STANDARDISED EXPANDED NUTRITION SURVEY (SENS)

Final report

Pamir & Ajoung Thok refugee camps, Pariang County, South Sudan

Survey conducted: 21-31 October 2019

In collaboration with WFP, UNICEF, AHA and IRC

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ACRONYMS AND ABBREVIATIONS

AHA	Africa Humanitarian Action
ANC	Ante Natal Care
AWD	Acute Watery Diarrhoea
BSFP	Blanket Supplementary Feeding Programme
CMR	Crude Mortality Rate
CI	Confidence Interval
CMAM	Community Management of Acute Malnutrition
CSB++	Corn-Soya Blend Plus Plus
ENA	Emergency Nutrition Assessment
EPI	Expanded Programme on Immunization
Epi Info	Name of CDC software for Epidemiological investigations
GAM	Global Acute Malnutrition
GFD	General Food Distribution
GFR	General Food Ration
HAZ	Height-for-Age z-score
Hb	Haemoglobin
HH	Household
iRHIS	Integrated Refugee Health Information System
IYCF	Infant and Young Child Feeding
IRC	International Rescue Committee
KAP	Knowledge Attitudes and Practices
L/P/D	Liters per Person per Day
LRTI	Lower Respiratory Tract Infection
MAM	Moderate Acute Malnutrition
MUAC	Mid Upper Arm Circumference
MSGs	Mother Support Groups
NCHS	National Centre for Health Statistics
NIDs	National Immunisation Days
ODK	Open Data Kit
OTP	Out-patient Therapeutic Programme
PDM	Post Distribution Monitoring
PPS	Probability Proportional to Size
ProGres	Registration database for refugee population data
SAM	Severe Acute Malnutrition
SC	Stabilization Centre
SD	Standard Deviation
SENS	Standardised Expanded Nutrition Survey (SENS)
SFP	Supplementary Feeding Programme
SMART	Standardised Monitoring and Assessment of Relief and Transitions
SP	Samaritan's Purse
OTP	Outpatient Therapeutic Programme
U5CMR	Under-5 Crude Mortality Rate
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
URTI	Upper Respiratory Tract Infection
WASH	Water, Sanitation and Hygiene
WAZ	Weight-for-Age z-score
WHZ	Weight-for-Height z-score
WFP	World Food Programme
WHO	World Health Organization

Pamir and Ajoung Thok refugee camps, South Sudan, October 2019 SENS

ACKNOWLEDGEMENTS

EXECUTIVE SUMMARY

UNHCR in collaboration with AHA, IRC and WFP carried out the nutrition survey in Pamir and Ajoung Thok refugee camps from 21 to 31 October 2019. Pamir and Ajoung Thok are the official refugee camps in Pariang County, Unity State. No nutrition survey was carried out in Yida as comprehensive services were not provided in 2019 considering its exit strategy. Refugees from Yida continue to be relocated to Pamir and Ajoung Thok refugee camps. The overall aim of the survey was to assess the nutrition situation among the refugee population and to monitor ongoing programme interventions. In each of the camps a cross- sectional survey was conducted using the UNHCR Standardised Expanded Nutrition Survey (SENS) version 2, 2013 guidelines (http://sens.unhcr.org/) and the Standardised Monitoring and Assessments of Relief and Transitions (SMART) guidelines (https://smartmethodology.org/). Systematic random sampling was used to identify the survey respondents.

The surveys had a total of 4 modules consisting of 3 individual level and 1 household level questionnaires following UNHCR SENS guidelines version 2, 2013. The modules included: 1. Anthropometry and health targeting all children aged 6 to 59 months in all the sampled households; 2. Anaemia targeting all children aged 6 to 59 months in all the sampled households and all non-pregnant women aged 15 to 49 years in every other sampled household, 3. Infant and Young Child Feeding (IYCF) targeting all children aged 0 to 23 months in all the sampled households; 4. Food security targeting every other sampled household. The Water, Sanitation, and Hygiene (WASH) and mosquito net coverage modules were not carried out. This is because there is a WASH monitoring system in place and WASH Knowledge Attitude and Practices (KAP) assessment was conducted within the same month as the nutrition survey. Information on mosquito net coverage was carried out within the year in Pamir and Ajoung Thok in a separate partner assessment. The Emergency Nutrition Assessment (ENA) software version July 9th, 2015 was used to calculate the sample sizes of children and households for participating in the survey. The parameters used to calculate the sample sizes can be found under table 6 on page 24.

A total of six survey teams composed of four members each (one team leader, one hemoglobin measurer, one anthropometric measurer/translator and one hemoglobin/anthropometric measurement assistant) were included in each survey. A standardized training lasting five days, which included a standardization test was provided. Data collection lasted eight days from 21-31 October with a two days break on the 26 and 27 October 2019. The survey teams were supported by a team of 5 supervisors and 3 coordinators who roved between the teams during the data collection.

Mobile phone questionnaires using Open Data Kit (ODK) android software was used for data collection for the four modules of SENS. Data validation was carried out daily by the survey coordinator and supervisors. This facilitated daily feedback to the survey teams. Data analysis used ENA for SMART July 9th, 2015 version for anthropometric indices and Epi info version 7 for the rest of the indicators.

The overall nutrition situation in both Pamir and Ajoung Thok is classified as poor[1] as indicated by the Global Acute Malnutrition (GAM) prevalence of 7.8% (5.1-11.7 95% C.I) and 9.1% (8.3-9.9 95% C.I) respectively based on weight for height z scores.

