Standardised Expanded Nutrition Survey (SENS) FINAL REPORT

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

Survey conducted: 17th September – 19th October 2019

Date finalized: February 2020

UNHCR
The UN Refugee Agency

IN COLLABORATION WITH

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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 Ration
HAZ	Height-for-Age z-score
Hb	Haemoglobin
HH	Household
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
MNP	Micronutrient Powder
MOHSW	Ministry of Health and Social Welfare
MSF	Médecins Sans Frontières
MUAC	Middle Upper Arm circumference
ODK	Open Data Kit
OTP	Out-patient Therapeutic Programme
PLW	Pregnant and Lactating Woman
ProGres	UNHCR registration database for refugees
SAM	Severe Acute Malnutrition
SD	Standard Deviation
SENS	Standardized Expanded Nutrition survey
TSFP	Targeted 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
WFP	World Food Programme
WHO	World Health Organization
WHZ	Weight-for-Height z-score
WVI	World Vision International

Executive summary

Overview

The UNHCR standardized expanded nutrition surveys (SENS) were conducted in the three refugee camps located in Kigoma region, the western part of Tanzania. The region has been receiving waves of refugees usually fleeing their countries particularly Burundi and the Republic Democratic of Congo (DRC) for decades now. During the surveys, Kigoma region was mainly hosting 260,906 refugees including; 58,077 Congolese in Nyarugusu old camp, 84,028 Burundians in Nyarugusu new camp, 84,691 Burundians in Nduta and 34,110 Burundians in Mtendeli camp. The under-five population was 54,395 in total including; 11,118 in Nyarugusu old camp, 16,861 in Nyarugusu new camp, 18,649 in Nduta and 7,767 in Mtendeli[1].

Camps are located closer to host communities and to some extent the ethnical characteristics resembles especially between Burundians and the ethnic group of "*Waha*", the majority in Kasulu and Kibondo districts.

Unlike in previous years, the upgraded UNHCR SENS from version 2 (2013) to version 3 (2019) was piloted for the first time in Kigoma region, Tanzania between September and October 2019. In this version, seven modules were considered namely; Demography, Anthropometry and Health, Anaemia, Infant and Young Child Feeding (IYCF), Food Security, Mosquito Net Coverage and Water, Sanitation and Hygiene (WASH).

Survey objectives

The main objective of the nutrition surveys was to assess the general health and nutrition status of Burundians and Congolese refugees in the 4 refugee areas (Nyarugusu Old camp, Nyarugusu New camp, Nduta camp and Mtendeli camp) and formulate workable recommendations for appropriate nutritional and public health interventions.

Primary objectives:

1. To determine the demographic profile of the population;
2. To determine the age dependency ratio;
3. To measure the prevalence of acute malnutrition in children aged 6-59 months;
4. To measure the prevalence of stunting in children aged 6-59 months;
5. To determine the coverage of measles vaccination among children aged 9-59 months;
6. To determine the coverage of vitamin A supplementation in the last six months among children aged 6-59 months;
7. To determine the two-week period prevalence of diarrhoea among children 6-59 months;
8. To measure the prevalence of anaemia in children 6-59 months and in women of reproductive age (non-pregnant) between 15-49 years);
9. To investigate IYCF practices among children aged 0-23 months;
10. To determine the coverage of households receiving in-kind food assistance and the duration of the general in-kind food distribution for recipients' households;
11. To determine the extent to which negative coping strategies are used by households;
12. To assess household food consumption (quantity and quality);
13. To determine the ownership of mosquito nets (all types and LLINs) in households.
14. To determine the utilization of mosquito nets (all types and LLINs) by the total population, children 0-59 months and pregnant women.
15. To determine the population's access to, and use of, water, sanitation and hygiene facilities.
16. To determine the population's access to soap;
17. To establish recommendations on actions to be taken to address the situation in the refuge population in the three camps.

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[1] UNHCR ProGres, 31st August 2019

Secondary objectives:

1. To determine the coverage of deworming with mebendazole in the last six months among children aged 12-59 months;
2. To determine the enrolment into the targeted supplementary feeding program (TSFP) and therapeutic feeding program (OTP/SC) for children aged 6-59 months;
3. To determine the coverage of the blanket supplementary feeding programme (BSFP) for children aged 6-23 months;
4. To determine the coverage of the MNP supplementation for children aged 24-59 months;
5. To determine the coverage of the blanket supplementary feeding programme (BSFP) for pregnant and lactating women;
6. To determine enrolment into Antenatal Care clinic and coverage of iron-folic acid supplementation in pregnant women;
7. To determine the coverage of vitamin A postnatal supplementation among women with children less than 6 months;
8. To determine the population's access to and use of cooking fuel;

Optional objectives (selected/measured):

1. To determine the use of oral rehydration salt (ORS) and/or zinc during diarrhoea episodes in children ages 6-59 months;
2. To determine the prevalence of MUAC malnutrition in women of reproductive age 15-49 years;

Methodology

The surveys were conducted using the Standardized Expanded Nutrition Survey (SENS) guidelines and tools[2]. SENS is a standardized tool for conducting nutrition surveys in refugee populations developed by UNHCR in collaboration with expert organizations and individuals in the fields of nutrition, public health, food security, water, sanitation and hygiene, and malaria prevention. SENS is based on the internationally recognized SMART Methodology[3] (Standardized Monitoring and Assessment of Relief and Transitions) for survey design and anthropometric assessments and adapted to the specific requirements of refugee settings. The SENS modules include standardized questionnaires, analysis guidance, reporting format and standard analysis procedures.

Data collection

Data was collected using mobile phones with pre-installed "open data kit" application. To ensure high quality of the data, a daily data check was done by running plausibility check in the ENA for SMART software. Feedback was provided to the data collection team with corrective measures during data collection in the following day. Data was collected from 17th September 2019 in Nyarugusu new camp and concluded on 19th October 2019 in Mtendeli camp.

Data analysis

Analysis was done using EPI info 7 classic and dashboard and ENA for SMART version 9th July 2015. The SENS version 3 modules were used to guide data analysis for each particular indicator – its definition and analysis criteria. Tool 17b was used to generate graphs and figures, the standard reporting template was used during writing of final report. The table below presents summary of the key findings and subsequent interpretation thereafter.

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[2] SENS. Standardised Expanded Nutrition Survey for Refugee Populations Version 3 (2019).
[3] SMART. Standardized Monitoring and Assessment of Relief and Transitions. Available at: http://smartmethodology.org/

Table 1 Summary of results SENS 2019 refugee camps in Tanzania

Surveyed Area	Nyarugusu New Camp	Nyarugusu Old Camp	Nduta	Mtendeli	
Data collection period	Date: 17 – 25/9/2019	Date: 26/9 – 01/10/2019	Date: 5 – 12/10/2019	Date: 15 – 19/10/2019	**Classification of public health significance or target (where applicable)**
CHILDREN 6-59 months % [95% CI]					
Acute Malnutrition (WHO 2006 Growth Standards)					
Global Acute Malnutrition (GAM)	1.8% [0.9%-3.4%]	1.2% [0.6% - 2.4%]	3.2% [2.2%- 4.5%]	1.3% [0.6%-2.9%]	Very high/critical if ≥ 15% (WHO-UNICEF) UNHCR Target of < 10%
Moderate Acute Malnutrition (MAM)	1.8% [0.9%-3.4%]	1.2% [0.6% - 2.4%]	3.0% [2.1%- 4.4%]	1.3% [0.6%-2.9%]	
Severe Acute Malnutrition (SAM)	0.0% [0.0%-0.0%]	0.0% [0.0%-0.0%]	0.2% [0.0%-1.1%]	0.0% [0.0%-0.0%]	UNHCR Target of < 2%
Oedema	0.0% [0.0%-0.0%]	0.0% [0.0%-0.0%]	0.0% [0.0%-0.0%]	0.0% [0.0%-0.0%]	
Mid Upper Arm Circumference (MUAC)					
MUAC <125 mm and/or oedema	2.7% [1.7- 4.3]	0.7% [0.3%-1.8%]	2.3% [1.3%- 3.8%]	0.5% [0.1- 2.5%]	
MUAC 115-124 mm	2.4% [1.5- 3.9]	0.7% [0.3%-1.8%]	1.8% [1.0%- 3.3%]	0.4% [0.1- 1.5%]	
MUAC <115 mm and/or oedema	0.3% [0.1- 1.2]	0.0% [0.0%-0.0%]	0.5% [0.1%- 1.4%]	0.2% [0.0- 1.4%]	
Stunting (WHO 2006 Growth Standards)					

Surveyed Area	Nyarugusu New Camp	Nyarugusu Old Camp	Nduta	Mtendeli	
Data collection period	Date: 17 – 25/9/2019	Date: 26/9 – 01/10/2019	Date: 5 – 12/10/2019	Date: 15 – 19/10/2019	**Classification of public health significance or target (where applicable)**
Total Stunting	47.7% [43.4%-52.1%]	42.7% [37.9%-47.6%]	52.1% [47.3-56.9%]	51.9% [47.1%-56.8%]	Very high/critical if ≥ 30% (WHO-UNICEF)
Severe Stunting	14.5% [11.9%-17.7%]	13.3% [10.8%-16.3%]	17.4% [14.3-21.1%]	15.9% [12.7%-19.8%]	
Programme coverage					
Measles vaccination with card or recall (9-59 months)	97.6% [96.0%-99.2%	93.0% [89.7%-96.3%]	98.1% [96.9%-99.3%	98.4% [97.1%-99.8%	Target of ≥ 95%
Vitamin A supplementation within the past 6 months with card or recall	94.7% [93.0%-96.5%]	85.4% [79.8%-91.0%]	95.8% [93.3%-98.3%]	96.9% [95.1%-98.7%]	Target of ≥ 90%
Deworming coverage children 12-59 months	95.1% [92.7%-97.4%]	88.2% [83.1%-93.3%]	97.5% [95.9%-99.0%]	98.4% [97.2%-99.5%]	
Nutrition programme enrolment coverage					
Blanket supplementary feeding program (BSFP) in 6 – 23 months	95.3% [92.2%-98.5%]	95.7% [92.5%-98.9%]	91.2% [87.1%-95.3%]	95.3% [92.0-98.6%]	
Blanket supplementary feeding program (BSFP) in 24 – 59 months	93.1% [90.6%-95.7%]	89.1% [84.6%-93.7%]	94.4% [92.0%-96.8%]	94.4% [91.7%-97.1%]	
Targeted supplementary feeding program (TSFP)	29.2% [12.6%-45.8%]	11.1% [0.0%-36.7%]	12.5% [0.0%-26.5%]	0.0%	
Outpatient care therapeutic feeding program/Stabilization centre (OTP/SC)	0.0%	0.0%	50.0% [0.0%-100%]	0.0%	
Diarrhoea					
Diarrhoea in the last 2 weeks	25.8% [21.9%-29.7%	23.0% [18.4%-27.6%]	27.0% [22.7%-31.2%]	22.7% [18.8%-26.5%]	

Surveyed Area	Nyarugusu New Camp	Nyarugusu Old Camp	Nduta	Mtendeli	
Data collection period	Date: 17 – 25/9/2019	Date: 26/9 – 01/10/2019	Date: 5 – 12/10/2019	Date: 15 – 19/10/2019	Classification of public health significance or target (where applicable)
Anaemia					
Total anaemia (Hb < 11 g/dl)	32.9% [26.2%-39.7%]	31.2% [24.2%-38.3%]	19.1% [14.8%-23.6%]	20.7% [15.6%-25.7%	High if ≥ 40% Target of < 20%
Mild (Hb 10-10.9)	18.4% [14.6%-22.1%]	19.9% [15.2%-24.5%]	14.1% [11.1%-17.2%]	16.3% [12.1%-20.4%]	
Moderate (Hb 7-9.9)	14.6% [10.6%-18.6%]	10.9% [6.8%-14.9%]	5.0% [2.4%-7.6%]	4.4% [2.5%-6.3%]	
Severe (Hb < 7)	0.0% [0.0%-0.0%]	0.5% [0.0%-1.1%]	0.0% [0.0%-0.0%]	0.0% [0.0%-0.0%]	
CHILDREN 0-23 months % [95% CI]					
IYCF indicators					
Timely initiation of breastfeeding	85.5% [79.6%-91.4%]	85.2% [80.3%-90.0%]	86.0% [81.2%-90.76%]	87.5% [82.5%-92.4%]	UNHCR Target of ≥ 85%
Exclusive breastfeeding under 6 months	71.4% [57.3%-85.5%]	74.6% [59.6%-89.6%]	83.1% [74.7%-91.5%]	89.2% [82.7%-95.8%]	UNHCR Target of ≥ 75%
Consumption of iron-rich or iron-fortified foods	86.5% [80.9%-92.1%]	86.8% [80.8%-92.8%]	89.4% [84.7%-94.4%]	92.7% [87.5%-97.8%]	UNHCR Target of ≥ 60%
Bottle feeding	1.2% [0.0%-2.4%]	0.4% [0.0%-1.1%]	0.3% [0.0%-0.9%]	0.4% [0.0%-1.2%]	UNHCR Target of < 5%
WOMEN 15-49 years % [95% CI]					
Anaemia (non-pregnant)					
Total Anaemia (Hb <12 g/dl)	18.8%	26.0%	8.2%	8.8%	High if ≥ 40% (WHO)

Surveyed Area	Nyarugusu New Camp	Nyarugusu Old Camp	Nduta	Mtendeli	
Data collection period	Date: 17 – 25/9/2019	Date: 26/9 – 01/10/2019	Date: 5 – 12/10/2019	Date: 15 – 19/10/2019	Classification of public health significance or target (where applicable)
	[13.4%-24.2%]	[17.1%-35.0%]	[4.3%-12.1%]	[4.4%-13.1%]	UNHCR Target of < 20%
Mild (Hb 11-11.9)	11.0% [7.8%-14.2%]	18.4% [11.4%-25.45]	6.8% [3.7%-9.9%]	6.8% [3.1%-10.5%]	
Moderate (Hb 8-10.9)	7.8% [3.6%-12.0%]	7.6% [4.1%-11.1%]	1.4% [0.05-3.2%]	1.9% [0.0%-4.3%]	
Severe (Hb <8)	0.0% [0.0%]	0.0% [0.0%]	0.0% [0.0%]	0.0% [0.0%]	
DEMOGRAPHY % [95% CI]					
Household size and Composition					
Average household size mean, (95%CI) [range]	5.2 (4.9-5.5) [Min 1, Max 13]	5.4 (5.1-5.8) [Min 1, Max 14]	4.3 (4.0-4.5) [Min 1, Max 11]	5.2 (4.8-5.6) [Min 1, Max 14]	
Percent of children U2	11.1%	11.1%	12.5%	11.1%	
Percent of children U5	24.6%	24.4%	26.6%	25.9%	
Percent of pregnant women	3.1%	2.6%	3.1%	2.6%	
Household Head Profile					
Female headed households	68.6% [59.9%-77.4%]	76.7% [68.5%-84.8%]	73.0% [66.1%-80.0%]	62.6% [51.1%-74.1%]	
Male headed households	28.2% [20.1%-36.3%]	20.4% [13.3%-27.4%]	24.0% [17.3%-30.6%]	35.2% [24.2%-46.2%]	
Children headed households	0.17% [0.0%-0.5%]	0.0%	0.2% [0.0%-0.5%]	0.5% [0.0%-1.1%]	

Surveyed Area	Nyarugusu New Camp	Nyarugusu Old Camp	Nduta	Mtendeli	
Data collection period	Date: 17 – 25/9/2019	Date: 26/9 – 01/10/2019	Date: 5 – 12/10/2019	Date: 15 – 19/10/2019	Classification of public health significance or target (where applicable)
Age dependency ratio					
Average age dependency ratio (mean, 95%CI / range)	1.4 (1.3-1.5) [Min 0, Max 7]	1.6 (1.5-1.7) [Min 0, Max 7]	1.5 (1.3-1.6) [Min 0, Max 7]	1.5 (1.4-1.7) [Min 0, Max 7]	
FOOD SECURITY % [95% CI]					
Proportion of households receiving a food assistance (in-kind)	100%	100%	100%	100%	
In-kind food distribution					
Proportion of households with a ration card	100%	100%	99.7% [99.1%-100%]	100%	
Average number of days general food ration lasts out of 28 days (mean, 95%CI range)	21.2 (20.7-21.7) [Min 5, Max 28]	22.2 (21.7-22.6) [Min 7, Max 28]	23.3 (22.8-23.9) [Min 2, Max 28]	23.6 (23.0-24.2) [Min 1, Max 28]	
Negative household coping strategies					
Proportion of households reporting using one or more negative coping strategies over the past 4 weeks	58.9% [49.6%-68.2%]	52.2% [41.3%-63.2%]	64.4% [56.2%-72.6%]	67.4% [58.7%-76.0%]	
Proportion of households reporting using the following coping strategies over the past 7 days:					
Rely on less preferred and/or less expensive foods	74.1% [66.0%-82.3%]	73.5% [62.7%-84.3%]	74.6% [66.6%-82.5%]	75.0% [62.2%-87.8%]	
Borrow food, or rely on help from a friend or relative	69.2% [63.0%-75.3%]	53.0% [44.6%-61.4%]	47.9% [41.3%-54.5%]	46.7% [36.8%-56.5%]	
Reduce the number of meals eaten in a day	76.3%	70.1%	58.1%	51.7%	

Surveyed Area	Nyarugusu New Camp	Nyarugusu Old Camp	Nduta	Mtendeli	
Data collection period	Date: 17 – 25/9/2019	Date: 26/9 – 01/10/2019	Date: 5 – 12/10/2019	Date: 15 – 19/10/2019	Classification of public health significance or target (where applicable)
	[70.5%-82.1%]	[61.5%-78.8%]	[49.6%-66.6%]	[38.7%-64.7%]	
Limit portion sizes at mealtime	77.9% [72.7%-83.1%]	67.9% [58.6%-77.3%]	56.0% [48.0%-64.0%]	53.8% [41.7%-65.8%]	
Reduce consumption by adults so children could eat.	61.1% [54.0%-68.1%]	37.7% [31.2%-44.1%]	32.9% [25.6%-40.3%]	22.5% [14.1%-30.9%]	
Average rCSI (mean, 95%CI / range)	20.9 (18.8-22.9) [Min 0, Max 56]	15.4 (13.7-17.0) [Min 0, Max 56]	13.6 (12.0-15.3) [Min 0, Max 56]	11.9 (9.9-13.9) [Min 0, Max 56]	
Food Consumption Score (FCS)					
Average FCS (mean, 95%CI / range)	44.8 (42.6-46.9) [Min 5.5, Max 95]	49.8 (48.0-51.7) [Min 6.5, Max 96.5]	51.2 (49.3-52.9) [Min 19.5, Max 83.5]	51.0 (49.3-52.7) [Min 21.0, Max 78.0]	WFP target: FCS>35
FCS profiles:					
Acceptable	85.7% [80.2%-91.2%]	92.9% [89.4%-96.4%]	91.6% [88.4%-94.8%]	95.4% [92.5%-98.3%]	
Borderline	11.2% [6.7%-15.7%]	6.0% [2.5%-9.5%]	8.1% [4.9%-11.3%]	4.2% [1.6%-6.7%]	
Poor	3.1% [0.9%-5.3%]	1.1% [0.0%-2.4%]	0.3% [0.0%-0.9%]	0.4% [0.0%-1.3%]	
MOSQUITO NET COVERAGE % [95% CI]					
Mosquito net ownership					

Surveyed Area	Nyarugusu New Camp	Nyarugusu Old Camp	Nduta	Mtendeli	
Data collection period	Date: 17 – 25/9/2019	Date: 26/9 – 01/10/2019	Date: 5 – 12/10/2019	Date: 15 – 19/10/2019	Classification of public health significance or target (where applicable)
Proportion of households owning at least one LLIN	56.3% [47.6%-65.0%]	66.5% [58.5%-74.5%]	61.3% [53.4%-69.2%]	38.3% [27.1%-49.4%]	UNHCR Target of > 80%
Average number of persons per LLIN (mean)	7.2	5.2	4.7	10.5	2 persons per LLIN
Mosquito net utilisation					
Proportion of household members (all ages) who slept under an LLIN	34.8%	45.7%	47.1%	23.5%	
Proportion of children 0-59 months who slept under an LLIN	45.9%	59.3%	54.7%	32.8%	
Proportion of pregnant women who slept under an LLIN	40.0%	43.5%	66.7%	34.1%	
WASH % [95% CI]					
Water quality					
Proportion of households collecting drinking water from protected/treated sources	100%	99.6% [98.9%-100%]	100%	100%	Emergency: ≥ 70% Post-emergency: ≥ 95%
Water quantity					
Proportion of households that use domestic water collected from protected/treated sources (with protected containers only): ≥ 20 lpppd	32.4% [25.2%-39.6%]	50.4% [41.2%-59.5%]	48.1% [39.1%-57.0%]	33.3% [24.3%-42.3%]	
Proportion of households that use domestic water collected from protected/treated sources (with protected containers only): 15 - <20 lpppd	7.5% [4.7%-10.3%]	13.1% [8.9%-17.2%]	13.5% [9.6%-17.4%]	11.8% [8.2%-15.5%]	

Surveyed Area	Nyarugusu New Camp	Nyarugusu Old Camp	Nduta	Mtendeli	
Data collection period	Date: 17 – 25/9/2019	Date: 26/9 – 01/10/2019	Date: 5 – 12/10/2019	Date: 15 – 19/10/2019	Classification of public health significance or target (where applicable)
Proportion of households that use domestic water collected from protected/treated sources (with protected containers only): <15 lpppd	60.1% [52.6%-67.7%]	36.6% [28.3%-45.0%]	38.4% [28.9%-48.0%]	54.9% [45.3%-64.5%]	
Toilet/Latrine use					
Proportion of households reporting defecating in a toilet	98.8% [97.5%-100%]	97.0% [93.9%-100%]	91.6% [85.2%-98.0%]	97.5% [93.9%-100%]	Emergency: ≥ 60% Post-emergency: ≥ 85%
Access to soap					
Proportion of households with access to soap	75.4% [68.0%-82.8%]	61.9% [52.4%-71.5%]	84.7% [79.6%-89.7%]	69.6% [60.3%-78.9%]	Emergency: ≥ 70% Post-emergency: ≥ 90%

Brief interpretation of results

WHO prevalence thresholds for wasting in children aged 6-59 months (low weight-for-height)

Previous prevalence ranges	Label	New prevalence ranges 2018	Label
-	-	<2.5	Very low
<5%	Acceptable	2.5 - < 5	Low
5 – 9%	Poor	5 - <10	Medium
10 – 14%	Serious	10 - <15	High
>15%	Critical	≥ 15	Very high

Table 2: WHO prevalence thresholds for stunting in children aged 6-59 months (low height-for-age)

Previous prevalence ranges	Label	New prevalence ranges 2018	Label
-	-	<2.5	Very low
<20%	Acceptable	2.5 - < 10	Low
20 – 30%	Poor	10 - < 20	Medium
30 – 39%	Serious	20 - < 30	High
>40%	Critical	≥ 30	Very high

Table 3: WHO classification of public health significance for the prevalence of Anaemia (children 6-59-month-old and non-pregnant Women 15-49 years old)

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

Source: WHO (2000)

Prevalence of global acute malnutrition remained within the acceptable or low level in all the camps. The GAM prevalence was 1.8% in Nyarugusu new camp, 1.2% for Nyarugusu old camp, 3.2% for Nduta and 1.3% for Mtendeli. Prevalence of severe acute malnutrition was 0.2% in Nduta camp and no bilateral pitting oedema was attested from the three camps. The UNHCR target for global acute malnutrition is below 10% and severe acute malnutrition below 2%.

Compared to 2018, prevalence of GAM has reduced from 2.5% to 1.8% in Nyarugusu new camp, 1.6% to 1.2% in Nyarugusu old camp, and 2.9% to 1.3% for Mtendeli camp in 2019. The GAM prevalence seemed to increase from 2.3% recorded in 2018 to 3.2% in 2019 in Nduta camp, perhaps related to significant increase of prevalence of diarrhoea from 6.4% [3.0%-9.8%] in 2018 to 27.0% [22.7%-31.2%]. The overall, weighted GAM prevalence 2.0% indicating stable situation in both Burundians and Congolese refugee populations.

Prevalence of stunting, a measure of chronic malnutrition in children aged 6 – 59 months, remained critical or very high in the three camps. The prevalence was 47.7% (43.4%-52.1%) for Nyarugusu new camp, 42.7% (37.9%-47.6%) for Nyarugusu old camp, 52.1% (47.3%-56.9%) for Nduta and 51.9% (47.1%-56.8%) for Mtendeli camp. Overall, the weighted prevalence of stunting was 48.1% (>40%), categorized as critical situation or very high according to classification of public health significance for children under 5 years old by WHO-UNICEF (2018). Prevalence of severe stunting was 14.5% (11.9%-17.7%), 13.3% (10.8%-16.3%), 17.4% (14.3%-21.1%) and 15.9% (12.7%-19.8%) for Nyarugusu new camp, Nyarugusu old camp, Nduta and Mtendeli respectively. Compared to previous years, prevalence of stunting has shown no significant change despite the ongoing efforts that has been invested so far.

Coverage for measles vaccination with card or confirmation from the mother in children aged 9 – 59 months was above 95% in Nyarugusu new camp, Nduta and Mtendeli camp. The coverage was 93% in Nyarugusu old camp which is below the targeted 95%. Measles vaccination with card was as low as 66% in Nduta camp and the highest was 86% in Nyarugusu new camp. Confirmation of measles vaccination from the mother was done where there was no EPI card, or the antigen is totally not marked on the card. In some camps including Nduta, parents and caregivers said cards were worn-out and could not be replaced or cards were lost while on their way to Tanzania to seek refuge some three to four years ago. The government officials testified that there are times when EPI cards were out of stock and could not reach the refugee camp on time due logistical challenges.

Vitamin A supplementation within last 6 months with cards and confirmation from the mother in children aged 6 – 59 months was above 90% in Nyarugusu new, Nduta and Mtendeli camps. In Nyarugusu old camp the coverage was 85%, which is below the targeted 90%. Coverage of vitamin A supplementation with card was as low as 40% in Nduta and 79% the highest, in Nyarugusu new camp. Poor documentation of the supplements was due the same reasons discussed above for measles; missing cards, worn-out cards and not marked at-all.

Enrolment of severe and moderate acute malnutrition cases into feeding programmes among children aged 6 – 59 months remained low. The TSFP enrolment of MAM cases for example ranged from 11.1% [0.0%-36.7%] in Nyarugusu old camp to 50.0% [0.0%-100%][4] in Nduta camp. Two reasons were thought likely to have contributed to low enrolment coverage; 1) Inadequate nutritional screening of children attending BSFP using both WHZ and MUAC criteria independently. This could leave MAM cases attending BSFP instead of enrolling them in the right programme. 2) The current discharge criteria for SAM cases which require the child to remain admitted in OTP until full recovery. When such a child is sampled may be considered as not admitted in the right programme. WHO recommends that children with severe acute malnutrition should only be discharged from treatment when weight-for-height/length is ≥–2 Z-scores and they have had no oedema for at least 2 weeks or mid-upper-arm circumference is ≥125 mm and they have had no oedema for at least 2 weeks. In addition, an anthropometric tool that was used for admission should also be used for discharge[5].

Prevalence of anaemia in children aged 6 – 59 months was 33% in Nyarugusu new camp, 31% in Nyarugusu old camp and 21% in Mtendeli camp classified as medium level public health significance. The prevalence remained above the UNHCR target (<20%) in the three surveyed refugee camps and within the UNHCR target for Nduta camp (19%). Prevalence of severe anaemia was 0.5% in Nyarugusu old camp and 0% in the remaining three camps.
Except in Nyarugusu new camp where the prevalence of anaemia in the above mentioned age group showed a downtrend since 2016 (45%) through 2018 (35%), prevalence of anaemia in other camps kept increasing; from 42% to 56% for Nyarugusu old camp, 31% to 41% for Nduta and 25% to 50% for Mtendeli camp. When compared the 2018 vs. 2019 results, prevalence of anaemia has slightly decreased from 35% to 33% for Nyarugusu new camp, and significantly decreased from 56% to 31% in Nyarugusu old camp, 37% to 19% in Nduta and 50% to 21% in Mtendeli camp. Intensive monitoring of children attending BSFP, provision of MNP, strengthened strategies for IYCF, stabilized WFP food pipeline, WASH and health services all together may have contributed to such amazing decrease of prevalence of anaemia in the three camps.

Prevalence of anaemia in non-pregnant women aged 15 to 49 years was 19% in Nyarugusu new camp, 26% in Nyarugusu old camp, 8% in Nduta and 9% in Mtendeli camp. The UNHCR target for total anaemia is <20% of which only Nyarugusu old camp was above the limit. There was no severe anaemia tested in neither of the three camps among this target group.

Compared to 2018, anaemia in this target group has increased from 13% to 19% in Nyarugusu new camp and decreased from 21% to 9% in Mtendeli camp. Comparison for Nyarugusu old camp and Nduta was not done to incorrect figures reported in 2018 report, not tallying between total, mild, moderate and severe anaemia. However, a downtrend of prevalence of anaemia in the past four years was vivid across all the three camps.

The timely initiation of breastfeeding in children aged 0-23months remained with the UNHCR target of ≥85%. Proportion of children breastfed within one hour among the host community in Kigoma region was 66.4% in 2014[6]. EBF prevalence among infants under six months was within the UNHCR target of ≥75% for Nyarugusu new camp, Nduta and Mtendeli, except in Nyarugusu new camp where the proportion was below the UNHCR target by 4%. Consumption of iron-rich or fortified food in children aged 6 – 23 months was above the UNHCR target of ≥60% proportion of children aged 0 – 23 months fed with bottle was within the UNHCR target of <5% in the three camps. Generally, most of the IYCF key indicators were within the UNHCR acceptable standards and have maintained almost at the same level over the past four years.

Proportion of household with ration card was 100% in Nyarugusu new camp, Nyarugusu old camp and Mtendeli. In Nduta camp, only one household (0.3%) reported not having a ration card. The household was

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[4] The wider confidence interval was due to small sample size of the children suffering from moderate acute malnutrition
[5] Management of severe acute malnutrition in infants and children: https://www.who.int/elena/titles/full_recommendations/sam_management/en/

[6] Tanzania National Nutrition Survey, 2014

among new arrivals who were eligible but not registered yet. This implies that vast majority had ration card and were receiving food assistance provided by WFP.

Duration of food assistance provided lasted for an average of 21 days in Nyarugusu new camp, 22 days in Nyarugusu old camp, 23 days in Nduta and 24 days in Matendeli compared to the intended 28 days per distribution cycle. In turn, several negative coping strategies were adopted to cover the gap while waiting for the following food distribution cycle.

In Nyarugusu new camp, strategy that was highly adopted by many households was to take out new loans or borrowed money, which counted at about 35%. The least adopted negative coping strategy was engaging in potentially risky or harmful activities, counted at about 2%. Proportion of households reporting using one or more negative coping strategies over the past 4 weeks was 58.9% [49.6-68.2].

In Nyarugusu old camp, the most preferred negative coping strategy was selling of assets that would not have normally sold, counted at 26%. The least adopted negative coping strategy was moving to the poorest shelter by household member, counted at 2%. Proportion of households reporting using one or more negative coping strategies over the past 4 weeks was 52.2% [41.3-63.2].

The most preferred negative coping strategy in Nduta and Mtendeli camp was taking out new loans or borrowed money (40% and 39%) and the least preferred negative coping strategy was engaging in potentially risky or harmful activities (2%) for Nduta and move to the poorest shelter for Mtendeli. Proportion of households reporting using one or more negative coping strategies over the past 4 weeks was 64.4% [56.2-72.6] for Nduta and 67.4% [58.7-76.0] for Mtendeli.

At least 50% of households used negative coping strategies across the three camps, implying that some efforts are invested by household members to cover food gap within 28 days of the distribution cycle.

The seven days recall period showed that except in Nyarugusu new camp where most of the households preferred to reduce the number of eaten meals in a day, in other camps majority preferred relying on less preferred and/or less expensive foods, mostly produced locally, either in the camp or from the host communities surrounding the camp.

The average reduced coping strategy index (rCSI) was 21 for Nyarugusu new camp, 15 for Nyarugusu old camp, 14 for Nduta and 12 for Mtendeli ranging from 0 to 56 in all the three camps.

Proportion of households with food consumption score (FCS) attaining the acceptable level (>35) was as higher as 86% in Nyarugusu new camp, 93% in Nyarugusu old camp, 92% in Nduta and 95% in Mtendeli camp. However, the food consumption scores nutritional quality analysis (FCS-N) showed high proportion of households that never consumed protein rich and haem-iron rich foods ranging from 81% in Nyarugusu old camp and Mtendeli to 92% in Nyarugusu new camp and from 83% in Nyarugusu old camp and Mtendeli to 93% in Nyarugusu new camp respectively. Closure of the common market and restrictions of movements might have contributed to low food diversity among households.

Proportion of households collecting drinking water from protected/treated sources was 100% in the three camps. Proportion of households with at least 10 litres per person drinking water storage was 40% for Nyarugusu new camp, 69% for Nyarugusu old camp, 61% for Nduta and 45% for Mtendeli camp. This was the newly introduced indicator for WASH in SENS version 3. A comparison of amount of water storage may apply in future with reference to SENS 2019 for refugees in Kigoma region.

Average number of litres per person per day of domestic water collected at household level from protected or treated sources with containers of any type was 31 litres for Nyarugusu new camp, 38 litres for Nyarugusu old camp, 37 litres for Nduta and 28 litres for Mtendeli camp. This was far above the UNHCR minimum recommended amount of water; 20 LPPPD, implying that was not a problem in the three refugee camps. Further, the average number of litres per person per day of domestic water collected at household level from protected or treated sources with protected containers only was 20 litres for Nyarugusu new camp, 27 litres for Nyarugusu old camp, 26 litres for Nduta and 18 litres for Mtendeli camp. This may reflect the type of water containers refugee owns in the camps. Protected containers are those with lids. Open containers may result into contamination making water unsafe for drinking. This indicator was also introduced in version 3 of the UNHCR SENS and was drew from the latest WASH KAP survey (2017), and thus, comparison from previous SENS report was not possible but will be possible to compare to KAP survey results if available.

In Nyarugusu new camp, proportion of households using domestic water collected from protected or treated sources with protected containers only; ≥20 LPPPD was 32%, 15 - <20 LPPPD was 8% and <15 LPPPD was 60%. Nyarugusu old camp, those collected from protected or treated sources with protected containers only; ≥20 LPPPD was 50%, 15 - <20 LPPPD was 13% and <15 LPPPD was 37%. In Nduta camp; ≥20 LPPPD was 48%, 15 - <20 LPPPD was 14% and <15 LPPPD was 38%. In Mtendeli camp; ≥20 LPPPD was 33%, 15

- <20 LPPPD was 12% and <15 LPPPD was 55%. Large proportion of households collecting less than 15LPPPD was noted in Nyarugusu new camp and Mtendeli.
Proportion of households with access to soap was 75% in Nyarugusu new camp, 62% in Nyarugusu old camp, 85% in Nduta and 70% in Mtendeli. There is no threshold for this indicator so far, but 62% and 70% for Nyarugusu old campa and Mtendeli suggest low access to soap and may need some attentions.

Proportion of households using toilet was as low as 92% in Nduta the highest prevalence of diarrhoea increased from 6.4% [3.0%-9.8%] in 2018 to 27.0% [22.7%-31.2%] in 2019. Inadequate decommissioning of filled latrines and construction of new ones faced difficult due to financial challenges from donors.

Proportion of households owning at least one mosquito net of any type was 63% in Nyarugusu new camp, 73% in Nyarugusu old camp, 69% in Nduta and 46% in Mtendeli camp. Proportion of households owning at least one LLIN ranged from 38% in Mtendeli camp to 67% in Nyarugusu old camp. Proportion of households owning at least one LLIN for Nyarugusu new camp, Nyarugusu old camp and Nduta only reached the UNHCR target (≥80%) in 2016. Mtendeli camp has never reached the target for the past four years now. This shows poor retention of mosquito and may prove ineffective preventive measure against malaria in the camps, and thus, another potential and effective way may be necessary.

Proportion population slept under mosquito net of any type was as low as 41% for the total population, 53% for under-fives and 41% for pregnant women, while those slept under LLIN was 35% for total population, 46% for under-fives and 40% for pregnant women in Nyarugusu new camp. In Nyarugusu old camp proportion of the total population slept under mosquito net of any type was 53%, 70% for under-fives and 50% for pregnant women, while those slept LLIN was 47%, 59% and 43% for total population, under-fives and pregnant women respectively. In Nduta camp the proportion for mosquito net of any type was 54% for total population, 62% for under-fives and 76%, for pregnant women while LLIN was utilized by 47% total population, 55% under-fives and 67% pregnant women. Proportion of total population slept under mosquito net of any type in Mtendeli was 28%, under-fives was 41% and 39% pregnant women. Those slept under LLIN was 24%, 33% and 34% for total population, under-fives and pregnant women respectively. Utilization was relatively higher in Nyarugusu old camp and Nduta where mosquito net retention seemed higher than Nyarugusu new camp and Mtendeli. Compared to previous years, utilization of mosquito net has been low over the four past years, and thus, a challenging measure in regard to malaria prevention.

Recommendations and priorities

Immediate action

1. Provide capacity building intensify nutritional screening at community level and supportive supervision to community nutrition volunteers (CNV's) and health information team (HIT) to increase enrolment of SAM and MAM in the targeted and therapeutic feeding programmes.
2. Provide community sensitization on the importance of early reporting and registration of pregnant women at ANC. Where possible, decentralization of registration and enrolment of pregnant women should be done at all facilities providing RCH services.
3. Ensure early enrolment of pregnant women at ANC and subsequent supply of IFAs, Anti-malaria, vaccines, immediate enrolment at BSFP with the focus of the 1000 days and continue with BSFP for children aged 6 to 59 months to reduce stunting.
4. Review community workers daily activities to ensure they reach all the populations in the camp with key messages on improvement of personal hygiene and environmental sensitization.
5. Improve coordination among stakeholders; implementing partners, operational partners, UN agencies, the GoT and refugees themselves in addressing anaemia and stunting issues like misuse and/or selling of received food aid, special nutrient supplements provided through targeted and blanket feeding programs and core relief items including mosquito nets. Distribution of the mosquito nets should align with number of HH members where possible.
6. Ensure availability of supplies for testing and subsequent early treatment of malaria cases among under 5 children.
7. Review an acceptability and adherence results to MNP and provide corrective measures to reduce misuse of the supplements. Provide mechanisms for feedback from the community regarding acceptance of MNP.
8. Ensure regular distributions of the water collection and storage containers, sensitize the community on proper handling of drinking water including covering of the water containers and discourage storage of drinking water suing unprotected containers such as plastic basins.

Medium term

1. Improving uptakes of family planning and adequate spacing to avoid pregnancies duration lactation period. This has caused children to terminate breastfeeding at infancy stage or young child resulting to increased prevalence of stunting.
2. Provide fresh food or related voucher for improvement of nutrient uptake among pregnant women for better growth of the foetus in the womb.
3. Establish breastfeeding corners, mother to mother support groups and/or baby friendly space to allow exchange of skills and ideas among women and subsequent improvement of IYCF practices.
4. Provide motivation to pregnant women who attended clinic in first trimester such as giving mosquito net where possible and encourage male involvement, so they support their partners to attend ANC as soon as they conceive.
5. Provide training of community health workers on identification of anaemia, immediate referral to health facilities and proper follow up of the case at community level thereafter.
6. Engage stakeholders for scale-up of backyard gardening focus more on vulnerable groups including under 5 and pregnant women.
7. Promote behaviour change in the communities such as footwears, usage of toilets and using soaps to hand wash, bathing and washing clothes.
8. Increase latrines coverage through construction of new toilets as well as related sanitation facilities including bathhouses, garbage pits and dishrack and drainage systems to reduce prevalence of diarrhoea and risks of outbreaks.
9. Advocate livelihood activities that will supplement efforts done by the agencies in provision of WASH related CRIs.

Longer term

1. Advocacy to WFP and UNHCR for reviewing eligibility criteria which denies enrolment of pregnant women during their first trimester into BSFP.
2. Conduct evaluation of effectiveness of BSFP project for prevention of anaemia and stunting for subsequent addressing of existing gaps focusing to improve nutritional status of under-fives.
3. Continue with deworming activities for under 5 as well as in primary schools through special immunization campaigns normally coordinated by the government bodies.
4. Adopt alternative programs to prevent malaria as the use of ITN has become a challenge in the community (E.g. IRS instead of ITN)
5. Work with government to formulate and enforce strict codes that will be used protect relief items from misusing including buying and selling where possible
6. Advocate to donors to increase the budget for WASH items such as soap, clothes, petroleum gel and footwear to enhance promotion of personal hygiene especially in children aged below five years.
7. Plan for routine nutritional assessment for 2020 aims to provide tracking of nutritional status of refugee communities.

1. Introduction

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 Old for Congolese and Nyarugusu New for Burundians refugees both located in Kasulu district, Nduta and Mtendeli for Burundian refugees located in Kidondo and Kakonko districts. According to UNHCR ProGres data as of August 31st, 2019 there were about 303,518 refugees, comprising of 74.2% Burundians, 25.6% Congolese and a small proportion of refugees from other nationalities (Yemen, Rwanda, Uganda, Sudan, Kenya and others). Nyarugusu is the largest camp which has a population of about 142,105 refugees, followed by Nduta camp which hosts about 84,691 and Mtendeli camp with about 34,110.

The refugee's movement outside camps is restricted and in the last one-year the government put restriction in any income generating activities including transport business with motorbikes (bodaboda) within the camps; all small-scale shops were closed as well as money transfer services. This followed the Tanzania withdrawal from Comprehensive Refugee Response Framework (CRRF) announce on the 23rd January 2018, which was thought to be a game changing global compact aimed at easing pressure on host countries by helping refugee to become more self-reliant and supporting the communities in which they live. Tanzania which was one of the 13 pilot countries for the pilot for the initiative, cited lack of donor funds and unspecified security concerns as reasons for withdrawal.

In September 2017, Tanzania initiated voluntary Repatriation of refugees return programme in collaboration with UNHCR and Burundian government for repatriation of Burundians; however, in the month October 2018, the exercise was stopped due ban on NGO operations in Burundi hence complicating the reception and re-integration of returnees within the country. However, voluntary repartition resumed thereafter and between September 2017 and July 2018, a total of 26,400 had already repatriated. The Nyarugusu camp was performing a resettlement process mainly targeting Congolese who arrived in Tanzania between 1994 and 2005.

Health and nutrition activities are among the activities conducted in these refugee camps. The main health and nutrition partners include Tanzania Red Cross society, MSF, WVI and IRC with support from UN agencies i.e. UNHCR, WFP, UNICEF, WHO and UNFPA. Malnutrition is among the factors contributing to mortality among the under five children. According to the Health Information System (HIS) annual indicator for 2018, the total under five mortality reported were 434 where among these the total death occurred due to acute malnutrition were 23 across all the camps.

This was the 6th SENS survey among the Congolese since the first survey in September 2012 and second in September 2014. In 2016, 2017 and 2018 the SENS surveys were conducted covering all the three camps of Nyarugusu (old and new), Nduta and Mtendeli.

The last SENS survey which was conducted in September 2018 revealed an overall GAM prevalence of 2.3% across all the camps. Specifically, the GAM prevalence was 2.5% (1.6-4.0) in Nyarugusu new camp, 1.6% (0.7-3.7) in Nyarugusu old camp, 2.3% (1.3-3.9) in Nduta camp and 2.9% (1.9-4.4) in Mtendeli camp. Comparing to the 2017 SENS, the GAM prevalence decreased across all the camps especially for Nduta where the prevalence dropped from 6.1% in 2017 to 2.3% in 2018.

Since 2016 stunting has been reported to be the major public health concern for the Burundian Refugees across all the three camps. In 2017 the prevalence for Nduta was 54.7% while in 2018 the prevalence increased to 56.7%. In Mtendeli and Nyarugusu there was slight reduction between 2017 and 2018 although in both camps the prevalence was still above 40% which according to classifications of public health significance this is considered "very high".

Prevalence of anaemia in children (6 – 59 months) remained above the critical public health threshold of 40% for the Congolese population in Nyarugusu camp and Burundians in Mtendeli camp. In Nyarugusu new camp, the anaemia prevalence increased from 46.9% in 2017 to 56.0% (49.5-62.5) in 2018, while for Burundians in Mtendeli camp the anaemia prevalence increased from 41.5% in 2017 to 49.9% in 2018. In spite of the interventions put in place in Nyarugusu and in Mtendeli camps, anaemia seemed to be the major public health concern. However, a reduction of prevalence of anaemia was noted among Burundian in Nyarugusu and

Nduta camps recorded from 41.2% to 35.3% and from 41% to 37.2% in 2017 and 2018 respectively[7]. Age disaggregation showed a statistically significant difference between prevalence of anaemia among younger children (6-23 months) compared to the older ones (24-59 months), the former being more affected than the latter. Prevalence of stunting among children aged 6-59 months remained very high (>30%) across all the three camps.

Malnutrition is linked to a high infectious diseases burden, suboptimal sanitation and a hyper-endemic malaria situation, especially to young children.

According to the Community and Household Survey (CHS) conducted in Nyarugusu, Nduta and Mtendeli camps in August 2018, food distribution cuts in 2017 and part of 2018 somehow resulted to a reduced number of meals and portion size of the meal as coping strategies. With the cancellation of CBI (Cash-Based Intervention) program, dietary diversity remained a challenge which resulted to negative coping mechanisms.

1.1. Geographic description of survey area

Kigoma region lies along the border with Burundi on the North-western and the Lake Tanganyika which separates Tanzania and Democratic Republic of Congo on its Western part. Refugees are hosted in Kasulu and Kibondo districts located about 90 km and 240 km from Kigoma town respectively. The altitude where refugees are located ranges from 1,224m to 1,311m above sea level.

The camps are located closer to host communities and to some extent the ethnical characteristics resembles especially between Burundians and the ethnic group of "*Waha*", the majority in Kasulu and Kibondo districts.

1.2. Description of the population

The Nyarugusu old camp was established about 25yrs ago following the first influx in 1994 after political turmoil in DRC while Nduta and Mtendeli reopened in 2015 when Burundians fled their country. Nyarugusu old camp is hosting Congloses fled from Eastern part of DRC who were living along Lake Tanganyika of which majority are from Bembe tribe. Nyarugusu new

Figure 1 Refugee camps locations in Kigoma Region

camp, Nduta and Mtendeli are accommodating Hutus ethnic group from Burundi, among which, majority were former refugees, hosted in Mtabila, Muyovosi, Nduta, Mtendeli, Karago and Lukole before closure of the last camp in June 2009. This recycling has exposed most of Burundian refugees to the best experience on being a refugee and how to cope with it.

As of August 31st, 2019, the total refugee population was 260,906 individuals (73,081 households[8]) according to UNHCR ProGres.

Table 2: Total population and U5 children in the camps as of August 31st, 2019

Camp/Site	Population	HH	<5 children	Average HH size	% of <5 children
Nyarugusu (Old camp)	58,077	13,479	11,118	4.3	19.1
Nyarugusu (New camp)	84,028	22,941	16,861	3.7	20.1
Nduta	84,691	27,931	18,649	3.0	22.0
Mtendeli	34,110	8,730	7,767	3.9	22.8
Total	260,906	73,081	54,395	3.6	20.8

(Source: UNHCR ProGres)

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[7] UNHCR SENS 2018 report

[8] In ProGres v4, the Registration Group is used as a proxy for household definition. A Registration Group is one or more individuals who are registered together. For example, a Registration Group could be a family, or it could be a household registered together for assistance purposes. An individual must always belong to a Registration Group. An individual can only belong to one Registration Group at any point in time.

1.3.   Food security situation

Food security among refugees in the three camps is entirely within the discretion of the donor assistance of food through WFP. In Tanzania, food assistance is purely in-kind distributed through general ration on 28 days distribution cycle. A full ration a refugee food basket contains of cereals at 380g, pulses at 120g, super cereal with sugar at 25g vegetable oil at 20g and salt at 5g per person per day intended to provide a minimum of 2100kcal per person as recommended by Sphere standards. Food distribution is done by the WFP partner; World Vision International for Kasulu camps and DRC for Kibondo and Kakonko camps. During data collection a total population of 260,906 were receiving an in-kind food assistance; 58,077 for Nyarugusu old camp, 84,028 for Nyarugusu new camp, 84,691 for Nduta and 34,110 for Mtendeli camp.

WFP also supports vulnerable groups through supplementary feeding programs such as pregnant and lactating women (PLW) as well as malnourished HIV/TB individuals provided with super cereal with sugar at 150g and 200g per person per day respectively. Children aged 6 – 23 months are also supported through BSFP, providing them with daily ration of 100g of super cereal plus per person. Children aged 6 – 59 months with MAM are supported through are supported with 200g per person per day through TSFP.

Food supply is managed by WFP usually shipped from Dar Es Salaam through Dodoma, Shinyanga, Isaka and delivered in Kakonko, Kibondo and finaly in Kasulu. Roads are passable throughout the year with minor challenges.
During the surveys, access to common market which were bringing together both refugees and host community was out of bound. Camp markets were active only in Nduta and Mtendeli camps, while in Nyarugusu new and old camps were not accessible. However, small shops were operational across the three camps.

1.4.   Health situation

Both Burundians and Congolese were enjoying health services provided through health facilities in the camps. In each camp there are at least one fully functional hospital with several health post in the outskirt of the camps to enable access to health services among refugees living far from the hospitals. Some complicated cases that cannot be managed within the camp facilities are referred to the government hospitals in Kasulu and Kibondo.
Services provided are preventive and curative care. There are OPDs, IPD services, reproductive and child health, as well as surgical and nutrition services in hospitals. At health posts, only primary health care, RCH and HIV/AIDS services are provided. Complicated cases are usually referred to the central dispensary/hospital in the camps.
Immunization campaigns coordinated by the government is done twice a year and refugees equally benefits in the same way as host communities. The last campaign which was done between 17th to 21st October 2019 involved provision of vitamin supplements in children aged 6 – 59 months as well as deworming among children aged 12 – 59 months.
The mortality indicators have been within the UNHCR and recommended Sphere standards. Crude mortality rate ranged between 0.03 to 0.3 while the under-fives mortality ranged between 0.12 to 0.7/1000 pop/month. The leading morbidities were Malaria (28.1%), URTI (21.2%), LRTI (10.7%), UTI (8.4%), watery Diarrhoea (3.3%) and others 28.3%[9].

