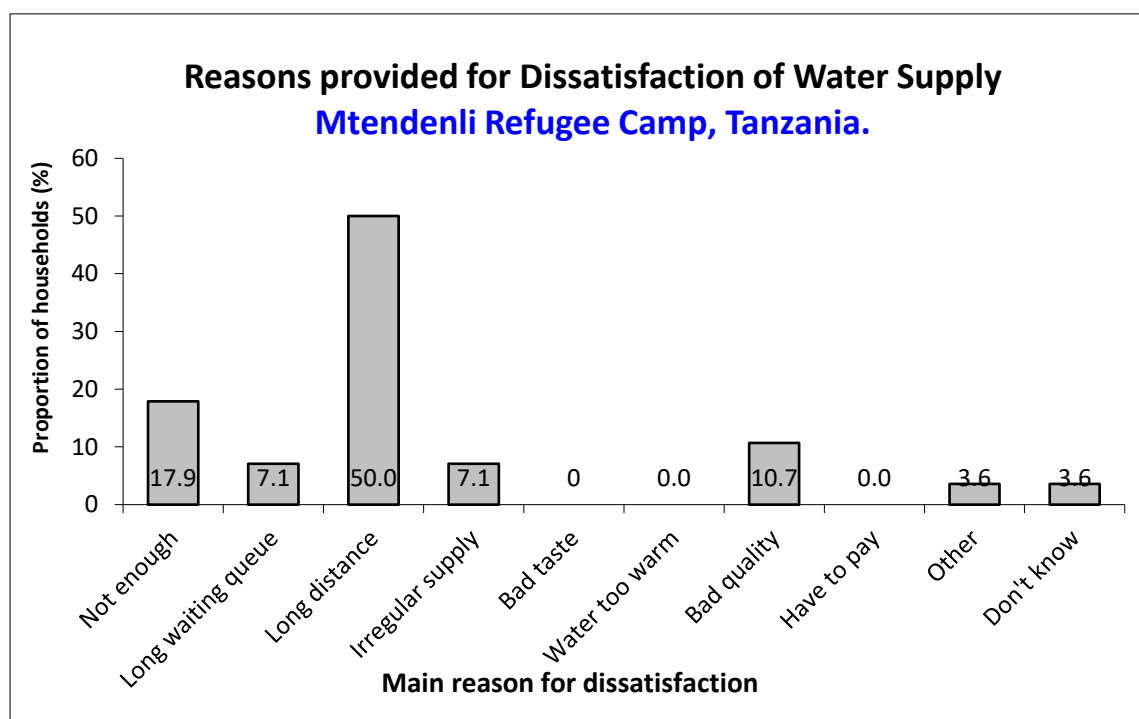


FIGURE 85: MAIN REASON FOR DISSATISFACTION AMONG HOUSEHOLDS NOT SATISFIED WITH WATER SUPPLY



The proportion of households using improved toilet facilities (i.e. pit latrine with floor slab shared by 2 households or less) was low at approximately 35.9%; majority use unimproved toilet facilities (see

Table 148 for full details).

The vast majority of households with children under three years old dispose of faeces safely (97.8%).

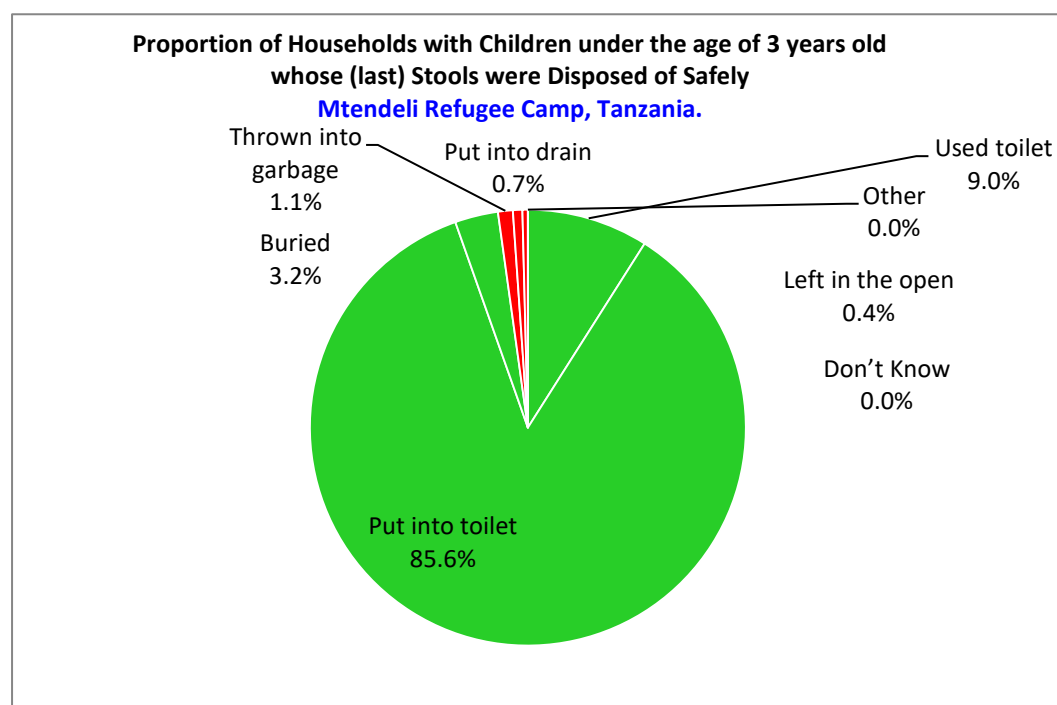
Table 148 : SAFE EXCRETA DISPOSAL

	Number/total	% (95% CI)
Proportion of households that use:		
An improved excreta disposal facility (improved toilet facility, 1 household) ***	172/479	35.9% (19.9 – 51.9)
A shared family toilet (improved toilet facility, 2 households) **	20/479	4.2% (1.4 – 7.0)
A communal toilet (improved toilet facility, 3 households or more)	10/479	2.1% (0.0 – 4.2)
An unimproved toilet (unimproved toilet facility or public toilet)	277/479	57.8% (40.4 – 75.3)
Proportion of households with children under three years old that dispose of faeces safely	448/458	97.8% (95.9 – 99.8)

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

According to UNHCR WASH monitoring system, an “improved excreta disposal facility**” is defined differently than in survey instruments and is defined as a toilet in the “improved” category **AND** one that is shared by a *maximum* of 2 families / households or no more than 12 *individuals*. Therefore, the following two categories from the SENS survey definitions are considered “improved excreta disposal facility” for UNHCR WASH monitoring system: “improved excreta disposal facility (improved toilet facility, 1 household)” and “shared family toilet (improved toilet facility, 2 households)”.

Figure 86 : PROPORTION OF HOUSEHOLDS WITH CHILDREN UNDER THE AGE OF 3 YEARS WHOSE (LAST) STOOLS WERE DISPOSED OF SAFELY



4.13 Mosquito Net Coverage

4.13.1 Mosquito Net Coverage (Nyarugusu Old Camp)

Table 149 : MOSQUITO NET COVERAGE SAMPLING INFORMATION

Household data	Planned	Actual	% of target
Total households surveyed for mosquito net coverage	261	232	89.1%

Household ownership of at least one of any mosquito net or LLIN is relatively high at 72% and 65.5% respectively, but below the recommended 80% of households for at least one LLIN **Table 150**; nevertheless, average number of persons per LLIN is suboptimal at 5.4 against recommended 2 persons per LLIN **Table 151**.

Proportion of household members reporting sleeping in LLIN were 47.0%; while in terms of vulnerable groups, 55.6% and 50% for children under five and pregnant woman respectively **Table 152**

Table 150 : HOUSEHOLD MOSQUITO NET OWNERSHIP

	Number/total	% (95% CI)
Proportion of total households owning at least one mosquito net of any type	167/232	72.0 (65.3 – 78.7)
Proportion of total households owning at least one LLIN	152/232	65.5 (59.0 – 72.1)

Figure 87: HOUSEHOLD OWNERSHIP OF AT LEAST ONE MOSQUITO NET (ANY TYPE)