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[1] WHO/UNICEF categorization, prevention of malnutrition threshold-children under 5 years of age, December 2018

Compared to the situation in 2018 the nutrition situation remained the same but the slight increase in the trends of GAM prevalence indicates a likely deteriorating situation[2]. The prevalence of SAM increased to 2.1% in Ajoung Thok classified as Critical (UNHCR thresholds SAM >2% critical). Addressing acute malnutrition (wasting) is of critical importance because of the heightened risk of disease and death for children who lose too much of their body weight. Severe acute malnourished children have a nine times elevated risk of death compared with normal children.[3]

The 2019 global stunting prevalence in Pamir was 23.6% (18.9-29.2 95% C.I) while in Ajoung Thok was 22.7% (20.8-24.8 95% C.I). This is categorized as high according to WHO standards[4]. Stunting prevalence remained the same as in 2018 in Pamir and decreased in Ajoung Thok. In 2018 stunting among children 6-59 months in Pamir and Ajoung Thok was 28.3% and 35.5%. Stunting is an outcome of inadequate nutrition and repeated bouts of infection during the first 1000 days of a child's life. Stunting before the age of 2 years predicts poorer cognitive and educational outcomes in later childhood.[5]

Total anaemia prevalence among children aged 6 to 59 months in Pamir and Ajoung Thok was 47.3% (41.1-53.6 95% C.I) and 44.1% (38.3-50.1 95% C.I) which indicates a critical situation as it is above the 40% level of public health significance (WHO classification)[6]. Compared to 2018 the prevalence of anaemia remained the same in both Pamir and Ajoung Thok. Anaemia is recognised to adversely affect the cognitive performance, behaviour and physical growth of infants, preschool and school-aged children, and increase the likelihood of associated morbidities.[7] Anaemia is not only an indicator of potential iron deficiency in populations but can also be taken as a proxy indicator for other micronutrient deficiencies.

The OTP and TSFP enrolment based on all admission criterion in both Pamir and Ajoung Thok is far below the recommended standard of >90%. This indicates the strong need to strengthen case finding both at the community level and the screening at the facility level.

The coverage of measles vaccination in Pamir was 93.6% which is slightly below the recommended ≥95%. In Ajoung Thok the target was met. Vitamin A supplementation met the target coverage of ≥90% in both camps. Ante natal coverage in Pamir was 90.1% and 90.5% in Ajoung Thok camp. Efforts to maintain and strengthen this to be ensured.

24.8% of children aged 6-59 months in Pamir and 9.3% in Ajoung Thok reported to have had diarrhoea in the last two weeks prior to the survey indicating a morbidity caseload requiring continued health and hygiene services provision.

74% of children aged 6-59 months in Pamir and 70.6% in Ajoung Thok reported to have been dewormed in the last six months prior to the survey. This was slightly below the

[2] P>0.05 therefore the decrease in prevalence was statistically insignificant
[3] WHO child growth standards and identification of severe acute malnutrition in infants and young children. A joint statement by WHO and UNICEF, 2009.
[4] WHO/UNICEF categorization, prevention of malnutrition threshold-children under 5 years of age, December 2018
[5] http://www.who.int/nutrition/topics/globaltargets_stunting_policybrief.pdf
[6] WHO categorization
[7] WHO anaemia global targets brief

UNHCR target of ≥75% indicating the need to strengthen routine and campaign interventions in both camps.

The rate of timely initiation of breastfeeding was 89.8% and 92.8% while exclusive breastfeeding was 100% in Pamir and 93.9% in Ajoung Thok indicating positive uptake of the breastfeeding messages. Timely introduction of complementary feeding was 72.2% and 92.8% in Pamir and Ajoung Thok respectively. This improved compared to the proportion in 2018. Consumption of iron rich foods although improving remains inadequate. The proportion of children aged 6 -23 months that had consumed iron-rich or iron-fortified foods in Pamir was 49.5% and 59.4% in Ajoung Thok. Continued strengthening of the Infant and Young Child Feeding (IYCF) promotion program in regard to appropriate complementary feeding remains key including finding options to diversify the diet to include a better micronutrient profile.

Majority of the refugees in Pamir and Ajoung Thok refugee camps continued to use negative coping strategies to fill the food assistance gap. Only 34.9% in Pamir and 42.6% in Ajoung Thok reported *not* using negative coping strategies. This group is likely to be benefiting from the complementary livelihood interventions in place. This, however, needs to be scaled up to increase the proportion to cover majority of the population. The proportion that reported *not* using negative coping strategies to fill the food assistance gap in Pamir increased in 2019 compared to 2018 in both camps.

Table 1: Summary of Results SENS 2019, Pamir and Ajoung Thok refugee camps, South Sudan

	Pamir		Ajoung Thok		Classification of public health significance or target (where applicable)
	Number / total	% (95% CI)	Number / total	% (95% CI)	
CHILDREN 6-59 months					
Acute Malnutrition					
Global Acute Malnutrition (GAM)	20/257	7.8 (5.1 - 11.7)	26/287	9.1 (8.3 - 9.9)	Very high/critical if ≥ 15% (WHO-UNICEF classification)
Moderate Acute Malnutrition (MAM)	17/257	6.2 (3.9 – 9.9)	20/287	7.0 (6.4 - 7.6)	
Severe Acute Malnutrition (SAM)	3/257	1.6 (0.6 - 3.9)	6/287	2.1 (1.9 – 2.3)	
Oedema	0/257	0	0/287	0 (0-0)	
Mid Upper Arm Circumference (MUAC)					
MUAC <125mm and/or oedema	2/258	0.8 (0.2 - 2.8)	2/290	1.0 (0.9 – 1.1)	
MUAC 115-124 mm	1/258	0.4 (0.1 - 2.2)	2/290	0.7 (0.6 - 0.8)	
MUAC <115 mm and/or oedema	1/258	0.4 (0.1 - 2.2)	0/290	0.3 (0.3 - 0.4)	
Stunting[8]					
Total Stunting	62/258	23.6 (18.9-29.2)	65/286	22.7 (20.8 -24.8)	Critical if ≥ 30% (WHO-UNICEF classification)
Severe Stunting	18/258	7.0 (4.5-10.8)	12/286	4.2 (3.8 - 4.6)	
Programme enrolment/ coverage					
Measles vaccination with card or recall (9-59 months)	225/240	93.8 (89.9-96.5)	273/276	98.9 (96.9 -99.8)	Target of ≥ 95%