Figure 2: Crude and under-5 mortality rates for Nyarugusu new camp

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[9] UNHCR health statistics report, 2018-2019
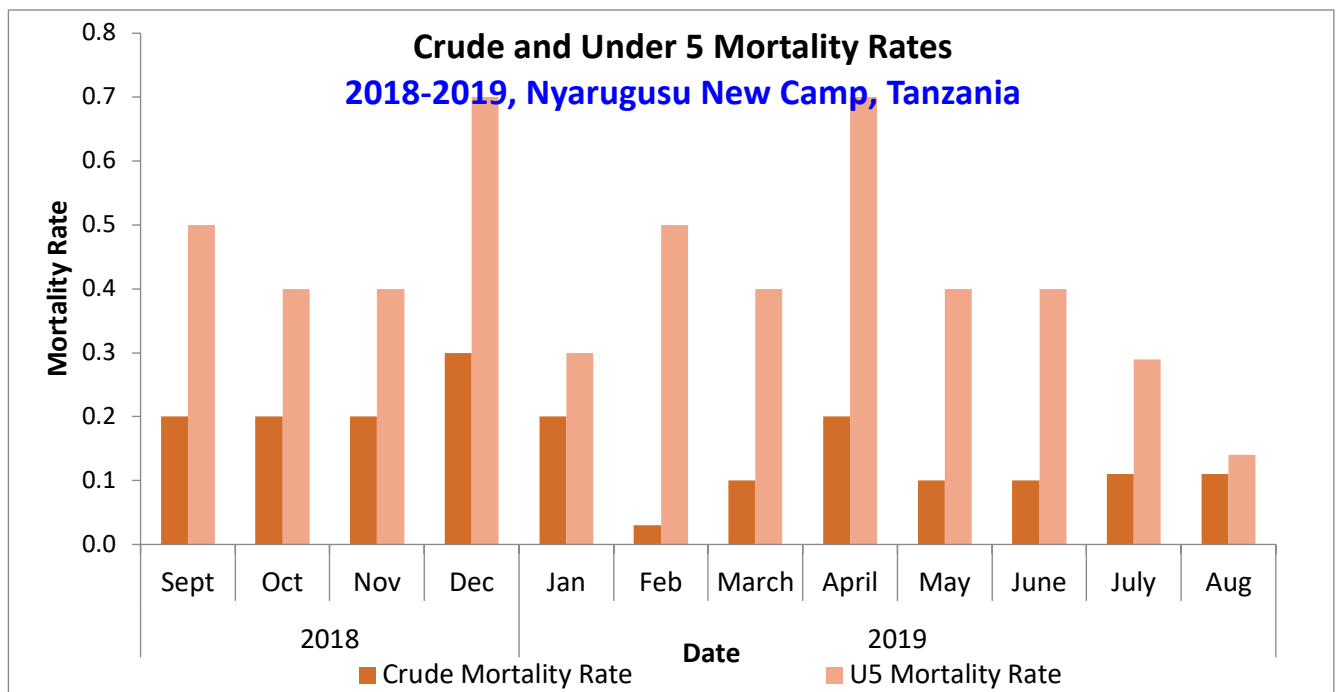
Figure 3: crude and under-5 mortality rates for nyarugusu old camp
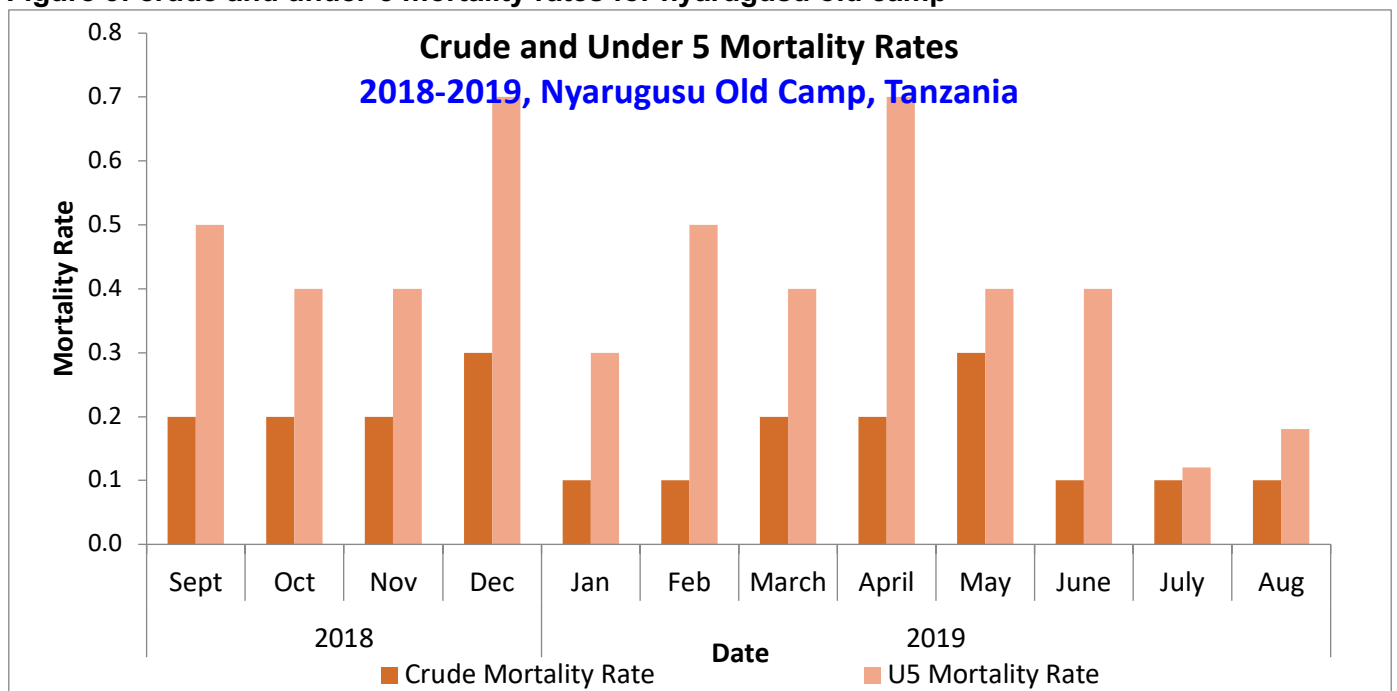
Figure 4: crude and under-5 mortality rates for mtendeli camp
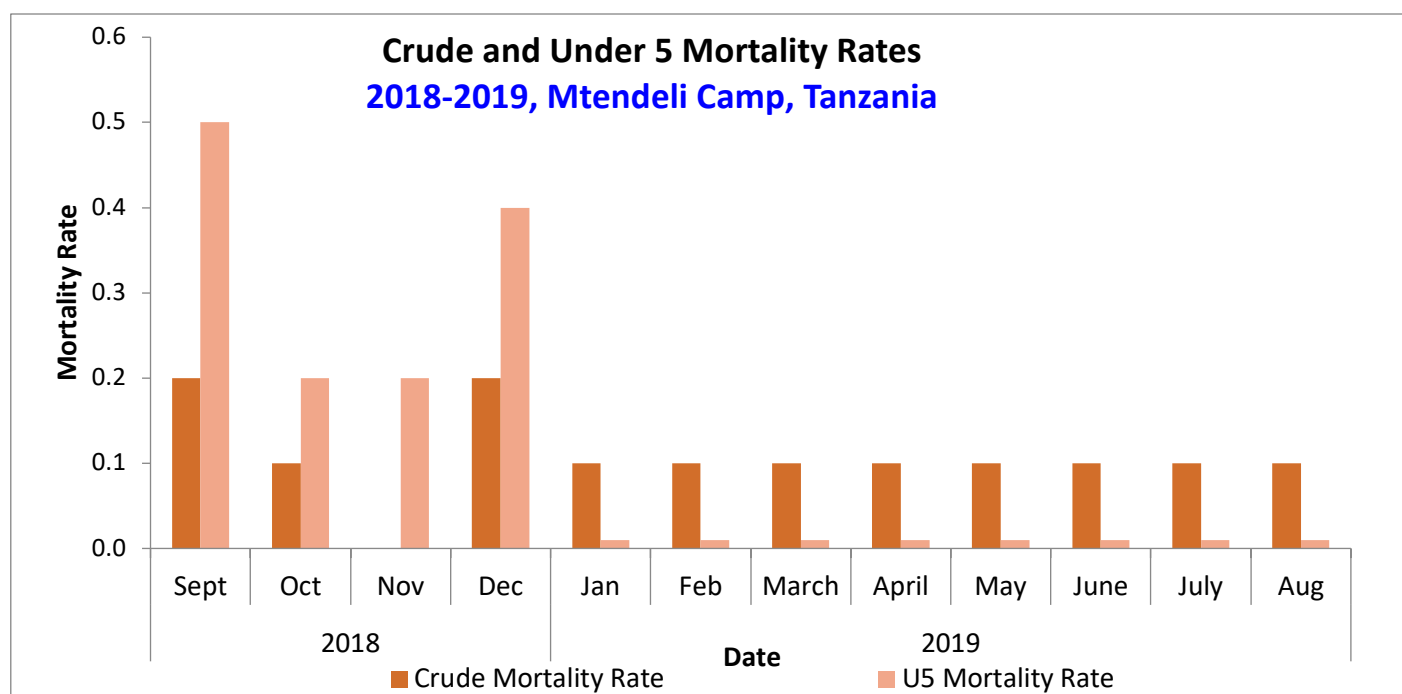
Figure 5: Top five causes of morbidity in children under-fives
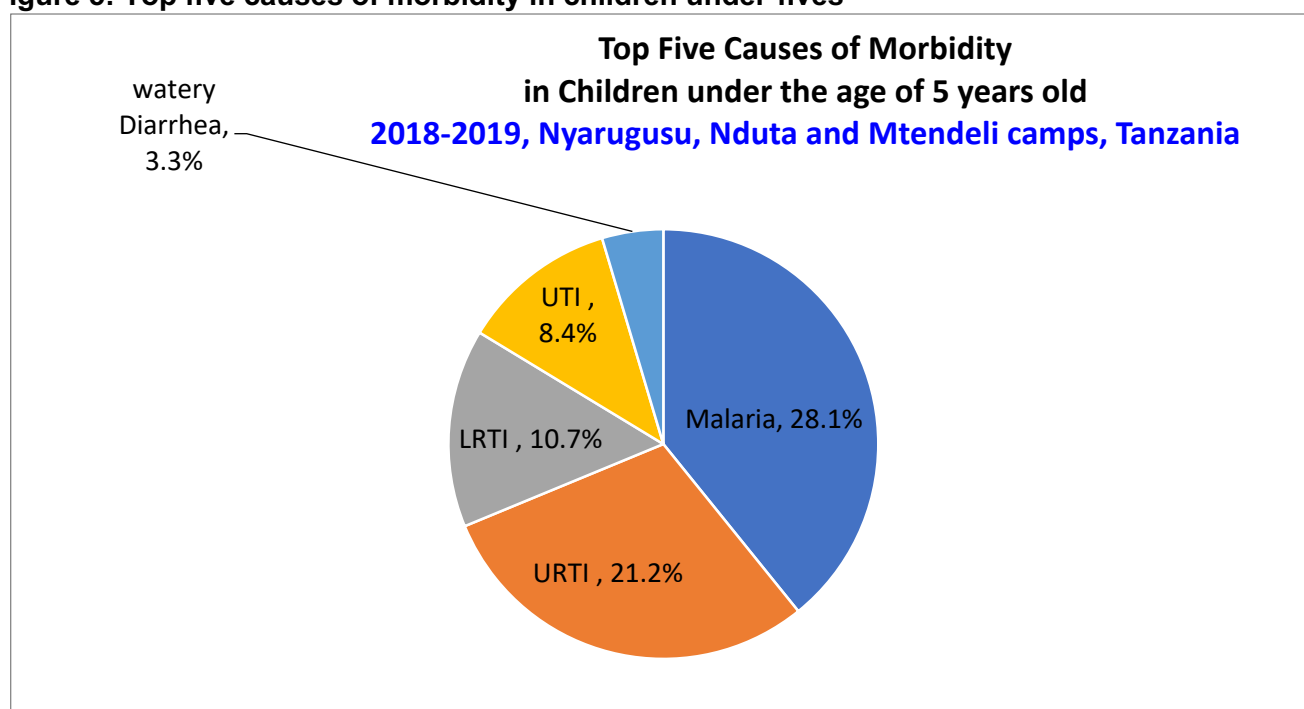
1.5. Nutrition situation

Nutrition programmes presently in the camps are widely used in many dimensions aiming to improve the nutrition wellbeing of refugee population. The program supports timely nutritional assessments, detection and treatment of severe and moderate acute malnutrition, vitamin A supplementation and deworming of children, Infant and young child feeding and strengthen nutrition information system. There are blanket feeding programs which are dedicated specifically for prevention of acute and chronic malnutrition and targeted feeding program used for management of moderate and severe forms of acute malnutrition among children aged 6 – 59 months. Pregnant, lactating women as well as TB/HIV cases also benefits through nutrition programs in the camps.

Nutrition surveys are usually conducted annually for monitoring of nutritional situation of refugees in the camps. The last SENS was conducted in 2018, almost the same period of September and October for comparison with the present.

The overall findings of the nutritional status for refugees was within acceptable threshold target of GAM & SAM prevalence of below 10% and below 2% respectively. Prevalence of stunting in children 6-59 months

remains above 30% critical threshold in all the camps.

Anaemia prevalence in children (6 – 59 months) remains above the critical public health threshold of above 40% categorized by classification of public health significance.

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.

Number of admissions for SAM and MAM are describe in the below figures.

Figure 6: Number of admissions for MAM and SAM in 6-59 months for Nyarugusu new camp
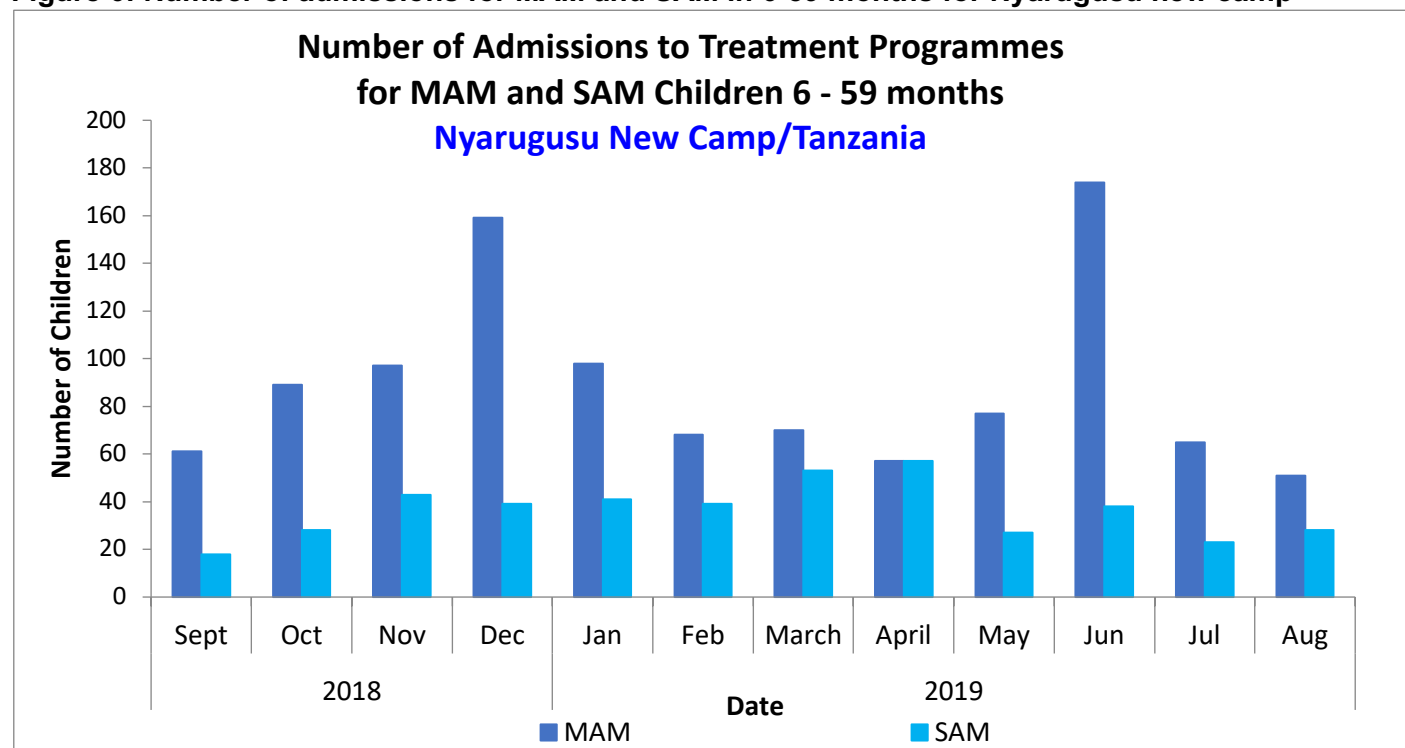
Figure 7: Number of admissions for MAM and SAM in 6-59 months for Nyarugusu old camp
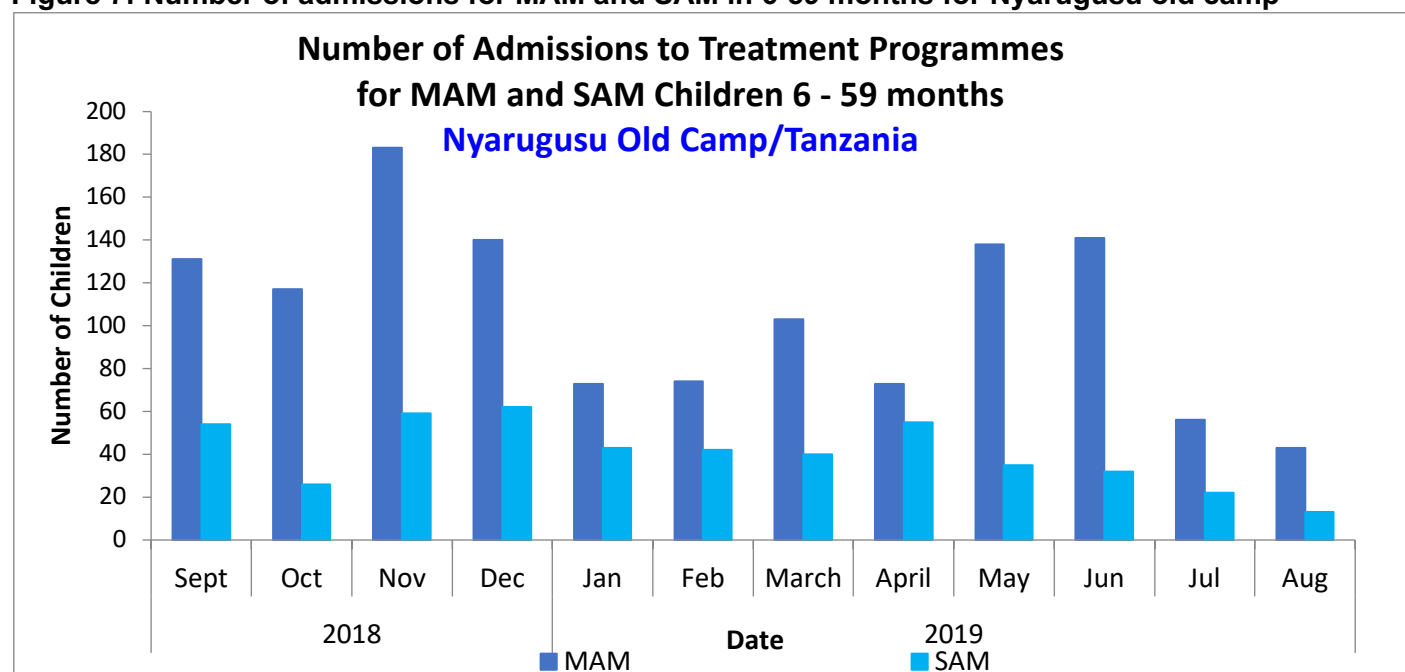
Figure 8: Number of admissions for MAM and SAM in 6-59 months for Nduta camp

Number of Admissions to Treatment Programmes for MAM and SAM Children 6 - 59 months
Nduta Camp/Tanzania
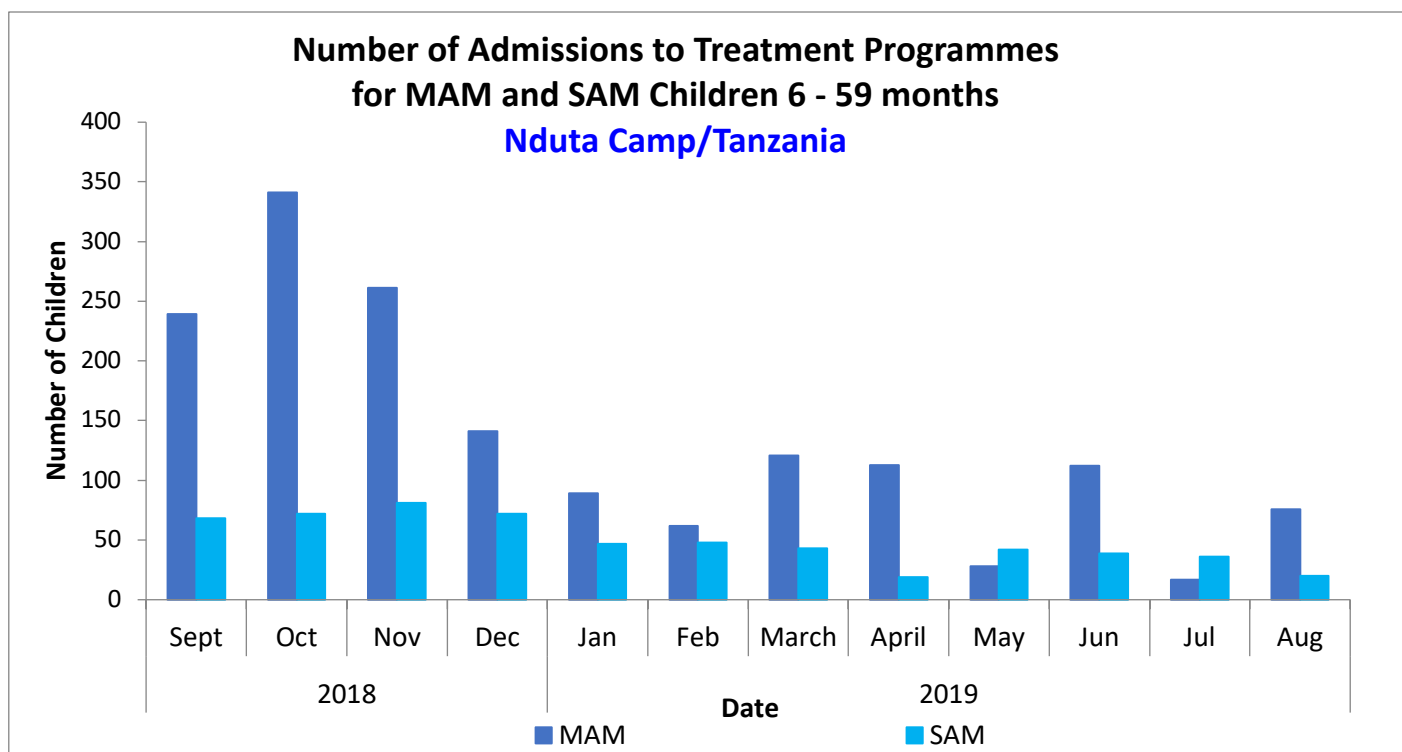
Figure 9: Number of admissions for MAM and SAM in 6-59 months for Mtendeli camp

Number of Admissions to Treatment Programmes for MAM and SAM Children 6 - 59 months
Mtendeli camp/Tanzania
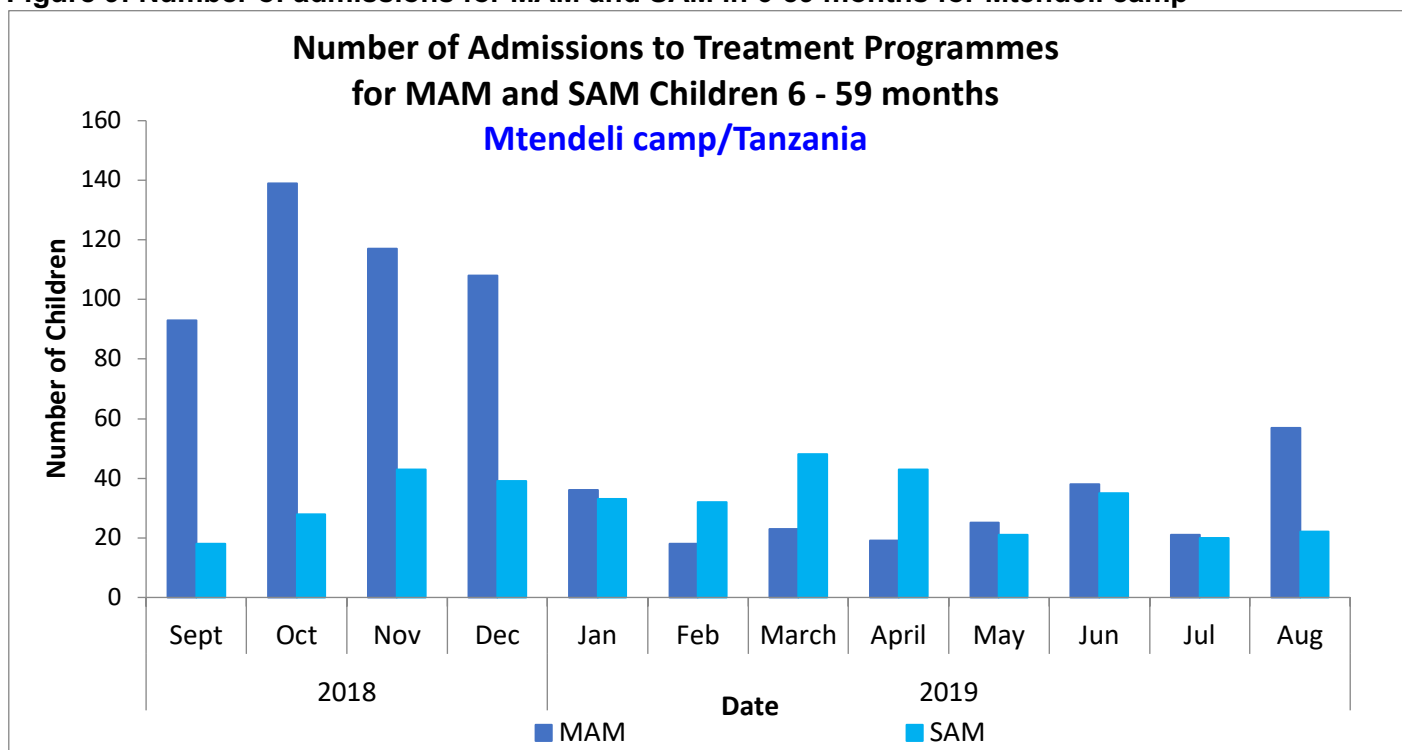
2. Survey Objectives

The main objective of the nutrition survey was to assess the general health and nutrition status of Burundians and Congolese refugees in the 4 refugee areas (Nyarugusu Old camp, Nyarugusu New camp, Nduta camp and Mtendeli camp) and formulate workable recommendations for appropriate nutritional and public health interventions.

2.1. Primary objectives:
1. To determine the demographic profile of the population;
2. To determine the age dependency ratio;
3. To measure the prevalence of acute malnutrition in children aged 6-59 months;
4. To measure the prevalence of stunting in children aged 6-59 months;
5. To determine the coverage of measles vaccination among children aged 9-59 months;
6. To determine the coverage of vitamin A supplementation in the last six months among children aged 6-59 months;
7. To determine the two-week period prevalence of diarrhoea among children 6-59 months;
8. To measure the prevalence of anaemia in children 6-59 months and in women of reproductive age (non-pregnant) between 15-49 years);
9. To investigate IYCF practices among children aged 0-23 months;
10. To determine the coverage of households receiving in-kind food assistance and the duration of the general in-kind food distribution for recipients' households;
11. To determine the extent to which negative coping strategies are used by households;
12. To assess household food consumption (quantity and quality);
13. To determine the ownership of mosquito nets (all types and LLINs) in households.
14. To determine the utilization of mosquito nets (all types and LLINs) by the total population, children 0-59 months and pregnant women.
15. To determine the population's access to, and use of, water, sanitation and hygiene facilities.
16. To determine the population's access to soap;
17. To establish recommendations on actions to be taken to address the situation in the refuge population in the three camps.

2.2. Secondary objectives:
1. To determine the coverage of deworming with mebendazole in the last six months among children aged 12-59 months;
2. To determine the enrolment into the supplementary (SFP) and therapeutic (OTP/SC) nutrition programmes for children aged 6-59 months;
3. To determine the coverage of the blanket supplementary feeding programme (BSFP) for children aged 6-23 months;
4. To determine the coverage of the MNP supplementation for children aged 24-59 months;
5. To determine the coverage of the blanket supplementary feeding programme (BSFP) in pregnant and lactating women;
6. To determine enrolment into Antenatal Care clinic and coverage of iron-folic acid supplementation in pregnant women;
7. To determine the coverage of vitamin A postnatal supplementation among women with children less than 6 months;
8. To determine the population's access to and use of cooking fuel;

2.3. Optional objectives (selected/measured):
1. To determine the use of oral rehydration salt (ORS) and/or zinc during diarrhoea episodes in children ages 6-59 months;
2. To determine the prevalence of MUAC malnutrition in women of reproductive age 15-49 years;

3. Methodology

The surveys were conducted using the Standardized Expanded Nutrition Survey (SENS) guidelines and tools. SENS is a standardized tool for conducting nutrition surveys in refugee populations developed by UNHCR in collaboration with expert organizations and individuals in the fields of nutrition, public health, food security, water, sanitation and hygiene, and malaria prevention. SENS is based on the internationally recognized SMART Methodology[10] (Standardized Monitoring and Assessment of Relief and Transitions) for survey design and anthropometric assessments and adapted to the specific requirements of refugee settings. The SENS modules include standardized questionnaires, analysis guidance, reporting format and standard analysis procedures.

3.1. Sample size

In each camp, a cross-sectional survey was conducted using a two-stage cluster sampling. The sample size was calculated using the ENA software (ENA for SMART 2011, July 9th, 2015).

The sample size was based on anthropometry in children – i.e. Global Acute malnutrition (GAM) among children between 6 and 59 months. The expected prevalence of GAM used for the sample size calculations were from the 2018 SENS survey. The sample size was first calculated in number of children and then converted into number of households. The sample size was adjusted for non-response. The assumptions for the sample size calculation are given below (Tables 3, 4, 5 and 6).

Table 3: Assumptions for the sample size calculation – Nyarugusu new camp

Parameters for Anthropometry	Value	Assumptions based on context
Population of children U5	16,861	Numbers of children under five years of age and living in the camps was obtained from ProGres, the UNHCR database for refugees, as of August 31st, 2019.
Estimated Prevalence of GAM (%)	4.0%	The prevalence of Global Acute Malnutrition (GAM) for Nyarugusu New Camp from the SENS survey conducted in September 2018 was used for calculation of sample size. To be on the safe side, the upper limit of the confidence interval was chosen (2.5% [1.6-4.0% 95% CI]).
± Desired Precision	2.5%	The general purpose of this survey was to assess current nutrition situation in children under the age of five years and women of reproductive age and assist in monitoring the effectiveness and coverage of interventions. From a practical point of view, this means the level of precision needed for sample size calculations was high in order to allow valid comparisons between 2018 and 2019. Since the GAM prevalence was lower, a precision of ±2.5% was chosen.
Design Effect	1.5	As nutrition outcomes are known to generally create relatively low design effects, the choice was made to use a 1.5 design effect to inflate the sample size and compensate the possible heterogeneity between clusters.
Children to be included	385	
Average Household Size	3.7	The average household size was derived from the updated UNHCR ProGres data of August 31st, 2019 to better reflect reality on ground.
% of Children Under Five years old	20.1%	The percentage of under-5 was derived from the updated UNHCR ProGres data of August 31st, 2019 to better reflect reality on ground.
% Non-Response Households	3%	A 3% non-response rate which refers to the number of basic sampling units that are not able to be reached due to the reasons including; refusals, accessibility, absentees, etc. was set.
Households to be included	594	

Table 4: Assumptions for the sample size calculation – Nyarugusu old camp

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[10] SMART. Standardized Monitoring and Assessment of Relief and Transitions. Available at: http://smartmethodology.org/

Parameters for Anthropometry	Value	Assumptions based on context
Population of children U5	11,118	Numbers of children under five years of age and living in the camps was obtained from ProGres, the UNHCR database for refugees, as of August 31st, 2019.
Estimated Prevalence of GAM (%)	3.7%	The prevalence of Global Acute Malnutrition (GAM) for Nyarugusu Old Camp from the SENS survey conducted in September 2018 was used for calculation of sample size. To be on the safe side, the upper limit of the confidence interval was chosen (1.6% [0.7-3.7% 95% CI]).
± Desired Precision	2.5%	The general purpose of this survey was to assess current nutrition situation in children under the age of five years and women of reproductive age and assist in monitoring the effectiveness and coverage of interventions. From a practical point of view, this means the level of precision needed for sample size calculations was high in order to allow valid comparisons between 2018 and 2019. Since the GAM prevalence was lower, a precision of ±2.5% was chosen.
Design Effect	1.5	As nutrition outcomes are known to generally create relatively low design effects, the choice was made to use a 1.5 design effect to inflate the sample size and compensate the possible heterogeneity between clusters.
Children to be included	358	
Average Household Size	4.3	The average household size was derived from the updated UNHCR ProGres data of August 31st, 2019 to better reflect reality on ground.
% of Children Under Five years old	19.1%	The percentage of under-5 was derived from the updated UNHCR ProGres data of August 31st, 2019 to better reflect reality on ground.
% Non-Response Households	3%	A 3% non-response rate which refers to the number of basic sampling units that are not able to be reached due to the reasons including; refusals, accessibility, absentees, etc. was set.
Households to be included	499	

Table 5: Assumptions for the sample size calculation – Nduta camp

Parameters for Anthropometry	Value	Assumptions based on context
Population of children U5	18,649	Numbers of children under five years of age and living in the camps was obtained from ProGres, the UNHCR database for refugees, as of August 31st, 2019.
Estimated Prevalence of GAM (%)	3.9%	The prevalence of Global Acute Malnutrition (GAM) for Nduta Camp from the SENS survey conducted in September 2018 was used for calculation of sample size. To be on the safe side, the upper limit of the confidence interval was chosen (2.3% [1.3-3.9% 95% CI]).
± Desired Precision	2.5%	The general purpose of this survey was to assess current nutrition situation in children under the age of five years and women of reproductive age and assist in monitoring the effectiveness and coverage of interventions. From a practical point of view, this means the level of precision needed for sample size calculations was high in order to allow valid comparisons between 2018 and 2019. Since the GAM prevalence is lower, a precision of ±2.5% was chosen.
Design Effect	1.5	As nutrition outcomes are known to generally create relatively low design effects, the choice was made to use a 1.5 design effect to inflate the sample size and compensate the possible heterogeneity between clusters.
Children to be included	376	
Average Household Size	3.0	The average household size was derived from the updated UNHCR ProGres data of August 31st, 2019 to better reflect reality on ground.

Parameters for Anthropometry	Value	Assumptions based on context
% of Children Under Five years old	22.0%	The percentage of under-5 was derived from the updated UNHCR ProGres data of August 31st, 2019 to better reflect reality on ground.
% Non-Response Households	3%	A 3% non-response rate which refers to the number of basic sampling units that are not able to be reached due to the reasons including; refusals, accessibility, absentees, etc. was set.
Households to be included	653	

Table 6: Assumptions for the sample size calculation – Mtendeli camp

Parameters for Anthropometry	Value	Assumptions based on context
Population of children U5	7,767	Numbers of children under five years of age and living in the camps was obtained from ProGres, the UNHCR database for refugees, as of August 31st, 2019. The U5 population was <10,000; the sample size calculations in the ENA software was corrected to account for small population size.
Estimated Prevalence of GAM (%)	4.4%	The prevalence of Global Acute Malnutrition (GAM) for Mtendeli Camp from the SENS survey conducted in September 2018 was used for calculation of sample size. To be on the safe side, the upper limit of the confidence interval was chosen (2.9% [1.9-4.4% 95% CI]).
± Desired Precision	2.5%	The general purpose of this survey was to assess current nutrition situation in children under the age of five years and women of reproductive age and assist in monitoring the effectiveness and coverage of interventions. From a practical point of view, this means the level of precision needed for sample size calculations was high in order to allow valid comparisons between 2018 and 2019. Since the GAM prevalence is lower, a precision of ±2.5% was chosen.
Design Effect	1.5	As nutrition outcomes are known to generally create relatively low design effects, the choice was made to use a 1.5 design effect to inflate the sample size and compensate the possible heterogeneity between clusters.
Children to be included	331	
Average Household Size	3.9	The average household size was derived from the updated UNHCR ProGres data of August 31st, 2019 to better reflect reality on ground.
% of Children Under Five years old	22.8%	The percentage of under-5 was derived from the updated UNHCR ProGres data of August 31st, 2019 to better reflect reality on ground.
% Non-Response Households	3%	A 3% non-response rate which refers to the number of basic sampling units that are not able to be reached due to the reasons including; refusals, accessibility, absentees, etc. was set.
Households to be included	430	

The number of households to be completed per day (per cluster) was determined according to the time the team could spend on the field taking into consideration travelling time, break times and other procedures like finding location of the selected households. According to the calculated sample size in terms of households to investigate and based on the experience from 2018 (17 households per cluster in Nyarugusu New Camp, 15 households per cluster in Nyarugusu Old Camp and 16 households per cluster in Nduta and Mtendeli camps) and considering the revised SENS version 3, the number of households per cluster was 13 in Nyarugusu New Camp, 15 in Nyarugusu Old Camp, 16 in Nduta and 15 in Mtendeli.

The total number of clusters was determined based on the number of households per cluster as well as based on the total number of survey teams (6 teams - same number of working days between the teams). Thus, a total of clusters ranging from 30 in Mtendeli camp to 46 in Nyarugusu New camp was calculated (Planned to be surveyed – see Table 7 below).

Table 7: Sample size calculations for 2019 SENS survey (Anthropometry and Health module)

Parameters for Anthropometry	Nyarugusu New Camp	Nyarugusu Old Camp	Nduta Camp	Mtendeli Camp
Households to be included	594	499	653	430
Households/ cluster	13	15	16	15
Number of clusters	46	34	42[11]	30
Number of days required for data collection (6 teams)	8 days (6 teams x 13 HH x 8 days = 624 HH)	6 days (6 teams x 15 HH x 6 days = 540 HH)	7 days (6 teams x 16 HH x 7 days = 672 HH)	5 days (6 teams x 15 HH x 5 days = 450 HH)

Table 8: Final sample sizes for all modules

Modules	Nyarugusu New Camp	Nyarugusu Old Camp	Nduta Camp	Mtendeli Camp
Anthropometry and Health	624 HH	540 HH	672 HH	450 HH
Anaemia – Children	624 HH	540 HH	672 HH	450 HH
Anaemia – Women	624/2 = 312 HH	540/2 = 270 HH	672/2 = 336 HH	450/2 = 225 HH
IYCF	624 HH	540 HH	672 HH	450 HH
Demography	624 HH	540 HH	672 HH	450 HH
Food Security	624/2 = 312 HH	540/2 = 270 HH	672/2 = 336 HH	450/2 = 225 HH
Mosquito Net Coverage	624/2 = 312 HH	540/2 = 270 HH	672/2 = 336 HH	450/2 = 225 HH
WASH	624/2 = 312 HH	540/2 = 270 HH	672/2 = 336 HH	450/2 = 225 HH

3.2. Sampling procedure: clusters and household selection

In each camp, a cross-sectional household survey was conducted using a two-stage cluster sampling. Four independent samples were drawn separately for Nyarugusu New camp, Nyarugusu Old camp, Nduta camp and Mtendeli camp using the cluster sampling methodology.

First stage: Cluster selection

All camps were divided into zones and each zone was further divided into villages ("kijiji"). The villages were used as primary sampling unit and assigned to clusters. The first stage sample of clusters was drawn from the UNHCR registration database (ProGres) using the village level population estimates as of August 31st, 2019. In Nyarugusu New camp, 46 clusters were randomly selected according to the probability proportional to size (PPS) method using the ENA software (ENA for SMART 2011, July 9th, 2015). In Nyarugusu new camp, 34 clusters were randomly selected. In Nduta camp, 42 clusters were randomly selected. In Mtendeli camp, 30 clusters were randomly selected.

Second stage: Household selection

The second stage of sampling involved selecting households within each selected cluster by using a simple random selection procedure. The Registration Group was used as a proxy for household definition. A Registration Group was defined as one or more individuals who were registered together. For example, a Registration Group could be a family, or it could be a household registered together for assistance purposes. An individual must always belong to a Registration Group. An individual can only belong to one Registration Group at any point in time. Houses/tents were physically labelled with unique numbers per village/cluster in each camp. To ensure results are representative of people actually living in the camps at the time of the survey, empty shelter[12], as verified through neighbours were not labelled. Using the total list of households generated from the physical counting and labelling of tents/houses per village/cluster in the camps, the households to be surveyed were picked automatically using the ENA software. Each team was provided with a list of households to be surveyed and it was its discretion to decide where to start collecting the data.

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[11] 42 instead of 41 calculated clusters were desired for Nduta following an intensive voluntary repatriation which was ongoing during the survey.
[12] An empty shelter was considered as an abandoned shelter and excluded from the survey if no one was living in that shelter during the last month.

3.3. Sampling procedure: selecting households and individuals

Special cases

Absent Household

If the household members were not present, the survey team had to ask from neighbor of the residents' whereabouts. If they were expected to return before the survey team leaves the village/cluster, the survey team had to return to administer the questionnaire on the same day where possible. This household had an ID, even if the survey team could not able to revisit them. The survey team continued with the survey by choosing the next household according to the selection method described above and this household was not replaced. A household was considered "absent" when its members slept there last night and went out for the whole day of the survey.

Refusal

If a participant or an entire household refused to participate then it was considered a refusal and the individual or the household was not replaced with another. The refusal was recorded in the data collection control sheet.

Households without children U5 and/or without women

In households with no children aged 0-59 months and/or women between 15 and 49 years, the survey team had to complete the Demography questionnaire and the Household questionnaire (Food security, mosquito net and WASH) if this household was selected for the Household questionnaire (administered in every other household). In the data collection control sheet, the team leader wrote the household's number and indicated that no children between the ages of 0 and 59 months and/or no women between the ages of 15 and 49 years belonged to the household.

Absent Children/Women

The team leader asked the reason of the children's/women's absence. If the child/woman (or children or women) is close to the home, someone should be sent to bring them back. If the child/woman was expected to return before the survey team leaves the village/cluster, then the survey team had to return before the end of the day to take the measurements. If the child/woman could not be found before the team leaves the village/cluster, the child/woman available information (age, sex, etc.) were recorded in the questionnaire and the child/woman was marked as "absent" in the data collection control sheet.

Disabled Children

Disabled children were included in the survey. If a physical deformity prevents the measurement of child's weight, height or MUAC, the data were recorded as missing and the remaining data were collected. This information was recorded in the data collection control sheet.

Children in a medical/nutrition centre

Children in a medical/nutrition centre were included in the survey. Where feasible, the team had to go to the centre. If it was not possible to visit the centre, the child was given an ID number and considered as absent and not replaced. If the child was too weak to be measured, the anthropometric data were recorded as missing and the remaining data were collected. This information was also recorded in the data collection control sheet.

3.4. Questionnaire and measurement methods

The questionnaire was divided into four main sections: Demography questionnaire, Household questionnaire (Food Security, Mosquito Net Coverage and WASH), Children questionnaire (anthropometry, health and anaemia) and Women questionnaire (anthropometry, health and anaemia) (See Annex 1). The final survey questionnaire was translated into Kiswahili. The survey questionnaire was pre-tested before the survey, during the survey training and at pilot test. Interviews were held in Kiswahili or translated to respective local language if the household does not understand Kiswahili and information was recorded on Android smartphone (LG). The survey questionnaires on the smartphones were available both in English and Kiswahili.

1- Demography questionnaire (all selected households)

Demography is the new module that has recently developed and included in the SENS survey aimed to provide key information on the demographic profile of the surveyed population in addition to information to aid in future survey planning

The Demography module provides information that describes the surveyed population to help understand the context but has to be used in conjunction with more detailed Household Vulnerability/ Socio-economic Assessments undertaken among the same population.

The SENS Demography questionnaire, therefore, intends to provide information on the following priority indicators at the household level: description of the population demographics, age dependency ratio, average household size, percentage of children under-5 and non-response rate.

2- Household questionnaire (half of the selected households)

Food security

Food security is the key component to achieving optimum fetal and child nutrition. Improving overall food security is therefore critical to improved nutrition, health and long-term development of children and other household members, and this is why collecting food security information is important.

The inclusion of food security module in SENS survey provides basic information on the existing food security situation among the surveyed population in addition to other detailed assessments.

The majority of indicators proposed in this module are based on international guidelines (by entities such as FANTA, FAO and WFP), that have been adapted to the refugee context.

Food Security module, therefore, aimed to provide an understanding of the current state of food security among the surveyed population focusing on four areas including; access to and use of food including food assistance, access to and use of cooking fuel, use of negative coping strategies and level of household dietary diversity.

Access to and use of food and food assistance provides information on any food gaps (quantity and quality). Access to cooking fuel demonstrates the extent to which refugee families are able to cook a meal without having to consider collecting or purchasing firewood. The extent to which negative coping strategies are used is an indicative of the overall stress placed on the surveyed population to meet their food and other basic needs.

Mosquito net coverage

Information on the ownership and utilisation of mosquito nets, more importantly long-lasting insecticidal net (LLINs), is essential to be known in refugee settings where malaria is endemic and LLINs are used as one of the malaria control strategies. Studies have shown an association between malaria and undernutrition among children aged below five years especially in malaria endemic areas.

The main objective of this module was, therefore, to assess the level of ownership and utilization of mosquito nets in the following categories: all household members (including children under 5, pregnant women and other household members); children under 5 years of age; and pregnant women.

Water, sanitation and hygiene

The inclusion of the basic WASH module in the SENS provides key information for planning interventions to address public health concerns and to ensure that basic rights are upheld

Poor water, sanitation and hygiene have serious consequences for the health and nutrition status of persons of concern to UNHCR

This module in SENS survey provides only a few of the core indicators for monitoring WASH programmes at the household level and has to be used in conjunction with the standard UNHCR WASH KAP undertaken by WASH specialists

All of the questions for the household SENS survey are taken from the UNHCR WASH KAP to harmonise the surveys undertaken in refugee operations

The SENS WASH questions, therefore, aimed to measure the following indicators at household level: access to a protected/treated drinking water source, use of an adequate quantity of water, use of toilets/latrines and access to soap.

3- Children Questionnaire (children from 0 to 59 months of age)

Sex

The child's sex was recorded as "f" or "m": f = female and m = male.

Age
The date of birth was recorded from any relevant document such as birth certificate, family book or vaccination card, which would provide the name of the child and the date of birth. If the date of birth was unknown, the interviewer used the calendar of local events and the recall of the mother or caregiver was used to estimate the most correct age in months to be recorded on the questionnaire. The birth date will be recorded in the day/month/year (DD/MM/YYYY) of format. The UNHCR Manifest was not used to determine age of children <5 years because it does not reflect the correct birthdate.

Weight
Children were weighed using a SECA Uniscale electronic scale with the precision of 100 grams and with a wooden board to stabilize it on the ground. All children were measured naked following the recommended anthropometric methods. Where seemed to be a problem, teams were instructed to take weight inside of the surveyed tent/house, and if this was not possible the child was allowed to wear a light cloth estimated at 100g maximum. Smaller children who were not able to stand on the scale were measured in their caregiver's arms using the mother-to-baby function of the scale.

Clothes
Recording of whether the child was measured weight with or without clothes was as follows.
Y = yes, with clothes
N = no, without clothes

Height/Length
The child's height/length was measured with a precision of 0.1cm by using height boards. Children were measured lightly dressed with no shoes, hairpieces or barrettes on their head that could interfere with a correct height measurements. Children less than 87cm height were measured laying down while those 87cm standing height or taller were measured standing.

Measurement
The measurers recorded if they measured height or length.
L = length (recumbent length)
H = height (standing height)

Oedema
Only bilateral pedal oedemas were considered as nutritional oedema. Their presence was detected by applying a gentle pressure with the thumbs to top part of both feet for three seconds. If the imprint of the thumbs remained on both feet for a few seconds after releasing the thumbs, the child was considered to have nutritional oedema. Bilateral oedema was diagnosed and not graded. The diagnosis was simply recorded Y for "Yes" or N for "No". In this case, the survey team had to report to the supervisors/survey manager for verification and subsequent referral to the feeding centre thereafter.

Mid-Upper Arm Circumference (MUAC)
The MUAC was measured in centimetres on the left arm, at midpoint between the shoulder's tip and the elbow, on a relaxed arm. MUAC was taken only for children between 6 and 59 months of age.

Additional data
Measles vaccination
The interviewer first tried to confirm if the child received measles vaccination by examining an official document (EPI card/clinic card/health card). If there was no document, the interviewer asked the respondent if the child received measles vaccination. Only children aged 9-59 months were assessed for measles vaccination.

Vitamin A supplementation in the past six months
The interviewer first tried to confirm if the child received a vitamin A supplementation by examining an official document (EPI card/clinic card/health card). If there was no document, the interviewer showed vitamin A blue and red samples to the respondent and ask him/her if the child received a vitamin A supplementation drops in the mouth in the past six months.

Deworming in the past six months

The deworming status in the past six months was also confirmed with an official document (EPI card/clinic card/health card). Where not possible, the interviewer showed to the respondent a deworming tablet (mebendazole) and ask if the child received a "worm medicine" in the past six months.

Diarrhoea episode in the last 2 weeks
A question was asked to caregivers to find out if their children have had an episode of diarrhoea in the two weeks preceding the survey. An episode of diarrhoea was defined by the occurrence of at least three liquid stools during the same 24 hours. The enumerators ensured that the definition of diarrhoea was understood by the respondent by assessing the number of liquid stools the child had within 24 hours.

Use of ORS/zinc during a diarrhoea episode
The interviewer asked the mother/caregiver of the child if received ORS sachets and/or zinc during a diarrhoea episode. An ORS sachet and a zinc pill were shown when asked to recall.

Enrolment into a nutrition programme (TSFP/OTP/SC)
The team leader asked the mother/caregiver of the child if he/she was receiving sachets of Plumpy Nut' or CSB++, by showing her both sachets. If the child was receiving the Plumpy Nut' sachets, he/she was enrolled in a therapeutic feeding programme (OTP); if he/she was receiving the CSB++, he/she was enrolled in a supplementary feeding programme (TSFP).

Enrolment into BSFP programme/MNP programme
The team leader asked the mother/caregiver of the child if he/she was receiving CSB++ (children aged > 6 and <24 months), by showing her sachet. If the child was receiving CSB++ sachet, he/she was enrolled in the BSFP programme. The team leader asked the mother/caregiver of the child if he/she was receiving sachet of MNP (children aged ≥24 and <= 59 months), by showing her sachet. If the child was receiving MNP sachets, he/she was enrolled in the MNP programme.

Haemoglobin concentration (Hb)
The haemoglobin concentration was measured from a blood sample taken at the fingertip and recorded in grams per decilitre or in grams per litre (depending on the HemoCue device used by the team) using a portable HemoCue Hb 301 analyzer. The measure was carried out after renewal in advance of the verbal consent. All children 6-59 months were assessed for their haemoglobin concentration, in all selected households for the survey. If severe anaemia was detected, the child was referred for treatment immediately.

Infant and Young Child Feeding practices (IYCF) (children from 0 to 23 months of age)
Several questions on breastfeeding practices and on complementary feeding practices were asked to the mothers/caregivers of children from 0 to 23 months of age.

4- Women Questionnaire (women from 15 to 49 years of age)
Age
The age was recorded in years on the questionnaire.

Pregnant and lactating status
The team leader asked all women if they were pregnant and/or lactating. If the woman was pregnant, the team did not assess the haemoglobin concentration.

Mid-Upper Arm Circumference (MUAC)
The MUAC was measured in centimeters on the left arm, at midpoint between the shoulder's tip and the elbow, on a relaxed arm for all women.

Enrolment in an ANC programme - Iron and folic acid supplementation
If the woman was pregnant, the team leader had to ask two additional questions about her enrolment in an antenatal care programme and consumption of iron-folic-acid pills. An iron-folic acid pill image was shown to the pregnant woman when asked to recall.

Post-natal vitamin A supplementation
The team leader asked the woman with children younger than 6 months if she received a vitamin A supplementation after delivery. A vitamin A capsule image was shown when asked to recall.

Enrolment into BSFP programme

The team leader asked all pregnant women and lactating women with an infant younger than 6 months if they were actually enrolled in the BSFP programme and so if they were receiving the super cereal with sugar.

Haemoglobin concentration (Hb)
The haemoglobin concentration was measured from a blood sample taken at the fingertip and recorded in grams per decilitre or in grams per litre (depending on the HemoCue device used by the team) using a portable HemoCue Hb 301 analyser. The measure was carried out after renewal in advance of the verbal consent. All non-pregnant women were assessed for their haemoglobin concentration, in half of the households selected for the survey. If severe anaemia was detected, the woman was referred for treatment immediately.

3.5. Case definitions, inclusion criteria and calculations

Demographic indicators
Age dependency ratio: According to the United Nations Population Division[13] and the World Bank[14], the age dependency ratio is defined as the 'ratio of dependents--people younger than 15 or older than 64--to the working-age population--those aged 15-64 ' The ratio is used to indicate the pressure/dependency on the working-age population (15 – 64 years) owing to the share of children and elderly in a household

A higher age dependency ratio indicates greater pressure on the working members of a household, while a lower age dependency ratio represents lesser burden on the family's economic situation It is calculated as follows:

$$\text{Age dependency Ratio} = \frac{\text{Number of people aged 0 - 14 years and those aged 65 years and over}}{\text{Number of people aged 15 - 64 years}}$$

Non-response rate: in sample surveys, the failure to obtain information from a designated individual or household for any reason (e g absence, refusal) is called a non-response. The proportion of non-responders (individuals or households) over the planned sample size is the non-response rate.

A household: In household surveys, a household is typically defined as a group of people who live together and routinely eat out of the same pot.

Head of household: The person responsible for making the decisions for the household as a whole

Nutritional Anthropometric Indicators
The following cut-offs were used to determine the prevalence of acute malnutrition, stunting and underweight (z-scores) using the WHO 2006 growth references.

Table 9: Cut-offs for definition of acute malnutrition, stunting and underweight

Classification	Acute Malnutrition or Wasting (WHZ)	Chronic Malnutrition or Stunting (HAZ)	Underweight (WAZ)
Global	<-2SD &/or bilateral oedema	<-2 SD	<-2 SD
Moderate	≥-3 SD & <-2 SD	≥-3 SD & <-2 SD	≥-3 SD & <-2 SD
Severe	<-3 SD &/or bilateral oedema	<-3 SD	<-3 SD

Table 10: Cut-offs for definition of acute malnutrition based on muac in tanzania

Target	Classification	MUAC Cut-offs
Children 6-59 months	MAM	<125 mm
	SAM	<115 mm

Vitamin A Supplementation, Deworming, Measles vaccination and Two-week prevalence of Diarrhoea

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[13] UN DESA Population Indicators, accessed 12th Sept 2017

[14] World Bank Data Library, accessed 12th Sept 2017

To estimate vitamin A supplementation, deworming coverage, measles vaccination and the two-week period prevalence of diarrhoea, the following formula presented in table 11 were used.

Table 11: Vit A supp, deworming, measles vaccination coverage and prevalence of diarrhoea

Indicator	Numerator	Denominator
Vitamin A Supplementation	Number of children aged 6-59 months who received at least one high-dose vitamin A supplement in the past six months	Total number of children aged 6-59 months x 100
Deworming	Number of children 12-59 months dewormed in the past six months	Total number of children aged 12-59 months x 100
Measles vaccination	Number of children 9-59 months immunized against measles	Total number of children aged 9-59 months x 100
Diarrhoea	Number of children aged 6-59 months who had diarrhoea in the past two weeks	Total number of children aged 6-59 months x 100

Child enrolment in selective feeding programme:

Coverage of TSFP programme (%) =
100 x
No. of surveyed children with MAM according to TSFP criteria who reported being registered in TSFP
No. of surveyed children with MAM *according to SFP admission criteria*

Coverage of OTP/SC programme (%) =
100 x
No. of surveyed children with SAM according to OTP/SC criteria who reported being registered in OTP/SC
No. of surveyed children with SAM *according to OTP/SC admission criteria*

Infant and Young Child Feeding Practices (IYCF)
IYCF indicators and formula that was used to calculate them are detailed below. These indicators and formula follow the SENS guidelines and the guidelines from WHO "Indicators for assessing IYCF practices".

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

Children born in the last 24 months who were ever breastfed
Children born in the last 24 months

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

Children born in the last 24 months who were put to the breast within one hour after birth
Children born in the last 24 months

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

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

Exclusive breastfeeding means that the infant receives only breast milk. No other liquids or solids are given – not even water – with the exception of oral rehydration solution, or drops/syrups of vitamins, minerals or medicines.

