FINAL REPORT

STANDARDIZED EXPANDED NUTRITION SURVEY (SENS)
White Nile State South Sudanese Refugee Camps-Sudan

Aljameya , Khor Alwaral, Um Sangour , Al Radis 1 & 2, El Kashafa, Jouri, Alagaya. Algana & Dabat Bosin camps

Survey conducted: 24th May-15th June 2022

Report finalised: (November 2022)

IN COLLABORATION WITH

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Lists of Acronyms

ANC	Antenatal Care
BSFP	Blanket Supplementary Feeding Program
CDC	Centre for Disease Control
CDR	Crude Death Rate
CI	Confidence Interval
COR	Coordination of Refugees
COVID	Corona Virus Disease
EHAGL	East, Horn of Africa and the Great Lakes
EPI	Expanded Programme on Immunization
Epi Info	Name of CDC software for epidemiological investigations
FAO	Food and Agriculture organization
GAM	Global Acute Malnutrition
GFD	General Food Distribution
HAZ	Height-for-Age Z-score
Hb	Haemoglobin
HFA	Height-for-Age
IYCF	Infant and young child feeding
Kcal	Kilocalorie
KAP	Knowledge Aptitude and Practices
Kg	Kilogram
LLIN	Long Lasting Insecticide treated Nets
MAM	Moderate Acute Malnutrition
MUAC	Mid-Upper Arm Circumference
OTP	Outpatient Therapeutic Programme
SAM	Severe Acute Malnutrition
SC	Stabilization Centre
SMART	Standardized Monitoring and Assessment for Relief and Transition
MOH	Ministry of Health
MUAC	Mid Upper Arm Circumference
SENS	Standardized Expanded Nutrition Survey
SFP	Supplementary Feeding Program
SRCS	Sudan-Red-Crescent-Society
TFP	Therapeutic Feeding Program
TSFP	Targeted Supplementary Feeding Program
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
WASH	Water Sanitation and Health
WFA	Weight-for-Age
WFH	Weight-for-Height
WFP	World Food Program
WHO	World Health Organization
WHZ	Weight-for-Height / Length Z-score

Executive summary

A standardized expanded nutrition survey (SENS) was conducted in ten camps of South Sudanese refugees , namely: Aljemeya, Khor Alwaral, Um Sangour, Al Radis 1&2, El Kashafa, Jouri, Alagaya, Algana and Dabat Bosin in White Nile state. The data collection was between the 24th of May and 15th June 2022. The survey followed UNHCR's Standardized Expanded Nutrition Survey (SENS) guidelines Version-3 for refugee populations https://sens.unhcr.org/.

Objectives:

The survey was aimed at assessing the general health, nutrition and mortality indices of refugees in order to formulate action-oriented recommendations for implementation of appropriate nutrition, public health and related interventions.

Primary objectives of the survey

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 population's overall ability to meet their food needs with assistance;
11- To determine the duration of the general in-kind food distribution for recipient households;
12- To determine the extent to which negative coping strategies are used by households;
13- To assess household food consumption (quantity and quality);
14- To determine the ownership of mosquito nets (all types and LLINs) in households.
15- To determine the utilization of mosquito nets (all types and LLINs) by the total population, children 0-59 months and pregnant women.
16- To determine the population's access to, and use of, water, sanitation and hygiene facilities.
17- To determine the population's access to soap;
18- To establish recommendations on actions to be taken to address the situation in the refuge population in the ten camps.

Secondary objectives of the survey

19- To determine the coverage of deworming with mebendazole in the last six months among children aged 12-59 months;
20- To assess crude and under-five mortality rates in the refugee sites in the last three months;
21- To determine the enrolment into the targeted supplementary feeding program (TSFP) and therapeutic (OTP/SC) nutrition programmes for children aged 6-59 months;
22- To determine enrolment into Antenatal Care clinic and coverage of iron-folic acid supplementation in pregnant women;

23- To determine the coverage of vitamin A postnatal supplementation among women with children less than 6 months;
24- To determine the population's access to and use of cooking fuel;
25- To determine the prevalence of MUAC malnutrition in pregnant and lactating women with an infant less than 6 months.
26- To determine the coverage of COVID-19 vaccination among population aged 18-70 years.

The sampling followed a simple random method to establish a representative sample of households and children to be measured. Lists of households were generated by labelling individual households in all camps, and empty houses were excluded from the sampling frame. Subsequently, the ten camps were further organized into five geographical units based on their geographical proximity, demographic and cultural homogeneity and population size. The five geographical units are categorized as 1. Jouri and El Kashafa, 2. Alradias one & two, 3. Umsangur, 4. Aljemeya and Khor Alwarel, and 5. Alagaya, Algana and Dabat Bosin. The sample size was calculated by using ENA for the SMART version (January 11th, 2020). Finally, a systematic or interval method was used to identify the selected households.

In the surveys, the UNHCR SENS -V3 survey modules namely: 1. Demography, 2. Anthropometry and Health, 3. Anaemia, 4. Infant and Young Child Feeding, 5. Food Security, 6. Mosquito Net Coverage, and 7. Water Sanitation and Hygiene (WASH) were administered. Additionally, COVID-19 vaccination coverage and mortality were included. The target groups were: 1. Children aged 6-59 months (Anthropometry, Health, and Anaemia measurements), 2. non-pregnant women of reproductive age (15-49 years) for Anaemia measurement, pregnant women for antenatal coverages, and pregnant and lactating women for MUAC malnutrition; 3. children aged 0-23 months (assessment of IYCF practices) and 4. Household data: Demography and mortality, COVID-19 vaccination coverage, Food security, WASH, and mosquito net coverage. All eligible children aged 6-59 months from all selected households were included in the assessment for anthropometry, Anaemia, health, and children 0-23 months included for infant and young child feeding practices. All selected households were assessed for demographic data and COVID-19 vaccination coverages. Whereas half of the selected households (50% of the sample) were considered representative and assessed for Food Security, WASH, Mosquito net coverage, and women (15-49 years) for Hb level measurement (for Anaemia determination) and coverage for antenatal care.

A total of six survey teams were organized (from MOH and SRCS), each consisting of five team members (interpreter, anthropometry measurer, anthropometric assistant, Anaemia data collector and team leader/interviewer) were trained for five days in Kosti and followed by an additional day in the camp for the standardization and pilot testing. In each camp, one assistant per team was assigned from the community to guide and support the survey team during the tracing of selected houses and discussion with respondents.
Data collection was carried out in all camps, under the supervision of the Survey Coordinators and supervisors comprising technical experts from UNHCR, WFP, WHO, UNICEF, SRCS, COR and MoH. Data collection was carried out using Open Data Kit (ODK) through android Tablets. The data from the Tablets were synchronized with the server daily. Data quality was maintained through close supervision and provision of feedback to the enumerators based on observed daily data errors and plausibility checked on ENA for SMART. All proposed indicators were analyzed by using ENA for SMART (version January 11th, 2020) for anthropometry and Epi-Info (version Epi 7.2.5.0) for the other variables. Summary of key findings as follows (see Table 1).

Table 1 SUMMARY OF RESULTS

Surveyed Area	Al Jameya & Khor Alwarel	Al Radis 1 & 2	Jouri and El Kashafa	Um Sangour	Alagaya, Algana and Dabat bosin	Classification of public health significance or target (where applicable)
CHILDREN 6-59 months % [95% CI]						
Number of children (N)	298	252	364	223	424	
Acute Malnutrition (WHO 2006 Growth Standards)			95% CI			
Global Acute Malnutrition (GAM)	16.1% (12.4-20.7)	16.7% (12.6-21.8)	18.1% (14.5-22.4)	15.2% (11.1-20.9)	18.6% (15.2-22.6)	Very high/critical if ≥ 15% (WHO-UNICEF) UNHCR Target of < 10%
Moderate Acute Malnutrition (MAM)	12.1% (8.9-16.3)	14.7% (10.8-19.6)	15.4% (12.0-19.5)	10.8% (7.3-15.5)	15.6% (12.4-19.3)	
Severe Acute Malnutrition (SAM)	4.0% (2.3-6.9)	2.0% (0.9-4.6)	2.7% (1.5-6.8)	4.5% (2.5-8.1)	3.1% (1.8-5.2)	Critical if ≥2% (UNHCR) UNHCR Target of < 2%
Oedema	0.7%	0.4%	0.0%	0.4%	0.0%	
Mid Upper Arm Circumference (MUAC)						
MUAC <125 mm and/or oedema	10.4% (7.4-14.4)	13.1% (9.5-17.8)	7.7% (5.4-10.9)	9.9% (6.6-14.5)	12.0% (9.2-15.4)	
MUAC 115-124 mm	9.1% (6.3-12.9)	9.9% (6.8-14.2)	6.6% (4.5-9.6)	8.1% (5.2-12.4)	8.5% (6.2-11.5)	
MUAC <115 mm and/or oedema	1.3% (0.5-3.4)	3.2% (0.8-6.8)	1.1% (0.4-2.8)	1.8% (0.7-4.5)	3.5% (2.2-5.7)	
Stunting (WHO 2006 Growth Standards)						
Total Stunting	12.8% (9.4-17.0)	17.1% (12.9-22.2)	23.9% (19.8-28.5)	9.9% (6.6-14.5)	11.8% (9.0-15.2)	Very high/critical if ≥ 30% (WHO-UNICEF)
Severe Stunting	1.3% (0.5-3.4)	2.8% (1.4-5.6)	5.8% (3.8-8.7)	(0.1-2.5)	0.5% (0.1-1.7)	
Programme coverage and enrolment						

Surveyed Area	Al Jameya & Khor Alwarel	Al Radis 1 & 2	Jouri and El Kashafa	Um Sangour	Alagaya, Algana and Dabat bosin	Classification of public health significance or target (where applicable)
Measles vaccination with card or recall (9-59 months)	97.2% (94.5-98.8)	96.9% (93.8-98.8)	98.5% (96.5-99.4)	89.3% (84.4-93.1)	96.0% (92.9-98.0)	Target of ≥ 95%
Vitamin A supplementation within past the 6 months with card or recall	88.9% (84.8-92.3)	89.3% (84.9-92.9)	81.5% (77.2-85.2)	75.8% (69.2-81.3)	58.7% (52.7-64.5)	Target of ≥ 90%
Deworming in the last six months among children aged 12-59 months	18.7 (13.6-24.6)	22.5% (16.8-29.1)	24.2% (19.4-29.6)	25.5% (18.9-32.9)	5.2% (2.3-10.0)	
Enrolment TSFP (based on all admission criteria WHZ, and MUAC)	25.8% (10.3-40.7)	22.0% (9.2-39.8)	25.5% (2.7-32.4)	34.1% (1.4-55.2)	21.8% (1.7-40.3)	Target of ≥ 90%
Enrolment TSFP by MUAC (≥115-<125mm)	18.5% (6.3-38.1)	8.0% (1.0-26.0)	12.5% (2.7-32.4)	11.1% (1.4-34.7)	8.1% (1.7-21.9)	
Therapeutic feeding program (based on all admission criteria WHZ, Oedema and MUAC)	55.0% (0.6-80.6)	39.2% (0.3-62.7)	100%	100%	24.7% (0.2-31.9)	Target of ≥ 90%
Enrolment therapeutic feeding program by MUAC (<115mm)	25.0% (0.6-80.6)	12.5% (0.3-62.7)	100%	50.0% (6.8-93.2)	6.7% (0.2-31.9)	
Diarrhoea						
Diarrhoea in the last 2 weeks	11.1% (7.8-15.3)	16.3% (11.9-21.7)	17.8% (14.2-22.1)	11.8% (7.8-16.9)	15.8% (12.7-19.6	
Anaemia children 6-59 months % [95% CI]						
Total Anaemia (Hb < 11 g/dl)	51.8% (45.8-57.7)	50.6% (44.3-56.9)	57.0% (51.8-62.0)	64.7% (58.0-71.0)	58.0% (53.2-62.8)	High if ≥ 40% Target of < 20%
Mild (Hb 10-10.9)	20.8% (16.2-26.0)	20.2% (15.4-25.6)	30.7% (26.1-35.7)	25.8% (20.2-32.1)	24.7% (19.6-30.4)	
Moderate (Hb 7-9.9)	29.2% (24.0-34.9)	29.6% (24.1-35.7)	24.9% (20.7-29.6)	35.8% (29.4-42.5)	35.7% (29.9-41.9)	
Severe (Hb < 7)	1.8%	0.8%	1.4%	3.2%	3.8%	

Surveyed Area	Al Jameya & Khor Alwarel	Al Radis 1 & 2	Jouri and El Kashafa	Um Sangour	Alagaya, Algana and Dabat bosin	Classification of public health significance or target (where applicable)
	(0.6-4.1)	(0.1-2.8)	(0.6-3.2)	(1.3-6.4)	(1.8-6.9)	
CHILDREN 6-23 months % [95% CI]						
Total Anaemia (Hb < 11 g/dl)	67.5% (58.5-75.7)	60.2% (50.1-69.7)	68.7% (59.4-77.0)	77.0 % (66.8-85.4)	84.5% (75.8-91.1)	
Mild (Hb 10-10.9)	29.3% (21.4-38.2)	24.3 % (16.4-33.7)	32.2% (23.8-41.5)	26.4% (17.6-37.0)	26.8% (18.3-36.8)	
Moderate (Hb 7-9.9)	36.6% (28.1-45.8)	35.9% (26.7-46.0)	34.8% (26.1-44.2)	43.7 % (33.1-54.7)	51.6% (41.2-61.8)	
Severe (Hb < 7)	1.6% (0.2-5.8)	0.0%	1.7% (0.2-6.1)	6.9% (2.6-14.4)	6.2% (2.3-13.0)	
IYCF indicators						
Timely initiation of breastfeeding (0-23months)	76.1% (68.0-83.1)	70.6% (61.2-79.0)	75.2% (66.4-82.7)	79.3% (69.3-87.3)	66.7% (59.6-73.2)	UNHCR Target of ≥ 85%
Exclusive breastfeeding under 6 months	93.3% (68.1-99.8)	57.1% (18.4-90.1)	47.1% (23.0-72.2)	87.5% (47.4-99.7)	72.7% (39.0-94.0)	UNHCR Target of ≥ 75%
Introduction of solid, semi-solid or soft foods (6-8 months)	40.0% (16.3-67.7)	47.6% (25.7-70.2)	46.9% (29.1-65.3)	50.0% (11.8-88.2)	75.0% (47.6-92.7)	UNHCR Target of ≥60%
Consumption of iron-rich or iron-fortified foods (6-23 months)	25.6% (18.2-34.2)	30.1% (21.0-40.5)	34.9% (26.0-44.6)	20.7% (12.8-30.7)	18.5% (13.1-25.0)	UNHCR Target of ≥ 60%
Bottle feeding (0-23 months)	2.1% (0.4-6.1)	6.9% (2.8-13.6)	5.4% (3.0-10.8)	12.5% (6.6-20.8)	2.1% (0.6-5.2)	UNHCR Target of < 5%
WOMEN 15-49 years % [95% CI]						
Anaemia (non-pregnant)						
Total Anaemia (Hb <12 g/dl)	28.4% (21.1-36.6)	36.4% (28.4-45.0)	33.7% (27.3-40.5)	29.3% (19.4-41.0)	26.4% (19.5-34.2)	High if ≥ 40% (WHO) UNHCR Target of < 20%
Mild (Hb 11-11.9)	13.5% (8.3-20.4)	17.1% (11.3-24.4)	19.7% (14.5-25.8)	13.3% (6.6-23.2)	19.6% (13.5-26.9)	

Surveyed Area	Al Jameya & Khor Alwarel	Al Radis 1 & 2	Jouri and El Kashafa	Um Sangour	Alagaya, Algana and Dabat bosin	Classification of public health significance or target (where applicable)
Moderate (Hb 8-10.9)	14.9% (9.5-21.9)	16.4% (10.7-23.6)	12.0% (7.9-17.2)	14.7% (7.6-24.7)	6.1% (2.8-11.2)	
Severe (Hb <8)	0.0%	2.9% (0.8-7.2)	1.9% (0.5-4.9)	1.3% (0.03-7.2)	10.7% (0.02-3.7)	
ANC Coverages	20.0% (0.5-71.6)	60.0% (14.7-94.7)	42.9% (9.9-81.6)	66.7% (9.4-99.2)	50.0% (18.7-81.3)	
Iron-folic acid pills coverage	20.0% (0.5-71.6)	60.0% (14.7-94.7)	28.6% (3.7-71.0)	66.7% (9.4-90.6)	40.0% (12.2-73.8)	
Program coverage						
Pregnant women currently enrolled in the ANC	20.0% (0.5-71.6)	60.0% (14.7-94.7)	42.9% (9.9-81.6)	66.7% (9.4-99.2)	50.0% (18.7-81.3)	
Pregnant women currently receiving Iron-folic acid pills	20.0% (0.5-71.6)	40.0% (5.3-85.3)	28.6% (3.7-71.0)	66.7% (9.4-99.2)	40.0% (12.2-73.8)	
MUAC malnutrition in pregnant and lactating women with an infant less than 6 months (PLW)	1.9% (0.1-9.9)	0.0%	0.0%	0.0%	4.2% (0.1-21.2)	
DEMOGRAPHY all household members % [95% CI]						
Household size and Composition						
Average household size (mean, SD / range)	5.3 SD 2.2 1 Min, 14 Max	5.1 SD 2.4 1 Min, 13 Max	5.3 SD 2.5 1 Min, 14 Max	5.3 SD 2.3 1Min, 14 Max	5.2 SD 2.0 1 Min, 12 Max	
Percent of children U2	9.8%	7.1%	6.7%	10.0%	10.8%	
Percent of children U5	23.4%	21.4%	19.2%	26.3%	27.0%	
Percent of pregnant women	1.1%	1.5%	1.3%	1.7%	1.4%	
Percent of elderly	2.2%	2.6%	2.6%	1.1%	2.0%	
Age dependency ratio						

Surveyed Area	Al Jameya & Khor Alwarel	Al Radis 1 & 2	Jouri and El Kashafa	Um Sangour	Alagaya, Algana and Dabat bosin	Classification of public health significance or target (where applicable)
Average age dependency ratio (mean, SD / range)	1.9 SD 1.4 0 Min, 8 Max	1.8 SD 1.4 0 Min, 7 Max	1.6 SD 1.4 0 Min, 7 Max	2.4 SD 1.5 0 Min, 6 Max	2.1 SD 1.4 0 Min, 7 Max	
FOOD SECURITY % [95% CI]						
Proportion of households receiving a food assistance (in-kind)	99.2% (95.8-100.0)	98.5% (94.6-99.8)	89.0% (83.6-93.0)	98.8% (93.3-100.0)	98.2% (94.8-99.6)	
In-kind food distribution						
Average number of days general food ration lasts out of [30] days (mean, SD or range)	17.0 SD 5.2 5.0 Min 30.0 Max	16.0 SD 3.6 7.0 Min 30 Max	17.6 SD 4.8 5.0 Min, 30 Max	14.7 SD 4.8 5.0 Min 30 Max	16.1 SD 4.5 7.0 Min 30.0Max	
Cooking fuel						
Proportion of households access to cooking fuel	96.9% (92.3-99.2)	93.9% (88.2-97.3)	90.5% (85.4-94.3)	98.8% (93.3-100.0)	97.6% (93.9-99.3)	
Negative household coping strategies						
Proportion of households reporting using the following coping strategies over the past 7 days:	100%	73.1% (64.6-80.5)	82.1% (75.9-87.3)	69.1% (57.9-78.9)	51.2% (43.3-59.1)	
Borrow food, or rely on help from a friend or relative	59.2% (50.3-67.8)	63.5% (54.5-71.9)	53.2% (45.8-60.5)	53.9% (42.2-65.2)	66.9% (59.0-74.1)	
Reduce the number of meals eaten in a day	51.9% (43.0-60.8)	57.0% (48.0-65.7)	63.6% (56.3-70.5)	54.4% (42.8-65.7)	42.3% (34.6-50.3)	
Average rCSI (mean, SD / range)	27.3	25.4	21.8	25.7	26.9	
Food Consumption Score (FCS)						
FCS profiles:						
Acceptable	24.6	14.6	15.3	14.8	20.7	
Borderline	31.5	50.8	32.6	46.9	34.8	

Surveyed Area	Al Jameya & Khor Alwarel	Al Radis 1 & 2	Jouri and El Kashafa	Um Sangour	Alagaya, Algana and Dabat bosin	Classification of public health significance or target (where applicable)
Poor	43.9	34.6	52.1	38.2	44.5	
Mosquito net coverage						
Proportion of households owning at least one LLIN	2.4% (0.5-6.8)	0.8% (0.02-4.2)	2.7% (0.9-6.1)	0	2.5% (0.7-6.2)	UNHCR Target of >80%
Proportion of total population (all ages) Slept under net of any type	1.6% (0.2-5.6)	0.8% (0.02-4.2)	2.1% (0.6-5.3)	0	1.9% (0.4-5.3)	
Average number of persons per LLIN (mean)	2	1	4	0	3	UNHCR target 2 persons per LLIN
WASH % [95% CI]						
Water quality						
Proportion of households collecting drinking water from protected/treated sources	90.8% (84.4-95.1)	99.2% (95.8-100.0)	96.8% (93.3-98.8)	100%	97.6% (93.8-99.3)	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	14.7% (5.0-31.1)	26.3% (13.4-43.1)	25.6% (13.0-42.1)	15.4% (1.9-45.5)	18.5% (6.3-38.1)	Emergency: ≥15 litres Post-emergency: ≥20 litres
Proportion of households that use domestic water collected from protected/treated sources (with protected containers only): 15 - <20 lpppd	11.8% (3.3-27.5)	23.7% (11.4-40.2)	12.8% (4.3-27.4)	23.1% (5.0-53.8)	11.1% (2.4-29.2)	
Proportion of households that use domestic water collected from protected/treated sources (with protected containers only): <15 lpppd	73.5% (55.6-87.1)	50.0% (33.4-66.6)	61.5% (44.6-76.6)	61.5% (31.6-86.1)	70.4% (49.8-86.3)	
Toilet/Latrine use						

Surveyed Area	Al Jameya & Khor Alwarel	Al Radis 1 & 2	Jouri and El Kashafa	Um Sangour	Alagaya, Algana and Dabat bosin	Classification of public health significance or target (where applicable)
Proportion of households reporting defecating in a toilet	83.1% (75.5-89.1)	83.9% (76.4-89.7)	90.0% (84.8-93.9)	71.6% (60.5-81.1)	84.7% (78.2-89.8	Emergency: ≥ 60% Post-emergency: ≥ 85%
Access to soap						
Proportion of households with access to soap	12.3% (7.2-19.2)	13.1% (7.8-20.1)	15.8% (10.9-21.8)	6.2% (2.0-13.8)	12.9% (8.2-91.8)	Emergency: ≥ 70% Post-emergency: ≥ 90%
COVID-19 Vaccination aged 18-70 years						
Vaccinated against COVID 19 (two doses)	75.0% (69.8-79.5)	84.6% (79.8-88.6)	84.3% (81.2-87.0)	75.3% (68.5-81.2)	84.2% (80.1-87.6)	
Partially vaccinated (one dose)	25.0% (20.5-30.2)	15.4% (11.4-20.2)	15.7% (13.0-18.8)	24.7% (18.7-31.5)	15.7% (12.4-19.7)	
Mortality						
Crude Mortality Rate (CMR) (total deaths/10,000 people / day)	0.09 (0.02-0.5)	0.09 (0.02-0.5)	0.3 (0.07-1.0)	0.1 (0.02-0.7)	0.1 (0.01-0.4)	
Under five Mortality Rate (U5MR) (deaths in children under five/10,000 children under five / day)	0.0	0.0	1.0 (0.3-2.8)	0.0	0.3 (0.05-1.5)	

Brief interpretation of the results

Classification of public Health signifiance for children under 5 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-UNICEF (2018)

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)

Nutritional status:

The overall findings of the nutritional status of refugees in White Nile camps are very high or critical level, based on the 2018 WHO-UNICEF classification of global-acute-malnutrition (GAM) prevalence above 15% of emergency thresholds. The GAM prevalence ranges from 15.2% (11.1-20.9) in Umsangur camp to 18.6% (15.2-22.6) in Alegaya, Dabat Bosin and Algana camps. Likewise, the severe acute malnutrition (SAM) prevalence was found above 2% "Critical" of the UNHCR cutoff point for the refugee population. The result ranges between 2.0% (0.9-4.6) in Al Radias 1&2 and the highest in 4.5% (2.5-8.1) with oedema in Umsangur camp (see figure 1).

Total malnutrition only by MUAC ranges from 7.7% (5.4-10.9) in Jouri and Kashafa camps and 13.1% (9.57.8) in El Radias 1&2. The result indicates the highest as per the Sudan routine MUAC screening outcomes.

In comparison with the results of last SENS conducted in 2018, key nutrition indicators for GAM/SAM prevalence indicating worsening situation as the prevalence of GAM reported above 15% "Very High or Critical" and SAM prevalence above 2% "Critical" in all the camps.

The prevalence of stunting (chronic malnutrition) varies from the lowest 9.9% (6.6-14.5) in Umsangur and 11.8% (9.0-15.2) in Alegaya, Dabat boisin and Algana camps, the camps hosting the Nuer community. The result in other camps is slightly highest and ranges from the lowest 12.8% (9.4-17.0) in Aljemeya and Khor Alwarel and the highest to 23.9% (19.8-28.5) in Jouri and Al Kashafa, the camps hosting the Shuluk community. Despite some disparities, all results are below 30% of (WHO-UNICEF) cutoff points, very high/critical if ≥ 30%.

Diarrhea:

The prevalence of diarrhoea among children 6-59 months of age in the last two weeks before the nutrition survey was higher in the three camps; Alradias 1& 2 16.3% (11.9-21.7), Jouri & El Kashafa

17.8% (14.2-22.1) and Alegaya, Algana and Dabat bosin 15.8% (12.7-19.6). The GAM prevelance is also higher in these camps. The diarrhoea level in the other locations was 11.1% (7.8-15.3) in Al Jameya and Khor Alwarel and 11.8% (7.8-16.9) in Umsangur.

The prevalence of Anaemia among children 6-59 months of age was categorized as critical (critical if ≥ 40%) in all camps: The result ranges from 50.6% (44.3-56.9) in Alradias 1 & 2 and to the highest 64.7% (58.0-71.0) in Umsangur camp.

Anaemia prevalence among women of reproductive age (15-49 years) was highest in Alradias 1 & 2 camps 36.4% (28.4-45.0) and followed by Jouri and El Kashafa camps 33.7% (27.3-40.5). The other camps ranges from 26.4% (19.5-34.2) in Alegaya, Algana and Dabat bosin and to 29.3% (19.4-41.0) in Umsangur. The Anamia level among women is medium according to the WHO cutoff point, whereas above the UNHCR intended target to keep <20%.

Programme enrolment and coverage:

The coverage results of measles vaccination among children age 9-59 months based on both card documentation and mother's recall were generally above 95% in most of the camps, except in Um Sangur camp, the coverage is 89.3% (84.4-93.1). Vitamin A supplementation in the last 6 months among children 6-59 months found below the expected target of 90% with disparities of coverages. It ranges from the lowest 58.7% (52.7-64.5) In Alegaya, Algana and Dabat bosin to the highest 89.3% (84.4-93.1) in Umsangur.

The nutirtion program enrollment coverage for children with moderate acute malnutrition (MAM) into the Targeted Supplementary Feeding Program(TSFP) by all admission criteria reported far below the expected target of ≥90% in all camps. Enrollment status of children with Severe Acute Malnutrtion (SAM) reported only 55%, 39%, and 25% in three locations (Algana and Dabat bosin, Al Jameya and Khor,and Alwarel camps) While in Alegaya, Algana and Dabat Bosin camps meeting the target of ≥90%.

The enrollment status of pregnant women in the ANC was found to be low in all camps between 20-66.7%. The lowest coverage was in Al Jameya and Khor Alwarel, which was 20.0% (0.5-71.6), and the highest coverage in Umsangur camps, which was 66.7% (9.4-90.6). The coverage of Iron-folic acid pills is like the ANC result, except in Alegaya, Algana and Dabat Bosin camps; the ANC is 50.0% (18.7-81.3), and Iron-folic acid coverage is 40.0% (12.2-73.8).