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[8] Note that z-scores for height-for-age require accurate ages to within two weeks (CDC/WFP: A manual: Measuring and Interpreting Mortality and Malnutrition, 2005).

	Pamir		Ajoung Thok		
	Number / total	**% (95% CI)**	**Number / total**	**% (95% CI)**	**Classification of public health significance or target (where applicable)**
Vitamin A supplementation coverage with card or recall, within past 6 months with card or recall (6-59 months	243/258	94.1 (90.6-96.7)	285/290	98.3 (96.0- 99.4)	Target of ≥ 90%
Outpatient Therapeutic Program (OTP) (based on all admission criteria WHZ, oedema and MUAC)	0/4	0	0/6	0	Target of ≥ 90%
Targeted Supplementary Feeding Program (TSFP) (based on all admission criteria WHZ and MUAC)	1/16	6.3 (0.2-30.2)	1/21	4.8 (0.1-23.8)	Target of ≥ 90%
Diarrhoea					
Diarrhoea in past 2 weeks	64/258	24.8 (19.7-30.5)	26/289	9.3 (6.2 – 13.3)	
Deworming coverage within past 6 months (12-59 months)	159/215	74.0 (67.6-79.7)	185/262	70.6 (64.7-76.1)	Target of ≥ 75%
Anaemia (children 6-59 months)					
Total Anaemia (Hb <11 g/dl)	122/258	47.3 (41.1-53.6)	128/290	44.1 (38.3-50.1)	High if ≥ 40%
Mild (Hb 10-10.9)	81/258	31.4 (25.8-37.4)	76/290	26.2 (21.2-31.7)	
Moderate (Hb 7-9.9)	40/258	15.5 (11.3-20.5)	51/290	17.6 (13.4-22.5)	
Severe (Hb <7)	1/258	0.4 (0.0-2.1)	1/290	0.3 (0.0-1.9)	
Anaemia (children 6-23 months)					
Total Anaemia (Hb <11 g/dl)	65/95	68.4 (58.1-77.6)	66/106	62.3 (52.3-71.5)	High if ≥ 40%

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	Pamir		Ajoung Thok		Classification of public health significance or target (where applicable)
	Number / total	% (95% CI)	Number / total	% (95% CI)	
Mild (Hb 10-10.9)	33/95	34.7 (25.3-45.2)	33/106	31.1 (22.5- 40.9)	
Moderate (Hb 7-9.9)	32/95	33.7 (24.3-44.1)	32/106	30.2 (21.6-39.9)	
Severe (Hb <7)	0/95	0	1/106	0.9 (0.0- 5.1)	
CHILDREN 0-23 months					
IYCF indicators					
Timely initiation of breastfeeding	106/118	89.8 (82.9-94.6)	129/139	92.8 (87.2-96.5)	
Exclusive breastfeeding under 6 months	23/23	100	31/33	93.9 (79.8-99.3)	
Continued breastfeeding at 1 year	19/19	100	25/26	96.2 (80.4-99.9)	
Continued breastfeeding at 2 years	7/17	58.8 (32.9-81.6)	14/24	58.3 (36.6-77.9)	
Introduction of solid, semi-solid or soft foods	13/18	72.2 (46.5-90.3)	13/14	92.9 (66.1-99.8)	
Consumption of iron-rich or iron-fortified foods	47/95	49.5 (39.1-59.9)	63/106	59.4 (49.5-68.9)	
Bottle feeding	2/117	1.7 (0.2-6.0)	1/139	0.7 (0.0-3.9)	
Proportion of children 6-23 months who received CSB++ in the last 24 hours	18/95	19.0 (11.6-28.3)	19/106	17.9 (11.2-26.6)	
WOMEN 15-49 years					
Anaemia (non-pregnant)					
Total Anaemia (Hb <12 g/dl)	28/99	28.3	51/150	34.0	High if ≥ 40%