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

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

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

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

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

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

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

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

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

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

Anaemia
Anaemia is said to exist when the level of circulating haemoglobin (Hb) in the patient is lower than that of healthy persons of the same age group and sex in the same environment. The most common type of anaemia is due to iron deficiency resulting from inadequate iron intake from foods.
Hb concentrations were reported in g/dL for consistency purposes. Hb levels were categorized according to WHO recommended cut-offs (shown in Table 12) to determine the prevalence of anaemia (mild, moderate, severe).

Table 12: Haemoglobin levels to diagnose anaemia at sea level (who 2011)

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

* This category includes lactating women

Residential elevation above sea level are known to increase haemoglobin concentrations. Consequently, the prevalence of anaemia may be underestimated in persons residing at high altitudes if the standard anaemia cut-offs are applied. Table 13 presents the recommended adjustments made to the measured haemoglobin concentration among non-pregnant women living in the camps. The Hb concentrations were automatically adjusted in each camp.

Table 13: Altitude adjustments to measured haemoglobin concentrations in the camps

Camp	Altitude (metres above sea level)	Measured haemoglobin adjustment (g/dL)
Nyarugusu	1223.46	-0.2
Nduta	1311.38	-0.3
Mtendeli	1305.7	-0.3

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 14: Definitions of drinking water and sanitation (toilet) facilities

	Protected/treated source	Un-protected/un-treated source
Drinking water	Public tap/standpipe Handpumps/Boreholes Water seller/Kiosks Piped connection to house (or neighbour's) Protected spring Bottled water, water sachets Tanker trucks	Unprotected hand-dug well Surface water (lake, pond, dam, river) Unprotected spring Rainwater collection Other
Latrines/toilets	**Considered a toilet**	**Not considered a toilet**
	Household latrine (one HH only) Communal latrine	Open defecation Plastic bag Bucket toilet Other

Food security

Food Consumption Score (FCS): the FCS is a proxy measure of household food access using dietary diversity and food frequency. Focusing on the seven days before the interview, it records how many days nine categories of foods (including super cereals) were eaten by anyone in the household. It is therefore a household variable and does not measure food frequency or diversity for any single individual in the household. Each food category is given a weight based on the energy and the macro and micronutrient content of the food/food group. This weight is multiplied by the number of days in the preceding week each food category was eaten. The sub-scores for each food group are then summed up to produce a composite FC. The FCS also provides a measure of dietary diversity.

Food Consumption Score Nutritional Quality Analysis (FCS-N): the FCS-N methodology uses the same data collection tool as the FCS. It adds an additional dimension to the FCS by analysing household nutrition and protein, vitamin A and iron consumption, using the FCS modules, main food groups and sub-groups. The separate food groups improve the measurement of the consumption of particular nutrient-rich foods versus other less nutrient-rich items that belong to the same general food group[15].

Food group: a food group is a group of foods that have similar nutritional properties, such as the cereal group, tuber and roots group, or meat group.

Coping strategies: coping strategies are behavioural responses to food insecurity, i.e. behaviours that people adopt when they do not have enough food or money to buy food. There are two basic types of coping strategies. One includes the immediate and short-term alteration of food consumption patterns. The other includes the longer-term alteration of income earning or food production patterns, and responses such as asset sales. Most, but not all, coping strategies have negative consequences on the overall wellbeing of the household and the individual.

Mosquito net

Conventionally treated net: a conventionally treated net is a mosquito net that has been treated by dipping in a WHO approved-insecticide treatment. It should be re-treated after three washes, or at least once a year with recommended insecticide to ensure its continued insecticidal effect.

Indoor Residual Spraying (IRS): IRS is the application of long-acting chemical insecticides on the walls and roofs of all houses and domestic animal shelters in a given area, in order to kill the adult vector mosquitoes that land and rest on these surfaces. The primary effects of IRS towards curtailing malaria transmission are: i) to reduce the life span of vector mosquitoes so that they can no longer transmit malaria parasites from one

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[15] Technical Guidance for the Joint Approach to Nutrition and Food Security Assessment (JANFSA). WFP, UNICEF, October 2016.

person to another, and ii) to reduce the density of the vector mosquitoes[16]

Insecticide-treated net (ITN): an insecticide-treated net is a mosquito net that repels, disables, and / or kills mosquitoes coming into contact with insecticide on the netting material. There are two categories of ITNs: conventionally treated nets and long-lasting insecticidal nets.

Malaria: a group of diseases caused by any of four different microorganisms called plasmodia (*Plasmodium falciparum, vivax, ovale,* and *malariae*), which are transmitted by certain species of mosquitoes Malaria is found mostly in tropical and subtropical regions of the world. It can cause anaemia due to haemolysis of red blood cells.

3.6. Classification of public health problems and targets

Anthropometric data:
UNHCR's target for the prevalence of Global Acute Malnutrition (GAM) is <10% and the target for the prevalence of Severe Acute Malnutrition (SAM) is <2% for children 6-59 months.
The table below shows the WHO-UNICEF classification of public health significance of the anthropometric results for children under-5 years of age.

Table 15: WHO-UNICEF (2018) classification of public health significance for children U5 years of age

Classification Prevalence thresholds (%)	Critical situation	Serious situation	Poor situation	Acceptable situation	
	Very High	High	Medium	Low	Very low
Wasting	≥ 15	10 - < 15	5 - < 10	2.5 - < 5	< 2.5
Stunting	≥ 30	20 - < 30	10 - < 20	2.5 - < 10	< 2.5
Overweight	≥ 15	10 - < 15	5 - < 10	2.5 - < 5	< 2.5
Underweight*	≥ 30	20 - < 30	10 - < 20	< 10%	

* Source: WHO (1995) Physical status: the use and interpretation of anthropometry Report of a WHO Expert Committee Technical Report Series No 854 Geneva, World Health Organization, 1995

Nutrition programme enrolment:
The table below shows the performance indicators for malnutrition treatment programmes according to SPHERE Standards.

Table 16: Performance indicators for MAM and SAM (SPHERE)

Coverage		
Rural areas	**Urban areas**	**Camps**
>50%	>70%	>90%

The target for blanket feeding programme coverage should be >70%.

Coverage of measles vaccination, vitamin A supplementation and deworming in the last 6 months

Table 17: UNHCR targets for measles vaccination, vit A supplementation and deworming coverage

Indicator	Target coverage	Source
Measles vaccination coverage (9-59 m)	95%	UNHCR, Sphere Standards
Vitamin A supplementation in the last 6 months coverage (6-59 m)	>90%	UNHCR
Deworming in the last 6 months coverage (appropriate age group)	75%	WHO

Anaemia
UNHCR target for the prevalence of anaemia in children 6-59 months of age and in women 15-49 years of age should be < 20% corresponding to the 'low' category as defined by WHO and shown in the table below

Table 18: WHO classification of public health significance

Classification	High	Medium	Low

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[16] Use of indoor residual spraying for scaling up global malaria control and elimination WHO Position Statement, WHO 2006

Prevalence of anaemia	≥40%	20-39%	5-19%

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

WASH

The following standard applies to UNHCR WASH programmes.

Table 19: UNHCR WASH programme standard

UNHCR Standard		Indicator target
Average liters per person per day of domestic water collected at household level from protected/treated sources (with protected containers only)	Emergency standard	≥15 liters
	Post emergency standard	≥20 liters
% households with at least 10 L/p drinking water storage capacity	Emergency standard	≥70%
	Post emergency standard	≥80%
% households collecting drinking water from protected/treated sources	Emergency standard	≥70%
	Post emergency standard	≥95%
% households reporting defecating in a toilet/latrine	Emergency standard	≥60%
	Post emergency standard	≥85%
% households with access to soap	Emergency standard	≥70%
	Post emergency standard	≥90%

Food Security

Table 20: Food Consumption Score

Classification	Poor	Borderline	Acceptable
Food Consumption Score (FCS)	≤21	21.5-35	>35

Mosquito nets coverage

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 21: International targets

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

3.7.   Survey team

The surveys were coordinated by UNHCR from the outset of planning to finalization of the survey activities. However, the surveys were a joint effort organized by WFP, UNICEF and major partners implementing health and nutrition projects in the camps (World Vision, MSF, TRCS, IMC, ACF, and SC-I).

As part of the implementation of this SENS survey, UNHCR recruited a survey consultant to provide technical assistance for the implementation of the survey. Technical support was also provided by two nutritionists from UNHCR HQ for the piloting of SENS version 3 and supervision in Nyarugusu camps.

The surveys needed 6 teams and 3 supervisors (staff from UN agencies) (1 for 2 teams). Each team composed of 1 team leader, 1 interviewer, 1 Hb taker and 2 measurers. The team leader was responsible for the children and women questionnaires. The interviewer was responsible for the demography questionnaire and the household questionnaire. The measurers took the anthropometric measurements and the Hb takers measured the Hb concentrations. In each team, 2 persons came from the refugee camps.

Language
English/Kiswahili language were used for training, communication, and data collection tools. Incentive workers were used to facilitate the translation of English/Kiswahili vis-à-vis local language (Kirundi/Congolese) during the assessment.

Survey training
The main training was organized in Kasulu bringing together the main survey team (Team leaders, Interviewers and Hb takers). In each camp, a one-day training was conducted for the measurers.

The survey training was facilitated by the survey consultant in collaboration with the two persons from UNHCR HQ, nutritionists from UNHCR Tanzania and other partners involved in the survey. The Survey Training was held in September (Week 37) and lasted for 5 days.

The training included the following areas:
- An overview of the survey and its objectives
- Interviewing and general communication skills
- Sampling procedure and selection of households
- Identification of individuals to measure or interview
- How to complete the questionnaires
- Correct age in month estimation or validation using the calendar of local events
- How to make correct anthropometric measurements
- How to take correct haemoglobin concentration
- The standardization of anthropometric measures: Each measurer had to measure 10 children less than five years of age twice (height, weight). The results of the standardization test by interviewer were produced immediately to determine if further training and standardization was needed.
- The identification of bilateral oedema and how to refer children with acute malnutrition to the health centre
- Data collection using Mobile Data Collection (MDC).
- Pilot Test

Selection of the Team Leaders
Among the participants, only 6 were retained for data collection as team leaders. All the participants were assessed during a pre-test at the beginning of the training and during a post-test at the end of the training. The selection of the team leaders was done based on the results of the two written tests.

Standardization of the Anthropometric Tools
Before testing the participants for accuracy and precision of measurements, all anthropometric tools were tested to ensure that each tool produces the same measure of a standard object (standard weight and wooden stick). The scales or height boards that did not produce exact measures were marked and eliminated before the standardization test and data collection.

Every day, before the start of fieldwork, the measurers were responsible to review their anthropometric equipment for damage and to measure the standard objects to ensure that the tools are still in good working order. Results were recorded daily on the standardization of anthropometric tools form.

Standardization of the Enumerators
The standardization test was organized in one session in each camp (12 measurers). Measurers with good skills of measurement were assigned as a measurer within a team and the others as an assistant-measurer.

Final Selection of the Enumerators
All participants were assessed during a pre-test at the beginning of the training and during a post-test at the end of the training. The final selection was done based on the results of the two written tests and based on the results of the standardization test.

Pilot Test
The survey tools were piloted in Nyarugusu new camp. The enumerators were divided into teams. Each team interviewed a number of households to investigate among households listed in a village not selected for the survey. This process was done to ensure that the methodology and survey equipment are adapted,

but also to complete the training of enumerators.

3.8. Data collection

Data were collected using mobile phones operated by the Android operating system (LG) and the ODK application. During supervision in the field and at the end of each day, the survey consultant and the supervisors manually check the phone questionnaires for completeness, consistency and accuracy. This check also used to provide feedback to the teams to improve data collection as the surveys progressed. Children data were downloaded and analyzed on a daily basis with the ENA software (ENA for SMART 2011, July 9th, 2015). The SMART plausibility report was generated daily in order to identify any problems with anthropometric data collection such as flags and digit preference for age, height and weight, to improve the quality of the anthropometric data collected as the survey was on-going.

A quick check on Haemoglobin concentration among children and non-pregnant women was conducted during quality check. This was done by checking the disparities of number of subjects with low Hb level amongst the teams and feedback was provided for necessary correction among blood sample takers where applicable.

3.9. Data analysis

All data files were reviewed before analysis. Anthropometric data for children 6-59 months were analyzed using ENA for SMART software. The nutritional indices were cleaned using flexible criterion (+/- 3 SD from the observed mean; also known as SMART flags in the ENA for SMART software).

The nutrition results were presented in the standard format following the report template from the ENA software (ENA for SMART 2011, July 9th, 2015). This format includes GAM, SAM, Stunting, Underweight and Overweight with 95% confidence intervals. The report has estimates of malnutrition calculated with the WHO 2006 growth references.

All other data were analyzed in Epi-Info 7. Primary data and secondary information related to health and nutrition were also gathered through interviews, observations and various records. In the secondary data review; the UNHCR Health Information System (HIS) data, UNHCR and partners weekly and monthly reports and past nutritional survey reports were used for the final analysis.

4. Results

4.1. Demography indicators

Sample size and clusters

The presents planned visa-vis surveyed number of clusters, households and children aged 6 – 59 months at survey area. This provides an estimate of percentage target and non-response rate among survey participants. The percentage target of children aged 6 – 59 months reached was above 100% across all the three camps.

Table 22: Sampling information by camp

Survey Area	Sampling Information	Total planned	Total surveyed	% of target	Non-response rate (%)
Nyarugusu New Camp	Number of clusters	46	*46*	100.0%	n/a
	Number of households	598	*593*	99.2%	0.8%
	Number of children 6-59 months	385	*665*	172.7%	
Nyarugusu Old Camp	Number of clusters	34	*34*	100.0%	n/a
	Number of households	506	*501*	99.0%	1.0%
	Number of children 6-59 months	358	*589*	164.5%	
Nduta	Number of clusters	42	*42*	100.0%	n/a
	Number of households	670	*664*	99.1%	0.9%
	Number of children 6-59 months	376	*668*	177.7%	
Mtendeli	Number of clusters	30	*30*	100.0%	n/a
	Number of households	446	*446*	100%	0%
	Number of children 6-59 months	331	*547*	165.3%	

Household size and composition

Camps with large population size were Nduta with 84,691 and Mtendeli had the smallest population size, 34,110 according to UNHCR ProGres database. The highest average household size was presented at 5.2 in Nyarugusu new camp and Mtendeli and the lowest was 4.3 in Nduta camp. Proportion of household size of 1 – 4 persons was the biggest across all the three camps. The proportion of household size of 10 and above persons was lower in Nduta camp (1.5%) compared to Nyarugusu old camp (9.2%). Generally, the household composition of members was almost evenly distributed and equally represented across the three camps. However, average number of children aged 5 – 14 yrs were few in Nduta camp (1.2) compared to other camps (≥1.6). The percentage under two years children ranged between 11 – 13% while proportion of children aged below five year lied between 24 and 27%. Proportion of pregnant women was 2.6% in Nyarugusu old camp and Mtendeli and 3.1% in Nyarugusu new camp and Nduta.

Table 23: Household size and composition, by camp

Household size and composition	Nyarugusu New Camp	Nyarugusu Old Camp	Nduta	Mtendeli
Population size – Total persons	84,028	58,077	84,691	34,110

Household size and composition		Nyarugusu New Camp	Nyarugusu Old Camp	Nduta	Mtendeli
Total population surveyed – Total persons (all ages)		3,076	2,723	2,840	2,326
Total U2 surveyed		340	303	356	258
Total U5 surveyed		756	664	755	602
Average household size		5.2	5.4	4.3	5.2
Household size categories	1-4 person(s)	41.5%	42.9%	59.0%	43.3%
	5-6 persons	28.2%	25.4%	22.3%	28.5%
	7-9 persons	24.0%	22.6%	17.2%	22.0%
	≥ 10 persons	6.4%	9.2%	1.5%	6.3%
Household composition	Children under two	0.6	0.6	0.5	0.6
	Children under five	1.3	1.3	1.1	1.4
	Children aged 5-14 years	1.6	1.7	1.2	1.6
	Members aged 15-64 years	1.2	1.4	1.1	1.2
	Members aged 65 years and above	0.03	0.02	0.02	0.01
Percent of children U2		11.1%	11.1%	12.5%	11.1%
Percent of children U5		24.6%	24.4%	26.6%	25.9%
Percent pregnant women (15-49 years)		3.1%	2.6%	3.1%	2.6%
Percent of elders (65 years and above)		0.5%	0.4%	0.4%	0.2%
Sex ratio		0.9	0.9	0.8	0.9

Below are the population pyramids showing the population profile by camp

Figure 10: Population pyramid <u>in Nyarugusu new camp</u>
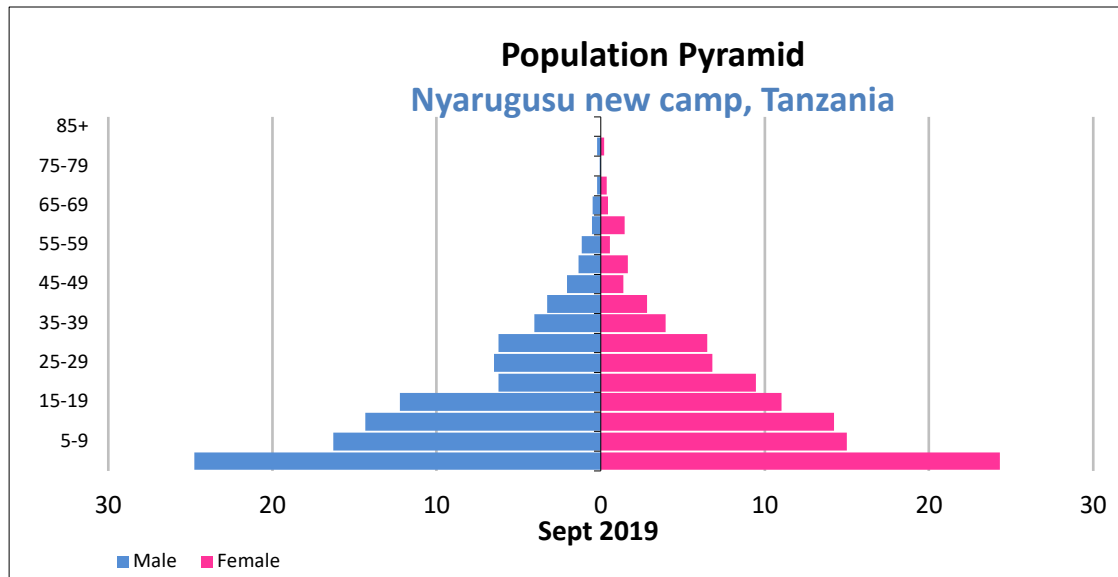
Figure 11: Population pyramid <u>in Nyarugusu old camp</u>
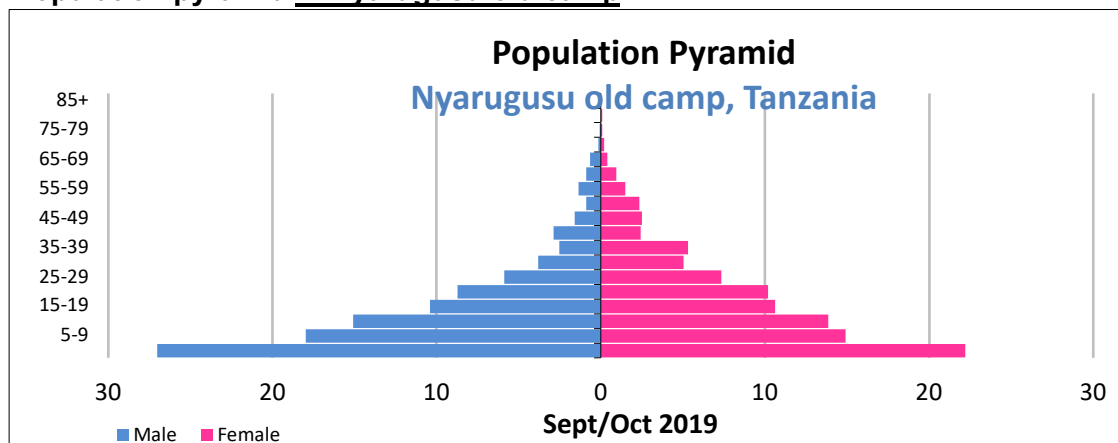
Figure 12: Population pyramid <u>in Nduta camp</u>
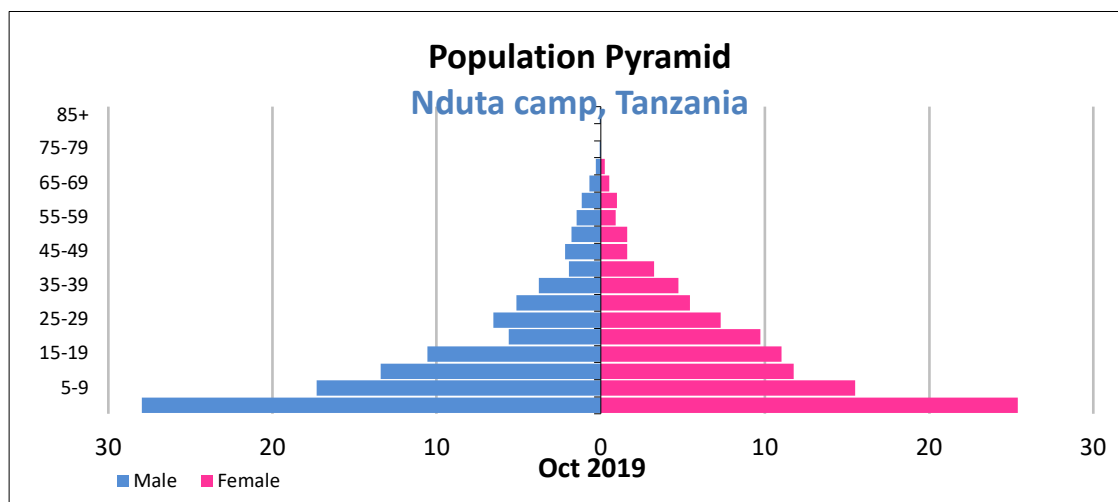
Figure 13: Population pyramid <u>in Mtendeli camp</u>

Population Pyramid
Mtendeli camp, Tanzania

Oct 2019
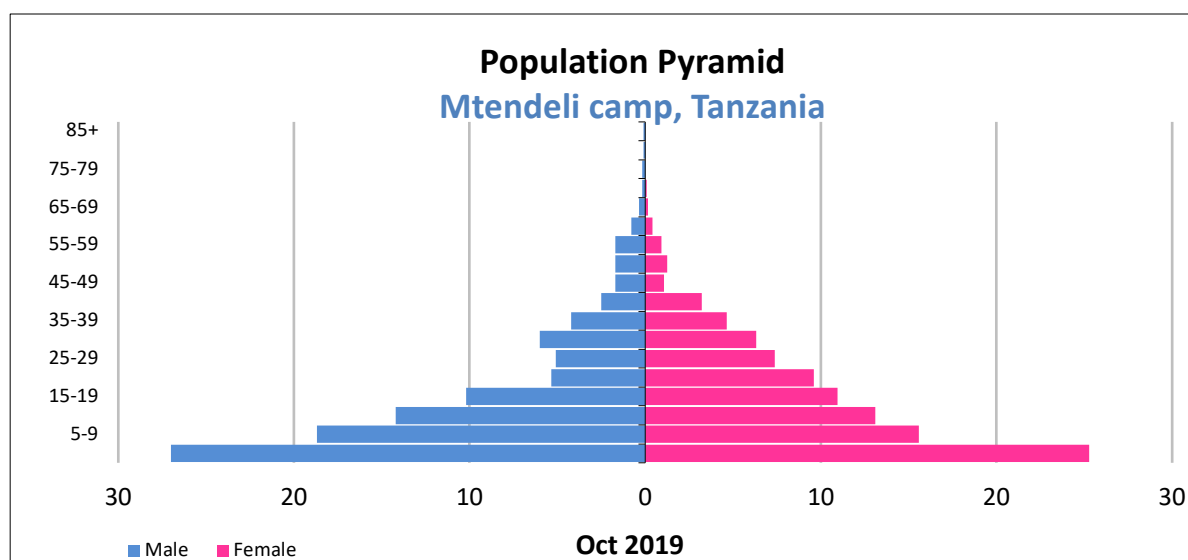
Household Head Profile

The female headed household ranged between 63% in Mtendeli and 77% in Nyarugusu old camp. However, it was noted during the data collection in Nyarugusu new camp that, two definitions are applied among Burundians in particular. Most of ration cards are possessed by women and according to participants that is how UNHCR wants it to be, and thus, termed as "household head for ration card". The second definition was based on roles and responsibility at household level where they said decision making lies entirely within a man/husband.

In Nyarugusu old camp, Nduta and Mtendeli, a small proportion though existed were for households headed by children aged below 15 years (0.2%-0.5%). The proportion of Elderly headed household ranged between 2% to 3%.

The table below shows detailed household head profiles by camp. The mean age of household head ranged from 33.9 years in Nduta and Mtendeli and 37.2 years in Nyarugusu old camp.

Table 24: Household head profile, by camp

Survey Area	N	Nyarugusu New Camp		N	Nyarugusu Old Camp		N	Nduta		N	Mtendeli	
		n	% (95% CI)		n	% (95% CI)		n	% (95% CI)		n	% (95% CI)
Female headed households (working age 15-64 years)	593	407	68.6% [59.9-77.4]	501	384	76.7% [68.5-84.8]	664	485	73.0% [66.1-80.0]	446	279	62.6% [51.1-74.1]
Male headed households (working age 15-64 years)	593	167	28.2% [20.1-36.3]	501	102	20.4% [13.3-27.4]	664	159	24.0% [17.3-30.6]	446	157	35.2% [24.2-46.2]
Children headed households (under 15 years)	593	1	0.2% [0.0-0.5]	501	0	0.0%	664	1	0.2% [0.0-0.5]	446	2	0.5% [0.0-1.1]
Elderly headed households (65 years and above)	593	18	3.0% [1.3-4.8]	501	15	3.0% [1.2-4.8]	664	19	2.9% [1.5-4.3]	446	8	1.8% [0.3-3.3]
Mean age of household head in years		35.6 [Min 14, Max 84]			37.2 [Min 16, Max 90]			33.9 [Min 14, Max 77]			33.9 [Min 8, Max 91]	

Age dependency ratio

The age decency ratio was almost the same across the three camps. The smallest was 1.4 in Nyarugusu new camp and the biggest at 1.6 in Nyarugusu old camp. Large proportion of households had age dependency ratio of 1 and below in all the three camps.

Table 25: Age dependency ratio*, by camp

Age dependency ratio		Nyarugusu New Camp N= 584	Nyarugusu Old Camp N=495	Nduta N=650	Mtendeli N=440
Mean (95% CI) [range]	Cluster design	1.4 (1.3-1.5) [Min 0, Max7]	1.6 (1.5-1.7) [Min 0, Max7]	1.5 1.3-1.6 [Min 0, Max7]	1.5 [1.4-1.7] [Min 0, Max7]

*Age dependency ratio = $\dfrac{\text{Number of people aged 0 -14 years and those aged} \geq 65 \text{ years}}{\text{Number of people aged 15 – 64 years}}$

Table 26: Age dependency ratio categories by household, by camp

Camp	Age dependency categories*	Number / Total	% (95% CI)
Nyarugusu New Camp	I	187/341	54.8% [48.7-61.0]
	II	33/341	9.7% [6.2-13.2]
	III	18/341	5.28% [2.7-7.9]
	IV	103/341	30.2% [26.0-34.4]
Nyarugusu Old Camp	I	153/314	[48.7% [42.8-54.6]
	II	31/314	9.9% [6.7-13.0]
	III	14/314	4.5% [1.8-7.1]
	IV	116/314	36.9% [31.8-42.1]
Nduta	I	201/372	54.0% [48.2-59.8]
	II	30/372	8.1% [5.4-10.7]
	III	15/372	4.0% [2.0-6.1]
	IV	126/372	33.9% [28.3-39.5]
Mtendeli	I	123/240	51.25% [44.4-58.2]
	II	20/240	8.33% [3.6-13.1]
	III	15/240	6.3% [3.0-9.53]
	IV	82/240	34.2% [27.9-40.4]

*Category I: 1 dependent or less per non-dependent member, age dependency ratio ≤ 1; Category II: Up to 3 dependents per 2 non-dependent members, age dependency ratio 1.1-1.5; Category III: Up to 2 dependents per non-dependent members, age dependency ratio 1.6-2.0; Category IV: More than 2 dependents per non-dependent members, age dependency ratio ≥2.1.

4.2. Children 6-59 months

Age and Sex Distribution

Age was evenly distributed among age categories as indicated in the below tables. The sex ratio was rounded to 1.0 across all the three camps.

Table 27: Children 6-59 months - distribution of age and sex of sample in Nyarugusu new camp

	Boys		Girls		Total		Ratio
Age (mo)	no.	%	no.	%	no.	%	Boy:Girl
6-11 months	37	49.3	38	50.7	75	11.3	1.0
12-23 months	86	47.3	96	52.7	182	27.4	0.9
24-35 months	77	48.7	81	51.3	158	23.8	1.0
36-47 months	75	51.7	70	48.3	145	21.8	1.1
48-59 months	50	47.6	55	52.4	105	15.8	0.9
Total	325	48.9	340	51.1	665	100.0	1.0

Table 28: Children 6-59 months - distribution of age and sex of sample in Nyarugusu old camp

	Boys		Girls		Total		Ratio
Age (mo)	no.	%	no.	%	no.	%	Boy:Girl
6-11 months	42	53.8	36	46.2	78	13.2	1.2
12-23 months	74	48.7	78	51.3	152	25.8	0.9
24-35 months	66	51.6	62	48.4	128	21.7	1.1
36-47 months	60	48.4	64	51.6	124	21.1	0.9
48-59 months	59	55.1	48	44.9	107	18.2	1.2
Total	301	51.1	288	48.9	589	100.0	1.0

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Table 29: Children 6-59 months - distribution of age and sex of sample in Nduta camp

	Boys		Girls		Total		Ratio
Age (mo)	no.	%	no.	%	no.	%	Boy:Girl
6-11 months	42	56.8	32	43.2	74	11.1	1.3
12-23 months	95	47.5	105	52.5	200	29.9	0.9
24-35 months	83	52.9	74	47.1	157	23.5	1.1
36-47 months	51	43.2	67	56.8	118	17.7	0.8
48-59 months	59	49.6	60	50.4	119	17.8	1.0
Total	330	49.4	338	50.6	668	100.0	1.0

Table 30: Children 6-59 months - distribution of age and sex of sample in Mtendeli camp

	Boys		Girls		Total		Ratio
Age (mo)	no.	%	no.	%	no.	%	Boy:Girl
6-11 months	27	46.6	31	53.4	58	10.6	0.9
12-23 months	75	56.4	58	43.6	133	24.3	1.3
24-35 months	72	44.2	91	55.8	163	29.8	0.8
36-47 months	66	55.0	54	45.0	120	21.9	1.2
48-59 months	32	43.8	41	56.2	73	13.3	0.8
Total	272	49.7	275	50.3	547	100.0	1.0

The proportion of children with no exact birthdate was 8% for Nyarugusu new camp, 5% for Nyarugusu old camp, 14% for Nduta and 5% for Mtendeli. During data collection, most of caregivers of children with no exact birthdate said were not given the EPI cards and for older children, parent said the card were lost on their way to seek refuge in Tanzania.

Anthropometric results (based on WHO Growth Standards 2006)

The prevalence of global acute malnutrition (GAM) based on weight for height expressed in Z-scores and/or oedema was 1.8% for Nyarugusu new camp, 1.2% for Nyarugusu old camp, 3.2% for Nduta and 1.3% for Mtendeli. While girls seemed the most affected with acute malnutrition for Nyarugusu new and old camps, the reverse was true for Nduta and Mtendeli. Except for Nduta camp where prevalence of severe acute

malnutrition (SAM) was 0.2%, other camps were free from SAM. Prevalence of oedema was 0% across the three camps.

Table 31: Prevalence of acute malnutrition based on WHZ (and/or oedema) and by sex, by camp

Survey Area	N	Global Acute Malnutrition (WHZ <-2 z-score and/or oedema)						Moderate Acute Malnutrition (WHZ <-2 z-score and ≥-3 z-score)		Severe Acute Malnutrition (WHZ <-3 z-score and/or oedema)	
		All		Boys		Girls		All		All	
		n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)
Nyarugusu New Camp	661	12	1.8% (0.9 - 3.4)	5	1.5% (0.6 - 4.2)	7	2.1% (1.0 - 4.3)	12	1.8% (0.9 - 3.4)	0	0.0% (0.0 - 0.0)
Nyarugusu Old Camp	587	7	1.2% (0.6 - 2.4)	3	1.0% (0.3 - 3.1)	4	1.4% (0.5 - 3.7)	7	1.2% (0.6 - 2.4)	0	0.0% (0.0 - 0.0)
Nduta	661	21	3.2% (2.2 - 4.5)	12	3.7% (2.0 - 6.6)	9	2.7% (1.5 - 4.8)	20	3.0% (2.1 - 4.4)	1	0.2% (0.0 - 1.1)
Mtendeli	544	7	1.3% (0.6 - 2.9)	4	1.5% (0.4 - 5.0)	3	1.1% (0.4 - 3.2)	7	1.3% (0.6 - 2.9)	0	0.0% (0.0 - 0.0)

Figure 14: Prevalence of MAM and SAM based on WHZ in 6-59 months from 2016-2019, by camp.
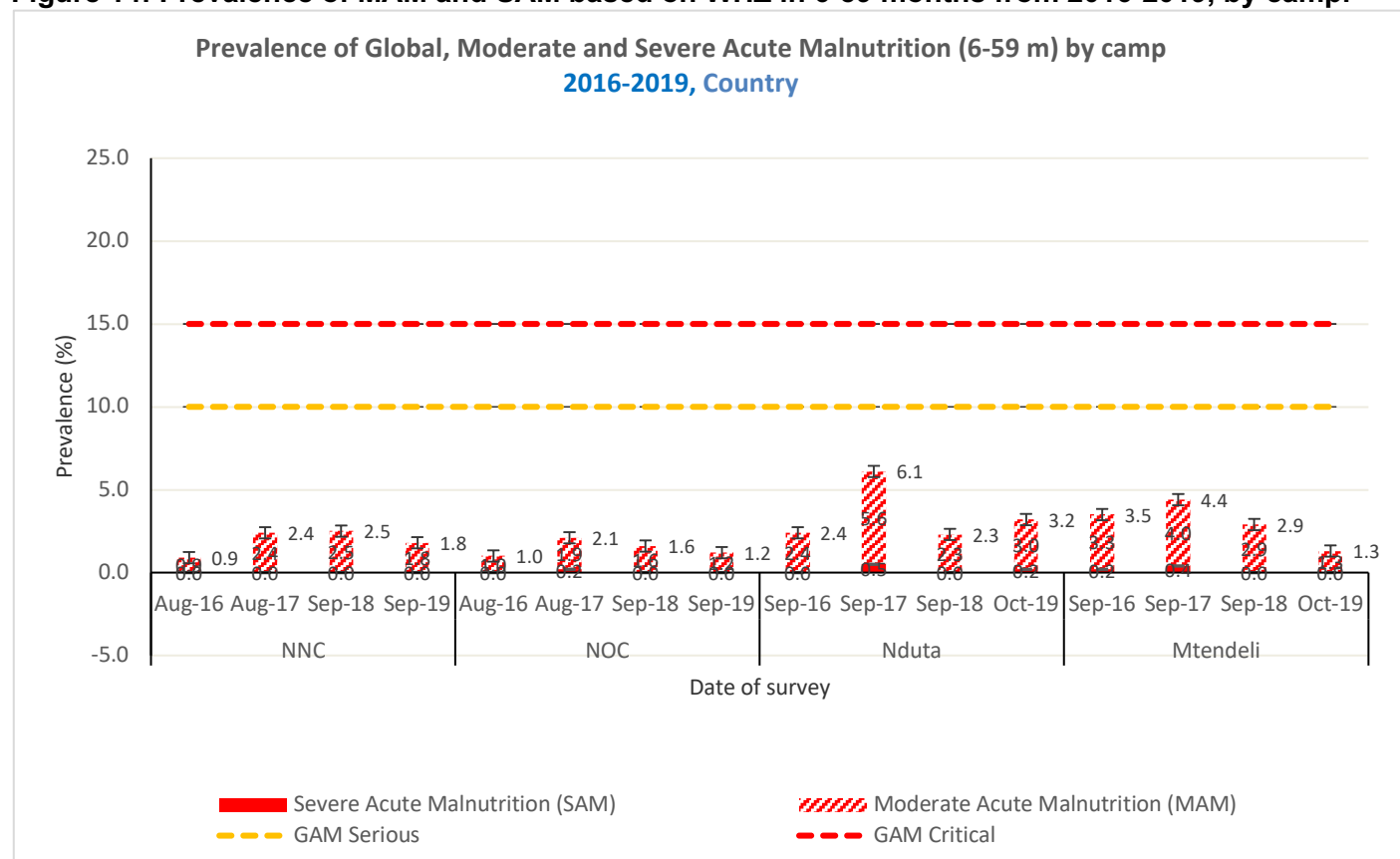
Prevalence of global and severe acute malnutrition remained within the recommended UNHCR and sphere standards.

Table 32: Prevalence of MAM and SAM by age, based on WHZ and/or oedema, <u>Nyarugusu new camp</u>

	Severe wasting (<-3 z-score)	Moderate wasting (≥ -3 and <-2 z-score)	Normal (≥ -2 z score)	Oedema

Age (mo)	Total no.	No.	%	No.	%	No.	%	No.	%
6-11	75	0	0.0	4	5.3	71	94.7	0	0.0
12-23	182	0	0.0	3	1.6	179	98.4	0	0.0
24-35	158	0	0.0	2	1.3	156	98.7	0	0.0
36-47	142	0	0.0	3	2.1	139	97.9	0	0.0
48-59	104	0	0.0	0	0.0	104	100.0	0	0.0
Total	661	0	0.0	12	1.8	649	98.2	0	0.0

Disaggregation of acute malnutrition by age showed younger children aged 6 – 11 months being the most affected age group in Nyarugusu new camp. However, this should be interpreted with care given the small sample size of the particular age group.

Table 33: Prevalence of SAM and MAM by age, based on WHZ and/or oedema, <u>Nyarugusu old camp</u>

		Severe wasting (<-3 z-score)		Moderate wasting (≥ -3 and <-2 z-score)		Normal (≥ -2 z score)		Oedema	
Age (mo)	Total no.	No.	%	No.	%	No.	%	No.	%
6-11	78	0	0.0	1	1.3	77	98.7	0	0.0
12-23	151	0	0.0	3	2.0	148	98.0	0	0.0
24-35	128	0	0.0	2	1.6	126	98.4	0	0.0
36-47	123	0	0.0	1	0.8	122	99.2	0	0.0
48-59	107	0	0.0	0	0.0	107	100.0	0	0.0
Total	587	0	0.0	7	1.2	580	98.8	0	0.0

Disaggregation of acute malnutrition by age showed children aged 12 – 23 months being the most affected age group in Nyarugusu old camp. However, this should be interpreted with care given the small sample size of the particular age group.

Table 34: Prevalence of acute malnutrition by age, based on WHZ and/or oedema, <u>Nduta</u>

		Severe wasting (<-3 z-score)		Moderate wasting (≥ -3 and <-2 z-score)		Normal (≥ -2 z score)		Oedema	
Age (mo)	Total no.	No.	%	No.	%	No.	%	No.	%
6-11	74	1	1.4	3	4.1	70	94.6	0	0.0
12-23	199	0	0.0	10	5.0	189	95.0	0	0.0
24-35	153	0	0.0	2	1.3	151	98.7	0	0.0
36-47	116	0	0.0	1	0.9	115	99.1	0	0.0
48-59	119	0	0.0	4	3.4	115	96.6	0	0.0
Total	661	1	0.2	20	3.0	640	96.8	0	0.0

Disaggregation of acute malnutrition by age showed children aged 12 – 23 months being the most affected age group in Nduta camp. However, this should be interpreted with care given the small sample size of the particular age group.

Table 35: Prevalence of acute malnutrition by age, based on WHZ and/or oedema, <u>Mtendeli</u>

		Severe wasting (<-3 z-score)		Moderate wasting (≥ -3 and <-2 z-score)		Normal (≥ -2 z score)		Oedema	
Age (mo)	Total no.	No.	%	No.	%	No.	%	No.	%
6-11	56	0	0.0	1	1.8	55	98.2	0	0.0

12-23	133	0	0.0	2	1.5	131	98.5	0	0.0
24-35	162	0	0.0	2	1.2	160	98.8	0	0.0
36-47	120	0	0.0	0	0.0	120	100.0	0	0.0
48-59	73	0	0.0	2	2.7	71	97.3	0	0.0
Total	544	0	0.0	7	1.3	537	98.7	0	0.0

Disaggregation of acute malnutrition by age showed the older children aged 48 – 59 months being the most affected age group in Mtendeli camp. However, this should be interpreted with care given the small sample size of the particular age group.

Graphs of prevalence of wasting disaggregated by age as presented in **Figure 15-18** are shown in the figures below.

Figure 15: Prevalence of wasting by age in children 6-59 months <u>in Nyarugusu new camp</u>
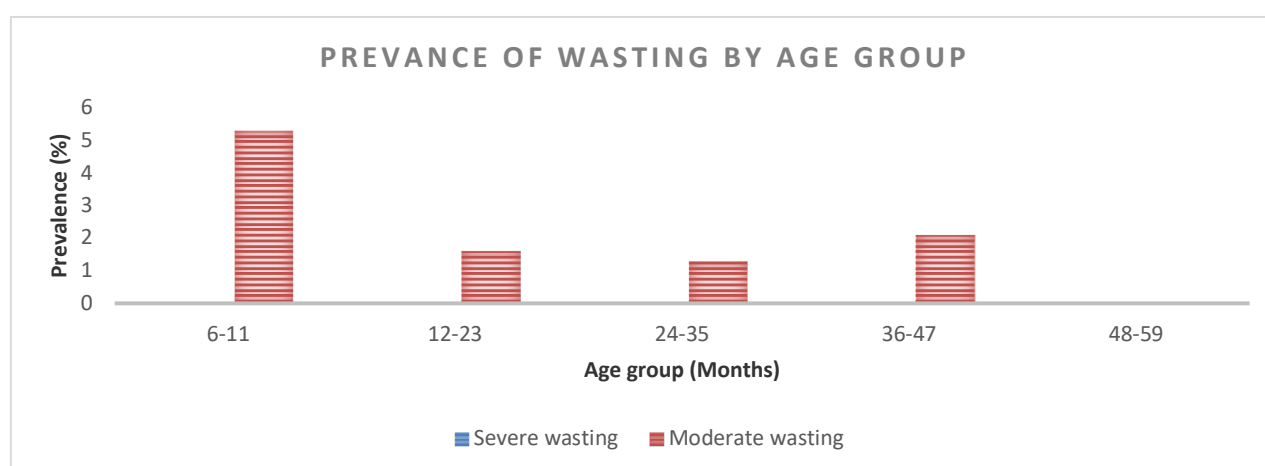
Figure 16: Prevalence of wasting by age in children 6-59 months <u>in Nyarugusu old camp</u>
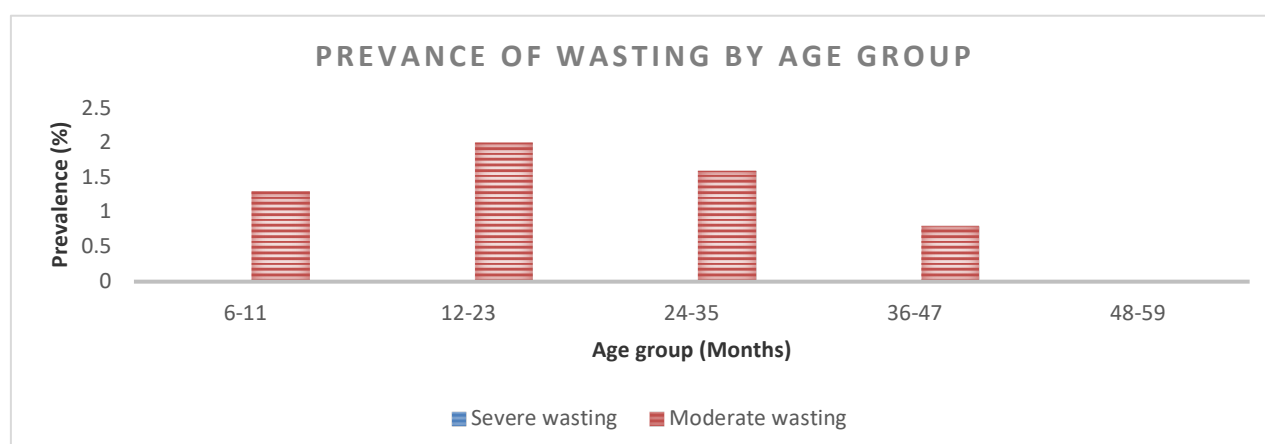
Figure 17: Prevalence of wasting by age in children 6-59 months <u>in Nduta camp</u>

PREVANCE OF WASTING BY AGE GROUP
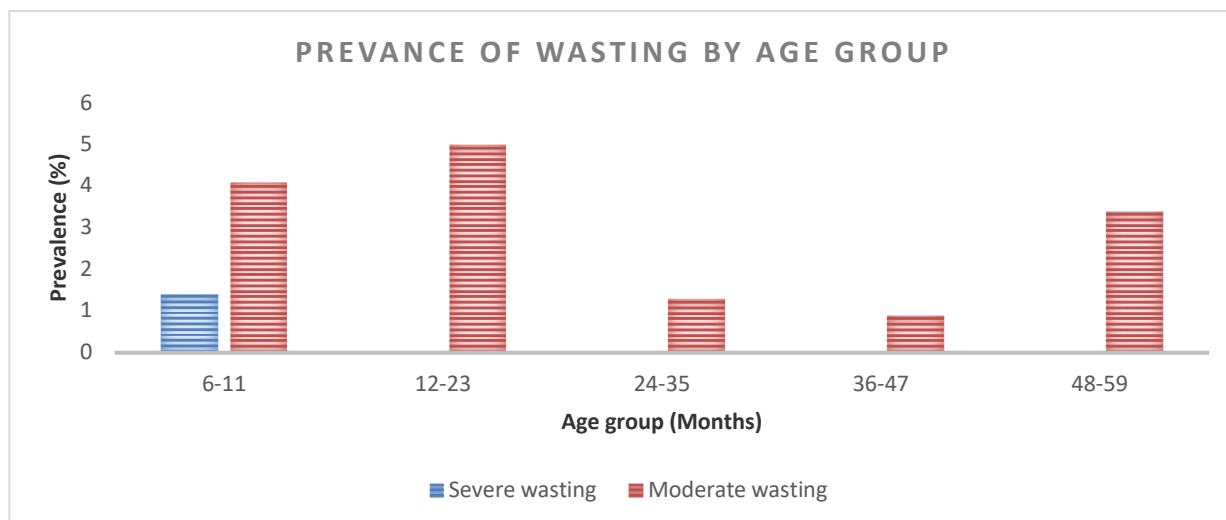
Figure 18: Prevalence of wasting by age in children 6-59 months in Mtendeli camp

PREVANCE OF WASTING BY AGE GROUP
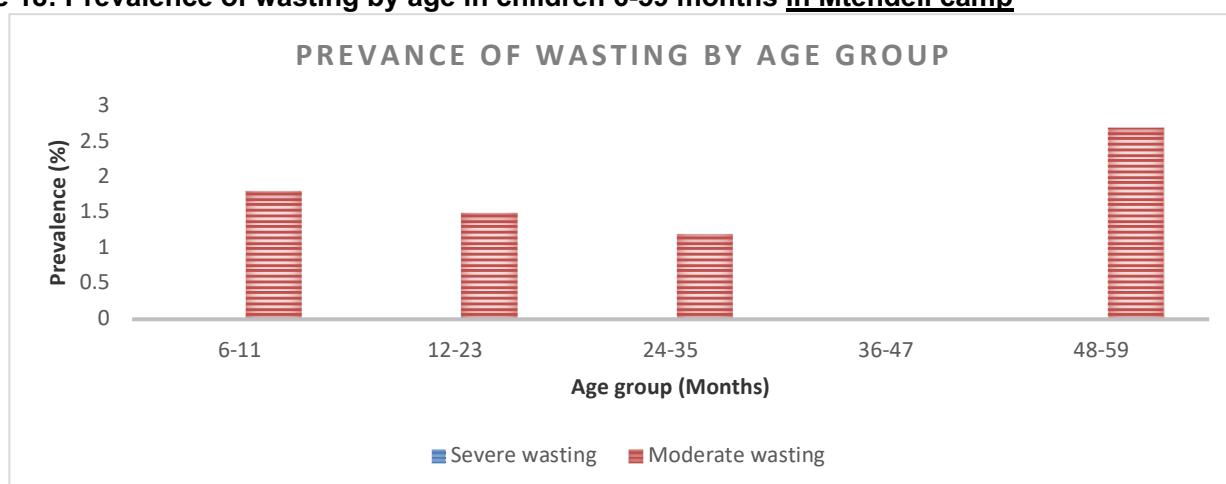
Figure 19: Distribution of WHZ for survey population, by camp

| Nyagurugusu new camp | Nyagurugusu old camp | Nduta camp | Mtendeli camp |
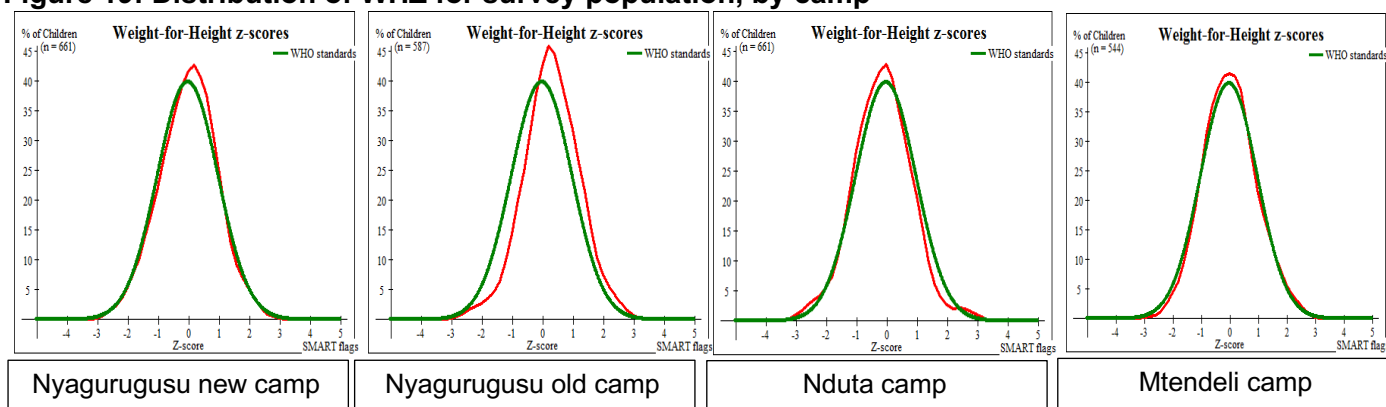
Note: The reference population is shown in green and the surveyed population is shown in red. The curves are closer indicating stable nutritional status among the surveyed population.

The prevalence of global acute malnutrition (GAM) based on MUAC was 2.7% in Nyarugusu new camp, 0.7% in Nyarugusu old camp, 2.3% in Nduta and 0.5% in Mtendeli. Acute malnutrition based on this indicator was slightly higher for Nyarugusu new camp and slightly lower for Nyarugusu old camp Nduta and Mtendeli camp when compared to prevalence of GAM based on WHZ. See the table below.

Table 36: Prevalence of MUAC malnutrition, by camp

Survey Area	N	Prevalence of MUAC < 125 mm and/or oedema						Prevalence of MUAC < 125 mm and ≥ 115 mm, no oedema		Prevalence MUAC < 115 mm and/or oedema	
		All		Boys		Girls		All		All	
		n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)
Nyarugusu New Camp	665	18	2.7% (1.7 - 4.3)	8	2.5% (1.3 - 4.7)	10	2.9% (1.6 - 5.5)	16	2.4% (1.5 - 3.9)	2	0.3 % (0.1 - 1.2)
Nyarugusu Old Camp	589	4	0.7% (0.3 - 1.8)	1	0.3% (0.0 - 2.4)	3	1.0% (0.3 - 3.3)	4	0.7 % (0.3 - 1.8)	0	0.0 % (0.0 - 0.0)
Nduta	668	15	2.3% (1.3 - 3.8)	10	3.0% (1.5 - 6.0)	5	1.5% (0.6 - 3.4)	12	1.8 % (1.0 - 3.3)	3	0.5 % (0.1 - 1.4)
Mtendeli	547	3	0.5% (0.1 - 2.5)	1	0.4% (0.0 - 2.8)	2	0.7% (0.1 - 5.5)	2	0.4 % (0.1 - 1.5.)	1	0.2 % (0.0 - 1.4)

Table 37: Prevalence of MUAC malnutrition by age, <u>in Nyarugusu new camp</u>

Age (mo)	Total no.	MUAC < 115 mm		MUAC ≥ 115 mm and < 125 mm		MUAC ≥ 125 mm		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-11	75	0	0.0	7	9.3	68	90.7	0	0.0
12-23	182	1	0.5	5	2.7	176	96.7	0	0.0
24-35	158	0	0.0	2	1.3	156	98.7	0	0.0
36-47	145	0	0.0	1	0.7	144	99.3	0	0.0
48-59	105	1	1.0	1	1.0	103	98.1	0	0.0
Total	665	2	0.3	16	2.4	647	97.3	0	0.0

Disaggregation of MUAC malnutrition by age showed children aged 6 – 11 months being the most affected age group in Nyarugusu new camp. However, this should be interpreted with care given the small sample size of the particular age group.