Infant and Young Child Feeding

The proportion of children age 0-23 months who were timely initiated on breast feeding ranges between 66.7-79.3%; the lowest in Alegaya, Algana and Dabat Bosin 66.7% (59.6-73.2) and the highest in Umsangur camp; which was 79.3% (69.3-87.3). Status of exclusively breastfed (below 6 months) ranged from the lowest 47.1% (23.0-72.2) in Jouri and El Kashafa camps and to the highest 93.3% (68.1-99.8) in Al Jameya and Khor Alwarel. The UNHCR target is ≥75%.

Introduction of solid, semi-solid or soft foods among children (6-8 months) to be 40.0-75.0%; the lowest 40.0% (16.3-67.7) in Alejemeya and Khor Alwarel camps and the highest 75.0% (47.6-92.7) in Alegaya, Algana and Dabat Bosin. Consumption of iron-rich or iron-fortified foods among children (6-23 months) were low in all camps ranging from the lowest 18.5% (13.1-25.0) in Alegaya, Algana and Dabat Bosin, and to the highest 34.9% (26.0-44.6) in Jouri and El Kashafa. The UNHCR target is ≥60%. Bottle feeding among children (0-23 months) were found highest in Umsangur camp, which

was 12.5% (6-6-20.8) and 6.9%(2.8-13.6) in Alradias 1&2, and 5.4% (3.0-10.8) in Jouri and El Kashafa camps. The rest found 2.1% (0.6-5.2). The UNHCR target is <5%.

Food security

Proportion of households receiving a food assistance (in-kind) is between 89.0% (83.6-93.0) in Jouri and El Kashafa and 99.2% (95.8-100.0) in Aljemeya and Khor Alwarel. The average duration of the food ration (out of the theoretical duration of 30 days) ranged from 14.7 days in Umsangur camp to 17.6 days in Jouri and El Kashsfa camps. Most of refugees are not able to cover the whole month with the food assistance. The food gap is covered through negative coping strategies. Proportion of households reporting using the negaive coping startegies over the past 7 days ranges from 51.2% (43.3-59.1) in Alegaya, Algana and Dabat Bosing and the highest 100% in Aljemeya and Khor Alwarel. The average relaxed coping strategies ranges between 21.8 in Jouri and El Kashafa and 27.3 in Al Jameya and Khor Alwarel. Food consumption score profile mainly the poor ranges 34.6 in Alradias 1&2 and 52.1 in Jouri and El Kashafa. It's to be mentioned that due to funding shorfalls refugee population facing 50% food ration cuts in the recommended 2100 kcal/p/d since July 2022. The food securty situation among refugee poplation is of a key conern where 50-100% of refugee's household reported the use of negative coping strategies for survival.

WASH:

The proportion of households collecting drinking water from protected/treated sources found within acceptable limits ≥95% post-emergency situation. The result ranges between 96.8% (93.3-98.8) in Jouri and El Kashafa camps and 100% in the Umsangur camp. The average daily water usage was above the target of 20 litres per person per day (lpppd) in all camps to low ranging from 14.7% (5.0-31.1) and the highest 26.3% (13.4-43.1). Likewise significant portion of the population collects water per day <15 lpppd. 73.5% (55.6-87.1) in Aljemeya and Khor Alwarel camps and 50.0% (33.4-66.6) in Al Radias 1 & 2 camps.

The proportion of households reporting defecating in toilets ranges between the lowest 71.6-90.0%. The lowest in Umsangur is 71.6% (60.5-81.1), and the Highest is 90.0% (84.8-93.3) in Jouri and El Kashafa. The post-emergency target is ≥85%. The proportion of households with access to soap is lower than the emergency and post-emergency targets. The result ranges from the lowest at 6.2% (2.0-13.8) to the highest at 15.8% (10.9-21.8).

Mosqito net coveage and utalization:

The proportion of households owning at least one LLIN mosquito net of any type ranged between 0.8% (0.02-4.2) and 2.7% (0.9-6.1). This is far below UNHCR's target >80%. The survey was conducted during the time of non-malaria or mosquitoes breeding season, and people were not using bed nets. The data were collected by asking respondents whether they have mosquito net or not. Additionally, it was more than three years since mosquitoes were distributed, as a result the respondents might have raised their expectations and responded as they have none. The data can be used as proxy indicator or baseline to evaluate future interventions.

COVID-19 vaccination coverage:

COVID vaccination coverage of total population (aged 18-70 years) those received a single dose ranging between 15.7% (12.4-19.7) in Alegaya, Algana and Dabat-bosin and 25.0 (20.5-30.2) in

Aljemeya and Khor Alwarel. Those vaccinated against COVID 19 (one or two doses combined) ranges between 75% (69.8 – 79.5) in Aljemeya and Khor Alwarel and 84.6% (79.8 – 88.6) in Jouri and El Kashafa, 84.3% (81.2 – 87.0) in Um Sangour, and 84.2% (80.1 – 87.6) in Al agaya, Al gana, and Dabat bosin respectively.

Mortality:
The mortality rates retrospective for the last three months for crude mortality rate (CMR) and under five years old children mortality rate (U5MR) were within acceptable limits for an emergency context i.e. <1.0/10,000/day for CMR and <2.0/10,000/day for U5MR. CMR results ranged between 0.0 and 0.1/10,000/day, while U5MR ranged between 0.0 and 1.0/10,000/day. The data should be interpreted cautiously, the chance of underreporting is possible while the rumour of ration cut was evolving during the time of the survey, as food ration distribution is linked with family size.

Key recommendations

Demography

The Demography results should be used, in conjunction with socio economic / vulnerability assessments, to help UNHCR and partners plan and prioritise food assistance intervention and programme design such as targeting assistance to meet food and other basic needs.

Nutrition and health related

The anthropometric, nutrition programme enrolment, measles vaccination, vitamin A supplementation, deworming and diarrhoea assessment results are to assist public health partners working in refugee settings to better plan their nutrition, health and WASHprogramming.

1. Review the CMAM protocol and maximize screening activity with active case findings, referral, follow up of absentees, and defaulter tracing with a scale-up of outreach interventions. SRCS and MOH increase the number of outreach workers and train the community in MUAC measurement and self-referral system by introducing or maximizing “Mothers led/family MUAC”. (UNHCR, MOH, and SRCS, with the support of UNICEF and WFP)

2. Higher MUAC cut-offs (<135mm at the risk group) can be applied considering the high prevalence of acute malnutrition in the camps and use standard criteria MUAC, Oedema and WHZ not to miss acute malnutrition cases. (An immediate action: nutrition partners)

3. In the situation of very high GAM prevalence ≥15% and some of aggravating factors of food insecurity (including 50% food ration cuts since July 2022) and general health situation a preventive blanket supplementary feeding program is recommended for all children aged 6-59 months at least for six months to stabilize/reduce the situation. (WFP and partners, with the support of UNHCR)

4. Continuation and further strengthening of nutrition treatment through the CMAM model (SC, OTP, TSFP and outreach). UNHCR, WFP and UNICEF to provide technical and logistical support to nutrition partners

5. Institutionalize vitamin A supplementation and deworming for the camps on established schedules independent of National campaigns and establish child health nutrition days for the camps. (Nutrition partners, UNICEF and MOH)

6. Introduction of new activities such as use of lipid-based nutrient supplements or micronutrient powders (refer to UNHCR Operational Guidance on the Use of Special Nutritional Products to Reduce Micronutrient Deficiencies and Malnutrition in Refugee Populations). (WFP and partners)

7. Provision of micronutrients through improving the micronutrient content of the general food ration; introduce home-based food fortifications and promote nutrition education. (Nutrition partners with technical support of UNHCR, WFP and UNICEF). (Refer to the UNHCR Operational Guidance on the Use of Special Nutritional Products to Reduce Micronutrient Deficiencies and Malnutrition in Refugee Populations).

8. Scale-up ANC coverage and create strong referral linkages ANC and nutrition program vice versa in liaison with the health sector, encourage pregnant women to attend ANC as required. (Health and nutrition partners).

9. Scale up IFA tablet supplementation among the pregnant women and intensify health education on the importance of IFAS and its adherence both at the community and during ANC Visits. (Health and nutrition partners).

IYCF related:

The IYCF survey results should be used in conjunction with qualitative assessments, IYCF strategies and plans, and monitoring data to help UNHCR and partners plan and prioritise IYCF interventions.

Key priorities recommendations:

10. Nutrition and health partners to develop or strengthen IYCF community-based activities through community peer-to-peer support groups. These activities should include other family members who traditionally influence IYCF practices of mothers, e.g. husbands and mothers-in-law. (UNHCR, UNICEF and MOH to provide technical support).
11. UNHCR and partners to develop a package of IYCF materials to facilitate user-friendly communication and dissemination of appropriate IYCF messages. (UNICEF and MOH to provide context specific communication tools).

Food Security related:

The results of this Food Security module should be used in conjunction with qualitative assessments and monitoring data to help UNHCR, WFP and partners plan and prioritise public health and food security interventions. The results provide a basic overview of the food security situation in the survey context at one point in time and are valuable in monitoring evolution in the food security situation. They may help explain any increases or decreases in acute malnutrition in the refugee population to take the necessary actions to address the problems. It's to be mentioned that due to funding shorfalls refugee population facing 50% food ration cuts in the recommended 2100 kcal/p/d since July 2022. The food securty situation among refugee poplation is of a key conern where 50-100% of refugee's household reported the use of negative coping strategies for survival.

Key priorities recommendations:

12. UNHCR and WFP with the support of partners to conduct feasibility study of cash-based interventions to widen food distribution modalities, such as multi-purpose cash assistance, food voucher, etc. to minimize or solve food basket pipeline breaks.

13. UNHCR, WFP and livelihood partners to introduce the backyard/sack gardening interventions to enhance the household dietary diversity which has a significant role on to address micronutrient needs and improving the nutritional status.

Mosquito Net Coverage:

The rapid LLIN coverage results are to assist public health partners working in refugee settings to better plan their malaria control programming.

Key priorities recommendations:

14. UNHCR and partners to enhance distribution of mosquito nets in all camps to increase the coverage of LLIN. Commence the distribution before the malaria.

15. UNHCR and partners to establish a strong monitoring mechanism on the use of bed nets by doing so to minimize or avoid sell of bed nets.

16. Conduct indoor residual spraying in all camps to reduce the incidence of malaria and consequently anaemia.

17. Strengthen environmental management activities such as clearing of stagnant ponds in the camps.

WASH related

The SENS WASH results should be used in conjunction with qualitative assessments and monitoring

data (such as KAP surveys) to help UNHCR and its partners plan and prioritise public health and WASH interventions.

Key priorities recommendations:

18. UNHCR and WASH partners to increase water storage capacity in camps that have inadequate storage facilities and prioritize distribution of water storage jerry cans for the households. UNHCR to continue replacement of water containers (jerry cans) to improve access to quality water.

19. To increase use of toilets it is recommended to ensure timely construction, maintenance and desludging of full latrines.

20. Provide information and education to improve the maintenance and cleanliness of water containers and to increase their utility life span.

1. Introduction

Geographic description of survey area

White Nile state is situated in the Southern part of Sudan, sharing border with South and the North Kordofan States to the west, Al Gezira and the Sennar States to the East, Khartoum State to the North, and an international border with South Sudan in the South. It consists of nine localities, namely: Ad Douiem, Al Gutaina, Kosti, Rabak,Al Jabalien Tendulti, Um Remta, Alsalaam, Guli. Rabak is the capital of the State with other important cities includes Kosti, Elduein, Gutaina, Tandaliti and El Jabalain. The state has a population of about 1.7 million people based on the latest census of 2010, about 1,730588 people[1]. The total area of the state estimated 30,411 km2. White Nile hosts one of the larger refugee populations in the country. Refugees from the South Sudan reside in 10 refugee camps located in two localities (Al Salam and Al Jabalain) on the Western and Eastern sides of the White Nile River. The ten camps are Khor AlWarel, Umsangour, Alredais1, Alredis 2, Alkashafa, Aljameya, Jory (Al Salam locality), Dabat Bosin, Alagaya and Algana'a (Al Jabalain locality). Some refugees also live out of the camps with host communities in different localities.

The economy of the Sudan is highly dependent on the agricultural sector, as nearly 65 percent of its population is engaged in agriculture, which is the main supplier of food and raw material to industries. The agricultural sector, including forestry, livestock, and fishery, accounted for 20 percent of the GDP in 2020. Sorghum (main staple cereal) accounting for about 80 percent of the total cultivated land and usually producing about 45 percent of the country's requirements. Sesame, sunflowers, millet, and cotton are also grown[2]. The rain-fed agriculture comprises crop mix sorghum as the major crop, which together with sesame and millet, form about 97% of the total area under this system. There are also other crops grown on a limited scale such as groundnut, watermelon and guar. Sesame is cultivated as main cash income, but it requires high inputs (such as pesticides) during cultivation and harvest season, therefore too costly for small farmers to grow. For this reason, sesame is grown mostly by the rich farmers in the large scale as mechanized farming[3].

Women often cultivate small home gardens with a variety of crops. During the agricultural season between October to December and March/April, male family members migrate to large-scale mechanized and irrigated farms in western parts of the White Nile state to work as agricultural labourers. The labour demand also absorbs Persons of Concern (POCs) settled in the White Nile State. Though POCs are settled in the potential agriculture area (rain-fed and irrigable) land and close to the White Nile River, the benefit from these resources is limited. Land in refugee areas is owned by the community/private, and access to the land remained with individual agreements with the landowners. The survey was conducted during slack period of agricultural activities.

[1] OCHA 2022, White Nile profile
[2] FAO 2022, Crop and Food supply assessment mission (CFSAM) to the Sudan 21 March
[3] FAO 2011, Food Security in the White Nile State, joint household food security assessment.

Description of the population

As of April 2022, there are 276,056 South Sudanese refugees (63,249hh) in White Nile State, making the state the largest host of camp-based refugees from South Sudan in the country. Out of which, about 191,537 individuals (44,474 households) reside in 10 refugee camps located in two localities (Al Salam and Al Jabalain) on the Western and Eastern sides of the White Nile River, see Table 2 for details. The two camps Khor Alwarel (38,337) and Um Sangour (32,954) hosts the largest number of refugees with 20.0% and 17.2% of the total registered population respectively. The proportion of women and children stands at 83%, Children represent 56% (Boys: 28%, Girls: 28%), while 31 % are women and girls in reproductive age (between 13-49-year-old). A total of 9,040 unaccompanied and separated children (UASC) have been registered (5% of the population), while 4% are elderly refugees (aged 60 years and above). The refugees are largely from 03 ethnic groups namely, Shiluk (68%), Nuer (30%) and others (2%), with likely inter-ethnic mixed marriages[4].

Table 2 Registered population per camp as of April 30, 2022

Camp	Individuals	Household	Children <5 Years
Joure	11732	3176	420
Al Kashafa	13363	3104	105
Alagaya	25806	5876	2227
Dabat-bosin	8820	1652	1490
Alradais 1	11620	2909	247
Alradais 2	27102	6398	1563
Um sangour	32954	8519	4188
Khor Alwarel	38337	8871	2776
Aljameya	11986	2507	774
Algana	9817	1735	3611
Total	**191,537**	**44,747**	**17,401**

Source: UNHCR Progress monthly update for the month of April 2022.

New arrivals enter the state through three border entry points in White Nile namely, Joda, El Megenis and Um Jalala, some enter the state through unofficial Al Kueik border entry point. Monthly monitoring of new arrivals reveals that an average of 47 individuals are recorded per day in the first quarter of 2022, with majority (83%) being women and children originating from Fangak, Bantiu, Al Nasir, Akobo and Jonglei localities in South Sudan. Majority of new arrival refugees are fleeing because of floods and lack of assistance including food. UNHCR and COR conduct continuous joint registration of refugees and verification exercises, data updates of previously registered households, ID issuance and implementation of Global Distribution Tool (GDT) to solve fraud and improve accountability of assistance delivered to PoCs, in collaboration with WFP, COR and SRCS.

Food security situation

Refugees in the White Nile camps are primarily relying on the general food assistance which is provided by WFP on monthly basis. Access to additional sources of food/income is limited. WFP

[4] UNHCR 2022, Situation update (February 2022)

provides monthly food assistance through a Field Level Agreement (FLA) with SRSC. At the time of the survey, the planned General Food Distribution (GFD) comprised of cereals, pulses, vegetable oil, and salt with the assumption of meeting the energy requirements 2,081 kcal per person per day (see Table 3 below). However, pipeline break of salt was encountered the GFD provided during the time of the survey (May distribution). The total amount which was distributed was estimated at about 1997 Kilocalories per person per day (95% of recommended daily 2100 kcal per person). The food gap of PoCs covered through individual coping strategies. Due to funding shortfalls WFP implemented 50% food ration cuts started in July 2022 to all refugees in Sudan including refugees in the ten camps in White Nile state. This situation will have further significance negative impacts on the already concerning food security and nutrition situation among refugee population.

Table 3 General Food Assistance distributed during February to May 2022

Site/Camp	February		March		April		May	
	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual
Alagaya	25591	25357	25782	25535	25782	25535	28865	33214
Debt Bosin	8783	8773	8813	8805	8813	8805	12235	14549
Kashafa	13368	13368	13363	13346	13363	13346	13363	13342
Joury	11737	11737	11737	11737	11737	11737	11737	11718
Al-Redes.1	11615	11608	11615	11603	11615	11603	11615	11583
Al-Redes.2	27090	27056	27095	27095	27095	27095	27095	27095
Umsangour	27943	27918	30803	30362	30803	30362	38885	32846
Khoralwaral	37327	37296	37319	37319	37319	37319	37319	38074
Al-Gamiea	11925	11898	11969	11969	11969	11969	11969	11968
Alganaa	28672	28540	28672	28351	28672	28351	28672	29256
Total	204,051	203,551	207,168	206,122	207,168	206,122	221,755	223,645

Source: WFP GFD report, Kosti, June 2022

Table 4 General Food Assistance food basket during February to May 2022

Ration in g/p/d	Planned GFD (gm/PPPD)			
	Feb	Mar	Apr	May
Cereals	450	450	450	450
Lentils	60	60	60	60
Veg oil	30	30	30	30
Salt	5	5	5	0
Kcal	**1997**	**1997**	**1997**	**1997**
Recommended daily food basket 2100 kcal/p	**95%**	**95%**	**95%**	**95%**

Refugees provided with 95% of the recommended daily food basket between Feb-May 2022

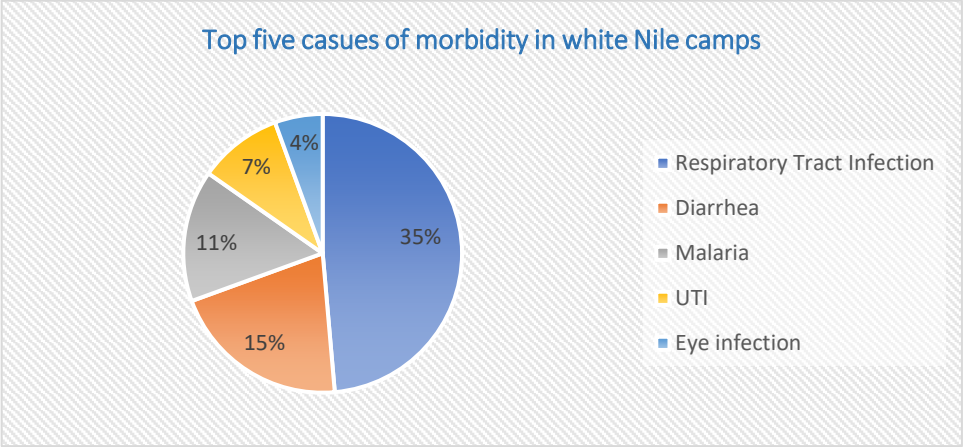
In Sudan, seasonality of the climate and production for crop and livestock producing play a crucial role. Sudan is endowed with quite different livelihood zones receiving unimodal rainfall, however, portray some difference in the seasons due to geographic diversity and variability. The main rainy season for White Nile (Sudan) is between June and September. Despite this difference, the peak lean season in Sudan is from May to September. Refugees are the most affected during this period[5].

[5] FAO 2022,IPC acute food insecurity analysis April 2021 - February 2022

Health situation

Refugees have access to primary health services in Nine health facilities across 10 camps. The health services in the camps supported by UNHCR and partners MOH and SRCS. The health facilities in the refugee camps provide primary health care services to the refugees and the surrounding host community. For cases that cannot be treated at camp level, a referral is carried out to secondary/tertiary level hospitals such at Rabak and Kosti Hospitals. The leading causes of morbidity in all camps include upper respiratory tract infections (URTI), malaria, skin and eye diseases, diarrhoea, and UTI (Figure 1).

Figure 1 TOP FIVE CAUSES OF MORBIDITY IN CHILDREN UNDER-5 IN WHITE NILE CAMPS



Acute infections are intrinsically linked to acute and chronic malnutrition as malnutrition lowers immunity, especially among children, making them more susceptible to and slower recovery from infections and illness. Malaria is among the life-threatening infections across all refugee camps. The overcrowding and the settlement sites/camps are in malaria-prone areas and exposed refugees to malaria and other disease-transmitting vectors. The levels of vulnerability increase during the rainy season (between June to October). Malaria is also a leading cause of anaemia due to the infection of blood cells.

Nutrition situation

A review of available data and information across the region (including Sudan) indicates that since the onset of the COVID-19 pandemic, diets of young children have shifted towards less nutrient-dense and cheaper foods. Dietary diversity, which was already alarmingly low across the region, has declined along with consumption of protein-rich milk and eggs largely due to weakening of purchasing power as household incomes dropped and food prices increased (UNICEF, February 2021). With the impact of the COVID-19 pandemic, it was estimated that wasting across the country could increase by up to 25 percent (The Lancet, July 2020). The situation is likely worst among refugees as the entire livelihood remains dependent on the limited humanitarian assistance.

The nutrition program in the camps comprises of a curative component for the treatment of severely and moderately acute malnutrition and protection or nutritional support for children 6 to

59 months of age, pregnant women, and lactating mothers for the six months after delivery. Though the technical capacity and adherence to the WHO 2006 guidelines varies among camps, all camps in principle believe that they are implementing CMAM to address nutritional needs of persons of concerns. MUAC screening of children 6-59 months is undertaken periodically with the admission cut off point of <12.5 cm. Nutrition services and activities in the camps at the time of the surveys included:

1. 10 Targeted Supplementary Feeding Programmes (TSFP) for moderately acute malnourished children aged 6-59 months using Plumpy'Sup.
2. 10 Outpatient therapeutic programmes for severely acute malnourished (SAM) children without medical complication by using Plumpynut.
3. 2 Stabilisation Centres (SC) for SAM management with medical complication – in El Kashafa and Rabak Hospital.

WASH situation

White Nile camps are situated adjacent to River White Nile, and the water supply in all camps is connected to the river. Water is regularly collected from the river, treated and pumped to distribution points which are fixed in the appropriate locations, and easily accessed by the community. The community expressed the quality of water is considered as good, however, interruption of water supply and shortages of jerrycans to collect and store water is main constraints. All locations have family and shared latrines close to their shelters. However, the presence of open defecation in the surroundings of the camps is indicative of the inadequate number of latrines to meet the needs.

2. Survey Objectives

The survey was aimed at assessing the general health, nutrition and mortality indices of refugees in order to formulate action-oriented recommendations for implementation of appropriate nutrition, public health and related interventions.

a) Primary objectives:

- To determine the demographic profile of the population;
- To determine the age dependency ratio;
- To measure the prevalence of acute malnutrition in children aged 6-59 months;
- To measure the prevalence of stunting in children aged 6-59 months;
- To determine the coverage of measles vaccination among children aged 9-59 months;
- To determine the coverage of vitamin A supplementation in the last six months among children aged 6-59 months;
- To determine the two-week period prevalence of diarrhoea among children 6-59 months;
- To measure the prevalence of anaemia in children 6-59 months and in women of reproductive age (non-pregnant) between 15-49 years);
- To investigate IYCF practices among children aged 0-23 months;
- To determine the population's overall ability to meet their food needs with assistance;

- To determine the duration of the general in-kind food distribution for recipient households;
- To determine the extent to which negative coping strategies are used by households;
- To assess household food consumption (quantity and quality);
- To determine the ownership of mosquito nets (all types and LLINs) in households.
- To determine the utilization of mosquito nets (all types and LLINs) by the total population, children 0-59 months and pregnant women.
- To determine the population's access to, and use of, water, sanitation and hygiene facilities.
- To determine the population's access to soap;
- To establish recommendations on actions to be taken to address the situation in the refuge population in the ten camps.

b) Secondary objectives of the survey

- To determine the coverage of deworming with mebendazole in the last six months among children aged 12-59 months;
- To determine the enrolment into the targeted supplementary feeding program (TSFP) and therapeutic (OTP/SC) nutrition programmes for children aged 6-59 months;
- To assess crude and under-five mortality rates in the refugee sites in the last three months;
- To determine enrolment into Antenatal Care clinic and coverage of iron-folic acid supplementation in pregnant women;
- To determine the coverage of vitamin A postnatal supplementation among women with children less than 6 months;
- To determine the population's access to and use of cooking fuel;
- To determine the prevalence of MUAC malnutrition in women of reproductive age 15-49 years.
- To determine the coverage of COVID-19 vaccination among population aged 18-70 years.

3. Methodology

In White Nile ten refugee camps, a cross-sectional survey was conducted using the UNHCR Standardized Expanded Nutrition Survey (SENS) version 3 guidelines http://sens.unhcr.org/ and Standardized Monitoring and Assessments of Relief and Transitions (SMART) methodology https://smartmethodology.org/ . Systematic random sampling was used to identify the survey respondents.

1.1 Sample size

The sample size was calculated based on anthropometry in children – i.e. The prevalence of Global Acute Malnutrition (GAM) among children between 6 to 59 months. The expected prevalence of GAM used for the sample size calculations was from the 2018 SENS surveys for White Nile camps. The sample size was first calculated in the number of children and then converted into the number of households. The sample size was adjusted for non-response and a smaller population size. If the population of *children U5* is less than 10,000, it is necessary to use a correction factor as per the

ENA recommendation. A systematic random sampling method was used to determine a representative sample of households. See Table 1 for details of sample size calculation

Table 3. 1. SENS 2022 Sample size calculation in White Nile camps

Camps	Total population	Total HH	%<5	Prevalence	Family size	Desired Precision	Non-response	Children	HH
Jouri & Kashafa	25,000	5,960	18.8	13.1	4.2	3.5	5	329	488
Radias 1 & 2	38,722	9,307	18.5	14.9	4.2	5	5	189	285
Umsangur	32,954	8,000	25.7	16.1	4.1	5	5	202	224
Aljameya and KohrAlwarel	50,323	11,378	21.2	19.4	4.4	5	5	240	318
Alegaya, Dbosin and Algana	44,443	9,263	23.0	13.6	4.8	3.5	5	344	390

1.2 Sampling procedure:

Systematic random sampling was used to identify the survey respondents. The camps were divided into zones. Under the zones all households were physically labelled with unique numbers per zone/household in each camp. To reduce the non-response rate and ensure results were representative of people living in the camps at the time of the survey, empty shelters[6] as verified through neighbours were labelled but not included in the sampling frame. Using the list generated from the physical counting and labelled households a sampling interval for each camp was determined by dividing the total number of verified households by the estimated sample. The first household was thereafter determined randomly using the random/lottery method by drawing a random number within the sampling interval. The interval was applied across the sampling frame to generate a list of households to be surveyed in the field. Each team was provided with a list of households to be surveyed daily.

1.3 Questionnaire and measurement methods

In the surveys, the SENS -V3 survey modules used, namely: 1. Anthropometry and Health, 2. Anaemia, 3. Infant and Young Child Feeding, 4. Food Security, 5. Water Sanitation and Hygiene (WASH), and 6. Mosquito Net Coverage was administered. Additionally, COVID-19 vaccination coverages were included. The target groups were: 1. Children aged 6-59 months (Anthropometry, Health and Anaemia measurements), 2. non-pregnant women of reproductive age (15-49 years) for Anaemia measurement, pregnant women for antenatal coverages, and pregnant and lactating women for MUAC; 3. children aged 0-23 months (assessment of IYCF practices) and 4. Household data: Demography and mortality, COVID-19 vaccination, Food security, WASH and mosquito net coverage. All eligible children aged 6-59 months from all selected households were included in the assessment for anthropometry, Anaemia, health and children 0-23 months included for infant and young child feeding practices. All selected households were assessed for demographic data and COVID-19 vaccination coverages. Whereas half of the selected households were considered representative and assessed for Food Security, WASH, Mosquito net coverage, and women (15-49

[6] An empty house/shelter was considered as abandoned and excluded from the nutrition survey if no one was present in that house/shelter and confirmed by neighbours and community/block leaders.

years) for HB level measurement (for Anaemia determination) and coverage for antenatal care. See Annex 4 for details of final survey questionaries.