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	Pamir		Ajoung Thok		Classification of public health significance or target (where applicable)
	Number / total	% (95% CI)	Number / total	% (95% CI)	
		(19.7-38.2)		(26.5-42.2)	
Mild (Hb 11-11.9)	14/99	14.1 (8.0-22.6)	34/150	26.7 (16.2-30.2)	
Moderate (Hb 8-10.9)	14/99	14.1 (8.0-22.6)	17/150	11.3 (6.7-17.5)	
Severe (Hb <8)	0/99	0	0/150	0	
Programme enrolment pregnant women					
Pregnant women currently enrolled in the ANC	10/11	90.9 (58.7-99.8)	19/21	90.5 (69.6-98.8)	
Pregnant women currently receiving Iron-folic acid pills	10/11	90.9 (58.7-99.8)	18/21	85.7 (63.7-97.0)	
Food Security					
Proportion of HH with a ration card	152/152	100	197/197	100	
Average Household Diet Diversity Score(HDDS)		5.6		5.8	
Proportion of households *not consuming any* vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	14/152	9.2 (5.1-15.0)	18/197	9.1 (5.5-14.1)	
Proportion of households consuming either a plant or animal source of vitamin A	117/152	77.0 (69.5-83.4)	137/197	69.5 (62.6-75.9)	
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	24/152	15.8 (10.4-22.6)	58/197	29.4 (23.2-36.3)	
Proportion of households reporting using the following negative coping strategies over the past month*:					
Borrowed cash, food or other items with or without interest	56/152	36.8 (29.2-45.0)	51/197	25.9 (19.9 – 32.6)	
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)	24/152	15.8 (10.4-22.6)	29/197	14.7 (10.1- 20.5)	
Requested increased remittances or gifts as compared to normal	13/152	8.6 (4.6-14.2)	17/197	8.6 (5.1-13.5)	

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	Pamir		Ajoung Thok		Classification of public health significance or target (where applicable)
	Number / total	% (95% CI)	Number / total	% (95% CI)	
Reduced the quantity and/or frequency of meals and snacks	72/152	47.4 (39.2-55.6)	84/197	42.6 (35.6- 49.9)	
Begged	6/152	4.0 (1.5-8.4)	8/197	4.1 (1.8-7.8)	
Engaged in potentially risky or harmful activities	8/152	5.3 (2.3-10.1)	15/197	7.6 (4.3-12.3)	
Households reporting using none of the listed negative coping strategies	53/152	34.9 (27.3-43.0)	84/197	42.6 (35.6-49.9)	

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

Results Interpretation

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

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

Table 3: WHO prevalence thresholds for stunting in children aged 6-59 months (low height-for-age)

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

Table 4: WHO classification of public health significance for the prevalence of Anaemia (children 6- 59month-old and non-pregnant Women 15-49 years old)[2]

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

Source: WHO (2000)

- The overall nutrition situation in both Pamir and Ajoung Thok is classified as poor[9] as indicated by the Global Acute Malnutrition (GAM) prevalence of 7.8% (5.1-11.7 95% C.I) and 9.1% (8.3-9.9 95% C.I) respectively based on weight for height z scores. Severe Acute Malnutrition (SAM) was 1.6% (0.6-3.9 95% CI) in Pamir. In Ajoung Thok this was 2.1% (1.9-2.3 95% CI) which is critical as per UNHCR classification (SAM>2% critical). Compared to the situation in 2018 the nutrition situation remained the same but the slight increase in the trends of GAM and SAM prevalence indicates a likely deteriorating situation[10].
- The 2019 global stunting prevalence in Pamir was 23.6% (18.9-29.2 95% C.I) while in Ajoung Thok was 22.7% (20.8-24.8 95% C.I). This is categorized as high according to WHO standards[11]. Stunting prevalence remained the same as in 2018 in Pamir and

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[9]

WHO/UNICEF categorization, prevention of malnutrition threshold-children under 5 years of age, December 2018

[10] P>0.05 therefore the decrease in prevalence was statistically insignificant

[11] WHO/UNICEF categorization, prevention of malnutrition threshold-children under 5 years of age, December 2018

decreased in Ajoung Thok. In 2018 stunting among children 6-59 months in Pamir and Ajoung Thok was 28.3% and 35.5%. Stunting is an outcome of inadequate nutrition and repeated bouts of infection during the first 1000 days of a child's life. Stunting before the age of 2 years predicts poorer cognitive and educational outcomes in later childhood.[12]

- Total anaemia prevalence among children aged 6 to 59 months in Pamir and Ajoung Thok was 47.3% (41.1-53.6 95% C.I) and 44.1% (38.3-50.1 95% C.I) which indicates a critical situation as it is above the 40% level of public health significance (WHO classification)[13]. Compared to 2018 the prevalence of anaemia remained the same in both Pamir and Ajoung Thok. Children 6-23 months tend to be more affected by anaemia. The prevalence of anaemia among children aged 6-23 months was 68.4% and 62.3% in Pamir and Ajoung Thok camps respectively. The prevalence of anaemia among women aged 15-49 years (non-pregnant) was 28.3% in Pamir and 22.7% in Ajoung Thok. This is of medium public health significance and is above the <20% UNHCR target. Only a low proportion of households consumed food groups containing iron (15.8% in Pamir and 29.4% in Ajoung Thok) which is indicative of an inadequate diet that is likely to be contributing to the micronutrient deficiencies. Anaemia is recognised to adversely affect the cognitive performance, behaviour and physical growth of infants, preschool and school-aged children, and increase the likelihood of associated morbidities.[14] Anaemia is not only an indicator of potential iron deficiency in populations but can also be taken as a proxy indicator for other micronutrient deficiencies.

- The OTP and TSFP enrolment based on all admission criterion in both Pamir and Ajoung Thok was far below the recommended standard of >90%. This indicates the need to strengthen active case finding and referral both at the community level and the screening at the facility level.

- The coverage of measles vaccination in Pamir was 93.6% which is slightly below the recommended ≥95%. In Ajoung Thok the target was met. Regarding vitamin A supplementation the target coverage of ≥90% was met in both camps. Ante natal coverage in Pamir was 90.1% and 90.5% in Ajoung Thok camp. Efforts to maintain and strengthen this to be ensured.

- 24.8% of children aged 6-59 months in Pamir and 9.3% in Ajoung Thok reported to have had diarrhea in the last two weeks prior to the survey indicating a morbidity caseload requiring continued health and hygiene services provision.