Table 38: Prevalence of MUAC malnutrition by age, <u>in Nyarugusu old camp</u>

Age (mo)	Total no.	MUAC < 115 mm		MUAC ≥ 115 mm and < 125 mm		MUAC > = 125 mm		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-11	78	0	0.0	1	1.3	77	98.7	0	0.0
12-23	152	0	0.0	3	2.0	149	98.0	0	0.0
24-35	128	0	0.0	0	0.0	128	100.0	0	0.0
36-47	124	0	0.0	0	0.0	124	100.0	0	0.0
48-59	107	0	0.0	0	0.0	107	100.0	0	0.0
Total	589	0	0.0	4	0.7	585	99.3	0	0.0

Disaggregation of MUAC malnutrition by age showed children aged 12 – 23 months being the most affected age group in Nyarugusu old camp. However, this should be interpreted with caution given the small sample size of the particular age group.

Table 39: Prevalence of MUAC malnutrition by age, <u>in Nduta camp</u>

Age (mo)	Total no.	MUAC < 115 mm No.	MUAC < 115 mm %	MUAC ≥ 115 mm and < 125 mm No.	MUAC ≥ 115 mm and < 125 mm %	MUAC > = 125 mm No.	MUAC > = 125 mm %	Oedema No.	Oedema %
6-11	74	2	2.7	1	1.4	71	95.9	0	0.0
12-23	199	0	0.0	8	4.0	191	96.0	0	0.0
24-35	157	1	0.6	1	0.6	155	98.7	0	0.0
36-47	117	0	0.0	1	0.9	116	99.1	0	0.0
48-59	119	0	0.0	1	0.8	118	99.2	0	0.0
Total	666	3	0.5	12	1.8	651	97.7	0	0.0

Disaggregation of MUAC malnutrition by age showed children aged 12 – 23 months being the most affected age group in Nduta camp. However, this should be interpreted with care given the small sample size of the particular age group.

Table 40: Prevalence of MUAC malnutrition by age, in Mtendeli camp

Age (mo)	Total no.	MUAC < 115 mm No.	MUAC < 115 mm %	MUAC ≥ 115 mm and < 125 mm No.	MUAC ≥ 115 mm and < 125 mm %	MUAC > = 125 mm No.	MUAC > = 125 mm %	Oedema No.	Oedema %
6-11	58	0	0.0	2	3.4	56	96.6	0	0.0
12-23	133	1	0.8	0	0.0	132	99.2	0	0.0
24-35	163	0	0.0	0	0.0	163	100.0	0	0.0
36-47	120	0	0.0	0	0.0	120	100.0	0	0.0
48-59	73	0	0.0	0	0.0	73	100.0	0	0.0
Total	547	1	0.2	2	0.4	544	99.5	0	0.0

Disaggregation of MUAC malnutrition by age showed children aged 6 – 11 months being the most affected age group in Mtendeli camp. However, this should be interpreted with caution given the small sample size of the particular age group.

Prevalence of underweight was 16% in Nyarugusu new camp, 9% in Nyarugusu old camp, 21% in Nduta and 17% in Mtendeli. Disaggregation by sex showed boys were the most affected than girls across all the three camps, the wider difference being noted among Burundian camps.

Table 41: Prevalence of underweight based on weight-for-age z-scores and by sex, by camp

Survey Area	N	Prevalence of underweight (<-2 z-score) All n	Prevalence of underweight (<-2 z-score) All % (95% CI)	Prevalence of underweight (<-2 z-score) Boys N	Prevalence of underweight (<-2 z-score) Boys % (95% CI)	Prevalence of underweight (<-2 z-score) Girls n	Prevalence of underweight (<-2 z-score) Girls % (95% CI)	Prevalence of moderate underweight (<-2 z-score and ≥-3 z-score) All n	Prevalence of moderate underweight (<-2 z-score and ≥-3 z-score) All % (95% CI)	Prevalence of severe underweight (<-3 z-score) All n	Prevalence of severe underweight (<-3 z-score) All % (95% CI)
Nyarugusu New Camp	662	105	15.9 % (13.4-18.7)	65	20.0% (16.0-24.8)	40	11.9% (8.7 - 16.0)	88	13.3% (11.0-15.9)	17	2.6% (1.6-4.0)
Nyarugusu Old Camp	586	55	9.4 % (7.2-12.1)	31	10.3% (6.9-15.2)	24	8.4% (5.9-11.8)	47	8.0% (5.9 - 10.9)	8	1.4% (0.7-2.8)
Nduta	661	141	21.3 % (18.0-25.0)	75	(23.1% (18.6-28.2)	66	19.6% (15.1-25.1)	120	18.2% (15.1-21.6)	21	3.2% (2.0-5.0)

Mtendeli	546	92	16.8% (13.6-20.7)	54	19.9% (15.3-25.3)	38	13.9% (9.4-20.0)	79	14.5% (11.3-18.3)	13	2.4% (1.3-4.5)

Table 42: Prevalence of underweight by age based on WAZ, in Nyarugusu new camp

Age (mo)	Total no.	Severe underweight (<-3 z-score)		Moderate underweight (≥ -3 and <-2 z-score)		Normal (≥ -2 z score)	
		No.	%	No.	%	No.	%
6-11	74	3	4.1	17	23.0	54	73.0
12-23	182	4	2.2	30	16.5	148	81.3
24-35	158	2	1.3	17	10.8	139	88.0
36-47	144	4	2.8	13	9.0	127	88.2
48-59	104	4	3.8	11	10.6	89	85.6
Total	662	17	2.6	88	13.3	557	84.1

Disaggregation of underweight by age showed younger children aged 6 – 11 months being the most affected age group in Nyarugusu new camp. However, this should be interpreted with caution given the small sample size of the particular age group.

Table 43: Prevalence of underweight by age based on WAZ, in Nyarugusu old camp

Age (mo)	Total no.	Severe underweight (<-3 z-score)		Moderate underweight (≥ -3 and <-2 z-score)		Normal (≥ -2 z score)	
		No.	%	No.	%	No.	%
6-11	77	1	1.3	6	7.8	70	90.9
12-23	150	3	2.0	15	10.0	132	88.0
24-35	128	3	2.3	6	4.7	119	93.0
36-47	124	1	0.8	10	8.1	113	91.1
48-59	107	0	0.0	10	9.3	97	90.7
Total	586	8	1.4	47	8.0	531	90.6

Disaggregation of underweight by age showed children aged 12 – 23 months being the most affected age group in Nyarugusu old camp. However, this should be interpreted with care given the small sample size of the particular age group.

Table 44: Prevalence of underweight by age based on weight-for-age z-scores, in Nduta

Age (mo)	Total no.	Severe underweight (<-3 z-score)		Moderate underweight (≥ -3 and <-2 z-score)		Normal (≥ -2 z score)	
		No.	%	No.	%	No.	%
6-11	73	1	1.4	7	9.6	65	89.0
12-23	198	7	3.5	38	19.2	153	77.3
24-35	155	7	4.5	31	20.0	117	75.5
36-47	116	2	1.7	18	15.5	96	82.8
48-59	119	4	3.4	26	21.8	89	74.8
Total	661	21	3.2	120	18.2	520	78.7

Disaggregation of underweight by age showed children aged 48 – 59 months being the most affected age group in Nduta camp. However, this should be interpreted with care given the small sample size of the particular age group.

Table 45: Prevalence of underweight by age based on weight-for-age z-scores, in Mtendeli

Age (mo)	Total no.	Severe underweight (<-3 z-score)		Moderate underweight (≥ -3 and <-2 z-score)		Normal (≥ -2 z score)	
		No.	%	No.	%	No.	%
6-11	57	2	3.5	4	7.0	51	89.5
12-23	133	4	3.0	19	14.3	110	82.7
24-35	163	4	2.5	30	18.4	129	79.1

36-47	120	0	0.0	15	12.5	105	87.5
48-59	73	3	4.1	11	15.1	59	80.8
Total	546	13	2.4	79	14.5	454	83.2

Disaggregation of underweight by age showed children aged 24 – 35 months being the most affected age group in Nduta camp. However, this should be interpreted with care given the small sample size of the particular age group.

Prevalence of stunting was 48% in Nyarugusu new camp, 43% in Nyarugusu old camp, 52% in Nduta and 52% in Mtendeli camp which, according to classification of public health significance the level were all about the recommended UNHCR and WHO cut-offs. Disaggregation by sex indicated boys being the most affected compared to girls across all the three camps.

Table 46: Prevalence of stunting based on height-for-age z-scores and by sex, by camp

Survey Area	N	Prevalence of stunting (<-2 z-score)						Prevalence of moderate stunting (<-2 z-score and ≥-3 z-score)		Prevalence of severe stunting (<-3 z-score)	
		All		Boys		Girls		All		All	
		n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)
Nyarugusu New Camp	660	315	47.7% (43.4-52.1)	163	50.5% (44.3 - 56.6)	152	45.1% (39.5-50.8)	219	33.2% (29.0-37.6)	96	14.5% (11.9-17.7)
Nyarugusu Old Camp	579	247	42.7% (37.9-47.6)	139	47.3% (40.7 - 53.9)	108	37.9% (31.7-44.5)	170	29.4% (25.6-33.4)	77	13.3% (10.8-16.3)
Nduta	660	344	52.1% (47.3-56.9)	187	57.7% (51.4 - 63.8)	157	46.7% (40.0-53.6)	229	34.7% (31.5-38.1)	115	17.4% (14.3-21.1)
Mtendeli	541	281	51.9% (47.1-56.8)	158	59.0% (52.6 - 65.0)	123	45.1% (37.1-53.3)	195	36.0% (32.0-40.3)	86	15.9% (12.7-19.8)

Literally, there has been no significant change in prevalence of stunting despite the efforts that has been put in place over the past four years. See figure 20 below

Figure 20: Prevalence of global and severe stunting based on who growth standards in children 6-59 months from 2016-2019, by camp.
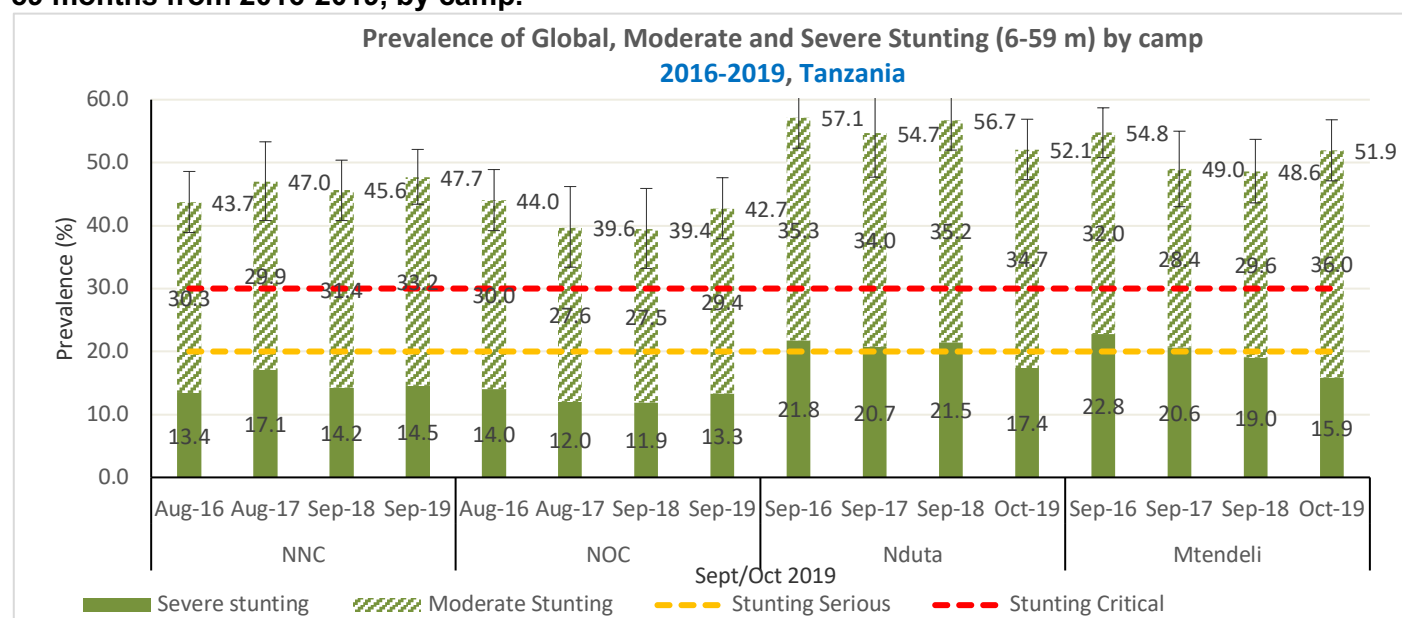
Table 47: Prevalence of stunting by age based on height-for-age z-scores, <u>in Nyarugusu new camp</u>

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (≥ -3 and <-2 z-score)		Normal (≥ -2 z score)	
		No.	%	No.	%	No.	%
6-11	74	13	17.6	16	21.6	45	60.8
12-23	181	30	16.6	69	38.1	82	45.3
24-35	157	23	14.6	60	38.2	74	47.1
36-47	143	19	13.3	43	30.1	81	56.6
48-59	105	11	10.5	31	29.5	63	60.0
Total	660	96	14.5	219	33.2	345	52.3

Disaggregation of stunting by age showed children aged 12 – 23 months being the most affected age group in Nyarugusu new camp. However, this should be interpreted with care given the small sample size of the particular age group.

Table 48: Prevalence of stunting by age based on height-for-age z-scores, <u>in Nyarugusu old camp</u>

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (≥ -3 and <-2 z-score)		Normal (≥ -2 z score)	
		No.	%	No.	%	No.	%
6-11	76	4	5.3	19	25.0	53	69.7
12-23	147	25	17.0	38	25.9	84	57.1
24-35	125	23	18.4	39	31.2	63	50.4
36-47	124	17	13.7	39	31.5	68	54.8
48-59	107	8	7.5	35	32.7	64	59.8
Total	579	77	13.3	170	29.4	332	57.3

Disaggregation of stunting by age showed children aged 24 – 35 months being the most affected age group in Nyarugusu old camp. However, this should be interpreted with care given the small sample size of the particular age group.

Table 49: Prevalence of stunting by age based on height-for-age z-scores, <u>in Nduta</u>

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (≥ -3 and <-2 z-score)		Normal (≥ -2 z score)	
		No.	%	No.	%	No.	%
6-11	71	3	4.2	14	19.7	54	76.1
12-23	198	45	22.7	68	34.3	85	42.9
24-35	156	30	19.2	62	39.7	64	41.0
36-47	116	17	14.7	38	32.8	61	52.6
48-59	119	20	16.8	47	39.5	52	43.7
Total	660	115	17.4	229	34.7	316	47.9

Disaggregation of stunting by age showed children aged 24 – 35 months being the most affected age group in Nduta camp. However, this should be interpreted with care given the small sample size of the particular age group.

Table 50: Prevalence of stunting by age based on height-for-age z-scores, <u>in Mtendeli camp</u>

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (≥ -3 and <-2 z-score)		Normal (≥ -2 z score)	
		No.	%	No.	%	No.	%
6-11	57	5	8.8	9	15.8	43	75.4
12-23	131	24	18.3	52	39.7	55	42.0
24-35	161	31	19.3	61	37.9	69	42.9

|							
36-47	120	17	14.2	49	40.8	54	45.0
48-59	72	9	12.5	24	33.3	39	54.2
Total	541	86	15.9	195	36.0	260	48.1

Disaggregation of stunting by age showed children aged 12 – 23 months being the most affected age group in Mtendeli camp. However, this should be interpreted with care given the small sample size of the particular age group.

Stunting prevalence trend by age shown in Tables 47-50 are presented in graphs in the figures below.

Figure 21: Prevalence of stunting by age in children 6-59 months <u>in Nyarugusu new camp</u>
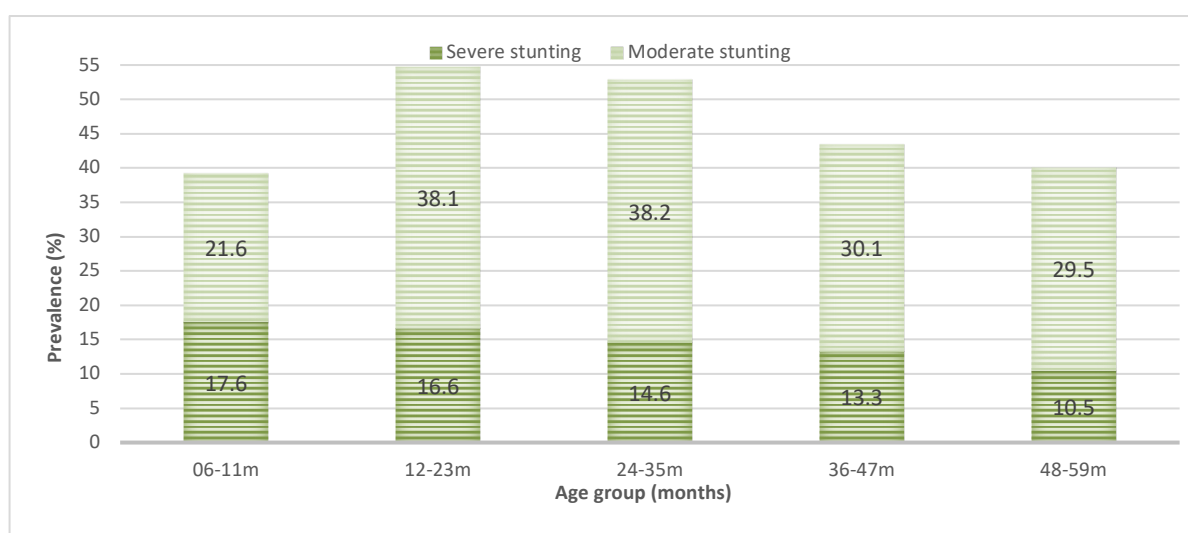
Prevalence of stunting was much higher among children aged 12 – 23 months and 24 – 35 months. Results however, should be interpreted with cautions given the small sample size of the age categories.

Figure 22: Prevalence of stunting by age in children 6-59 months <u>in Nyarugusu old camp</u>
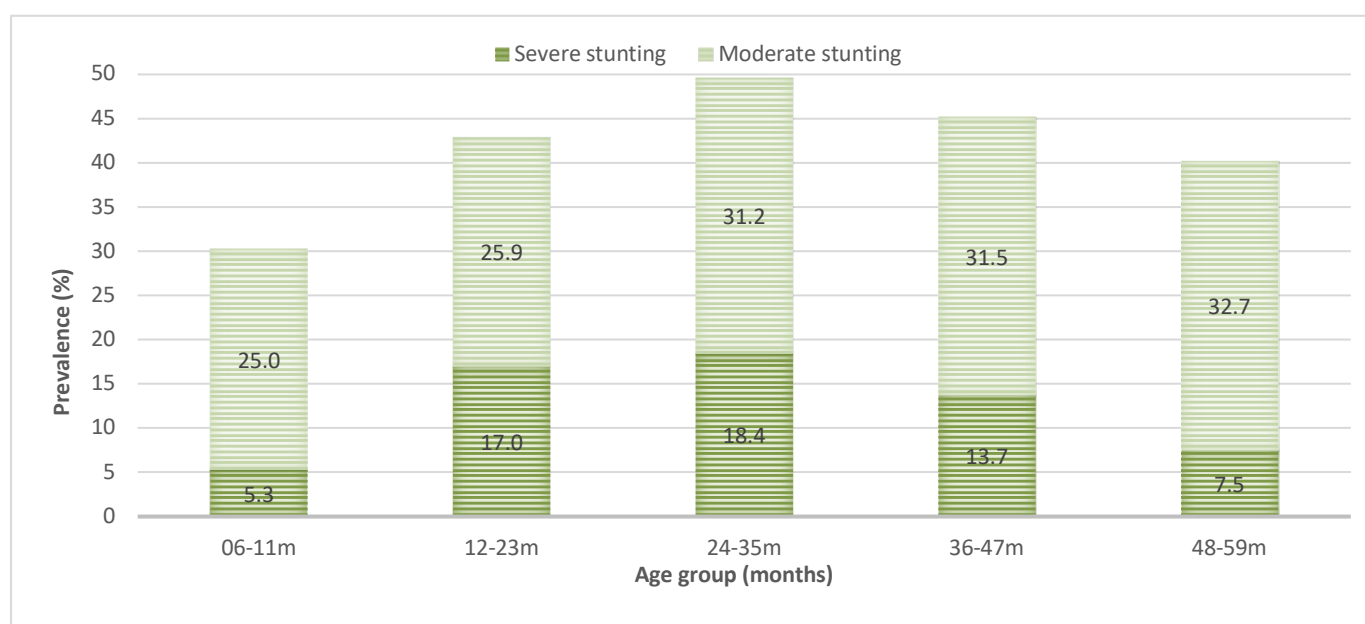
Prevalence of stunting was much higher among children aged 24 – 35 months followed by 36 – 47 moths. However, the above results should be interpreted with cautions given the small sample size of the age categories.

Figure 23: Prevalence of stunting by age in children 6-59 months <u>in Nduta camp</u>
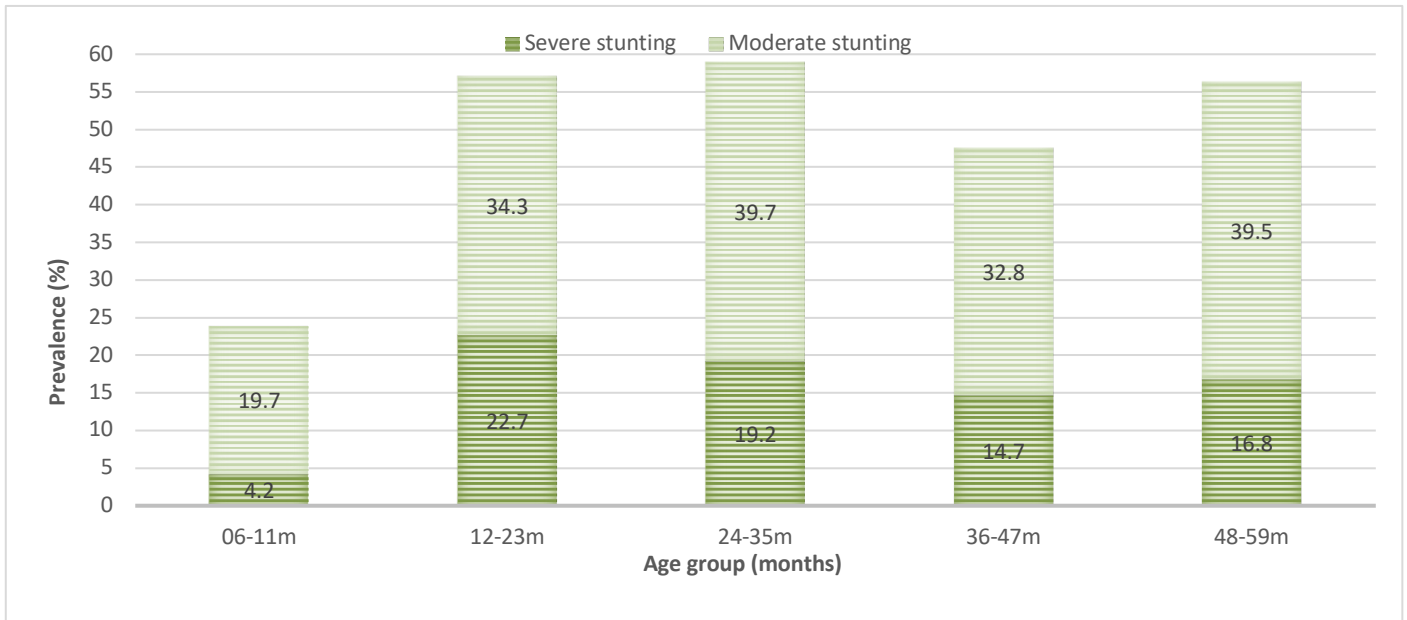
Prevalence of stunting was much higher among children aged 12 – 23 months, 24 – 35 moths and 48 – 59 moths. However, the above results should be interpreted with cautions given the small sample size of the age categories.
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Figure 24: Prevalence of stunting by age in children 6-59 months <u>in Mtendeli camp</u>
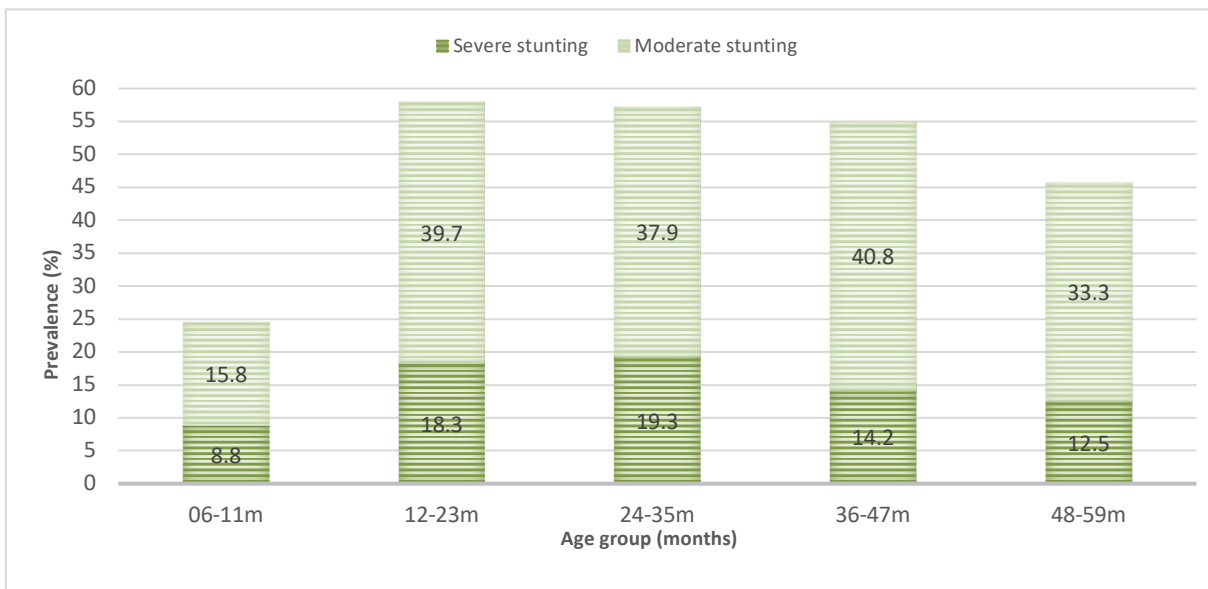
Prevalence of stunting was much higher among children aged 12 – 23 months and 24 – 35 moths. However, the above results should be interpreted with cautions given the small sample size of the age categories.

Figure 25: distribution of HAZ of survey population, <u>by camp</u>

| Nyagurugusu new camp | Nyagurugusu old camp | Nduta camp | Mtendeli camp |
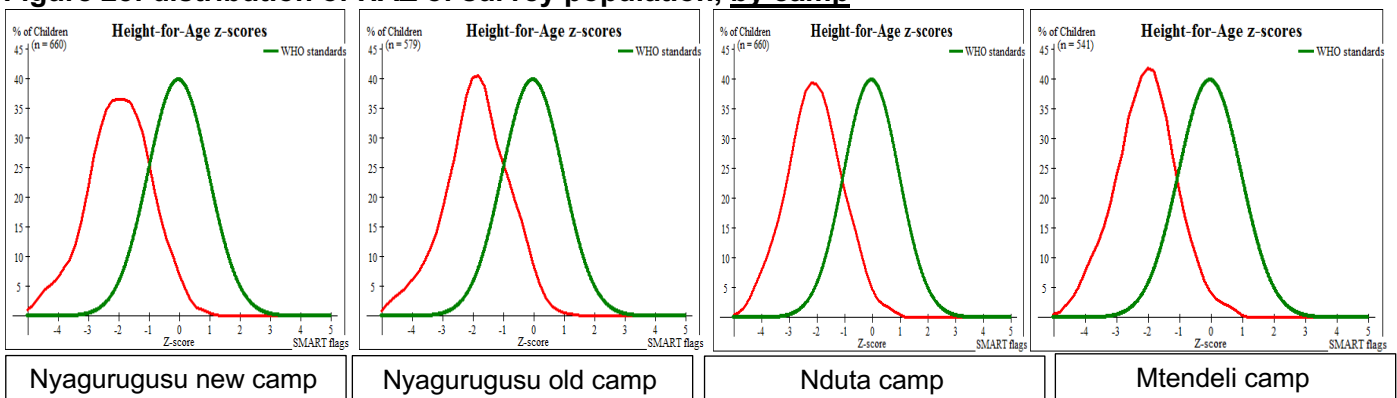
The reference population is shown in green and the surveyed population is shown in red. The surveyed population curves lie far left from the reference population indicating unstable nutritional status in the three camps.

Prevalence of overweight was 1.7% in Nyarugusu new camp, 3.7% in Nyarugusu old camp, 2,3% in Nduta and 2.7% in Mtendeli. There was no severe overweight across all the three camps.
Disaggregation of prevalence of overweight by camp indicates younger children aged 6 – 11 moths being the most affected age group in all the three camps. However, results should be interpreted with care given the small sample size among disaggregated age groups.

Table 51: Prevalence of overweight based on weight-for-height z-scores, by camp

Survey Area	N	Prevalence of overweight (>2 z-score)		Prevalence of severe overweight (>3 z-score)	
		n	% (95% CI)	n	% (95% CI)
Nyarugusu New Camp	661	11	1.7 % (0.8 - 3.3)	0	0.0% (0.0)
Nyarugusu Old Camp	587	22	3.7 % (2.4 - 5.8)	0	0.0% (0.0)
Nduta	661	15	2.3 % (1.4 - 3.7)	0	0.0% (0.0)
Mtendeli	544	14	2.6 % (1.4 - 4.6)	0	0.0% (0.0)

Table 52: Prevalence of overweight by age based on WHZ, in Nyarugusu new camp

Age (mo)	Total no.	Prevalence of overweight (>2 z-score)		Prevalence of severe overweight (>3 z-score)	
		No.	%	No.	%
6-11	75	3	4.0	0	0.0
12-23	182	2	1.1	0	0.0
24-35	158	3	1.9	0	0.0
36-47	142	1	0.7	0	0.0
48-59	104	2	1.9	0	0.0
Total	661	11	1.7	0	0.0

Table 53: Prevalence of overweight by age based on WHZ, Nyarugusu old camp

Age (mo)	Total no.	Prevalence of overweight (>2 z-score)		Prevalence of severe overweight (>3 z-score)	
		No.	%	No.	%
6-11	78	4	5.1	0	0.0
12-23	151	7	4.6	0	0.0
24-35	128	5	3.9	0	0.0
36-47	123	2	1.6	0	0.0
48-59	107	4	3.7	0	0.0
Total	587	22	3.7	0	0.0

Table 54: Prevalence of overweight by age based on WHZ, in Nduta camp

Age (mo)	Total no.	Prevalence of overweight (>2 z-score)		Prevalence of severe overweight (>3 z-score)	
		No.	%	No.	%
6-11	74	4	5.4	0	0.0

12-23	199	3	1.5	0	0.0
24-35	153	2	1.3	0	0.0
36-47	116	3	2.6	0	0.0
48-59	119	3	2.5	0	0.0
Total	661	15	2.3	0	0.0

Table 55: Prevalence of overweight by age based on WHZ, <u>in Mtendeli camp</u>

		Prevalence of overweight (>2 z-score)		Prevalence of severe overweight (>3 z-score)	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**
6-11	56	6	10.7	0	0.0
12-23	133	2	1.5	0	0.0
24-35	162	3	1.9	0	0.0
36-47	120	2	1.7	0	0.0
48-59	73	1	1.4	0	0.0
Total	544	14	2.6	0	0.0

Presentation of mean z-score, design effects and excluded data from analysis by camp indicated as higher as 10 subjects excluded from analysis of stunting in Nyarugusu old camp. See table 56 below.

Table 56: Mean z-scores, design effects and excluded subjects, by camp

Indicator	**n**	**Mean z-scores ± SD**	**Design Effect (z-score < -2)**	**z-scores not available***	**z-scores out of range**
Nyarugusu New Camp					
Weight-for-Height	661	0.01±0.93	1.25	0	4
Weight-for-Age	662	-1.08±0.94	1.00	0	3
Height-for-Age	660	-1.96±1.04	1.25	0	5
Nyarugusu Old Camp					
Weight-for-Height	587	0.30±0.92	1.00	0	2
Weight-for-Age	586	-0.82±0.90	1.00	0	3
Height-for-Age	579	-1.87±1.04	1.35	0	10
Nduta Camp					
Weight-for-Height	661	-0.13±0.96	1.00	3	4
Weight-for-Age	661	-1.23±0.96	1.18	2	5
Height-for-Age	660	-2.07±1.00	1.51	2	6
Mtendeli Camp					
Weight-for-Height	544	0.02±0.93	1.11	0	3
Weight-for-Age	546	-1.12±0.94	1.19	0	1
Height-for-Age	541	-2.07±0.97	1.22	0	6

* contains for WHZ and WAZ the children with oedema.

Enrolment into nutrition programme

Enrolment into TSFP and OTP/SC was 29% and 0% for Nyarugusu new camp, 11% and 0% for Nyarugusu old camp, 13% and 50% for Nduta camp and 0% for Mtendeli camp. Generally, the coverage was very low camps despite the presence of MAM and SAM cases identified through MUAC and WHZ and/or Oedema. Results however, should be interpreted with care given the small sample size which has resulted into wider confidence interval.

Table 57: Programme enrolment for acutely malnourished children, by camp

Survey Area	**Programme**	**Number/total**	**% (95% CI)**
Nyarugusu New Camp	Supplementary feeding programme (TSFP) enrolment	7/24	29.2% [12.6%-45.8%]

	Therapeutic (OTP/SC) feeding programme enrolment	0/2	0.0%
Nyarugusu Old Camp	Supplementary feeding programme (TSFP) enrolment	1/9	11.1% [0.0%-36.7%]
	Therapeutic (OTP/SC) feeding programme enrolment	0/0	0.0%
Nduta	Supplementary feeding programme (TSFP) enrolment	3/24	12.5% [0.0%-26.5%]
	Therapeutic (OTP/SC) feeding programme enrolment	2/4	50.0% [0.0%-100%]
Mtendeli	Supplementary feeding programme (TSFP) enrolment	0/8	0.0%
	Therapeutic (OTP/SC) feeding programme enrolment	0/1	0.0%

- The calculations were computed based on the three criteria of MUAC, WHZ and oedema.
- Children with WHZ flags were excluded from the coverage analysis.

The coverage of blanket supplementary feeding program among children aged 6-23 months was 95% for Nyarugusu new camp, 96% for Nyarugusu old camp, 91% for Nduta and 95% for Mtendeli. Children in this program were receiving super cereal plus.

Table 58: Coverage of the blanket supplementary feeding programme, by camp

Survey Area	Programme	Number/total	% (95% CI)
Nyarugusu New Camp	Blanket supplementary feeding programme (BSFP)	245/257	95.3% [92.2%-98.5%]
	Product name	Super Cereal Plus	
	Target age group	6-23 months	
Nyarugusu Old Camp	Blanket supplementary feeding programme (BSFP)	220/230	95.7% [92.5%-98.9%]
	Product name	Super Cereal Plus	
	Target age group	6-23 months	
Nduta	Blanket supplementary feeding programme (BSFP)	249/273	91.2% [87.1%-95.3%]
	Product name	Super Cereal Plus	
	Target age group	6-23 months	
Mtendeli	Blanket supplementary feeding programme (BSFP)	182/191	95.3% [92.0-98.6%]
	Product name	Super Cereal Plus	
	Target age group	6-23 months	

The coverage of blanket supplementary feeding program among children aged 24 – 59 months was 93% for Nyarugusu new camp, 89% for Nyarugusu old camp, 94% for Nduta and 94% for Mtendeli. Children enrolled in this program were receiving Multiple micronutrient powder (MNP) distributed during general food rations along with other food items. This was deliberately set to ensure households with targeted children are receives the items.

Table 59: Coverage of the blanket supplementary feeding programme, by camp

Survey Area	Programme	Number/total	% (95% CI)
Nyarugusu New Camp	Blanket supplementary feeding programme (BSFP)	379/407	93.1% [90.6%-95.7%]
	Product name	MNP	

	Target age group	24-59 months	
Nyarugusu Old Camp	Blanket supplementary feeding programme (BSFP)	320/359	89.1% [84.6%-93.7%]
	Product name	MNP	
	Target age group	24-59 months	
Nduta	Blanket supplementary feeding programme (BSFP)	371/393	94.4% [92.0%-96.8%]
	Product name	MNP	
	Target age group	24-59 months	
Mtendeli	Blanket supplementary feeding programme (BSFP)	336/356	94.4% [91.7%-97.1%]
	Product name	MNP	
	Target age group	24-59 months	

Measles vaccination coverage results

The coverage for measles vaccination based on recall and EPI card ranged from 93% in Nyarugusu old camp and 98% in Nduta and Mtendeli. The coverage for Nyarugusu camp was slightly below the recommended cut-off of 95%. However, the coverage with confirmation from EPI card was as low as 66% in Nduta and 75% in Mtendeli compared to 82% in Nyarugusu old camp and 86% in Nyarugusu new camp. In other words, the coverage of measles vaccination with confirmation from EPI card was higher in Kasulu compared to Kibondo camps.

Table 60: Measles vaccination coverage for children aged 9-59 months, by camp

Survey Area	N	Measles vaccination with card		Measles vaccination with card or confirmation from mother	
		n	% (95% CI)	n	% (95% CI)
Nyarugusu New Camp	630	539	85.6% [80.5%-90.6%]	615	97.6% [96.0%-99.2%]
Nyarugusu Old Camp	554	455	82.1% [76.5%-87.7%]	515	93.0% [89.7%-96.3%]
Nduta	629	412	65.5% [58.0%-73.0%]	617	98.1% [96.9%-99.3%]
Mtendeli	513	383	74.7% [61.6%-87.8%]	505	98.4% [97.1%-99.8%]

Vitamin A supplementation coverage results

The coverage of vitamin A supplementation based on recall and confirmation from EPI card was 95% in Nyarugusu new camp, 85% in Nyarugusu old camp, 96% in Nduta and 97% in Mtendeli. The coverage based on confirmation from EPI card was as low as 40% in Nduta compared to 66%, 69% and 79% for Mtendeli, Nyarugusu old camp and Nyarugusu new camp respectively.

Table 61: Vitamin A supplementation coverage for 6-59 months within the past 6 months, by camp

Survey Area	N	Vitamin A supplementation in last 6 months with card		Vitamin A supplementation in last 6 months with card or confirmation from mother	
		n	% (95% CI)	n	% (95% CI)
Nyarugusu New Camp	665	527	79.3% [73.3%-85.2%]	630	94.7% [93.0%-96.5%]
Nyarugusu Old Camp	589	405	68.8% [60.9%-76.7%]	503	85.4% [79.8%-91.0%]
Nduta	668	265	39.7% [30.6%-48.7%]	640	95.8% [93.3%-98.3%]
Mtendeli	547	369	67.5% [54.0%-80.9%]	530	96.9% [95.1%-98.7%]

Deworming coverage results

The coverage for deworming among children aged 12-59 months was 95% in Nyarugusu new camp, 88% in Nyarugusu old camp, 98% in Nduta and 98% in Mtendeli conducted during the last national immunization campaign.

Table 62: Deworming coverage for children aged 12-59 months within the past 6 months, by camp*

Survey Area	N	Deworming within the past 6 months	
		n	% (95% CI)
Nyarugusu New Camp	586	557	95.1% [92.7%-97.4%]
Nyarugusu Old Camp	507	447	88.2% [83.1%-93.3%]
Nduta	592	577	97.5% [95.9%-99.0%]
Mtendeli	489	481	98.4% [97.2%-99.5%]

*Note that this refers to large-scale campaigns done with mebendazole and/or albendazole alongside with vitamin A in the last six months.

Below is the coverage results for measles vaccination and vitamin A supplementation in last 6 months from 2016 to 2019. Trend of coverage of deworming was not included since this was not part of reports in SENS Version2.

Figure 26: Coverage of measles and vit A in last 6 months in 6-59 months children from 2016-2019.
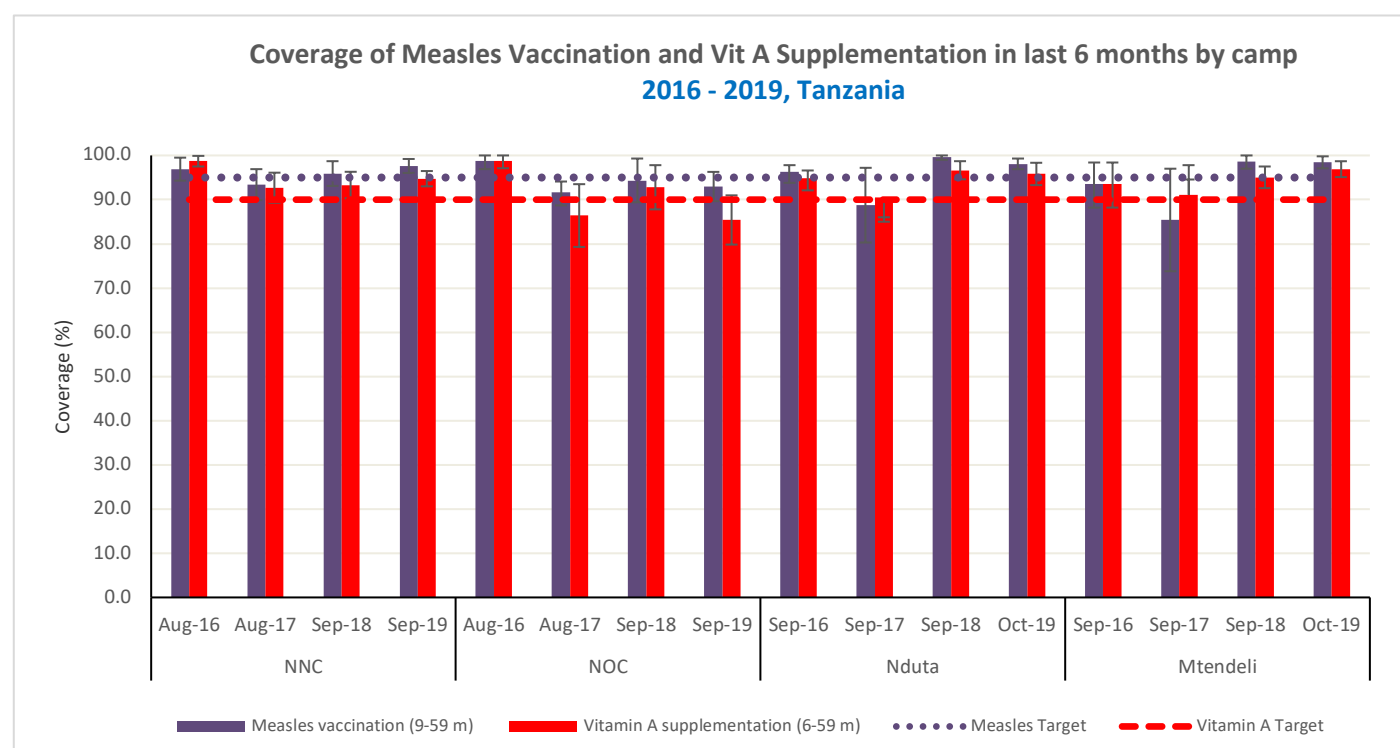
Diarrhoea results

Prevalence of diarrhoea among children aged 6-59 was 26% in Nyarugusu new camp, 23% in Nyarugusu old camp, 27% in Nduta and 23% in Mtendeli. Nduta was the leading camp with the highest upper confidence limit of 31%.

Table 63: Period prevalence of diarrhoea within the recall period of last two weeks, by camp

Survey Area	N	Diarrhoea in the last two weeks	
		n	% (95% CI)
Nyarugusu New Camp	663	171	25.8% [21.9%-29.7%]
Nyarugusu Old Camp	588	135	23.0% [18.4%-27.6%]

Nduta	668	180	27.0% [22.7%-31.2%]
Mtendeli	547	124	22.7% [18.8%-26.5%]

Among episodes of diarrhoea, 54% in Nyarugusu camp, 65% in Nyarugusu old camp, 81% in Nduta camp and 68% in Mtendeli camp used ORS, while 28% in Nyarugusu new camp, 32% in Nyurugusu old camp, 33% in Nduta and 34% in Mtendeli used zinc tablets for treatment of diarrhoea. This may indicate higher use of ORS among episodes of diarrhoea in these particular refugee camps.

Table 64: ORS and Zinc use during diarrhoea episode, by camp

Survey Area	N	ORS use during diarrhoea episode		N	Zinc tablet or syrup use during diarrhoea episode	
		n	% (95% CI)		n	% (95% CI)
Nyarugusu New Camp	171	92	53.8% [44.3-63.3]	168	47	28.0% [17.0-39.0]
Nyarugusu Old Camp	133	87	65.4% [55.7-75.1]	132	42	31.8% [19.0-44.7]
Nduta	180	146	81.1% [74.0-88.2]	173	57	33.0% [22.7-43.2]
Mtendeli	124	84	67.7% [58.0-77.5]	124	42	34.0% [20.8-47.0]

Anaemia results
The total anaemia in this age group was 33% in Nyarugusu new camp, 31% in Nyarugusu old camp and 21% in Mtendeli camp. The prevalence was 19% in Nduta camp which was within the UNHCR acceptable level. The mean haemoglobin concentration, however, was above 11g/dL across the three camps. There was no severe anaemia detected in Nyarugusu new camp, Nduta and Mtendeli. Prevalence of severe anaemia was 0.5% in Nyarugusu old camp. Moderate and severe anaemia was 15% in Nyarugusu new camp, 11% in Nyarugusu old camp, 5% in Nduta and 4% in Mtendeli indicating that children with mild anaemia had a significant contribution to total anaemia.

Disaggregation by age indicated high prevalence of anaemia in younger children aged 6 – 23 months. The total anaemia in this particular age group was 45% in Nyarugusu new camp, 41% in Nyarugusu old camp, 26% in Nduta camp and 25% in Mtendeli camp. Despite the ongoing interventions, prevalence anaemia in Kasulu camps in this age group remined high (>40%) as categorized by classifications of public health significance. Surprisingly, there was no severe anaemia in this particular age group across the three camps. The mean haemoglobin concentrations were 11g/dL in Nyarugusu new camp, 11.2g/dL in Nyarugusu old camp, 11.6g/dL in Nduta and 11.6g/dL in Mtendeli camp. Moderate and severe anaemia was 20% in Nyarugusu new camp, 14% in Nyarugusu old camp, 6% in Nduta and 5% in Mtendeli camp.

Prevalence of anaemia in older children aged 24 – 59 months was 26% in Nyarugusu new camp, 25% in Nyarugusu old camp, 14% in Nduta and 18% in Mtendeli camp. Prevalence of severe anaemia was zero in Nyarugusu new camp, Nduta and Mtendeli while in Nyarugusu old camp, the prevalence was 0.8%. The mean haemoglobin concentration was 11.7g/dL in Nyarugusu new camp, 11.6g/dL in Nyarugusu old camp, 12.0g/dL in Nduta and 11.9g/dL in Mtendeli camp. Moderate and severe anaemia was 11% in Nyarugusu new camp, 10% in Nyarugusu old camp, 4% in Nduta and 4% in Mtendeli camp.

Table 65: Prevalence of anaemia and mean Hb in 6-59 months and by age group, <u>in Nyarugusu new camp</u>

		6-59 months n = 665	6-23 months n=257	24-59 months n=408
Total Anaemia (Hb<11.0 g/dL)		(219) 32.9% [26.2-39.7]	(115) 44.8% [36.6-52.9]	(104) 25.5% [18.4-32.6]
Mild Anaemia (Hb 10.0-10.9 g/dL)		(122) 18.4% [14.6-22.1]	(63) 24.5% [19.8-29.2]	(59) 14.5% [9.9-19.1]
Moderate Anaemia (7.0-9.9 g/dL)		(97) 14.6% [10.6-18.6]	(52) 20.2% [14.3-26.2]	(45) 11.0% [7.2-14.9]
Severe Anaemia (<7.0 g/dL)		(0) 0.0%	(0) 0.0%	(0) 0.0%
Mean Hb (g/dL)	Cluster design	11.4 g/dL	11.0 g/dL	11.7 g/dL

	(95% CI) [range]		(11.2-11.6) [7.0, 15.9]	(10.8-11.3) [7.0, 14.5]	(11.5-11.9) [7.2, 15.9]

Table 66: Prevalence of moderate and severe anaemia in 6-59 months and by age group, <u>in Nyarugusu new camp</u>

	6-59 months n = 665	6-23 months n=257	24-59 months n=408
Moderate and Severe Anaemia (Hb<10.0 g/dL)	(97) 14.6% [10.6-18.6]	(52) 20.2% [14.3-26.2]	(45) 11.0% [7.2-14.9]

Anaemia prevalence (mild, moderate and severe) and mean Hb results in children 6-59 from 2016 to 2019 are presented in figure 23, 24 and 25 below.

Table 67: Prevalence of anaemia and mean Hb in 6-59 months and by age group, <u>in Nyarugusu old camp</u>

		6-59 months n = 589	6-23 months n=230	24-59 months n=359
Total Anaemia (Hb<11.0 g/dL)		(184) 31.2% [24.2-38.3]	(95) 41.3% [31.5-51.1]	(89) 24.8% [17.8-31.8]
Mild Anaemia (Hb 10.0-10.9 g/dL)		(117) 19.9% [15.2-24.5]	(63) 27.4% [19.8-35.0]	(54) 15.0% [10.5-19.6]
Moderate Anaemia (7.0-9.9 g/dL)		(64) 10.9% [6.8-14.9]	(32) 13.9% [8.2-19.7]	(32) 8.9% [4.4-13.4]
Severe Anaemia (<7.0 g/dL)		(3) 0.5% [0.0-1.1]	(0) 0%	(3) 0.8% [0.1-1.8]
Mean Hb (g/dL) (95% CI) [range]	**Cluster design**	11.5 g/dL (11.2-11.7) [6.0, 14.7]	11.2 g/dL (10.9-11.5) [8.2, 14.4]	11.6 g/dL (11.4-11.9) [6.0, 14.7]

Table 68: Prevalence of moderate and severe anaemia in 6-59 months and by age group, <u>in Nyarugusu old camp</u>

	6-59 months n = 589	6-23 months n=?	24-59 months n=359
Moderate and Severe Anaemia (Hb<10.0 g/dL)	(67) 11.4% [7.2-15.6]	(32) 13.9% [8.2-19.7]	(35) 9.8% [5.1%-14.4]

Anaemia prevalence (mild, moderate and severe) and mean Hb results in children 6-59 from 2016 to 2019 are presented in figure 23, 24 and 25 below.

Table 69: Prevalence of anaemia and mean Hb in 6-59 months and by age group, <u>in Nduta camp</u>

		6-59 months n = 666	6-23 months n=273	24-59 months n=393
Total Anaemia (Hb<11.0 g/dL)		(127) 19.1% [14.8-23.4]	(71) 26.0% [19.4-32.6]	(56) 14.3% [9.6-18.9]
Mild Anaemia (Hb 10.0-10.9 g/dL)		(94) 14.1% [11.1-17.2]	(54) 19.8% [14.3-25.2]	(40) 10.2% [7.2-13.2]
Moderate Anaemia (7.0-9.9 g/dL)		(33) 5.0% [2.4-7.6]	(17) 6.2% [2.4-10.1]	(16) 4.1% [1.5-6.7]
Severe Anaemia (<7.0 g/dL)		0.0% [0.0]	0.0% [0.0]	0.0% [0.0]
Mean Hb (g/dL) (95% CI)	**Cluster design**	11.8 g/dL (11.7-12.0)	11.6 g/dL (11.4-11.8)	12.0 g/dL (11.8-12.1)

	[7.5, 14.4]	[7.7, 14.4]	[7.50, 14.40]

Table 70: Prevalence of moderate and severe anaemia in 6-59 months and by age group, <u>in Nduta camp</u>

	6-59 months n = 666	6-23 months n=273	24-59 months n=393
Moderate and Severe Anaemia (Hb<10.0 g/dL)	(33) 5.0% [2.4-7.6]	(17) 6.2% [2.4-10.1]	(16) 4.1% [1.5-6.7]

Anaemia prevalence (mild, moderate and severe) and mean Hb results in children 6-59 from 2016 to 2019 are presented in figure 23, 24 and 25 below.

Table 71: Prevalence of anaemia and mean Hb in 6-59 months and by age group, <u>in Mtendeli camp</u>

		6-59 months n = 547	6-23 months n=191	24-59 months n=356
Total Anaemia (Hb<11.0 g/dL)		(113) 20.7% [15.6%-25.7%]	(48) 25.1% [18.3-31.9]	(65) 18.3% [12.9-23.6]
Mild Anaemia (Hb 10.0-10.9 g/dL)		(89) 16.3% [12.1%-20.4%]	(38) 19.9% [13.4-26.4]	(51) 14.3% [10.1-18.6]
Moderate Anaemia (7.0-9.9 g/dL)		(24) 4.4% [2.5%-6.3%]	(10) 5.2% [1.0-9.5]	(14) 3.9% [1.9-6.0]
Severe Anaemia (<7.0 g/dL)		0.0% [0.0]	0.0% [0.0]	0.0% [0.0]
Mean Hb (g/dL) (95% CI) [range]	**Cluster design**	11.8 g/dL (11.7-11.9) [7.0, 14.8]	11.6 g/dL (11.4-11.8) [7.2, 14.3]	11.9 g/dL (11.8-12.1) [7.0, 14.8]

Table 72: Prevalence of moderate and severe anaemia in 6-59 months and by age group, <u>in Mtendeli camp</u>

	6-59 months n = 547	6-23 months n=191	24-59 months n=356
Moderate and Severe Anaemia (Hb<10.0 g/dL)	(24) 4.4% [2.5-6.3]	(10) 5.2% [1.0-9.5]	(14) 3.9% [1.9-6.0]

Anaemia prevalence (mild, moderate and severe) and mean Hb results in children 6-59 from 2016 to 2019 are presented in figure 23, 24 and 25 below.