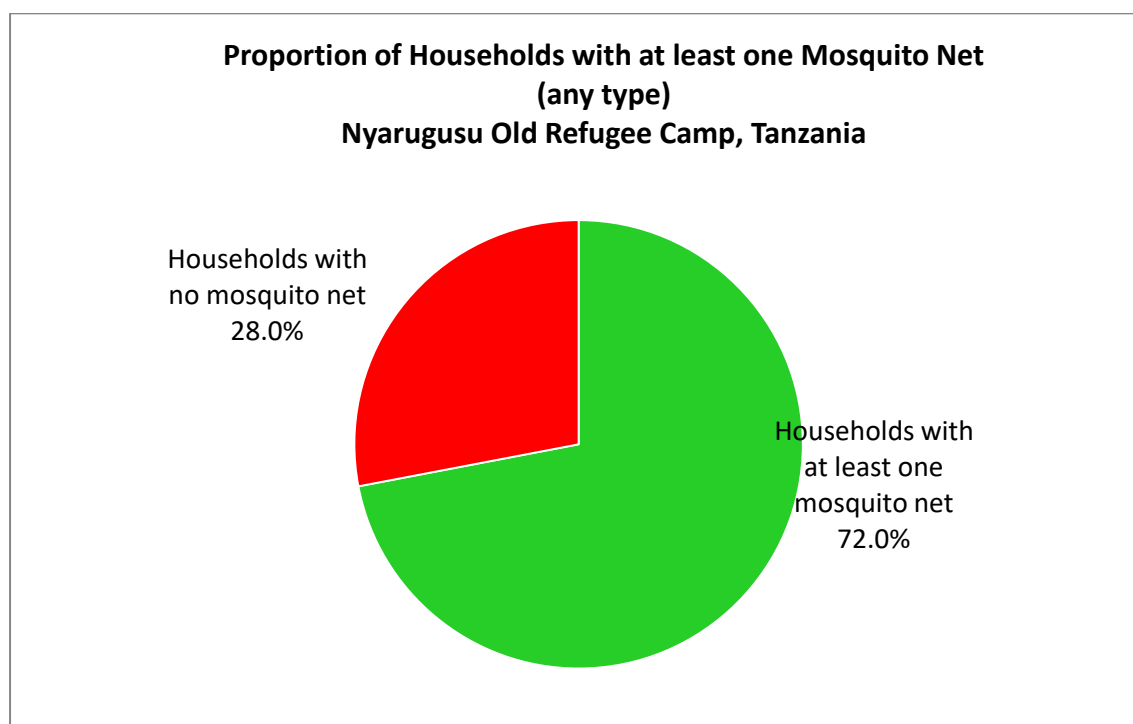


Figure 88 : HOUSEHOLD OWNERSHIP OF AT LEAST ONE LLIN

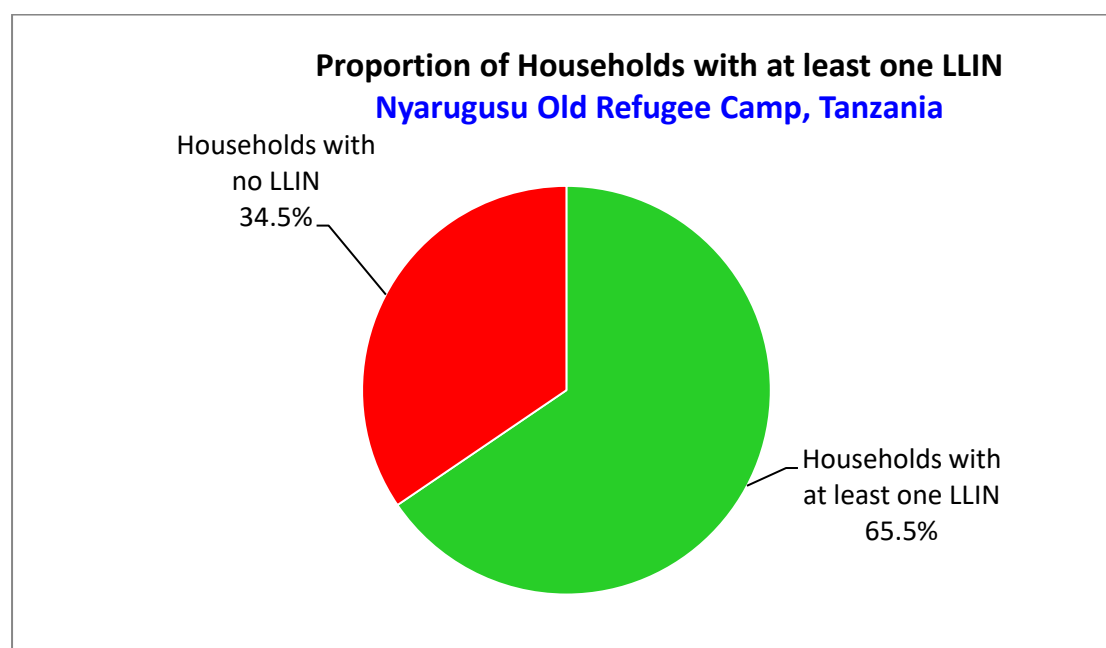


Table 151: NUMBER OF NETS

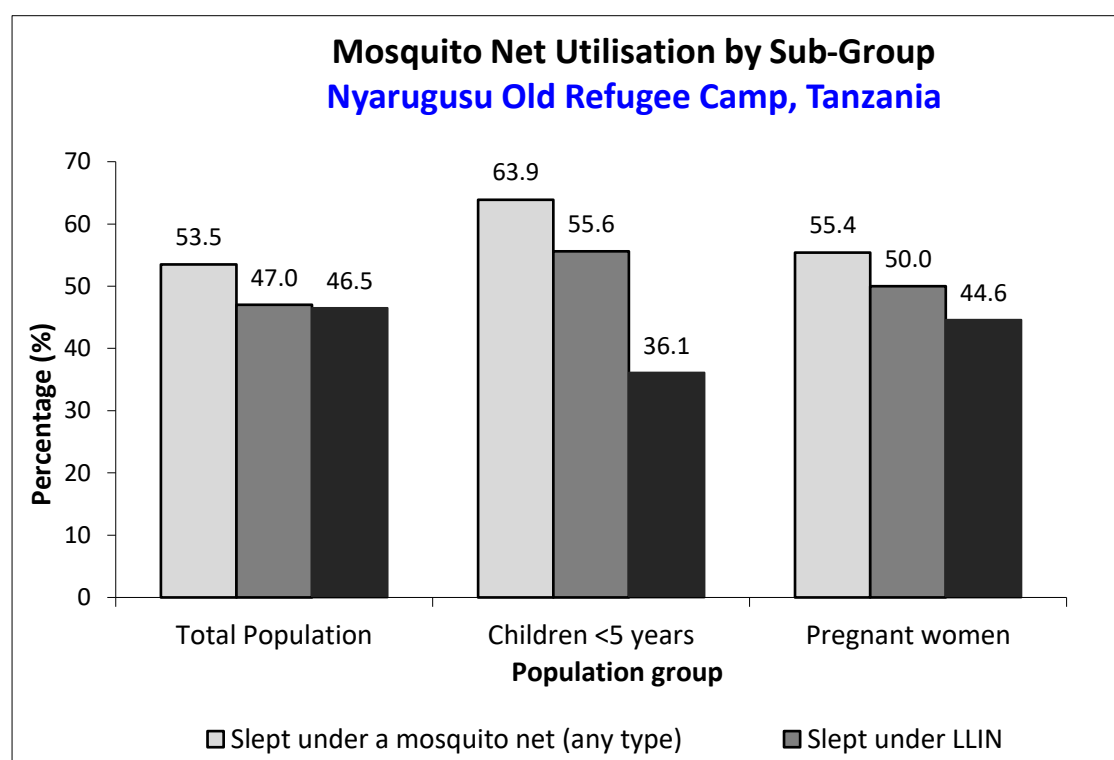
Average number of LLINs per household	Average number of persons per LLIN
1.7	5.4

Table 152 : MOSQUITO NET UTILISATION¹².

	Proportion of total population (all ages)		Proportion of 0-59 months		Proportion of pregnant women	
	Total No=1527	%	Total No=338	%	Total No=56	%
Slept under net of any type	817	53.5%	216	63.9%	31	55.4%
Slept under LLIN	717	47.0%	188	55.6%	28	50.0%

¹² Note that it is not required to include confidence intervals for these indicators as they are complex to calculate

Figure 89 : MOSQUITO NET UTILISATION BY SUB-GROUP



4.13.2 Mosquito Net Coverage (Nyarugusu New Camp)

Table 153 : MOSQUITO NET COVERAGE SAMPLING INFORMATION

Household data	Planned	Actual	% of target
	251	263	106.4%

Mosquito net ownership for the 263 households surveyed is shown in

Table 154 below. Results indicate LLIN coverage of 52.7% has consistently been below the UNHCR target coverage of 80% in the previous three surveys.

The proportion of household members (total, under five and Pregnant Women who slept under either a net of any type or an LLIN is suboptimal: 31.0% of total population, 39.6% of children under five and 40.5% for pregnant woman Table 156. Average number of persons per LLIN of 9.2 is more than four times the two recommended thresholds of LLIN per person

Table 155 .

Table 154 : HOUSEHOLD MOSQUITO NET OWNERSHIP

	Number/total	% (95% CI)
Proportion of total households owning at least one mosquito net of any type	134/262	51.2% (41.1 – 61.2)
Proportion of total households owning at least	124/262	52.7% (43.1 – 62.2)

one LLIN		
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Figure 90 : HOUSEHOLD OWNERSHIP OF AT LEAST ONE MOSQUITO NET (ANY TYPE)