- 74% of children aged 12-59 months in Pamir and 70.6% in Ajoung Thok reported to have been dewormed in the last six months prior to the survey. This was slightly below the UNHCR target of ≥75% indicating the need to strengthen routine and campaign interventions in both camps.

- The rate of timely initiation of breastfeeding was 89.8% and 92.8% while exclusive breastfeeding was 100% in Pamir and 93.9% in Ajoung Thok indicating a positive uptake of the breastfeeding messages. Timely introduction of complementary feeding

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[12] http://www.who.int/nutrition/topics/globaltargets_stunting_policybrief.pdf
[13] WHO categorization

[14] Iron deficiency anaemia. Assessment, Prevention and Control-A guide for program managers, WHO 2001

was 72.2% and 92.8% in Pamir and Ajoung Thok respectively. This improved compared to the proportion in 2018. Consumption of iron rich foods although improving remains inadequate. The proportion of children aged 6 -23 months that had consumed iron-rich or iron-fortified foods in Pamir was 49.5% and 59.4% in Ajoung Thok. Continued strengthening of the Infant and Young Child Feeding (IYCF) promotion program with increased attention to appropriate complementary feeding remains key including finding options to diversify the diet to include a better micronutrient profile.

- 100% of the households had a ration card in both camps indicating that all refugees have access to food assistance. The household diet diversity score in Pamir was 5.6 out of 12 food groups and in Ajoung Thok was 5.8. Most households reported using one or more of the negative coping strategies (borrowed cash or food 36.8% and 25.9%, sold assets 15.8% and 14.7%, requested increased remittances/gifts 8.6% and 8.6%, reduced quantity or frequency of meals 47.4% and 42.6%, begged 4% and 4.1%, and engaged in potential risky or harmful activities 5.3% and 7.6% in Pamir and Ajoung Thok respectively). A reduced GFD continues to be provided since August 2015 which only provides 1491kcal/person/day (71%) of the recommended 2100 kcal/person/day which is insufficient and continues to require attention.

- Majority of the refugees in Pamir and Ajoung Thok refugee camps continued to use negative coping strategies to fill the food assistance gap. Only 34.9% in Pamir and 42.6% in Ajoung Thok reported *not* using negative coping strategies. This group is likely to be benefiting from the complementary livelihood interventions in place. This, however, needs to be scaled up to increase the proportion to cover majority of the population. The proportion that reported *not* using negative coping strategies to fill the food assistance gap in Pamir increased in 2019 compared to 2018 in both camps.

Recommendations and Priorities

Nutrition related

Continue and strengthen the implementation of the comprehensive Community based Management of Acute Malnutrition (CMAM) program providing both therapeutic and supplementary feeding programs to facilitate the rehabilitation of identified acute malnourished persons including children, pregnant and lactating women, people living with HIV/AIDS and TB patients on treatment and others with chronic illnesses. (UNHCR, UNICEF, WFP and AHA and IRC).

Maintain community outreach active case finding and referral. This to ensure all children identified with a MUAC less than 12.5cm are referred and enrolled into the management of acute malnutrition programs.

Conduct the two step MUAC and WHZ scores (for children with MUAC at risk) screening monthly at all the contact points at the facility level to allow the identification of the increased malnutrition based on WHZ scores as compared to MUAC. This to include the Blanket Supplementary Feeding Program (BSFP) site for children aged 6-23 months, Expanded Program of Immunisation (EPI) areas and at the health facility triage area for all presenting children aged 24-59 months at both Pamir and Ajoung Thok. In addition to this the result from this to be documented to complement the quarterly mass MUAC screening to facilitate the nutrition situation evolution monitoring (AHA and IRC).

Growth monitoring for all children under five years at the various contact points including the mother child clinic during EPI, triage areas, nutrition centres and during consultations.

Ensure monthly blanket supplementary feeding for children aged 6-23 months, pregnant and lactating women using a fortified blended food or lipid-based supplement to prevent malnutrition and to cover the nutrient gap these vulnerable groups have in light of a predominant grain based general food diet. Appropriate utilisation of the BSFP ration at the household level to continue being sensitised (UNHCR, WFP, AHA and IRC).

Continue to strengthen capacity development of nutrition and health staffs and community workers through training to facilitate quality provision of both curative and preventative components of nutrition (UNHCR, WFP, UNICEF, AHA and IRC).

Expand and strengthen preventative nutrition components including the awareness creation, implementation of the multi-sectoral IYCF friendly framework a UNHCR and save the children initiative for support, promotion, and protection of Infant and Young Child Feeding (IYCF) and community outreach education aspects to stop malnutrition from occurring in the first place. (UNHCR, UNICEF, AHA and IRC).

Continue implementing the anaemia reduction strategy in Pamir and Ajoung Thok refugee camps to reduce the very high anaemia levels. This to include systematic screening and referral of all persons with anaemia signs and symptoms (palmar pallor) at the community level. Health centres to provide appropriate diagnosis, treatment and follow up for anaemia detected cases (UNHCR, AHA and IRC).

Ensure regular supervision, monitoring, quarterly joint monitoring and yearly program performance evaluations in all camps to assess performance progress and formulate recommendations for any identified gaps. (UNHCR, WFP, UNICEF, AHA and IRC).

Undertake a follow up annual joint nutrition surveys (SENS) in all camps to analyse trends, assess program impact and facilitate evidence-based recommendations for nutrition programming. (UNHCR, WFP and UNICEF, AHA and IRC).