Figure 27: Prevalence of anaemia by categories in 6-59 months from 2016-2019, by camp.
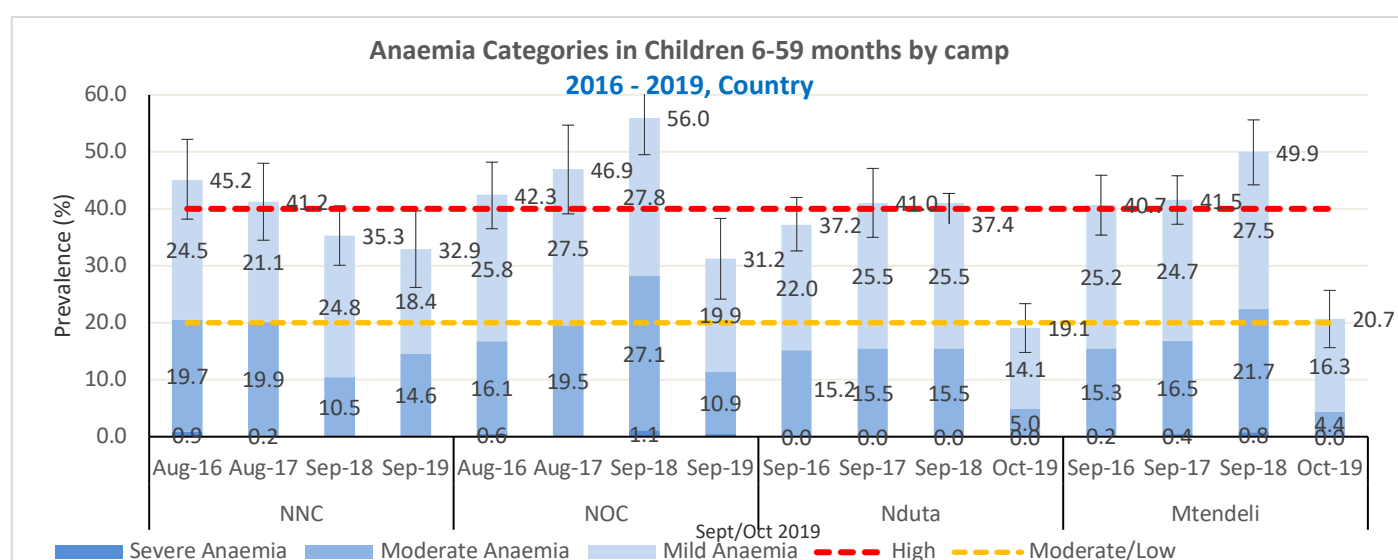
Figure 28: Prevalence of total anaemia, and moderate and severe anaemia in 6-59 months from 2016 - 2019, by camp.
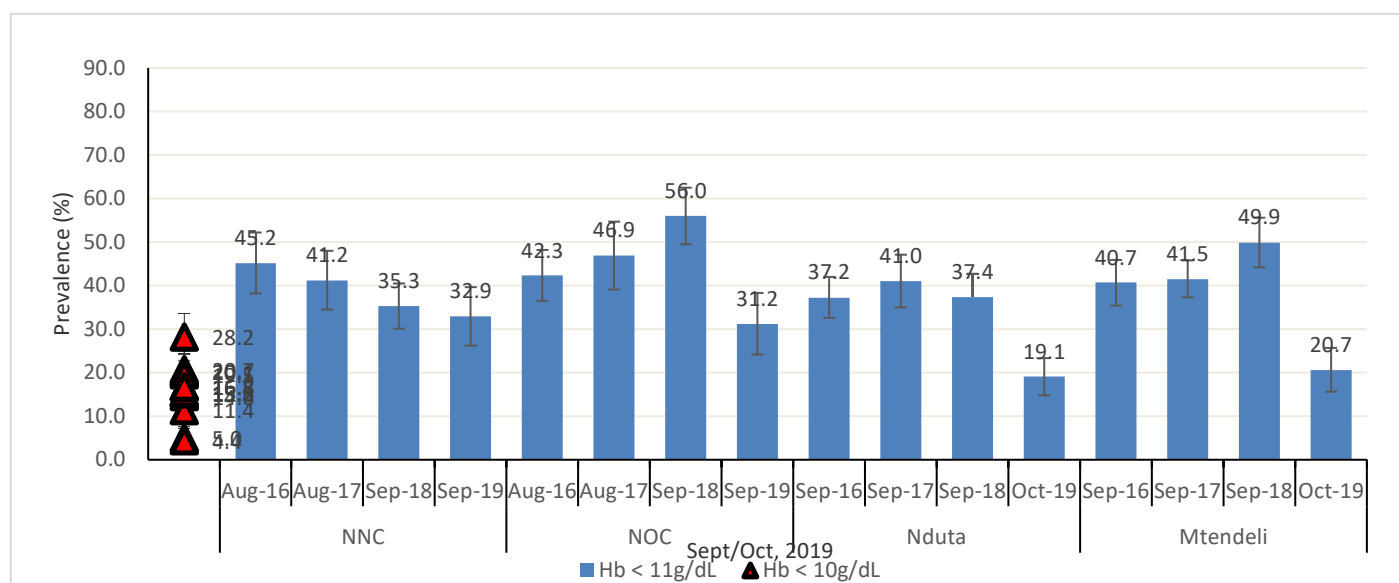
Figure 29: Mean Hb concentration in children 6-59 months from 2016-2019, by camp.
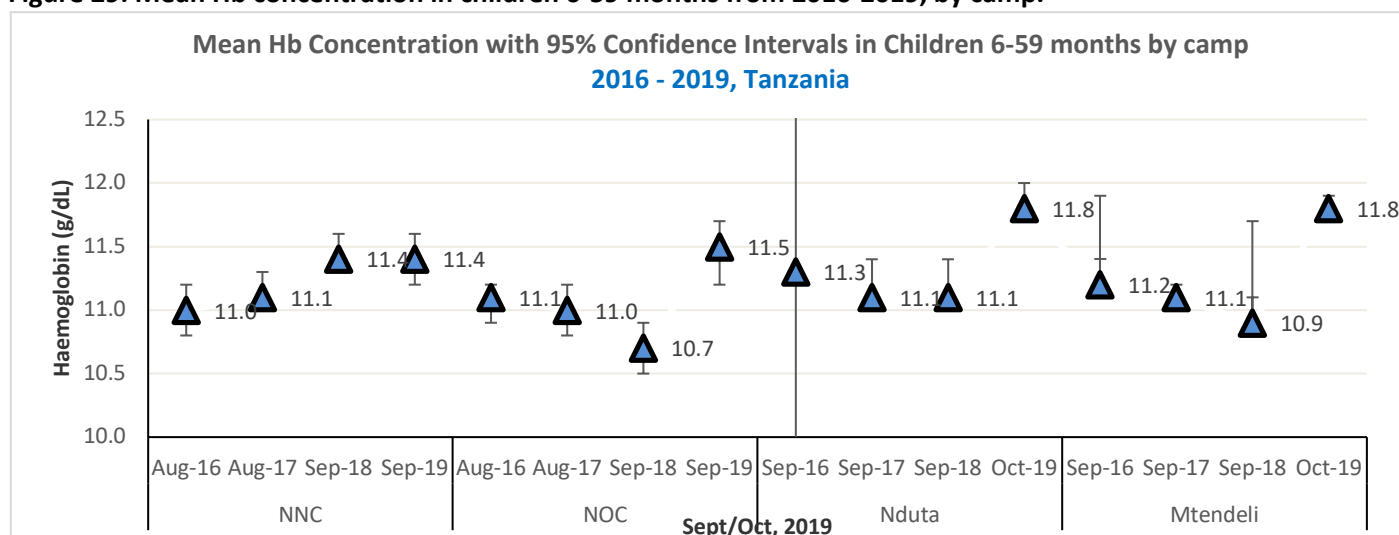
4.3. Children 0-23 months

The timely initiation of breastfeeding in children aged 0-23months ranged between 85% in Nyarugusu old camp and 88% in Mtendeli camp. Excusive breastfeeding in children aged 0-5months was 71% in Nyarugusu new camp, 75% in Nyarugusu new camp, 83% in Nduta and 89% in Mtendeli camp. Predominant breastfeeding among children aged below 6 months was above 90% except in Nyarugusu old camp where prevalence was 81%. While the lowest proportion of children who continued with breastfeeding at one year was 86% in Nyarugusu old camp, prevalence of continued breastfeeding at two years was 48% in Nyarugusu new camp, 58% in Nyarugusu old camp, 60% in Nduta and 56% in Mtendeli camp. The highest proportion of children introduced with solid, semi-solid or soft food between the of age 6 and 8 months was 74% in Mtendeli camp, followed by 69% in Nduta, 60% in Nyarugusu new camp and lastly, 57% in Nyarugusu old camp. Consumption of iron-rich or fortified food in children aged 6 – 23 months was well above 86% and the highest proportion of children aged 0 – 23 months fed with bottle was 1.2% in Nyarugusu new camp. The highest proportion of children under 6 months who were not breastfed at all was 5% in Nyarugusu old camp, Nduta and Mtendeli, and 5% among under 12 months in Nduta camp.

Table 73: Prevalence of infant and young child feeding practices indicators, by camp

Survey Area	N	Nyarugusu New Camp		N	Nyarugusu Old Camp		N	Nduta		N	Mtendeli	
		n	% (95% CI)		n	% (95% CI)		n	% (95% CI)		n	% (95% CI)
WHO INDICATORS												
Timely initiation of breastfeeding (0-23 mo)	255	218	85.5% [79.6-91.4]	223	190	85.2% [80.3-90.0]	273	231	86.0% [81.2-90.76]	191	167	87.5% [82.5-92. 4]
Exclusive breastfeeding under 6 months (0-5 mo)	63	45	71.4% [57.3-85.5]	59	44	74.6% [59.5-89.6]	77	64	83.1% [74.7-91.5]	65	58	89.2% [82.7-95.8]
Predominant breastfeeding under 6 months (0-5 mo)	63	57	90.5% [81.4-99.6]	59	48	81.4% [69.2-93.5]	77	72	93.5% [87.2-99.8]	65	60	92.3% [86.4-98.3]
Continued breastfeeding at 1 year (12-15 mo)	71	66	93.0% [87.2-98.7]	56	48	85.7% [76.0-95.5]	53	48	90. 6% [82.4-98.8]	46	41	89.1% [79.6-98.7]
Continued breastfeeding at 2 years (20-23 mo)	53	28	47.5% [33.6-61.3]	52	30	57.7% [42.2-73.2]	73	44	60.3% [48.2-72.4]	34	24	55.8% [38.3-73.4]
Introduction of solid, semi-solid or soft foods (6-8 mo)	35	21	60.0% [42.2-77.9]	35	20	57.1% [36.4-78.0]	39	27	69.2% [53. 7-84.8]	34	25	73.6% [58.3-88.8]
Consumption of iron-rich or iron-fortified foods (6-23 mo)	259	224	86.5% [80.9-92.1]	227	197	86.8% [80.8-92.8]	274	245	89.4% [84.7-94.4]	191	177	92.7% [87.5-97.8]
Bottle feeding (0-23 mo)	223	4	1.2% [0.0-2.4]	287	1	0.4% [0.0-1.1]	351	1	0.3% [0.0-0.9]	256	1	0.4% [0.0-1.2]
UNHCR INDICATORS												
No breastfeeding under 6 months (0-5 mo)	63	2	3.2% [0.0-9.3]	59	3	5.1% [2.5-12.6%]	77	4	5.2% [0.0-11. 2]	65	3	4.6% [0.0-9.8]
No breastfeeding under 12 months (0-11 mo)	139	4	2.9% [0.0-6.2]	136	6	4.4% [0.3-8.5]	151	7	4.6% [0.9-8.3]	123	4	3.3% [0.0-7.1]

Note:

Results in the above table should interpreted with caution due to the fact that, it was not feasible to achieve large sample size for some IYCF indicators (e.g. 12-15 months, 6-8 months) given the nature of the survey which was primarily based on GAM in children aged 6-59 months. As the results, the confidence limits may be too wide and hence under or overestimation of prevalence of the particular indicator.

Below is figure presenting prevalence of a few IYCF indicators between 2016 and 2019, by camp

Figure 30: Key IYCF indicators from 2016-2019, by camp
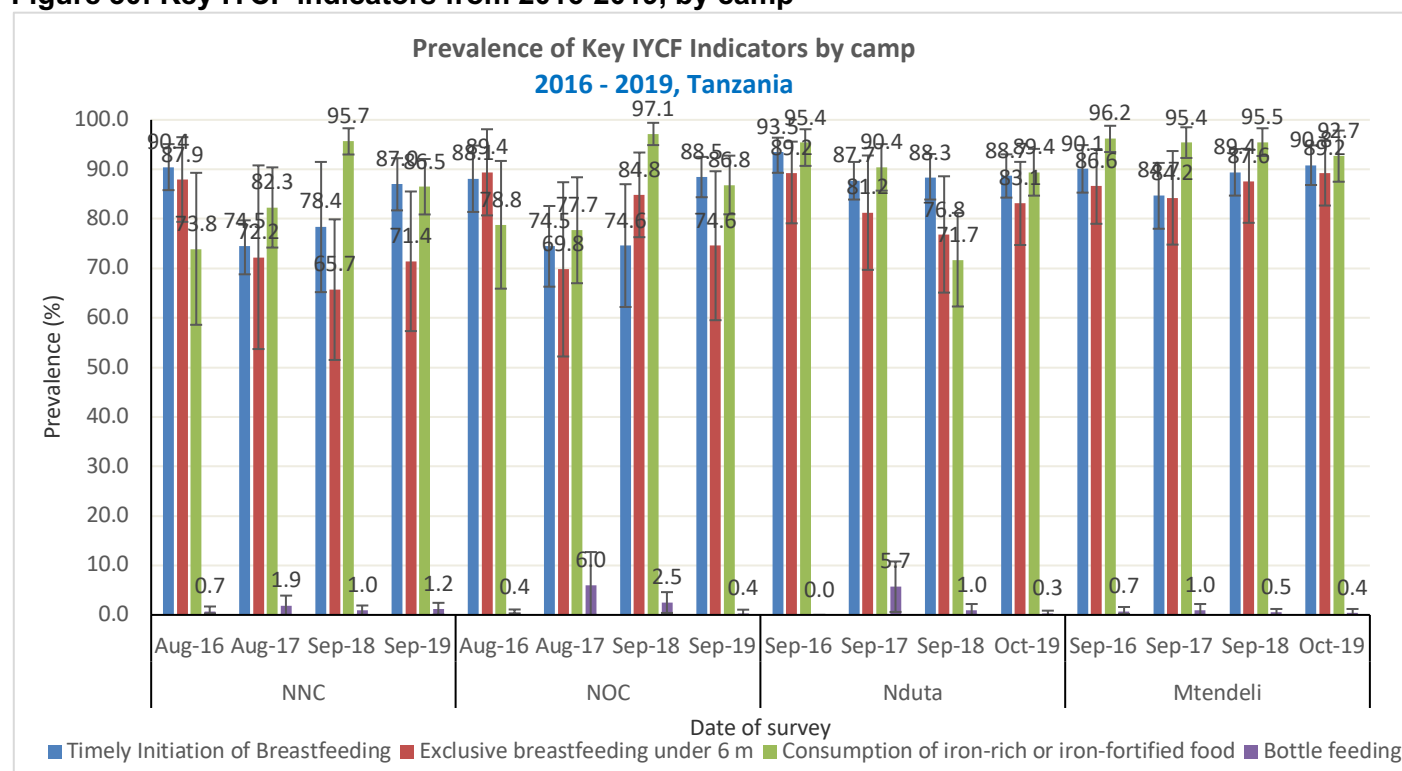
Prevalence of intake

Infant formula

Proportion children aged 0 – 23 months who were receiving infant formula was below 1% across the three camps.

Table 74: Infant formula intake in children aged 0-23 months, by camp

Survey Area	N	Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	
		n	% (95% CI)
Nyarugusu New Camp	323	1	0.3% [0.0-0.9]
Nyarugusu Old Camp	287	1	0.4% [0.0-1.1]
Nduta	351	1	0.3% [0.0-0.9]
Mtendeli	256	0	0.0% [0.0]

Fortified blended foods

FBF intake among children aged 6 – 23months was 37% in Nyarugusu New Camp, 33% in Nyarugusu old camp, 38% in Nduta and 31% in Matendeli camp. It should be noted that there was a reduction of CSB+ by 50% in the refugee food basket from general ration that preceded the survey exercise in July and August 2019.

Table 75: FBF intake in children aged 6-23 months, by camp

Survey Area	N	Proportion of children aged 6-23 months who receive FBF	
		n	% (95% CI)
Nyarugusu New Camp	260	96	36.9% [23.7-50.1]
Nyarugusu Old Camp	228	74	32.5% [20.7-44.3]
Nduta	274	103	37.6% [26.9-48.3]

Mtendeli	191	60	31.4% [20.5-42.5]

Despite distribution of supercereal plus (CSB++) to children aged 6 – 23 months through BSFP, proportion of intake of FBF++ was 78% in Nyarugusu new camp, 70% in Nyarugusu old camp, 66% in Nduta and 77% in Mtendeli. See table 66 below. The BSFP was set in Burundians and Congolese refugee camps following high prevalence of anaemia among young children aged 6 – 23 months.

Table 76: FBF++ intake in children aged 6-23 months, by camp

Survey Area	N	Proportion of children aged 6-23 months who receive FBF++	
		n	% (95% CI)
Nyarugusu New Camp	260	202	77.7% [69.1-86.3]
Nyarugusu Old Camp	228	160	70.2% [61.4-79.0]
Nduta	274	180	65.7% [57.2-74.2]
Mtendeli	191	147	77.0% [67.0-87.0]

Special nutritional products
The MicroNutrient Powder (MNP) project started in 2017 following high prevalence of anaemia in the camp. The BSFP however, was targeting children aged 24 – 59 months since younger children aged 6 – 23 months were already covered under super cereal plus (CSB++) distribution. During the surveys, proportion of intake of MNP among younger children aged 6 – 23 months was 9% in Nyarugusu new camp, 9% in Nyarugusu old camp, 4% in Nduta and 1% in Mtendeli camp. The fact that this proportion of younger children were taking MNP may indicate a crossover between ages on the consumption of MNP. See table 77 below.

Table 77: MNP intake in children aged 6-23 months, by camp

Survey Area	N	Proportion of children aged 6-23 months who receive MNP	
		n	% (95% CI)
Nyarugusu New Camp	260	24	9.2% [5.4-13.1]
Nyarugusu Old Camp	228	21	9.2% [2.8-15.7]
Nduta	274	11	4.0% [1.1-6.9]
Mtendeli	191	2	1.1% [0.0-2.6]

4.4.   Women 15-49 years

Assessment of physiological status among women was part of the survey. Women were assessed if they were pregnant or lactating children under six or equal and greater than six months. The table below describes the physiological status among assessed women.

Table 78: Women physiological status and age, by camp

Survey Area	N	Non-pregnant, non-lactating		Pregnant		N	Lactating with an infant less than 6 months		Lactating with an infant greater than 6 months		Mean age in years
		n	% (95% CI)	n	% (95% CI)		n	% (95% CI)	n	% (95% CI)	[min, max]
Nyarugusu New Camp	335	131	39.1% [33.1-45.1]	54	16.1% [10.9-21.4]	155	44	28.4% [20.7-36.0]	111	71.6% [64.0-79.1]	27.9 [17.0, 44.0]
Nyarugusu Old Camp	296	147	49.7% [42.4-57.0]	45	15.2% [11.1-19.3]	111	27	24.3% [16.4-32.2]	84	75.7% [67.8-83.6]	27.7 [17.0 ,47.0]
Nduta	328	131	39.9% [34.7-45.2]	47	14.3% [10.8-17.8]	153	32	20.9% [14.2-27.6]	121	79.1% [72.4-85.8]	27.3 [16.0, 46.0]
Mtendeli	246	90	36.6%	40	16.3%	118	34	28.8%	84	71.2%	27.7

		[30.3-42.9]	[11.6-20.9]		[19.7-38.0]	[62.1-80.3]	[16.0, 45.0]

Proportion of women who were neither pregnant nor lactating was 39% in Nyarugusu new camp, 50% in Nyarugusu old camp, 40% in Nduta and 37% in Mtendeli camp. Proportion of pregnant, lactating with an infant below six months and greater or equal to six months was 16%, 28% and 72% in Nyarugusu new camp, 15%, 24% and 76% in Nyarugusu old camp, 14%, 21% and 79% in Nduta and 16%, 29% and 71% in Mtendeli. The mean age of women participants was 28% in Nyarugusu new camp, Nyarugusu old camp and Mtendeli and 27% in Nduta camp. Generally, there was not statistically significant difference of proportions of women in each category by camp indicating equally distributed.

MUAC in women
The MUAC cut-off was set at 230mm regardless of physiological status of the woman. Prevalence of MUAC malnutrition in non-pregnant and non-lactating women was 9% in Nyarugusu new camp, 3% in Nyarugusu old camp, 13% in Nduta and 7% in Mtendeli camp. Nduta had a highest prevalence when compared to other camps.

Table 79 Prevalence of MUAC malnutrition in non-pregnant, non-lactating women, by camp

Survey Area	N	Prevalence of MUAC < 230 mm	
		n	% (95% CI)
Nyarugusu New Camp	330	23	8.5% [5.1-11.9]
Nyarugusu Old Camp	289	8	2.8% [1.0-4.6]
Nduta	325	42	12.9% [9.0-16.8]
Mtendeli	244	17	7.0% [3.2-10.8]

Prevalence of MUAC malnutrition among pregnant and lactating women with an infant less than 6 months was 7% in Nyarugusu new camp, 3% in Nyarugusu old camp, 11% in Nduta and 6% in Mtendeli camp. Nduta camp had a highest prevalence when compared to other camps. Results however, should be interpreted with cautions given the small sample size of the particular target group.

Table 80: Prevalence of MUAC malnutrition in PLW with an infant less than 6 months, by camp

Survey Area	N	Prevalence of MUAC < 230 mm	
		n	% (95% CI)
Nyarugusu New Camp	98	7	7.1% [1.4-12.9]
Nyarugusu Old Camp	72	2	2.8% [0.0-6.7]
Nduta	79	9	11.4% [3.3-19.]
Mtendeli	73	4	5.5% [0.0-10.9]

Note:
The MUAC cut-off applicable at local context was not available during the assessment. The 230mm was among the suggested cut-offs which could be used for pregnant and lactating women in Tanzania.

BSFP enrolment
Enrolment at BSFP starts during second trimester of the women's pregnancy and continue until six months post-delivery. Coverage of BSFP among Pregnant and lactating women (PLW) was 64% in Nyarugusu new camp, 56% in Nyarugusu old camp, 68% in Nduta and 85% in Mtendeli camp.

Table 81: Coverage of BSFP among pregnant and lactating women, by camp

Survey Area	Programme	Number/total	% (95% CI)
Nyarugusu New Camp	Blanket feeding programme enrolment	63/98	64.3% [54.4-74.2]
	Product name	CSB+	
	Target age group	PLW	
	Blanket feeding programme enrolment	40/72	55.6%

Nyarugusu Old Camp			[46.0-65.1]
	Product name	CSB+	
	Target age group	PLW	
Nduta	Blanket feeding programme enrolment	54/79	68.4% [56.7-80.0]
	Product name	CSB+	
	Target age group		
Mtendeli	Blanket feeding programme enrolment	62/73	84.9% [75.8-94.1]
	Product name	CSB+	
	Target age group	PLW	

Coverage of BSFP among pregnant women was 41% in Nyarugusu new camp, 31% in Nyarugusu old camp, 57% in Nduta and 78% in Mtendeli camp. Coverage was the lowest in Nyarugusu old camp and the highest in Mtendeli camp. Some pregnant women were not able to get into BSFP enrolment due admission criteria which needs them to prove their pregnancy through ANC and completed the first three months.

Table 82: Coverage of the BSFP for pregnant women, by camp

Survey Area	Programme	Number/total	% (95% CI)
Nyarugusu New Camp	Blanket feeding programme enrolment	22/54	40.7% [25.5-55.9]
	Product name	CSB+	
	Target age group	Pregnant women	
Nyarugusu Old Camp	Blanket feeding programme enrolment	14/45	31.1% [18.8-43.4]
	Product name	CSB+	
	Target age group	Pregnant women	
Nduta	Blanket feeding programme enrolment	27/47	57.4% [41.0-73.9]
	Product name	CSB+	
	Target age group	Pregnant women	
Mtendeli	Blanket feeding programme enrolment	31/40	77.5% [64.3-90.7]
	Product name	CSB+	
	Target age group	Pregnant women	

Anaemia

Prevalence of anaemia among non-pregnant women aged 15 to 49 years was 19% in Nyarugusu new camp, 26% in Nyarugusu old camp, 8% in Nduta and 9% in Mtendeli camp. The UNHCR target for total anaemia is <20% of which only Nyarugusu old camp was above the limit. There was no severe anaemia tested in neither of the three camps among this target group. The mean haemoglobin concentration was 13.1g/dL in Nyarugusu new camp, 12.9g/dL in Nyarugusu old camp, 13.7g/dL in Nduta and 13.6g/dL in Mtendeli camp.

Table 83: Prevalence of total anaemia, anaemia categories, and mean Hb concentration in non-pregnant women aged 15-49 years, by camp

	Nyarugusu New Camp N = 282	Nyarugusu Old Camp N=250	Nduta N=281	Mtendeli N=206
Total Anaemia (Hb<12.0 g/dL)	(53) 18.8% [13.4-24.2]	(65) 26.0% [17.1-35.0]	(23) 8.2% [4.3-12.1]	(18) 8.8% [4.4-13.1]
Mild Anaemia (Hb 11.0-11.9 g/dL)	(31) 11.0% [7.8-14.2]	(46) 18.4% [11.4-25.4]	(19) 6.8% [3.7-9.9]	(14)

					6.8% [3.1-10.5]
Moderate Anaemia (8.0-10.9 g/dL)		(22) 7.8% [3.6-12.0]	(19) 7.6% [4.1-11.1]	(4) 1.4% [0.0-3.2]	(4) 1.9% [0.0-4.3]
Severe Anaemia (<8.0 g/dL)		0% [0%]	0% [0%]	0% [0%]	0% [0%]
Mean Hb (g/dL) (95% CI) [range]	**Cluster design**	13.1 g/dL (12.9-13.3) [9.5, 19]	12.9 g/dL (12.7-13.2) [8.2, 16.5]	13.7 g/dL (13.5-13.9) [9.6, 17.2]	13.6 g/dL (13.4-13.8) [10.1, 17.2]

Anaemia prevalence (mild, moderate and severe) and mean Hb results in women of reproductive age (non-pregnant) from 2016 to 2019 are presented in figures 31and 32 below.

Figure 31: Prevalence of anaemia by categories in non-pregnant women from 2016-2019, by camp.
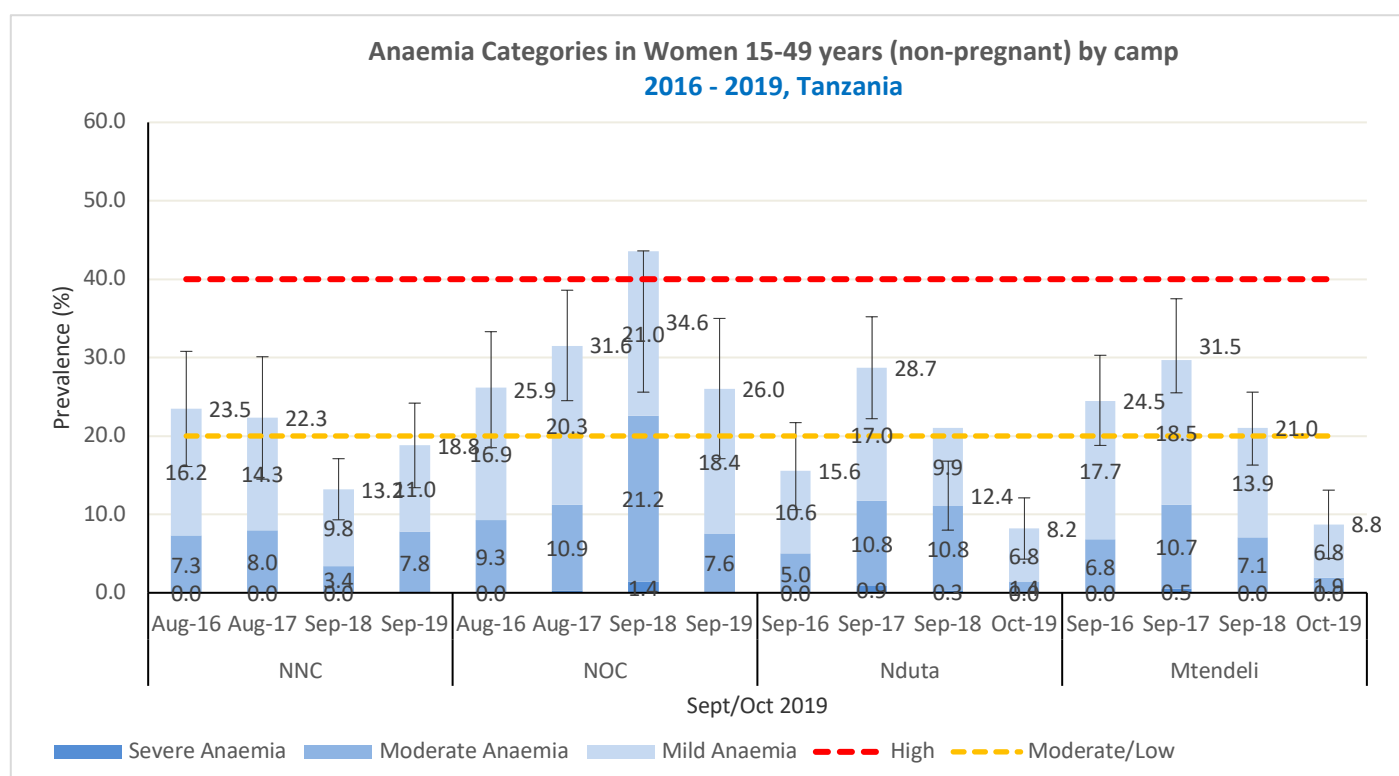
Figure 32: mean Hb concentration in non-pregnant women from 2016-2019, by camp.

Mean Haemoglobin Concentration with 95% Confidence Intervals in Women of Reproductive Age by camp
2016 - 2019, Tanzania
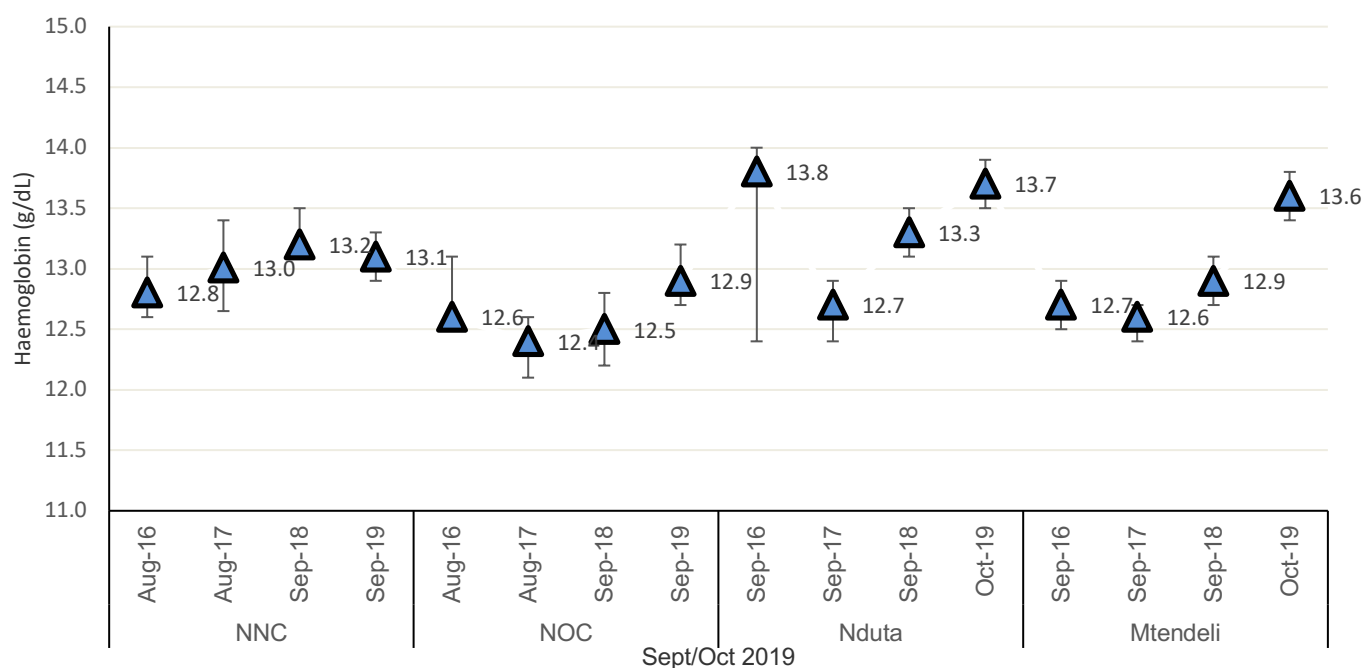
ANC Enrolment

Coverage of ANC enrolment was 54% in Nyarugusu new camp, 36% in Nyarugusu old camp, 83% in Nduta and 80% in Mtendeli camp. Generally, the coverage was low in Kasulu camps compared to Kibondo. Proportion of pregnant women who were receiving IFA's was 54% in Nyarugusu new camp, 36% in Nyarugusu old camp, 79% in Nduta and 80% in Mtendeli camp. In some camps women complained of being sent back home until their pregnancies are palpable. It was noted during the assessment that enrolment into ANC based on urine for pregnant test is not enforced in all ANC centers as some health providers are still applying the palpation method to determine gestational age of pregnancy and if present. This could delay timely enrolment of pregnant women into ANC programme.

Table 84: ANC enrolment and IFAs pills coverage among pregnant women (15-49 years) by camp

Survey Area	N	Currently enrolled in ANC programme		Currently receiving iron-folic acid pills	
		n	% (95% CI)	n	% (95% CI)
Nyarugusu New Camp	54	29	53.7% [40.4-67.0]	29	53.7% [40.4-67.0]
Nyarugusu Old Camp	45	16	35.6% [22.8-48.3]	16	35.6% [22.8-48.3]
Nduta	47	39	83.0% [70.3-95.6]	37	78.7% [64.2-93.3]
Mtendeli	40	32	80.0% [66.5-93.6]	32	80.0% [66.5-93.6]

The ANC enrolment and coverage of IFA's supplementation among pregnant women from 2016 to 2019 are presented in figures 29 below.

Figure 33: ANC enrolment and coverage of IFAs supplementation in pregnant women from 2016-2019, by camp.

Prevalence of Key Reproductive Health Indicators for Pregnant Women by camp 2016 - 2019, Tanzania
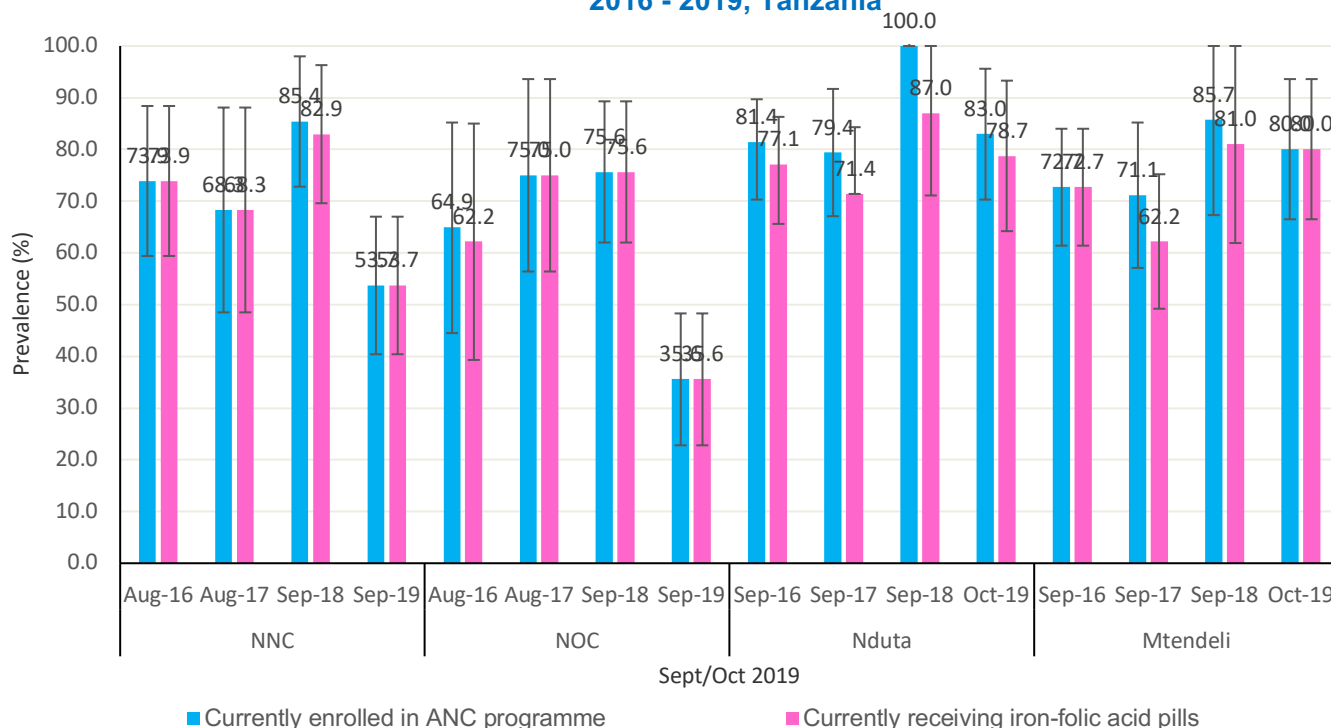
Proportion of lactating women with an infant aged below 6 months receiving vitamin A supplementation was 71% in Nyarugusu new camp, 82% in Nyarugusu old camp, 78% and 85% in Nduta and Mtendeli respectively. Results in the table below should be interpreted with caution given the narrowed sample size which may not properly represent the target population.

Table 85: Vitamin A supplementation coverage among lactating women to U6 months, by camp

Survey Area	N	Receiving Vitamin A capsules	
		n	% (95% CI)
Nyarugusu New Camp	44	31	70.5% [55.3-85.6]
Nyarugusu Old Camp	27	22	81.5% [58.7-100]
Nduta	32	25	78.1% [61.1-95.2]
Mtendeli	34	29	85.3% [71.4-99.2]

4.5.   Food security

Food security data was collected from at least 99.4% of the planned number of households in the three camps indicting good coverage. In a few households where data were not collected in households where consent was not given.

Table 86: Food security sampling information by camp

Total households surveyed for Food Security	Planned	Actual	% of target
Nyarugusu New Camp	323	321	99.4%
Nyarugusu Old Camp	268	268	100%
Nduta	336	334	99.4%
Mtendeli	240	240	100%

Access to food assistance

Refugees in the three camps receives an in-kind food assistance distributed through general rations based on 28 days cycle. A month prior to this assessment, refugees were receiving 380g of cereals, 120g of pulses, 20g of oil, 25g of FBF and 5g of salt per person per day. These food items were providing a total of 2055kcal per person per day, slightly below the recommended 2100kcal/p/d by WHO and SPHERE standards. The gap was due to reduced ration of FBF from 50g to 25g/p/d resulted from the WFP food pipeline interruption between June and August 2019. However, the general rations resumed to its normal from September's distribution throughout the data collection period in October 2019. The general rations were the same across the three camps. See table 87 below.

While scooping method was already in force in Kasulu camps, Kibondo camps were still implementing grouping system during food distribution. Stakeholders including WFP, UNHCR in collaboration with the government were transitioning the system in Kibondo to adapt scooping method as it was in Kasulu.

The World vision international distribution system in the Kasulu camps was primarily based on Family Size regardless of the location of beneficiaries while DCR in Kibondo distribute foods by zones and villages.

Table 87: Food assistance type, amount and distribution schedule for the last distribution <u>in all camps</u>

Type	Distribution schedule (days)	Commodities/products distributed	Amount per person per day (g/day)	Kcal per person per day
In-kind	28	Cereals	380	1376
	28	Legumes	120	408
	28	Oil	20	177
	28	Salt	5	0
	28	Super cereal with sugar	25	94

Proportion of households receiving in-kind assistance was 100% across the three camps. See table 88 below.

Table 88: Food assistance coverage

Survey Area	N	Proportion of households receiving a food assistance including in-kind food assistance	
		n	% (95% CI)
Nyarugusu New Camp	321	321	100%
Nyarugusu Old Camp	268	268	100%
Nduta	334	334	100%
Mtendeli	240	240	100%

The one household reporting not receiving the in-kind food assistance in Nyarugusu new camp said it was because they were not given a ration card, even if they were eligible.

Proportion of households with ration card was 99.7% in Nduta camp, and 100% in Nyarugusu new camp, Nyarugusu old camp and Mtendeli camp.

Table 89: Ration card coverage by camp

Survey Area	N	Proportion of households with a ration card	
		n	% (95% CI)
Nyarugusu New Camp	321	321	100%
Nyarugusu Old Camp	268	268	100%

Nduta	334	333	99.7% [99.1-100]	
Mtendeli	240	240	100%	

The one household reporting not having a ration card in Nduta camp said it was because they were new arrivals who were eligible but were not yet registered.

Refugees were receiving food rations calculated to cover 28 days duration per distribution cycle. However, in some household food did not last until the end of the particular distribution cycle. The mean duration of the food received from general ration was 21 days for Nyarugusu new camp, 22 days for Nyarugusu old camp, 23 days for Nduta and 24 days in Mtendeli camp. In some household food were sold immediately or later after receiving their rations and buy what they prefer to eat.

Table 90: Reported duration of general food distribution, by camp

Average number of days the general food distribution lasts		Nyarugusu New Camp N = 321	Nyarugusu Old Camp N= 268	Nduta N= 332	Mtendeli N= 240
Mean (Days) (95% CI) [range]	Cluster design	21.2 Days (20.7-21.7) [5, 28]	22.2 Days (21.7-22.6) [7, 28]	23.3 Days (22.8-23.9) [2, 28]	23.6 Days (23.0-24.2) [1, 28]

During the assessment, household heads were asked to report about meeting their household basic needs. Proportion of households reporting meeting 100% of their basic needs by their own was 1.3% for Nyarugusu new camp, 1.9% for Nyarugusu old camp, 0% for Ndua and 0.4% for Mtendeli camp. Proportion of household reporting meeting 50% of their basic needs was 47% for Nyarugusu new camp, 54% for Nyarugusu old camp, 46% for Nduta and 48% for Mtendeli camp. Proportion of household reporting not meeting any of their household basic needs was 2.5% for Nyarugusu new camp, 0.4% for Nyarugusu old camp, 8.7% for Nduta and 6.7% for Mtendeli camp. However, the question seemed ambiguous to respondents given the in-kind food assistance and core relief items distributed to refugee communities.

Table 91: Households by categories of coverage of basic needs, by camp

Camp	Proportion of households in each category of coverage of basic needs	Number/total	% (95% CI)
Nyarugusu New Camp	All basic needs are met (100%)	4/321	1.3% [0.1-2.4]
	More half basic needs are met (>50%)	30/321	9.4% [5.9-12.8]
	Half basic needs are met (50%)	151/321	47.0% [39.0-55.1]
	Few basic needs are met (<50%)	128/321	39.9% [31.7-48.1]
	Basic needs are not met (0%)	8/321	2.5% [0.9-4.1]
Nyarugusu Old Camp	All basic needs are met (100%)	5/268	1.9% [0.3-3.5]
	More half basic needs are met (>50%)	61/268	22.8% [13.7-31.8]
	Half basic needs are met (50%)	144/268	53.7% [44.0-63.4]
	Few basic needs are met (<50%)	57/268	21.3% [12.5-30.0]
	Basic needs are not met (0%)	1/268	0.4% [0.0-1.1]
Nduta	All basic needs are met (100%)	0/333	0% [0]
	More half basic needs are met (>50%)	45/333	13.5% [8.2-18.9]
	Half basic needs are met (50%)	154/333	46.3% [37.5-55.0]
	Few basic needs are met (<50%)	105/333	31.5% [24.4%-38.6]

	Basic needs are not met (0%)	29/333	8.7% [3.6-13.8]
Mtendeli	All basic needs are met (100%)	1/240	0.4% [0.0-1.3]
	More half basic needs are met (>50%)	40/240	16.7% [7.4-26.0]
	Half basic needs are met (50%)	115/240	47.9% [35.1-60.8]
	Few basic needs are met (<50%)	68/240	28.3% [15.7-41.0]
	Basic needs are not met (0%)	16/240	6.7% [1.5-11.9]

The tables 92, 93, 94 and 95 below describes some basic needs that a particular household could not afford if were not provided as an assistance to refugees. This assumption was made to enable respondents to answer the previous question on meeting their basic needs while most of the needs are provided in-kind and/or free of charge (e.g. food, water, health services, shelter, etc.)

Table 92: Description of basic needs not affordable by the households, <u>in Nyarugusu new camp</u>

Basic needs not affordable by the households:	Number/total	% (95% CI)	Ranking of the basic need not affordable
Food	240/317	75.7% [65.2-86.2]	1
Water	151/317	47.6% [35.9-59.4]	8
Hygiene items, clothes, shoes	219/317	69.1% [57.1-81.1]	3
Health costs (including medicines)	141/317	44.5% [32.5-56.5]	9
Rent, shelter repair, household items (e.g. mattress, blankets, jerrycan), utilities and bills (e.g. electricity, water bills, phone calling credit)	182/317	57.4% [45.5-69.3]	4
Firewood / fuel for cooking or heating	234/317	73.8% [63.1-84.5]	2
Assets for a livelihood activity (e.g. seeds, tools, farming, fishing, petty trade, etc.)	95/317	30.0% [18.2-41.7]	10
Debts repayment	172/317	54.3% [40.8-67.7]	5
Saved some money, support other family members, relatives, friends	161/317	50.8% [36.8-64.8]	6
Education (e.g. school fees, uniform, books)	152/317	48.0% [37.1-58.8]	7
Other	62/317	19.6% [9.0-30.1]	11

Table 93 Description of basic needs not affordable by the households, <u>in Nyarugusu old camp</u>

Basic needs not affordable by the households:	Number/total	% (95% CI)	Ranking of the basic need not affordable
Food	178/263	67.7% [53.0-82.4]	1
Water	96/263	36.5% [22.2-50.8]	8
Hygiene items, clothes, shoes	176/263	66.9% [53.4-80.4]	2
Health costs (including medicines)	89/263	33.8% [21.1-46.6]	9
Rent, shelter repair, household items (e.g. mattress, blankets, jerrycan), utilities and bills (e.g. electricity, water bills, phone calling credit)	174/263	66.2% [52.9-79.5]	3
Firewood / fuel for cooking or heating	170/263	64.6% [53.2-76.0]	4

Assets for a livelihood activity (e.g. seeds, tools, farming, fishing, petty trade, etc.)	64/263	24.3% [11.0-37.6]	11
Debts repayment	110/263	41.8% [26.0-57.9]	7
Saved some money, support other family members, relatives, friends	128/263	48.7% [34.2-63.1]	5
Education (e.g. school fees, uniform, books)	118/263	44.9% [31.4-58.3]	6
Other	65/263	24.7% [11.3-38.2]	10

Table 94: Description of basic needs not affordable by the households, <u>in Nduta camp</u>

Basic needs not affordable by the households:	Number/total	% (95% CI)	Ranking of the basic need not affordable
Food	207/333	62.2% [48.5-75.8]	3
Water	112/333	33.6% [21.4-45.9]	9
Hygiene items, clothes, shoes	208/333	62.5% [50.4-74.5]	2
Health costs (including medicines)	112/333	33.6% [21.1-46.1]	10
Rent, shelter repair, household items (e.g. mattress, blankets, jerrycan), utilities and bills (e.g. electricity, water bills, phone calling credit)	235/333	70.6% [59.4-81.7]	1
Firewood / fuel for cooking or heating	191/333	57.4% [45.5-69.2]	4
Assets for a livelihood activity (e.g. seeds, tools, farming, fishing, petty trade, etc.)	123/333	36.9% [25.7-48.2]	8
Debts repayment	169/333	50.8% [38.1-63.4]	5
Saved some money, support other family members, relatives, friends	134/333	40.2% [28.0-52.5]	7
Education (e.g. school fees, uniform, books)	138/333	41.4% [29.6-53.3]	6
Other	86/333	25.8% [13.8-37.9]	11

Table 95: Description of basic needs not affordable by the households, <u>in Mtendeli camp</u>

Basic needs not affordable by the households:	Number/total	% (95% CI)	Ranking of the basic need not affordable
Food	158/239	66.1% [50.9-81.3]	3
Water	81/239	34.0% [19.8-48.0]	10
Hygiene items, clothes, shoes	166/239	69.5% [56.7-82.2]	2
Health costs (including medicines)	121/239	50.6% [34.9-66.3]	6
Rent, shelter repair, household items (e.g. mattress, blankets, jerrycan), utilities and bills (e.g. electricity, water bills, phone calling credit)	185/239	77.4% [65.7-89.1]	1
Firewood / fuel for cooking or heating	119/239	49.8% [36.5-63.1]	7
Assets for a livelihood activity (e.g. seeds, tools, farming, fishing, petty trade, etc.)	116/239	48.5% [34.1-63.0]	8
Debts repayment	141/239	59.0% [42.7-75.3]	4
Saved some money, support other family members, relatives, friends	123/239	51.5% [37.4-65.5]	5

Education (e.g. school fees, uniform, books)	97/239	40.6% [26.2-55.0]	9
Other	63/239	26.4% [11.5-41.2]	11

Access to cooking fuel

The most common cooking fuels applicable in both refugee setting and host community surrounding the camps are firewood and charcoal. Proportion of households using wood was 95% for Nyarugusu new camp, 88% for Nyarugusu old camp, 98% for Nduta and 98% for Mtendeli. The remaining proportions were using charcoal across all the three camps.

Table 96: Cooking fuel use in Nyarugusu new camp

Proportion of households using the following cooking fuel:	Number/total	% (95% CI)
Wood	306/321	95.3% [92.4-98.3]
Charcoal	15/321	4.7% [1.8-7.6]

Table 97: Cooking fuel use in Nyarugusu old camp

Proportion of households using the following cooking fuel:	Number/total	% (95% CI)
Wood	236/268	88.1% [83.6-92.5]
Charcoal	32/268	11.9% [7.5-16.4]

Table 98: Cooking fuel use in Nduta

Proportion of households using the following cooking fuel:	Number/total	% (95% CI)
Wood	326/334	97.6% [95.8-99.4]
Charcoal	8/334	2.4% [0.6-4.2]

Table 99: cooking fuel use in Mtendeli

Proportion of households using the following cooking fuel:	Number/total	% (95% CI)
Wood	234/240	97.5% [95.3-99.8%
Charcoal	6/240	2.5% [0.2-4.8]

Negative Coping Strategies Results

As seen in presentation of number of days the rations received from general food distribution lasts, there were several coping strategies which the households were adopting to cover the gaps. Table 100 - 103 describes negative coping strategies that household member used three weeks prior the data collection date.

In Nyarugusu new camp, strategy that was highly adopted by many households was to take out new loans or borrowed money, which counted about 35%. The least adopted negative coping strategy was engaging in potentially risky or harmful activities, counted about 2%. Proportion of households reporting using one or more negative coping strategies over the past 4 weeks was 58.9% [49.6-68.2]

Table 100: Negative coping strategies used in Nyarugusu new camp over the past 4 weeks

Proportion of households reporting using the following negative coping strategies over the past 4 weeks*:	Number/total	% (95% CI)	Ranking of negative coping strategies reported

Stop a child from attending school	15/321	4.7% [2.1-7.3]	8
Sold any assets that would not have normally sold	53/321	16.5% [9.3-23.7]	4
Ask for money from strangers (begging)	43/320	13.4% [9.2-17.7]	5
Move to a poorer quality shelter	9/321	2.8% [0.7-4.9]	9
Send household members under the age of 16 to work	17/321	5.3% [2.3-8.3]	7
Send a member of the household to work far away	64/320	20.0% [13.2-26.8]	3
Engage in potentially risky or harmful activities	7/321	2.2% [0.4-4.0]	10
Skip paying rent /debt repayments to meet other needs	65/321	20.3% [14.1-26.4]	2
Take out new loans or borrowed money	110/318	34.6% [27.4-41.8]	1
Reduce expenditure hygiene items, water, baby items, health or education in order to meet household food needs	21/321	6.5% [1.7-11.4]	6
Proportion of households reporting using one or more negative coping strategies over the past 4 weeks	186/316	58.9% [49.6-68.2]	N/A

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

In Nyarugusu old camp, the most preferred negative coping strategy was selling of assets that would not have normally sold, counted at 26%. The least adopted negative coping strategy was moving to the poorest shelter by household member, counted at 2%. Proportion of households reporting using one or more negative coping strategies over the past 4 weeks was 52.2% [41.3-63.2].