1.4 Case definitions, inclusion criteria and calculations

Household: People living in the same dwelling and routinely eat food from the same pot. (ENA-SMART)

Nutritional Anthropometric Indicators

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

Table 3. 2 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 3. 3: Cut-offs for definition of acute malnutrition based on MUAC in Sudan

Target	Classification	MUAC Cut-offs
Children 6-59 months	MAM	<125 mm
	SAM	<115 mm
Women	GAM	<121 mm
	SAM	<160 mm

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

To estimate vitamin A supplementation, deworming coverage, measles vaccination and the two-week period prevalence of diarrhoea, the following formula presented in table 3.4 will be used.

Table 3. 4: Vitamin A Supplementation Coverage, Deworming Coverage, Measles vaccination coverage and two-week period 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

Indicator	Numerator	Denominator
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 (%) =

$$100 \times \frac{\text{No. of surveyed children with MAM according to TSFP criteria who reported being registered in TSFP}}{\text{No. of surveyed children with MAM } \textit{according to SFP admission criteria}}$$

Coverage of OTP/SC programme (%) =

$$100 \times \frac{\text{No. of surveyed children with SAM according to OTP/SC criteria who reported being registered in OTP/SC}}{\text{No. of surveyed children with SAM } \textit{according to OTP/SC admission criteria}}$$

Infant and Young Child Feeding Practices (IYCF)

IYCF indicators and formula that will be 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.

$$\frac{\text{Children born in the last 24 months who were ever breastfed}}{\text{Children born in the last 24 months}}$$

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

$$\frac{\text{Children born in the last 24 months who were put to the breast within one hour after birth}}{\text{Children born in the last 24 months}}$$

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

$$\frac{\text{Infants 0-5 months of age who received only breast milk during the previous day}}{\text{Infants 0-5 months of age}}$$

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.

$$\frac{\text{Children 12-15 months of age who received breast milk during the previous day}}{\text{Children 12-15 months of age}}$$

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 will be reported in g/dL for consistency purposes. Hb levels will be categorised according to WHO recommended cut-offs (shown in Table 3.5) to determine the prevalence of anaemia (mild, moderate, severe).

Table 3. 5: 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 3.5 presents the recommended adjustments made to the measured haemoglobin concentration among non-pregnant women living in the camps. The Hb concentration will be automatically adjusted in each camp.

WASH

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

Table 3. 6: 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 Rain water 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

1.5 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 3. 7 WHO-UNICEF (2018) Classification of public health significance for children under 5 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%	

Nutrition programme enrolment:

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

Table 3. 8 : 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 3. 9 : UNHCR targets for measles vaccination, vitamin a supplementation and deworming coverage

Indicator	Target coverage	Source
Measles vaccination coverage (9-59 mois)	95%	UNHCR, Sphere Standards
Vitamine A supplementation in the last 6 months coverage (6-59m)	>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 3. 10 : WHO classification of public health significance

Classification	High	Medium	Low
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 3. 11 : 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%

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 3. 12 : International Target

UNHCR Standard	Indicator
Proportion of households owning at least one Long-Lasting Insecticide treated bed net (LLIN)	>80%
Average number of persons per LLIN	8. persons per LLIN

1.6 Training, coordination and supervision

Training

Two trainings lasting for five days were conducted: Training of Trainers (TOT) at Khartoum level for partners and UNHCR public health team (from 17th to 21th April 2022) and Enumerators training at Kosti level (15th to 19th May 2022). The TOT training has covered the high-level SENS training modules.

The survey teams were organized (from MOH and SRCS), and formed six teams, each consisting of five team members (interpreter, anthropometry measurer, anthropometric assistant, Anaemia data collector and team leader/interviewer). The survey team training was organized for five days in Kosti and followed by an additional day in the camp for the standardization and pilot testing. The survey team training included: Purpose and objectives of the survey, roles and responsibilities of each team member, familiarization with the SENS questionnaires by reviewing the purpose of each question; interviewing skills, use of SMART phone and recording of data; interpretation of local/seasonal calendar of events and age determination; how to take anthropometric measurements and haemoglobin measurements and common errors usually made in the field, team work etc. The training included participatory approaches that covered a practical session for anthropometric measurement, HB measurement and role plays for household data collection. The practical session on anthropometric measurement involved volunteer children for practice. The practical session on haemoglobin measurement involved trainees measuring each other's Hb as well as undertaking a standardization test.

Coordination and supervision

The survey was coordinated by SENS survey consultant (Samuel Tadesse) with the support from Khartoum and White Nile public health team. Filed level coordination and supervision was undertaken by technical experts from UNHCR, WFP, WHO, UNICEF, SRCS, COR and MoH. Survey team leaders were selected from each team to facilitate data collection and communication with survey coordinators and supervisors. Two nutrition experts from MoH closely supervised survey team each covering three teams.

1.7 Data collection and analysis

Data collection was carried out from 24th of May to 15th of June using Open Data Kit (ODK) through android Tablets. The data from the Tablets were synchronized with the server daily. Data quality was maintained through close supervision and provision of feedback to the enumerators based on observed daily data errors and plausibility checked on ENA for SMART. All proposed indicators were analyzed by using ENA for SMART (version January 2020) for anthropometry and Epi-Info (version Epi 7.2.5.0) for the other variables.

1.8 Ethical consideration and community consent

Due to the comprehensive nature of the survey and taking of peripheral blood, there is a need to obtain consent of an individuals and organizations. Community leaders were informed to discuss and clarify questions and reservations that they have on the process of surveying their population. All concerned persons informed about the reason for taking blood and measurement of Anaemia status. Women/caregivers asked for their verbal consents before taking blood sample from the women and children.

For the children identified as malnutrition during the assessment and not enrolled in the nutrition program provided with referral form to nutrition centre allocated in respective camp; for the women and children who identified to be anaemic also provided with referral to the health facility. The referral cut-off points for children aged 6-59 months when MUAC was < 12.5 cm, and/or when WHZ is < -2 z-score, and/or when oedema is present, and/or when haemoglobin is < 7.0 g/dl. Women of reproductive age when haemoglobin is < 8.0 g/dl.

4. Results

4.1 Demography indicators

Table 4. 1 SAMPLING INFORMATION IN WHITE NILE CAMPS

Survey Area	Sampling Information	Total planned	Total surveyed	% of target
AlJameya and Khor Alwarel	**Number of households**	318	274	86%
	Number of children 6-59 months	240	298	124.2%
Al Radias 1&2	**Number of households**	285	270	94.7%
	Number of children 6-59 months	189	252	133.3%
Jouri amd El Kashafa	**Number of households**	488	410	84.0%
	Number of children 6-59 months	329	364	111%
Umsangur	**Number of households**	224	93	83.0%
	Number of children 6-59 months	202	223	110.4%
Alegaya, Algana, Dabat-bosin	**Number of households**	390	349	89.5%
	Number of children 6-59 months	344	433	126%

By the end of SENS in all White Nile camps the actual children surveyed were recoded >100% of the targeted children. The SENS guidelines recommend that at least 80% of the targeted children to be covered.

Household size and composition

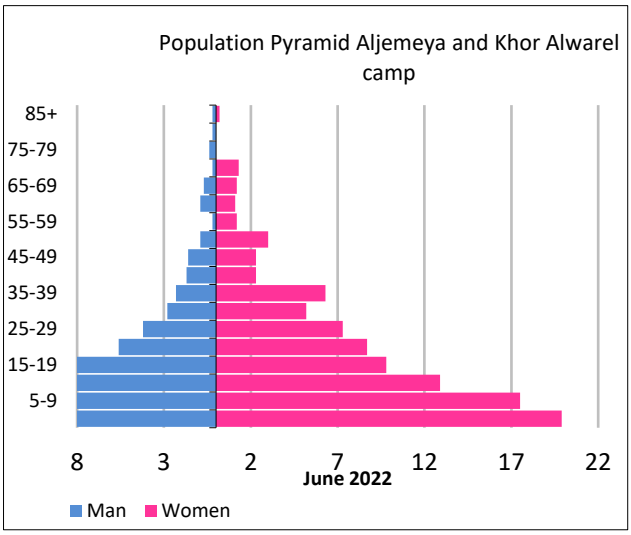
Table 4. 2 HOUSEHOLD SIZE AND COMPOSITION, BY CAMP

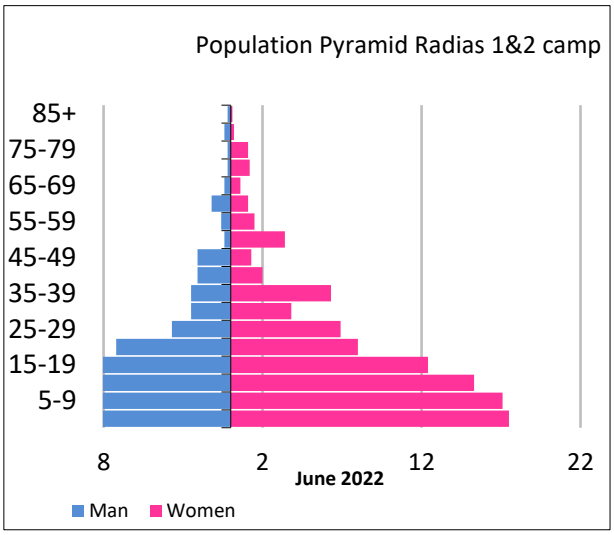
Household size and composition	AlJameya and Khor Alwarel	Al Radias 1&2	Jouri amd El Kashafa	Umsangur	Alegaya, Algana, Dabat-bosin
Population size – Total persons	50,323	38,722	25,000	32,954	44,443
Total population surveyed – Total persons (all ages)	1,403	1,332	2,092	934	1,732
Total U2 surveyed	138	94	140	93	187
Total U5 surveyed	328	285	402	246	467
Average household size	*5.3*	*5.1*	*5.3*	*5.3*	*5.2*

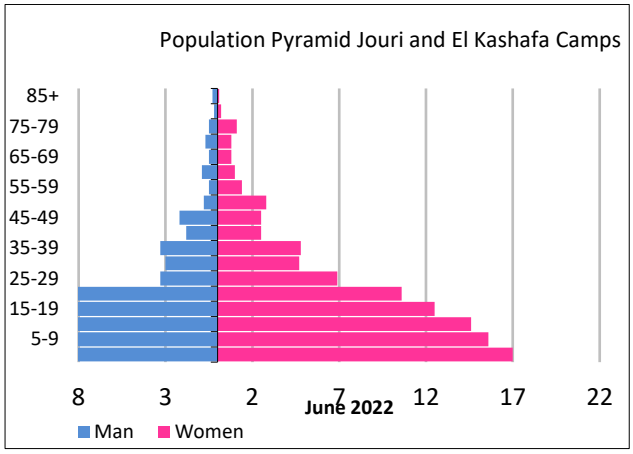
Household size and composition		AlJameya and Khor Alwarel	Al Radias 1&2	Jouri amd El Kashafa	Umsangur	Alegaya, Algana, Dabat-bosin
Household size categories	1-4 person(s)	*40.4%*	*42%*	*37.9 %*	*39.8 %*	*38.7%*
	5-6 persons	*30.9%*	*33.2%*	*30.6 %*	*35.8 %*	*36.3%*
	7-9 persons	*52.7%*	*19.9%*	*28.3 %*	*19.9%*	*22.2%*
	≥ 10 persons	*3.0%*	*5.0 %*	*3.3 %*	*4.6 %*	*2.7%*
Household composition	Children under two	*0.2*	*0.4*	*0.4*	*0.5*	*0.6*
	Children under five	*1.2*	*1.1*	*1.0*	*1.4*	*1.4*
	Children aged 5-14 years	*1.8*	*1.8*	*1.8*	*1.9*	*1.8*
	Members aged 15-64 years	*2.1*	*2.8*	*2.4*	*1.9*	*1.9*
	Members aged 65 years and above	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
Percent of children U2		*9.8 %*	*7.1 %*	*6.7 %*	*9.9 %*	*10.8 %*
Percent of children U5		*23.4 %*	*21.4 %*	*19.2 %*	*26.3 %*	*26.9 %*
Percent pregnant women (15-49 years)		*1.1 %*	*1.5 %*	*1.3 %*	*1.7 %*	*1.4 %*
Percent of elders (65 years and above)		*2.2 %*	*2.6 %*	*2.6 %*	*1.1 %*	*1.9 %*
Sex ratio		*573/831=0.7*	*513/825=0.6*	*895/1199=0.7*	*435/500=0.9*	*758/976=0.8*

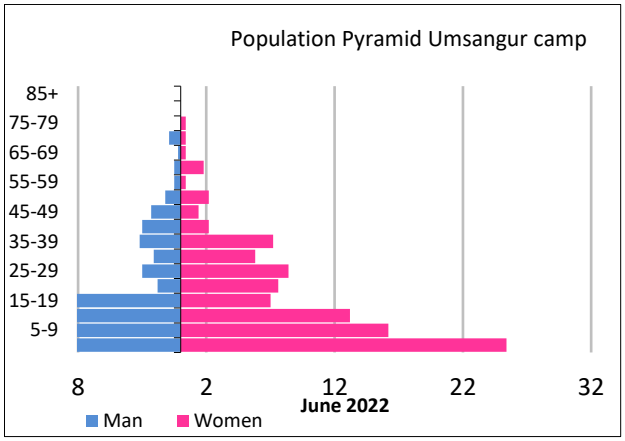
The SENS results captured demographic characteristics of age groups in the surveyed sites.

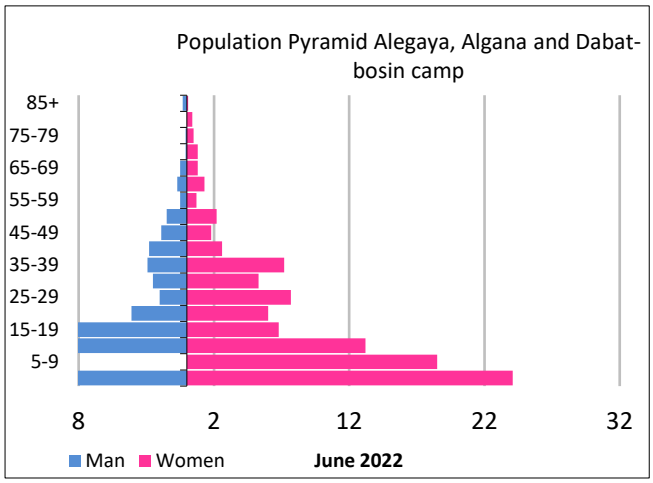
Figure 2 POPULATION PYRAMID PER CAMP











4.2 Mortality results

Table 4. 3 : MORTALITY RESULTS (RETROSPECTIVE OVER THREE MONTHS/90 DAYS PRIOR TO INTERVIEW) PER CAMP

Survey Area	CMR (total deaths/10,000 people / day): (95% CI)	U5MR (deaths in children under five/10,000 children under five / day): (95% CI)
Aljameya & Khor Alwarel	0.09 (0.02-0.5)	0.0
Radias 1&2	0.09 (0.02-0.5)	0.0
Jouri and El Kashafa	0.3 (0.07-1.0)	1.0 (0.3-2.8)
Umsangur	0.1 (0.02-0.7)	0.0
Alegaya, Algana and Daba-bosin	0.1 (0.01-0.4)	0.3 (0.05-1.5)

Both crude/totral and under five years old mortality rate found within acceptable treshold, <1.0 % CMR and <2.0 U5M.

4.3 Children 6-59 months

Age and Sex Distribution

Table 4. 4 : CHILDREN 6-59 MONTHS - DISTRIBUTION OF AGE AND SEX OF SAMPLE **IN ALJEMEYA AND KHOR ALWAREL**

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:girl
6-11	22	52.4	20	47.6	42	14.1	1.1
12-23	48	55.8	38	44.2	86	28.9	1.3
24-35	41	54.7	34	45.3	75	25.2	1.2
36-47	35	53.0	31	47.0	66	22.1	1.1
48-59	13	44.8	16	55.2	29	9.7	0.8
Total	159	53.4	139	46.6	298	100.0	1.1

The proportion of children with no exact birthdate is 11%

Table 4. 5 : CHILDREN 6-59 MONTHS - DISTRIBUTION OF AGE AND SEX OF SAMPLE **IN RADIAS 1&2**

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:girl
6-17	32	50.0	32	50.0	64	25.4	1.0
18-29	32	47.1	36	52.9	68	27.0	0.9
30-41	32	54.2	27	45.8	59	23.4	1.2
42-53	19	39.6	29	60.4	48	19.0	0.7
54-59	9	69.2	4	30.8	13	5.2	2.3
Total	124	49.2	128	50.8	252	100.0	1.0

The proportion of children with no exact birthdate is 9%

Table 4. 6 : CHILDREN 6-59 MONTHS - DISTRIBUTION OF AGE AND SEX OF SAMPLE **IN JOURI AND EL KASHAFA**

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:girl
6-11	22	50.0	22	50.0	44	12.1	1.0
12-23	38	51.4	36	48.6	74	20.3	1.1

24-35	40	50.6	39	49.4	79	21.7	1.0
36-47	46	49.5	47	50.5	93	25.5	1.0
48-59	43	58.1	31	41.9	74	20.3	1.4
Total	189	51.9	175	48.1	364	100.0	1.1

The proportion of children with no exact birthdate 30%

Table 4. 7 : CHILDREN 6-59 MONTHS - DISTRIBUTION OF AGE AND SEX OF SAMPLE **IN UMSANGUR**

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:girl
6-11	9	50.0	9	50.0	18	8.1	1.0
12-23	34	48.6	36	51.4	70	31.4	0.9
24-35	24	42.9	32	57.1	56	25.1	0.8
36-47	20	45.5	24	54.5	44	19.7	0.8
48-59	17	48.6	18	51.4	35	15.7	0.9
Total	104	46.6	119	53.4	223	100.0	0.9

The proportion of children with no exact birthdate 48%

Table 4. 8 : CHILDREN 6-59 MONTHS - DISTRIBUTION OF AGE AND SEX OF SAMPLE **IN ALEGAYA, ALGANA AND DABAT-BOSIN**

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:girl
6-11	20	47.6	22	52.4	42	9.9	0.9
12-23	77	54.2	65	45.8	142	33.4	1.2
24-35	31	41.3	44	58.7	75	17.6	0.7
36-47	46	48.9	48	51.1	94	22.1	1.0
48-59	36	50.0	36	50.0	72	16.9	1.0
Total	210	49.4	215	50.6	425	100.0	1.0

The proportion of children with no exact birthdate is 66%

The children who participated in the survey were included using their exact ages as on the official documentation available or using age estimation from the calendar of events. The overall boy: girl ratio was indicating that both sexes were equally represented in the survey (with slight differences in some of the sites). Children with exact birth date were 91% in Radias 1&2, 89% in Aljemeya and Khor Alwarel camps, 70% in Jouri and El Kashafa camps. Whereas the coverage of age documentation with no exact birth date was 66% in Alegaya, Algana and Dabat-bosin camps and 48% in Umsangur camp. Hence, for the children did not have an exact birthdate the stunting and the underweight data should be interpreted cautiously.

4.4 Anthropometric results (based on WHO Growth Standards 2006)

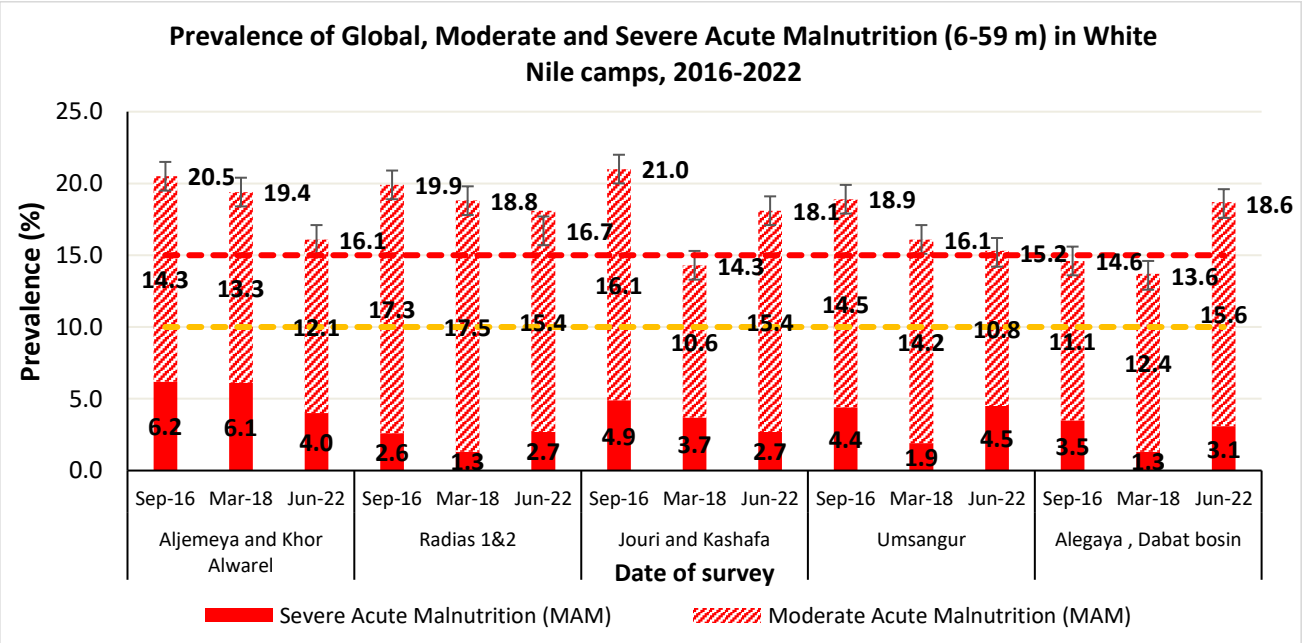
Table 4. 9 : PREVALENCE OF ACUTE MALNUTRITION BASED ON WEIGHT-FOR-HEIGHT Z-SCORES (AND/OR OEDEMA) AND BY SEX, BY CAMP

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)
Aljameya & Khor Alwarel	298	(48)16.1% (12.4-20.7)	(25) 15.7% (10.9-22.2)	(23) 16.5% (11.3-23.6)	(36) 12.1% (8.9-16.3)	(12) 4.0% (2.3-6.9)
Radias 1&2	252	(42) 16.7% (12.6-21.8)	(28) 22.6% (16.1-30.7)	(14) 10.9% (6.6-17.5)	(37) 14.7% (10.8-19.6)	(5) 2.0% (0.9-4.6)
Jouri and El Kashafa	364	(66) 18.1% (14.5-22.4)	(40) 21.2% (15.9-27.5)	(26)14.9% (10.3-20.9)	(56) 15.4% (12.0-19.5)	(10) 2.7% (1.5-5.0)
Umsangur	223	(34) 15.2% (11.1-20.6)	(17) 16.3% (10.5-24.6)	(17)14.3% (9.1-21.7)	(24) 10.8% (7.3-15.5)	(10) 4.5% (2.5-8.1)
Alegaya, Algana and Daba-bosin	424	(79) 18.6% (15.2-22.2)	(47) 22.4% (17.3-28.5)	(32)15.0% (10.8-20.3)	(66) 15.6% (12.4-19.3)	(13) 3.1% (1.8-5.2)

The prevalence of oedema is 4.0% in Umsangur, 0.7% in Aljemeya and Khor Alwarel

The prevalence of Global-Acute-Malnutrition and Severe-Acute-Malnutrition among children 6-59 months in all camps above 15% and 2.0% respectively. Except in Aljemeya and Khorlawrel camps the result in the rest of the camps shows boys are the most affected compared to girls (i.e., ranging from the highest 22.6% in Radias 1&2 to the lowest 16.3% in Umsangur).

Figure 3 : PREVALENCE OF GLOBAL AND SEVERE ACUTE MALNUTRITION BASED ON WHO GROWTH STANDARDS IN CHILDREN 6-59 MONTHS FROM 2016-2022, BY CAMP**.**



The trend graph for the period of 2016 to 2022 shows there was slight improvement in 2018 compared to 2016. However, the result in 2022 shows like the situation in 2016. Though there have been some changes through time, there is no statistically significant differences among the three surveys. The nutritional situation of White Nile camps has remained of great concern.

Table 4. 10 : PREVALENCE OF ACUTE MALNUTRITION BY AGE, BASED ON WEIGHT-FOR-HEIGHT Z-SCORES AND/OR OEDEMA, **IN ALJEMEYA AND KHOR ALWAREL**

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-11	42	3	7.1	7	16.7	31	73.8	1	2.4
12-23	86	3	3.5	9	10.5	74	86.0	0	0.0
24-35	75	2	2.7	9	12.0	63	84.0	1	1.3
36-47	66	2	3.0	8	12.1	56	84.8	0	0.0
48-59	29	0	0.0	3	10.3	26	89.7	0	0.0
Total	298	10	3.4	36	12.1	250	83.9	2	0.7

The prevalence of severe wasting is high in children 6 to 47 months. The highest was recorded in 6-11 months age category (i.e., 7.1 %) and the lowest 24-35 months age group (i.e., 2.7 %). There was no wasting among children age category 48 to 59.

Table 4. 11 : PREVALENCE OF ACUTE MALNUTRITION BY AGE, BASED ON WEIGHT-FOR-HEIGHT Z-SCORES AND/OR OEDEMA, **IN RADIAS 1&2**

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-11	33	3	9.1	9	27.3	21	63.6	0	0.0
12-23	70	1	1.4	10	14.3	59	84.3	0	0.0
24-35	55	0	0.0	6	10.9	48	87.3	1	1.8
36-47	54	0	0.0	5	9.3	49	90.7	0	0.0
48-59	40	0	0.0	7	17.5	33	82.5	0	0.0
Total	252	4	1.6	37	14.7	210	83.3	1	0.4

The prevalence of severe wasting is high in children 6 to 23 months. The highest was recorded in 6-11 months age category (i.e., 9.1 %) and the lowest 12-23 months age group (i.e., 1.4 %). There was no wasting among children age category 24 to 59 months.

Table 4. 12 : PREVALENCE OF ACUTE MALNUTRITION BY AGE, BASED ON WEIGHT-FOR-HEIGHT Z-SCORES AND/OR OEDEMA, **IN JOURI AND EL KASHAFA**

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-11	44	1	2.3	14	31.8	29	65.9	0	0.0
12-23	74	4	5.4	10	13.5	60	81.1	0	0.0
24-35	79	0	0.0	6	7.6	73	92.4	0	0.0
36-47	93	3	3.2	12	12.9	78	83.9	0	0.0
48-59	74	2	2.7	14	18.9	58	78.4	0	0.0
Total	364	10	2.7	56	15.4	298	81.9	0	0.0

The prevalence of severe wasting is high in children 12 to 23 months. There was no wasting among children age category 24 to 35 months.

Table 4. 13 : PREVALENCE OF ACUTE MALNUTRITION BY AGE, BASED ON WEIGHT-FOR-HEIGHT Z-SCORES AND/OR OEDEMA, **IN UMSANGUR**

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-11	18	2	11.1	5	27.8	11	61.1	0	0.0
12-23	70	4	5.7	7	10.0	59	84.3	0	0.0
24-35	56	2	3.6	5	8.9	49	87.5	0	0.0
36-47	44	1	2.3	3	6.8	40	90.9	0	0.0
48-59	35	0	0.0	4	11.4	30	85.7	1	2.9
Total	223	9	4.0	24	10.8	189	84.8	1	0.4

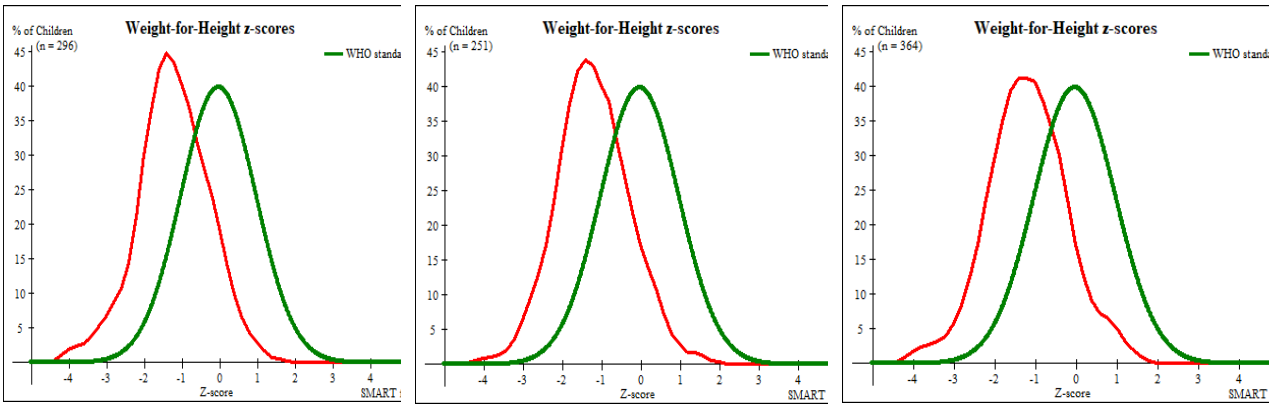
The prevalence of severe wasting is high in children 6 to 47 months. The highest was recorded in 6-11 months age category (i.e., 7.1 %) and followed by 12-23 months age group (i.e., 5.7 %) and the lowest among children 36-47 months (i.e., 2.3). There was no wasting among children age category 48 to 59.