Food security related

Food assistance providing the minimum dietary requirements (2100kcal/person/day) in both refugee camps). This to include fortified blended food. Adequate in-kind food to be prepositioned for 2020 needs during the dry season when road access is favourable. (WFP, UNHCR and SP)

Continue providing milling assistance to facilitate the utilisation of the whole grain provided as the general food ration cereal option (WFP, UNHCR and SP).

Explore various ways of providing sustainable food security and livelihood solutions to complement the general food distribution. Recommendations from the 2018 joint assessment mission to guide the improvement of food security in 2020 (UNHCR, WFP, AHA, IRC and food security and livelihood actors).

Health related

Maintain and strengthen the provision of comprehensive primary health care programme to reduce the disease burden among the refugees in Maban. (UNHCR, AHA and IRC)

Maintain Vitamin A supplementation, strengthen deworming and maintain routine Expanded Program of Immunization (EPI) and campaigns as per National Ministry of Health schedule in Pamir and Ajoung Thok. (UNHCR, AHA and IRC)

Prevention, control of infection, vector borne diseases especially around malaria and helminths (UNHCR, AHA, Mentor Initiative, SP and IRC).

Maintain and strengthen reproductive health interventions at both the health facilities and community level. This to include healthy timing and spacing of pregnancies to improve birth outcomes, allow for continued breastfeeding until at least 24 months, reduce the risk of iron deficiency anaemia and maternal mortality among women thus improved nutrition for both the mothers and their children. The maintenance and strengthening of reproductive health (UNHCR, AHA and IRC).

Water Sanitation and Hygiene promotion related

Maintenance of adequate clean water provision and provision of adequate water storage containers (UNHCR, SP, AHA and IRC).

Hygiene promotion, latrine coverage and provision of adequate soap strengthening to facilitate the prevention and control of infections like diarrhea and other hygiene related illnesses. (UNHCR, SP, AHA and IRC).

1   Introduction

This report presents the results of nutrition survey conducted in Pamir and Ajoung Thok refugee camps from 21-31 October 2019.
This report is divided into the following sections:
- *Background*: This section sets out background information related to the health, nutrition and food security situation in the above refugee camps;
- *Methodology*;
- *Results:* presents the findings;
- *Discussion*; *and*
- *Recommendations*.

Background

Pamir and Ajoung Thok refugee locations in Pariang County of South Sudan's Unity State are home to refugees from the South Kordofan State of the neighbouring Sudan. The two locations are less than 50km away from the northern border of South Sudan and Sudan and 73km apart. The refugees started arriving in Pariang-Yida in July 2011 following armed clashes between the SPLA-North and the government of Sudan Armed Forces.

Pamir and Ajoung Thok are the official refugee camps in Pariang. Yida is a settlement where refugees first settled without assistance from neither UNHCR nor from the government; it also has a sizeable number of refugees (51913)[15]. Since Yida is recognised as a refugee settlement and given the exit strategy, only lifesaving assistance was provided to the refugees in 2019. This is following the government's directive through the South Sudan Commission for Refugee Affairs (SSCRA) that was issued in April 2013 following the establishment of Ajoung Thok refugee camp in March 2013. The directive highlighted that refugees in Yida should be relocated to Ajoung Thok. All new arrivals are transferred to either Ajoung Thok or Pamir where a comprehensive protection and assistance package is being offered. The refugee population in Yida continues to be voluntarily relocated to Pamir and Ajoung Thok refugee camps.

Pamir and Ajoung Thok locations are in what can be described as the green belt of Pariang County which is a forest with red sandy soils. The area is flat terrain surrounded by black cotton soils with poor drainage which floods during the rainy season. The rainy season is between June and October followed by the hot dry season which reaches its peak around March. The survey was conducted in November which is the harvest season.

Key partners in terms of the provision of the health, nutrition and food security services include UNHCR, WFP, UNICEF and IRC, AHA and SP. UNHCR is mainly involved in providing funding for implementation of various services, coordinating, technical support, monitoring and evaluation of the services offered to the refugees through the partners. WFP's main role is to ensure that the refugee's food security is adequately addressed through the provision of the General Food Ration (GFR) once per month. In addition to this WFP supports the targeted and blanket supplementary feeding programmes which aims at preventing malnutrition and treating moderate acute malnourished cases. UNICEF in collaboration with UNHCR provides support to the nutrition CMAM and IYCF programmes. IRC and AHA implements the health and nutrition program while SP carries out the general food security distribution and

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[15]UNHCR ProGres data, October 2019

implements the water and sanitation programme.

1.1 Description of the population

The SENS was conducted from 21-31 October 2019. At the end of September 2019, Pamir and Ajoung Thok had population figures of 34145 and 39357 individuals respectively[16]. Children less than five years accounted for 22% of the population in Pamir and 18.7% in Ajoung Thok.

The two main religions among the refugee populations are Christianity and Islam. The refugees are mainly from the Nuba Mountains area of South Kordofan and are mainly referred as Nubans. Nubans are manly agriculturalists who also rear livestock such as cattle, goats and sheep. The main crops grown are sorghum, groundnuts, cowpeas and sesame. Maize is grown at a very small scale while sorghum is the staple grain. The surrounding host community are mainly pastoralists, who rely mainly on cattle for their livelihood. There is a small proportion of the host community who practice cultivation of sorghum but at a very small scale.