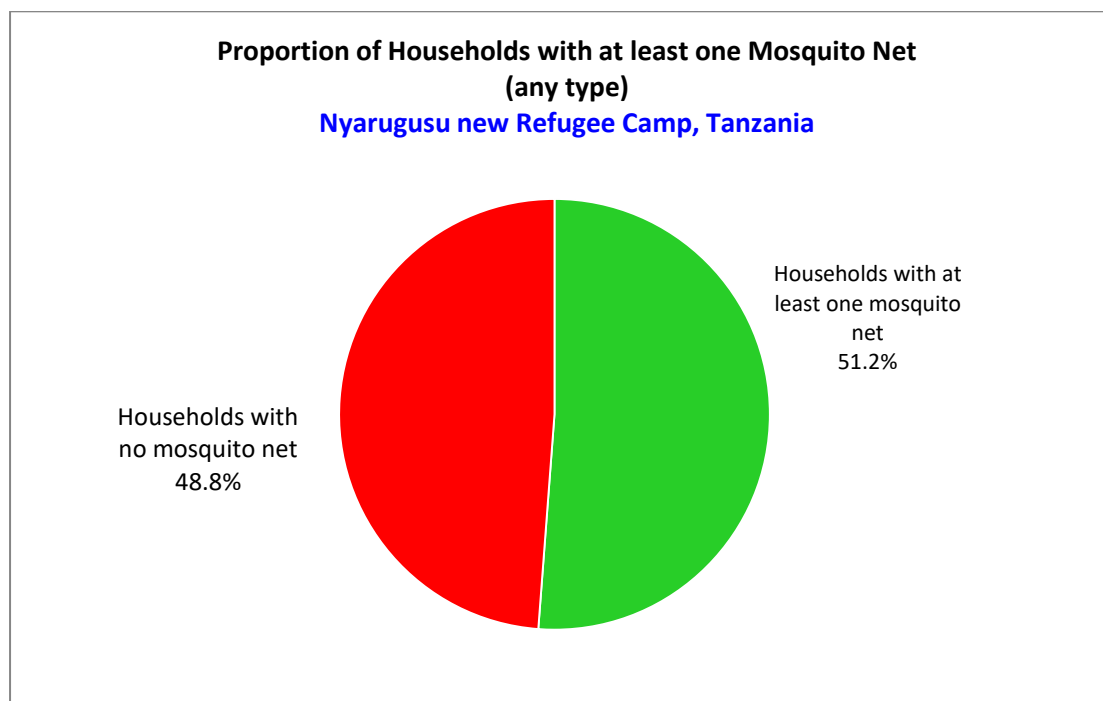


Figure 91 : HOUSEHOLD OWNERSHIP OF AT LEAST ONE LLIN

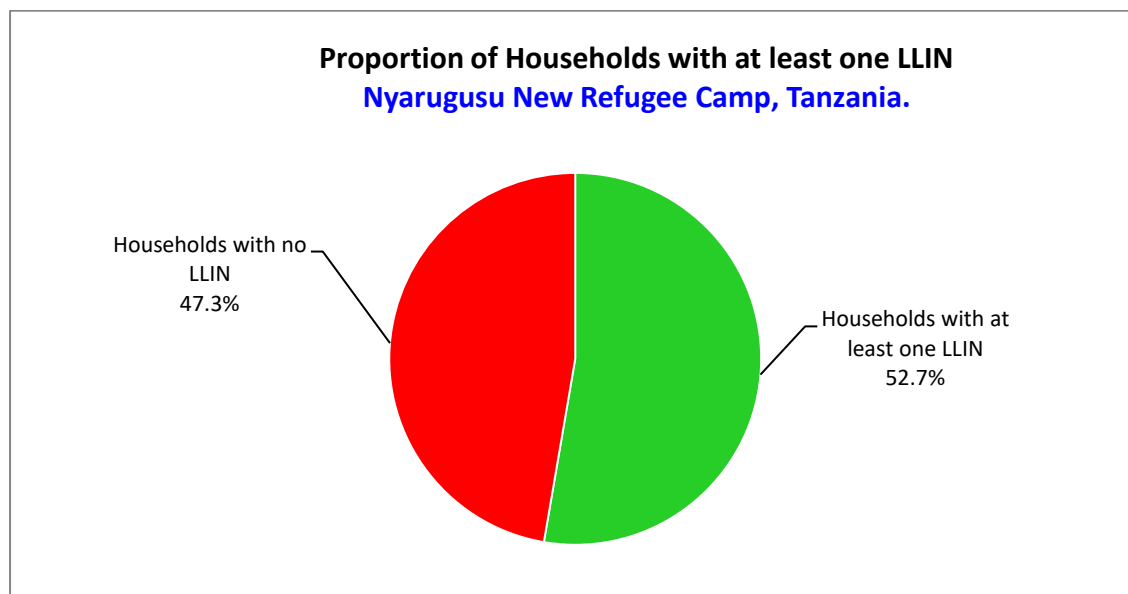


Table 155 : NUMBER OF NETS

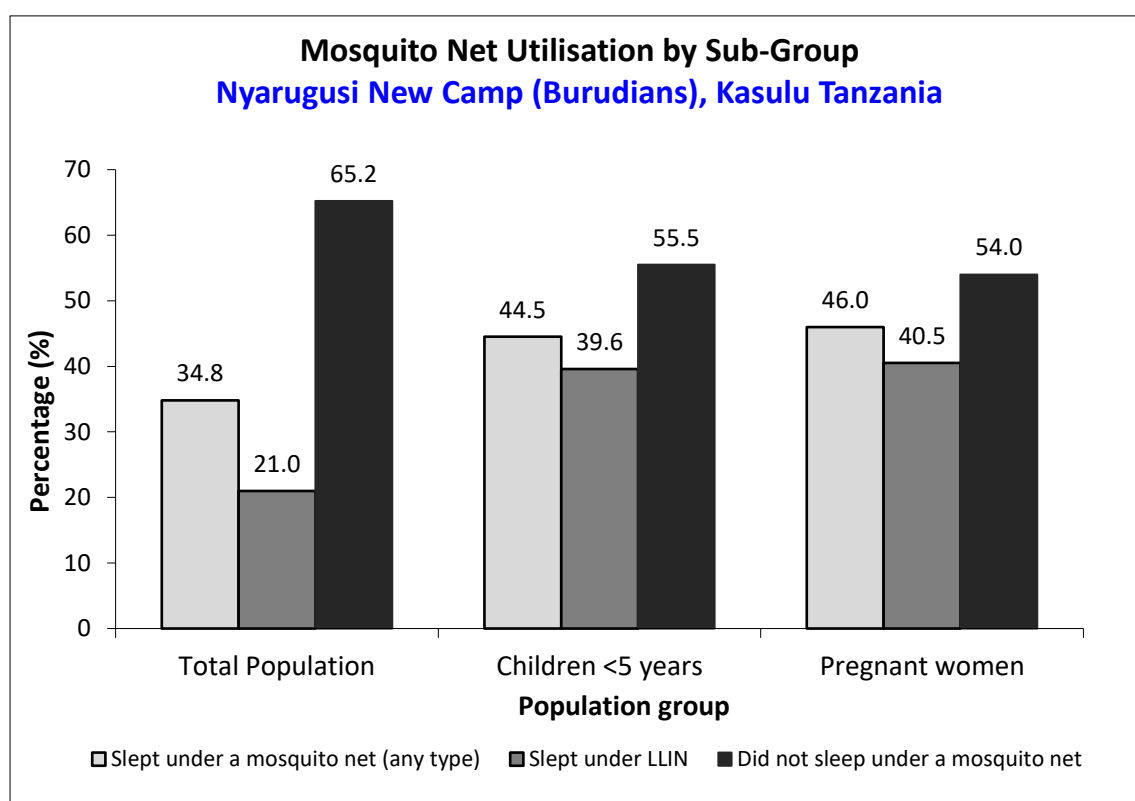
Average number of LLINs per household	Average number of persons per LLIN

1.3	9.2
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Table 156: MOSQUITO NET UTILISATION.

	Proportion of total population (all ages)		Proportion of 0-59 months		Proportion of pregnant women	
	Total 1622	%	Total 452	%	Total 37	%
Slept under net of any type	564	34.8%	201	44.5%	17	46.0 %
Slept under LLIN	502	31.0%	179	39.6%	15	40.5 %

Figure 92 : MOSQUITO NET UTILISATION BY SUB-GROUP



4.13.3 Mosquito Net Coverage (Nduta Camp)

Table 157 : MOSQUITO NET COVERAGE SAMPLING INFORMATION

Household data	Planned	Actual	% of target
Total households surveyed for mosquito net coverage	242	245	101.2

Mosquito net ownership for the 245 households assessed are summarized in **Table 158**. The coverage

of LLIN at 48.6% is quite low compared to the recommended above 80% of the households. Average number of persons per LLIN is high at 12.1, which over six times the recommend threshold of 2 persons per LLIN **Table 159**.

Table 158 : HOUSEHOLD MOSQUITO NET OWNERSHIP

	Number/total	% (95% CI)
Proportion of total households owning at least one mosquito net of any type	134/245	54.7% (36.9 – 53.7)
Proportion of total households owning at least one LLIN	119/245	48.6% (41.4 – 55.8)

Figure 93 : HOUSEHOLD OWNERSHIP OF AT LEAST ONE MOSQUITO NET (ANY TYPE)