Table 101: Negative coping strategies used <u>in Nyarugusu old camp</u> over the past 4 weeks

Proportion of households reporting using the following negative coping strategies over the past 4 weeks*:	Number/total	% (95% CI)	Ranking of negative coping strategies reported
Stop a child from attending school	26/268	9.7% [5.6-13.8]	5
Sold any assets that would not have normally sold	69/268	25.8% [17.9-33.6]	1
Ask for money from strangers (begging)	23/268	8.6% [4.3-12.9]	6
Move to a poorer quality shelter	6/268	2.2% [0.2-4.3]	10
Send household members under the age of 16 to work	21/268	7.8% [3.1-12.5]	8
Send a member of the household to work far away	29/268	10.8% [6.2-15.5]	4
Engage in potentially risky or harmful activities	7/268	2.6% [0.0-5.5]	9
Skip paying rent /debt repayments to meet other needs	42/268	15.7% [9.4-21.9]	3
Take out new loans or borrowed money	62/268	23.1% [16.1-30.1]	2

Reduce expenditure hygiene items, water, baby items, health or education in order to meet household food needs	22/268	8.2% [2.8-13.6]	7
Proportion of households reporting using one or more negative coping strategies over the past 4 weeks	140/268	52.2% [41.3-63.2]	N/A

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

The most preferred negative coping strategy in Nduta camp was taking out new loans or borrowed money (40%) and the least preferred negative coping strategy was engaging in potentially risky or harmful activities (2%). Proportion of households reporting using one or more negative coping strategies over the past 4 weeks was 64.4% [56.2-72.6].

Table 102: Negative coping strategies used <u>in Nduta camp</u> over the past 4 weeks

Proportion of households reporting using the following negative coping strategies over the past 4 weeks*:	Number/total	% (95% CI)	Ranking of negative coping strategies reported
Stop a child from attending school	35/334	10.5% [6.2-14.7]	5
Sold any assets that would not have normally sold	74/334	22.2% [16.1-28.3]	4
Ask for money from strangers (begging)	29/334	8.7% [4.2-13.2]	7
Move to a poorer quality shelter	15/334	4.5% [1.8-7.2]	8
Send household members under the age of 16 to work	15/334	4.5% [1.9-7.0]	9
Send a member of the household to work far away	79/334	23.7% [16.8-30.5]	3
Engage in potentially risky or harmful activities	8/334	2.4% [0.6-4.2]	10
Skip paying rent /debt repayments to meet other needs	86/334	25.8% [18.1-33.4]	2
Take out new loans or borrowed money	133/334	39.8% [33.3-46.4]	1
Reduce expenditure hygiene items, water, baby items, health or education in order to meet household food needs	34/334	10.2% [4.0-16.4]	6
Proportion of households reporting using one or more negative coping strategies over the past 4 weeks	215/333	64.4% [56.2-72.6]	N/A

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

In Mtendeli camp 39% of household took out new loans or borrowed money as most preferred coping strategy while moving to the poorest shelter was the least preferred negative strategy counting at 2%. Proportion of households reporting using one or more negative coping strategies over the past 4 weeks was 67.4% [58.7-76.0].

Table 103: Negative coping strategies used <u>in Mtendeli camp</u> over the past 4 weeks

Proportion of households reporting using the following negative coping strategies over the past 4 weeks*:	Number/total	% (95% CI)	Ranking of negative coping strategies reported

Stop a child from attending school	13/240	5.4% [2.0-8.8]	8
Sold any assets that would not have normally sold	53/240	22.1% [14.6-29.7]	3
Ask for money from strangers (begging)	14/240	5.8% [2.6-9.0]	6
Move to a poorer quality shelter	4/240	1.7% [0.0-3.7]	9
Send household members under the age of 16 to work	14/240	5.8% [2.7-9.0]	7
Send a member of the household to work far away	59/239	24.7% [17.1-32.3]	2
Engage in potentially risky or harmful activities	3/240	1.3% [0.0-2.7]	10
Skip paying rent /debt repayments to meet other needs	41/240	17.1% [8.3-25.9]	4
Take out new loans or borrowed money	94/240	39.2% [31.2-47.2]	1
Reduce expenditure hygiene items, water, baby items, health or education in order to meet household food needs	16/240	6.7% [1.8-11.6]	5
Proportion of households reporting using one or more negative coping strategies over the past 4 weeks	161/239	67.4% [58.7-76.0]	N/A

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

Respondents were asked whether some negative coping strategies were adopted over the past 7 days anticipating covering the food gap. In Nyarugusu new camp, the most preferred negative strategy was limiting portion sizes at mealtime adopted by 77.9% among surveyed households. About 61% reduced consumption by adults so children could eat. See table 104 below.

Table 104: Negative coping strategies used <u>in Nyarugusu new camp</u> over the past 7 days

Proportion of households reporting using the following negative coping strategies over the past 7 days*:	Number/total	% (95% CI)
Rely on less preferred and/or less expensive foods	238/321	74.1% [66.0-82.3]
Borrow food, or rely on help from a friend or relative	222/321	69.2% [63.0-75.3]
Reduce the number of meals eaten in a day	245/321	76.3% [70.5-82.1]
Limit portion sizes at mealtime	250/321	77.9% [72.7-83.1]
Reduce consumption by adults so children could eat	196/321	61.1% [54.0-68.1]

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

In Nyarugusu old camp, the most adopted negative coping strategy over the 7 days recall period was relying on less preferred and/or less expensive foods, counted at 74%. About 38% reduce consumption by adults so children could eat. See table 105 below.

Table 105: Negative coping strategies used <u>in Nyarugusu old camp</u> over the past 7 days

Proportion of households reporting using the following negative coping strategies over the past 7 days*:	Number/total	% (95% CI)
Rely on less preferred and/or less expensive foods	197/268	73.5% [62.7-84.3]

	142/268	53.0% [44.6-61.4]
Borrow food, or rely on help from a friend or relative		
Reduce the number of meals eaten in a day	188/268	70.1% [61.5-78.8]
Limit portion sizes at mealtime	182/268	67.9% [58.6-77.3]
Reduce consumption by adults so children could eat	101/268	37.7% [31.2-44.1]

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

In Nduta camp, the most adopted negative coping strategy over the 7 days recall period was relying on less preferred and/or less expensive foods, counted at 75%. About 33% reduce consumption by adults so children could eat. See table 96 below.

Table 106: Negative coping strategies used <u>in Nduta camp</u> over the past 7 days

Proportion of households reporting using the following negative coping strategies over the past 7 days*:	Number/total	% (95% CI)
Rely on less preferred and/or less expensive foods	249/334	74.6% [66.6-82.5]
Borrow food, or rely on help from a friend or relative	160/334	47.9% [41.3-54.5]
Reduce the number of meals eaten in a day	194/334	58.1% [49.6-66.6]
Limit portion sizes at mealtime	187/334	56.0% [48.0-64.0]
Reduce consumption by adults so children could eat	110/334	32.9% [25.6-40.3]

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

In Mtendeli, the most adopted negative coping strategy over the 7 days recall period was relying on less preferred and/or less expensive foods, counted at 75%. About 38% reduce consumption by adults so children could eat. See table 97 below.

Table 107: Negative coping strategies used <u>in Mtendeli camp</u> over the past 7 days

Proportion of households reporting using the following negative coping strategies over the past 7 days*:	Number/total	% (95% CI)
Rely on less preferred and/or less expensive foods	180/240	75.0% [62.2-87.8]
Borrow food, or rely on help from a friend or relative	112/240	46.7% [36.8-56.5]
Reduce the number of meals eaten in a day	124/240	51.7% [38.7-64.7]
Limit portion sizes at mealtime	129/240	53.8% [41.7-65.8]
Reduce consumption by adults so children could eat	54/240	22.5% [14.1-30.9]

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

Average reduced coping strategy index (rCSI) was 21 for Nyarugusu new camp, 15 for Nyarugusu old camp, 14 for Nduta and 12 for Mtendeli ranging from 0 to 56 in all the three camps.

Table 108: Average rCSI*, by camp

Average rCSI	Nyarugusu New Camp N = 321	Nyarugusu Old Camp N= 268	Nduta N= 334	Mtendeli N= 240

Mean (95% CI) [range]	Cluster design	20.9 rCSI (18.8-22.9) [0, 56]	15.4 rCSI (13.8-17.0) [0, 56]	13.6 rCSI (12.0-15.3) [0, 56]	11.9 rCSI (9.9-13.9) [0, 56]

*Maximum rCSI is 56.

Food Consumption Score (FCS) and FSC-Nutrition (FCS-N) results

The mean FCS was 45 (42.6-46.9) in Nyarugusu new camp, 50 (48.0-51.7) in Nyarugusu old camp, 51 (49.4-53.0) in Nduta and 51 (49.3-52.7) in Mtendeli. Nyarugusu new camp had a relatively lower average FCS compared the other three camps and the difference was statistically significant. However, the mean FCS was at acceptable level (>35) in all the three camps.

Table 109: Average FCS* by camp

Average FCS					
		Nyarugusu New Camp N = 321	**Nyarugusu Old Camp** N= 268	**Nduta N=** 334	**Mtendeli** N= 240
Mean (95% CI) [range]	**Cluster design****	44.8 FCS (42.6-46.9) [5.5, 95.0]	49.8 FCS (48.0-51.7) [6.5, 96.5]	51.2 FCS (49.4-53.0) [19.5, 83.5]	51.0 FCS (49.3-52.7) [21.0, 78.0]

*Maximum FCS is 112 (129.5 if specialized nutritious foods are included).

Despite the mean FCS which was in the category of acceptable across the three camps, few households scored at the borderline and poor. In Nyarugusu new camp, 86% of the households were at acceptable level, 11% borderline and 3% poor. In Nyarugusu old camp, proportion of households with acceptable was 93%, Borderline 6% and Poor 1%. In Nduta, acceptable was 92%, borderline 8% and poor 0.3%. Mtendeli camp had 95% acceptable, 4% borderline and 0.4% poor.

Table 110: Food consumption score by categories, by camp

Camp	FCS profiles	Number/total	% (95% CI)
Nyarugusu New Camp	Acceptable FCS > 35	275/321	85.7% [80.2-91.2]
	Borderline 21.5≤FCS≤35	36/321	11.2% [6.7-15.7]
	Poor FCS≤21	10/321	3.1% [0.9-5.3]
Nyarugusu Old Camp	Acceptable FCS > 35	249/268	92.9% [89.4-96.4]
	Borderline 21.5≤FCS≤35	16/268	6.0% [2.5-9.5]
	Poor FCS≤21	3/268	1.1% [0.0-2.4]
Nduta	Acceptable FCS > 35	306/334	91.6% [88.4-94.8]
	Borderline 21.5≤FCS≤35	27/334	8.1% [4.9-11.3]
	Poor FCS≤21	1/334	0.3% [0.0-0.9]
Mtendeli	Acceptable FCS > 35	229/240	95.4% [92.5-98.3]
	Borderline 21.5≤FCS≤35	10/240	4.2% [1.6-6.7]
	Poor	1/240	0.4% [0.0-1.3]

	FCS≤21		

The Food Consumption Score Nutritional Quality Analysis (FCS-N) was done and results presented in Table 111, 112, 113 and 114 below. Consumption of protein rich foods was limited in Nyarugusu camp. About 92% of the surveyed household reported they never consumed such food for the past 7days, 7% consumed sometimes and 1% consumed at least daily. About 53% of the households were able to consume Vitamin A rich foods sometimes, 36% never consumed and 11% consumed at least daily. The Haem-iron rich foods were consumed by 0.3% at least daily, while 7% consumed sometimes and 93% never consumed during the whole week.

Table 111: Consumption frequency categories of each nutrient rich food groups <u>in Nyarugusu new camp</u>

Nutrient rich food groups	Consumption frequency categories	Number/total	% (95% CI)
Protein rich foods	Never	294/321	91.6% [87.4-95.7]
	Sometimes	23/321	7.2% [3.4-10.9]
	At least daily	4/321	1.2% [0.0-2.5]
Vitamin A rich foods	Never	116/321	36.1% [28.5-43.8]
	Sometimes	171/321	53.3% [45.5-61.1]
	At least daily	34/321	10.6% [7.2-14.0]
Haem iron rich foods	Never	299/321	93.2% [89.1-97.2]
	Sometimes	21/321	6.5% [2.8-10.3]
	At least daily	1/321	0.3% [0.3-0.9]

About 81% of households in Nyarugusu old camp did not consume protein rich foods 7 days prior to the survey. 16% of the household consumed sometimes and 4% consumed at least daily. Vitamin A rich foods were consumed at least daily by 7% of the households while 68% consumed sometimes and 25% never consumed. 83% of households never consumed haem iron rich foods while 15% consumed sometimes and 3% consumed at least daily.

Table 112: Consumption frequency categories of each nutrient rich food groups <u>in Nyarugusu old camp</u>

Nutrient rich food groups	Consumption frequency categories	Number/total	% (95% CI)
Protein rich foods	Never	216/268	80.6% [75.1-86.1]
	Sometimes	42/268	15.7% [10.6-20.7]
	At least daily	10/268	3.7% [0.7-6.7]
Vitamin A rich foods	Never	66/268	24.6% [16.7-32.6]
	Sometimes	183/268	68.3% [61.2-75.4]
	At least daily	19/268	7.1% [3.4-10.7]
Haem iron rich foods	Never	221/268	82.5% [77.2-87.7]
	Sometimes	39/268	14.6% [9.9-19.2]
	At least daily	8/268	3.0% [0.1-5.9]

In Nduta, 84% of the visited households never consumed the protein rich foods while 15% consumed sometimes and 2% consumed at least daily. Vitamin A rich foods was never consumed by 19% of the households, 71% consumed sometimes and 11% consumed at least daily. While haem iron rich foods were consumed by 1.2% at least daily, 14% consumed sometimes and 85% never consumed.

Table 113: Consumption frequency categories of each nutrient rich food groups <u>in Nduta camp</u>

Nutrient rich food groups	Consumption frequency categories	Number/total	% (95% CI)
Protein rich foods	Never	279/333	83.8% [78.4-89.2]

	Sometimes	49/333	14.7% [9.8-19.6]
	At least daily	5/333	1.5% [0.2-2.8]
Vitamin A rich foods	Never	62/333	18.6% [14.0-23.3]
	Sometimes	235/333	70.6% [65.3-75.9]
	At least daily	36/333	10.8% [7.3-14.4]
Haem iron rich foods	Never	283/333	85.0% [79.7-90.2]
	Sometimes	46/333	13.8% [9.1-18.6]
	At least daily	4/333	1.2% [0.0-2.4]

In Mtendeli camp, 81% of the households never consumed protein rich foods 7 days prior to the survey. 18% of the households consumed sometimes and 0.4% consumed at least daily. Vitamin A rich foods were consumed by 13% of the households at least daily, while 67% consumed sometimes and 21% never consumed. 83% of households never consumed haem iron rich foods 17% consumed sometimes and none were able to consume at least daily.

Table 114 Consumption frequency categories of each nutrient rich food groups <u>in Mtendeli camp</u>

Nutrient rich food groups	Consumption frequency categories	Number/total	% (95% CI)
Protein rich foods	Never	196/241	81.3% [74.6-88.0]
	Sometimes	44/241	18.3% [11.7-24.8]
	At least daily	1/241	0.4% [0.4-1.3]
Vitamin A rich foods	Never	50/241	20.8% [13.6-27.9]
	Sometimes	161/241	66.8% [58.8-74.8]
	At least daily	30/241	12.5% [7.2-17.8]
Haem iron rich foods	Never	201/241	83.4% [77.4-89.4]
	Sometimes	40/241	16.6% [10.6-22.6]
	At least daily	0/241	0[0]

Acquisition of food items was mainly through in-kind assistance across the three camps. Proportion of households sourced food through in-kind assistance was 98% In Nyarugusu new camp, 99% in Nyarugusu old camp, 100% in Nduta and 100% in Matendeli camp. Only 1 to 2% were able to purchase food items using their own cash.

Table 115: Food acquisition sources, by camp

Camp	Food acquisition sources	Number/total	% (95% CI)
Nyarugusu New Camp	Purchase using their own cash	3/321	0.9% [0.0-2.33]
	Own production (crops, livestock, fishing/hunting, gathering)	0/321	0
	Traded goods/services, barter	0/321	0
	Borrowed (loan/credit from traders)	0/321	0
	Received as gift (from family relatives or friends/neighbour)	2/321	0.6% [0.0-1.5]
	In-kind or voucher-based food assistance	316/321	98.4% [96.9-100]
	Other	0/321	0
Nyarugusu Old Camp	Purchase (using cash grants and/or with their own cash)	1/268	0.4% [0.0-1.1]
	Own production (crops, livestock, fishing/hunting, gathering)	0/268	0
	Traded goods/services, barter	0/268	0
	Borrowed (loan/credit from traders)	0/268	0

	Received as gift (from family relatives or friends/neighbour)	1/268	0.4% [0.0-1.1]
	In-kind food assistance	266/268	99.3% [98.2-100]
	Other	0/268	0%
Nduta	Purchase (using cash grants and/or with their own cash)	0/334	0%
	Own production (crops, livestock, fishing/hunting, gathering)	0/334	0%
	Traded goods/services, barter	0/334	0%
	Borrowed (loan/credit from traders)	0/334	0%
	Received as gift (from family relatives or friends/neighbour)	0/334	0%
	In-kind food assistance	334/334	100%
	Other	0/334	0%
Mtendeli	Purchase (using cash grants and/or with their own cash)	0/240	0
	Own production (crops, livestock, fishing/hunting, gathering)	0/240	0
	Traded goods/services, barter	0/240	0
	Borrowed (loan/credit from traders)	0/240	0
	Received as gift (from family relatives or friends/neighbour)	0/240	0
	In-kind food assistance	240/240	100%
	Other	0/240	0

4.6. Mosquito Net Coverage

The smallest sample size for mosquito net was 87% of the planned figure in Mtendeli camp and the highest was 95% in Nyarugusu old camp which were within the acceptable range in all the three camps.

Table 116: Mosquito net coverage sampling information, by camp

Total households surveyed for Mosquito net coverage	Planned	Actual	% of target
Nyarugusu New Camp	323	*295*	91.3%
Nyarugusu Old Camp	268	*254*	94.8%
Nduta	336	*300*	89.3%
Mtendeli	240	*209*	87.1%

Observation of the type of mosquito net brand was part of the assessment and below is the list of mosquito nets (LLIN and Non-LLIN) that were observed during the survey by camp.

Table 117: List of mosquito net brand name observed during assessment, by camp

	Nyarugusu New Camp	Nyarugusu Old Camp	Nduta	Mtendeli
LLIN mosquito net brands observed during the survey	*Dawanet Duranet Interceptor Lifenet*	*Dawanet Duranet Interceptor Lifenet Netprotect*	*Dawanet Duranet Interceptor Lifenet Magnet Miranet*	*Dawanet Duranet Interceptor*
Non-LLIN mosquito net brands observed during the survey	*Not reported*	*Not reported*	*Not reported*	*Not reported*

Mosquito net ownership

Proportion of households owning at least one mosquito net of any type was 63% in Nyarugusu new camp, 73% in Nyarugusu old camp, 69% in Nduta and 46% in Mtendeli camp. Proportion of households owning at least one LLIN ranged from 38% in Mtendeli camp to 67% in Nyarugusu old camp. See table 118 below.

Table 118: Household mosquito net ownership, by camp

Survey Area	N	Proportion of total households owning at least one mosquito net of any type		Proportion of total households owning at least one LLIN	
		n	% (95% CI)	n	% (95% CI)
Nyarugusu New Camp	295	187	63.4% [55.0-71.7]	166	56.3% [47.6-65.0]
Nyarugusu Old Camp	254	186	73.2% [66.6-79.9]	169	66.5% [58.5-74.5]
Nduta	300	206	68.7% [61.5-75.9]	184	61.3% [53.4-69.2]
Mtendeli	209	95	45.5% [35.8-55.1]	80	38.3% [27.1-49.4]

Trend of mosquito net ownership from 2016 to 2019 by camp was plotted as shown in figure 34 below. Proportion of households owning at least one LLIN for Nyarugusu new camp, Nyarugusu old camp and Nduta has never reached the UNHCR target (≥80%) since 2016. Mtendeli camp has been below for the past three years now. This shows poor retention of mosquito net which are normally distributed through general and targeted program especially to pregnant women and under-five years children every year.

Figure 34: Household ownership of at least one llin from 2016 to 2019, by camp

Proportion of Households with at least one LLIN by camp
2016 - 2019, Tanzania
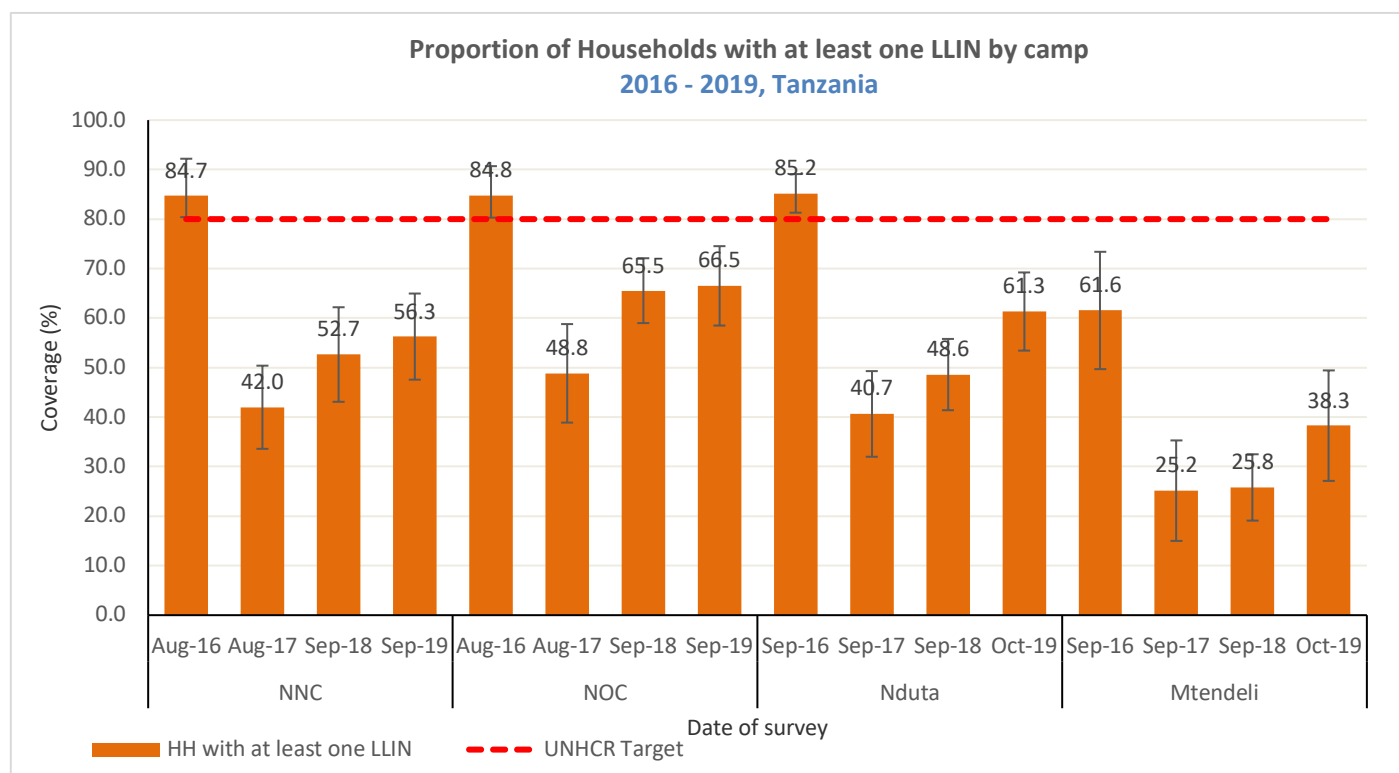
Analysis of average number of LLIN per household showed 1.2 mosquito net per household in Nyarugusu new camp, 1.4 for Nyarugusu old camp, 1.4 for Nduta and 1.1 for Mtendeli camp. The average number of persons per LLIN was 7.2 for Nyarugusu new camp, 5.2 for Nyarugusu old camp, 4.7 for Nduta and 10.5 for Mtendeli camp. The UNHCR target is 2 persons per LLIN.

Table 119: Number of nets by camp

Survey Area	N	Average number of LLINs per household	Average number of persons per LLIN
		Mean	Mean
Nyarugusu New Camp	187	1.2	7.2
Nyarugusu Old Camp	186	1.4	5.2
Nduta	206	1.4	4.7
Mtendeli	95	1.1	10.5

Mosquito net utilization

Utilization of mosquito net remained a challenge among Burundians and Congolese refugee. Proportion population slept under mosquito net of any type was 41% for the total population, 53% for under-fives and 41% for pregnant women, while those slept under LLIN was 35% for total population, 46% for under-fives and 40% for pregnant women in Nyarugusu new camp. In Nyarugusu old camp proportion of the total population slept under mosquito net of any type was 53%, 70% for under-fives and 50% for pregnant women, while those slept LLIN was 47%, 59% and 43% for total population, under-fives and pregnant women respectively. In Nduta camp the proportion for mosquito net of any type was 54% for total population, 62% for under-fives and 76%, for pregnant women while LLIN was utilized by 47% total population, 55% under-fives and 67% pregnant women. Proportion of total population slept under mosquito net of any type in Mtendeli was 28%, under-fives was 41% and 39% pregnant women. Those slept under LLIN was 24%, 33% and 34% for total population, under-fives and pregnant women respectively.

Table 120: Mosquito net utilisation, by camp.

	Camp	Proportion of total population (all ages)		Proportion of 0-59 months		Proportion of pregnant women	
		N=1586	%	N=414	%	N=75	%
Slept under net of any type	Nyarugusu New Camp	650	41.0%	221	53.4%	31	41.3%
Slept under LLIN		552	34.8%	190	45.9%	30	40.0%
		N=1323	%	N=334	%	N=46	%
Slept under net of any type	Nyarugusu Old Camp	698	52.8%	235	70.4%	23	50.0%
Slept under LLIN		604	45.7%	198	59.3%	20	43.5%
		N=1315	%	N=373	%	N=45	%
Slept under net of any type	Nduta	707	53.8%	231	61.9%	34	75.6%
Slept under LLIN		620	47.1%	204	54.7%	30	66.7%
		N=1083	%	N=290	%	N=44	%
Slept under net of any type	Mtendeli	307	28.3%	118	40.7%	17	38.6%
Slept under LLIN		254	23.5%	95	32.8%	15	34.1%

Figure 35 below presents utilization of mosquito net of any type, LLIN and those who did not sleep under mosquito net of any type. Given the small proportion mosquito net ownership, Mtendeli for example seemed to have large proportion of population not sleeping under mosquito net. Utilization was relatively higher in Nyarugusu old camp and Nduta where mosquito net retention seemed higher than Nyarugusu new camp and Mtendeli.

Figure 35: Mosquito net utilisation by sub-group, by camp

Figure 35: Mosquito net utilisation by sub-group, by camp
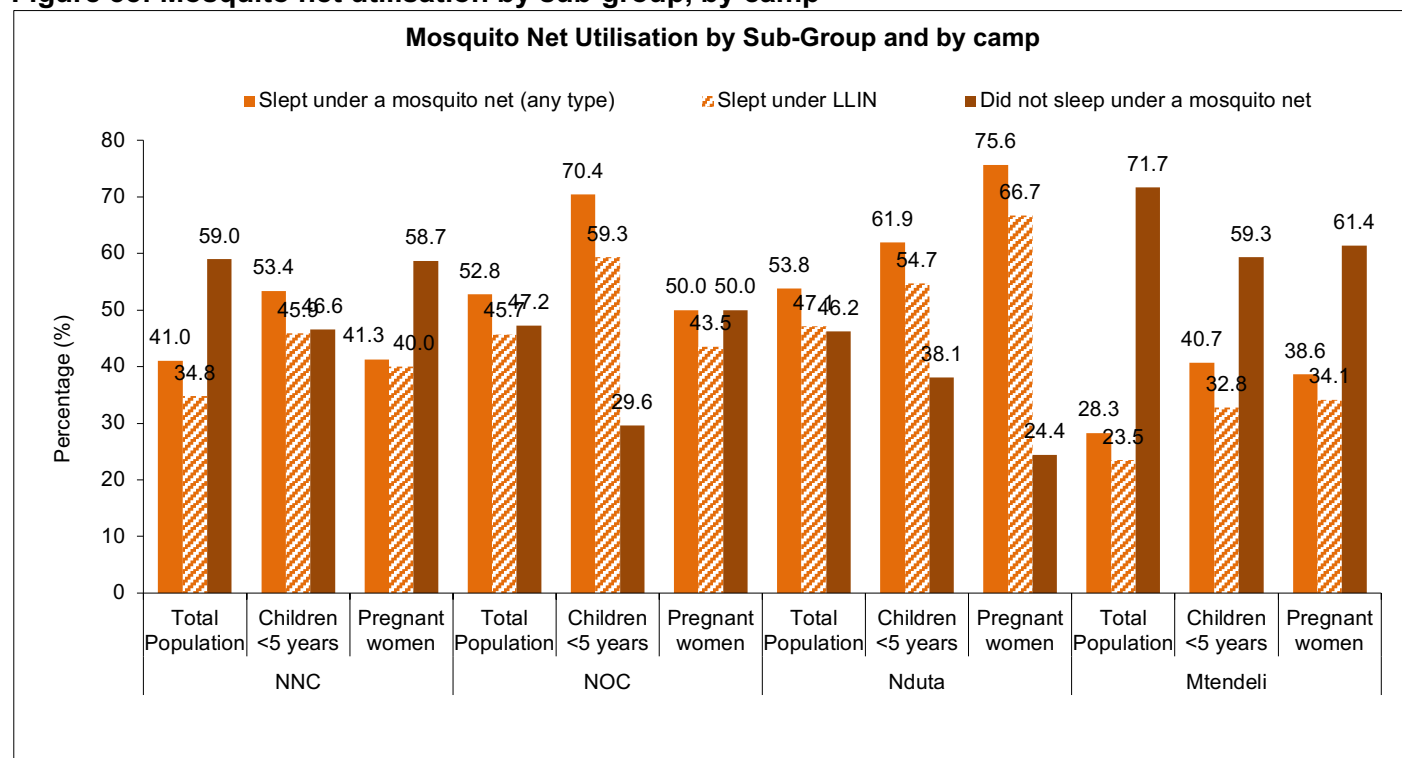
4.7. WASH

Proportion of surveyed households was 99.4% in Nyarugusu new camp, 100% in Nyarugusu old camp, 99.1% in Nduta and 98.8% in Mtendeli. This was an excellent coverage for data collection. See the table below.

Table 121: WASH sampling information, by camp

Total households surveyed for WASH	Planned	Actual	% of target
Nyarugusu New Camp	323	321	99.4%
Nyarugusu Old Camp	268	268	100%
Nduta	336	333	99.1%
Mtendeli	240	237	98.8%

Proportion of households collecting drinking water from protected/treated sources was 100% in the three camps. Proportion of households with at least 10 liters per person drinking water storage was 40% for Nyarugusu new camp, 69% for Nyarugusu old camp, 61% for Nduta and 45% for Mtendeli camp.

Table 122: Water quality, by camp

Survey Area	N	Proportion of households collecting drinking water from protected/treated sources		Proportion of households with at least 10 litres/person drinking water storage	
		n	% (95% CI)	n	% (95% CI)
Nyarugusu New Camp	321	321	100%	129	40.2% [32.2-48.2]
Nyarugusu Old Camp	267	268	99.6% [98.9-100]	186	69.4% [63.3-75.5]
Nduta	333	333	100%	204	61.3% [54.2-68.3]
Mtendeli	237	237	100%	107	45.2% [36.9-53.4]

Average number of liters per person per day (LPPPD) of domestic water collected at household level from protected or treated sources with containers of any type was 31 liters for Nyarugusu new camp, 38 liters for Nyarugusu old camp, 37 liters for Nduta and 28 liters for Mtendeli camp. Average number of liters per person per day of domestic water collected at household level from protected or treated sources with protected containers only was 20 liters for Nyarugusu new camp, 27 liters for Nyarugusu old camp, 26 liters for Nduta and 18 liters for Mtendeli camp.

Table 123: Water quantity 1; – number of litres of water used per person per day, by camp

Survey Area	N	Average # LPPPD of domestic water collected at household level, from protected/treated sources with containers of any type	Average # LPPPD of domestic water collected at household level, from protected/treated sources with protected containers only
		Mean (95% CI)	Mean (95% CI)
Nyarugusu New Camp	321	30.9 (25.3 - 36.6)	19.7 (15.4-23.9)
Nyarugusu Old Camp	267	37.5 (29.2 - 45.8)	27.4 (21.4-33.4)
Nduta	333	37.0 (30.1-43.9)	26.2 (20.9-31.5)
Mtendeli	237	28.2 (23.6-32.8)	18.0 (14.8-21.3)

In Nyarugusu new camp, proportion of households using domestic water collected from protected or treated sources with protected containers only; ≥20 LPPPD was 32%, 15 - <20 LPPPD was 8% and <15 LPPPD was 60%. In Nyarugusu old camp, those collected from protected or treated sources with protected containers only; ≥20 LPPPD was 50%, 15 - <20 LPPPD was 13% and <15 LPPPD was 37%. In Nduta camp; ≥20 LPPPD was 48%, 15 - <20 LPPPD was 14% and <15 LPPPD was 38%. In Mtendeli camp; ≥20 LPPPD was 33%, 15 - <20 LPPPD was 12% and <15 LPPPD was 55%. This may imply that households collecting domestic water using protected containers only were few, possibly due to inadequate number of protected water containers among the refugee communities.

Table 124: Water quantity 2; – number of litres of water used per person per day by category, by camp

Survey Area	N	Proportion of households that use domestic water collected from protected/treated sources with protected containers only: ≥ 20 lpppd	Proportion of households that use domestic water collected from protected/treated sources with protected containers only: 15 - <20 lpppd	Proportion of households that use domestic water collected from protected/treated sources with protected containers only: <15 lpppd
		Mean [95% CI]	Mean [95% CI]	Mean [95% CI]
Nyarugusu New Camp	321	32.4% [25.2-39.6]	7.5% [4.7-10.3]	60.1% [52.6-67.7]
Nyarugusu Old Camp	267	50.4% [41.2-59.5]	13.1% [8.9-17.2]	36.6% [28.3-44.9]
Nduta	333	48.1% [39.1-57.0]	13.5% [9.6-17.4]	38.4% [28.9-48.0]
Mtendeli	237	33.3% [24.3-42.3]	11.8% [8.2-15.5]	54.9% [45.3-64.5]

Access to soap was assessed during the survey. Repospondent was asked to bring soap, and if presented within one minute, the household was assumed to have access to soap. Any type of soap including bar soap, liquid soap, powder detergent, and soapy water was accepted except ash, soil, sand or other handwashing agents.

Proportion of households with access to soap was 75% in Nyarugusu new camp, 62% in Nyarugusu old camp, 85% in Nduta and 70% in Mtendeli. It should be noted that bar soaps were distributed during general rations at 250g per person per month prior to the survey.

Table 125: Access to soap, by camp

Survey Area	N	Proportion of households with access to soap	
		n	% [95% CI]
Nyarugusu New Camp	321	242	75.4% [68.0-82.8]
Nyarugusu Old Camp	267	166	61.9% [52.4-71.5]
Nduta	333	282	84.7% [79.6-89.7]
Mtendeli	237	165	69.6% [60.3-78.9]

Proportion of households using toilet was 99% in Nyarugusu new camp, 97% in Nyarugusu old camp, 92% in Nduta and 98% in Mtendeli camp. Nduta camp had the highest proportion of household not using toilet and this was linked to inadequate decommissioning and construction of new latrines, hygiene promotion, linkages between sectors to enhance WASH programs, etc.

Table 126: Toilet/latrine use, by camp

Survey Area	N	Proportion of households reporting defecating in a toilet	
		n	% [95% CI]

Nyarugusu New Camp	321	317	98.8% [97.5-100]
Nyarugusu Old Camp	267	260	97.0% [93.9-100]
Nduta	333	305	91.6% [85.2-98.0]
Mtendeli	237	231	97.5% [93.9-100]

5. Limitations

Exact birthdate: There were some children who had no reliable documentation for reference of their birthdate. A local event calendar was used to estimate their month and year of birth. This may have an impact on the quality of age data impacting on the reliability of IYCF indicators in children aged 0 – 23 months as well as the stunting and underweight in children aged 6 – 59 months.

Higher expectation: In refugee camps, when studies are conducted there are tendency of building expectations that usually happens among participants. Some refugees think they may benefit if they provide information even if is biased, so they can be provided with something as a family, despite clear explanations from the survey team members.

Unreliable population data for cluster selection: Despite the updated population that was received during the training in September 2019, figures that were shared could not reflect the reality during labeling of households. In some villages which were earmarked for segmentation, was not done given the small population which was not tallying with the initial shared figures.

Lack of gestation age among pregnant women: This was not considered during data collection and thus, limited calculation of actual coverage of BSFP among pregnant women in accordance to enrolment criteria which accepts only women from second trimester.

6. Discussion

6.1. Nutritional status of young children

The sex of children was equally represented in all the camps. The overall sex ratio was 1.0, meaning there was no bias in sampling and data collection in children age 6 – 59 months. However, proportion of children with no exact birthdates ranged from 5% in Nyarugusu old camp and Mtendeli to 14% in Nduta camp. During data collection, parents and caregiver were concerned of the worn-out EPI cards which had never replaced with new ones. Some said, the cards were lost during their way fleeing their country to seek refuge in Tanzania. The 2018 SENS report indicated as lower percent of children with no exact date (1%) in Nyarugusu old camp and none in Nyarugusu new camp, Nduta and Mtendeli.

Prevalence of global acute malnutrition remained below the UNHCR and SPHERE standards. The GAM prevalence was 1.8% in Nyarugusu new camp, 1.2% for Nyarugusu old camp, 3.2% for Nduta and 1.3% for Mtendeli. Prevalence of severe wasting was 0.2% in Nduta camp and no bilateral pitting oedema was attested across the three camps. The UNHCR target for global acute malnutrition is below 10% and severe acute malnutrition below 2%.

Nutritional status among refugees in western Tanzania has been stable for the couple of years now. Compared to 2018, prevalence of GAM has reduced from 2.5% to 1.8% in Nyarugusu new camp, 1.6% to 1.2% in Nyarugusu old camp, and 2.9% to 1.3% for Mtendeli camp in 2019. The GAM prevalence seemed to increase from 2.3% recorded in 2018 to 3.2% in 2019 in Nduta camp, perhaps due to significant increase of prevalence of diarrhoea from 6.4% [3.0%-9.8%] in 2018 to 27.0% [22.7%-31.2%]. The overall, the average weighted GAM prevalence 2.0% indicating stable situation in both Burundians and Congolese refugee populations. Prevalence of GAM in children aged 6 – 59 months was 6.0% in Kigoma host population recorded in 2016 through TDHS.

Prevalence of total stunting, a measure of chronic malnutrition in children aged 6 – 59 months, remained high in the three camps. The prevalence was 47.7% (43.4%-52.1%) for Nyarugusu new camp, 42.7% (37.9%-47.6%) for Nyarugusu old camp, 52.1% (47.3%-56.9%) for Nduta and 51.9% (47.1%-56.8%) for Mtendeli camp. Overall, the weighted prevalence of stunting was 48.1%, categorized as critical situation or very high according to classification of public health significance for children under 5 years by WHO-UNICEF (2018). Prevalence of severe stunting was 14.5% (11.9%-17.7%), 13.3% (10.8%-16.3%), 17.4% (14.3%-21.1%) and 15.9% (12.7%-19.8%) for Nyarugusu new camp, Nyarugusu old camp, Nduta and Mtendeli respectively. Compared to previous years, prevalence of stunting has shown no significant change despite the ongoing efforts that has been invested so far. The national benchmark indicates almost similar prevalence of total stunting (42.3%) in the same age group among the host community in Kigoma Region[17].

BSFP for children aged 6 – 23 months supplied with super cereal plus has been in force since a couple of years now. WFP established a blanket distribution of MNP in children aged 24 – 59 months in 2017. Pregnant women are enrolled in the program from second trimester until 6 months post-delivery. All these efforts were invested with the aim of improving nutrition status of the refugees including prevention of anaemia which has shown a significant improvement. However, the invested efforts have not vividly revealed an improvement of chronic malnutrition in children aged 6 – 59 months. During data collection for example, some MNP sachets were found dumped in the bins indicating that some beneficiaries do collect the items but not consuming them.

Pregnant women are advised to enrol in the ANC soon as they realize and confirm pregnancy. However, this is not done especially in the first three months. Two of the reasons are; 1) In some camps, women were not interested to enrol earlier to the clinic as they can still not bet accepted to start BSFP at nutrition centres. This is because the UNHCR-WFP guidelines do not allow enrolment into BSFP before the second trimester. Apparently, some women are not aware of the importance of IFAs, which are usually provided to a woman, soon as they report at ANC. Women are more interested in receiving super cereal, thinking is the only item with high nutrients to their babies in the womb; 2) in some camps, pregnant women are only accepted at ANC during their second trimester when pregnancies are palpable. During data collection some women complained that were rejected from enrolment at ANC and advised to attend during their second trimester. The national guidelines recommend pregnant women to start ANC services during their first trimester.

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[17] Tanzania national nutrition survey, 2018

6.2. Programme coverage

Coverage for measles vaccination with card or confirmation from the mother in children aged 9 – 59 months was above 95% in Nyarugusu new camp, Nduta and Mtendeli camp. The coverage was 93% in Nyarugusu old camp which is below the targeted 95%.

Measles vaccination with card was as low as 66% in Nduta camp and the highest was 86% in Nyarugusu new camp. Confirmation of measles vaccination from the mother was done where there was no EPI card, or the antigen is totally not marked on the card. In some camps including Nduta, parents and caregivers said cards were worn-out and could not be replaced or cards were lost on their way to Tanzania to seek refuge some three to three years ago. The government officials testified that there are times when EPI cards were out of stock and could not reach the refugee camp on time due logistical challenges.

Vitamin A supplementation within last 6 months with cards and confirmation from the mother in children aged 6 – 59 months was above 90% in Nyarugusu, Nduta and Mtendeli camps. In Nyarugusu old camp the coverage was 85%, which is below the targeted 90%. Coverage of vitamin A supplementation with card was as low as 40% in Nduta and 79% the highest, in Nyarugusu new camp. Poor documentation of the supplements was due the same reasons discussed above for measles; missing cards, worn-out cards and not marked at-all.

Enrolment of severe and moderate acute malnutrition cases into feeding programmes among children aged 6 – 59 months remained low. Enrolment at TSFP for example ranged from 11.1% [0.0%-36.7%] in Nyarugusu old camp to 50.0% [0.0%-100%] in Mtendeli camp. Two reasons were thought to have contributed to low coverage into the TSFP; 1) Inadequate nutritional screening of children attending BSFP using both WHZ and MUAC criteria independently. This could leave MAM cases attending BSFP instead of enrolling them in the right programme. 2) The current discharge criteria for SAM cases which require the child to remain admitted in OTP until full recovery (WHZ above -2 z-score and MUAC larger than 125mm). When such a child is sampled would be considered as not admitted in the right programme.

Coverage of deworming in children aged 12 – 59 months was above 90% in Nyarugusu new camp, Nduta and Mtendeli camp. Coverage was relatively low in Nyarugusu old camp as it was for measles and vitamin A supplementation. This was the first SENS to include deworming as an area of focus given high prevalence of anaemia among the refugee camps including Tanzania. Deworming was conducted along with Vitamin A supplementation during immunization campaign within six months prior to the survey.

The coverage of ANC among pregnant women was low as 36% in Nyarugusu old camp and 54% in Nyarugusu new camp. In Mtendeli camp, the coverage was 80% and 83% in Nduta camp. During data collection in Kasulu camps, some participants said were denied being registered at the clinic since their pregnancies were not palpable. Health providers asked them to go back until completion of the first three months. Some women could not see the sense of enrolling to ANC as cannot be accepted into BSFP for collection of nutrition items. The WFP guideline allows enrolment of women in BSFP from second trimester until six months post-delivery. It should be noted that gestation of pregnancy was not considered during development of the tool, and thus, difficult to analyse enrolment based on this important variable.

Compared to 2018, the ANC enrolment decreased from 85% to 54% in Nyarugusu new camp, 76% to 36% for Nyarugusu old camp, from 100% to 83% for Nduta and from 86% to 80% for Mtendeli camp. Reason for the sharp decrease in ANC enrolment may be difficult to establish but linked to voluntary repatriation among Burundians and resettlement among Congolese which was more intensive in September and October 2019 compared to 2018.

6.3. Anaemia in young children and women

Prevalence of anaemia in children aged 6 – 59 months was 33% in Nyarugusu new camp, 31% in Nyarugusu old camp and 21% in Mtendeli camp. The prevalence remained above the UNHCR target (<20%) in the three surveyed refugee and within the UNHCR target for Nduta camp (19%). Prevalence of severe anaemia was 0.5% in Nyarugusu old camp and 0% in the remaining three camps. Moderate and severe anaemia was 15% in Nyarugusu new camp, 11% in Nyarugusu old camp, 5% in Nduta and 4% in Mtendeli indicating that children with mild anaemia had a significant contribution to total anaemia.

When compared to 2018, prevalence of anaemia in this age group has slightly decreased from 35% to 33% for Nyarugusu new camp, and significantly decreased from 56% to 31% in Nyarugusu old camp, 37% to 19%

in Nduta and 50% to 21% in Mtendeli camp. Except in Nyarugusu new camp where a downtrend is vivid since 2016 (45%) through 2018 (35%), prevalence of anaemia in other camps kept increasing from 2016 to 2018, from 42% to 56% for Nyarugusu old camp, 31% to 41% for Nduta and 25% to 50% for Mtendeli camp.

When compared to the host community, prevalence of anaemia among refugees both Congolese and Burundians look far better. Anaemia prevalence for the same age group was 67.2% according Tanzania demographic and health survey report of 2016.

Intensive monitoring of children attending BSFP, strengthened strategies for IYCF, stabilized WFP food pipeline, WASH and health services all together may have contributed to such amazing decrease of prevalence of anaemia in the three camps.

Prevalence of anaemia in non-pregnant women aged 15 to 49 years was 19% in Nyarugusu new camp, 26% in Nyarugusu old camp, 8% in Nduta and 9% in Mtendeli camp. The UNHCR target for total anaemia is <20% of which only Nyarugusu old camp was above the limit. There was no severe anaemia tested in neither of the three camps among this target group. The mean haemoglobin concentration was 13.1g/dL in Nyarugusu new camp, 12.9g/dL in Nyarugusu old camp, 13.7g/dL in Nduta and 13.6g/dL in Mtendeli camp. Compare to 2018, anaemia in this target group has increased from 13% to 19% in Nyarugusu new camp and decreased from 21% to 9% in Mtendeli camp. Comparison for Nyarugusu old camp and Nduta was not done to incorrect figures reported in 2018 report, not tallying between total, mild, moderate and severe anaemia. However, a downtrend of prevalence of anaemia in the past four years was vivid across all the three camps.

6.4.   IYCF indicators

The timely initiation of breastfeeding in children aged 0-23months remained with the UNHCR target of ≥85%. Proportion of children breastfed within one hour among the host community in Kigoma region was 66.4% in 2014. EBF prevalence among infants under six months was within the UNHCR target of ≥75% for Nyarugusu new camp, Nduta and Mtendeli, except in Nyarugusu new camp where the proportion was below the UNHCR target by 4%. Compared to the host community, prevalence of EBF in the refugee camps was far better than the host community in Kigoma host community where the prevalence was 58.7% in 2014.[18] to the Prevalence of continued breastfeeding at two years was 48% in Nyarugusu new camp, 58% in Nyarugusu old camp, 60% in Nduta and 56% in Mtendeli camp. There is no established cut-off for this indicator, but coverage seemed relatively low. The highest proportion of children introduced to solid, semi-solid or soft food between the of age 6 and 8 months was 74% in Mtendeli camp, followed by 69% in Nduta, 60% in Nyarugusu new camp and lastly, 57% in Nyarugusu old camp. Although this indicator has no cut-offs currently, proportion of children introduced to solid, semi-solid or soft food was at least below 70% in the three camps. Consumption of iron-rich or fortified food in children aged 6 – 23 months was above the UNHCR target of ≥60% proportion of children aged 0 – 23 months fed with bottle was within the UNHCR target of <5% in the three camps. Generally, most of the IYCF key indicators were within the UNHCR acceptable standards and have maintained almost at the same level over the past four years.

6.5.   Food security

Refugees in Tanzania receives an in-kind food assistance comprised of cereals, pulses, fortified blended food, vegetable oil and salt in a refugee food basket. A month prior to data collection, refugees had already received the general rations equivalent to 2,055kcal per person per day which was less than the 2,100kcal full ration. All items were at full ration except corn-soy blend which was distributed at 50% since June 2019, and thus, a reduced minimum recommended daily energy by 45kcal per person per day. During data collection a refugee food basket was at 100% ration after resumption of fortified blended food at 50g per person per day following the stabilized WFP pipeline.

Proportion of household with ration card was 100% in Nyarugusu new camp, Nyarugusu old camp and Mtendeli. In Nduta camp, only one household (0.3%) reported not having a ration card. The household was among new arrivals who were eligible but not registered yet. This implies that vast majority had ration card and were receiving food assistance provided by WFP.

Duration of food assistance provided lasted for an average of 21 days in Nyarugusu new camp, 22 days in Nyarugusu old camp, 23 days in Nduta and 24 days in Matendeli compared to the intended 28 days per distribution cycle. In turn, several negative coping strategies were adopted to cover the gap while waiting for the following food distribution cycle.

In Nyarugusu new camp, strategy that was highly adopted by many households was to take out new loans or borrowed money, which counted at about 35%. The least adopted negative coping strategy was engaging in potentially risky or harmful activities, counted at about 2%. Proportion of households reporting using one or more negative coping strategies over the past 4 weeks was 58.9% [49.6-68.2].

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[18] TDHS, 2014

In Nyarugusu old camp, the most preferred negative coping strategy was selling of assets that would not have normally sold, counted at 26%. The least adopted negative coping strategy was moving to the poorest shelter by household member, counted at 2%. Proportion of households reporting using one or more negative coping strategies over the past 4 weeks was 52.2% [41.3-63.2].

The most preferred negative coping strategy in Nduta and Mtendeli camp was taking out new loans or borrowed money (40% and 39%) and the least preferred negative coping strategy was engaging in potentially risky or harmful activities (2%) for Nduta and move to the poorest shelter for Mtendeli. Proportion of households reporting using one or more negative coping strategies over the past 4 weeks was 64.4% [56.2-72.6] for Nduta and 67.4% [58.7-76.0] for Mtendeli.

The negative coping strategies that were preferred were almost similar. At least 50% of households used negative coping strategies across the three camps, implying that some efforts are invested by household members to cover food gap within 28 days of the distribution cycle.

The seven days recall period showed that expect in Nyarugusu new camp where most of the households preferred to reduce the number of eaten meals in a day, in other camps majority preferred relying on less preferred and/or less expensive foods, mostly produced locally, either in the camp or from the host communities surrounding the camp.

The average reduced coping strategy index (rCSI) was 21 for Nyarugusu new camp, 15 for Nyarugusu old camp, 14 for Nduta and 12 for Mtendeli ranging from 0 to 56 in all the three camps. Currently, there is no established cut-offs for rCSI though some literatures suggest a severe food insecure when the index is above 11[19]. Since this was the first SENS to include rCSI, the findings may be used for comparison during the next SENS, and latter a trend can be established for monitoring reasons.

Despite high proportion of households with FCS at acceptable level (FCS>35) in camps, the food consumption scores nutritional quality analysis (FCS-N) showed high proportion of households that never consumed protein rich and haem-iron rich foods ranging from 81% in Nyarugusu old camp and Mtendeli to 92% in Nyarugusu new camp and from 83% in Nyarugusu old camp and Mtendeli to 93% in Nyarugusu new camp respectively. Closure of the common market and restrictions of movements might have contributed to low food diversity among households.

6.6. WASH

Proportion of households collecting drinking water from protected/treated sources was 100% in the three camps. Proportion of households with at least 10 litres per person drinking water storage was 40% for Nyarugusu new camp, 69% for Nyarugusu old camp, 61% for Nduta and 45% for Mtendeli camp. This was the newly introduced indicator for WASH in SENS version 3. A comparison of amount of water storage may apply in future with reference to SENS 2019 for refugees in Kigoma region.

Average number of litres per person per day of domestic water collected at household level from protected or treated sources with containers of any type was 31 litres for Nyarugusu new camp, 38 litres for Nyarugusu old camp, 37 litres for Nduta and 28 litres for Mtendeli camp. This was far above the UNHCR minimum recommended amount of water; 20LPPPD, implying that was not a problem in the three refugee camps. Further, the average number of litres per person per day of domestic water collected at household level from protected or treated sources with protected containers only was 20 litres for Nyarugusu new camp, 27 litres for Nyarugusu old camp, 26 litres for Nduta and 18 litres for Mtendeli camp. This may reflect the type of water containers refugee owns in the camps. Protected containers are those with lids. Open containers may result into contamination making water unsafe for drinking. This indicator was also introduced in version 3 of the UNHCR SENS, and thus, comparison from previous SENS report was not possible.

In Nyarugusu new camp, proportion of households using domestic water collected from protected or treated sources with protected containers only; ≥20 LPPPD was 32%, 15 - <20 LPPPD was 8% and <15 LPPPD was 60%. Nyarugusu old camp, those collected from protected or treated sources with protected containers only; ≥20 LPPPD was 50%, 15 - <20 LPPPD was 13% and <15 LPPPD was 37%. In Nduta camp; ≥20 LPPPD was 48%, 15 - <20 LPPPD was 14% and <15 LPPPD was 38%. In Mtendeli camp; ≥20 LPPPD was 33%, 15 - <20 LPPPD was 12% and <15 LPPPD was 55%. Large proportion of households collecting less than 15LPPPD was noted in Nyarugusu new camp and Mtendeli. It should be noted that this assessment was focusing only on collection of potable water using protected containers only and should not be compared to previous years.

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[19] Comparing Household Food Consumption Indicators to Inform Acute Food Insecurity Phase Classification, Dec 2015

Proportion of households with access to soap was 75% in Nyarugusu new camp, 62% in Nyarugusu old camp, 85% in Nduta and 70% in Mtendeli. There is no threshold for this indicator so far, but 62% and 70% for Nyarugusu old campa and Mtendeli suggest low access to soap and may need some attentions.