1.2 Food security situation

All the registered refugees in Pamir and Ajoung Thok receive the WFP General Food Distribution (GFD) which is the refugees' primary food source. In 2019 the refugees in Pamir and Ajoung Thok camps continued to receive a 29% reduced ration scale with no fortified food item. This consisted of 350g sorghum, 35g of yellow split peas, 21ml of vegetable oil and 3.5g salt. This cumulates to approximately 411 grams/person/day providing 1491 kilocalories/person/day. This provided 71% of the recommended food ration of 2100 kcal/person/day. Cereals and pulses were provided at the 71% ration scale from January to December. Oil faced challenges pipeline for two months – in February and November 2019 thus only a 50% ration was provided. Salt also faced pipeline breaks in from February to May 2019. In February a 50% ration was provided while the other three months had zero stock. Cash for salt was introduced in June 2019. This was provided for the rest of the year.

From the NutVal analysis, the reduced ration has an inadequate micronutrient profile. The ration does not provide a fortified blended food like CSB+. It provides only 53% of the daily iron requirements. Sorghum, which contributes the bulk of the iron (non-heme iron form) in the food is high in phytates, anti-nutrients that inhibit iron absorption in the body. Vitamin C, a nutrient that plays a key role in the facilitating iron absorption is also barely available from the GFD ration. The ration provides only 2% of vitamin C. In addition, vitamin C is very easily destroyed when cooking at high temperatures. Other key micronutrients including Vitamin A, folate and Vitamin B12 are also insufficient as the ration provides 35%, 46% and 0% of these respectively. Ways to fill the nutrient gap should continue to be explored.

See breakdown below showing the monthly ration provision

Table 5: General food ration provision by month – Pamir & Ajoung Thok refugee camps, 2019

Ration provided in g/p/d	Standard	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Cereal	500g	350	350	350	350	350	350	350	350	250	250
Pulses	50g	35	35	35	35	35	35	25	25	50	50
Vegetable oil	30g	21	15	21	21	21	21	21	61.3	21	21
Salt	5g	3.5	2.5	0	0	0	3.5	3.5	3.5	3.5	3.5

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[16] UNHCR ProGres data October 2019

CSB+	50g	0	0	0	0	0	0	0	0	0	0
Kcal	2100	1491	1438	1491	1491	1491	1491	1491	1845	1491	1491
% of (recommended 2100 kcal/p/d) met		71	68.5	71	71	71	71	71	87.9	71	71

Milling assistance continued in 2019. A range of 210 to 330 SSP was provided per person per month from January to December 2019. The price depended on the milling market rate. Milling assistance is essential for better utilization of the grain provided by the general food distribution.

Regular Food Basket Monitoring (FBM) is conducted every month during GFD in both camps. Post Distribution Monitoring (PDM) was conducted in March and October 2019. The latter is carried out bi-yearly by WFP in collaboration with the GFD partners and UNHCR.

1.3   Health situation

Health care services in Pamir are offered by IRC and AHA in Ajoung Thok. The health services in both locations are at primary health care level. To improve refugees' health seeking behaviour and to have sustainable community health programme, UNHCR health, nutrition and WASH agencies have a comprehensive community health programme. This is implemented by Community Health Workers (CHW) with the capacity of working in all the three areas. In addition to the above malaria and vector control interventions including indoor residual spraying, malaria supplies gap filling, larvaciding, and health staff training were provided in 2019.Mentor Initiative supported the latter.

Based on the UNHCR Health Information System data, the average Crude Mortality Rate (CMR) and Under Five Mortality Rate (U5 MR) for the Jamjang refugee camps were 0.05 and 0.09 respectively. These rates remained within the standard thresholds of 0.75/1000/month and 1.5/1000/month indicating effectiveness health services provision in the camps.

Figure 1: Crude and under-5 mortality rates (Jan-Oct 2019) – Jamjang refugee Camps
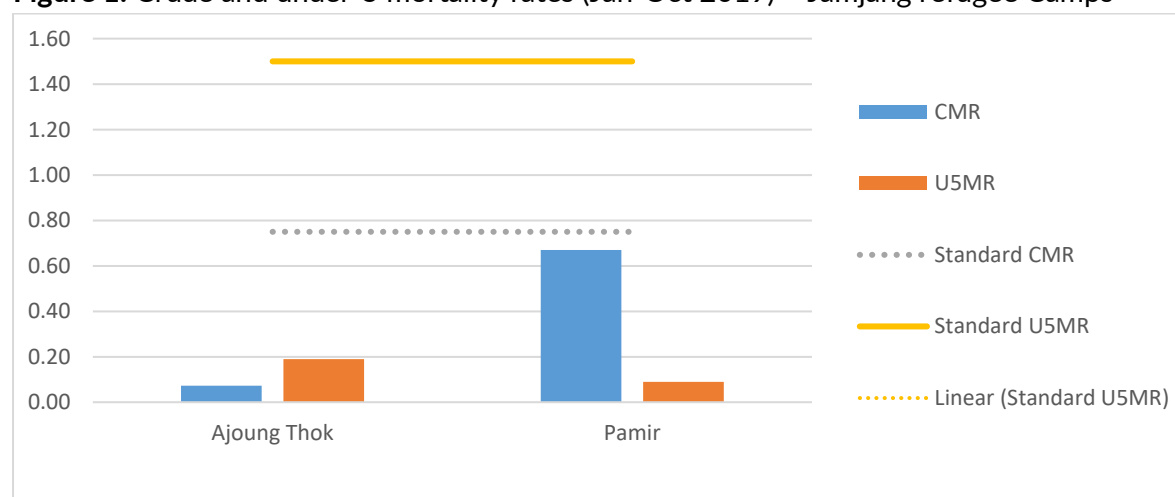
In Pamir, the top five morbidities among children under 5 were; upper respiratory tract infection with (28%); Malaria 13%, lower respiratory tract infection (12%), skin infection 10% and acute watery diarrhoea (6%). In Ajoung Thok camp the top four diseases among children under 5 were; malaria (35%) followed by respiratory tract infections 28%, skin diseases (8%), eye diseases (4%) and acute watery diarrhoea.