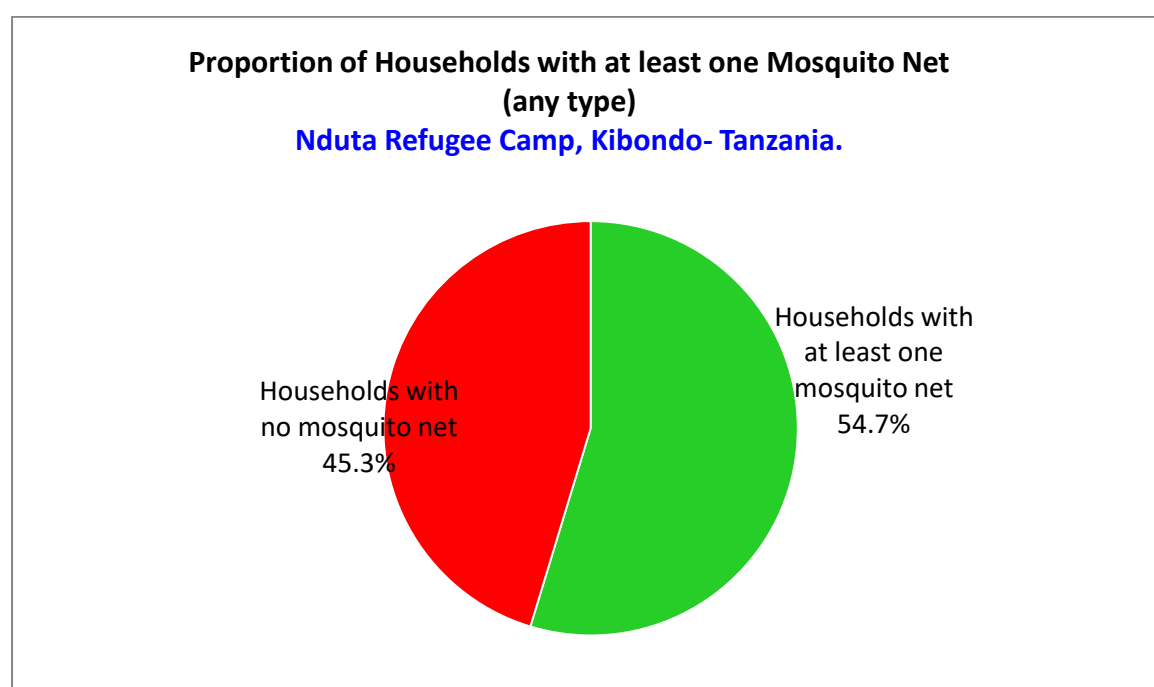


Figure 94 : HOUSEHOLD OWNERSHIP OF AT LEAST ONE LLIN

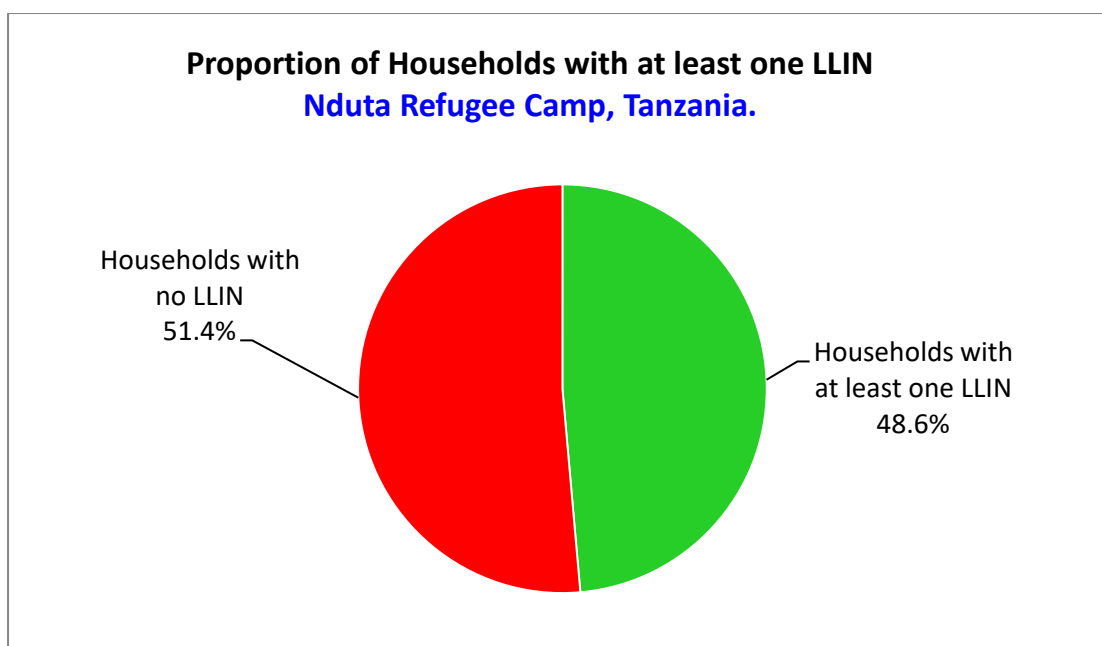


Table 159: NUMBER OF NETS

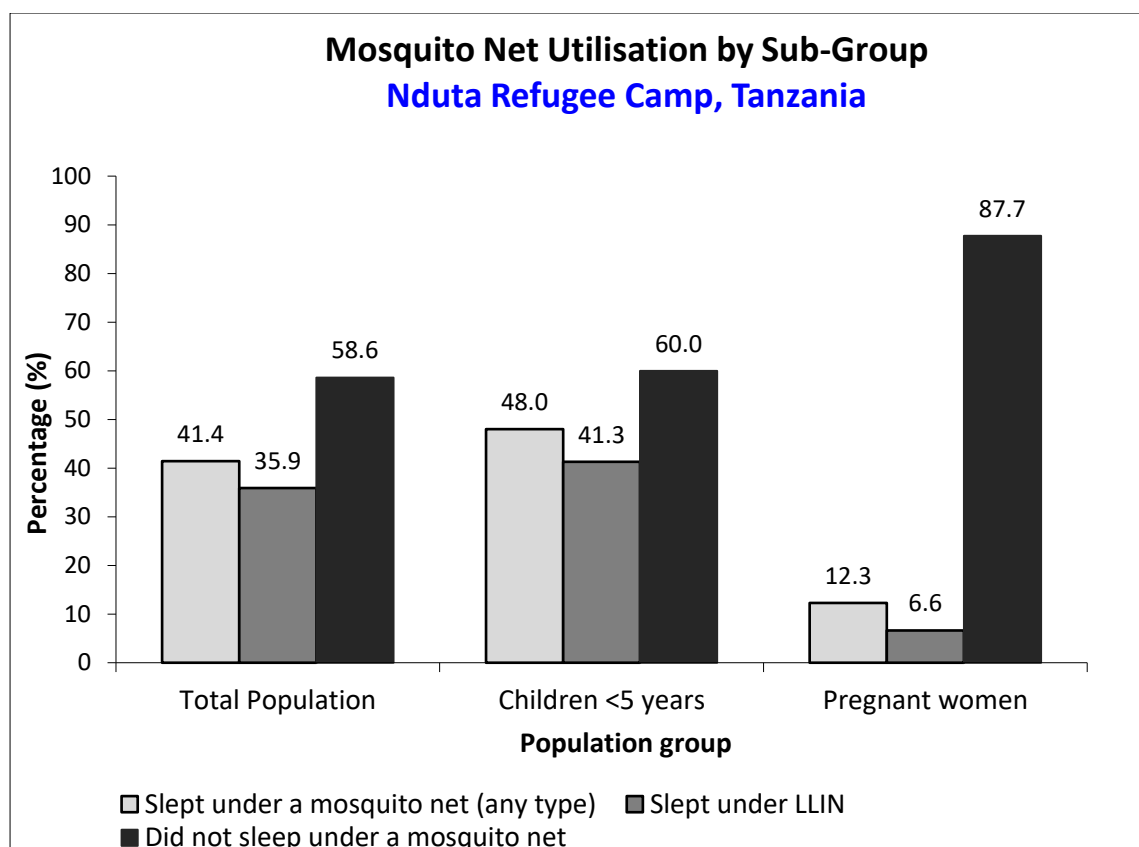
Average number of LLINs per household	Average number of persons per LLIN
1.4	12.4

Table 160: MOSQUITO NET UTILISATION.

	Proportion of total population (all ages)		Proportion of 0-59 months		Proportion of pregnant women	
	Total =1489	%	Total =475	%	Total=196	%
Slept under net of any type	617	41.4	228	48.0%	24	12.3%
Slept under LLIN	535	35.9	196	41.3%	13	6.6%

The proportion of household members (total, under five and pregnant women) who slept under either a net of any type or an LLIN is low **Table 160**. Only 41.4% of household members slept under a net of any type, a paltry 6.6% of the pregnant women slept under an LLIN, and 41.3% children under 5 slept under an LLIN. Overwhelming majority of the household residents (above 60%) are still not sleeping under nets [Figure 91](#).

Figure 95: Mosquito Net Utilisation by sub-group



4.13.4 Mosquito Net Coverage (MTENDELI CAMP)

Table 161 : MOSQUITO NET COVERAGE SAMPLING INFORMATION

Household data	Planned	Actual	% of target
Total households surveyed for mosquito net coverage	243	248	102%

Mosquito net ownership for the 248 households surveyed is shown in **Table 162 & Figure 96** below. Results indicate that the UNHCR target coverage of 80% coverage of LLINs is yet to be achieved with only 25.8% of the households owning a at least one LLIN, more or less the same prevalence as 2017 survey. The proportion of household members (total, under five and pregnant women) who slept under either a net of any type or an LLIN is likewise poor at only 22.2%; for Children & Pregnant woman, the prevalence of LLIN use is 20.5% & 17.7%, majority are not sleeping under mosquito net.

Average number of people per mosquito net is quite at 13.9 persons per LLIN against the recommended threshold of 2 persons per LLIN Table 163.

Table 162: HOUSEHOLD MOSQUITO NET OWNERSHIP

	Number/total	% (95% CI)
Proportion of total households owning at least one mosquito net of any type	78/248	31.5% (23.6 – 39.3)
Proportion of total households owning at least	64/248	25.8% (19.1 – 32.5)

Figure 96: HOUSEHOLD OWNERSHIP OF AT LEAST ONE MOSQUITO NET

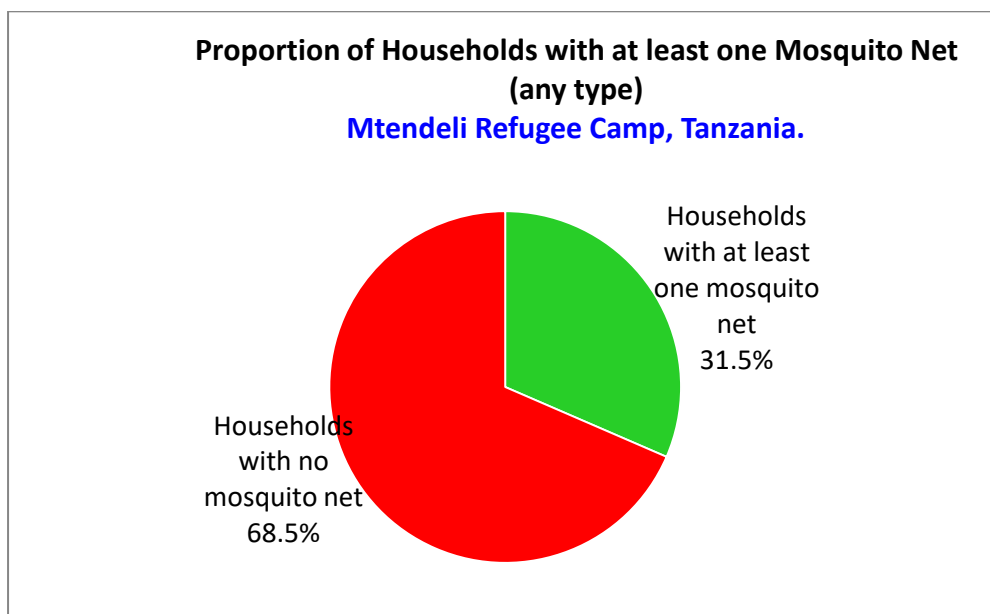


Figure 97 : HOUSEHOLD OWNERSHIP OF AT LEAST ONE LLIN

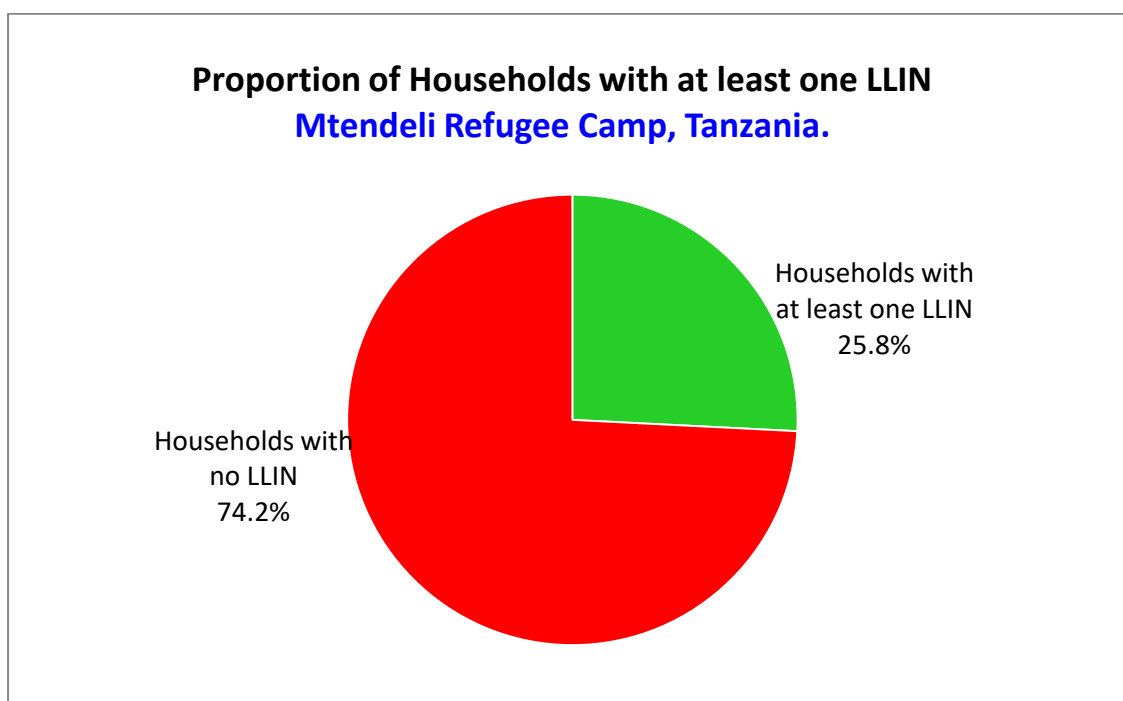


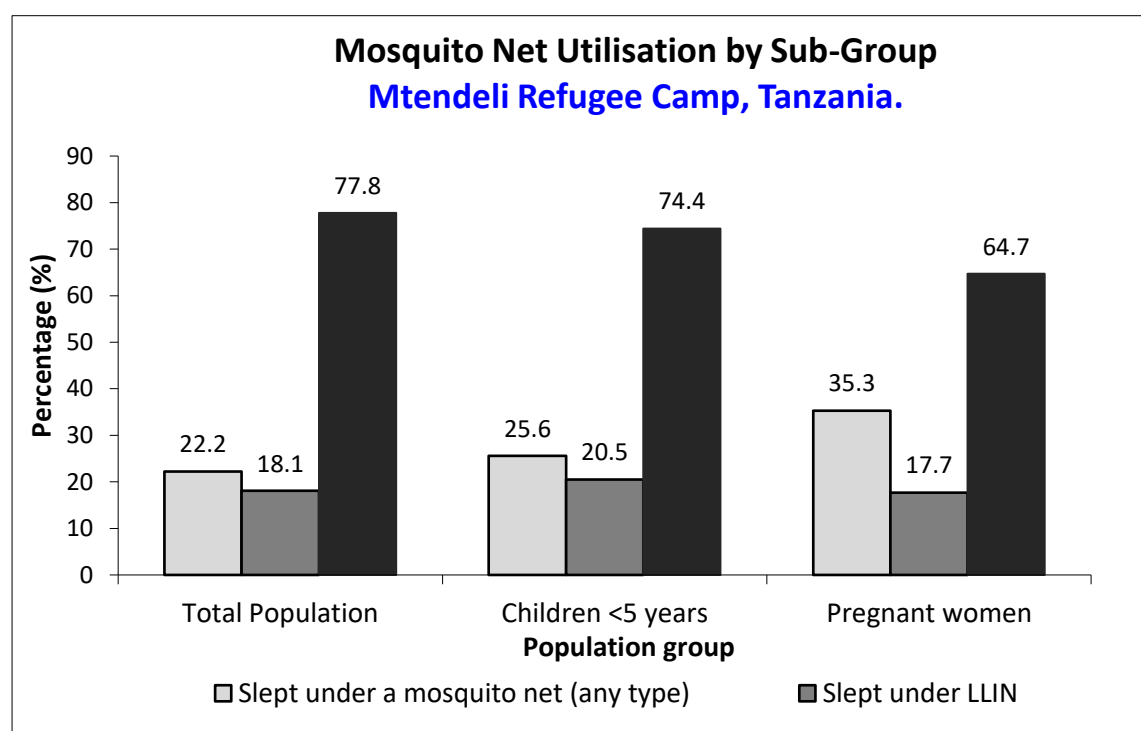
Table 163 : NUMBER OF NETS

Average number of LLINs per household	Average number of persons per LLIN
1.3	13.9

Table 164 : MOSQUITO NET UTILISATION.