Proportion of households using toilet was as the lowest in Nduta (92%) among all three camps, while the prevalence of diarrhoea was the highest, and it has increased from 6.4% [3.0%-9.8%] in 2018 to 27.0% [22.7%-31.2%] in 2019. Inadequate decommissioning of filled latrines and construction of new ones faced difficult due to financial challenges from donors.

6.7.   Mosquito net coverage

Proportion of households owning at least one mosquito net of any type was 63% in Nyarugusu new camp, 73% in Nyarugusu old camp, 69% in Nduta and 46% in Mtendeli camp. Proportion of households owning at least one LLIN ranged from 38% in Mtendeli camp to 67% in Nyarugusu old camp. Proportion of households owning at least one LLIN for Nyarugusu new camp, Nyarugusu old camp and Nduta only reached the UNHCR target (≥80%) in 2016. Mtendeli camp has never reached the target for the past four years now. This shows poor retention of mosquito and may prove ineffective preventive measure against malaria in the camps, and thus, another potential and effective way may be necessary.

Proportion population slept under mosquito net of any type was as low as 41% for the total population, 53% for under-fives and 41% for pregnant women, while those slept under LLIN was 35% for total population, 46% for under-fives and 40% for pregnant women in Nyarugusu new camp. In Nyarugusu old camp proportion of the total population slept under mosquito net of any type was 53%, 70% for under-fives and 50% for pregnant women, while those slept LLIN was 47%, 59% and 43% for total population, under-fives and pregnant women respectively. In Nduta camp the proportion for mosquito net of any type was 54% for total population, 62% for under-fives and 76%, for pregnant women while LLIN was utilized by 47% total population, 55% under-fives and 67% pregnant women. Proportion of total population slept under mosquito net of any type in Mtendeli was 28%, under-fives was 41% and 39% pregnant women. Those slept under LLIN was 24%, 33% and 34% for total population, under-fives and pregnant women respectively. Utilization was relatively higher in Nyarugusu old camp and Nduta where mosquito net retention seemed higher than Nyarugusu new camp and Mtendeli. Compared to previous years, utilization of mosquito net has been low over the four past years, and thus, a challenging measure in regard to malaria prevention.

7. Conclusions

Acute malnutrition remained within the acceptable or low levels in all the refugee camps. UNHCR and WHO standards acceptable level. However, stunting and anaemia among children 6-59 months has persistently remained above the UNHCR recommended threshold. Prevalence of stunting based on age disaggregation indicted younger children age group 6-24 months more affected than the older ones aged 24 – 59 months. The difference in prevalence of anaemia between these two group was statistically significant; younger children being more affected than the older ones. However, a significant improvement was noted when compared to 2018 results probably due improved follow-up, improved food WFP pipeline, health and nutrition services as well as WASH activities. The BSFP for children aged 6 – 59 must have significant contribution on improvement of prevalence of anaemia in this target group. However, misuse of nutrition items including selling, sharing and discarding the MNP sachet were among observations done during the survey and may have a negative impact on improvement of the situation. Prevalence anaemia in non-pregnant women aged 15 – 49 years was within the UNHCR recommended cut-off of 20% except for Nyarugusu old camp, despite the number of years passed since the camp was established.

Coverage of nutrition program for MAM and SAM was low linked to inadequate nutritionals screening among children attending BSFP. Coverage of vitamin A supplementation, measles vaccination and deworming were relatively good. However, confirmation of measles and vitamin A supplementation with card remained low mainly due to inadequate EPI cards in the camps. These documents are usually supplied by the government and sometimes stock out happens due to logistical challenges.

Coverage of pregnant women attending ANC as well as BSFP was low due to delayed enrolment into ANC. In some camps, enrolment was still implemented based on palpation of pregnancy and not through urine for pregnant test, and thus, enrolment into ANC during second trimester.

Mosquito net ownership was very low across all the camps despite the routine distribution of the items to under-fives and pregnant women. This has been the same as in previous years where both retention and utilization remained extremely low. Retention of mosquito net has been very challenging due selling of the items to customers outside the camps.

8. Recommendations and priorities

Immediate action

1. Provide capacity building intensify nutritional screening at community level and supportive supervision to CNV'S and HIT to increase enrolment of SAM and MAM in the targeted and therapeutic feeding programmes.
2. Provide community sensitization on the importance of early reporting and registration of pregnant women at ANC. Where possible, decentralization of registration and enrolment of pregnant women should be done at all facilities providing RCH services.
3. Ensure early enrolment of pregnant women at ANC and subsequent supply of IFAs, Anti-malaria, vaccines, immediate enrolment at BSFP with the focus of the 1000 days and continue with BSFP for children aged 6 to 59 months to reduce stunting
4. Review community workers daily activities to ensure they reach all the populations in the camp with key messages on improvement of personal hygiene and environmental sensitization.
5. Improve coordination among stakeholders; Implementing partners, operational partners, UN agencies, the GoT and refugees themselves in addressing anaemia and stunting issues like misuse and/or selling of received food aid, special nutrient supplements provided through targeted and blanket feeding programs and core relief items including mosquito nets. Distribution of the mosquito nets should align with number of HH members where possible.
6. Ensure availability of supplies for testing and subsequent early treatment of malaria cases among under 5 children.
7. Review an acceptability and adherence results to MNP and provide corrective measures to reduce misuse of the supplements. Provide mechanisms for feedback from the community regarding acceptance of the powder.
8. Ensure regular distributions of the water collection and storage containers, sensitize the community on proper handling of drinking water including covering of the water containers and discourage storage of drinking water suing unprotected containers such as plastic basins.

Medium term

1. Improving uptakes of family planning and adequate spacing to avoid pregnancies during lactation period. This has caused children to terminate breastfeeding at infancy stage or young child which

may result in increased prevalence of stunting.

2. Provide fresh food or related voucher for improvement of nutrient uptake among pregnant women for better growth of the foetus in the womb.
3. Establish breastfeeding corners, mother to mother support groups and/or baby friendly space to allow exchange of skills and ideas among women and subsequent improvement of IYCF practices.
4. Provide motivation to pregnant women who attended clinic in first trimester such as giving mosquito net where possible and encourage male involvement, so they support their partners to attend ANC as soon as they conceive.
5. Provide training of community health workers on identification of anaemia, immediate referral to health facilities and proper follow up of the case at community level thereafter.
6. Engage stakeholders for scale-up of backyard gardening focus more on vulnerable groups including under 5 and pregnant women.
7. Promote behaviour change in the communities such as footwears, usage of toilets and using soaps to hand wash, bathing and washing clothes.
8. Increase latrines coverage through construction of new toilets as well as related sanitation facilities including bathhouses, garbage pits and dishrack and drainage systems to reduce prevalence of diarrhoea and risks of outbreaks.
9. Advocate livelihood activities that will supplement efforts done by the agencies in provision of WASH related CRIs.

Longer term

1. Advocacy to WFP and UNHCR for reviewing eligibility criteria which denies enrolment of pregnant women during their first trimester into BSFP.
2. Conduct evaluation of effectiveness of BSFP project for prevention of anaemia and stunting for subsequent addressing of existing gaps focusing to improve nutritional status of under-fives.
3. Continue with deworming activities for under 5 as well as in primary schools through special immunization campaigns normally coordinated by the government bodies.
4. Adopt alternative programs to prevent malaria as the use of ITN has become a challenge in the community (E.g. IRS instead of ITN)
5. Work with government to formulate and enforce strict codes that will be used protect relief items from misusing including buying and selling where possible
6. Advocate to donors to increase the budget for WASH items such as soap, clothes, petroleum gel and footwear to enhance promotion of personal hygiene especially in children aged below five years.
7. Plan for routine nutritional assessment for 2020 aims to provide tracking of nutritional status of refugee communities.

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14.	Noela Chacha		Team Leader
15.	Rajab Kidoga		Interviewer
16.	Vasco Chusi		Interviewer
17.	Therezia Jacob		Interviewer
18.	James Ngalaba		Interviewer
19.	Jackson Daniel		Interviewer
20.	Ladislaus Chanda		Interviewer
21.	Elifasi Nkena		Hb Taker
22.	Harerimana Vestine		Hb Taker
23.	Issa Nalinga Issa		Hb Taker
24.	Rosemery Benedima		Hb Taker
25.	Shabani Nyakinoti		Hb Taker
26.	Siyaleo Shilambele		Hb Taker
27.	Johari Famia Lubanga	Incentive staff, TRCS-Nyarugusu	Measurer
28.	Almas Bintu	Incentive staff, TRCS-Nyarugusu	Measurer
29.	Harerimana Vestine	Incentive staff, TRCS-Nyarugusu	Measurer
30.	Bukuru Emanuel	Incentive staff, TRCS-Nyarugusu	Measurer
31.	Ekyoci Namembe	Incentive staff, TRCS-Nyarugusu	Measurer
32.	Kamumtu Solange	Incentive staff, TRCS-Nyarugusu	Measurer
33.	Sindayigaya Charles	Incentive staff, TRCS-Nyarugusu	Assistant measurer
34.	Ntakirutimana Erick	Incentive staff, TRCS-Nyarugusu	Assistant measurer

35.	Mcwale Ambela	Incentive staff, TRCS-Nyarugusu	Assistant measurer
36.	Kaleba Mtenga	Incentive staff, TRCS-Nyarugusu	Assistant measurer
37.	Bigirimana Jean Bosco	Incentive staff, TRCS-Nyarugusu	Assistant measurer
38.	Wilondja Mbili	Incentive staff, TRCS-Nyarugusu	Assistant measurer
39.	Mukarurangwa Esperance	Incentive staff, WVI Nduta	Measurer
40.	Ndereyimana claudette	Incentive staff, MSF Nduta	Measurer
41.	Itangishaka evelyne	Incentive staff, WVI Nduta	Measurer
42.	Nduwayo innocent	Incentive staff, MSF Nduta	Measurer
43.	Nshimirimana jacqueline	Incentive staff, WVI Nduta	Measurer
44.	Bukeyeneza théogène	Incentive staff, MSF Nduta	Measurer
45.	Manirakiza emmanuel	Incentive staff, WVI Nduta	Assistant measurer
46.	Niyokindi lévis	Incentive staff, MSF Nduta	Assistant measurer
47.	Manirakiza Jean Marie	Incentive staff, WVI Nduta	Assistant measurer
48.	Bigirimana ernest	Incentive staff, MSF Nduta	Assistant measurer
49.	Nduwimana martin	Incentive staff, WVI Nduta	Assistant measurer
50.	Harerimana berchimans	Incentive staff, MSF Nduta	Assistant measurer
51.	Karegeya Emmanuel	Incentive staff, WVI Mtendeli	Measurer
52.	Ntiranyigimana Gilbert	Incentive staff, WVI Mtendeli	Measurer
53.	Yakweri Elias	Incentive staff, WVI Mtendeli	Measurer
54.	Ndereyimana Sophia	Incentive staff, WVI Mtendeli	Measurer
55.	Nininahazwe Moses	Incentive staff, WVI Mtendeli	Measurer
56.	Niyikitungiye Claudine	Incentive staff, WVI Mtendeli	Measurer
57.	Mpewimana Ezra	Incentive staff, WVI Mtendeli	Assistant measurer
58.	Irankunda Mirreile	Incentive staff, WVI Mtendeli	Assistant measurer
59.	Habonimana Jean Claude	Incentive staff, WVI Mtendeli	Assistant measurer
60.	Ndereyimana Esperance	Incentive staff, WVI Mtendeli	Assistant measurer
61.	Angeliqe Nibimpa	Incentive staff, WVI Mtendeli	Assistant measurer
62.	Cishayo Odetta	Incentive staff, WVI Mtendeli	Assistant measurer

11. Appendices
Appendix 1: SMART Plausibility Check (PC) Report
Overall data quality for Nyarugusu new camp

```
Criteria                Flags* Unit Excel. Good    Accept  Problematic Score

Flagged data            Incl   %    0-2.5 >2.5-5.0 >5.0-7.5  >7.5
(% of out of range subjects)          0     5        10       20       0 (0.6 %)


Overall Sex ratio       Incl   p    >0.1  >0.05    >0.001  <=0.001
(Significant chi square)              0     2         4       10       0 (p=0.561)


Age ratio(6-29 vs 30-59) Incl  p    >0.1  >0.05    >0.001  <=0.001
(Significant chi square)              0     2         4       10       4 (p=0.009)


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 (5)


Dig pref score - MUAC    Incl  #    0-7   8-12     13-20     > 20
                                      0     2         4       10       0 (6)


Standard Dev WHZ         Excl   SD   <1.1  <1.15    <1.20    >=1.20
.                                    and   and      and      or
.                        Excl   SD   >0.9  >0.85    >0.80    <=0.80
                                      0     5         10       20       0 (0.93)


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 (-0.04)


Poisson dist WHZ-2       Excl   p   >0.05 >0.01    >0.001  <=0.001
                                      0     1         3        5        1 (p=0.034)


OVERALL SCORE WHZ =                  0-9   10-14    15-24    >25       5 %
```

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

Overall data quality for Nyarugusu old camp

```
Criteria                Flags* Unit Excel. Good    Accept  Problematic Score

Flagged data            Incl   %    0-2.5 >2.5-5.0 >5.0-7.5  >7.5
(% of out of range subjects)          0     5        10       20       0 (0.3 %)

Overall Sex ratio       Incl   p    >0.1  >0.05    >0.001  <=0.001
(Significant chi square)              0     2         4       10       0 (p=0.592)

Age ratio(6-29 vs 30-59) Incl  p    >0.1  >0.05    >0.001  <=0.001
(Significant chi square)              0     2         4       10       4 (p=0.029)

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 (5)

Dig pref score - MUAC    Incl  #    0-7   8-12     13-20     > 20
                                      0     2         4       10       0 (6)

Standard Dev WHZ         Excl   SD   <1.1  <1.15    <1.20    >=1.20
.                                    and   and      and      or
.                        Excl   SD   >0.9  >0.85    >0.80    <=0.80
```

```
                                        0      5        10      20     0 (0.92)


Skewness  WHZ          Excl   #   <±0.2 <±0.4  <±0.6  >=±0.6
                                    0     1      3       5     0 (-0.13)


Kurtosis  WHZ          Excl   #   <±0.2 <±0.4  <±0.6  >=±0.6
                                    0     1      3       5     1 (0.33)


Poisson dist WHZ-2     Excl   p   >0.05 >0.01  >0.001 <=0.001
                                    0     1      3       5     0 (p=0.760)


OVERALL SCORE WHZ =               0-9   10-14  15-24   >25    5 %
```

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

Overall data quality for Nduta camp

```
Criteria               Flags* Unit Excel. Good   Accept Problematic Score


Flagged data           Incl   %   0-2.5 >2.5-5.0 >5.0-7.5  >7.5
(% of out of range subjects)       0     5        10        20    0 (0.6 %)


Overall Sex ratio      Incl   p   >0.1  >0.05   >0.001  <=0.001
(Significant chi square)           0     2        4        10   0 (p=0.757)


Age ratio(6-29 vs 30-59) Incl p   >0.1  >0.05   >0.001  <=0.001
(Significant chi square)           0     2        4        10   4 (p=0.001)


Dig pref score - weight Incl  #   0-7   8-12    13-20    > 20
                                   0     2        4        10   0 (4)


Dig pref score - height Incl  #   0-7   8-12    13-20    > 20
                                   0     2        4        10   0 (5)


Dig pref score - MUAC   Incl  #   0-7   8-12    13-20    > 20
                                   0     2        4        10   0 (5)


Standard Dev WHZ       Excl   SD  <1.1  <1.15   <1.20   >=1.20
.                                 and   and      and      or
.                      Excl   SD  >0.9  >0.85   >0.80   <=0.80
                                   0     5        10       20   0 (0.96)


Skewness  WHZ          Excl   #   <±0.2 <±0.4   <±0.6   >=±0.6
                                   0     1        3        5    0 (0.07)


Kurtosis  WHZ          Excl   #   <±0.2 <±0.4   <±0.6   >=±0.6
                                   0     1        3        5    3 (0.52)


Poisson dist WHZ-2     Excl   p   >0.05 >0.01   >0.001  <=0.001
                                   0     1        3        5    0 (p=0.920)


OVERALL SCORE WHZ =               0-9   10-14   15-24    >25   7 %
```

The overall score of this survey is 7 %, this is excellent.

Overall data quality for Mtendeli camp

```
Criteria               Flags* Unit Excel. Good   Accept Problematic Score


Flagged data           Incl   %   0-2.5 >2.5-5.0 >5.0-7.5  >7.5
(% of out of range subjects)       0     5        10        20    0 (0.5 %)


Overall Sex ratio      Incl   p   >0.1  >0.05   >0.001  <=0.001
(Significant chi square)           0     2        4        10   0 (p=0.898)


Age ratio(6-29 vs 30-59) Incl p   >0.1  >0.05   >0.001  <=0.001
(Significant chi square)           0     2        4        10   4 (p=0.007)
```

```
Dig pref score - weight   Incl   #    0-7   8-12    13-20    > 20
                                       0    2       4        10        0 (5)

Dig pref score - height   Incl   #    0-7   8-12    13-20    > 20
                                       0    2       4        10        0 (4)

Dig pref score - MUAC     Incl   #    0-7   8-12    13-20    > 20
                                       0    2       4        10        0 (4)

Standard Dev WHZ          Excl   SD   <1.1  <1.15   <1.20    >=1.20
.                                     and   and     and      or
.                         Excl   SD   >0.9  >0.85   >0.80    <=0.80
                                       0    5       10       20        0 (0.93)

Skewness   WHZ            Excl   #    <±0.2 <±0.4   <±0.6    >=±0.6
                                       0    1       3        5         0 (0.15)

Kurtosis   WHZ            Excl   #    <±0.2 <±0.4   <±0.6    >=±0.6
                                       0    1       3        5         0 (-0.04)

Poisson dist WHZ-2        Excl   p    >0.05 >0.01   >0.001   <=0.001
                                       0    1       3        5         0 (p=0.339)

OVERALL SCORE WHZ =                   0-9   10-14   15-24    >25       4 %
```

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

Appendix 2: Assignment of Clusters

Nyarugusu new camp: September 2019

Location	HHs	Cluster	Sampled HHs												
Zone 10, Village B6	97	1	3	13	20	24	26	37	40	44	53	70	72	76	87
Zone 10, Village C6	112	2	12	25	31	41	44	52	62	68	87	90	108	109	112
Zone 10, Village E6	57	3	3	15	20	22	23	29	33	38	46	50	52	53	56
Zone 10, Village G6	111	4	22	29	38	41	64	66	71	79	90	95	98	108	109
Zone 10, Village H6	81	5	12	13	15	26	40	44	46	47	52	57	61	71	72
Zone 10, Village J6	130	6	2	3	8	11	13	15	24	25	26	72	78	108	115
Zone 10, Village M6	164	7	4	11	16	20	24	25	29	33	65	96	114	140	146
Zone 11, Village A7	124	8	9	24	25	37	57	63	67	74	83	90	95	106	123
Zone 11, Village D7	123	9	21	22	24	42	45	66	74	89	90	91	100	118	121
Zone 11, Village F7	166	10	10	12	44	60	97	108	115	124	125	139	148	150	157
Zone 11, Village G7	190	11	15	32	48	86	110	122	125	136	149	157	158	161	176
Zone 11, Village I7	111	12	12	17	26	38	45	63	72	76	88	90	92	95	105
Zone 11, Village L7	41	13	2	3	4	10	11	13	18	26	27	31	32	34	40
Zone 11, Village N7	174	14	7	14	21	51	72	81	94	110	119	122	154	162	170
Zone 11, Village Q7	123	15	2	6	15	41	57	62	68	71	77	84	85	91	119
Zone 11, Village W7	314	16	1	8	22	33	34	68	88	89	168	184	218	250	279
Zone 11, Village Z7	155	17	3	4	37	59	61	74	84	93	100	106	114	144	150
Zone 12, Village C8	79	18	4	11	12	13	15	43	53	56	59	64	65	75	78
Zone 12, Village F8	92	19	5	24	28	29	52	54	56	60	71	74	78	85	87
Zone 13, Village C9	35	20	2	5	6	10	12	14	16	19	21	23	24	25	30
Zone 8, Village A4	97	21	4	11	14	15	19	27	42	47	49	64	66	79	87
Zone 8, Village B4	155	22	16	29	53	57	86	96	113	114	119	121	124	129	139
Zone 8, Village C4	224	23	11	21	26	38	64	82	109	132	136	155	159	174	176
Zone 8, Village E4	147	24	17	19	50	51	76	89	92	106	110	118	123	140	141

Zone 8, Village F4	146	25	11	12	23	28	32	42	51	61	65	79	81	112	132
Zone 8, Village G4	148	26	2	10	29	40	60	64	72	73	87	90	101	118	147
Zone 8, Village L4	154	27	6	23	45	49	56	58	61	76	98	103	109	118	139
Zone 8, Village M4	196	28	25	27	41	42	43	52	99	104	105	112	139	150	159
Zone 8, Village O4	189	29	3	28	30	38	44	52	71	74	83	91	102	133	158
Zone 8, Village P4	231	30	23	27	59	70	77	100	117	118	119	154	168	188	200
Zone 8, Village R4	126	31	1	11	23	24	36	56	58	91	94	109	114	119	126
Zone 8, Village U4	102	32	10	15	28	30	32	46	56	59	61	74	86	96	99
Zone 9, Village A5	116	33	18	22	32	47	54	69	74	75	98	99	101	108	110
Zone 9, Village C5	128	34	9	28	37	48	49	65	72	79	91	95	106	115	122
Zone 9, Village D5	87	35	9	14	19	35	38	40	46	47	48	65	67	73	74
Zone 9, Village F5	78	36	8	11	12	18	22	24	31	35	54	59	60	76	78
Zone 9, Village H5	156	37	4	23	32	37	45	47	48	52	56	79	109	119	134
Zone 9, Village J5	128	38	1	5	6	12	13	16	33	43	67	70	82	91	101
Zone 9, Village M5	147	39	2	3	7	23	60	65	66	72	76	82	87	95	135
Zone 9, Village P5	130	40	11	15	20	21	29	31	48	56	60	70	119	120	130
Zone 9, Village R5	73	41	11	13	15	18	20	23	37	44	46	51	57	63	65
Zone 9, Village T5	127	42	1	39	40	42	46	54	63	77	78	81	87	88	97
Zone 9, Village U5	141	43	2	13	24	28	51	76	81	85	88	108	118	124	130
Zone 9, Village V5	116	44	11	15	20	23	37	60	62	70	82	84	88	96	102
Zone 9, Village X5	287	45	22	60	74	111	119	122	134	140	158	201	216	251	254
Zone 9, Village Y1	110	46	1	5	25	41	49	55	72	76	79	93	100	107	110

Nyarugusu old camp: September 2019

Location	HHs	Cluster	Sampled HHs													
Zone 1, Village A1	140	1	3	4	8	38	43	51	54	72	79	90	106	111	117	125	137
Zone 1, Village B1	231	2	2	7	25	69	71	92	115	121	123	145	152	162	164	178	213
Zone 1, Village B1	223	3	8	29	33	42	74	126	151	153	168	169	179	191	192	193	196
Zone 1, Village D1	104	4	19	24	25	32	38	40	41	42	45	46	57	61	83	102	103
Zone 1, Village E1	237	5	3	12	16	23	48	56	82	93	95	96	141	170	171	210	214
Zone 1, Village F1	191	6	3	42	44	47	49	50	62	77	81	136	142	149	168	178	184
Zone 2, Village A2	216	7	25	67	74	83	88	93	99	103	108	117	146	150	153	204	213
Zone 2, Village B2	219	8	3	5	9	19	26	29	37	105	131	133	150	151	156	176	198
Zone 2, Village E2	213	9	20	48	53	70	74	113	119	125	131	136	153	169	171	181	203
Zone 2, Village F2	193	10	8	23	25	44	51	62	67	84	88	103	114	132	133	137	183
Zone 2, Village H2	238	11	13	39	58	64	106	123	125	151	153	165	179	186	198	231	233
Zone 3, Village G1	205	12	12	19	31	35	44	62	105	108	109	127	140	146	147	158	180
Zone 3, Village H1	195	13	14	15	36	60	61	91	97	100	110	117	122	129	172	176	188
Zone 3, Village I1	182	14	10	23	24	46	52	59	73	82	84	110	134	143	149	151	153
Zone 3, Village N1	194	15	8	38	57	62	77	78	83	89	94	122	123	143	162	171	191
Zone 3, Village N1	134	16	1	2	18	25	51	58	65	78	85	89	104	113	115	123	127
Zone 4, Village L2	111	17	9	12	19	21	25	30	52	57	68	74	75	77	96	105	111
Zone 4, Village O2	185	18	4	8	22	25	40	55	83	94	96	136	142	165	166	168	174
Zone 5, Village A3	166	19	48	49	64	65	70	79	83	96	106	109	125	145	150	156	165
Zone 5, Village B3	178	20	11	14	19	22	37	51	61	67	73	75	82	87	157	158	163
Zone 5, Village C3	187	21	2	30	42	44	47	54	62	99	115	131	136	139	148	171	182
Zone 5, Village C3	107	22	12	14	15	29	30	37	45	58	61	67	74	76	82	89	98

Zone 5, Village K3	219	23	24	34	60	85	96	105	107	118	125	130	137	144	158	191	197
Zone 5, Village L3	176	24	37	40	41	47	61	83	85	91	96	105	106	113	121	145	150
Zone 6, Village O1	188	25	7	26	53	61	66	103	112	116	119	124	129	165	177	182	187
Zone 6, Village P1	193	26	14	18	32	38	43	68	71	88	123	124	130	159	183	191	193
Zone 6, Village Q1	229	27	5	31	77	95	99	107	111	132	135	139	140	143	170	176	182
Zone 6, Village R1	502	28	9	19	44	65	68	71	92	119	129	139	148	170	201	236	250
Zone 6, Village R1	502	29	252	254	270	294	311	324	325	331	382	383	409	437	439	442	460
Zone 6, Village S1	188	30	7	22	24	25	26	41	99	105	109	127	130	170	174	180	186
Zone 6, Village V1	261	31	40	41	77	93	102	108	124	163	186	201	224	228	234	249	250
Zone 7, Village E3	229	32	25	95	134	136	142	146	149	169	172	183	187	207	217	219	225
Zone 7, Village F3	248	33	29	81	84	104	106	107	120	131	153	159	167	180	185	201	247
Zone 7, Village H3	110	34	9	18	19	21	31	41	42	43	44	47	51	67	75	95	108

Nduta Camp: October 2019

Location	HHs	Cluster	Sampled HHs															
Zone 11Village 1	48	1	5	8	18	23	24	26	27	30	33	37	38	40	43	44	46	47
Zone 11Village 13	49	2	1	3	4	5	7	8	12	14	16	17	19	21	31	32	33	49
Zone 11Village 2	37	3	2	5	6	8	9	13	16	18	22	25	26	27	32	34	35	36
Zone 11Village 7	51	4	1	4	6	13	14	18	19	23	25	27	29	33	34	38	39	47
Zone 12Village 12	32	5	1	9	10	12	13	17	18	20	22	23	24	25	26	27	28	32
Zone 12Village 19	49	6	1	2	3	4	8	9	13	16	19	24	27	30	37	38	40	48
Zone 12Village 7	57	7	7	9	10	14	19	20	22	23	25	26	30	34	38	52	54	56
Zone 13Village 25	18	8	1	2	3	4	5	6	7	9	10	11	12	13	14	15	16	17
Zone 13Village 9	22	9	1	2	3	4	6	7	8	9	10	11	12	13	14	15	16	17
Zone 14Village 4	12	10	1	2	3	4	5	6	7	8	9	10	11	12	18	19	20	21
Zone 17Village 7	21	11	1	2	3	4	5	6	8	10	12	13	16	17	18	19	20	21
Zone 16Village 3	17	12	1	2	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Zone 15Village 5	22	13	1	2	3	4	5	6	8	9	12	13	14	16	17	18	19	20
Zone 18Village 4	31	14	1	2	3	7	8	9	15	18	21	24	25	27	28	29	30	31
Zone 19Village 2	26	15	2	3	4	5	6	8	9	10	12	13	15	17	19	20	21	24
Zone 1Village 19	84	16	16	18	23	27	30	32	39	43	46	48	51	61	63	76	83	84
Zone 1Village 16	58	17	5	9	10	11	13	17	18	23	27	29	34	36	37	43	54	57
Zone 1Village 11	77	18	1	2	3	7	14	17	28	30	32	33	49	50	54	56	58	59
Zone 1Village 23	171	19	34	38	52	59	69	70	73	76	79	82	84	89	119	142	151	166
Zone 1Village 25	99	20	22	24	29	37	45	56	58	67	72	74	78	85	87	90	92	95
Zone 1Village 27	130	21	10	14	15	29	36	37	44	71	86	92	95	97	108	109	116	120
Zone 20Village 11	28	22	1	4	5	7	8	10	11	17	19	20	21	22	23	24	25	26
Zone 21Village 1	28	23	2	6	7	8	10	11	16	17	19	20	21	23	25	26	27	28
Zone 2Village 10	38	24	1	5	9	14	19	22	23	24	28	29	30	31	35	36	37	38
Zone 2Village 7	164	25	1	6	12	33	37	52	58	78	82	83	89	92	98	107	138	151
Zone 3Village 10	53	26	2	5	6	7	12	13	25	28	29	31	34	36	37	41	42	43
Zone 3Village 15	80	27	4	11	12	14	20	29	31	40	48	54	58	64	69	76	78	80
Zone 3Village 3	94	28	10	15	17	18	20	27	28	33	35	38	43	61	71	82	83	90
Zone 4Village 7	91	29	1	3	5	16	23	28	45	47	51	53	54	60	61	72	73	90
Zone 6Village 18	71	30	7	8	10	12	21	22	36	41	42	45	47	53	60	64	65	68
Zone 6Village 11	70	31	1	2	7	12	17	18	19	26	38	44	47	49	50	54	66	67

Location	HHs	Cluster	Sampled HHs															
Zone 5Village 6	91	32	8	12	15	19	33	45	53	54	61	62	63	68	76	79	86	90
Zone 6Village 23	64	33	3	9	14	15	21	22	23	24	27	28	32	44	45	51	61	63
Zone 8Village 1	52	34	1	3	9	10	16	24	25	27	28	31	33	35	40	45	46	47
Zone 7Village 6	67	35	7	10	13	19	23	26	31	32	36	38	40	48	50	57	58	61
Zone 7Village 12	102	36	1	2	7	9	13	20	21	23	40	58	59	64	71	72	77	82
Zone 8Village 16	51	37	6	8	9	13	14	17	18	19	20	23	28	34	35	48	49	50
Zone 8Village 20	63	38	4	5	7	9	15	19	21	27	29	37	38	42	43	46	47	58
Zone 8Village 7	77	39	6	7	8	16	23	42	45	46	48	54	59	60	64	65	73	75
Zone 9Village 23	20	40	2	3	4	5	7	8	10	11	12	13	14	15	16	18	19	20
Zone 13Village 13	23	41	1	4	5	6	7	8	9	11	12	14	15	17	18	21	22	23
Zone 9Village 15	37	42	1	6	8	9	11	12	14	15	16	19	21	28	30	32	33	37

Mtendeli Camp: October 2019

Location	HHs	Cluster	Sampled HHs														
Zone A, Village 2	85	1	1	11	19	29	37	42	43	49	52	57	65	66	74	75	81
Zone A, Village 6	55	2	7	11	12	13	16	19	28	31	32	40	41	43	47	50	51
Zone A, Village 9	85	3	6	12	19	27	32	33	34	40	45	60	64	66	74	75	78
Zone B, Village 1	109	4	6	19	25	28	49	51	63	64	82	87	88	92	98	102	104
Zone B, Village 2	120	5	1	3	6	13	18	24	29	30	38	44	48	49	94	104	115
Zone B, Village 5	177	6	1	10	12	20	25	80	86	91	123	128	130	135	147	162	174
Zone B, Village 7	92	7	2	10	14	16	32	36	37	42	44	53	57	65	71	87	88
Zone B, Village 9	93	8	15	16	20	27	33	48	51	52	59	60	66	80	85	89	93
Zone C, Village 4	121	9	7	24	31	35	38	45	65	78	81	87	92	94	106	109	121
Zone C, Village 5	85	10	1	9	11	18	20	22	23	31	42	45	46	53	75	76	84
Zone C, Village 8	92	11	4	5	13	15	18	19	34	38	56	59	69	75	88	89	92
Zone D, Village 2	114	12	2	5	17	41	46	50	51	58	62	67	84	86	87	99	104
Zone D, Village 4	114	13	10	22	27	47	52	58	60	68	92	94	96	98	101	106	112
Zone D, Village 6	57	14	2	3	6	10	12	14	20	28	33	45	48	49	50	54	55
Zone E, Village 1	106	15	3	16	20	28	36	38	46	51	53	68	71	79	84	93	99
Zone E, Village 5	100	16	6	9	23	32	53	56	67	69	70	74	76	77	83	88	99
Zone F, Village 1	68	17	9	13	22	23	24	26	34	35	37	48	51	58	61	63	64
Zone F, Village 3	95	18	8	12	14	15	16	32	43	44	46	50	61	67	77	82	84
Zone F, Village 8	55	19	12	14	23	27	33	34	39	41	42	44	45	47	48	49	50
Zone G, Village 1	116	20	2	5	11	19	26	27	29	30	34	35	43	44	45	46	53
Zone G, Village 1		21	60	61	63	69	74	77	85	87	89	90	91	107	108	109	116
Zone G, Village 2	143	22	3	6	7	8	11	36	46	49	58	61	73	79	80	107	116
Zone G, Village 9	38	23	1	3	14	15	16	18	21	25	26	28	31	32	33	35	38
Zone H, Village 1	138	24	16	24	26	27	31	41	60	62	64	88	92	95	105	107	111
Zone H, Village 5	71	25	4	5	7	8	20	25	27	35	38	40	47	50	52	55	70
Zone H, Village 8	56	26	9	53	49	47	54	20	30	37	52	22	45	50	26	48	23
Zone I, Village 1	100	27	4	16	17	19	21	28	41	45	53	76	80	84	87	91	99
Zone I, Village 6	67	28	4	8	12	17	33	35	36	38	42	48	49	50	51	62	64
Zone J, Village 4	62	29	6	7	15	16	20	23	24	26	35	37	39	41	43	51	58
Zone J, Village 7	74	30	3	6	7	14	17	19	30	41	44	48	50	54	59	64	66

Appendix 3: Evaluation of Enumerators (anthropometric ST)

Mtendeli camp

Weight	subjects	mean	SD	max	Technical error	TEM/mean	Coef of reliability	Bias from superv Bias	Bias from median	result		
	#	kg	kg	kg	TEM (kg)	TEM (%)	R (%)	(kg)	Bias (kg)			
Supervisor	7	13.3	1.7	0.2	0.12	0.9	99.5	-	0.15	TEM poor	R value good	Bias poor
Enumerator 1	7	13.4	1.7	0.4	0.16	1.2	99	0.01	0.16	TEM poor	R value good	Bias poor
Enumerator 2	7	13.3	1.7	0.4	0.15	1.1	99.2	-0.01	0.14	TEM poor	R value good	Bias poor
Enumerator 3	7	13.4	1.7	0.3	0.13	1	99.4	0.01	0.16	TEM poor	R value good	Bias poor
Enumerator 4	7	13.3	1.7	0.25	0.11	0.8	99.6	-0.01	0.14	TEM poor	R value good	Bias poor
Enumerator 5	7	13.4	1.7	0.25	0.13	0.9	99.4	0.01	0.16	TEM poor	R value good	Bias poor
Enumerator 6	7	13.3	1.7	0.2	0.11	0.8	99.6	0	0.15	TEM poor	R value good	Bias poor
Enumerator 7	7	13.3	1.7	0.25	0.1	0.7	99.7	-0.03	0.12	TEM acceptable	R value good	Bias poor
Enumerator 8	7	13.4	1.7	0.3	0.11	0.8	99.6	0	0.15	TEM poor	R value good	Bias poor
Enumerator 9	7	13.3	1.7	0.25	0.12	0.9	99.5	-0.04	0.11	TEM poor	R value good	Bias poor
Enumerator 10	7	13.3	1.7	0.2	0.11	0.8	99.6	0	0.15	TEM poor	R value good	Bias poor
Enumerator 11	7	13.3	1.7	0.25	0.13	1	99.4	-0.02	0.13	TEM poor	R value good	Bias poor
Enumerator 12	7	13.3	1.7	0.2	0.09	0.7	99.7	-0.04	0.11	TEM acceptable	R value good	Bias poor
enum inter 1st	12x7	13.3	1.6	-	0.05	0.4	99.9	-	-	TEM good	R value good	
enum inter 2nd	12x7	13.4	1.6	-	0.07	0.6	99.8	-	-	TEM good	R value good	
inter enum + sup	13x7	13.3	1.6	-	0.06	0.5	99.9	-	-	TEM good	R value good	
TOTAL intra+inter	12x7	-	-	-	0.14	1	99.3	-0.01	0.14	TEM acceptable	R value good	Bias poor
TOTAL+ sup	13x7	-	-	-	0.14	1	99.3	-	-	TEM acceptable	R value good	

Height	subjects	mean	SD	max	Technical error TEM	TEM/mean	Coef of reliability	Bias from superv Bias	Bias from median	result		
	#	cm	cm	cm	(cm)	TEM (%)	R (%)	(cm)	Bias (cm)			
Enumerator 1	7	91.3	5.7	0.9	0.45	0.5	99.4	0.57	2.09	TEM acceptable	R value good	Bias acceptable
Enumerator 2	7	90.8	5.4	1.3	0.55	0.6	99	0.09	1.6	TEM acceptable	R value acceptable	Bias good
Enumerator 3	7	90.7	5.7	0.8	0.32	0.4	99.7	-0.01	1.51	TEM good	R value good	Bias good
Enumerator 4	7	90.7	5.6	0.8	0.31	0.3	99.7	-0.01	1.51	TEM good	R value good	Bias good
Enumerator 5	7	90.7	5.7	1	0.42	0.5	99.5	-0.01	1.5	TEM acceptable	R value good	Bias good
Enumerator 6	7	89.9	5.6	9.9	2.71	3	76.6	-0.79	0.73	TEM reject	R value reject	Bias good
Enumerator 7	7	90.9	5.4	1.9	0.79	0.9	97.9	0.18	1.69	TEM poor	R value acceptable	Bias good
Enumerator 8	7	91.1	5.2	0.7	0.28	0.3	99.7	0.36	1.88	TEM good	R value good	Bias good
Enumerator 9	7	91	5.3	2.1	0.75	0.8	98	0.3	1.81	TEM poor	R value acceptable	Bias good
Enumerator 10	7	90.7	6.1	0.9	0.35	0.4	99.7	-0.01	1.51	TEM good	R value good	Bias good
Enumerator 11	7	90.6	5.9	3.2	0.89	1	97.7	-0.08	1.44	TEM poor	R value acceptable	Bias good
Enumerator 12	7	90.2	5.4	2.4	0.98	1.1	96.8	-0.55	0.96	TEM poor	R value acceptable	Bias good
enum inter 1st	12x7	90.7	5.5	-	1.23	1.4	94.9	-	-	TEM poor	R value poor	
enum inter 2nd	12x7	90.7	5.4	-	0.75	0.8	98	-	-	TEM acceptable	R value acceptable	
inter enum + sup	13x7	90.7	5.4	-	0.95	1	96.8	-	-	TEM acceptable	R value acceptable	
Supervisor	7	90.7	5.5	1.1	0.34	0.4	99.6	-	1.51	TEM good	R value good	
TOTAL intra+inter	12x7	-	-	-	1.41	1.6	93.2	0	1.52	TEM poor	R value poor	Bias good
TOTAL+ sup	13x7	-	-	-	1.36	1.5	93.7	-	-	TEM poor	R value poor	

MUAC	subjects #	mean mm	SD mm	max mm	Technical error TEM (mm)	TEM/mean TEM (%)	Coef of reliability R (%)	Bias from superv Bias (mm)	Bias from median Bias (mm)	result		
Supervisor	7	157.9	12.1	3	1.4	0.9	98.7	-	1.9	TEM good	R value acceptable	Bias acceptable
Enumerator 1	7	157.6	13.4	5	1.95	1.2	97.9	-0.26	1.64	TEM good	R value acceptable	Bias acceptable
Enumerator 2	7	158.3	13.2	5	1.96	1.2	97.8	0.39	2.29	TEM good	R value acceptable	Bias poor
Enumerator 3	7	158.7	13.4	7	2.48	1.6	96.6	0.81	2.71	TEM acceptable	R value acceptable	Bias poor
Enumerator 4	7	158.4	12.3	5	2.22	1.4	96.7	0.46	2.36	TEM acceptable	R value acceptable	Bias poor
Enumerator 5	7	157.3	12.1	3	1.13	0.7	99.1	-0.61	1.29	TEM good	R value good	Bias acceptable
Enumerator 6	7	158.4	12.6	33	8.88	5.6	50.2	0.46	2.36	TEM reject	R value reject	Bias poor
Enumerator 7	7	158.7	14.2	6	1.93	1.2	98.2	0.81	2.71	TEM good	R value acceptable	Bias poor
Enumerator 8	7	157.4	12.4	37	10	6.4	35	-0.54	1.36	TEM reject	R value reject	Bias acceptable
Enumerator 9	7	157.6	12.1	5	1.51	1	98.4	-0.33	1.57	TEM good	R value acceptable	Bias acceptable
Enumerator 10	7	156.6	12.4	4	1.67	1.1	98.2	-1.26	0.64	TEM good	R value acceptable	Bias good
Enumerator 11	7	157.1	12.6	6	2.38	1.5	96.4	-0.83	1.07	TEM acceptable	R value acceptable	Bias acceptable
Enumerator 12	7	158.6	13.7	14	4.92	3.1	87	0.74	2.64	TEM reject	R value reject	Bias poor
enum inter 1st	12x7	158.3	12.4	-	5.66	3.6	79.1	-	-	TEM reject	R value reject	
enum inter 2nd	12x7	157.5	12.6	-	2.38	1.5	96.4	-	-	TEM acceptable	R value acceptable	
inter enum + sup	13x7	157.9	12.4	-	3.85	2.4	88.8	-	-	TEM reject	R value reject	
TOTAL intra+inter	12x7	-	-	-	6.21	3.9	75.1	-0.01	1.89	TEM reject	R value reject	Bias acceptable
TOTAL+ sup	13x7	-	-	-	5.97	3.8	76.8	-	-	TEM reject	R value reject	

Appendix 4: UNHCR – SENS Questionnaire

Greeting and reading of rights:

THIS STATEMENT IS TO BE READ TO THE HEAD OF THE HOUSEHOLD OR, IF THEY ARE ABSENT, ANOTHER ADULT MEMBER OF THE HOUSE BEFORE THE INTERVIEW. DEFINE HEAD OF HOUSEHOLD AS MEMBER OF THE FAMILY WHO MANAGES THE FAMILY RESOURCES AND IS THE FINAL DECISION MAKER IN THE HOUSE.

- Hello, my name is _____ and I work with _____. We would like to invite your household to participate in a survey that is looking at the nutrition and health status of people living in this camp.

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

- If you agree to participate, we will ask you some questions about your family and we will also measure all the children in the household who are older than 6 months and younger than 5 years and women between 15 and 49 years. In addition to these assessments, we will test a small amount of blood from the finger of the children and women to see if they have anaemia.

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

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

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

DEMOGRAPHY

1 questionnaire per household

THIS QUESTIONNAIRE IS TO BE ADMINISTERED TO THE HEAD OF THE HOUSEHOLD OR, IF THEY ARE ABSENT, ANOTHER ADULT MEMBER OF THE HOUSEHOLD.

No	QUESTION	ANSWER CODES	
SECTION IDENTIFICATION			
THIS SECTION IS TO BE COMPLETED IN ALL SELECTED HOUSEHOLDS. THIS MODULE IS MANDATORY TO COMPLETE.			
ID1	Camp Name **CAMPNAME**	|_____|	
ID3	Zone Code / Number **ZONE**		|__|__|
ID4	Village Code / Number **VILLAGE**		|__|__|
ID5	Date of interview (dd/mm/yyyy) **SURVDAT**	Day/Month/Year…..|__|__| /|__|__| / |__|__||__|__|	
ID6	Cluster Number **CLUSTER**		|__|__|
ID7	Team Number **TEAM**		|__|
ID8	Household Number **HH**		|__|__|

No	QUESTION	ANSWER CODES	
SECTION DM1: Household Head Information			
Note	THESE QUESTIONS NEED TO BE ASKED TO THE HEAD OF THE HOUSEHOLD OR, IF THEY ARE ABSENT, ANOTHER ADULT MEMBER OF THE HOUSEHOLD.		
DM1	Was consent given for conducting the interview using Mobile Data Collection (use of smartphone)? ENSURE THAT YOU HAVE INTRODUCED THE TEAM AND INFORMED THEM ABOUT THE INTERVIEW. **MDCCONST**	Yes...1 No ....2 Absent..3	|__| **IF ANSWER IS 2 or 3 STOP HERE**
DM2	What is the sex of the household head? THE HOUSEHOLD HEAD IS THE PERSON RESPONSIBLE FOR MAKING THE DECISIONS FOR THE HOUSEHOLD AS A WHOLE. USE THE TERM AGREED UPON DURING THE TRAINING.	Male..m Female ....f	|__|

	HHHSEX		
DM3	What is the age of the household head (years)? YOU DO NOT NEED TO SEE PROOF OF AGE. **Lower limit=6** **Upper limit=98** **HHHAGE**	RECORD THE NUMBER IN YEARS IF KNOWN. RECORD 97 IF 97 YEARS OR OLDER. RECORD 98 IF UNKNOWN.	|___|___| years
SECTION DM2: Survey of Household Members			
DM4	What is the total number of household members? **Lower limit=1** **Upper limit=30** **DMHHSIZE**	RECORD THE NUMBER.	|___|___| people
Note	ASK INTERVIEWEE IF THOSE ARE ALL THE MEMBERS IN THE HOUSEHOLD AND THAT NO ONE IS MISSING. THESE QUESTIONS NEED TO BE COMPLETED FOR EACH HH MEMBER WHO LIVES IN THE HOUSEHOLD.		
DM5	Name of household member ONLY WRITE FIRST NAME. **NAME**	|_____|	
DM6	What is the sex of the household member? **HHMSEX**	Male ....m Female ....f	|___|
DM7	What is the age of the household member (years)? YOU DO NOT NEED TO SEE PROOF OF AGE. **Lower limit=0** **Upper limit=98** **HHMAGE**	RECORD THE NUMBER IN YEARS IF KNOWN. IF AGE IS LESS THAN 1 YEAR, RECORD 0. RECORD 97 IF 97 YEARS OR OLDER. RECORD 98 IF UNKNOWN.	|___|___| years
DM8	Is the household member currently pregnant? **HHMPREG**	Yes..1 No ....2 Don't know 8	|___|
DM9	Was consent given for taking the GPS coordinates of the household? **GPSCONST**	Yes..1 No 2	|___|
Note	Summary messages WRITE DOWN THE SUMMARY DATA PROVIDED BELOW ON THE PARTICIPANTS AND MEASURES CONTROL SHEET.		
DM10	**Total number of children under 5 (0-4 years)**		

	|___|___| children under-5 **TOTU5**
DM11	**Total number of women aged 15-49 years** |___|___| **women** **TOTWM**
DM12	**Total number of pregnant women aged 15-49 years** |___|___| **pregnant women** **TOTPREG**
	Interviewer: I confirm that questionnaire is complete: yes/no
	Supervisor: I confirm that questionnaire is complete.: yes/no MESSAGE TO INTERVIEWER: DO NOT ANSWER THIS QUESTION.

Summary			
Years old	**Female**	**Male**	**Total**
U2 **(0-1 years)**	|__|__| **TOTFU2**	|__|__| **TOTMU2**	|__|__| **TOTU2**
U5 **(0-4 years)**	|__|__| **TOTFU5**	|__|__| **TOTMU5**	|__|__| **TOTU5**
5-14 **(5-14 years)**	|__|__| **TOTF514**	|__|__| **TOTM514**	|__|__| **TOT514**
14 years or younger **(0-14 years)**	|__|__| **TOTFU15**	|__|__| **TOTMU15**	|__|__| **TOTU15**
Between 15 years **and 64 years**	|__|__| **TOTF1564**	|__|__| **TOTM1564**	|__|__| **TOT1564**
65 years and older	|__|__| **TOTF65OLD**	|__|__| **TOTM65OLD**	|__|__| **TOT65OLD**
Total household size **(all ages)**	|__|__| **HHFSIZE**	|__|__| **HHMSIZE**	|__|__| **DMHHSIZE**

FOOD SECURITY
1 questionnaire per household

THIS QUESTIONNAIRE IS TO BE ADMINISTERED TO THE MAIN CARETAKER WHO IS RESPONSIBLE FOR COOKING THE MEALS.