Table 4. 14 : PREVALENCE OF ACUTE MALNUTRITION BY AGE, BASED ON WEIGHT-FOR-HEIGHT Z-SCORES AND/OR OEDEMA, **IN ALEGAYA, ALGANA AND DABAT-BOSIN**

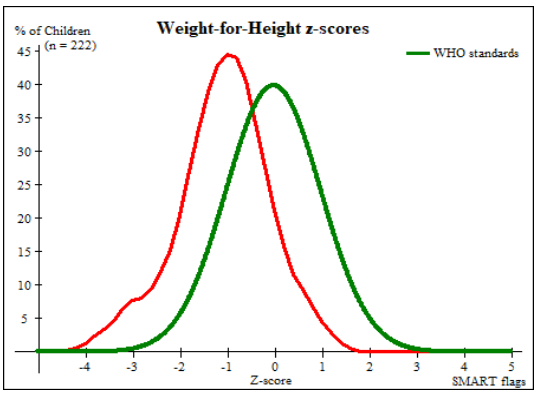
Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-11	42	6	14.3	4	9.5	32	76.2	0	0.0
12-23	142	4	2.8	30	21.1	108	76.1	0	0.0
24-35	75	0	0.0	9	12.0	66	88.0	0	0.0
36-47	94	3	3.2	11	11.7	80	85.1	0	0.0
48-59	71	0	0.0	12	16.9	59	83.1	0	0.0
Total	424	13	3.1	66	15.6	345	81.4	0	0.0

The prevalence of severe wasting is high in children 6 to 11 months (i.e., 14.3), followed by age category 36-47 months (i.e., 3.2) and the lowest among children 12-23 months (i.e., 2.8). There was no wasting among children age category 24 to 35 and 48 to 59 months.

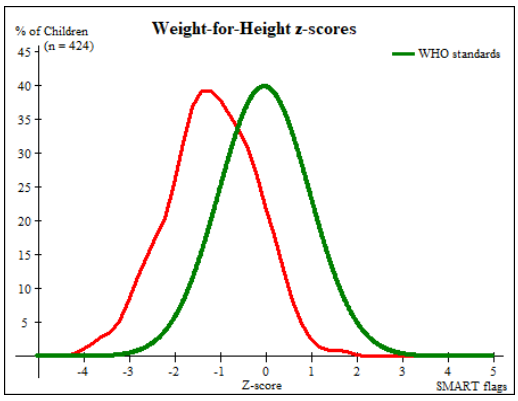
Figure 4 : DISTRIBUTION OF WEIGHT-FOR-HEIGHT Z-SCORES (BASED ON WHO GROWTH STANDARDS; THE REFERENCE POPULATION IS SHOWN IN GREEN AND THE SURVEYED POPULATION IS SHOWN IN RED) OF SURVEY POPULATION IN WHITE NILE CAMPS.



Aljmeya and Khor Alwarel camp | Radias 1&2 camp | Jouri and El Kashafa camp



Umsangur camp



Alegaya, Algana and Dabat-bosin camp

Figure 4 Above shows that the distribution of weight-for-height Z-score for the surveyed sample in all camps shifted to the left from the WHO standard reference population for children aged 6-59 months. This shows the poor nutritional status among the surveyed population.

Table 4. 15 : PREVALENCE OF MUAC MALNUTRITION, IN WHITE NILE CAMPS

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)
Aljameya & Khor Alwarel	298	(31) 10.4% (7.4-14.4)	(15) 9.4% (5.8-15.0)	(16) 11.5% (7.2-17.9)	(27) 9.1% (6.3-12.9)	(4) 1.3% (0.5-3.4)
Radias 1&2	252	(33) 13.1% (9.5-17.8)	(18) 14.5% (9.4-21.8)	(15) 11.9% (7.2-18.4)	(25) 9.9% (6.8-14.2)	(8) 3.2% (1.6-6.1)
Jouri and El Kashafa	364	(28) 7.7% (5.4-10.9)	(15) 7.9% (4.9-12.7)	(13) 7.4% (4.4-12.3)	(24) 6.6% (4.5-9.6)	(4) 1.1% (0.4-2.8)
Umsangur	223	(22) 9.9 % (6.6 - 14.5)	(15) 14.4 % (8.9 - 22.4)	(7) 5.9 % (2.9 - 11.6)	(18) 8.1 % (5.2 - 12.4)	(4) 1.8 % (0.7 - 4.5)
Alegaya, Algana and Daba-bosin	425	(51) 12.0 % (9.2 - 15.4)	(29) 13.8 % (9.8 - 19.1)	(22) 10.2 % (6.9 - 15.0)	(36) 8.5 % (6.2 - 11.5)	(15) 3.5 % (2.2 - 5.7)

Prevalence of MUAC < 125 mm and/or oedema is the highest in Radias 1&2 (13.1%) and followed by Alegaya, Algana and Dabat-bosin camp (12.0%). The lowest is in Jouri and El Kashafa camp (7.7%). The overall result shows the highest prevalence in all camps.

Table 4. 16 : PREVALENCE OF MUAC MALNUTRITION BY AGE, BASED ON MUAC CUT OFF'S AND/OR OEDEMA, **IN ALJEMEYA AND KHOR ALWAREL**

Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-11	42	2	4.8	13	31.0	27	64.3	1	2.4
12-23	86	0	0.0	7	8.1	79	91.9	0	0.0
24-35	75	0	0.0	4	5.3	71	94.7	1	1.3
36-47	66	0	0.0	3	4.5	63	95.5	0	0.0
48-59	29	0	0.0	0	0.0	29	100.0	0	0.0

Total	298	2	0.7	27	9.1	269	90.3	2	0.7

Table 4. 17 : PREVALENCE OF MUAC MALNUTRITION BY AGE, BASED ON MUAC CUT OFF'S AND/OR OEDEMA, **IN RADIAS 1&2**

Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-11	33	2	6.1	9	27.3	22	66.7	0	0.0
12-23	70	5	7.1	15	21.4	50	71.4	0	0.0
24-35	55	0	0.0	1	1.8	54	98.2	1	1.8
36-47	54	0	0.0	0	0.0	54	100.0	0	0.0
48-59	40	0	0.0	0	0.0	40	100.0	0	0.0
Total	252	7	2.8	25	9.9	220	87.3	1	0.4

Table 4. 18 : PREVALENCE OF MUAC MALNUTRITION BY AGE, BASED ON MUAC CUT OFF'S AND/OR OEDEMA, **IN JOURI AND EL KASHAFA**

Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-11	44	0	0.0	16	36.4	28	63.6	0	0.0
12-23	74	4	5.4	4	5.4	66	89.2	0	0.0
24-35	79	0	0.0	4	5.1	75	94.9	0	0.0
36-47	93	0	0.0	0	0.0	93	100.0	0	0.0
48-59	74	0	0.0	0	0.0	74	100.0	0	0.0
Total	364	4	1.1	24	6.6	336	92.3	0	0.0

Table 4. 19 : PREVALENCE OF MUAC MALNUTRITION BY AGE, BASED ON MUAC CUT OFF'S AND/OR OEDEMA, **IN UMSANGUR**

Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-11	18	2	11.1	3	16.7	13	72.2	0	0.0
12-23	70	0	0.0	9	12.9	61	87.1	0	0.0
24-35	56	0	0.0	5	8.9	51	91.1	0	0.0
36-47	44	0	0.0	1	2.3	43	97.7	0	0.0
48-59	35	1	2.9	0	0.0	34	97.1	1	2.9
Total	223	3	1.3	18	8.1	202	90.6	1	0.4

Table 4. 20 : PREVALENCE OF MUAC MALNUTRITION BY AGE, BASED ON MUAC CUT OFF'S AND/OR OEDEMA, **IN ALEGAYA, ALGANA AND DABAT-BOSIN**

Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-11	42	6	14.3	10	23.8	26	61.9	0	0.0
12-23	142	7	4.9	25	17.6	110	77.5	0	0.0
24-35	75	1	1.3	0	0.0	74	98.7	0	0.0
36-47	94	1	1.1	1	1.1	92	97.9	0	0.0
48-59	72	0	0.0	0	0.0	72	100.0	0	0.0
Total	425	15	3.5	36	8.5	374	88.0	0	0.0

Table 4. 21 : PREVALENCE OF UNDERWEIGHT BASED ON WEIGHT-FOR-AGE Z-SCORES AND BY SEX, IN WHITE NILE CAMPS

Survey Area	N	Prevalence of underweight (<-2 z-score)			Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	Prevalence of severe underweight (<-3 z-score)
		All	Boys	Girls	All	All
		(n) % (95% CI)	(n) % (95% CI)	(n) % (95% CI)	(n) % (95% CI)	(n) % (95% CI)
Aljameya & Khor Alwarel	296	(61) 20.6% (16.4-25.6)	(39) 24.8% (18.7-32.1)	(22) 15.8% (10.7-22.8)	(55)18.6% (14.6-23.4)	(6) 2.0% (0.9-4.4)
Radias 1&2	251	(60) 23.9% (19.0-29.5)	(38) 30.9% (23.4-39.5)	(22) 17.2% (11.6-24.7)	(50) 19.9% (15.4-25.3)	(10) 4.0% (2.2-7.2)
Jouri and El Kashafa	364	(95) 26.1% (21.9-30.8)	(61) 32.3% (26.0-39.2)	(34) 19.4% (14.2-25.9)	(80) 22.0% (18.0-26.5)	(15) 4.1% (2.5-6.7)
Umsangur	222	(57) 25.7 % (20.4-31.8)	(28) 27.2 % (19.5- 36.5)	(29) 24.4 % (17.5 - 32.8)	(53) 23.9 % (18.7- 29.9)	(4) 1.8 % (0.7 - 4.5)
Alegaya, Algana and Daba-bosin	425	(59) 13.9 % (10.9 - 17.5)	(36) 17.1 % (12.6- 22.8)	(23) 10.7 % (7.2 - 15.5)	(51) 12.0 % (9.2 - 15.4)	(8) 1.9 % (1.0 - 3.7)

Table 4. 22 : PREVALENCE OF UNDERWEIGHT BY AGE BASED ON WEIGHT-FOR-AGE Z-SCORES, AND OEDEMA **IN ALJEMEYA AND KHOR ALWAREL**

Age (mo)	Total no.	Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-11	41	2	4.9	8	19.5	31	75.6	1	2.4
12-23	86	3	3.5	17	19.8	66	76.7	0	0.0
24-35	74	1	1.4	10	13.5	63	85.1	1	1.4
36-47	66	0	0.0	15	22.7	51	77.3	0	0.0
48-59	29	0	0.0	5	17.2	24	82.8	0	0.0
Total	296	6	2.0	55	18.6	235	79.4	2	0.7

Table 4. 23 : PREVALENCE OF UNDERWEIGHT BY AGE BASED ON WEIGHT-FOR-AGE Z-SCORES, AND OEDEMA **IN RADIAS 1&2**

Age (mo)	Total no.	Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-11	33	4	12.1	7	21.2	22	66.7	0	0.0
12-23	70	3	4.3	17	24.3	50	71.4	0	0.0
24-35	54	0	0.0	13	24.1	41	75.9	1	1.9
36-47	54	3	5.6	5	9.3	46	85.2	0	0.0

48-59	40	0	0.0	8	20.0	32	80.0	0	0.0
Total	251	10	4.0	50	19.9	191	76.1	1	0.4

Table 4. 24 : PREVALENCE OF UNDERWEIGHT BY AGE BASED ON WEIGHT-FOR-AGE Z-SCORES, AND OEDEMA **JOURI AND EL KASHAFA**

Age (mo)	Total no.	Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-11	44	1	2.3	11	25.0	32	72.7	0	0.0
12-23	74	5	6.8	15	20.3	54	73.0	0	0.0
24-35	79	2	2.5	18	22.8	59	74.7	0	0.0
36-47	93	4	4.3	23	24.7	66	71.0	0	0.0
48-59	74	3	4.1	13	17.6	58	78.4	0	0.0
Total	364	15	4.1	80	22.0	269	73.9	0	0.0

Table 4. 25 : PREVALENCE OF UNDERWEIGHT BY AGE BASED ON WEIGHT-FOR-AGE Z-SCORES, AND OEDEMA **IN UMSANGUR**

Age (mo)	Total no.	Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-11	18	0	0.0	8	44.4	10	55.6	0	0.0
12-23	70	3	4.3	27	38.6	40	57.1	0	0.0
24-35	56	1	1.8	10	17.9	45	80.4	0	0.0
36-47	44	0	0.0	3	6.8	41	93.2	0	0.0
48-59	34	0	0.0	5	14.7	29	85.3	1	2.9
Total	222	4	1.8	53	23.9	165	74.3	1	0.5

Table 4. 26 : PREVALENCE OF UNDERWEIGHT BY AGE BASED ON WEIGHT-FOR-AGE Z-SCORES, AND OEDEMA **IN ALEGAYA, ALGANA AND DABAT-BOSIN**

Age (mo)	Total no.	Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-11	42	4	9.5	5	11.9	33	78.6	0	0.0
12-23	142	3	2.1	26	18.3	113	79.6	0	0.0
24-35	75	0	0.0	7	9.3	68	90.7	0	0.0
36-47	94	1	1.1	9	9.6	84	89.4	0	0.0
48-59	72	0	0.0	4	5.6	68	94.4	0	0.0
Total	425	8	1.9	51	12.0	366	86.1	0	0.0

Table 4. 27 : PREVALENCE OF STUNTING BASED ON HEIGHT-FOR-AGE Z-SCORES AND BY SEX, IN WHITE NILE CAMPS

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)
Aljameya & Khor Alwarel	298	(38) 12.8% (9.4-17.0)	(26) 16.4% (11.4-22.9)	(12) 8.6% (5.0-14.5)	(34) 11.4% (8.3-15.5)	(4) 1.3% (0.5-3.4)
Radias 1&2	252	(43) 17.1% (12.9-22.2)	(28) 22.6% (16.1-30.7)	(15) 11.7% (7.2-18.4)	(36) 14.3% (10.5-19.1)	(7) 2.8% (1.4-5.6)

Jouri and El Kashafa	364	(87) 23.9 % (19.8-28.5)	(59) 31.2 % (25.0- 38.1)	(28) 16.0 % (11.3 - 22.2)	(66) 18.1 % (14.5- 22.4)	(21) 5.8 % (3.8 - 8.7)
Umsangur	223	(19) 8.5 % (5.5 - 12.9)	(12) 11.5 % (6.7 - 19.1)	(7) 5.9 % (2.9 - 11.6)	(19) 8.5 % (5.5 - 12.9)	(0) 0.0 % (0.0 - 1.7)
Alegaya, Algana and Daba-bosin	425	(50) 11.8 % (9.0 - 15.2)	(33) 15.7 % (11.4 - 21.2)	(17) 7.9 % (5.0 - 12.3)	(48) 11.3 % (8.6 - 14.7)	(2) 0.5 % (0.1 - 1.7)

Figure 5 : PREVALENCE OF GLOBAL AND SEVERE STUNTING BASED ON WHO GROWTH STANDARDS IN CHILDREN 6-59 MONTHS FROM 2016-2022, IN WHITE NILE CAMPS.

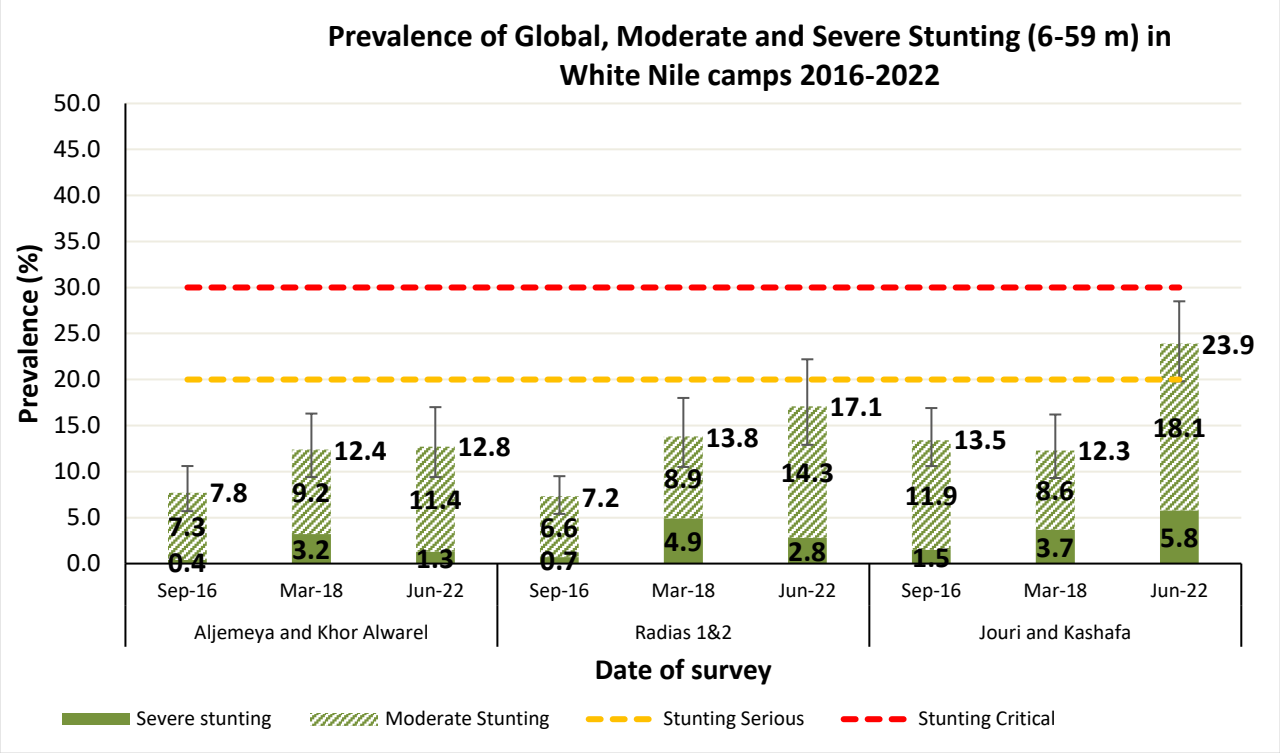


Figure 5: shows trend analysis of the prevalence of stunting during 2016, 2018 and 2022. The result shows the prevalence of stunting in all camps are stable, apart for an increase in Jouri and El Kashafa camps during 2022.

Table 4. 28 : PREVALENCE OF STUNTING BY AGE BASED ON HEIGHT-FOR-AGE Z-SCORES, **IN ALJEMEYA AND KHOR ALWAREL**

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	42	0	0.0	2	4.8	40	95.2
12-23	86	3	3.5	10	11.6	73	84.9
24-35	75	1	1.3	5	6.7	69	92.0
36-47	66	0	0.0	12	18.2	54	81.8
48-59	29	0	0.0	5	17.2	24	82.8
Total	298	4	1.3	34	11.4	260	87.2

Table 4. 29 : PREVALENCE OF STUNTING BY AGE BASED ON HEIGHT-FOR-AGE Z-SCORES, **IN RADIAS 1&2**

Age (mo)	Total	Severe stunting	Moderate stunting	Normal

	no.	(<-3 z-score)		(>= -3 and <-2 z-score)		(> = -2 z score)	
		No.	%	No.	%	No.	%
6-11	33	0	0.0	6	18.2	27	81.8
12-23	70	3	4.3	9	12.9	58	82.9
24-35	55	2	3.6	6	10.9	47	85.5
36-47	54	2	3.7	9	16.7	43	79.6
48-59	40	0	0.0	6	15.0	34	85.0
Total	252	7	2.8	36	14.3	209	82.9

Table 4. 30 : PREVALENCE OF STUNTING BY AGE BASED ON HEIGHT-FOR-AGE Z-SCORES, **IN JOURI AND EL KASHAFA**

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	44	0	0.0	5	11.4	39	88.6
12-23	74	3	4.1	11	14.9	60	81.1
24-35	79	6	7.6	19	24.1	54	68.4
36-47	93	7	7.5	22	23.7	64	68.8
48-59	74	5	6.8	9	12.2	60	81.1
Total	364	21	5.8	66	18.1	277	76.1

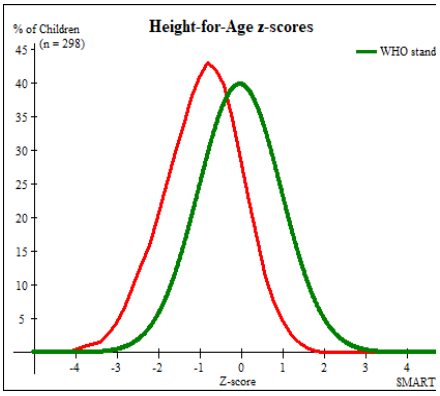
Table 4. 31 : PREVALENCE OF STUNTING BY AGE BASED ON HEIGHT-FOR-AGE Z-SCORES, **IN UMSANGUR**

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	18	0	0.0	1	5.6	17	94.4
12-23	70	0	0.0	9	12.9	61	87.1
24-35	56	0	0.0	4	7.1	52	92.9
36-47	44	0	0.0	2	4.5	42	95.5
48-59	35	0	0.0	3	8.6	32	91.4
Total	223	0	0.0	19	8.5	204	91.5

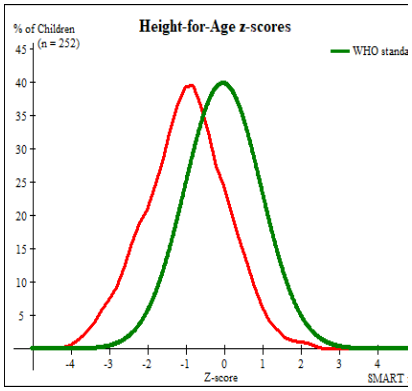
Table 4. 32 : PREVALENCE OF STUNTING BY AGE BASED ON HEIGHT-FOR-AGE Z-SCORES, **IN ALEGAYA, ALGANA AND DABAT-BOSIN**

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	42	1	2.4	4	9.5	37	88.1
12-23	142	0	0.0	20	14.1	122	85.9
24-35	75	0	0.0	4	5.3	71	94.7
36-47	94	0	0.0	9	9.6	85	90.4
48-59	72	1	1.4	11	15.3	60	83.3
Total	425	2	0.5	48	11.3	375	88.2

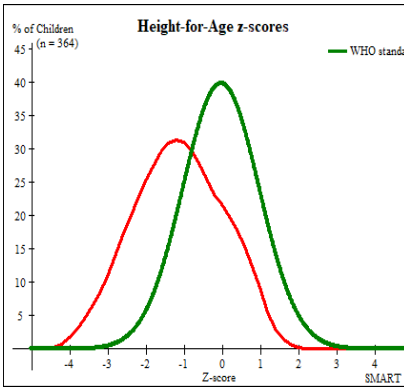
Figure 6 : DISTRIBUTION OF HEIGHT-FOR-AGE Z-SCORES (BASED ON WHO GROWTH STANDARDS; THE REFERENCE POPULATION IS SHOWN IN GREEN AND THE SURVEYED POPULATION IS SHOWN IN RED) OF SURVEY POPULATION WHITE NILE CAMPS COMPARED TO REFERENCE POPULATION



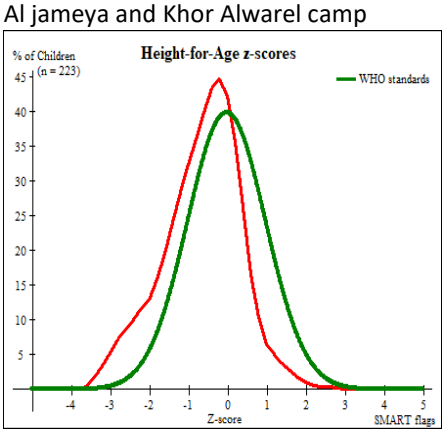
Al jameya and Khor Alwarel camp



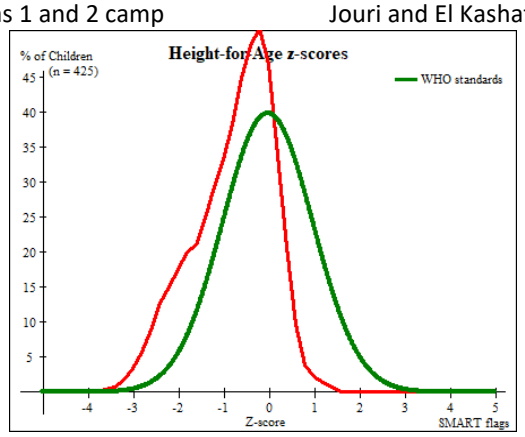
Radias 1 and 2 camp



Jouri and El Kashafa camp



Umsangur camp



Alegaya, Algana and Dabat-bosin camp

The distribution for height-for-age z-scores for the survey sample is shifted to the left, illustrating poor height for age of the surveyed population compared to the international WHO Standard population of children aged 6-59 months. The age distribution in Umsangur and Alegaya, Algana and Dabat-bosin camps saturated between -2 and +2. The two sites hosting the Nuer community, known for tall legs and there might be an implication on height mainly for those above 36 months of age due to certain errors while tracing the exact birth date or months of the child.

Table 4. 33 : PREVALENCE OF OVERWEIGHT BASED ON WEIGHT-FOR-HEIGHT Z-SCORES (NO OEDEMA), BY CAMP

Survey Area	N	Prevalence of overweight (>2 z-score)		Prevalence of severe overweight (>3 z-score)	
		n	% (95% CI)	n	% (95% CI)
Aljameya & Khor Alwarel	298	0	0.0% (0.0-1.3)	0	0.0% (0.0-1.3)
Radias 1&2	251	0	0.0% (0.0-1.5)	0	0.0% (0.0-1.5)
Jouri and El Kashafa	364	0	0.0% (0.0-1.0)	0	0.0% (0.0-1.0)
Umsangur	223	0	0.0% (0.0-1.7)	0	0.0% (0.0-1.7)
Alegaya, Algana and Daba-bosin	424	0	0.0% (0.0-0.9)	0	0.0% (0.0-0.9)

The prevalence of overweight (>2 z-score) shows similar results with no overweight category among children surveyed 6-59 months of age in all camps.