	Proportion of total population (all ages)		Proportion of 0-59 months		Proportion of pregnant women	
	Total 1448	%	Total 469	%	Total 17	%
Slept under net of any type	321	22.2%	120	25.6%	6	35.3%
Slept under LLIN	262	18.1%	96	20.5%	3	17.7%

Figure 98 : MOSQUITO NET UTILISATION BY SUB-GROUP



5 Discussion

5.1 *Nutritional status of young children*

The overall findings of the nutritional status for refugees in Tanzanian Refugee Camps is within acceptable threshold UNHCR target of GAM & SAM prevalence of below 10% and below 2% respectively. Compared to 2017, malnutrition prevalence has reduced by a wide margin in all the camps; in particular there was statistically significant reduction in Nduta Camp with GAM prevalence reducing by nearly three times from 6.1% in 2017 to 2.3% in 2018 ($P=0.006$).

Prevalence of stunting in children 6-59 months remains above 40% critical threshold in all the camps. In Nduta Camp, Boys are statistically significantly more malnourished compared with girls with prevalence of 25.3% and 17.6% respectively ($P=0.006$).

5.2 *Programme coverage*

Coverage of Targeted Supplementary Feeding Programme for MAM (All criteria -Z-Score & MUAC) was below expected >90% in all the camps; Mtendeli 59.3%, Nduta 74.1%; Nyarugusu New Camp 57.0% and Nyarugusu Old Camp 61.1%. Estimation of SAM enrolment coverage in therapeutic feeding programme was not possible due to no cases of SAM children identified during SENS.

Measles and Vitamin A coverage is considerably improved in all the camps within the threshold of above 90% for vitamin A and above 95% for Measles.

Pregnant women attending antenatal care & the women attending ANC and receiving iron-folic acid pills at health facility was above 70% across the camps; this is relatively low since in a settlement it is expected to register 100% enrolment in the ANC programme.

5.3 *Anaemia in young children and women*

Anaemia prevalence in children (6 – 59 months) remains above critical public health threshold with prevalence over 40% within confidence interval across the camps; there was no statistical difference between 2017 and 2018 prevalence in all the camps. However, on age disaggregation, young age group 6-24 months children are statistically more anaemic compared to the older age group 24-59 months in all the camps: - Nyarugusu old Camp 66.9% & 47.5%; Nyarugusu New Camp 41.25 & 35.3% ($p=0.001$); Nduta Camp 47.4% & 31.9% ($P=0.000$); Mtendeli Camp 62.9% & 40.9% ($p=0.000$).

Anaemia prevalence among non-pregnant women (15 – 49 years) was however at medium public health significance hovering at around 30% in Nyarugusu Old Camp & Mtendeli; in Nyarugusu Camp, the prevalence of anaemia was at 22% and, in Nduta was 12.4% which is within low public health significance threshold. There was statistically significant improvement in prevalence in Nduta Camp from 2017 and 2018 from 28.4% to 12.4% ($P=0.000$).

5.4 *IYCF indicators*

Infant and Young Children Feeding (IYCF) practices have deteriorated in all the camps except Mtendeli camp where there was an upward and stable trend of all the indicators in 2018 as well as in 2017; Exclusive Breastfeeding (EBF) prevalence of 86.6%, while timely initiation of Breastfeeding (TBF) rate was 86.6%. Rates of exclusive breastfeeding among Burundian Infants is on a second-year downward trend from a high of 87.9% in 2016 to 72.2% in 2017 and 65.7% 2018; timely initiation of breastfeeding however remains stable above 70%. Nduta IYCF indicators are on the downward trend too with EBF rate of 81.2% in 2017 reducing to 71.7% in 2018; the same slight decreasing trend in timely TBF rate occurred.

Continued breastfeeding at one year was high in all the camps; however, continued breastfeeding at two years declines drastically indicating majority of women cease breastfeeding before the second year. Similarly, Introduction of solid, semi-solid or soft food at 6-8 months is high across the camps; the indicator is used to evaluate the introduction of complementary foods as per WHO recommendations.

Consumption of iron rich and fortified food among children has been consistently high; it would have been expected that prevalence of anaemia would be inversely proportional to the consumption of iron fortified & rich food; therefore, it could be an indication that the high anaemia prevalence in the camps is not related to diet per se, notwithstanding the low food diversity in the households; further in-depth assessment needs to be explored. Bottle feeding is negligible as to be an IYCF/public health concern.

5.5 Food security

Coverage of Ration card is high at nearly 100% in all the camps with negligible report of loss of card which was already reported and measures put in place to ensure that such households didn't miss their entitlements. Full ration was provided compared to the same time in 2017 where reduced ration was provided at 60%; consequently, the ration is reported to last more time compared to 2017 assessments: 21 days in Nyarugusu new camp, Nyarugusu Old camp 23.5 days; Nduta 24.5 days and Mtendeli 29.9 days out of the full cycle of 30 days. This compares favourably to an average of 17 days in 2017.

Encouragingly majority (95.5%) of the households in Nyarugusu old camp report the ration lasts 75% of the intended duration (22.3 days); while Nduta and Mtendeli, slightly over half of the households report the ration lasts 75 days; the figure is however low in Nyarugusu new camp where a paltry 22.9% of the households report the ration 75% of the duration last. This could be due to a number of reasons including, sharing and selling of rations for non-food items or other food items not provided, or additionally, as the ration is calculated to provide an average of 2100kcal, male dominated households are likely to run out more quickly as their average daily energy requirement is greater than this. Additionally, beneficiaries may consume more than the intended 2100kcal in the first few days, meaning that it runs out sooner than intended.

The mean HDDS was low with households eating an average of 4.9 out of a total of 12 food groups, this means that households are consuming around one third of the total number of food groups. Low score reflects limited dietary diversity in the sampled households which needs to be addressed. This may be related to households' limited economic power to purchase items, since the HDDS is more or less the same as previous years when the markets were well functioning with a variety of items available as compared to 2018 where all income generating activities are effectively banned including closure of markets as well as money transfer services.

The most common negative coping strategies were borrowing cash, food or other items without

interest with over 70.0% in all the camps except in Mtendeli where 57% of households reported using either one of these strategies. The next most common strategy was reduction in the number of meals per day and/or reduce meal size report by over 50% of the camps' households.

As sign of a not so rosy situation, over half of households reported to have begged as well as engaging in risky activities (prostitution, smuggling, brewing & sale of the same) a proxy indicator of severe form of coping and often indicates destitution; this could be a result of the effective ban on all income generating activities. It should be noted however, questioning on coping strategies is a sensitive topic, and some households may have been hesitant to share, which needs to be considered during interpretation. Nevertheless, results indicate that greater options for non-risky coping strategies need to be investigated.

5.6 **WASH**

Poor water, sanitation and hygiene have serious consequences for health and nutritional status, especially among the most vulnerable population groups. Contamination of water sources is a major cause of diarrhoea, but also other major diseases such as cholera, schistosomiasis, and trachoma.

An improved drinking water source was used by virtually all the households in the 4 camps (66% to 100% coverage). It is assumed that if a household uses an improved drinking water source they are more likely to be drinking clean water. Whoever, secondary contamination of water is more likely that not with only 40% of the households using a covered or narrow necked container to store their drinking water, which would have ensured the water is far less likely to be contaminated as opposed to having open containers without a lid. Although contamination can still occur, for example when removing water from the container with unwashed hands or not regularly cleaning the container, these aspects of water and sanitation were not investigated as part of this survey.

Hygiene and health are compromised by a lack of water and UNHCR minimum water quantity standard is 20 lpppd (or 15 lpppd according to Sphere standards). The average water usage in lpppd was 25.3 in Nduta, Mtendeli 26.3 litres, Nyarugusu New camp 27.3 litres & Nyarugusu Old Camp 31.3 litres. In addition, over 60% of all households across the Camps collected ≥ 20 lpppd in the previous day.

In terms of water satisfaction, Mtendeli recorded the highest water satisfaction with over 93% of the households giving a positive response, an excellent improvement compared with 2017 assessment where Mtendeli fared badly in water accessibility due to the challenges of low water table and poor yield of boreholes. Nduta water satisfaction rate was 73%, Nyarugusu new camp 61% and Nyarugusu old camp the last at 56.9%.

Safe disposal of excreta is an important preventative measure against the contamination of water supplies or the food chain. It is particularly important to prevent defecation near water banks and agricultural land (WHO, 2011). Assessment of the use of improved vs non-improved latrines (whereby improved means simple pit latrine with floor slab, shared by a maximum of two households), indicated that only less than 10% of the households were using improved excreta disposal facilities in three camp, with only Nyarugusu Old Camp where the majority, 65.45% of the households have access to improved sanitation facility while 33.0% report using unimproved facility. In the other camps majority use unimproved facilities: - Nyarugusu Old Camp 79.7%, Nduta 67.5 and Mtendeli 57.8%. Unimproved/Communal toilets are more difficult to keep clean due to little accountability of the users, thus increasing risk of contamination.

The safe disposal of children's faeces is of particular importance because children's faeces are the most likely cause of faecal contamination to the immediate household environment. "Safe" is understood to mean disposal in a safe sanitation facility or by burying. Safe disposal of child faeces was carried out in the vast majority of households with children under three years old.

5.7 Mosquito net coverage

Results of mosquito net ownership and utilisation has been generally poor over the 3 years assessment has been carried out. Majority of households neither owned at least one net of any type, or an LLIN, nor reached UNHCR's target coverage for LLINs of 80%; Nyarugusu Old camp ownership of LLIN was the highest at 65.5% of the households; approximately half of the households in Nyarugusu New Camp and Nduta, while Mtendeli tails off at only 25.8%. Long-lasting insecticidal nets are preferable as they are designed to maintain their biological efficacy against vector mosquitoes for at least 3 years (WHO, 2007).

Subsequently, the number of persons per LLIN is suboptimal ranging from 5.4 persons per LLIN in Nyarugusu Old Camp to a high of 13.9 persons per LLIN in Mtendeli; this is abysmal compared to the UNHCR recommended threshold of 2 persons per LLIN.

In recent years, focus has shifted to universal coverage of mosquito net utilisation rather than just on under-fives, due to the need for protection for the general population. In Nyarugusu old Camp, approximately 47% of total population reported using LLIN; while approximately 30% in Nyarugusu new camp and Nduta Camp. The coverage in Mtendeli is however quite low at only 18.1%. On the vulnerable groups, more than half of children under five and pregnant woman sleep in an LLIN in Nyarugusu Old Camp; Nyarugusu New Camp 39.6% & 40% respectively. The usage of LLIN in Nduta is much less with around 41.3% of children under five and only 6.6% of pregnant woman having slept in LLIN; the same suboptimal situation is reflected in Mtendeli where only 20.5% and 17.7% children under five and pregnant woman respectively slept in an LLIN.