No	QUESTION	ANSWER CODES	
SECTION IDENTIFICATION THIS SECTION IS TO BE COMPLETED IN ALL SELECTED HOUSEHOLDS. THIS MODULE IS MANDATORY TO COMPLETE.			
ID1	Camp Name **CAMPNAME**	|_____|	
ID3	Zone Code / Number **ZONE**		|___|___|
ID4	Village Code / Number **VILLAGE**		|___|___|
ID5	Date of interview (dd/mm/yyyy) **SURVDAT**	Day/Month/Year…..|___|___| /|___|___| / |___|___||___|___|	
ID6	Cluster Number **CLUSTER**		|___|___|
ID7	Team Number **TEAM**		|___|
ID8	Household Number **HH**		|___|___|

No	QUESTION	ANSWER CODES	
SECTION FS1: Food assistance and cooking fuel			
Note	THIS QUESTIONNAIRE NEED TO BE ASKED TO THE MAIN CARETAKER WHO IS RESPONSIBLE FOR COOKING THE MEALS.		
FS1	Was consent given for conducting the interview? ENSURE THAT YOU HAVE INTRODUCED THE TEAM AND INFORMED THEM ABOUT THE INTERVIEW. **FSCONST**	Yes .... 1 No .... 2 Absent... 3	|___| **IF ANSWER IS 2 or 3 STOP HERE**
FS2	Does your household receive food assistance (general in-kind food distribution) **FOODASS**	Yes .... 1 No .... 2 Don't know 8	|___| **IF ANSWER IS 1 OR 8 GO TO FS4**
FS3	Why do you not have access to the food assistance programmes	Ration card and/or cash grants and/or food voucher not given even if eligible .. 1 Not registered... 2 Registered but determined not eligible.. 3	|___|

		Other .... 6 Don't know 8	
	YNOFOODA		
FS4	Does your household have a ration card for general in-kind food? **RCARD**	Yes .... 1 No .... 2 Don't know 8	|___| **IF ANSWER IS 1 OR 8 GO TO FS6**
FS5	Why do you not have a ration card? **YNORCARD**	Not given one at registration even if eligible .... 1 Lost card .... 2 Traded/sold card .... 3 Not registered.. 4 Registered but determined not eligible.. 5 Other .... 6 Don't know 8	|___| **GO TO FS7**
FS6	How many days did the food from the general in-kind food distribution from the [INSERT] cycle of [INSERT LAST CYCLE MONTH] last? 30 days Last distribution=19th-24th August **Lower limit=1** **Upper limit=98** **GFDLAST**	RECORD THE NUMBER OF DAYS IF KNOWN. RECORD 98 IF UNKNOWN.	|___|___|
FS7	Overall, to what extent are you currently able to meet the basic needs of your household? **EXTNEEDS**	All basic needs are met (100%)............... 1 More half basic needs are met (>50%)... 2 Half basic needs are met (50%) .... 3 Few basic needs are met (<50%) .... 4 Basic needs are not met (0%) .... 5 Don't know 8	|___| **IF ANSWER IS 1 OR 8 GO TO FS9**
FS8	Which of your household's basic needs can you not afford? SELECT ALL THAT APPLY.	Food..01 Water...02 Hygiene items, clothes, shoes ....03 Health costs (including medicines) ....04 Rent, shelter repair, household items (e.g. mattress, blanket, jerrycan), utilities and bills (e.g. electricity, water bills, phone calling credit) ....05 Firewood/fuel for cooking or heating...06 Assets for a livelihood activity (e.g. seeds, tools, farming, fishing, petty trade, etc.) ....07 Debt repayment ....08 Save some money or support other family members, relatives, friends ....09 Education (e.g. school fees, uniform,	|___|___|

	NEEDSNOT: FOODB / WATERB / HYGIENEB / HEALTHB / HOUSEB / FUELB / LIVELIB / DEBTSB / SAVINGB / EDUCAB / OTHERB / DKNB	books) .... 10 Other .... 96 Don't know 98	
FS9	What cooking fuel does your household usually use? **HHFUEL**	Wood .... 01 Charcoal .... 02 Kerosene .... 03 Biogas .... 04 Liquid petroleum gas (LPG) .... 05 Ethanol .... 06 Briquettes .... 07 Other .... 96 Don't know 98	|___|___|
FS10	Does your household receive cooking fuel assistance? **FUEL**	Yes .... 1 No .... 2 Don't know 8	|___| **IF ANSWER IS 2 or 8 GO TO FS12**
FS11	How many days did the fuel from the [INSERT] cycle of [INSERT LAST CYCLE MONTH] last? **Lower limit=1** **Upper limit=98** **FUELLAST**	RECORD THE NUMBER OF DAYS IF KNOWN (RECORD 98 IF UNKNOWN)	|___|___|
SECTION FS2: Coping Strategies and Reduced Coping Strategy Index (rCSI)		
Note	EXPLAIN TO THE RESPONDENT THAT THE QUESTIONS APPLY TO ALL HOUSEHOLD MEMBERS AND NOT ONLY TO HIM/HER.		
FS12	In the past 4 weeks, have you or anyone in your household needed to stop a child from attending school? **SCHOOL**	Yes .... 1 No .... 2 Don't know 8	|___|
FS13	In the past 4 weeks, have you or anyone in your household needed to sold any assets that would not have normally sold in order to buy food or basic goods (e.g. sold items such as a car, motorbike, plough, sewing machine, tools, seed stock, livestock, productive land)? **SELLLIV**	Yes .... 1 No .... 2 Don't know 8	|___|
FS14	In the past 4 weeks, have you or anyone in your household needed to ask for money from strangers (begging)? **BEG**	Yes .... 1 No .... 2 Don't know 8	|___|
FS15	In the past 4 weeks, have you or anyone in your household needed to move to a poorer quality shelter?	Yes .... 1 No .... 2 Don't know 8	|___|

	SHELTER		
FS16	In the past 4 weeks, have you or anyone in your household needed to send household members under the age of 16 to work? **CHILDLAB**	Yes .... 1 No .... 2 Don't know 8	|___|
FS17	In the past 4 weeks, have you or anyone in your household needed to send a member of the household to work far away? **WORKAWAY**	Yes .... 1 No .... 2 Don't know 8	|___|
FS18	In the past 4 weeks, have you or anyone in your household needed to engage in activities for money or items that you feel puts you or other members of your household at risk of harm (e.g. illegal activities like hunting, fishing, survival sex, drug dealing, early marriage, joining armed groups, etc.)? **RISKYACT**	Yes .... 1 No .... 2 Don't know 8	|___|
FS19	In the past 4 weeks, have you or anyone in your household needed to skip paying rent / debt repayments to meet other needs? **RENTDEBT**	Yes .... 1 No .... 2 Don't know 8	|___|
FS20	In the past 4 weeks, have you or anyone in your household needed to take out new loans or borrowed money? **LOANBRW**	Yes .... 1 No .... 2 Don't know 8	|___|
FS21	In the past 4 weeks, have you or anyone in your household needed to reduce expenditure hygiene items, water, baby items, health or education in order to meet household food needs? **REDUCE**	Yes .... 1 No .... 2 Don't know 8	|___|
Note	EXPLAIN TO THE RESPONDENT THAT THE QUESTIONS APPLY TO ALL HOUSEHOLD MEMBERS AND NOT ONLY TO HIM/HER.		
FS22	In the past 7 days, how many days did your household rely on less preferred and/or less expensive food due to lack of food or money to buy food? **Lower limit=0** **Upper limit=7** **LESSEXP**	RECORD THE NUMBER OF DAYS, FROM 0-7.	|___|
FS23	In the past 7 days, how many days did your household borrow food or rely on help from a	RECORD THE NUMBER OF DAYS, FROM 0-7.	|___|

	friend or relative due to lack of food or money to buy food? **Lower limit=0** **Upper limit=7** **BRW**		
FS24	In the past 7 days, how many days did your household reduce the number of meals eaten in a day due to lack of food or money to buy food? **Lower limit=0** **Upper limit=7** **LESSMEAL**	RECORD THE NUMBER OF DAYS, FROM 0-7.	|___|
FS25	In the past 7 days, how many days did your household limit portion sizes at mealtime due to lack of food or money to buy food? **Lower limit=0** **Upper limit=7** **REDMEAL**	RECORD THE NUMBER OF DAYS, FROM 0-7.	|___|
FS26	In the past 7 days, how many days did your household reduce consumption by adults so children could eat, due to lack of food or money to buy food? IN HOUSEHOLDS WIHTOUT CHILDREN, THE ANSWER SHOULD BE '0'. **Lower limit=0** **Upper limit=7** **REDADULT**	RECORD THE NUMBER OF DAYS, FROM 0-7.	|___|

SECTION FS3 : FCS and FCS-N

FS27	How many days over the last 7 days, did members of your household eat the following food items, prepared and/or consumed at home? READ THE LIST OF FOODS AND DO NOT PROBE. ONLY RECORD THE CONSUMPTION OF SIGNIFICANT QUANTITIES OF FOOD BY THE HOUSEHOLD. WRITE '0' IF NOT CONSUMED IN THE LAST 7 DAYS.	
		Number of days eaten in past 7 days
	1. In the past 7 days, how many days did your household eat any cereals for example **maize, corn soy blend, barley, buckwheat, millet, oats, rice, sorghum, etc.** or any foods made from these such as **bread, porridge, noodles, ugali, pasta**. Or any roots and tubers for example **green bananas, parsnip, taro, plantains, white potatoes, white yam, white cassava, white sweet potato, etc.** or any foods made from roots or tubers.	|___| **Lower limit=0** **Upper limit=7**

	CRLROTU	
	2. In the past 7 days, how many days did your household eat any pulses, nuts and /or seeds for example **beans, peas, lentils, peanuts, cashew nuts, pigeon peas, groundnuts, pumpkin seeds, etc.** or any foods made from these such as **peanut butter** **PULSE**	|___| **Lower limit=0** **Upper limit=7**
	3. In the past 7 days, how many days did your household eat any dairy products for example **fresh milk, sour milk, infant formula, cheese, yogurt** **MILK**	|___| **Lower limit=0** **Upper limit=7**
	4. In the past 7 days, how many days did your household eat any meat, fish and eggs for example **goat, beef, chicken, pork, organ meat, fish including canned tuna, eggs** **PROT**	|___| **IF ANSWER IS 0 GO TO QUESTION 5** **Lower limit=0** **Upper limit=7**
	4.1. In the past 7 days, how many days did your household eat any meat such as **beef, goat, lamb, mutton, pork, chicken, duck, agouti frogs, snakes, insects, etc.** **FLSHMT**	|___| **Lower limit=0** **Upper limit=7**
	4.2. In the past 7 days, how many days did your household eat any organ meat or blood-based food for example **liver, kidney, heart, etc.** **ORGMT**	|___| **Lower limit=0** **Upper limit=7**
	4.3. In the past 7 days, how many days did your household eat any fresh or dried fish or shellfish for example **tuna, sardines, shrimp, etc.** **FISHSF**	|___| **Lower limit=0** **Upper limit=7**
	4.4. In the past 7 days, how many days did your household eat any eggs for example **eggs from chicken, duck, guinea fowl, etc.** **EGGS**	|___| **Lower limit=0** **Upper limit=7**
	5. In the past 7 days, how many days did your household eat any vegetables and leaves for example **spinach, cassava leaves, onion, carrot, lettuce, cabbage, pepper, tomato, eggplant, zucchini, etc.** **VEGL**	|___| **IF ANSWER IS 0 GO TO QUESTION 6** **Lower limit=0** **Upper limit=7**
	5.1. In the past 7 days, how many days did your household eat **carrots, or pumpkin, or squash, or sweet**	|___|

	potato that are yellow or orange inside or red sweet pepper **VITAV**	Lower limit=0 Upper limit=7
	5.2. In the past 7 days, how many days did your household eat any dark green leafy vegetables for example **spinach, pumpkin leaves, cassava leaves, etc.** **GREENV**	|___| Lower limit=0 Upper limit=7
	6. In the past 7 days, how many days did your household eat any fruits for example **mango, pineapple, avocados, banana, coconut flesh, lemon, orange, watermelon, etc.** or 100% fruit juice made from these fruits **FRT**	|___| **IF ANSWER IS 0 GO TO QUESTION 7** Lower limit=0 Upper limit=7
	6.1. In the past 7 days, how many days did your household eat **mangoes (ripe, fresh and dried), ripe papaya, passion fruit (ripe)** **VITAFRT**	|___| Lower limit=0 Upper limit=7
	7. In the past 7 days, how many days did your household eat **red palm nut or red palm sauce or foods made with red palm oil** **PALMOIL**	|___| Lower limit=0 Upper limit=7
	8. In the past 7 days, how many days did your household eat any oils and fats added to food or used for cooking for example **vegetable/nut oil, butter, margarine, mayonnaise, palm oil** **FATS**	|___| Lower limit=0 Upper limit=7
	9. In the past 7 days, how many days did your household eat any sweets, sweetened soda or drinks, sugary foods for example **sugar, honey, syrup, soda drinks, chocolates, candies, cookies, sweet biscuits and cakes** **SWTS**	|___| Lower limit=0 Upper limit=7
	10. In the past 7 days, how many days did your household eat any spices, condiments and beverages for example **black pepper, salt, chilies, fish powder, ginger, herbs, magi cubes, ketchup, mustard, coffee, tea, milk/cream in small quantities, etc.** **SPICE**	|___| Lower limit=0 Upper limit=7
	11. In the past 7 days, how many days did your household eat **CSB+, CSB++ or Plumpy Nut'** **SPENUTF**	|___| Lower limit=0 Upper limit=7
FS28	How was this food acquired?	Purchase (using cash grants and/or with their own cash) ....01 |___|___|

			Own production (crops, livestock, fishing/hunting, gathering) ....02 Traded goods/services, barter ......03 Borrowed (loan/credit from traders) ....04 Receive as gift (from family relatives or friend/neighbor ....05 In-kind food assistance (GFD, BSFP) ....06 Other ....96 Don't know....................................98	
	FOODSOU			
ID9	Please take a GPS reading AVOID TAKING IT INSIDE THE HOUSE OR UNDER TREES (TO MAKE IT FASTER). **GPS**	|_____|
	Interviewer: I confirm that questionnaire is complete: yes/no	
	Supervisor: I confirm that questionnaire is complete.: yes/no MESSAGE TO INTERVIEWER: DO NOT ANSWER THIS QUESTION.	

MOSQUITO NET COVERAGE
1 questionnaire per household

THIS QUESTIONNAIRE IS TO BE ADMINISTERED TO THE HEAD OF THE HOUSEHOLD OR, IF THEY ARE ABSENT, ANOTHER ADULT MEMBER OF THE HOUSEHOLD.

No	QUESTION	ANSWER CODES	
SECTION IDENTIFICATION THIS SECTION IS TO BE COMPLETED IN ALL SELECTED HOUSEHOLDS. THIS MODULE IS MANDATORY TO COMPLETE.			
ID1	Camp Name **CAMPNAME**	|_____|	
ID3	Zone Code / Number **ZONE**		|___|___|
ID4	Village Code / Number **VILLAGE**		|___|___|
ID5	Date of interview (dd/mm/yyyy) **SURVDAT**	Day/Month/Year…..|___|___| /|___|___| / |___|___||___|___|	
ID6	Cluster Number **CLUSTER**		|___|___|
ID7	Team Number **TEAM**		|___|
ID8	Household Number **HH**		|___|___|

No	QUESTION	ANSWER CODES	
SECTION TN1: Details on the Household			
Note	THESE QUESTIONS NEED TO BE ASKED TO THE HEAD OF THE HOUSEHOLD OR, IF THEY ARE ABSENT, ANOTHER ADULT MEMBER OF THE HOUSEHOLD.		
TN1	Was consent given for conducting the interview? ENSURE THAT YOU HAVE INTRODUCED THE TEAM AND INFORMED THEM ABOUT THE INTERVIEW. **TNCONST**	Yes.. 1 No .... 2 Absent... 3	|___| **IF ANSWER IS 2 or 3 STOP HERE**
TN2	What is the total number of household numbers? RECORD NUMBER. **TNHHSIZE**		|___|___|
TN3	How many people live in this household and slept here last night? RECORD NUMBER.		|___|___|

	TOTHH		
TN4	How many children 0-59 months live in this household and slept here last night? RECORD NUMBER OR TYPE 0 IF THERE AREN'T ANY CHILDREN BELOW 5 YEARS. **TOTCH**		|__|__|
TN5	How many pregnant women live in this household and slept here last night? RECORD NUMBER OR TYPE 0 IF THERE AREN'T ANY PREGNANT WOMEN. **TOTPW**		|__|__|
TN6	Do you have mosquito bed nets in this household that can be used while sleeping? **MOSNETS**	Yes... 1 No .... 2 Don't know 8	|__| **IF ANSWER IS 2 OR 8 STOP NOW**
TN7	How many of these mosquito bed nets that can be used while sleeping does your household have? PROBE FOR ANY NETS CURRENTLY NOT IN USE THAT ARE BEING SAVED OR STORED (STILL IN THEIR PACKAGE). RECORD REPORTED NUMBER. **Lower limit=1** **Upper limit=10** **NUMNETS**		|__|__| Nets

SECTION TN2: Observation of Bed Nets
THIS SECTION IS TO BE COMPLETED FOR ALL BED NETS USED FOR SLEEPING REPORTED BY THE RESPONDENT.

Note	THESE QUESTIONS ARE ASKED FOR EACH BED NET USED FOR SLEEPING REPORTED BY THE RESPONDENT.		
TN8	Can the bed net be observed? ASK RESPONDENT TO SHOW YOU THE NET IN THE HOUSEHOLD. **NETSOBS**	Yes... 1 No 2	|__| **IF ANSWER IS 2 SKIP TO TN11**
TN9	What is the brand of the net observed? LOOK AT THE TAG ON THE NET. IF THERE IS NONE OR IS UNREADABLE, SELECT 'UNIDENTIFIABLE'/'DON'T KNOW.	DAWAPLUS .... 01 DURANET .... 02 INTERCEPTOR.................................... 03 LIFENET .... 04 MAGNET .... 05 MIRANET... 06 OLYSET .... 07 PANDANET .... 08 PERMANET.. 09	|__|__| **IF ANSWER IS 96 GO TO TN10**

		ROYALSENTRY .... 10 SAFENET.. 11 VEERALIN .... 12 YALE .... 13 YORKOOL .... 14 Other (please specify) .... 96 Unidentifiable/Don't know 98	
	NETBRAND		
TN10	If other, please specify the brand name of net **BRANDOTH**	|_____|	
	  TOTLN		|___|___|

<table>
<tr><td colspan="4">SECTION TN3: Survey of household members
THIS SECTION IS TO BE COMPLETED FOR EACH HH MEMBER WHO LIVES HERE AND SLEPT HERE LAST NIGHT.</td></tr>
<tr><td>Note</td><td colspan="3">THESE QUESTIONS NEED TO BE COMPLETED FOR EACH HH MEMBER WHO LIVES IN THE HOUSEHOLD AND SLEPT HERE LAST NIGHT.</td></tr>
<tr><td>TN11</td><td>ID of household member

HHMID</td><td></td><td>\|___\|</td></tr>
<tr><td>TN12</td><td>What is the sex of the household member?

HHMSEX</td><td>Male .... m
Female .... f</td><td>\|___\|</td></tr>
<tr><td>TN13</td><td>How old is the household member?

HHMAGE</td><td><5 years....................................1
≥5 years....................................2</td><td>\|___\|</td></tr>
<tr><td>TN14</td><td>Is the household member currently pregnant?

HHMPREG</td><td>Yes..1
No 2
Don't know ....8</td><td>\|___\|</td></tr>
<tr><td>TN15</td><td>Did the household member sleep under a net last night?

SLPNET</td><td>Yes..1
No…………………………………………… 2
Don't know…………………………………… 8</td><td>\|___\|</td></tr>
<tr><td>TN16</td><td>Select the brand of the net under which the household member slept

ASK THE RESPONDENT TO PHYSICALLY IDENTIFY WHICH OF THE OBSERVED NETS S/HE SLEPT UNDER.

SLPBRAND</td><td>RESPONSES FROM TN9 SHOWN HERE. EXAMPLE:

NETBRAND1-PERMANET
NETBRAND2-PERMANET
NETBRAND3-Unidentifiable/Don't know
NETBRAND4- OLYSET</td><td>\|___\|___\|</td></tr>
<tr><td>ID9</td><td>Please take a GPS reading

AVOID TAKING IT INSIDE THE HOUSE OR UNDER TREES (TO MAKE IT FASTER).

GPS</td><td>\|_____\|</td><td></td></tr>
<tr><td>Note</td><td>Error messages</td><td></td><td></td></tr>
</table>

	The total number of children in the household declared at the beginning of the form (TN4) does not match the number of children you have entered in the group (TN14). Please review to ensure they match.
	The total number of pregnant woman in the household you declared at the beginning of the form (TN5) does not match the number of pregnant woman you have entered (TN15). Please review to ensure they match.
	Interviewer: I confirm that questionnaire is complete: yes/no
	Supervisor: I confirm that questionnaire is complete.: yes/no MESSAGE TO INTERVIEWER: DO NOT ANSWER THIS QUESTION.

	Summary		
	Total household members	**Total <5**	**Total Pregnant**
Slept under a net of any type	**TN17** |___|___| **TOTSLPNT**	**TN19** |___|___| **TOTCHNT**	**TN21** |___|___| **TOTPWNT**
Slept under an LLIN	**TN18** |___|___| **TOTSLPLN**	**TN20** |___|___| **TOTCHLN**	**TN22** |___|___| **TOTPWLN**

WASH
1 questionnaire per household

THIS QUESTIONNAIRE IS TO BE ADMINISTERED TO THE HEAD OF THE HOUSEHOLD OR, IF THEY ARE ABSENT, ANOTHER ADULT MEMBER OF THE HOUSEHOLD.

No	QUESTION	ANSWER CODES	
SECTION IDENTIFICATION THIS SECTION IS TO BE COMPLETED IN ALL SELECTED HOUSEHOLDS. THIS MODULE IS MANDATORY TO COMPLETE.			
ID1	Camp Name **CAMPNAME**	|_____|	
ID3	Zone Code / Number **ZONE**		|___|___|
ID4	Village Code / Number **VILLAGE**		|___|___|
ID5	Date of interview (dd/mm/yyyy) **SURVDAT**	Day/Month/Year…..|___|___| /|___|___| / |___|___||___|___|	
ID6	Cluster Number **CLUSTER**		|___|___|
ID7	Team Number **TEAM**		|___|
ID8	Household Number **HH**		|___|___|

No	QUESTION	ANSWER CODES	
SECTION WS1: WASH interview questions			
Note	THESE QUESTIONS NEED TO BE ASKED TO THE HEAD OF THE HOUSEHOLD OR, IF THEY ARE ABSENT, ANOTHER ADULT MEMBER OF THE HOUSEHOLD.		
WS1	Was consent given for conducting the interview? ENSURE THAT YOU HAVE INTRODUCED THE TEAM AND INFORMED THEM ABOUT THE INTERVIEW. **WSCONST**	Yes .... 1 No .... 2 Absent 3	|___| **IF ANSWER IS 2 or 3 STOP HERE**
WS2	What is the total number of household members? RECORD NUMBER. **HHSIZE**		|___|___|
WS3	What is the principal source of drinking water for members of your household?	Public tap/standpipe .... 01 Handpumps/boreholes 02	|___|___|

	SELECT ONE BUT DO NOT PROMPT WITH RESPONSES. CONSIDER DRINKING WATER ONLY. **SOURCE**	Water seller/kiosks................................ 03 Piped connection to house (or neighbour's house)............................. 04 Protected spring .... 05 Bottled water, water sachets .... 06 Tanker trucks....................................... 07 Unprotected hand-dug well .... 08 Surface water (lake, pond, dam, river). 09 Unprotected spring .... 10 Rain water collection........................... 11 Other .... 96 Don't know 98	
WS4	Where do you and your household members (excluding children under 5) usually go to defecate? SELECT ONE BUT DO NOT PROMPT WITH RESPONSES. **TOILET**	Household latrine................................... 1 Communal latrine................................... 2 Open defecation..................................... 3 Plastic bag .... 4 Bucket toilet .... 5 Other .... 6 Don't know 8	|___|
SECTION WS2: WASH observation questions			
Note	EXPLAIN TO THE RESPONDENT THAT THESE QUESTIONS RELATE TO WATER USED FOR DOMESTIC PURPOSES. THIS INCLUDES: DRINKING, COOKING/FOOD PREPARATION, BATHING, AND PERSONAL HYGIENE PLUS LAUNDRY AND OTHER HOUSEHOLD CLEANING. EXCLUDED FROM THIS ARE ANIMAL USE, BRICKMAKING OR OTHER INDUSTRY, OR AGRICULTURE/GARDENING (NON DOMESTIC).		
WS5	Please show me the soap you have in the household. **SOAP**	Presented within one minute................. 1 Not presented within one minute/no soap 2	|___|
WS6	How many containers do you have to <u>collect</u> or <u>store</u> water for domestic purposes for your house? Please show me all of them one by one RECORD ONE BY ONE. CHECK FOR ALL OF THE CONTAINERS. DO NOT INCLUDE BROKEN, LEAKING, OR NON-FUNCTIONAL CONTAINERS. **Lower limit=0** **Upper limit=25** **CONTAINER**		|___|___|
WS7	What is the type of container? **TYPE**	Jerrycan .... 01 Bucket... 02 Basin .... 03 Bottle.. 04 Saucepan .... 05 Drums.. 06 Other 96	|___|___|
WS8	What is the volume of container?		|___|___|___| · |___|

	ENTER THE AMOUNT OF LITRES THIS CONTAINER CAN HOLD TO THE NEAREST 0.5L **Lower limit=0.5L** **Upper limit=300.0L** **LITER**		litres
WS9	Is the container covered? **PROTECT**	Yes .... 1 No .... 2 Don't know 8	|___|
WS10	Number of journeys made with container for the collection of water for domestic purposes yesterday? This includes all water collected morning, afternoon and evening. PLEASE ENTER '0' IF HOUSEHOLD DID NOT FILL IT YESTERDAY. **Lower limit=0** **Upper limit=10** **NUMTRIPS**		|___|___| journeys
ID9	Please take a GPS reading AVOID TAKING IT INSIDE THE HOUSE OR UNDER TREES (TO MAKE IT FASTER). **GPS**	|_____|	
	Interviewer: I confirm that questionnaire is complete: yes/no		
	Supervisor: I confirm that questionnaire is complete.: yes/no MESSAGE TO INTERVIEWER: DO NOT ANSWER THIS QUESTION.		

CHILDREN 0-59 ANTHROPOMETRY, HEALTH, IYCF & ANAEMIA
1 questionnaire per child 0-59 months

THIS QUESTIONNAIRE IS TO BE ADMINISTERED TO ALL CHILDREN BETWEEN 0-59 MONTHS IF THE IYCF MODULE IS INCLUDED

No	QUESTION	ANSWER CODES	
SECTION IDENTIFICATION THIS SECTION IS TO BE COMPLETED IN ALL SELECTED HOUSEHOLDS. THIS MODULE IS MANDATORY TO COMPLETE.			
ID1	Camp Name **CAMPNAME**	|_____|	
ID3	Zone Code / Number **ZONE**		|___|___|
ID4	Village Code / Number **VILLAGE**		|___|___|
ID5	Date of interview (dd/mm/yyyy) **SURVDAT**	Day/Month/Year…..|___|___| /|___|___| / |___|___||___|___|	
ID6	Cluster Number **CLUSTER**		|___|___|
ID7	Team Number **TEAM**		|___|
ID8	Household Number **HH**		|___|___|

No	QUESTION	ANSWER CODES	
SECTION CHILD1: Details of the Child 0-59 months THIS SECTION IS TO BE ADMINISTERED TO ALL CHILDREN IN THE SELECTED HOUSEHOLDS BETWEEN 0-59 MONTHS.			
Note	THESE QUESTIONS NEED TO BE ASKED TO THE MOTHER OR THE MAIN CAREGIVER.		
CH1	ID Number **ID**		|___|___|
CH2	Was consent given for conducting the interview and the measurements? ENSURE THAT YOU HAVE INTRODUCED THE TEAM AND INFORMED THEM ABOUT THE INTERVIEW AND THE MEASUREMENTS. **CHCONST**	Yes...1 No 2	|___| **IF ANSWER IS 2 STOP HERE**
CH3	Name of the child ONLY WRITE FIRST NAME. **CHNAME**	|_____|	

CH4	Sex of [NAME OF CHILD]? **SEX**	Male .... m Female .... f	|___|
CH5	Do you have an official age documentation for [NAME OF CHILD]? **XDOBK**	Yes.. 1 No 2	|___| **IF ANSWER IS 2 GO TO CH7**
CH6	[NAME OF CHILD]'s date of birth THE EXACT BIRTH DATE SHOULD ONLY BE TAKEN FROM AN AGE DOCUMENTATION SHOWING DAY, MONTH AND YEAR OF BIRTH. FOR PAPER-BASED SURVEYS: RECORD FROM AGE DOCUMENTATION. LEAVE BLANK IF NO VALID AGE DOCUMENTATION. **BIRTHDAT**	Day/Month/Year…..|___|___| /|___|___| / ___|___||___|___|	
CH7	Age of [NAME OF CHILD] in months **Lower limit=0 months** **Upper limit=59.99 months** **MONTHS**	SINCE NO AGE DOCUMENTATION IS AVAILABLE, ESTIMATE AGE USING A LOCAL EVENTS CALENDAR.	|___|___|months
Note	Verify that the child is ${MONTHS} months old. Remember, if they are older than 59 months; they are not eligible for inclusion and you should stop here.		

SECTION CHILD2: Nutrition, Health and Anaemia Status of the Child 6-59 months
THIS SECTION IS TO BE ADMINISTERED TO ALL CHILDREN BETWEEN 6 AND 59 MONTHS OF AGE.

CH8	Is [NAME OF CHILD] currently present in the household? **CHPRES**	Yes.. 1 No 2	|___| **IF ANSWER IS 2 GO TO CH15**
CH9	[NAME OF CHILD]'s weight in kilograms (±0.1kg) DON'T FORGET THE DECIMAL. **Lower limit=3.0kg** **Upper limit=31.0kg** **WEIGHT**		|___|___|. |___| kg
CH10	Was the [NAME OF CHILD] dressed with clothes for the weight measurement? **CLOTHES**	Yes.. y No .... n	|___|
CH11	[NAME OF CHILD]'s length/height in cm (±0.1cm) DON'T FORGET THE DECIMAL. **Lower limit=54.0cm** **Upper limit=124.0cm**		|___|___|___|. |___| cm

	HEIGHT		
CH12	Was [NAME OF CHILD] measured lying down or standing up? **MEASURE**	Child lying down ....l Child standing up ....h	|___|
CH13	Clinical examination: Does the [NAME OF CHILD] present bilateral pitting oedema? **EDEMA**	Yes... y No .... n	|___|
CH14	[NAME OF CHILD]'s middle upper arm circumference (MUAC) in cm (±0.1cm) MEASURE LEFT ARM. DON'T FORGET THE DECIMAL. **Lower limit=7.0cm** **Upper limit=23.5cm** **MUAC**		|___|___|. |___| cm
CH15	Is [NAME OF CHILD] currently being treated in [NAME OF NUTRITION PROGRAMMES] for malnutrition? SHOW CSB++ SACHET AND PLUMPY NUT **ENROL**	Yes, SFP ....1 Yes, TFP (OTP/SC)................................2 No ....3 Don't know 8	|___|
CH16	Is [NAME OF CHILD] currently enrolled in the BSFP? SHOW CSB++ SACHET **BSFPCSB**	Yes...1 No ....2 Don't know 8	|___|
CH17	Is [NAME OF CHILD] currently receiving MNPs sachets? SHOW MNPs SACHET **BSFPMNP**	Yes...1 No ....2 Don't know 8	
CH18	Has [NAME OF CHILD] been vaccinated against measles? CHECK VACCINATION CARD (ONLY FOR CHILDREN OLDER THAN 9 MONTHS). **MEASLES**	Yes, card......................................1 Yes, recall ....2 No or don't know 3	|___|
CH19	Has [NAME OF CHILD] received a vitamin A capsule in the past six months? CHECK VACCINATION/HEALTH CARD AND SHOW CAPSULE.	Yes, card......................................1 Yes, recall ....2 No or don't know 3	|___|

	VITA		
CH20	Was [NAME OF CHILD] given any drug for intestinal worms in the last six months? SHOW TABLET OF MEBENDAZOLE. **DEWORM**	Yes..1 No ....2 Don't know 8	|___|
CH21	Has [NAME OF CHILD] had diarrhoea in the past 2 weeks? CASE DEFINITION: THREE OR MORE LOOSE OR LIQUID STOOLS DURING 24 HOURS. **DIAR**	Yes..1 No ....2 Don't know 8	|___| **IF ANSWER IS 2 OR 8 GO TO CH24**
CH22	Did you give ORS sachets to [NAME OF CHILD] when s/he had diarrhoea? SHOW ORS SACHET. **DIARORS**	Yes..1 No ....2 Don't know 8	|___|
CH23	Did you give zinc tablets or syrup to [NAME OF CHILD] when s/he had diarrhoea? SHOW ZINC TABLET OR SYRUP. **DIARZINC**	Yes..1 No ....2 Don't know 8	|___|
CH24	Units of measurement of your HemoCue device (g/dL or g/L) **HBUNIT**	g/dL.................................... gdl g/L .... gl	|___|___|___|
CH25	[NAME OF CHILD]'s haemoglobin (Hb) in g/dL (±0.1 g/dL) or in g/L (±1g/L) APPLICABLE ONLY IF HB MEASURED IN G/DL: DON'T FORGET THE DECIMAL. **Lower limit=2.0 g/dL** **Upper limit=22.0 g/dL** **CHHB**		|___|___|. |___|g/dL OR |___|___|___|g/L
CH26	**Automatic referral for child with signs of acute malnutrition who is not already enrolled in a nutrition programme:** - Child needs to be referred for moderate acute malnutrition (if MUAC<12.5 cm and MUAC≥11.5 cm and/or WHZ<-2 and WHZ≥-3 and if ENROL equals to 3 or 8). - Child needs to be referred for severe acute malnutrition (if MUAC<11.5 cm and/or WHZ<-3 and/or bilateral pitting oedema is yes and if ENROL equals to 3 or 8). FILL OUT A REFERRAL FORM: ONE SLIP IS FOR THE MOTHER/CAREGIVER AND THE OTHER IS FOR THE HEALTH FACILITY. **REFMAM/REFSAM**		
CH27	**Automatic referral for child who has severe anaemia:**		

	• Child needs to be referred for severe anaemia (if Hb<7.0g/dL). FILL OUT A REFERRAL FORM: ONE SLIP IS FOR THE MOTHER/CAREGIVER AND THE OTHER IS FOR THE HEALTH FACILITY. **REFANEM**

SECTION IYCF1: Breastfeeding Status of the Child 0-23 months (part 1)
THIS SECTION IS TO BE ADMINISTERED TO THE MOTHER OR THE MAIN CAREGIVER WHO IS RESPONSIBLE FOR FEEDING THE CHILD AND THE CHILD SHOULD BE BETWEEN 0 AND 23 MONTHS OF AGE.

Note	THESE QUESTIONS NEED TO BE ASKED TO THE MOTHER OR THE MAIN CAREGIVER WHO IS RESPONSIBLE FOR FEEDING THE CHILD.		
IF1	Has [NAME OF CHILD] ever been breastfed? **EVERBF**	Yes..1 No ....2 Don't know 8	|___| **IF ANSWER IS 2 or 8 GO TO IF4**
IF2	How long after birth did you first put [NAME OF CHILD] to the breast? **INITBF**	Less than one hour ....1 Between 1 and 23 hours......................2 More than 24 hours.............................3 Don't know 8	|___|
IF3	Was [NAME OF CHILD] breastfed yesterday during the day or at night? **YESTBF**	Yes..1 No ....2 Don't know 8	|___|

SECTION IYCF2: Breastfeeding Status of the Child 0-23 months (part 2)
THIS SECTION IS TO BE ADMINISTERED TO THE MOTHER OR THE MAIN CAREGIVER WHO IS RESPONSIBLE FOR FEEDING THE CHILD AND THE CHILD SHOULD BE BETWEEN 0 AND 23 MONTHS OF AGE.

IF4	Now I would like to ask you about liquids that [NAME OF CHILD] may have had yesterday during the day and at night. I am interested in whether your child had the item even if it was combined with other foods. Yesterday, during the day or at night, did [NAME] receive any of the following? ASK ABOUT EVERY LIQUID. EVERY QUESTION MUST HAVE AN ANSWER. IF ITEM WAS GIVEN, SELECT 'YES'. IF ITEM WAS NOT GIVEN, SELECT 'NO'. IF CAREGIVER DOES NOT KNOW, SELECT 'DON'T KNOW'. Yes No DK	
	4A. Plain water **WATER**	4A.........................1 2 8
	4B. Infant formula, for example **Lactogen, NAN** **INFORM**	4B.........................1 2 8
	4C. Milk such as tinned, powdered, or fresh animal milk, for example **Nido, Cowbell, Tanga Fresh, Al-mudhish, first choice** **MILK**	4C.........................1 2 8
	4D. Juice or juice drinks, for example **Ceres, Azam, Mo juice**, **etc.** **JUICE**	4D.........................1 2 8
	4E. Clear broth	

	BROTH	4E………………………1	2	8	
	4F. Sour milk or yogurt, for example **Asas, Tanga Fresh, Serengeti, Dar Fresh, Mara Milk** **YOGURT**	4F………………………1	2	8	
	4G. <u>Thin</u> porridge, for example made with maize, sorghum, millet, cassava or finger millet **THINPOR**	4G………………………1	2	8	
	4H. Tea or coffee with milk **WHTEACOF**	4H………………………1	2	8	
	4I. Any other water-based liquids, for example sodas **Azam Cola, Pepsi, Twist, Coca cola**, other sweet drinks, herbal infusion, gripe water, **clear tea with no milk, black coffee**, ritual fluids (**togwa**) **WATLQD**	4I…………………………1	2	8	
IF5	Yesterday, during the day or at night, did [NAME] eat solid or semi-solid (soft, mushy) food? **FOOD**	Yes…………………………………………1 No……………………………………… 2 Don't know……………………………… 8			|___|

SECTION IYCF3: Bottle Feeding for the Child 0-23 months	

IF6	Did [NAME OF CHILD] drink anything from a bottle with a nipple yesterday during the day or at night? **BOTTLE**	Yes…………………………………………1 No……………………………………… 2 Don't know……………………………… 8	|___|

SECTION IYCF4: Iron-fortified or Iron-rich Foods for the Child 6-23 months	

IF7	Now I would like to ask you about some particular foods [NAME OF CHILD] may eat. I am interested in whether your child had the item even if it was combined with other foods. Yesterday, during the day or at night, did [NAME] consume any of the following? ASK ABOUT EVERY ITEM. EVERY QUESTION MUST HAVE AN ANSWER. IF ITEM WAS GIVEN, SELECT 'YES'. IF ITEM WAS NOT GIVEN, SELECT 'NO'. IF CAREGIVER DOES NOT KNOW, SELECT 'DON'T KNOW'.				
			Yes	No	DK
	7A. Any meat such as beef, pork, lamb, goat, chicken, liver, kidney, heart or other organ meats, fresh or dried fish, sardines, seafood, insects, etc. **FLESHFD**	7A…………………………1	2	8	
	7B. CSB+	7B…………………………1	2	8	

	FBF	
	7C. CSB++ **FBFSUPER**	7C……………………………………1　2　8
	7D. Plumpy'Nut® SHOW SACHET. **RUTF**	7D……………………………………1　2　8
	7G. Iron fortified infant formula, for example **Lactogen, NAN** **INFORMFE**	7G………..……………………..1　2　8
	7H. Iron fortified solid, semi-solid or soft foods designed specifically for infants and young children, for example **Cerelac, Weetabix** **FOODFE**	7H…………………………….....1　2　8
IF8	Yesterday, during the day or at night, did [NAME] consume any food to which you added a MNPs sachet like this? SHOW MICRONUTRIENT POWDER SACHET. **MNP**	Yes……………………………………………………1 No……………………………………………… 2 Don't know…………………………………….. 8 　　｜＿＿｜
ID9	Please take a GPS reading AVOID TAKING IT INSIDE THE HOUSE OR UNDER TREES (TO MAKE IT FASTER). **GPS**	｜＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿｜
	Interviewer: I confirm that questionnaire is complete: yes/no	
	Supervisor: I confirm that questionnaire is complete.: yes/no MESSAGE TO INTERVIEWER: DO NOT ANSWER THIS QUESTION.	

WOMEN ANTHROPOMETRY, HEALTH & ANAEMIA
1 questionnaire per woman 15-49 years

THIS QUESTIONNAIRE IS TO BE ADMINISTERED TO ALL ELIGIBLE WOMEN AGED BETWEEN 15 AND 49 YEARS IN THE SELECTED HOUSEHOLD.

No	QUESTION	ANSWER CODES	
SECTION IDENTIFICATION THIS SECTION IS TO BE COMPLETED IN ALL SELECTED HOUSEHOLDS. THIS MODULE IS MANDATORY TO COMPLETE.			
ID1	Camp Name **CAMPNAME**	|_____|	
ID3	Zone Code / Number **ZONE**		|___|___|
ID4	Village Code / Number **VILLAGE**		|___|___|
ID5	Date of interview (dd/mm/yyyy) **SURVDAT**	Day/Month/Year…..|___|___| /|___|___| / |___|___||___|___|	
ID6	Cluster Number **CLUSTER**		|___|___|
ID7	Team Number **TEAM**		|___|
ID8	Household Number **HH**		|___|___|

No	QUESTION	ANSWER CODES	
SECTION WM1: Details of the Woman 15-49 years THIS SECTION IS TO BE ADMINISTERED TO ALL ELIGIBLE WOMEN AGED BETWEEN 15 AND 49 YEARS IN THE SELECTED HOUSEHOLDS.			
Note	THESE QUESTIONS NEED TO BE ASKED TO EACH ELIGIBLE WOMAN.		
WM1	ID Number **WMID**		|___|
WM2	Was consent given for conducting the interview and the measurements? ENSURE THAT YOU HAVE INTRODUCED THE TEAM AND INFORMED THEM ABOUT THE INTERVIEW AND THE MEASUREMENTS. **WMCONST**	Yes .... 1 No .... 2 Absent.. 3	|___| **IF ANSWER IS 2 OR 3 STOP HERE**
WM3	Name of the woman	|_____|	

	ONLY WRITE FIRST NAME. **WMNAME**		
WM4	Age of [NAME OF WOMAN] in years ONLY WOMEN BETWEEN 15 AND 49 ARE BEING INTERVIEWED. **Lower limit=15 years** **Upper limit=49 years** **WMAGE**		|___|___|years

SECTION WM2: Anthropometry, Physiological and Anaemia Status of the Woman 15-49 years
THIS SECTION IS TO BE ADMINISTERED TO ALL ELIGIBLE WOMEN BETWEEN 15 AND 49 YEARS IN THE SELECTED HOUSEHOLD.

WM5	Are you pregnant? **PREGNANT**	Yes .... 1 No .... 2 Don't know 8	|___| **IF ANSWER IS 2 OR 8 GO TO WM8**
WM6	Are you currently <u>enrolled</u> in the ANC programme? **ANC**	Yes .... 1 No .... 2 Don't know 8	|___|
WM7	Are you currently <u>receiving</u> iron-folate pills? SHOW PILL. **FEREC**	Yes .... 1 No .... 2 Don't know 8	|___|
WM8	Are you currently breastfeeding? **LACTAT**	Yes .... 1 No .... 2 Don't know 8	|___| **IF ANSWER IS 2 OR 8 GO TO WM11**
WM9	Is the child you are breastfeeding younger than 6 months old? **LACTATU6**	Yes .... 1 No .... 2 Don't know 8	|___| **IF ANSWER IS 2 OR 8 GO TO WM11**
WM10	In the first two months after delivery, did you receive a vitamin A supplementation? SHOW CAPSULE. **WMVITA**	Yes .... 1 No .... 2 Don't know 8	|___|
WM11	Are you currently enrolled in the BSFP? SHOW CSB++ SACHET. **WMBSFP**	Yes .... 1 No .... 2 Don't know 8	|___|
WM12	[NAME OF WOMAN]'s MUAC in cm (±0.1cm)		|___|___|.|___| cm

	MEASURE LEFT ARM. DON'T FORGET THE DECIMAL. **Lower limit=16.0 cm** **Upper limit=50.0 cm** **WMMUAC**		
WM13	Units of measurement of your HemoCue device (g/dL or g/L) **WMHBUNIT**	g/dL.. gdl g/L... gl	|___|
WM14	[NAME OF WOMAN]'s haemoglobin in g/dL (±0.1 g/dL) or in g/L (±1g/L) APPLICABLE ONLY IF HB MEASURED IN G/DL: DON'T FORGET THE DECIMAL. **Lower limit=2.0 g/gL** **Upper limit=22.0 g/dL** **WMHB**		|___|___|. |___| g/dL OR |___|___|___| g/L
ID9	Please take a GPS reading AVOID TAKING IT INSIDE THE HOUSE OR UNDER TREES (TO MAKE IT FASTER). **GPS**	|_____|	
WM15	**Automatic referral for woman who has severe anaemia:** Woman needs to be referred for severe anaemia (if Hb<8.0g/dL). FILL OUT A REFERRAL FORM: ONE SLIP IS FOR THE WOMAN AND THE OTHER IS FOR THE HEALTH FACILITY. **WMREFAN**		
	Interviewer: I confirm that questionnaire is complete: yes/no		
	Supervisor: I confirm that questionnaire is complete.: yes/no MESSAGE TO INTERVIEWER: DO NOT ANSWER THIS QUESTION.		

Appendix 5: Local event calendar used to estimate age – Sept 2019

	Calendar of Events 2014-2019 – SENS Surveys, Refugee Camps, Tanzania – Data Collection: September				
Season & Agricultural calendar	Religious Holidays/National Holidays	National Events	Regional / Local Events	Month / Year	Age (month)
Beginning long rain		Primary School National Exam		September 2019	0
Dry season	Nane Nane day: 8th Eid El Adha: 12th			August 2019	1
Dry season Start cotton selling	Saba Saba day: 7th		Rwandan independence and Liberation day	July 2019	2
Dry season Cotton harvesting	End of Ramadan: 3rd WRD: 20th	Vitamin A/Deworming Mass campaign		June 2019	3
End long rain Cotton harvesting	Workers day: 1st Beginning of Ramadan: 5th		Gatumba events	May 2019	4
End long rain	Sheikh Abeid Amani Karume day: 7th Easter: 21st Union day: 26th		Genocide	April 2019	5
Long rain	Women's day: 8th			March 2019	6
Long rain	Valentine's day: 14th		Heroes Day on 1st Rentree scolaire: 2nd	February 2019	7
Long rain	New year's day: 1st Zanzibar Revolution: 12th			January 2019	8
Long rain Cotton planting	HIV/AIDS day: 1st Independence day: 9th Christmas: 25th Boxing day: 26th	Vitamin A/Deworming Mass campaign	Umunsi w'abamugaye, Iminsi 16 yo kurwanya ihohoterwa	December 2018	9
Long rain Cotton planting	Mawlid: 20th			November 2018	10
Beginning long rain Cotton planting	Nyerere Day: 14th			October 2018	11
Beginning long rain		Primary School National Exam		September 2018	12
Dry season	Nane Nane day: 8th Eid El Adha: 21st		Rwandan independence and Liberation day	August 2018	13
Dry season Start cotton selling	Saba Saba day: 7th			July 2018	14
Dry season Cotton harvesting	End of Ramadan: 15th WRD: 20th	Vitamin A/Deworming Mass campaign	Gatumba events	June 2018	15
End long rain Cotton harvesting	Workers day: 1st Beginning of Ramadan: 16th		Genocide	May 2018	16
End long rain	Easter: 1st Sheikh Abeid Amani Karume day: 7th Union day: 26th			April 2018	17
Long rain			Heroes Day on 1st Rentree scolaire: 2nd	March 2018	18
Long rain	Valentine's day: 14th			February 2018	19
Long rain	New year's day: 1st Zanzibar Revolution: 12th		Umunsi w'abamugaye, Iminsi 16 yo kurwanya ihohoterwa	January 2018	20
Long rain Cotton planting	HIV/AIDS day: 1st Independence day: 9th Christmas: 25th Boxing day: 26th	Vitamin A/Deworming Mass campaign		December 2017	21
Long rain Cotton planting	Mawlid: 30th			November 2017	22
Beginning long rain Cotton planting	Nyerere Day: 14th			October 2017	23
Beginning long rain		Primary School National Exam		September 2017	24
Dry season	Nane Nane day: 8th Eid El Adha:31st		Rwandan independence and Liberation day	August 2017	25
Dry season Start cotton selling	Saba Saba day: 7th			July 2017	26
Dry season Cotton harvesting	End of Ramadan:24th WRD: 20th	Vitamin A/Deworming Mass campaign	Gatumba events	June 2017	27
End long rain Cotton harvesting	Workers day: 1st Beginning of Ramadan: 26th		Genocide	May 2017	28
End long rain	Sheikh Abeid Amani Karume day: 7th Easter: 16th Union day: 26th			April 2017	29

Long rain			Heroes Day on 1st Rentree scolaire: 2nd	March 2017	30
Long rain	Valentine's day: 14th			February 2017	31
Long rain	New year's day: 1st Zanzibar Revolution: 12th		Umunsi w'abamugaye, Iminsi 16 yo kurwanya ihohoterwa	January 2017	32
Long rain Cotton planting	HIV/AIDS day: 1st Independence day: 9th Mwalid: 11th Christmas: 25th Boxing day: 26th	Vitamin A/Deworming Mass campaign		December 2016	33
Long rain Cotton planting				November 2016	34
Beginning long rain Cotton planting	Nyerere Day: 14th			October 2016	35
Beginning long rain	Eid El Adha:12th	Primary School National Exam		September 2016	36
Dry season	Nane Nane day: 8th		Rwandan independence and Liberation day	August 2016	37
Dry season Start cotton selling	End of Ramadan: 5th Saba Saba day: 7th			July 2016	38
Dry season Cotton harvesting	Beginning of Ramadan: 6th WRD: 20th	Vitamin A/Deworming Mass campaign	Gatumba events	June 2016	39
End long rain Cotton harvesting	Workers day: 1st		Genocide	May 2016	40
End long rain	Sheikh Abeid Amani Karume day: 7th Union day: 26th			April 2016	41
Long rain	Easter: 27th		Heroes Day on 1st Rentree scolaire: 2nd	March 2016	42
Long rain	Nilad-un-Nabi: 4th Valentine's day: 14th			February 2016	43
Long rain	New year's day: 1st Zanzibar Revolution: 12th		Umunsi w'abamugaye, Iminsi 16 yo kurwanya ihohoterwa	January 2016	44
Long rain Cotton planting	HIV/AIDS day: 1st Independence day: 9th Christmas: 25th Boxing day: 26th	Vitamin A/Deworming Mass campaign Swearing ceremony		December 2015	45
Long rain Cotton planting				November 2015	46
Beginning long rain Cotton planting	Nyerere Day: 14th	Presidential Elections		October 2015	47
Beginning long rain	Eid El Adha:23th	Primary School National Exam		September 2015	48
Dry season	Nane Nane day: 8th		Rwandan independence and Liberation day	August 2015	49
Dry season Start cotton selling	Saba Saba day: 7th End of Ramadan: 16th			July 2015	50
Dry season Cotton harvesting	Beginning of Ramadan: 17th WRD: 20th	Vitamin A/Deworming Mass campaign	Gatumba events	June 2015	51
End long rain Cotton harvesting	Workers day: 1st		Genocide	May 2015	52
End long rain	Sheikh Abeid Amani Easter: 5th Karume day: 7th Union day: 26th			April 2015	53
Long rain			Heroes Day on 1st Rentree scolaire: 2nd	March 2015	54
Long rain	Valentine's day: 14th			February 2015	55
Long rain	New year's day: 1st Mawlid: 2nd Zanzibar Revolution: 12th		Umunsi w'abamugaye, Iminsi 16 yo kurwanya ihohoterwa	January 2015	56
Long rain Cotton planting	HIV/AIDS day: 1st Independence day: 9th Christmas: 25th Boxing day: 26th	Vitamin A/Deworming Mass campaign		December 2014	57
Long rain Cotton planting				November 2014	58
Beginning long rain Cotton planting	Eid El Adha:4th Nyerere Day: 14th			October 2014	59
Beginning long rain		Primary School National Exam		September 2014	60

Appendix 6: Local event calendar used to estimate age – Oct 2019

Season & Agricultural calendar	Religious Holidays/National Holidays	National Events	Regional / Local Events	Month / Year	Age (month)
Beginning long rain Cotton planting	Nyerere Day: 14th			October 2019	0
Beginning long rain		Primary School National Exam		September 2019	1
Dry season	Nane Nane day: 8th Eid El Adha: 12th			August 2019	2
Dry season Start cotton selling	Saba Saba day: 7th		Rwandan independence and Liberation day	July 2019	3
Dry season Cotton harvesting	End of Ramadan: 3rd WRD: 20th	Vitamin A/Deworming Mass campaign		June 2019	4
End long rain Cotton harvesting	Workers day: 1st Beginning of Ramadan: 5th		Gatumba events	May 2019	5
End long rain	Sheikh Abeid Amani Karume day: 7th Easter: 21st Union day: 26th		Genocide	April 2019	6
Long rain	Women's day: 8th			March 2019	7
Long rain	Valentine's day: 14th		Heroes Day :1st Rentree scolaire: 2nd	February 2019	8
Long rain	New year's day: 1st Zanzibar Revolution: 12th			January 2019	9
Long rain Cotton planting	HIV/AIDS day: 1st Independence day: 9th Christmas: 25th Boxing day: 26th	Vitamin A/Deworming Mass campaign	Umunsi w'abamugaye, Iminsi 16 yo kurwanya ihohoterwa	December 2018	10
Long rain Cotton planting	Mawlid: 20th			November 2018	11
Beginning long rain Cotton planting	Nyerere Day: 14th			October 2018	12
Beginning long rain		Primary School National Exam		September 2018	13
Dry season	Nane Nane day: 8th Eid El Adha: 21st			August 2018	14
Dry season Start cotton selling	Saba Saba day: 7th		Rwandan independence and Liberation day	July 2018	15
Dry season Cotton harvesting	End of Ramadan: 15th WRD: 20th	Vitamin A/Deworming Mass campaign		June 2018	16
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Long rain	New year's day: 1st Zanzibar Revolution: 12th			January 2018	21
Long rain Cotton planting	HIV/AIDS day: 1st Independence day: 9th Christmas: 25th Boxing day: 26th	Vitamin A/Deworming Mass campaign	Umunsi w'abamugaye, Iminsi 16 yo kurwanya ihohoterwa	December 2017	22
Long rain Cotton planting	Mawlid: 30th			November 2017	23
Beginning long rain Cotton planting	Nyerere Day: 14th			October 2017	24
Beginning long rain		Primary School National Exam		September 2017	25
Dry season	Nane Nane day: 8th Eid El Adha:31st			August 2017	26
Dry season Start cotton selling	Saba Saba day: 7th		Rwandan independence and Liberation day	July 2017	27
Dry season Cotton harvesting	End of Ramadan:24th WRD: 20th	Vitamin A/Deworming Mass campaign		June 2017	28
End long rain Cotton harvesting	Workers day: 1st Beginning of Ramadan: 26th		Gatumba events	May 2017	29

Calendar of Events 2014-2019 – SENS Surveys, Refugee Camps, Tanzania – Data Collection: October

End long rain	Sheikh Abeid Amani Karume day: 7th Easter: 16th Union day: 26th		Genocide	April 2017	30
Long rain	Women's day: 8th			March 2017	31
Long rain	Valentine's day: 14th		Heroes Day :1st Rentree scolaire: 2nd	February 2017	32
Long rain	New year's day: 1st Zanzibar Revolution: 12th			January 2017	33
Long rain Cotton planting	HIV/AIDS day: 1st Independence day: 9th Mwalid: 11th Christmas: 25th Boxing day: 26th	Vitamin A/Deworming Mass campaign	Umunsi w'abamugaye, Iminsi 16 yo kurwanya ihohoterwa	December 2016	34
Long rain Cotton planting				November 2016	35
Beginning long rain Cotton planting	Nyerere Day: 14th			October 2016	36
Beginning long rain	Eid El Adha:12th	Primary School National Exam		September 2016	37
Dry season	Nane Nane day: 8th			August 2016	38
Dry season Start cotton selling	End of Ramadan: 5th Saba Saba day: 7th		Rwandan independence and Liberation day	July 2016	39
Dry season Cotton harvesting	Beginning of Ramadan: 6th WRD: 20th	Vitamin A/Deworming Mass campaign		June 2016	40
End long rain Cotton harvesting	Workers day: 1st		Gatumba events	May 2016	41
End long rain	Sheikh Abeid Amani Karume day: 7th Union day: 26th		Genocide	April 2016	42
Long rain	Women's day: 8th Easter: 27th			March 2016	43
Long rain	Nilad-un-Nabi: 4th Valentine's day: 14th		Heroes Day :1st Rentree scolaire: 2nd	February 2016	44
Long rain	New year's day: 1st Zanzibar Revolution: 12th			January 2016	45
Long rain Cotton planting	HIV/AIDS day: 1st Independence day: 9th Christmas: 25th Boxing day: 26th	Vitamin A/Deworming Mass campaign Swearing ceremony	Umunsi w'abamugaye, Iminsi 16 yo kurwanya ihohoterwa	December 2015	46
Long rain Cotton planting				November 2015	47
Beginning long rain Cotton planting	Nyerere Day: 14th	Presidential Elections		October 2015	48
Beginning long rain	Eid El Adha:12th	Primary School National Exam		September 2015	49
Dry season	Nane Nane day: 8th			August 2015	50
Dry season Start cotton selling	End of Ramadan: 5th Saba Saba day: 7th		Rwandan independence and Liberation day	July 2015	51
Dry season Cotton harvesting	Beginning of Ramadan: 6th WRD: 20th	Vitamin A/Deworming Mass campaign		June 2015	52
End long rain Cotton harvesting	Workers day: 1st		Gatumba events	May 2015	53
End long rain	Sheikh Abeid Amani Karume day: 7th Union day: 26th Women's day: 8th		Genocide	April 2015	54
Long rain	Women's day: 8th Easter: 27th			March 2015	55
Long rain	Nilad-un-Nabi: 4th Valentine's day: 14th		Heroes Day :1st Rentree scolaire: 2nd	February 2015	56
Long rain	New year's day: 1st Zanzibar Revolution: 12th			January 2015	57
Long rain Cotton planting	HIV/AIDS day: 1st Independence day: 9th Christmas: 25th Boxing day: 26th	Vitamin A/Deworming Mass campaign Swearing ceremony	Umunsi w'abamugaye, Iminsi 16 yo kurwanya ihohoterwa	December 2014	58
Long rain Cotton planting				November 2014	59
Beginning long rain Cotton planting	Eid El Adha:4th Nyerere Day: 14th			October 2014	60