Table 4. 34 : PREVALENCE OF OVERWEIGHT BY AGE BASED ON WEIGHT-FOR-HEIGHT Z-SCORES (NO OEDEMA), **IN ALJEMEYA AND KHOR ALWAREL**

Age (mo)	Total no.	Overweight (WHZ > 2)		Severe Overweight (WHZ > 3)	
		No.	%	No.	%
6-11	42	0	0.0	0	0.0
12-23	86	0	0.0	0	0.0
24-35	75	0	0.0	0	0.0
36-47	66	0	0.0	0	0.0
48-59	29	0	0.0	0	0.0
Total	298	0	0.0	0	0.0

Table 4. 35 : PREVALENCE OF OVERWEIGHT BY AGE BASED ON WEIGHT-FOR-HEIGHT Z-SCORES (NO OEDEMA), **IN RADIAS 1&2**

Age (mo)	Total no.	Overweight (WHZ > 2)		Severe Overweight (WHZ > 3)	
		No.	%	No.	%
6-11	33	0	0.0	0	0.0
12-23	70	0	0.0	0	0.0
24-35	55	0	0.0	0	0.0
36-47	54	0	0.0	0	0.0
48-59	40	0	0.0	0	0.0
Total	252	0	0.0	0	0.0

Table 4. 36 : TABLE 33 PREVALENCE OF OVERWEIGHT BY AGE BASED ON WEIGHT-FOR-HEIGHT Z-SCORES (NO OEDEMA), **IN JOURI AND EL KASHAFA**

Age (mo)	Total no.	Overweight (WHZ > 2)		Severe Overweight (WHZ > 3)	
		No.	%	No.	%
6-11	44	0	0.0	0	0.0
12-23	74	0	0.0	0	0.0
24-35	79	0	0.0	0	0.0
36-47	93	0	0.0	0	0.0
48-59	74	0	0.0	0	0.0
Total	364	0	0.0	0	0.0

Table 4. 37 :Prevalence of OVERWEIGHT by age based on Weight-for-HEIGHT z-scores (no oedema), IN UMSANGUR

Age (mo)	Total no.	Overweight (WHZ > 2)		Severe Overweight (WHZ > 3)	
		No.	%	No.	%
6-11	18	0	0.0	0	0.0
12-23	70	0	0.0	0	0.0
24-35	56	0	0.0	0	0.0
36-47	44	0	0.0	0	0.0
48-59	35	0	0.0	0	0.0
Total	223	0	0.0	0	0.0

Table 4. 38 : PREVALENCE OF OVERWEIGHT BY AGE BASED ON WEIGHT-FOR-HEIGHT Z-SCORES (NO OEDEMA), **IN ALEGAYA, ALGANA AND DABAT-BOSIN**

Age (mo)	Total no.	Overweight (WHZ > 2)		Severe Overweight (WHZ > 3)	
		No.	%	No.	%
6-11	42	0	0.0	0	0.0
12-23	142	0	0.0	0	0.0
24-35	75	0	0.0	0	0.0

36-47	94	0	0.0	0	0.0
48-59	71	0	0.0	0	0.0
Total	424	0	0.0	0	0.0

Table 4. 39 : MEAN Z-SCORES, DESIGN EFFECTS AND EXCLUDED SUBJECTS, IN WHITE NILE CAMPS

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Aljemeya and Khor Alwarel					
Weight-for-Height	296	-1.22±0.93	1.00	2	0
Weight-for-Age	296	-1.34±0.77	1.00	2	0
Height-for-Age	298	-0.92±0.91	1.00	0	0
Radias 1 & 2					
Weight-for-Height	250	-1.35±0.77	1.00	1	1
Weight-for-Age	251	-1.58±0.80	1.00	1	0
Height-for-Age	252	-0.81±0.98	1.00	0	0
Jouri and El Kashafa					
Weight-for-Height	364	-1.18±0.96	1.00	0	0
Weight-for-Age	364	-1.44±0.91	1.00	0	0
Height-for-Age	364	-1.12±1.15	1.00	0	0
Umsangur					
Weight-for-Height	222	-1.08±0.96	1.00	1	0
Weight-for-Age	222	-1.09±0.89	1.00	1	0
Height-for-Age	223	-0.65±0.97	1.00	0	0
Alegaya, Algana and Dabat-bosin					
Weight-for-Height	424	-1.17±0.97	1.00	0	1
Weight-for-Age	425	-1.22±0.74	1.00	0	0
Height-for-Age	425	-0.78±0.85	1.00	0	0

* contains for WHZ and WAZ the children with edema.

Children with missing data for weight, height, edema or MUAC were automatically excluded from the analysis by the ENA software for their respective estimation of prevalence. As recommended by the SMART Methodology and SENS V3 guideline, SMART flags (exclusion of z-scores from observed mean) were used for analysis to exclude extreme values that were likely resulted from incorrect anthropometric measurements or incorrect estimation of age (-3 z-scores/+3 z-scores for WHZ, HAZ and WAZ in all survey sites).

4.5 Enrolment into nutrition programmes results

Table 4. 40 : PROGRAMME ENROLMENT FOR ACUTELY MALNOURISHED CHILDREN BASED ON MUAC, WHZ AND OEDEMA, IN WHITE NILE CAMPS

Survey Area	Programme	Number/total	% (95% CI)
Aljameya & Khor Alwarel	Supplementary feeding programme (TSFP) enrolment WHZ < –2SD to ≥ –3SD & MUAC ≥11.5cm-<12.5CM)	11/27	40.7% (13.2-66.1)
	Therapeutic (OTP/SC) feeding programme enrolment WHZ < –3 Z score & MUAC <11.5cm and/or Oedema	3/4	75% (35.9-80.6)
Radias 1&2	Supplementary feeding programme (TSFP) enrolment WHZ < –2SD to ≥ –3SD & MUAC ≥11.5cm-<12.5CM	7/25	28% (8.9-41.0)
	Therapeutic (OTP/SC) feeding programme enrolment	4/8	50%

	MUAC <11.5cm and/or Oedema		(19.8 - 82.7)
Jouri and El Kashafa	Supplementary feeding programme (TSFP) enrolment (MUAC ≥11.5cm- <12.5CM)	11/24	45.8% (2.7-72.3)
	Therapeutic (OTP/SC) feeding programme enrolment MUAC <11.5cm and/or Oedema	4/4	100%
Umsangur	Supplementary feeding programme (TSFP) enrolment (MUAC ≥11.5cm- <12.5CM)	8/18	44.4% (1.4-69.7)
	Therapeutic (OTP/SC) feeding programme enrolment MUAC <11.5cm and/or Oedema	4/4	100%
Alegaya, Algana and Dabat-bosin	Supplementary feeding programme (TSFP) enrolment (MUAC ≥11.5cm- <12.5CM)	9/37	24.3% (1.7-49.9)
	Therapeutic (OTP/SC) feeding programme enrolment MUAC <11.5cm and/or Oedema	7/15	46.6% (0.2-69.9)

The survey used MUAC and WFH Z-score for nutritional admission as per the national screening criteria/cutoff points, <125mm for MUAC and < -2 Z-score and Oedema. All children identified as malnourished and not in the programme were referred to the nearby nutrition program. The coverage results must be interpreted with caution due to the small number of cases that were identified during the survey.

4.6 Measles vaccination coverage results

Table 4. 41 : MEASLES VACCINATION COVERAGE FOR CHILDREN AGED 9-59 MONTHS, IN WHITE NILE CAMPS

Survey Area	N	Measles vaccination with card		Measles vaccination with card or confirmation from mother	
		n	% (95% CI)	n	% (95% CI)
Aljameya & Khor Alwarel	283	118	41.7% (35.9-47.7)	275	97.2% (94.5-98.8)
Radias 1&2	229	137	59.8% (53.2-66.2)	222	96.9% (93.8-98.8)
Jouri and El Kashafa	330	205	62.1% (56.8-67.2)	325	98.5% (96.5-99.4)
Umsangur	215	110	51.2% (44.3-58.0)	192	98.3% (84.4-93.1)
Alegaya, Algana and Daba-bosin	274	121	44.1% (38.2-50.3)	263	96.0% (92.9-98.0)

Table 4.41 the measles vaccination coverage with the combination of card and recall from mother/caregivers in all camps are found within acceptable situation, the recommended target is ≥ 95%.

4.7 Vitamin A supplementation coverage results

Table 4. 42 : VITAMIN A SUPPLEMENTATION COVERAGE FOR CHILDREN AGED 6-59 MONTHS WITHIN THE PAST 6 MONTHS, IN WHITE NILE CAMPS

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)
Aljameya & Khor Alwarel	298	91	30.5% (25.4-36.1)	265	88.9% (84.8-92.3)
Radias 1&2	253	133	52.5% (46.2-58.9)	226	89.3% (84.9-92.9)
Jouri and El Kashafa	362	190	52.5% (47.3-57.6)	295	81.5% (77.2-85.2)
Umsangur	223	169	75.8% (69.6-80.3)	169	75.8% (69.2-81.3)
Alegaya, Algana and Daba-bosin	283	76	26.9% (21.8-32.4)	166	58.7% (52.7-64.5)

Table 4.42: the coverages of Vitamin A supplementations within the past six months by card and recall from mother/caregivers in all camps are found bellow acceptable situation, the recommended target is ≥ 90%.

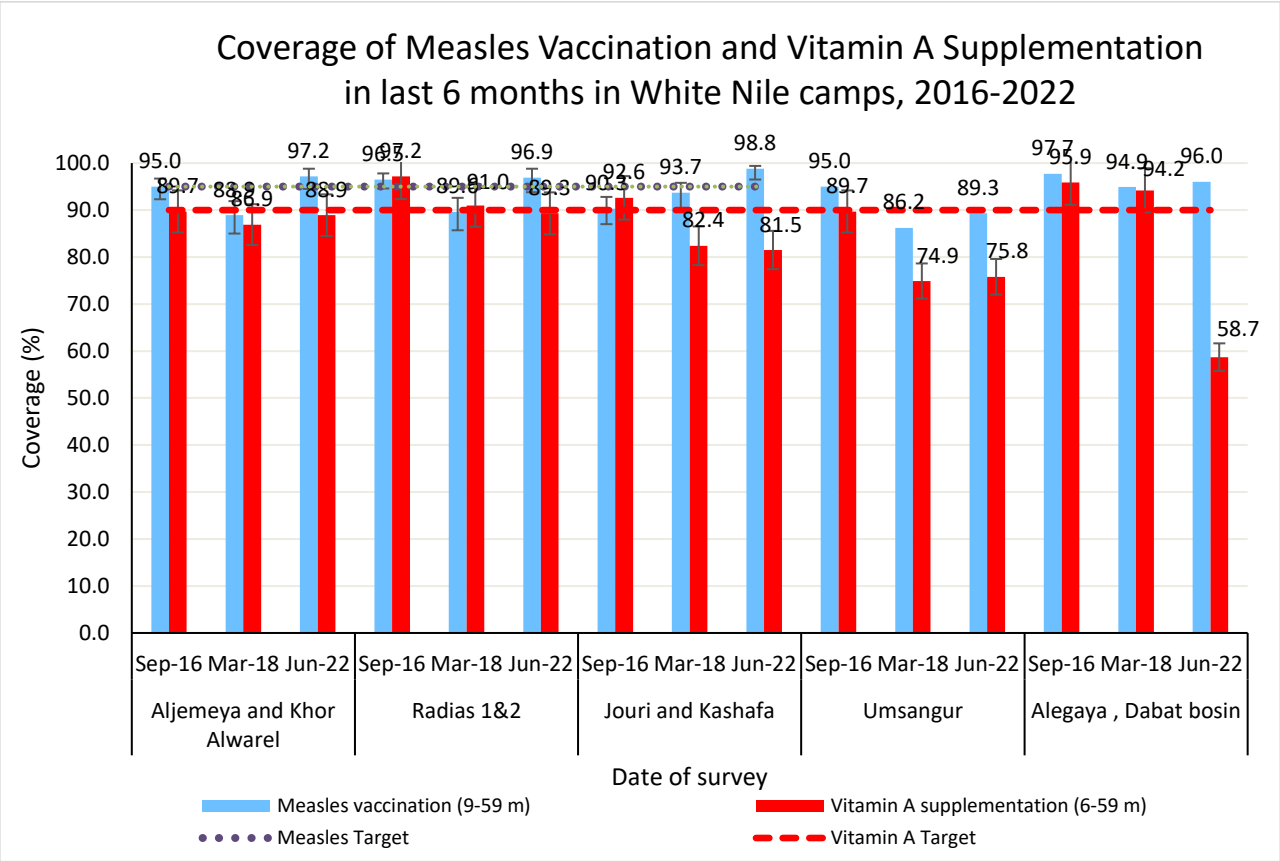
4.8 Deworming coverage results (if applicable)

Table 4. 43 : DEWORMING COVERAGE FOR CHILDREN AGED 12-59/24-59 MONTHS WITHIN THE PAST 6 MONTHS, IN WHITE NILE CAMPS

Survey Area	N	Deworming within the past 6 months	
		n	% (95% CI)
Aljameya & Khor Alwarel	209	39	18.7% (13.6-24.6)
Radias 1&2	191	43	22.5% (16.8-29.1)
Jouri and El Kashafa	293	71	24.2% (19.4-29.6)
Umsangur	161	41	25.5% (18.9-32.9)
Alegaya, Algana and Daba-bosin	153	8	5.2% (2.3-10.0)

Deworming coverage integrated into the national vitamin A supplementation campaigns. Table 4.43, shows that the coverage from the clinical routine medications and supplementations from the nutrition centres. Thus, the Deworming coverage in all camps found bellow the recommended target of ≥75%.

Figure 7 : COVERAGE OF MEASLES VACCINATION, AND VITAMIN A SUPPLEMENTATION IN LAST 6 MONTHS IN CHILDREN 6-59 MONTHS FROM 2016-2022 IN WHITE NILE CAMPS



The above Figure 7 Shows the trend analysis of Measles vaccinations and Vitamin A supplementation coverages in all sites for the period of 2016, 2018 and 2022. The Measles vaccination coverage is within acceptable threshold for the three surveys. Whereas Vitamin A supplementation coverage result shows irregularities and declining trend in 2022.

4.9 Diarrhoea results

Table 4. 44 : PERIOD PREVALENCE OF DIARRHOEA, IN WHITE NILE CAMPS

Survey Area	N	Diarrhoea in the last two weeks	
		n	% (95% CI)
Aljameya & Khor Alwarel	297	33	11.1% (7.8-15.3)
Radias 1&2	245	40	16.3% (11.9-21.7)
Jouri and El Kashafa	359	64	17.8% (14.2-22.1)
Umsangur	212	25	11.8% (7.8-16.9)
Alegaya, Algana and Daba-bosin	423	67	15.8% (12.7-19.6)

4.10 Anaemia results

Table 4. 45 : PREVALENCE OF TOTAL ANAEMIA, ANAEMIA CATEGORIES, AND MEAN HAEMOGLOBIN CONCENTRATION IN CHILDREN 6-59 MONTHS OF AGE AND BY AGE GROUP, **IN ALJEMEYA AND KHOR ALWAREL**

	6-59 months n = 284	6-23 months n=	24-59 months n=123
	95% CI	95% CI	95% CI
Total Anaemia (Hb<11.0 g/dL)	(147) 51.8 % (45.8-57.7)	(83) 67.5% (58.5-75.7)	(64) 39.7% (32.1-47.8)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(59) 20.8 % (16.2-26.0)	(36) 29.3% (21.4-38.2)	(23) 14.3% (9.3-20.7)
Moderate Anaemia (7.0-9.9 g/dL)	(83) 29.2 % (24.0-34.9)	(45) 36.6% (28.1-45.8)	(38) 23.6% (17.3-30.9)
Severe Anaemia (<7.0 g/dL)	(5) 1.8% (95% CI)	(2) 1.6% (0.2-5.8)	(3) 1.9% (0.4-5.4)
Mean Hb (g/dL) **(SD)** **[range]**	10.6g/dL (1.5 SD) [4.5min, 13.5max]	10.3g/dL (1.3 SD) [6.6 min, 12.9 max]	10.9g/dL (1.6 SD) [4.5 min, 13.5 max]

Table 4. 46 : PREVALENCE OF MODERATE AND SEVERE ANAEMIA IN CHILDREN 6-59 MONTHS OF AGE AND BY AGE GROUP, **IN RADIAS 1&2**

	6-59 months n = 253	6-23 months n=103	24-59 months n=149
	95% CI	95% CI	95% CI
Total Anaemia (Hb<11.0 g/dL)	(128) 50.6 % (44.3-56.9)	(62) 60.2% (50.1-69.7)	(66) 44.3 % (36.2-52.7)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(51) 20.2% (15.4-25.6))	(25) 24.3 % (16.4-33.7)	(26) 17.5% (11.7-24.5)
Moderate Anaemia (7.0-9.9 g/dL)	(75) 29.6% (24.1-35.7)	(37) 35.9% (26.7-46.0)	(38) 25.5% (18.7-33.3)
Severe Anaemia (<7.0 g/dL)	(2) 0.8% (0.1-2.8)	0.0%	(2) 1.3 % (0.2-4.8)
Mean Hb (g/dL) **(SD)** **[range]**	10.7g/dL (1.6 SD) [4.4 min, 14.2 max]	10.5g/dL (1.5 SD) [7.0min, 14.0max]	10.9g/dL (1.7SD) [4.4min, 14.2max]

Table 4. 47 : PREVALENCE OF MODERATE AND SEVERE ANAEMIA IN CHILDREN 6-59 MONTHS OF AGE AND BY AGE GROUP, **IN JOURI AND EL KASHAFA**

	6-59 months n = 358	6-23 months n=115	24-59 months n=243
	95% CI	95% CI	95% CI
Total Anaemia (Hb<11.0 g/dL)	(204) 57.0% (51.8-62.0)	(79) 68.7% (59.4-77.0)	(125) 51.4 % (45.0-57.9)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(110) 30.7% (26.2-35.7)	(37) 32.2% (23.8-41.5)	(73) 30.0% (24.4-36.2)
Moderate Anaemia (7.0-9.9 g/dL)	(89) 24.9 % (20.7-29.6)	(40) 34.8% (26.1-44.2)	(49) 20.2% (15.3-25.8)
Severe Anaemia (<7.0 g/dL)	(5) 1.4 % (0.6-3.2)	(2) 1.7% (0.2-6.1)	(3) 1.2 % (0.3-3.6)

Mean Hb (g/dL) **(SD)** **[range]**	10.6g/dL (1.4 SD) [6.0min, 14.7 max]	10.2g/dL (1.3SD) [6.0min, 13.6max]	10.9g/dL (1.4SD) [6.7min, 14.7max]

Table 4. 48 : PREVALENCE OF TOTAL ANAEMIA, ANAEMIA CATEGORIES, AND MEAN HAEMOGLOBIN CONCENTRATION IN CHILDREN 6-59 MONTHS OF AGE AND BY AGE GROUP, **IN UMSANGUR**

	6-59 months n =221	**6-23 months** n=87	**24-59 months** n=134
	95% CI	95% CI	95% CI
Total Anaemia (Hb<11.0 g/dL)	(143) 64.7% (58.0-71.0)	(67) 77.0 % (66.8-85.4)	(76) 56.7% (47.9-65.2)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(57) 25.8% (20.2-32.1)	(23) 26.4% (17.6-37.0)	(34) 25.4% (18.3-33.6)
Moderate Anaemia (7.0-9.9 g/dL)	(79) 35.8 % (29.4-42.5)	(38) 43.7 % (33.1-54.7)	(41) 31.6% (22.9-39.1)
Severe Anaemia (<7.0 g/dL)	(7) 3.2% (1.3-6.4)	(6) 6.9% (2.6-14.4)	(1) 0.8 % (0.02-4.1)
Mean Hb (g/dL) **(SD)** **[range]**	10.3g/dL (1.6 SD) [5.4min, 13.6max]	9.7g/dL (1.7 SD) [5.4min, 12.9max]	10.7g/dL (1.5SD) [6.9min, 13.6max]

Table 4. 49 : PREVALENCE OF TOTAL ANAEMIA, ANAEMIA CATEGORIES, AND MEAN HAEMOGLOBIN CONCENTRATION IN CHILDREN 6-59 MONTHS OF AGE AND BY AGE GROUP, **IN ALEGAYA, ALGANA AND DABAT-BOSIN**

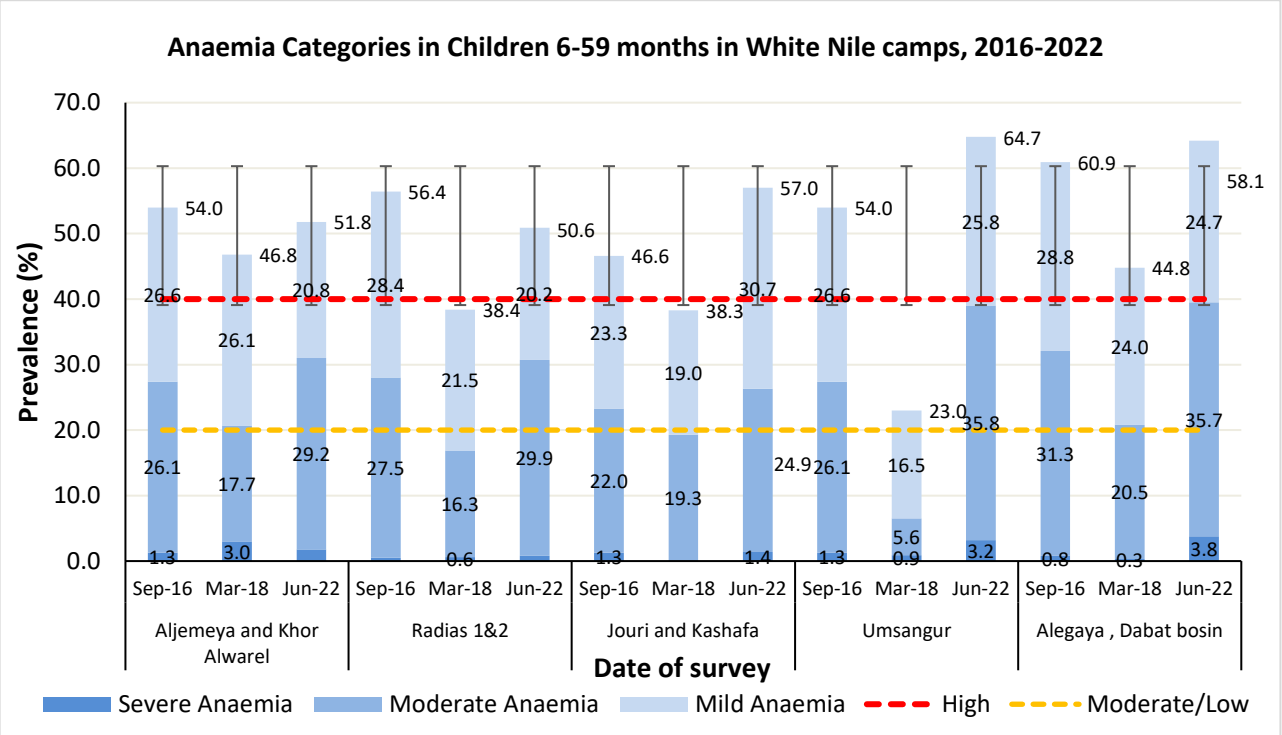
	6-59 months n = 403	**6-23 months** n=97	**24-59 months** n=166
	95% CI	95% CI	95% CI
Total Anaemia (Hb<11.0 g/dL)	(234) 58.1 % (53.2-62.8)	(82) 84.5% (75.8-91.1)	(87) 52.4% (44.5-60.2)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(65) 24.7% (19.6-30.4)	(26) 26.8% (18.3-36.8)	(39) 23.5% (17.3-30.7)
Moderate Anaemia (7.0-9.9 g/dL)	(94) 35.7% (30.0-41.9)	(50) 51.6% (41.2-61.8)	(44) 26.5% (20.0-33.9)
Severe Anaemia (<7.0 g/dL)	(10) 3.8% (1.8-69)	(6) 6.2% (2.3-13.0)	(4) 2.4% (0.7-6.1)
Mean Hb (g/dL) **(SD)** **[range]**	10.4g/dL (1.6SD) [5.2min, 13.8max]	9.5g/dL (1.5SD) [5.2min, 12.4max]	10.6g/dL (1.5SD) [5.4min, 13.8max]

Table 4.49: The prevalence of total anaemia among children aged 6 to 59 months in all camps were found very high, ranging from 50.6% to 64.7%. This is of critical public health significance in all camps, as the result shows above 40%. Further analysis by age category also shows children aged 6-23 months were the most severely affected by anaemia.

Table 4. 50: PREVALENCE OF MODERATE AND SEVERE ANAEMIA IN CHILDREN 6-59 MONTHS OF AGE AND BY AGE GROUP IN WHITE NILE CAMPS

Survey area	Category	6-59 months	6-23 months	24-59 months
Aljameya and Khor Alwarel	**Moderate and Severe Anaemia (Hb<10.0 g/dL)**	(88/284) 31.0% (25.7-36.7)	(47/123) 38.2% (9.6-47.4)	(41/161) 25.5% (18.9-32.9)
Radias 1& 2	**Moderate and Severe Anaemia (Hb<10.0 g/dL)**	(77/253) 30.4% (24.8-36.5)	(37/103) 35.9% (26.7-46.0)	(40/149) 26.9% (19.9-34.7)
Jouri and El Kashafa	**Moderate and Severe Anaemia (Hb<10.0 g/dL)**	(86/282) 30.5% (25.2-36.2)	(47/123) 38.2% (29.6-47.4)	(39/159) 24.5% (18.1-32.0)
Umsangur	**Moderate and Severe Anaemia (Hb<10.0 g/dL)**	(86/221) 38.9% (32.5-45.7)	(44/87) 50.6% (39.6-61.5)	(42/134) 31.3% (23.6-39.9)
Alegaya, Algana and Dabat-bosin	**Moderate and Severe Anaemia (Hb<10.0 g/dL)**	(104/263) 39.5% (33.6-45.7)	(56/97) 57.7% (47.3-67.7)	(48/166) 28.9% (22.2-36.5)

Figure 8 : PREVALENCE OF ANAEMIA BY CATEGORIES IN CHILDREN 6-59 MONTHS FROM 2016-2022, IN WHITE NILE CAMPS



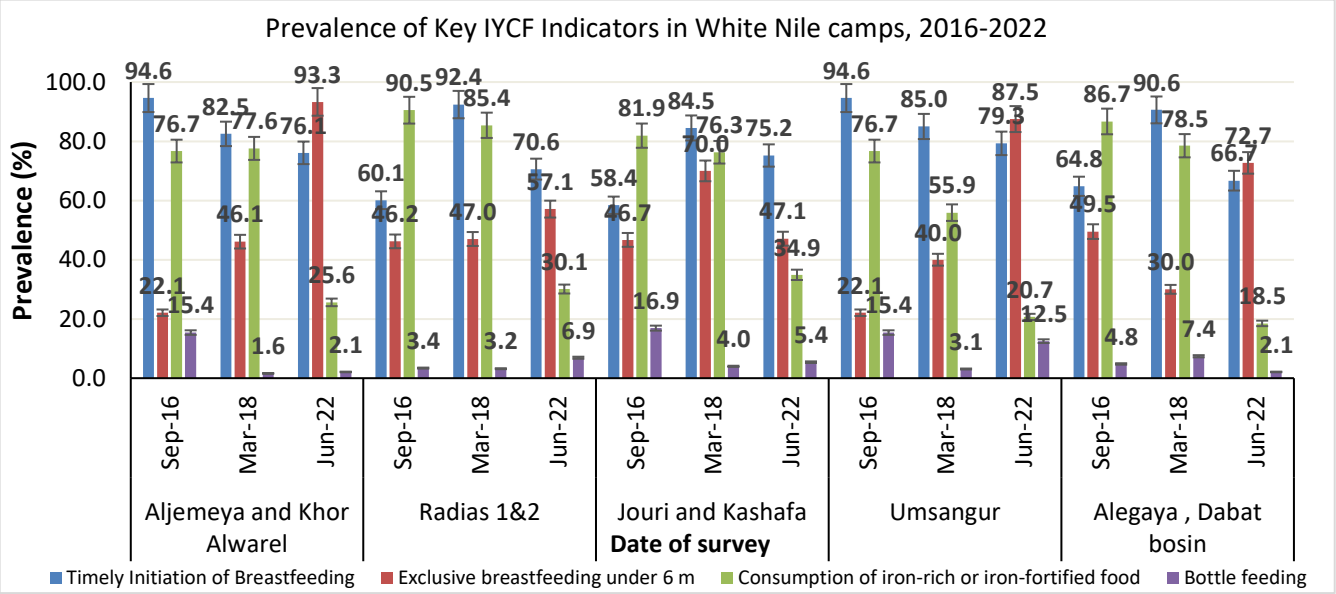
The above Figure 8 Shows the trend analysis of Anaemia situation among children aged 6-59 months in all sites for the period of 2016, 2018 and 2022. Apart from slight improvement in 2018, the trend analysis shows Anaemia situation in all White Nile camps remained of great concern.