6 Conclusions

Acute malnutrition has reduced across the camps; whoever the gains need to be sustained through improved coverage of relevant nutrition programmes. Stunting among children 6-59 months has whoever consistently remains above the critical threshold, as well as prevalence of Anaemia in children 6-59 months. Age disaggregation show younger age group 6-24 months are statistically significantly more anaemic compared to the older age group; there is need to further investigate the possible causative reasons, especially given the fact that prevalence of anaemia among woman has improved across the camps to low or medium public health thresholds, in most cases statistically significant improvement compared to the previous year results. In addition, children above 24 months are targeted for MNP since it is expected younger children would be able to meet iron and other nutrients requirements through the blanket distribution of CSB++.

Coverage of public health programmes e.g. Vitamin A supplementations & measles vaccinations are relatively good; other programmes could piggyback on it this high coverage e.g. deworming, and other public health programmes.

IYCF indicators are on the downward trend; there is need for concerted effort on use of more innovative strategies e.g. scaling up of mother to mother support groups as well other strategies that leads to improved behaviour change in the long term.

Access to improved water sources is universal across the camps; however safe storage within the households remains a challenge. Sanitation and personal hygiene requires urgent improvement as well as improving access to improved sanitation facilities.

Mosquito net ownership and usage remains low; it the missing link in malaria prevention as well as contributing to prevention of vector borne anaemia especially among the vulnerable groups.

Food security situation in the camp is stable; however, diet diversity remains a challenge as well as increasing use of destructive coping mechanisms, an indication of subtle dire situation of some households; the situation is compound by effective ban on income generating activities including money transfer services; kitchen gardens promotion and wide adoption of the same could fill the gap.

7 Recommendations and priorities

7.1 Short term Recommendations

Nutrition & Food Security

- WFP to share monthly monitoring data for stunting which is done during BSFP distribution especially on the use of MNP for children 24-59 months.
- UNHCR and WFP to harmonize and integrate all the food and Nonfood distributions including GFD and SFP to occur concurrently to give ample time for mothers to take care of their children.

Health

- Improve on deworming coverage biannually for children above 12 months; deworming indicator to be included in the subsequent SENS.
- UNHCR, UNICEF and UNFPA to discuss and agree on possibility of distributing the mosquito net to children upon receiving measles vaccination when 9 month per national guideline.

WASH

- Improve on water availability in Mtendeli camp.
- WASH partners to work together with health partners to educate the community and incorporate demonstrations on issues related to hygiene and sanitation; includes personal hygiene, household cleanliness and promotion of hand washing in Nduta and Mtendeli camp.
- WASH partners to ensure availability of toilet hand washing containers in all the houses and increase toilets at least one toilet per two families.
- To cover all the filled-up toilets and replace with the new once.

7.2 Long term Recommendations

Health

- Health partners to prepare and conduct KAP survey on the family planning issues.
- There is need for a formative assessment to see what are the underlying factors that contribute to declining of IYCF indicators and an efficient follow up mechanism on households at community level and reporting of performance progress for accountability that is lacking
-

Food Security and Nutrition

- Strengthen support and set of kitchen garden to improve of food diversity; this could be linked to IYCF activities especially mother to mother support groups.
- UNHCR to hold bilateral discussion with PLAN and TRCS Mtendeli to discuss the modality of distributing infant formula to orphans' infants.

NFI/Shelters

- Conduct the need assessment of the community in terms of shelters especially Mtendeli and Nduta camp.

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11. Grellety and Golden BMC Nutrition (2016) Weight-for-height and mid-upper-arm circumference should be used independently to diagnose acute malnutrition: policy implications

9 Acknowledgements

- A. List all government departments, International agencies, International NGOs, National NGOs and other organizations that supported or participated in the survey.
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 - UNICEF
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 - Ministry of Health Community Development Gender Elderly and Children (MOHCDGEC)
- B. List the individuals involved in the survey

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Team leaders

1. ELIBARIKI MNZAVA	World Vision
2. VASCO CHUSI	TRCS-Ny
3. JENIFER RODEN MGENI	TRCS- Mtendeli
4. JAMES KIMAMBO	TRCS-Ny
5. JAMES NGALABA	Kasulu District council
6. FAUSTA AUGUST	WV

Interviewers

1. RAJAB IDD KIGODA	TRCS-Mt
2. LADISLAUS CHANDA	TRCS- Mtendeli
3. IMANI KILATTO YUNGE	TRCS- Mtendeli
4. ALPHONCE BISHIRANGONGA	Kakonko District council
5. RAMDHANI HUSEIN BERNARD	TRCS-Nyarugusu
6. TUMAINI JACKSON MUNA	kibondo DC

Haemocue operator (Medical Background)

1. Juvenal Nzabimana	TRCS-Nyarugusu
2. Kashindi Msambya	TRCS-Nyarugusu
3. Claude Hakizimana	TRCS-Nyarugusu
4. Donald Ebuela	TRCS-Nyarugusu
5. Shimirimana Gervas	TRCS-Nyarugusu
6. Ngena Lubunga	TRCS-Nyarugusu
7. Désire Nsengiyumya	MSF Nduta
8. MUNEZERO Jacqueline	MSF Nduta
9. Gideon BARUTWANAYO	MSF Nduta
10. Désiré NIYUKURI	MSF Nduta
11. Moise IRANKUNDA	MSF Nduta
12. HAKIZIMANA Daniel	MSF Nduta
13. HATUNGIMANA ONESPHORE	TRS Mtendeli

14. GIHIMBILE DENIS	TRS Mtendeli
15. NDAYISHIMIYE JECKONIA	TRS Mtendeli
16. CHARLES HIHUMBUTU	TRS Mtendeli
17. CONGELA ALEX	TRS Mtendeli
18. BICHUMI PASCAL	TRS Mtendeli

Measures

1. Balebanga Makamba	TRCS-Nyarugusu
2. Irakoze Deborah	TRCS-Nyarugusu
3. Ndabahimana Pascal	TRCS-Nyarugusu
4. Mwajuma Riziki	TRCS-Nyarugusu
5. Kyaba Mbaku	TRCS-Nyarugusu
6. Niyokwizera Ezekiel	TRCS-Nyarugusu
7. Niyomukunzi Jackline	TRCS-Nyarugusu
8. Nikole Katherine	TRCS-Nyarugusu
9. Nkundabera Norbert	TRCS-Nyarugusu
10. Mzuri Kasimbi	TRCS-Nyarugusu
11. Samson Ndalama	TRCS-Nyarugusu
12. Nduwayo Onesphor	TRCS-Nyarugusu
13. Nshimirimana Balthazar	MSF Nduta
14. Manampa Elia	MSF Nduta
15. Bukuru fidele	MSF Nduta
16. Ndayishimiye Francois	MSF Nduta
17. Niyonsenga Chadia	MSF Nduta
18. Ndayisaba Judith	MSF Nduta
19. Nkurunziza Ezechiel	MSF Nduta
20. Nigaba Emmanuel	MSF Nduta
21. Manirakiza Nesto	MSF Nduta
22. Iragaba Jean de Dieu	MSF Nduta
23. Hatungimana Eric	MSF Nduta
24. Manirakiza Pascal	MSF Nduta
25. RIVUZIMANA SCHADRACK	WVI Mtendeli
26. TOYI DESIRE	WVI Mtendeli
27. NSHIMIRIMANA JOHN	WVI Mtendeli
28. NSENGIYUMVA AUGUSTIN	WVI Mtendeli
29. TOYI YVETE	WVI Mtendeli
30. MANIRAMBONA DIANE	WVI Mtendeli
31. NIYONKURU VERONICA	WVI Mtendeli
32. NGENDAKUMANA JOHN	WVI Mtendeli
33. BANDIYETUYAGA JAMAL	WVI Mtendeli
34. TUWENAIMAN JAIROSE	WVI Mtendeli
35. NIYONZIMANA SYPRIEN	WVI Mtendeli
36. BYAMUNGU LODRICK	WVI Mtendeli

10 Appendices

Appendix 1: SMART Plausibility Check (PC) Report

Overall data quality

Nyarugusu Old Refugee Camp

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Flagged data (% of out of range subjects)	Incl	%	0-2.5 0	>2.5-5.0 5	>5.0-7.5 10	>7.5 20	0 (0.7 %)
Overall Sex ratio (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<=0.001 10	0 (p=0.121)
Age ratio(6-29 vs 30-59) (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<=0.001 10	0 (p=0.220)
Dig pref score - weight	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	0 (3)
Dig pref score - height	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	2 (8)
Dig pref score - MUAC	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	0 (6)
Standard Dev WHZ .	Excl	SD	<1.1 and >0.9 0	<1.15 and >0.85 5	<1.20 and >0.80 10	>=1.20 or <=0.80 20	0 (0.95)
Skewness WHZ	Excl	#	<±0.2 0	<±0.4 1	<±0.6 3	>=±0.6 5	1 (-0.30)
Kurtosis WHZ	Excl	#	<±0.2 0	<±0.4 1	<±0.6 3	>=±0.6 5	0 (0.16)
Poisson dist WHZ-2	Excl	p	>0.05 0	>0.01 1	>0.001 3	<=0.001 5	1 (p=0.016)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	4 %

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

Nyarugusu New Camp

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Flagged data (% of out of range subjects)	Incl	%	0-2.5 0	>2.5-5.0 5	>5.0-7.5 10	>7.5 20	0 (0.9 %)
Overall Sex ratio (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<=0.001 10	0 (p=0.138)
Age ratio(6-29 vs 30-59) (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<=0.001 10	2 (p=0.076)
Dig pref score - weight	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	0 (3)
Dig pref score - height	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	2 (8)
Dig pref score - MUAC	Incl	#	0-7 0	8-12 2	13-20 4	> 20 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 (1.01)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6		
			0	1	3	5		0 (-0.10)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6		
			0	1	3	5		0 (-0.14)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001		
			0	1	3	5		0 (p=0.417)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25		4 %

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

Nduta Refugee Camp

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Flagged data (% of out of range subjects)	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
			0	5	10	20	0 (1.0 %)
Overall Sex ratio (Significant chi square)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
			0	2	4	10	0 (p=0.416)
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=0.005)
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 (7)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	0 (5)
Standard Dev WHZ	Excl	SD	<1.1	<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 (0.94)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	0 (0.06)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	1 (0.31)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	0 (p=0.108)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	5 %

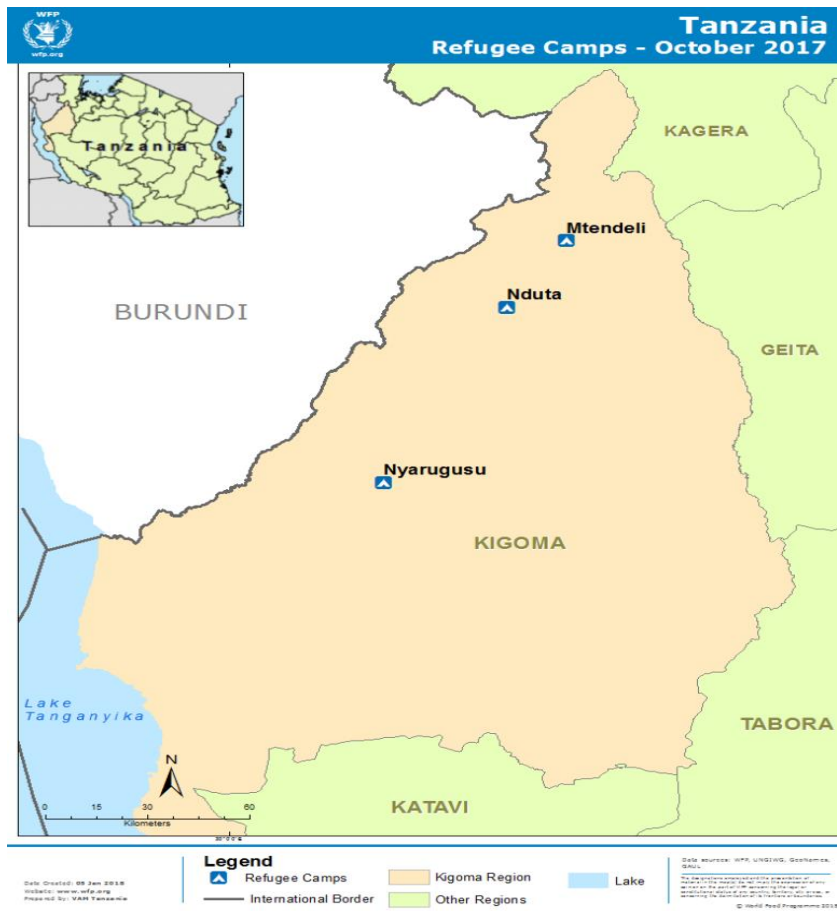
The overall score of this survey is 5 %, this is excellent.

Mtendeli Refugee Camp

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Flagged data (% of out of range subjects)	Incl	%	0-2.5 0	>2.5-5.0 5	>5.0-7.5 10	>7.5 20	0 (1.2 %)
Overall Sex ratio (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<=0.001 10	4 (p=0.007)
Age ratio(6-29 vs 30-59) (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<=0.001 10	0 (p=0.158)
Dig pref score - weight	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	0 (3)
Dig pref score - height	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	0 (6)
Dig pref score - MUAC	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	0 (7)
Standard Dev WHZ .	Excl	SD	<1.1 and	<1.15 and	<1.20 and	>=1.20 or	0 (1.01)
.	Excl	SD	>0.9 0	>0.85 5	>0.80 10	<=0.80 20	
Skewness WHZ	Excl	#	<±0.2 0	<±0.4 1	<±0.6 3	>=±0.6 5	0 (-0.02)
Kurtosis WHZ	Excl	#	<±0.2 0	<±0.4 1	<±0.6 3	>=±0.6 5	1 (0.37)
Poisson dist WHZ-2	Excl	p	>0.05 0	>0.01 1	>0.001 3	<=0.001 5	0 (p=0.603)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	5 %

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

Appendix 2: Location of the camps in Kigoma Region



Appendix 3: Questionnaire

Tanzania Nutrition survey Aug/Sept 2017: WATOTO WA MIEZI 6-59 VIPIMO VYA LISHE, AFYA NA UPUNGUFU WA DAMU: dodoso 1 kwa kila “mkusanyiko” /ukanda /eneo (DODOSO HILI LIFANYIKE KWA WATOTO WENYE UMRI KATI YA MIEZI 6 NA 59)

Ukanda/Eneo: _____ Kijiji: _____ Namba ya Mtaa /Barabara: _____

Tarehe ya usaili (siku/mwezi/mwaka):					Namba ya “mkusanyiko” (kwa tafiti za “cluster” tu)						Namba ya timu			
_ _ / _ _ / _ _ _ _					_ _						_ _			
MT1	MT2	MT3	MT4	MT5	MT6	MT7	MT8	MT9	MT10	MT11	MT12	MT13	MT14	MT15
Utambulisho	Nyumba	Ridhaa 1=Ndiyo 2=Hapana 3=Hayupo	Jinsi (me/ke)	Kuzaliwa* (trh/mwezi/mwaka)	Umri** (miezi)	Uzito (kg) ±100g	Height (sm) ±0.1sm	Uvimbe (y/n)	Mzingo wa kati wa Mkono (mm)	Mtoto anahudh uria 1=SFP 2=TFP 3=None	Surua 1=Ndiyo kadi 2= Ndiyo kumbuka 3=Hapana/sijui	Vit. A ndani ya miezi 6 iliyopita (ONYESHA VIDONGE) 1=Ndiyo kadi 2= Ndiyo kumbuka 3=Hapana/sijui	Kuhara katika wiki 2 zilizopita 1=Ndiyo 2=Hapana 3=Sijui	Kiasi cha Da mu (g/L au g/d L)
01				/ /										
02				/ /										
03				/ /										
04				/ /										
05				/ /										
06				/ /										
07				/ /										
08				/ /										

* tarehe halisi ya kuzaliwa uchukuliwe tu kutoka katika nyaraka / kadi za hospitali zinazoonyesha siku, mwezi na mwaka wa kuzaliwa. Inaandikwa tu kama kuna vyaraka zenye uthibitisho /kadi za hospitali wa umri wa mtoto; hata kama mama anakumbuka tarehe halisi, bado haitoshi. **Acha wazi kama hakuna nyaraka za uthibitisho wa umri.**

**kama hakuna nyaraka / kadi za hospitali za uthibitisho wa umri, kadiria umri kwa kutumia kalenda ya matukio na majira ya mwaka. Kama kuna nyaraka za uthibitisho /kadi za hospitali wa umri andika umri katika miezi kutoka tarehe ya kuzaliwa

Tanzania Nutrition survey Aug/Sept 2017: UPUNGUFU WA DAMU KWA WANAWAKE: dodoso 1 kwa kila “mkusanyiko” /ukanda /eneo (DODOSO HILI LIFANYIKE KWA WANAWAKE WENYE UMRI KATI YA MIAKA 15 NA 49 KATIKA NYUMBA ILIYOCHAGULIWA)

Ukanda/Eneo: _____

Kijiji: _____

Namba ya Mtaa /Barabara: _____

Tarehe ya usaili (siku/mwezi/mwaka): _ _ / _ _ / _ _ _ _ _				Namba ya “mkusanyiko” (kwa <i>tafiti za “cluster” tu</i>) _ _ _		Namba ya timu _ _	
MM1	MM2	MM3	MM4	MM5	MM6	MM7	MM8
Utambulis ho	Nyumba	Ridhaa 1=ndiyo 2=hapana 3=hayupo	Umri (miaka)	Una ujauzito? 1=ndiyo 2=hapana (pima kiasi cha damu) 8=sijui (pima kiasi cha damu)	Umeandikishwa kwenye kliniki ya afya ya mama na mtoto? 1=Ndiyo 2=Hapana 3=Sijui	Je unapokea vidonge vya kuongeza damu vinayotolewa kliniki? (ONYESHA VIDONGE)? 1=Ndiyo (Komea hapa) 2=Hapana (Komea hapa) 8=Sijui (Komea hapa)	Kiasi cha damu (g/L au g/dL)
01							
02							
03							
04							
05							

Na.	SWALI	ALAMA YA JIBU		
KIPENGELE UW1				
V1	Jinsia	Kiume.....1 Kike2	_	
V2	Tarehe ya kuzaliwa ANDIKA KUTOKA KATIKA NYARAKA ZA UTHIBITISHO (KADI YA HOSPITALI YA KUZALIWA KWA MTOTO)WA KUZALIWA ACHA WAZI KAMA HAKUNA NYARAKA ZA UTHIBITISHO WA KUZALIWA	Siku/Mwezi/Mwaka..... _ _ / _ _ / _ _ _ _ _		
V3	Umri wa mtoto katika miezi	KAMA HAKUNA NYARAKA ZA UTHIBITISHO /(KADI YA HOSPITALI YA KUZALIWA KWA MTOTO) WA UMRI WA MTOTO, KADIRIA UMRI KWA KUTUMIA KALENDA YA MATUKIO NA MAJIRA YA MWAKA. KAMA KUNA NYARAKA ZA UTHIBITISHO (KADI YA HOSPITALI YA KUZALIWA KWA MTOTO) WA UMRI ANDIKA UMRI KATIKA MIEZI KUTOKA TAREHE YA KUZALIWA	_ _	
V4	Je [taja jina la mtoto] aliwahi kunyonya?	Ndio1 Hapana.....2 Sijui8	_ KAMA JIBU NI 2 AU 8 NENDA UW7	
V5	Ilichukuwa muda gani (taja jina la mtoto) kuanza kunyonya kwa mara ya kwanza alipozaliwa	Chini ya saa moja1 Kati ya saa 1 hadi 232 Zaidi ya saa 243 Sijui8	_	
V6	Je (taja jina la mtoto) alinyonya jana mchana au usiku?	Ndiyo.....1 Hapana.....2 Sijui8	_	
KIPENGELE UW2				
V7	<p>Sasa ningependa kukuuliza maswali kuhusu vyakula vya majimaji ambavyo [taja jina la mtoto] alikula jana mchana au usiku. Ningependa kujua kama mtoto wako ulimpa chakula cha namna hiyo hata kama kilichanganywa na vyakula vingine. Je, jana mchana au usiku [taja jina la mtoto] alikula vyakula vya namna hiyo kama;</p> <p>ULIZA KUHUSU KILA CHAKULA CHA MAJIMAJI. KAMA ALIPEWA KITU HICHO, ZUNGUSHIA '1'. KAMA HAKUPEWA KITU HICHO, ZUNGUSHIA '2'. KAMA MLEZI HAJUI, ZUNGUSHIA '8'. KILA MSTARI LAZIMA UWE NA ALAMA.</p> <p>INGIZA MAJINA YA VITU KATIKA NAFASI YA MAANDISHI YALIYOWEKEWA KIVULI CHA KIJIVU KAMA YANAVYOTUMIKA MAHALI HAPO</p> <p>MAANDISHI YALIYOLALIA KULIA YANATAKIWA KUFUTWA KATIKA DODOSO LA MWISHO LITAKALOTUMIKA KWA UTAFITI – ORODHA ILIYOTOLEWA HAPO CHINI NI MFANO.</p>			
	7A. Maji yasiyochanganywa na kitu chochote	7A.....1	2	8
	7B. Maziwa ya kopo ya watoto wachanga (Infant formula), kwa mfano?	7B.....1	2	8