4.11 Infant and Young Children age 0-23 months

Table 4. 51 : PREVALENCE OF INFANT AND YOUNG CHILD FEEDING PRACTICES INDICATORS, BY CAMP

	Aljameya and Khor Alwarel	Radias 1&2	Jouri and El kashafa	Umsangur	Alegaya, Algana and Dabat-bosin
	n/N % (95% CI)	n/N % (95% CI)	n/N % (95% CI)	n/N % (95% CI)	n/N % (95% CI)
WHO INDICATOR					
Timely initiation of breastfeeding (0-23 months)	(102/134) 76.1% (68.0-83.1)	(77/109) 70.6% (61.2-79.0)	(88/117) 75.2% (66.4-82.7)	(69/87) 79.3% (69.3-87.3)	(130/195) 66.7% (59.6-73.2)
Exclusive breastfeeding under 6 months (0-5 months)	(14/15) 93.3% (68.1-99.8)	(4/7) 57.1% (18.4-90.1)	(8/17) 47.1% (23.0-72.2)	(7/8) 87.5% (47.4-99.7)	(8/11) 72.7% (39.0-94.0)
Predominant breastfeeding under 6 months (0-5 months)	(14/15) 93.3% (68.1-99.8)	(4/7) 57.1% (18.4-90.1)	(10/17) 58.8% (32.9-81.6)	(7/8) 87.5% (47.4-99.7)	(9/11) 81.8% (48.2-97.7)
Continued breastfeeding at 1 year (12-15 month)	(17/21) 80.9% (58.1-94.6)	(20/22) 90.9% (70.8-98.9)	(18/22) 81.8% (59.7-94.8)	(18/20) 90.0% (68.3-98.8)	(28/34) 82.4% (65.5-93.2)
Continued breastfeeding at 2 years (20-23 months)	(14/22) 63.6% (40.7-82.8)	(20/26) 76.9% (56.4-91.0)	(16/18) 88.9% (65.3-98.6)	(21/25) 84.0% (63.9-95.5)	(21/46) 45.7% (30.9-61.0)
Introduction of solid, semi-solid or soft foods (6-8 moth)	(5/15) 40.0% (16.1-67.7)	(10/21) 47.6% (29.8-74.3)	(17/32) 53.1% (34.7-70.9)	(3/6) 50.0% (11.8-88.2)	(12/16) 75.0% (47.6-92.7)
Consumption of iron-rich or iron-fortified foods (6-23 Months)	(32/125) 25.6% (18.2-34.2)	(28/93) 30.1% (21.0-40.5)	(38/109) 34.9% (26.0-44.6)	(18/87) 20.7% (12.8-30.7)	(33/178) 18.5% (13.1-25.0)
Bottle feeding (0-23 months)	(3/141) 2.1% (0.4-6.1)	(7/102) 6.9% (2.8-13.6)	(7/130) 5.4% (2.2-10.8)	(12/96) 12.5% (6.6-20.8)	(4/193) 2.1% (0.6-5.2)
UNHCR INDICATORS					
No breastfeeding under 6 months (0-5 months)	(15/15) 100% (78.2-100)	(7/7) 0.0%	(17/17) 0.0%	(1/8) 12.5% (0.3-52.6)	(2/11) 18.2% (2.3-51.8)
No breastfeeding under 12 months (0-11 months)	(91/158) 57.6% (49.5-65.4)	(2/45) 5.0% (0.6-16.9)	(60/60) 0.0%	(2/26) 7.7% (0.9-25.1)	(4/52) 7.7% (2.1-18.5)

Figure 9 : KEY IYCF INDICATORS FROM 2016-2022, IN WHITE NILE CAMPS



The above figure 9 shows the trend analysis of key IYCF indicators among children aged 0-23 months in all sites for the period of 2016, 2018 and 2022. The three surveys show stable situations, except bottle feeding increased in 2022 in Umsangur, Radias 1&2 sites, 12.5 and 6.9 respectively. The UNHCR target is to maintain < 5%.

Prevalence of intake

Infant formula

Table 4. 52 : INFANT FORMULA INTAKE IN CHILDREN AGED 0-23 MONTHS, IN WHITE NILE CAMPS

Survey Area	N	Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	
		n	% (95% CI)
Aljameya & Khor Alwarel	141	15	10.6% (6.1-16.9)
Radias 1&2	103	7	6.8% (2.8-13.5)
Jouri and El Kashafa	129	32	24.8% (17.6-33.2)
Umsangur	96	19	19.8% (12.5-29.2)
Alegaya, Algana and Daba-bosin	194	14	7.2% (4.0-11.8)

Table 4.52: indicates the infant formula intake is high in Umsangur 19.8% (12.5-29.2) and Jouri and El Kashafa 24.8% (17.6-33.2).

4.4 Women 15-49 years

Table 4. 53 : WOMEN PHYSIOLOGICAL STATUS AND AGE, BY CAMP (OPTIONAL)

Survey Area	Non-pregnant, non-lactating	Pregnant	Lactating with an infant less than	Lactating with an infant greater	Mean age in years

			6 months	than 6 months	
	(n/N) % (95% CI)	(n/N) % (95% cI)	(n/N) % (95% CI)	(n/N) % (95% CI)	[min, max]
Aljameya & Khor Alwarel	(91/158) 57.6% (49.5-65.4)	(5/146) 3.4% (1.1-7.8)	(10/50) 20.0% (10.0-33.7)	(40/50) 80.0% (66.3-89.9)	27.4 (15 min, 49 max)
Radias 1&2	(139/144) 96.5% (92.1-98.9)	(5/144) 3.5% (1.1-7.9)	(11/49) 22.5% (11.8-36.6)	(38/49) 77.6% (63.4-88.2)	26.8 (15 min, 46 max)
Jouri and El Kashafa	(139/217) 64.1% (57.3-70.4)	(7/215)3.3% (1.3-6.6)	(19/70) 27.1% (17.2-39.1)	(51/70) 72.9% (60.9-82.8)	26.9 (15 min, 49 max
Umsangur	(40/84) 47.6% (36.6-58.8)	(3/78) 3.8% (0.8-10.8)	(15/35) 42.9% (26.3-60.7)	(20/35) 57.1% (39.4-73.7)	28.1 (15.0 in, 49.0 max
Alegaya, Algana and Daba-bosin	(97/172) 56.4% (48.6-63.9)	(10/166) 6.0% (2.9-10.8)	(14/59) 23.7% (13.6-36.6)	(45/59) 76.3% (63.4-86.4)	28.1 (15 min, 49 max)

MUAC malnutrition in women

Table 4. 54 : PREVALENCE OF MUAC MALNUTRITION IN PREGNANT AND LACTATING WOMEN WITH AN INFANT LESS THAN 6 MONTHS, (*MUAC <120mm)* IN WHITE NILE CAMPS

Survey Area	N	Prevalence of MUAC < 210 mm	
		n	% (95% CI)
Aljameya & Khor Alwarel	54	1	1.9% (0.1-9.9)
Radias 1&2	64	0	0.0%
Jouri and El Kashafa	26	0	0.0%
Umsangur	26	0	0.0%
Alegaya, Algana and Daba-bosin	24	1	4.2% (0.1-21.2)

According to Table 4.54, the prevalence of MUAC malnutrition among Pregnant women and lactating mothers with an infant less than 6 months of age found non/lower in all sites.

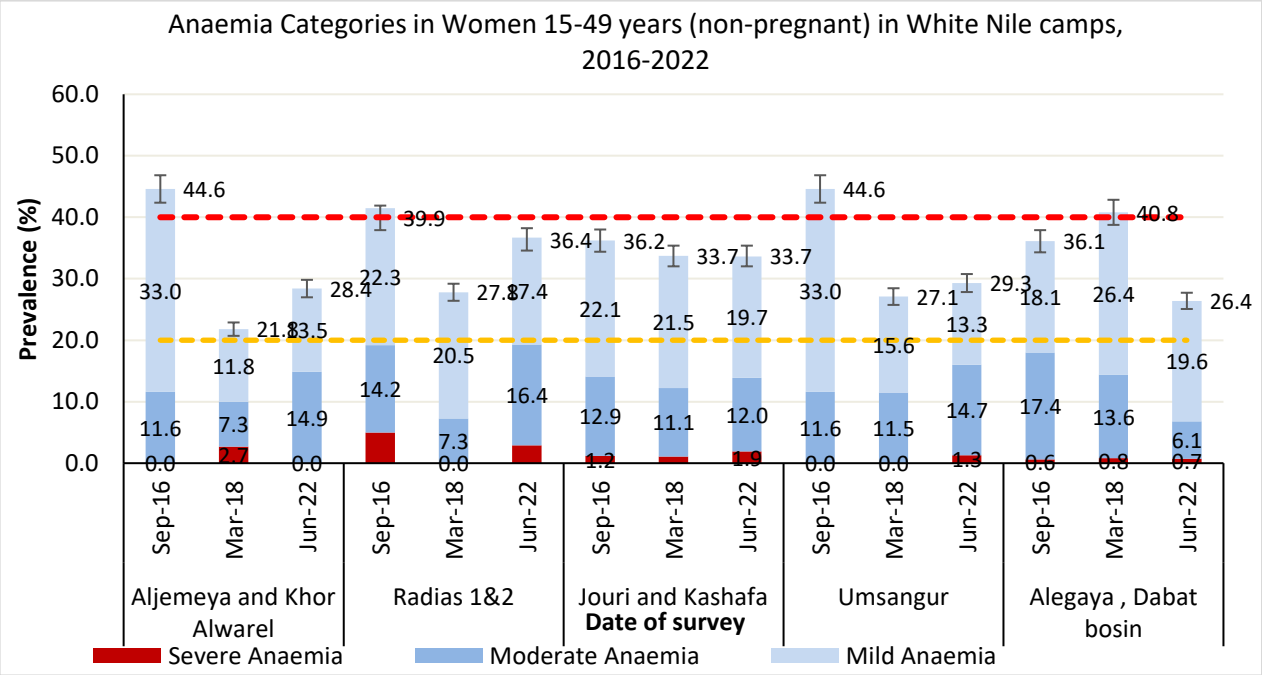
4.12 Anaemia women (15-49 years)

Table 4. 55 : PREVALENCE OF TOTAL ANAEMIA, ANAEMIA CATEGORIES, AND MEAN HAEMOGLOBIN CONCENTRATION IN NON-PREGNANT WOMEN OF REPRODUCTIVE AGE (15-49 YEARS), IN WHITE NILE CAMPS

	Aljameya and Khor Alwarel	Radias 1&2	Jouri and El Kashafa	Umsangur	Alegaya, Algana and Dabat-bosin
	N =141	N=140	N=208	N=75	N=145
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Total Anaemia (Hb<12.0 g/dL)	(40) 28.4 % (21.1-36.6)	(51) 36.4% (28.5-45.0)	(70) 33.7% (27.3-40.5)	(22) 29.3% (19.4-41.0)	(39) 26.4% (19.5-34.2)
Mild Anaemia (Hb 11.0-11.9 g/dL)	(19) 13.5 % (8.3-20.2)	(24) 17.4% (11.3-24.4)	(41) 19.7% (14.5-25.9)	(10) 13.3% (6.6-23.2)	(29/148) 19.6% (13.5-26.9)
Moderate Anaemia (8.0-10.9 g/dL)	(21) 14.9 % (9.5-21.9)	(23) 16.4% (10.7-23.6)	(25) 12.0% (7.9-17.2)	(11) 14.7% (7.6-24.7)	(9/148) 6.1% (2.8-11.2)
Severe Anaemia	(0) %	(4) 2.9%	(4) 1.9%	(1) 1.3%	(1/148) 0.7%

(<8.0 g/dL)		(0.8-7.2)	(0.5-4.9)	(0.03-7.2)	(0.02-3.7)
Mean Hb (g/dL) **(SD)** **[range]**	12.6 g/dL 1.5 SD [8.0 min, 16.3 max]	12.2 g/dL 1.8 SD [5.0 min, 16.1 max]	12.3g/dL 1.6 SD [6.1 min, 16.7max]	12.4 g/dL 1.5SD [7.7 min, 16.7max]	13.0 2.4 SD [7.5 min, 22.0 max]

Figure 10 : PREVALENCE OF ANAEMIA BY CATEGORIES IN WOMEN OF REPRODUCTIVE AGE (NON-PREGNANT) FROM 2016-2022, IN WHITE NILE CAMPS



The trend analysis of anaemia categories in women of reproductive age (non-pregnant) from 2016-2022 shows slight improvement in 2022 compared to 2016. The change in 2018 and 2022 among the various categories has not been statistically significant (Figure??). The UNHCR Target is to keep < 20%.

Figure 11 : MEAN HAEMOGLOBIN CONCENTRATION WITH 95% CI IN WOMEN OF REPRODUCTIVE AGE (NON-PREGNANT) FROM 2016-2022, IN WHITE NILE CAMPS

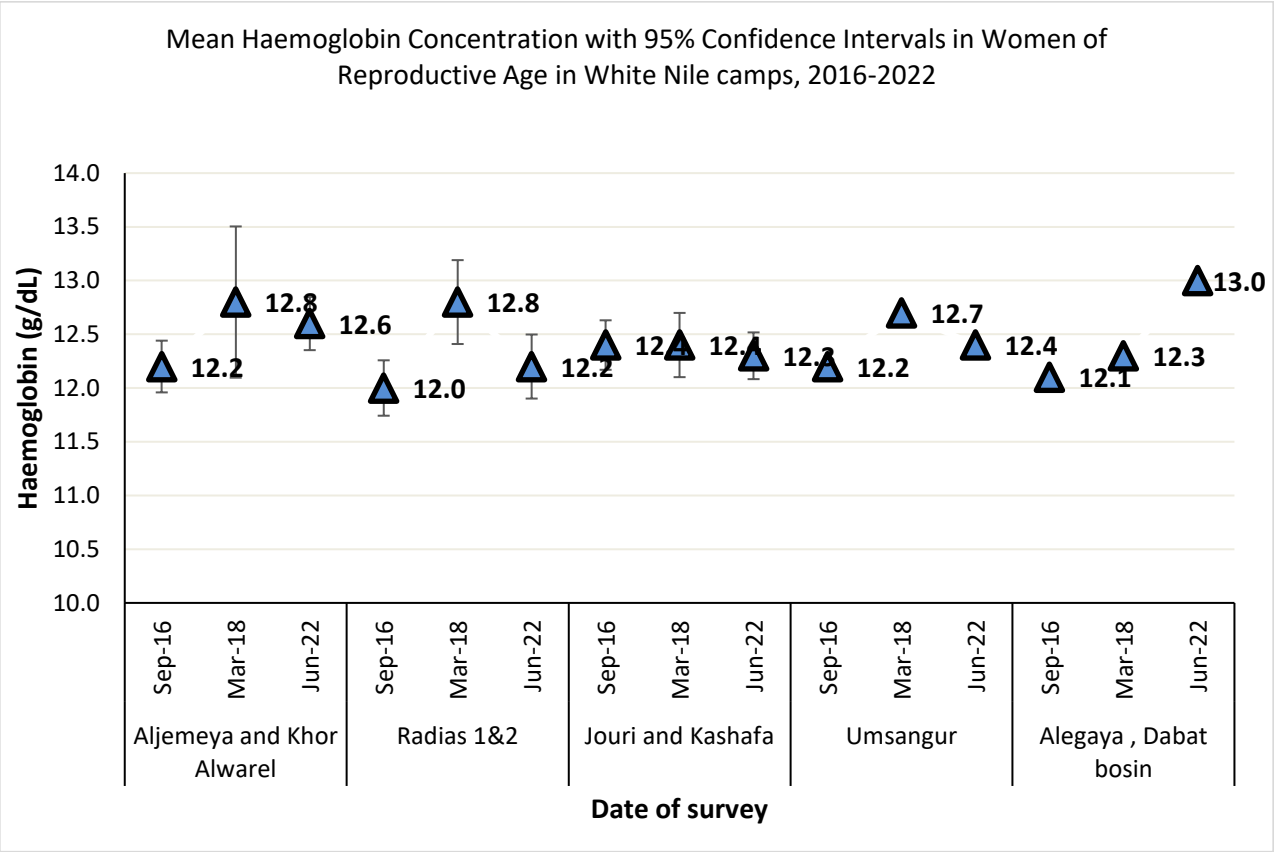
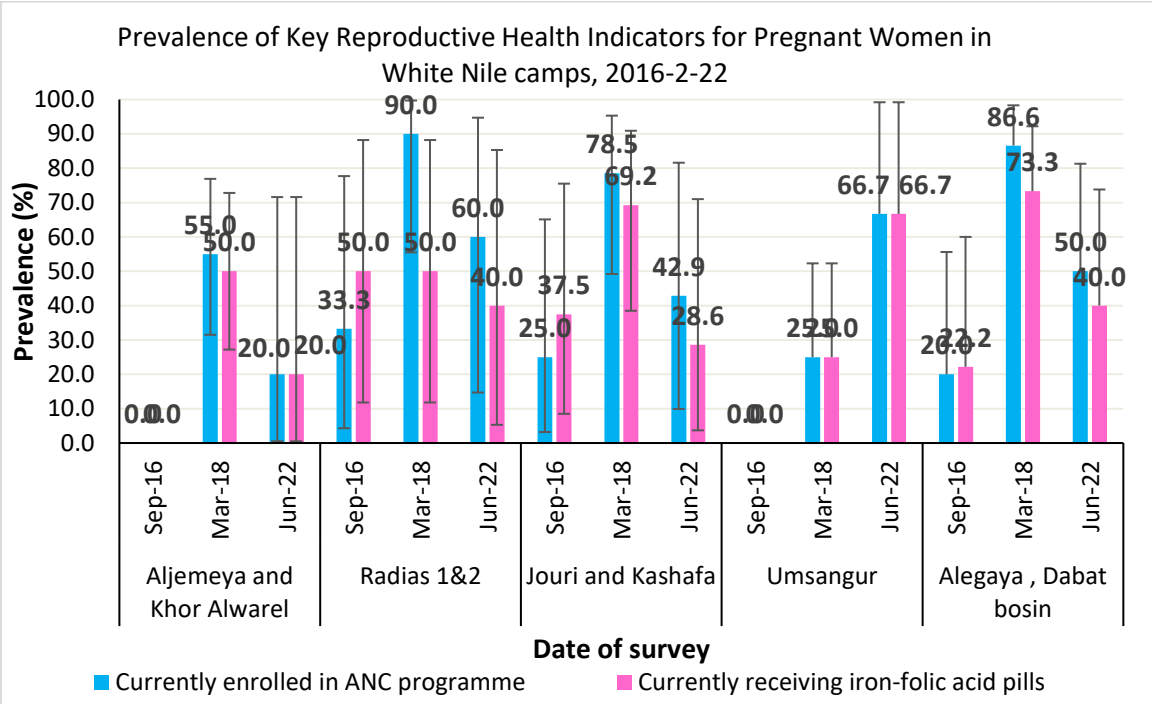


Table 4. 56 : ANC ENROLMENT AND IRON-FOLIC ACID PILLS COVERAGE AMONG PREGNANT WOMEN (15-49 YEARS), BY CAMP

Survey Area	Currently enrolled in ANC programme (n/N) % (95% CI)	Currently receiving iron-folic acid pills (n/N) % (95% CI)
Aljameya & Khor Alwarel	(1/5) 20.0% (0.5-71.6)	(1/5) 20.0% (0.5-71.6)
Radias 1&2	(3/5) 60.0% (14.7-94.7)	(2/5) 40.0% (5.3-85.3)
Jouri and El Kashafa	(3/7) 42.9% (9.9-81.6)	(2/7) 28.6% (3.7-71.0)
Umsangur	(2/3) 66.7% (9.4-99.2)	(2/3) 66.7% (9.4-99.2)
Alegaya, Algana and Daba-bosin	(5/10) 50.0% (18.7-81.3)	(5/10) 40.0% (12.2-73.8)

Table 4.56 illustrates the status of pregnant women enrolled in ANC program and provided with Iron-Folic Acid pills. The coverage results in all camps showing by far below the target. However, the results must be interpreted with caution due to the small number of cases that were identified during the survey.

Figure 12 : ANC ENROLMENT AND COVERAGE OF IRON-ACID FOLIC SUPPLEMENTATION IN PREGNANT WOMEN 15-49 YEARS FROM 2016-2022, IN WHITE NILE CAMPS



4.13 Food security

Table 4. 57 : FOOD SECURITY SAMPLING INFORMATION, IN WHITE NILE CAMPS

Total households surveyed for Food Security	Planned	Actual	% of target
Aljameya & Khor Alwarel	159	*137*	86.2 %
Radias 1&2	142	135	95.1%
Jouri and El Kashafa	244	205	84.0%
Umsangur	112	*93*	83.0%
Alegaya, Algana and Daba-bosin	195	*175*	89.7%

Access to food assistance

Table 4. 58 : FOOD ASSISTANCE TYPE, AMOUNT AND DISTRIBUTION SCHEDULE FOR THE LAST DISTRIBUTION **IN WHITE NILE CAMPS**

Type	Distribution schedule (days)	Commodities/products distributed	Amount per person per day (g/day)	Kcal per person per day
In-kind	30	Cereals	450	1526
	30	Legumes	60	206
	30	Oil	30	265
	30	Salt	0	0
Total			**540**	**1997**

Table 4.58 shows Pipeline break of slat encountered during the distribution of GFD for the month of June. Whereas there was no pipeline break during the distribution of one month prior to the survey (i.e., the month of April/May)

Table 4. 59 : FOOD ASSISTANCE COVERAGE

Survey Area	N	Proportion of households receiving a food assistance in-kind	
		n	% (95% CI)
Aljameya & Khor Alwarel	130	129	99.2% (95.8-100)
Radias 1&2	128	130	98.5% (94.6-99.8)
Jouri and El Kashafa	190	169	88.9% (83.6-93.0)
Umsangur	81	80	98.8% (93.3-99.9)
Alegaya, Algana and Daba-bosin	164	161	98.2% (94.8-99.5)

Out of the households reporting not to have access to food assistance, 100% (1/1) in AlJameya & Khor Alwarel and Radias 1&2 said it was because they were not registered. In Jouri and El Kashafa camp 25% (1/4) said it was because they were not registered; 25% (1/4) said it was because they were registered but determined not eligible; and 50% (2/4) gave other reasons. In Umsangur 100% (1/1) gave other reason. In ALegaya, Algana and Dabat-bosin 100% (3/3) said it was because they were registered but determined not eligible.

In-kind food distribution

Duration of food assistance from the last distribution (a month prior to the survey) based on the principal duration of food assistance, which is about 30 days.

Table 4. 60 : REPORTED DURATION OF GENERAL FOOD DISTRIBUTION, BY CAMP

Average number of days the general food distribution lasts	Aljameya and Khor Alwarel	Radias 1&2	Jouri and El kashafa	Umsangur	Alegaya, Algana and Dabat-bosin
	N = 2219	N=2189	N=3346	N = 1194	N=2625
Mean (Days) **(SD)** **[range]**	17.2 Days 5.3 SD [5 min, 30 max]	17.0 Days 3.6 SD [7 min, 30 max]	17.6 Days 4.5 SD [7 min, 30 max]	14.7 Days 4.8 SD [5 min, 30 max]	16.1 Days 4.5 SD [7 min, 30 max]

Table 4.60 illustrates the GFD provided a one month prior to the survey lasted for the average of 14.7 to 17.6 days. Only few households reported the GFD lasted for 30 days (which is an intended target the GFD to last).

Access to cooking fuel

Table 4. 61 : COOKING FUEL USE IN WHITE NILE CAMPS

Proportion of households using the	Aljemeya and Khor Alwarel	Radias 1&2	Jouri and El Kashafa	Umsangur	Alegaya, Algana and Dabat-bosin
	Number/total % (95% CI)				

following cooking fuel:					
Wood	(126/130) 97.0% (92.3-99.2)	(122/130) 93.9% (88.2-97.3)	(172/190) 90.5% (85.4-94.3)	(80/81) 98.8% (93.3-100.0)	(160/164) 97.6% (93.3-99.3)
Charcoal	(3/130) 2.3% (0.5-6.6)	(8/130) 6.2% (2.7-11.8)	(17/190) 9.0% (5.3-13.9)	(1/81) 1.2% (0.03-6.7)	(4/164) 2.4% (0.7-6.1)
Other	(1/130) 0.7% (0.02-4.2)		(1/190) 0.5% (0.01-2.9)		

According to Table 4.61 refugees have access to fuel wood, charcoal and others. However, fuel is primarily accessed from the local market through purchasing.

Negative coping strategies results

Table 4. 62 : NEGATIVE COPING STRATEGIES USED BY THE SURVEYED POPULATION IN WHITE NILE CAMPS OVER THE PAST 4 WEEKS

Proportion of households reporting using the following negative coping strategies over the past 4 weeks*:	Aljemeya and Khor Alwarel	Radias 1&2	Jouri and El Kashafa	Umsangur	Alegaya, Algana and Dabat-bosin
	Number/total, % (95% CI)				
Stop a child from attending school	(7/130) 5.4% (2.2-10.8)	(9/128) 7.0% (3.3-12.9)	(14/190) 7.4% (4.1-12.1)	(4/81) 4.9% (1.4-12.2)	(12/164) 7.3% (3.8-12.4)
Sold any assets that would not have normally sold	(44/130) 33.8% (25.7-42.7)	(30/128) 23.4% (16.4-31.7)	(38/189) 20.1% (14.6-26.4)	(22/81) 27.2% (17.9-38.2)	(61/164) 37.2% (29.8-45.1)
Ask for money from strangers (begging)	(28/130) 21.5% (14.8-29.6)	(29/125) 23.2% (16.1-31.6)	(60/188) 31.9% (25.3-39.1)	(11/81) 13.4% (6.9-23.0)	(42/164) 25.6% (19.1-33.0)
Send household members under the age of 16 to work	(7/130) 5.4% (2.2-10.8)	(9/130) 6.9% (3.2-12.7)	(14/188) 7.5% (4.1-12.2)	(3/81) 3.7% (0.8-10.4)	(7/164) 4.3% (1.7-8.6)
Send a member of the household to work far away	(30/130) 23.1% (16.1-31.3)	(42/130) 32.3% (24.4-41.1)	(46/189) 24.3% (18.4-31.1)	(21/81) 25.9% (16.8-36.9)	(55/163) 33.7% (26.5-41.6)
Engage in potentially risky or harmful activities	(4/130) 3.1% (0.8-7.7)	(4/121) 3.3% (0.9-8.3)	(3/177) 1.7% (0.4-4.9)	(2/74) 2.7% (0.3-9.4)	(3/157) 1.9% (0.4-5.5)
Take out new loans or borrowed money	(77/130) 59.2% (50.3-67.8)	(80/126) 63.5% (54.5-71.9)	(100/188) 53.2% (45.8-60.5)	(42/78) 53.9% (42.9-65.2)	(6/164) 3.6% (1.2 – 7.2)
Reduce expenditure on hygiene items, water, baby items, health or education in order to	(67/129) 51.9% (43.0-60.8)	(73/128) 57.0% (47.9-65.7)	(119/187) 63.6% (56.3-70.5)	(43/79) 54.4% (42.8-65.7)	78/164 47.5% (22.7 – 62.8)

meet household food needs					
Proportion of households reporting using one or more negative coping strategies over the past 4 weeks	(130/130) 100.0% (98.8-100.0)	(114/114) 100.0% (96.8-100.0)	(173/173) 100.0% (97.8-100.0)	(73/73) 100.0% (98.7-100.0)	(155/155) 100.0% (97.7-100.0)

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

Table 4.62 all households reporting using one or more negative coping strategies over the past four weeks to cope with stress situation.

Table 4. 63 : NEGATIVE COPING STRATEGIES USED BY THE SURVEYED POPULATION IN WHITE NILE CAMPS OVER THE PAST 7 DAYS

Proportion of households reporting using the following negative coping strategies over the past 7 days*:	Aljemeya and Khor Alwarel	Radias 1&2	Jouri and El Kashafa	Umsangur	Alegaya, Algana and Dabat-bosin
	Number/total, % (95% CI)				
Rely on less preferred and/or less expensive foods	(65/130) 50.0% (41.1-58.9)	(95/130) 73.1% (64.6-80.1)	(156/190) 82.1% (75.9-87.3)	(56/81) 69.1% (57.9-78.9)	(84/164) 51.2% (43.3-59.1)
Borrow food, or rely on help from a friend or relative	(63/130) 48.5% (39.6-57.4)	(102/130) 78.5% (70.4-85.2)	(145/190) 76.3% (69.2-82.1)	(54/81) 66.7% (55.3-76.8)	(77/164) 47.0% (39.1-54.9)
Reduce the number of meals eaten in a day	(59/130) 45.4% (36.6-54.4)	(96/130) 73.9% (65.4-81.2)	(159/190) 83.7% (77.7-88.6)	(44/81) 54.3% (42.9-65.4)	(82/164) 50.0% (42.1-57.9)
Limit portion sizes at mealtime	(64/64) 49.2% (40.4-58.1)	(98/130) 75.4% (67.1-82.5)	(148/190) 77.9% (71.3-83.6)	(45/81) 55.6% (44.1-66.6)	(79/164) 48.2% (40.3-56.1)
Reduce consumption by adults so children could eat	(45/130) 34.6% (26.5-43.5)	(77/130) 59.2% (50.3-67.8)	(113/190) 59.5% (52.1-66.5)	(42/81) 51.9% (40.5-63.1)	(54/164) 32.9% (25.8-40.7)

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

In addition to several coping strategies Table?? shows refugees were using some of the negative coping strategies over the past seven days prior to the survey.