	[Lactogen , Nan , and S26]		
	7C. Maziwa ya kopo, ya unga au ya maji yenye asili ya wanyama (Mbuzi au ngombe), kwa mfano? [maziwa ya unga kwa mfano Nido..... , maziwa ya pakiti kama tanga fresh ,]	7C.....1 2 8	
	7D. Maji ya matunda ama juici kama juici freshi ama za dukani , kwa mfano? [Azam , blackcurrant ,soda]	7D.....1 2 8	
	7E. Supu /mchuzi	7E.....1 2 8	
	7F. Maziwa ya kugandishwa /mtindi.(sour milk or yorgurt)	7F.....1 2 8	
	7G. Uji mwepesi,	7G.....1 2 8	
	7H. Chai au kahawa ya maziwa	7H.....1 2 8	
	7I. Vyakula vyote vya majimaji vinavyo patikana hapa, kwa mfano? [. soda, vinywaji vitamu vingine, vinywaji kutoka katika mitishamba, maji matamu ya chupa ndogo, chai isiyo na maziwa, kahawa isiyo na maziwa, vinywaji vya asili]	7I.....1 2 8	
V8	Je, jana mchana au usiku [taja jina la mtoto] alikula chakula kigumu au laini (kilichopondwapondwa)	Ndiyo.....1 Hapana.....2 Sijui.....8	__
KIPENGELE UW3			
V9	Je jana mchana au usiku [taja jina la mtoto] alinyonya kupitia chupa au vyombo bandia vya kunyonyeshea watoto?	Ndiyo.....1 Hapana.....2 Sijui.....8	__
KIPENGELE UW4			
V10	MTOTO ANA UMRI KATI YA MIEZI 6 – 23? REJEA UW2/UW3	Ndiyo.....1 Hapana.....2	__ KAMA JIBU NI 2 KOMEA HAPA
V11	<p>Nataka nikuulize kuhusu vyakula fulani ambavyo [taja jina la mtoto] anaweza kuwa alikula. Ningependelea kujuwa kama mtoto wako jana mchana au usiku alikula vyakula vya majimaji hata kama vyakula hivyo vilichanganywa na vyakula vingine kwenye mlo wake kama ifuatavyo;</p> <p>ULIZA KUHUSU KILA KITU. KAMA ALIPEWA KITU HICHO, ZUNGUSHIA '1'. KAMA HAKUPEWA KITU HICHO, ZUNGUSHIA '2'. KAMA MLEZI HAJUI,ZUNGUSHIA '8'.KILA MSTARI LAZIMA UWE NA ALAMA.</p> <p>INGIZA MAJINA YA VITU KATIKA NAFASI YA MAANDISHI YALIYOWEKEWA KIVULI CHA KIJIVU KAMA YANAVYOTUMIKA MAHALI HAPO.</p> <p>MAANDISHI YALIYOLALIA KULIA YANATAKIWA KUFUTWA KATIKA DODOSO LA MWISHO LITAKALOTUMIKA KWA</p>		

UTAFITI – ORODHA ILIYOTOLEWA HAPO CHINI NI MFANO. KAMA JAMII YA VYAKULA VYENYE MADINI YA CHUMA (11A – 11H) HAPO KATIKA ENEO HILO, FUTA KWENYE DODOSO LAKINI TUNZA NAMBA ZA MASWALI KAMA ZILIVYOKUWA NA USIBADILISHE			
		Ndy	Hpn Sij
11A .NYAMA (kwa mfano ya <i>Ngo'mbe, mbuzi, kondoo, nguruwe, sungura, kuku, bata, maini, figo, moyo</i>) na samaki.	11A.....	1	2 8
11B. Mchanganyo wa soja na unga wa mahindi [CSB+]	11B.....	1	2 8
11C. Mchanganyo wa soya na unga wa mahindi [CSB++] ONYESHA MFUKO AU KIFUNGASHIO)	11C.....	1	2 8
11D. <i>Plumpy'Nut®</i> , <i>eeZeePaste™</i>) (ONYESHA MFUKO AU KIFUNGASHIO)	11D.....	1	2 8
11E. MAZIWA YA KOPO YA WATOTO WACHANGA TU YALIYOONGEZEWA MADINI YA CHUMA YANAYOPATIKANA HAPO] (<i>mf. Nan, S26 infant formula</i>)	11G.....	1	2 8
11F. CHAKULA CHOCHOTE KIGUMU, CHEPESI AU LAINI KILICHOONGEZEWA MADINI YA CHUMA KWA AJILI YA WATOTO WACHANGA KINACHOPATIKANA HAPO AMBACHO NI TOFAUTI NA KILE KINACHOGAWIWA NA TUMIA MAJINA YALIYOZOELEKA] (<i>mf. Cerelac, Weetabix</i>).	11H.....	1	2 8

Tanzania Nutrition survey Aug/Sept 2017: ULISHAJI WA WACHANGA NA WATOTO WADOGO (UWWW): dodoso 1 kwa kila “mkusanyiko” /ukanda /eneo (DODOSO HILI LIFANYIKE KWA MAMA AU MLEZI AMBAYE ANAWAJIBU WA KUMLISHA MTOTO NA MTOTO AWE NA UMRI KATI MIEZI 0 NA 23)

Ukanda/Eneo:_____ Kijiji:_____ Namba ya Mtaa /Barabara:

Tarehe ya usaili (siku/mwezi/mwaka):	Namba ya “mkusanyiko” (kwa tafiti za “cluster” tu)	
_ _ / _ _	_ _	
Namba ya timu	Namba ya utambulisho	Namba ya Nyumba
_	_ _ _	_ _ _

Tanzania Nutrition survey Aug/Sept 2017: MAJI NA USAFI WA MAZINGIRA: dodoso 1 kwa kila “mkusanyiko-cluster”/ukanda /eneo (DODOSO HILI LIFANYIKE KWA MKUU WA KAYA AU, MWANAKAYA MWINGINE AMBAYE NI MTU MZIMA KAMA MKUU WA KAYA HAYUPO

Ukanda/Eneo: _____ **Kijiji:** _____ **Namba ya Mtaa /Barabara:** _____

Tarehe ya usaili (siku/mwezi/mwaka):	Namba ya “mkusanyiko” (kwa tafiti za “cluster” tu)
_ _ / _ _ / _ _ _ _ _	_ _
Namba ya timu	Namba ya Nyumba
_	_ _ _

Na.	SWALI	ALAMA YA JIBU
KIPENGELE MU1		
U1	Ni watu wangapi wanaokaa katika kaya hii na waliolala katika nyumba hii jana usiku?	_ _
U2	Ni kipi chanzo kikuu cha maji ya kunywa mnachokitegemea katika kaya hii? PATA ORODHA YA ENEO HUSIKA KABLA YA UTAFITI KUANZA UNAPOANDAA ORODHA HAKIKISHA UNATUNZA ALAMA ZA MAJIBU KAMA ZILIVYO NA USIBADILISHE. USISOME MAJIBU CHAGUA JIBU MOJA TU	Maji ya bomba (mtaani)01 Maji ya mvua (kuvuna)02 Gari la maji la UNHCR03 Chemchem isiyo na ulinzi04 Maji ya chupa (kiwandani).....05 Maji ya bwawani au mtoni06 Chanzo kingine.....96 Sifahamu98
U3	Je unaridhika na upatikanaji wa maji? SWALI HILI LINAZINGATIA UPATIKANAJI WA MAJI YA KUNYWA	Ndiyo.....1 Hapana.....2 Kiasi.....3 Sijui8
U4	Sababu gani hasa inayokufanya usiridhike na huduma ya maji? PATA ORODHA YA ENEO HUSIKA KABLA YA UTAFITI KUANZA USISOME MAJIBU CHAGUA JIBU MOJA TU	Hayatoshi01 Yakusubiria kwa kupanga mstari02 Yanapatikana mbali03 Hayapatikani muda wote.....04 Ladha mbaya.....05 Maji yana uvuguvugu.....06 Hayana ubora/sio mazuri07 Yakulipia.....08 Sababu nyingine96 Sijui98

U5	Nyumba hii inatumia choo cha aina gani? PATA ORODHA YA ENEO HUSIKA KABLA YA UTAFIGI KUANZA UNAPOANDAA ORODHA HAKIKISHA UNATUNZA ALAMA ZA MAJIBU KAMA ZILIVYO NA USIBADILISHE. USISOME MAJIBU CHAGUA JIBU MOJA TU	Choo cha shimo na kilicho sakafiwa na bomba la hewa chafu 01 Choo cha shimo kisicho sakafiwa/kikavu/(traditional latrine)...02 Hakuna/uwanjani/vichakani/mifuko ya plastiki..... 03	__ __ KAMA JIBU NI 10 NENDA MU7
U6	Je! Ni kaya ngapi zinazochangia choo hiki? HII NI PAMOJA NA KAYA INAYOTAFITIWA	ANDIKA IDADI YA KAYA KAMA ZINAFAHAMIKA (REKODI 96 KAMA NI CHOO CHA UMMA, 98 KAMA HAIJULIKANI) MSIMAMIZI CHAGUA MOJA TU Hakichangiwi (Kaya 1)1 Cha kuchangia (Kaya 2)2 Cha jumuiya (Kaya 3 na zaidi)3 Cha umma (sokoni, kliniki/zahanati n.k) .4 Sijui8	__ __ Kaya __
U7	Kuna watoto wenye umri chini ya miaka mitatu?	Ndiyo.....1 Hapana.....2	__ KAMA JIBU NI 2 NENDA MU9
U8	Mara ya mwisho [TAJA JINA LA MTOTO WA MWISHO] alipojisadia haja kubwa mlifanya nini kuhakikisha kinyesi hicho kimetupwa? USISOME MAJIBU CHAGUA JIBU MOJA TU	Mtoto alienda chooni kujisaidia 01 Tulimwaga kinyesi chooni..... 02 Tulifukia 03 Kilitupwa kwenye takataka..... 04 Kilitupwa kwenye shimo..... 05 Kiliachwa sehemu ya wazi 06 Sehemu nyingine96 Sijui98	__ __
KIPENGELE MU2 Maswali kwa uchunguzi (yafanyike mara tu baada ya yale ya awali kumalizika ili kuhakikisha mtiririko wa usaili haukatiki)			
Na.	UCHUNGUZI / SWALI	JIBU	

MU9	KOKOTOA KIWANGO CHA MAJI YANAYOTUMIWA NA KAYA KWA SIKU HII INAJUMUISHA MAJI KUTOKA VYANZO VYOTE (MAJI YA KUNYWA NA YASIYO YA KUNYWA)	Tafadhali nionyeshe vyombo ulivyotumia kuchota maji jana KIPE NAMBA KILA CHOMBO	Ujazo katika lita	Idadi ya safari zilizofan yika kwa kila chombo	Jumla ya lita MSIMAMIZI AMALIZIE KUFANYA HESABU KWA MKONO
		1 m.f. Dumu	25 L	1 x	25
		2 m.f. Dumu	10 L	2 x	20
		3 m.f. Dumu	5 L	2 x	10
		4 m.f. Dumu	5 L	1 x	5
		5 m.f. Dumu	50 L	1 x	50
		Jumla ya lita zilizotumiwa na kaya			110
MU10	Tafadhali nionyeshe vyombo unavyotumia kutunzia maji ya kunywa VYOMBO VYA KUTUNZIA MAJI YA KUNYWA VIMEFUNIKWA AU VINA MDOMO USIOMPANA/MWEMBAMBA	Vyote vina..... 1 Baadhi vina 2 Hakuna chenye..... 3	<div> __ </div>		

Add event calendar and map of the camps