Table 4. 64 : AVERAGE RCSI*, IN WHITE NILE CAMPS

Average rCSI	Aljemeya and Khor Alwarel	Radias 1&2	Jouri and El Kashafa	Umsangur	Alegaya, Alegana and Dabat-bosin
	N = 130	N=130	N=190	N=81	N=164
Mean (SD) [range]	rCSI=7.6 SD=8.1 [0.0 min, 32.0 max] (0.0-15.0)	rCSI=12.8 SD=8.8 [0.0 min, 42.0 max] (6.0-18.0	rCSI=14.0 SD=8.9 [0.0 min, 56.0 max] (9.0-18.0)	rCSI=11.6 SD=10.0 [0.0 min, 41.0 max] (2.0-17.0)	rCSI=6.4 SD=6.8 [0.0 min, 34.0max] (4.0-11.0)

*Maximum rCSI is 56.

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

The last general food distribution ended a month prior to the start of the survey data collection. The general food distribution usually lasts more than two days and may be organised by family size, particularly the food assistance is an in-kind, hence the surveyed households were at different times of the cycle which may have an impact on the FCS and FCS-N results and this needs to be considered in interpreting the data.

The survey was conducted during the annual lean season, during which the overall food availability is limited. It is hence likely that the household dietary diversity score is lower than it would be e.g. after the harvest." Note also the monthly cycle of food distribution (for the month of June) was commenced during the time of survey that may have an effect on household dietary intake.

Table 4. 65 : AVERAGE FCS IN WHITE NILE CAMPS

Average FCS					
	Aljemeya and Khor Alwarel	Radias 1&2	Jouri and El Kashafa	Umsangur	Alegaya, Algana and Dabat-bosin
Mean (SD) [range]	FCS=27.3 SD=14.6 [4.0 min, 83.5 max] (17.5-35.0)	FCS= 25.4 SD=10.9 [4.5 min, 60.0 max] (17.5-30.0)	FCS=21.8 SD=14.3 [0.0 min, 66.5 max] (11.0-29.0)	FCS=25.7 SD=11.5 [10.0 min, 82.5 max] (17.5-30.5)	FCS=26.9 SD=16.5 [4.0min, 101.5 max] (22.0-33.5)

TABLE 91 FOOD CONSUMPTION SCORE BY CATEGORY, IN WHITE NILE CAMPS

Survey Area	FCS profiles*	Number/total	% (95% CI)
Aljemeya and Khor Alwarel	Acceptable FCS > 35	32/130	24.6% (17.5-32.9)
	Borderline 21.5≤FCS≤35	41/130	31.5% (23.7-40.3)
	Poor FCS≤21	57/130	43.9% (35.2-52.8)
Radias 1&2	Acceptable FCS > 35	19/130	14.6% (9.0-21.9)
	Borderline 21.5≤FCS≤35	66/130	50.8% (41.9-59.6)
	Poor FCS≤21	45/130	34.6% (26.5-43.5)
Jouri and El Kashafa	Acceptable FCS > 35	29/190	15.3% (10.5-21.2)
	Borderline 21.5≤FCS≤35	62/190	32.6% (26.0-39.8)
	Poor FCS≤21	99/190	52.1% (44.8-59.4)
Umsangur	Acceptable FCS > 35	12/81	14.8% (7.9-24.5)

	Borderline 21.5≤FCS≤35	38/81	46.9% (35.7-58.3)
	Poor FCS≤21	31/81	38.3% (27.7-49.7)
Alegaya, Algana and Dabat-bosin	Acceptable FCS > 35	34/164	20.7% (14.8-27.8)
	Borderline 21.5≤FCS≤35	57/164	34.8% (27.5-42.6)
	Poor FCS≤21	73/164	44.5% (36.8-52.5)

Table 4. 66 : CONSUMPTION FREQUENCY CATEGORIES OF EACH NUTRIENT RICH FOOD GROUPS (FCS-N) IN WHITE NILE CAMPS

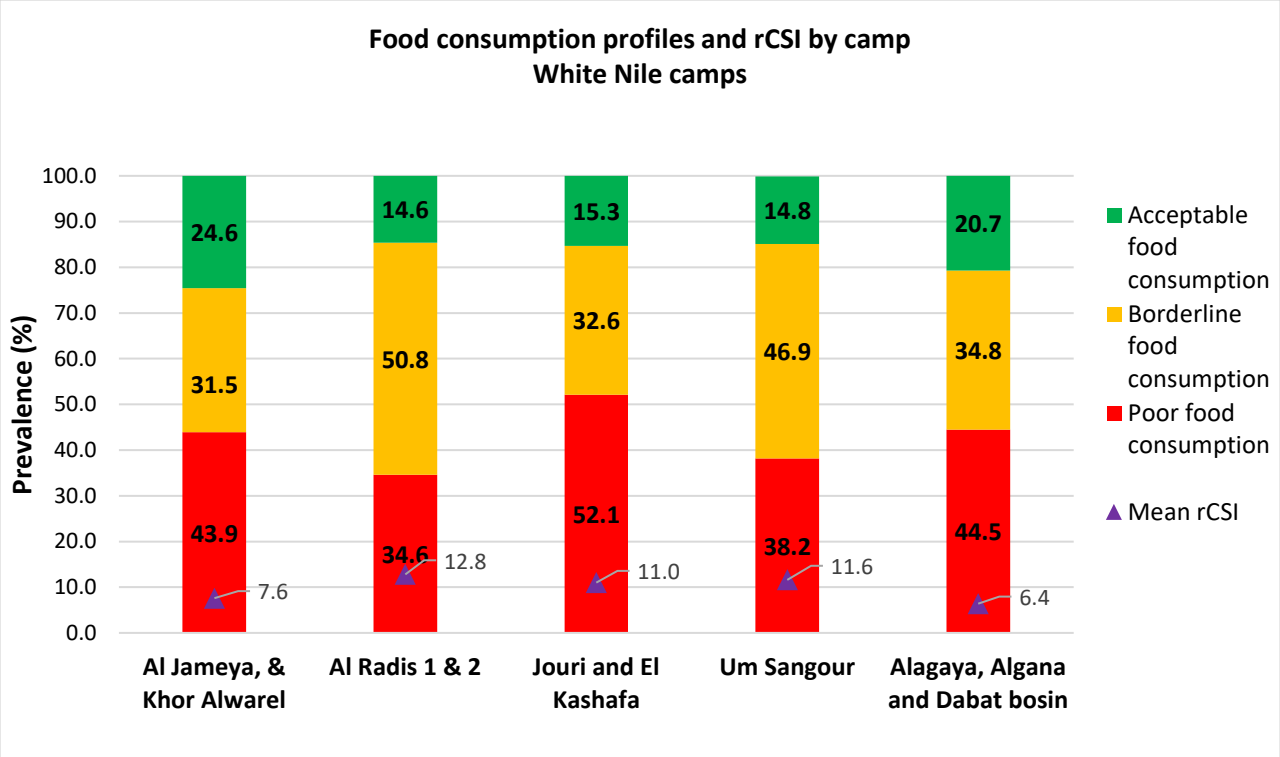
Survey sites	Nutrient rich food groups	Consumption frequency categories	Number/total	% (95% CI)
Aljemeya and Khor Alwarel	**Vitamin A rich foods**	Never	41/130	31.5% (28.4 – 34.2)
		Sometimes	37/130	28.5% (23.6 – 33.4)
		At least daily	33/130	25.4% (21.8 – 29.5)
	Protein rich foods	Never	55/130	42.3% (33.7-51.3)
		Sometimes	40/130	30.8% (22.9-39.5)
		At least daily	35/130	26.9% (19.5-35.4)
	Haem iron rich foods	Never	99/130	76.2% (67.9-83.2)
		Sometimes	31/130	23.9% (16.8-32.1)
		At least daily	25/130	19.2% (10.1 – 28.7)
Radias 1&2	**Vitamin A rich foods**	Never	61/130	46.9% (22.5 – 70.5)
		Sometimes	55/130	42.3% (32.6 – 52.7)
		At least daily	49/130	37.7% (24.4 – 37.8)
	Protein rich foods	Never	59/130	45.4% (36.6-54.4)
		Sometimes	56/130	43.1% (34.4-52.1)
		At least daily	15/130	11.5% (6.6-18.3)
	Haem iron rich foods	Never	98/130	75.4% (67.1-82.5)
		Sometimes	30/130	23.1% (16.1-31.3)
		At least daily	2/130	1.5% (0.2-5.5)

Survey sites	Nutrient rich food groups	Consumption frequency categories	Number/total	% (95% CI)
Jouri and El Kashafa	**Vitamin A rich foods**	Never	72/190	37.9% (29.2 – 45.8)
		Sometimes	66/190	34.7% (29.2 – 39.8)
		At least daily	52/190	27.4% (20.2 – 34.8)
	Protein rich foods	Never	74/190	38.9% (31.9-46.3)
		Sometimes	97/190	51.1% (43.7-58.4)
		At least daily	19/190	10.0% (6.1-15.2)
	Haem iron rich foods	Never	119/190	62.6% (55.3-69.5)
		Sometimes	68/190	35.8% (28.9-43.1)
		At least daily	3/190	1.6% (0.3-4.5)
Umsangur	**Vitamin A rich foods**	Never	21/81	25.9% (19.6 – 31.2)
		Sometimes	18/81	22.2% (15.2 – 28.4)
		At least daily	16/81	19.7% (9.5 – 29.3)
	Protein rich foods	Never	28/81	34.6% (24.3-45.9)
		Sometimes	44/81	54.3% (42.9-45.9)
		At least daily	9/81	11.1% (5.2-20.1)
	Haem iron rich foods	Never	49/81	60.5% (49.0-71.2)
		Sometimes	32/81	39.5% (28.8-51.0)
		At least daily	27/81	33.3% (24.4 – 42.6)
Alegaya, Algana and Dabat-bosin	**Vitamin A rich foods**	Never	81/164	49.4% (20.9 – 68.4)
		Sometimes	77/164	46.9% (34.6 – 58.4)
		At least daily	59/164	35.9% (22.8 – 49.2)
	Protein rich foods	Never	71/164	43.3% (35.6-51.2)
		Sometimes	79/164	48.2% (40.3-56.1)
		At least daily	14/164	8.5% (4.8-13.9)
	Haem iron rich foods	Never	107/164	65.2% (57.4-72.5)
		Sometimes	56/164	34.2%

Survey sites	Nutrient rich food groups	Consumption frequency categories	Number/total	% (95% CI)
				(26.9-41.9)
		At least daily	1/164	0.6% (0.02-3.4)

Table 4.66 respondents from all sites mentioned that they didn't consume Vitamin A source/rich food in the past seven days.

Figure 13 : TRENDS OF FOOD CONSUMPTION PROFILES AND RCSI FROM 2017 TO 2018, BY CAMP *(THIS FIGURE CAN BE AUTOMATICALLY GENERATED BY USING SENS PRE-MODULE TOOL 17B – TRENDS AND GRAPHS)*



4.14 Mosquito Net Coverage

Table 4. 67 : MOSQUITO NET COVERAGE SAMPLING INFORMATION IN WHITE NILE CAMPS

Total households surveyed for Mosquito net coverage	Planned	Actual	% of target
Aljameya & Khor Alwarel	159	*137*	86.2 %
Radias 1&2	142	135	95.1%
Jouri and El Kashafa	244	205	84.0%
Umsangur	112	*93*	83.0%
Alegaya, Algana and Daba-bosin	195	*175*	89.7%

Table 4. 68 : HOUSEHOLD MOSQUITO NET OWNERSHIP IN WHITE NILE CAMPS

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)
Aljameya & Khor Alwarel	127	3	2.4% (0.5-6.8)	2	1.6% (0.2-5.6)
Radias 1&2	130	1	0.8% (0.02-4.2)	1	0.8% (0.02-4.2)
Jouri and El Kashafa	187	5	2.7% (0.9-6.1)	4	2.1% (0.6-5.3)
Umsangur	0	0	0	0	0
Alegaya, Algana and Daba-bosin	162	4	2.5% (0.7-6.2)	3	1.9% (0.4-5.3)

4.15 WASH

Table 4. 69 : WASH SAMPLING INFORMATION IN WHITE NILE CAMPS

Total households surveyed for WASH	Planned	Actual	% of target
Aljameya & Khor Alwarel	159	*137*	86.2 %
Radias 1&2	142	135	95.1%
Jouri and El Kashafa	244	205	84.0%
Umsangur	112	*93*	83.0%
Alegaya, Algana and Daba-bosin	195	*175*	89.7%

Table 4. 70 : WATER QUALITY IN WHITE NILE CAMPS

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)
Aljameya & Khor Alwarel	130	118	90.8% (84.4-95.1)	7	40.4% (13.2-52.9)
Radias 1&2	130	129	99.2% (95.8-100)	8	30.8% (14.3-51.8)
Jouri and El Kashafa	190	184	96.8% (93.3-98.8)	19	10.0% (6.1-15.2)
Umsangur	81	81	100%	4	4.9% (1.4-12.2)
Alegaya, Algana and Daba-bosin	163	159	97.6% (93.8-99.3)	6	54.6% (23.4-83.3)

Table 4. 71 : WATER QUANTITY 1: AMOUNT OF LITRES OF WATER USED PER PERSON PER DAY, IN WHITE NILE CAMPS

Survey Area	N	Average # L/p/d of domestic water collected at household level, from	Average # L/p/d of domestic water collected at household level, from

		protected/treated sources with containers of any type	protected/treated sources with protected containers only
		Mean (SD, or 95% CI)	Mean (SD, or 95% CI)
Aljameya & Khor Alwarel	130	17.8 11.5 SD (11.4-20.0)	13.5 7.8 SD (8.2-15.0)
Radias 1&2	130	19.1 13.6 SD (10.0-24.0)	5.1 10.1 SD (0.0-6.8)
Jouri and El Kashafa	191	21.1 19.2 SD (8.8-28.0)	12.6 9.5 SD (6.6-16.0)
Umsangur	81	4.6 11.9 SD (0.0-2.1)	1.9 4.9 SD (0.0-0.0)
Alegaya, Algana and Daba-bosin	164	15.5 7.5 SD (10.0-19.2)	13.1 7.8 SD (6.0-15.0)

Table 4. 72 : WATER QUANTITY 2: AMOUNT OF LITRES OF WATER USED PER PERSON PER DAY BY CATEGORY, IN WHITE NILE CAMPS

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	
		n	Mean (SD, or 95% CI)	n	Mean (SD, or 95% CI)	n	Mean (SD, or 95% CI)
Aljameya & Khor Alwarel	34	5	14.7% (5.0-31.1)	4	11.8% (3.3-27.5)	25	73.5% (55.6-87.1)
Radias 1&2	38	10	26.3% (13.4-43.1)	9	23.7% 11.4-40.2)	19	50.0% (33.4-66.6)
Jouri and El Kashafa	39	10	25.6% (13.0-42.1)	5	12.8% (4.3-27.4)	24	61.5% (44.6-76.6)
Umsangur	13	2	15.4% (1.9-45.5)	3	23.1% (5.0-53.8)	8	61.5% (31.6-86.1)
Alegaya, Algana and Daba-bosin	27	5	18.5% (6.3-38.1)	3	11.1% (2.4-29.2)	19	70.4% (49.8-86.3)

Add the average water usage in lppd for each camp at the bottom of **Table 104** in the final report.

Table 4. 73 : ACCESS TO SOAP IN WHITE NILE CAMPS

Survey Area	N	Proportion of households with access to soap	
		n	% (95% CI)

Aljameya & Khor Alwarel	130	16	12.3% (7.2-19.2)
Radias 1&2	130	17	13.1% (7.8-20.1)
Jouri and El Kashafa	190	30	15.8% (10.9-21.8)
Umsangur	81	5	6.2% (2.0-13.8)
Alegaya, Algana and Daba-bosin	163	21	12.9% (8.2-19.0)

Table 4. 74 : TOILET/LATRINE USE IN WHITE NILE

Survey Area	N	Proportion of households reporting defecating in a toilet	
		n	% (95% CI)
Aljameya & Khor Alwarel	130	108	83.1% (75.5-89.1)
Radias 1&2	130	109	83.9% (76.4-89.7)
Jouri and El Kashafa	191	171	90.0% (84.8-93.9)
Umsangur	81	58	71.6% (60.5-81.1)
Alegaya, Algana and Daba-bosin	163	138	84.7% (78.2-89.8)

4.16 Other results

Table 4. 75 : COVID VACCINATIONS IN WHITE NILE CAMPS

Survey sites	N	COVID Vaccination coverage age 18-70 years: One or two doses		COVID Vaccination coverage age 18-70 years: one dose		COVID Vaccination coverage age 18-70 years: two doses	
		n	% (95% CI)	n	% (95% CI)	n	% (95% CI)
Aljameya & Khor Alwarel	483	304	62.9% (58.5-67.1)	76	25.0% (20.5-30.2)	228	75.0% (69.8-79.5
Radias 1&2	463	279	60.3% (55.7-64.6)	43	15.4% (11.4-20.2)	236	84.6% (79.8-88.6)
Jouri and El Kashafa	762	593	77.8% (74.7-80.6)	93	15.7% (13.0-18.8)	500	84.3% (81.2-87.0)
Umsangur	285	190	66.6% (60.9-72.1)	47	24.7% (18.7-31.5)	143	75.3% (68.5-81.2)
Alegaya, Algana and Daba-bosin	551	381	69.1% (65.2-72.9)	60	15.7% (12.4-19.7)	321	84.2% (80.1-87.6)

Limitations

Poor quality of age data impacting on the reliability of the stunting and underweight results, mainly the camps with no exact birth date records.

Expectations in need of assistance might influenced respondents to provide reliable data on mosquito net coverages and food consumption scores.

5. Discussion

5.1 Nutritional status of children

The overall findings of the nutritional status of refugees in White Nile camps are very high, based on the 2018 WHO-UNICEF classification of global-acute-malnutrition (GAM) prevalence above 15%. The GAM result ranges from 15.2% (11.1-20.9) in Umsangur camp to 18.6% (15.2-22.6) in Alegaya, Dabat Bosin and Algana camps. Likewise, the acute malnutrition rate was found above 2% of the UNHCR cutoff point for the refugee population. The result ranges between 2.0% (0.9-4.6) in Al Radias 1&2 and the highest in 4.5% (2.5-8.1) with oedema in Umsangur camp (see figure 1). Total malnutrition by MUAC ranges from 7.7% (5.4-10.9) in Jouri and Kashafa camps and 13.1% (9.57.8) in El Radias 1&2. The result indicates the highest as per the Sudan routine MUAC screening outcomes. The weighted average of total wasting (weight-for-height) for the five sites has shown a stable situation with very-high prevalence, of 18.5% (2016), 15.5% (2018) and 16.9% (2022). Though various efforts have been made to reduce the prevalence of acute malnutrition (wasting) in these camps the burden has remained of great concern. Malnourished children, particularly those with severe acute malnutrition, have a higher risk of death from common childhood illnesses such as diarrhoea, pneumonia, etc.

The prevalence of stunting (chronic malnutrition) varies ranging from the lowest 9.9% (6.6-14.5) in Umsangur and 11.8% (9.0-15.2) in Alegaya, Dabat boisin and Algana camps, the camps hosting the Nuer community. The result in other camps is slightly highest and ranges from the lowest 12.8% (9.4-17.0) in Aljemeya and Khor Alwarel to the highest 23.9% (19.8-28.5) in Jouri and Al Kashafa, the camps hosting the Shuluk community. Despite some disparities, all results are below 30% of (WHO-UNICEF) cutoff points, very high/critical if ≥ 30%. The weighted average prevalence of stunting for the five sites has shown an increasing trend from 7.2% in 2016, 11.0 % in 2018 and 14.1% in 2022. Even though the results of the three surveys show within acceptable margins, it is also showing a deteriorating trend among children aged 6 – 59 months suffering from chronic malnutrition. This may be an indication of the nutritional status of children in the last five or six years was getting worse regardless of humanitarian assistance provided to the refugees by UNHCR, WFP and partners. Factors that contribute to stunted growth and development include poor maternal health and nutrition resulting in likely growth retardation, inadequate infant and young child feeding practices, frequent infection, and poor hygiene and sanitation that exposes children to frequent diarrhoea and intestinal worms.

5.2 Programme coverage (children and women)

The coverage results of measles vaccination among children aged 9-59 months based on both card documentation and mother's recall were generally above 95 % in most of the camps, except in Um Sangur camp, the coverage is 89.3% (84.4-93.1). Vitamin A supplementation in the last 6 months among children 6-59 months found below 90% with disparities of coverages. It ranges from the

lowest 58.7% (52.7-64.5) In Alegaya, Algana and Dabat bosin to the highest 89.3% (84.4-93.1) in Umsangur.

The enrollment status is presented by using only MUAC as it has been used for screening and admission to TFP and SFP in all camps. The result shows the status in the Supplementary and Therapeutic program by MUAC is low. Enrollment status of children in the supplementary feeding program ranges from the lowest 0.9% (0.4-2.4) in Alegaya, Algana and Dabat bosin, and to the highest 18.5% (6.3-38.1) in Al Jameya and Khor Alwarel camps. The status in the Therapeutic-Feeding-Program based on Oedema and MUAC only were lowest in Al Radias 1&2; which was 12.5% (0.3-62.7). The highest was reported in Alegaya, Algana and Dabat Bosin, which was 100.0%. The enrollment coverage results interpreted with caution due to the small number of cases that were identified during the survey.

Information from the nutrition facilities indicated that the active case finding for malnutrition among children and PLW was hindered due to COVID-19. Only MUAC screening was undertaken at the facility and community level. The use of weight for height has been shelved to reduce the contact between the outreach worker and the children to be screened. The periodic mass screening was also suspended during the pandemic until the change in the local COVID-19 situation in 2022. Additionally, participants during filed level preliminary briefings mentioned that the number of outreach workers reduced in each camp due to funding constraints, and subsequently affected the routine outreach activities, (such as regular MUAC screening, defaulter tracing, etc.)

The enrollment status of pregnant women in the ANC was found to be between 20-66.7% in all camps. The lowest coverage was in Al Jameya and Khor Alwarel, which was 20.0% (0.5-71.6), and the highest coverage in Umsangur camps, which was 66.7% (9.4-90.6). The coverage of Iron-folic acid pills is like the ANC result, except in Alegaya, Algana and Dabat Bosin camps; the ANC is 50.0% (18.7-81.3), and Iron-folic acid coverage is 40.0% (12.2-73.8).

5.3 Anaemia in young children and women

The prevalence of Anaemia among children 6-59 months of age was categorized as critical (critical if ≥ 40%) in all camps: The result ranges from 50.6% (44.3-56.9) in Alradias 1 & 2 and to the highest 64.7% (58.0-71.0). Although anaemia prevalence was high in all sites, majority are mild or moderately anaemic. The prevalence of severe anaemia among children aged 6 to 59 rages from the lowest 0.8% (0.1-2.8) in Radias 1&2 and to the highest 3.8% (1.8-6.9) in Alegaya, Algana, and Dabat-bosin. The weighted average prevalence of anaemia for the five sites has remained above the public health significance (High if ≥ 40% and the UNHCR Target of < 20%); the trend ranging from 55.6% in 2016, 41.0% in 2018 and 55.9% in 2022.

Anaemia prevalence among women of reproductive age (15-49 years) was highest in Alradias 1 & 2 camps 36.4% (28.4-45.0) and followed by Jouri and El Kashafa camps 33.7% (27.3-40.5). The other camps ranges from 26.4% (19.5-34.2) in Alegaya, Algana and Dabat bosin and to 29.3% (19.4-41.0)

in Umsangur. The Anamia level among women is medium according to the WHO cutoff point, whereas above the UNHCR intended target to keep <20%.

5.4 IYCF indicators (children 0-23 months)

Some of the IYCF results should be interpreted with caution as the sample is small to draw representative conclusions, however, the result still provides proxy indicators for appropriate programming. The proportion of children age 0-23 months who were timely initiated on breast feeding ranges between 66.7-79.3%; the lowest in Alegaya, Algana and Dabat Bosin 66.7% (59.6-73.2) and the highest in Umsangur camp; which was 79.3% (69.3-87.3). Early initiation (within one hour of birth) of exclusive breastfeeding significantly reduces the risk of infant or neonatal mortality. Status of exclusively breastfed (below 6 months) ranged from the lowest 47.1% (23.0-72.2) in Jouri and El Kashafa camps and to the highest 93.3% (68.1-99.8) in Al Jameya and Khor Alwarel. The UNHCR target is ≥75%. The risk of infantile death is higher if milk-based fluids or solids are provided to breastfed neonates. Breastmilk alone (exclusive) satisfies the nutritional and fluid requirements of an infant for the first complete six months of life regardless of any factor such as environmental and climates.[7]

Introduction of solid, semi-solid or soft foods among children (6-8 months) to be 40.0-75.0%; the lowest 40.0% (16.3-67.7) in Alejemeya and Khor Alwarel camps and the highest 75.0% (47.6-92.7) in Alegaya, Algana and Dabat Bosin. After six months, adequate and appropriate infant complementary foods become necessary to complement breastmilk to meet the energy and other nutrient requirements of the infants.

Consumption of iron-rich or iron-fortified foods among children (6-23 months) were low in all camps ranging from the lowest 18.5% (13.1-25.0) in Alegaya, Algana and Dabat Bosin, and to the highest 34.9% (26.0-44.6) in Jouri and El Kashafa. The UNHCR target is ≥60%. Bottle feeding among children (0-23 months) were found highest in Umsangur camp, which was 12.5% (6-6-20.8) and 6.9%(2.8-13.6) in Alradias 1&2, and 5.4% (3.0-10.8) in Jouri and El Kashafa camps. The rest found 2.1% (0.6-5.2). The trend weighted average of bottle feeding improved in 2018, which was 3.3%, whereas it was 6.4% in 2016, 5.4 % in 2022. The UNHCR target is <5%.

5.5 Food security

Proportion of households receiving a food assistance (in-kind) is between 89.0% (83.6-93.0) in Jouri and El Kashafa and 99.2% (95.8-100.0) in Aljemeya and Khor Alwarel. The average duration of the food ration (out of the theoretical duration of 30 days) ranged from 14.7 days in Umsangur camp to 17.6 days in Jouri and El Kashsfa camps. Most of refugees are not able to cover the whole month with the food assistance. The food gap is covered through coping strategies. Proportion of households reporting using the coping startegies over the past 7 days ranges from 51.2% (43.3-59.1) in Alegaya, Algana and Dabat Bosing and the highest 100% in Aljemeya and Khor Alwarel. The average relaxed coping strategies ranges between 21.8 in Jouri and El Kashafa and 27.3 in Al Jameya and Khor Alwarel. Food consumption score profile mainly the poor ranges 34.6 in Alradias 1&2 and 52.1 in Jouri and El Kashafa. The combined (poor and boardeline) food consumption score for the

[7] UNHCR SENS guidelines for refugee populations, Version 3 (2019)

last seven days ranging from 75.4 in Aljemeya and Khor Alwarel to 85.4 in Radias 1&2, showing refugees food consumption scroe is in bad situation.

Acute food insecurity is likely to increase across Sudan following an early start to the lean season in April/May, driven by the below-average 2021-2022 harvest and the continued macroeconomic deterioration, which is limiting household purchasing power, resulting in significantly above-average staple food prices and a high inflation rate[8]. The anticipated food ration dilution/cut by 50% starting July will have a negative impact on the overall food security status of refugees. According to the progress database and population profile, refugees in the White Nile are dominated by children and women, known as the most vulnerable group of the refugee population. Thus, food insecurity will be one of the main causes of undernutrition as it directly affects the nutritional status of the most vulnerable groups (children, pregnant and lactating mothers, and people with specific needs).

5.6 Mosquito net coverage

The proportion of households owning at least one mosquito net of any type ranged between 0.8% (0.02-4.2) and 2.7% (0.9-6.1). This is below UNHCR's target >80%. The survey was conducted during the time of non-malaria or mosquitoes breeding season, and people were not using bed nets. The data were collected by asking respondents whether they have mosquito net or not. Additionally, it was more than three years since mosquitoes were distributed, as a result the respondents might have raised their expectations and responded as they have none. The data can be used as proxy indicator or baseline to evaluate future interventions.

5.7 WASH

The proportion of households collecting drinking water from protected/treated sources found within acceptable limits ≥95% post-emergency situation. The result ranges between 96.8% (93.3-98.8) in Jouri and El Kashafa camps and 100% in the Umsangur camp. The average daily water usage was above the target of 20 litres per person per day (lpppd) in all camps to low ranging from 14.7% (5.0-31.1) and the highest 26.3% (13.4-43.1). Likewise significant portion of the population collects water per day <15 lpppd. 73.5% (55.6-87.1) in Aljemeya and Khor Alwarel camps and 50.0% (33.4-66.6) in Al Radias 1 & 2 camps.

The proportion of households reporting defecating in toilets ranges between the lowest 71.6-90.0%. The lowest in Umsangur is 71.6% (60.5-81.1), and the Highest is 90.0% (84.8-93.3) in Jouri and El Kashafa. The post-emergency target is ≥85%. The proportion of households with access to soap is lower than the emergency and post-emergency targets. The result ranges from the lowest at 6.2% (2.0-13.8) to the highest at 15.8% (10.9-21.8).

5.8 Other collected information/data

[8] FEWS NET 2022, Sudan food security outlook

The mortality rates retrospective for the last three months for crude mortality rate (CMR) and under five years old children mortality rate (U5MR) were within acceptable limits for an emergency context i.e. <1.0/10,000/day for CMR and <2.0/10,000/day for U5MR. CMR results ranged between 0.0 and 0.1/10,000/day, while U5MR ranged between 0.0 and 1.0/10,000/day. The data should be interpreted cautiously, the chance of underreporting is possible while the roomer of ration cut was evolving during the time of the survey, as food ration distribution was linked with family size.

COVID vaccination coverage of total population (aged 18-70 years) those received a single dose ranging between 15.7% (12.4-19.7) in Alegaya, Algana and Dabat-bosin and 25.0 (20.5-30.2) in Aljemeya and Khor Alwarel. Those received two doses ranges between 62.9% (58.5-67.1) in Aljemeya and Khor Alwarel and 77.8% (74.7-80.6) in Jouri and El Kashafa.

6. Conclusions

Overall, the SENS 2022 results show the severity of the situation: critical (very high) prevalence of global acute malnutrition, very high anaemia level (above 40% of public health significance), nutrition and health program enrolment and coverage are far below the targets for most of the indicators (SAM, MAM enrolment in treatment programs, and ANC coverage), the anticipated food ration cut by 50% starting in July remains a concern. Malnutrition is an outcome of multiple factors, which are directly or indirectly linked with nutrition-sensitive and related programming. The subsequent need for an interagency multi-sectoral review of the existing interventions for better programming and prioritization to address the situation (UNHCR/WFP/UNICEF/MOH/ and Partners). Furthermore, SENS's outcomes are to be considered as an input for the multisectoral assessment, preferably to plan for the joint assessment mission (JAM) in near future.

7. Recommendations and priorities

Demography

The Demography results should be used, in conjunction with socio economic / vulnerability assessments, to help UNHCR and partners plan and prioritise food assistance intervention and programme design such as targeting assistance to meet food and other basic needs.

Nutrition and health related

The anthropometric, nutrition programme enrolment, measles vaccination, vitamin A supplementation, deworming and diarrhoea assessment results are to assist public health partners working in refugee settings to better plan their nutrition programming.

Key priorities and recommendations:

21. Review the CMAM protocol and maximize screening activity with active case findings, referral and defaulter tracing with a scale-up of outreach interventions. SRCS and MOH increase the

number of outreach workers and train the community in MUAC measurement and self-referral system by introducing or maximizing "Mothers led/family MUAC". (UNHCR, MOH, and SRCS, with the support of UNICEF and WFP)

22. Higher MUAC cut-offs (<135mm at the risk group) can be applied considering the high acute malnutrition rate in the camps and use mixed criteria MUAC and WHZ no to miss malnutrition. (An immediate action: nutrition partners)

23. In the situation of very high GAM prevalence >15% and some of aggravating factors of food insecurity and general health situation blanket supplementary feeding program is recommended for children 6-59 months at least for six months to stabilize/reduce the situation. (WFP and partners, with the support of UNHCR)

24. Continuation and further strengthening of nutrition treatment through the CMAM model (SC, OTP, TSFP and outreach). UNHCR, WFP and UNICEF to provide technical and logistical support to nutrition partners

25. Institutionalize vitamin A supplementation and deworming for the camps on established schedules independent of National campaigns and establish child health nutrition days for the camps. (Nutrition partners, UNICEF and MOH)

26. Introduction of new activities such as use of lipid-based nutrient supplements or micronutrient powders (refer to UNHCR Operational Guidance on the Use of Special Nutritional Products to Reduce Micronutrient Deficiencies and Malnutrition in Refugee Populations). (WFP and partners)

27. Provision of micronutrients through improving the micronutrient content of the general food ration; introduce home-based food fortifications and promote nutrition education. (Nutrition partners with technical support of UNHCR, WFP and UNICEF). (Refer to the UNHCR Operational Guidance on the Use of Special Nutritional Products to Reduce Micronutrient Deficiencies and Malnutrition in Refugee Populations).

28. Scale-up ANC coverage and create strong referral linkages ANC and nutrition program vice versa in liaison with the health sector, encourage pregnant women to attend ANC as required. (Health and nutrition partners).

29. Scale up IFA tablet supplementation among the pregnant women and intensify health education on the importance of IFAS and its adherence both at the community and during ANC Visits. (Health and nutrition partners).

IYCF related:

The IYCF survey results should be used in conjunction with qualitative assessments, IYCF strategies

and plans, and monitoring data to help UNHCR and partners plan and prioritise IYCF interventions.

Key priorities recommendations:

30. Nutrition and health partners to develop or strengthen IYCF community-based activities through community peer-to-peer support groups. These activities should include other family members who traditionally influence IYCF practices of mothers, e.g. husbands and mothers-in-law. (UNHCR, UNICEF and MOH to provide technical support).

31. UNHCR and partners to develop a package of IYCF materials to facilitate user-friendly communication and dissemination of appropriate IYCF messages. (UNICEF and MOH to provide context specific communication tools).

Food Security related:

The results of this Food Security module should be used in conjunction with qualitative assessments and monitoring data to help UNHCR, WFP and partners plan and prioritise public health and food security interventions. The results provide a basic overview of the food security situation in the survey context at one point in time and are valuable in monitoring evolution in the food security situation. They may help explain any increases or decreases in acute malnutrition in the refugee population to take the necessary actions to address the problems.

Key priorities recommendations:

32. UNHCR and WFP with the support of partners to conduct feasibility study of cash-based interventions to widen food distribution modalities, such as multi-purpose cash assistance, food voucher, etc. to minimize or solve food basket pipeline breaks.

33. UNHCR, WFP and livelihood partners to introduce the backyard/sack gardening interventions to enhance the household dietary diversity which has a significant role on to address micronutrient needs and improving the nutritional status.

Mosquito Net Coverage:

The rapid LLIN coverage results are to assist public health partners working in refugee settings to better plan their malaria control programming.

Key priorities recommendations:

34. UNHCR and partners to enhance distribution of mosquito nets in all camps to increase the coverage of LLIN. Commence the distribution before the malaria.

35. UNHCR and partners to establish a strong monitoring mechanism on the use of bed nets by doing so to minimize or avoid sell of bed nets.

36. Conduct indoor residual spraying in all camps to reduce the incidence of malaria and consequently anaemia.

37. Strengthen environmental management activities such as clearing of stagnant ponds in the camps.

WASH related

The SENS WASH results should be used in conjunction with qualitative assessments and monitoring data (such as KAP surveys) to help UNHCR and its partners plan and prioritise public health and WASH interventions.

Key priorities recommendations:

38. UNHCR and WASH partners to increase water storage capacity in camps that have inadequate storage facilities and prioritize distribution of water storage jerry cans for the households. UNHCR to continue replacement of water containers (jerry cans) to improve access to quality water.

39. To increase use of toilets it is recommended to ensure timely construction, maintenance and desludging of full latrines.

40. Provide information and education to improve the maintenance and cleanliness of water containers and to increase their utility life span.

Appendices

Appendix 1: SMART Plausibility Check (PC) Report

SMART Plausibility Check (PC) Report, Standard/Reference used for z-score calculation: WHO standards 2006

Aljemeya and Khor Alwarel camp

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
(% of out of range subjects)			0	5	10	20	**0** (0.0 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.247)
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=0.027)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**2** (9)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**2** (9)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**2** (9)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>=1.20	
.			and	and	and	or	
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	5	10	20	**0** (0.93)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (-0.18)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**1** (0.29)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**0** (p=)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**11** %

The overall score of this survey is 11 %, this is good.
There were no duplicate entries detected.
Percentage of children with no exact birthday: 53 %

Radias 1 & 2 Camps

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
(% of out of range subjects)			0	5	10	20	**0** (0.0 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=1.000)
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=0.040)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**2** (8)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**2** (12)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**2** (12)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>=1.20	
.			and	and	and	or	

.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	5	10	20	**0** (0.92)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (0.14)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**1** (0.31)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**0** (p=)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**11** %

The overall score of this survey is 11 %, this is good.
There were no duplicate entries detected.
Percentage of children with no exact birthday: 9 %

Jouri and El Kashafa camps
Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	**Score**
Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
(% of out of range subjects)			0	5	10	20	**0** (0.0 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.463)
Age ratio(6-29 vs 30-59)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.813)
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	**4** (13)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**2** (12)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>=1.20	
.			and	and	and	or	
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	5	10	20	**0** (0.96)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (-0.02)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**1** (0.27)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**0** (p=)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**7** %

The overall score of this survey is 7 %, this is excellent.
There were no duplicate entries detected.
Percentage of children with no exact birthday: 30 %

Umsangur camp
Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	**Score**
Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
(% of out of range subjects)			0	5	10	20	**0** (0.0 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.315)
Age ratio(6-29 vs 30-59)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.251)

Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (6)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**2** (12)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**2** (9)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>=1.20	
.			and	and	and	or	
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	5	10	20	**0** (0.96)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**1** (-0.36)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**1** (0.30)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**0** (p=)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**6** %

The overall score of this survey is 6 %, this is excellent.
There were no duplicate entries detected.
Percentage of children with no exact birthday: 48 %

Alegaya, Algana and Dabat-bosin camps

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	**Score**
Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
(% of out of range subjects)			0	5	10	20	**0** (0.2 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.808)
Age ratio(6-29 vs 30-59)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.103)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (7)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**2** (10)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**2** (8)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>=1.20	
.			and	and	and	or	
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	5	10	20	**0** (0.97)
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	**0** (-0.14)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**0** (p=)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**4** %

The overall score of this survey is 4 %, this is excellent.
There were no duplicate entries detected.
Percentage of children with no exact birthday: 66 %

Appendix 2 (A) : Lists of survey participants

No	Name	Agency		No	Name	Agency
1	Samuel Tadesse	UNHCR		25	Fatima Abdallah Eshage	MOH
2	Mohamed Abdelhamid	UNHCR		**26**	Nawal Adam Eldoma	MOH
4	Hadia Abbo Abdallah	SRCS		27	Hanan Adam Eldoma	MOH
5	Mariam Osman Mohamed	MOH		**28**	Salwa Sadig Ismall	MOH
6	Showaz Mohamed Ahmed	SRCS		29	Zainab Ahmed Ashaikh	SRCS
7	Rashida farog Babiker	SRCS		**30**	Alafia Kabashi Ali Hamed	SRCS
8	Safa Awad Daldoum Gumaa	SRCS		31	Remaz Abdelrahman Ali	MOH
9	Marwa Hammad Daldoum	SRCS		**32**	Habiba Basheir Elhaj	MOH
10	Um Kulthoum kheirAllah	SRCS		33	Alsadig ShikhEldeen	SRCS
11	Mohamed Osman Tiy	SRCS		**34**	Sohil Rudwan Kamel	SRCS
12	May Ibrahim Mohammed	MOH		35	Egbal Abdallah Fadul	MOH
13	Nahla Abdalla Ibrahim Babiker	MOH		**36**	Mawahib Mahadi Ragig	SRCS
14	Mater Ibrahim Mohammed	MOH		37	Alnour Bashir Mohammed	SRCS
15	Byader Albager Mohammed	MOH		**38**	Adil Ibrahim Ahmed	SRCS
16	Esam Hussein Ali Elebaid	MOH		39	Sawakin Mohamed Adam	SRCS
17	Durea Altahir Abker	MOH		**40**	Sir Elkhatim Eltyeb Mustafa	SRCS
18	Altoma Ismaeil Abdallah	MOH		41	Ali Daff Allah Salah aldein	SRCS
19	Omjoma Ismaeil	MOH		**42**	Wahid Abd Algadir	SRCS
20	Hanan Awad Taha	MOH		43	Mohammed Abd Alkarim	SRCS
21	Ibrahem Abdallah Blellah	SRCS		**44**	Musa Hamid Ibrahim	SRCS
22	Elham Mohamed Ali	MOH		45	Khaled Abdalah	SRCS
23	Abdalbagi Elssdeg Ahmed	SRCS		**46**	Adam Elzain Mohamed	SRCS
24	Mohamed Abdelrahman	SRCS				

Appendix 2 (B) : List of ToT training participants conducted in Khartoum

NS	Name	Position	Duty Station	Agency	Email
1	Mohamed Ahmed	Assistant Nutrition and Food Security Officer	Khartoum	UNHCR	mohamahm@unhcr.org
2	Rami Ata Algeed	Assistant Public Health Officer	Khartoum	UNHCR	ataalgee@unhcr.org
3	Malik Gaidoum	Assistant Health and Nutrition Officer	El Fashir	UNHCR	gaidoum@unhcr.org
4	Badreldin Osman	Health and Nutrition Associate	El Daien	UNHCR	osmanbd@unhcr.org
5	Aicha Mohamed	Field Associate	El Daien	UNHCR	abacker@unhcr.org
6	Zain Al Abdeen Kambo	Health and Nutrition Associate	Kadugli	UNHCR	kambo@unhcr.org
7	Khalid Abdulrahim	Assistant Health and Nutrition Officer	Kassala	UNHCR	abdulrkh@unhcr.org
8	Mohammed Abdelhamid	Pharmacist	Kosti	UNHCR	abdelham@unhcr.org
9	Wisam Winila	Assistant Public Health Officer	Gadaref	UNHCR	WINILA@unhcr.org
10	Ashraf Abdo	Public Health Associate	Gadaref	UNHCR	abdoas@unhcr.org
11	Nasur Muwonge	Public Health Officer	Gadaref	UNHCR	muwongen@unhcr.org
12	Adam Mohammad Adam	Nutrition Specialist	Kassala	WHO	adammo@who.int
13	Mohamed Ali Mohamed Emam	Nutrition Specialist	Khartoum	WHO	emamm@who.int
14	Nadir Ahmed	Nutrition Officer	Kosti	UNICEF	nadahmed@unicef.org
15	Mohammed Ali Elamin	Nutrition Officer	Kassala	UNICEF	melamin@unicef.org
16	Nusiba HASHIM	Nutritionist	Kassala	WFP	nusiba.hashim@wfp.org
17	Mohammed MAHJOUB	Nutritionist	Kosti	WFP	mohammed.mahjoub@wfp.org
18	Hadia Mohamed Salih	CMAM focal person	Khartoum	FMOH	hidisalih@gmail.com
19	Fatima Eissa Mirghani	CMAM information management	Khartoum	FMOH	fatmamirghani4@gmail.com

Appendix 3: Local event calendar used during the survey to estimate age of young children

Seasons: الفصول	Religious Holidays الاعياد الدينية	Local Event (in camp of surrounding villages): الاحداث المحلية في المعسكر	Month / year شهر \ السنة	Age (m) العمر بالشهر
End of Hot: نهاية الصيف			مايو: May-2022	0
Middle of Hot: وسط الصيف			ابريل : Apr-22	1
Beginning of Hot: بداية الصيف			مارس : Mar-22	2
End of Cold: نهاية الشتاء			فبراير: Feb-22	3
Middle of cold :وسط الخر الشتاء	New yearالسنة الجديدة		يناير: Jan-22	4
Middle of cold :وسط الخر الشتاء	Christmas عيد كريسماس		ديسمبر: Dec-21	5
Beginning of Cold: بداية الشتاء			نوفمبر: Nov-21	6
End of Rain: نهاية الخريف			اكتوبر: Oct-21	7
Middle of Rain: وسط الخريف			سبتمبر: Sept-21	8
Middle of Rain: وسط الخريف			أغسطس: Aug-21	9
Middle of Rain: وسط الخريف		South Sudan Independent day انفصال جنوب السودان	يوليو: Jul-21	10
Beginning of Rain: بداية الخريف		June 20 Refugee day 20 يونيو يوم اللاجئ العالمي	يونيو: Jun-21	11
End of Hot: نهاية الصيف			مايو: May-21	12
Middle of Hot: وسط الصيف			ابريل : Apr-21	13
Beginning of Hot: بداية الصيف			مارس : Mar-21	14
End of Cold: نهاية الشتاء			فبراير: Feb-21	15
Middle of cold :وسط الخر الشتاء	New yearالسنة الجديدة		يناير: Jan-21	16
Middle of cold :وسط الخر الشتاء	Christmas عيد كريسماس		ديسمبر : Dec-20	17
Beginning of Cold: بداية الشتاء			نوفمبر: Nov-20	18
End of Rain: نهاية الخريف			أكتوبر : Oct-20	19
Middle of Rain: وسط الخريف			سبتمبر : Sept-20	20
Middle of Rain: وسط الخريف			أغسطس: Aug-20	21
Middle of Rain: وسط الخريف		South Sudan Independent day انفصال جنوب السودان	يوليو : Jul-20	22
Beginning of Rain: بداية الخريف		June 20 Refugee day 20 يونيو يوم اللاجئ العالمي	يونيو : Jun-20	23
End of Hot: نهاية الصيف			مايو: May-20	24
Middle of Hot:وسط الصيف			أبريل : Apri-20	25
Beginning of Hot: بداية الصيف			مارس : Mar-20	26
End of Cold: نهاية الشتاء			فبراير : Feb-20	27
Middle of cold :وسط الخر الشتاء	New yearالسنة الجديدة		يناير : Jan-20	28
Middle of cold :وسط الخر الشتاء	Christmas عيد كريسماس		ديسمب: Dec-19	29
Beginning of Cold: بداية الشتاء			نوفمبر : Nov-19	30
End of Rain: نهاية الخريف			أكتوبر: Oct- 19	31
Middle of Rain: وسط الخريف			سبتمبر : Sep-19	32
Middle of Rain: وسط الخريف			أغسطس:Aug- 19	33
Middle of Rain: وسط الخريف		South Sudan Independent day انفصال جنوب السودان	يوليو: Jul-19	34
Beginning of Rain: بداية الخريف		June 20 Refugee day 20 يونيو يوم اللاجئ العالمي	يونيو: June-19	35
End of Hot: نهاية الصيف	Refugee dayيوم اللاجئ		مايو:May-19	36
Middle of Hot: وسط الصيف			أبريل: April-19	37
Beginning of Hot: بداية الصيف			مارس: Mar-19	38
End of Cold: نهاية الشتاء			فبراير: Feb-19	39
Middle of cold :وسط الخر الشتاء	New yearالسنة الجديدة		يناير: Jan-19	40
Middle of cold :وسط الخر الشتاء	Christmas عيد كريسماس		ديسمبر: Dec-18	41
Beginning of Cold: بداية الشتاء			نوفمبر: Nov-18	42
End of Rain: نهاية الخريف			أكتوبر: Oct-18	43
Middle of Rain: وسط الخريف			سبتمبر: Sept-18	44
Middle of Rain: وسط الخريف			أغسطس:Aug-14	45
Middle of Rain: وسط الخريف		South Sudan Independent day انفصال جنوب السودان	يوليو: July-18	46
Beginning of Rain: بداية الخريف		June 20 Refugee day 20 يونيو يوم اللاجئ العالمي	يونيو: June-18	47
End of Hot: نهاية الصيف			مايو: May-18	48
Middle of Hot: وسط الصيف			أبريل:Apr-18	49
Beginning of Hot: بداية الصيف			مارس: Mar-18	50
End of Cold: نهاية الشتاء			فبراير: Feb-18	51
Middle of cold :وسط الخر الشتاء	New year السنة الجديدة		يناير: Jan-18	52
Middle of cold :وسط الخر الشتاء	Christmas عيد كريسماس		ديسمبر: Dec-17	53
Beginning of Cold: بداية الشتاء			نوفمبر : Nov-17	54
End of Rain: نهاية الخريف			أكتوبر: Oct-17	55
Middle of Rain: وسط الخريف			سبتمبر: Sept-17	56
Middle of Rain: وسط الخريف			أغسطس:Aug-17	57
Middle of Rain:وسط الخريف		South Sudan Independent day انفصال جنوب السودان	يوليو: July-17	58

Appendix 4 : Survey Questionnaire

UNHCR Standardised Expanded Nutrition Survey (SENS) Questionnaire

Greeting and reading of rights:

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

- Hello, my name is _____ and I work with _____. 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. We will also ask some questions on COVID-19 vaccination status for those age 18 years and above in your household.
- 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 QUESTIONNAIRE
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. **HHHSEX**	Male ..... m Female ..... f	|___|
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)?	RECORD THE NUMBER IN YEARS IF KNOWN. IF AGE IS LESS THAN 1 YEAR, RECORD 0.	|___|___| years

	YOU DO NOT NEED TO SEE PROOF OF AGE. **Lower limit=0** **Upper limit=98** **HHMAGE**	RECORD 97 IF 97 YEARS OR OLDER. RECORD 98 IF UNKNOWN.	
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.		

COVID-19 vaccination questions administrated at HH level:

- ID of household member:
- Name of household member:
- What sex is {NAME}?
- What is {NAME}'s age (years)?
- Has {NAME} ever received any vaccinations against Covid-19?
- How many doses of the COVID-19 vaccine has {NAME} received so far?
- Does the vaccine {NAME} received require one or two doses?
- Why did {NAME} not receive a COVID-19 vaccine?
- if other, please specify:
- Summary of results:

COVID-19 VACCINATION SUMMARY:

Vaccination status
Full Vacc
Partial Vacc
Non Vacc / Don't know

FOOD SECURITY, MOSQUITO NET COVERAGE AND WASH QUESTIONNAIRE
1 questionnaire per 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 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 **YNOFOODA**	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	|___|
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?	Not given one at registration even if eligible .....1 Lost card..... 2	|___| **GO TO FS7**

	YNORCARD	Traded/sold card ..... 3 Not registered..... 4 Registered but determined not eligible ..... 5 Other ..... 6 Don't know..... 8	
FS6	How many days did the food from the general in-kind food distribution from the 28 days cycle of August/September last? **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. **NEEDSNOT: FOODB / WATERB / HYGIENEB / HEALTHB / HOUSEB / FUELB / LIVELIB / DEBTSB / SAVINGB / EDUCAB / OTHERB / DKNB**	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, 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	|___|___|
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.		
FS10	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	|___|
FS11	In the past 4 weeks, have you or anyone in your	Yes 1	

	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**	No ..... 2 Don't know..... 8	|___|
FS12	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	|___|
FS13	In the past 4 weeks, have you or anyone in your household needed to move to a poorer quality shelter? **SHELTER**	Yes .....1 No ..... 2 Don't know..... 8	|___|
FS14	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	|___|
FS15	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	|___|
FS16	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	|___|
FS17	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	|___|
FS18	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	|___|
FS19	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.		
FS20	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?	RECORD THE NUMBER OF DAYS, FROM 0-7.	|___|

	Lower limit=0 **Upper limit=7** **LESSEXP**		
FS21	In the past 7 days, how many days did your household borrow food or rely on help from a friend or relative due to lack of food or money to buy food? **Lower limit=0** **Upper limit=7** **BRW**	RECORD THE NUMBER OF DAYS, FROM 0-7.	|___|
FS22	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.	|___|
FS23	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.	|___|
FS24	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			
FS25	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. **CRLROTU**	|___| **Lower limit=0** **Upper limit=7**	

	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	|___| **IF ANSWER IS 0 GO TO QUESTION 7**

	100% fruit juice made from these fruits FRT	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, sugar can, 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	
FS26	How was this food acquired? FOODSOU	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	|___|___|

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	Yes..... 1	

	interview? ENSURE THAT YOU HAVE INTRODUCED THE TEAM AND INFORMED THEM ABOUT THE INTERVIEW. **TNCONST**	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?	Yes..... 1 No..... 2	|___|

	ASK RESPONDENT TO SHOW YOU THE NET IN THE HOUSEHOLD. **NETSOBS**		**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. **NETBRAND**	DAWAPLUS..... 01 DURANET..... 02 INTERCEPTOR..... 03 LIFENET..... 04 MAGNET.....05 MIRANET..... 06 OLYSET.....07 PANDANET.....08 PERMANET .....09 ROYALSENTRY.....10 SAFENET ..... 11 VEERALIN.....12 YALE.....13 YORKOOL .....14 Other (please specify).....96 Unidentifiable/Don't know 98	|___|___| **IF ANSWER IS 96 GO TO TN10**
TN10	If other, please specify the brand name of net **BRANDOTH**	|_____|	
	TOTLN		|___|___|

SECTION TN3: Survey of household members THIS SECTION IS TO BE COMPLETED FOR EACH HH MEMBER WHO LIVES HERE AND SLEPT HERE LAST NIGHT.			
Note	THESE QUESTIONS NEED TO BE COMPLETED FOR EACH HH MEMBER WHO LIVES IN THE HOUSEHOLD AND SLEPT HERE LAST NIGHT.		
TN11	ID of household member **HHMID**		|___|
TN12	What is the sex of the household member? **HHMSEX**	Male ..... m Female..... f	|___|
TN13	How old is the household member? **HHMAGE**	<5 years ..... 1 ≥5 years 2	|___|
TN14	Is the household member currently pregnant? **HHMPREG**	Yes..... 1 No.....2 Don't know 8	|___|
TN15	Did the household member sleep under a net last night? **SLPNET**	Yes..... 1 No…….. 2 Don't know…….. 8	|___|
TN16	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**	RESPONSES FROM TN9 SHOWN HERE. EXAMPLE: NETBRAND1-PERMANET NETBRAND2-PERMANET NETBRAND3-Unidentifiable/Don't know NETBRAND4- OLYSET	|___|___|
Note	Error messages		

	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 (TN13). 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 (TN14). Please review to ensure they match.

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? SELECT ONE BUT DO NOT PROMPT WITH RESPONSES. CONSIDER DRINKING WATER ONLY. **SOURCE**	Public tap/standpipe ..... 01 Handpumps/boreholes ..... 02 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 collect or store 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	Yes ..... 1 No 2	|___|

	CHILD]? XDOBK		**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. 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** HEIGHT		|___|___|___|. |___| cm
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 the SFP or the OTP/SC 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. **VITA**	Yes, card ..... 1 Yes, recall ..... 2 No or don't know 3	|___|
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.	Yes ..... 1 No ..... 2 Don't know 8	|___| **IF ANSWER IS 2 OR 8 GO TO CH24**

	DIAR		
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	Less than one hour 1	

	put [NAME OF CHILD] to the breast? **INITBF**	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, Jambo 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. Thin porridge, for example made with maize, sorghum, millet, cassava or finger millet, CSB+/CSB++ **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**)	4I……	1	2	8

	WATLQD		
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+ FBF	7B……1	2 8
	7C. CSB++ SHOW CSB++ SACHET FBFSUPER	7C……1	2 8
	7D. Plumpy'Nut® SHOW SACHET. RUTF	7D……1	2 8
	7E. Iron fortified infant formula, for example **Lactogen, NAN** INFORMFE	7E……1	2 8
	7F. Iron fortified solid, semi-solid or soft foods designed specifically for infants and young children, for example **Cerelac, Weetabix** FOODFE	7F……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.		|___|___|years

	Lower limit=15 years **Upper limit=49 years** **WMAGE**		
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 enrolled in the ANC programme? **ANC**	Yes ..... 1 No ..... 2 Don't know 8	|___|
WM7	Are you currently receiving 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) MEASURE LEFT ARM. DON'T FORGET THE DECIMAL. **Lower limit=16.0 cm** **Upper limit=50.0 cm** **WMMUAC**		|___|___|. |___| cm
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 OR

	G/DL: DON'T FORGET THE DECIMAL. **Lower limit=2.0 g/gL** **Upper limit=22.0 g/dL** **WMHB**		|___|___|___| 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.og/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.		