There was no disease outbreak in Pamir and Ajoung Thok in 2019. Community and facility-based surveillance continued to be implemented to ensure early detection of any disease outbreaks. Routine immunization continued at the facility level and through the biannual National Immunization Days (NIDs) campaign. The NIDs carry out measles immunization, provision of vitamin A and the deworming for both refugees and nationals.

Reproductive health services including 24-hour safe motherhood services in both camps including antenatal care (ANC), safe and skilled delivery, Postnatal Care, family planning continued in 2019. According to the iRHIS in 2019, 95% of the livebirths in both camps were attended by a skilled personel. Contraceptive prevalence was 24% and 22% in Pamir and Ajoung Thok respectively.

1.4   Nutrition situation

Nutrition services provided at the two refugee camps include:
- Targeted Supplementary Feeding Programmes (TSFP) for moderately acute malnourished children aged 6-59 months using Plumpy'Sup or Corn Soya Blend Plus Plus (CSB++).
- Outpatient and inpatient therapeutic feeding programmes for severely acute malnourished children.
- Blanket Supplementary Feeding Program (BSFP) targeting children 6 to 23 months and Pregnant and Lactating Women (PLW). Both children and PLW receive 200g/person/day of CSB++.
- Infant and young child feeding support and promotion programme provided at both the facility and community level. At the facility level this is integrated into the primary health care components i.e. Outpatient Department (OPD); Expanded Programme for Immunisation (EPI); Ante Natal Care (ANC), Post-Natal Care (PNC) Maternity and Nutrition. At the community level, community structures are used and include community health promoters and Mothers Support Group (MSGs).
- MUAC screening of children aged 6-59 months and Pregnant and Lactating Women (PLW) at health care facilities and nutrition centres. At the community level this includes active case finding on daily basis by CHPs and quarterly mass MUAC screening.
- Anaemia prevention and control measures mainstreamed into the health, nutrition, and livelihood interventions in all the camps.

In total 532 and 1926 children 6-59 months were admitted for rehabilitation from acute malnutrition (SAM and MAM) in Pamir and Ajoung Thok refugee camps respectively from January to October 2019. The number of admissions in both Pamir and Ajoung Thok compared to the same period in 2018. Admission trends in the management of acute malnutrition programmes in Pamir and Ajoung Thok show peak admissions in May to July months. The peak could be due to the high malaria and respiratory tract infection prevalence as a result of the beginning of the rainy season. See figure 3 and 4 below showing the admissions by month in 2019.

Figure 2 : Number of admissions to treatment programmes for SAM and MAM among Children 6-59 Months from Jan to Oct 2019 - Pamir refugee camp
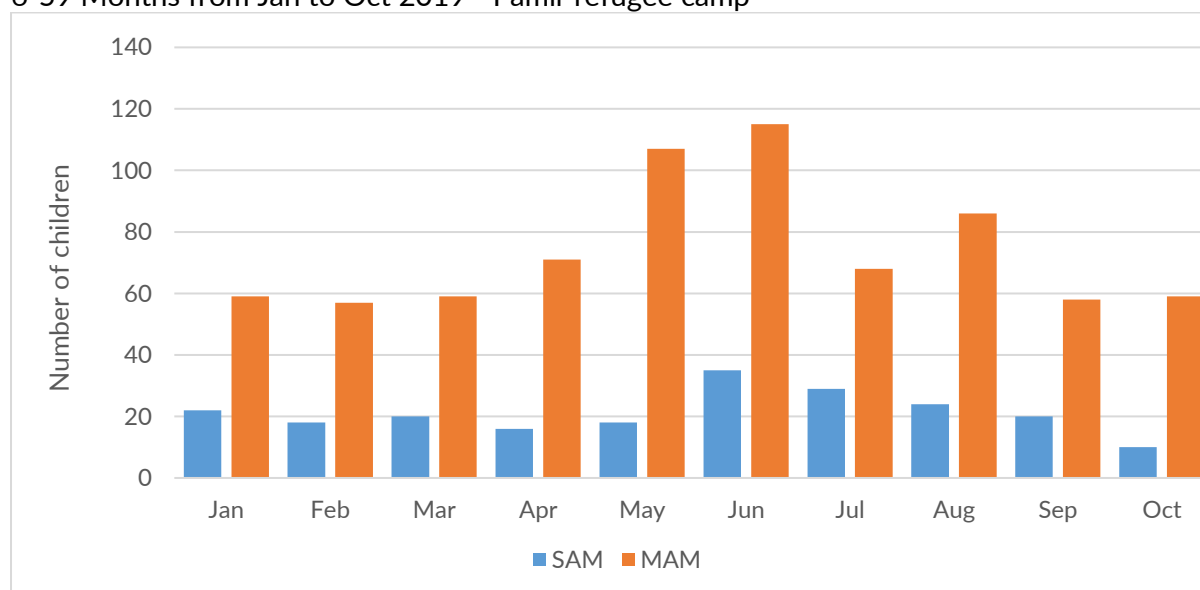
Figure 3 : Number of admissions to treatment programmes for SAM and MAM among Children 6-59 Months from Jan to Oct 2019 – Ajoung Thok refugee camp
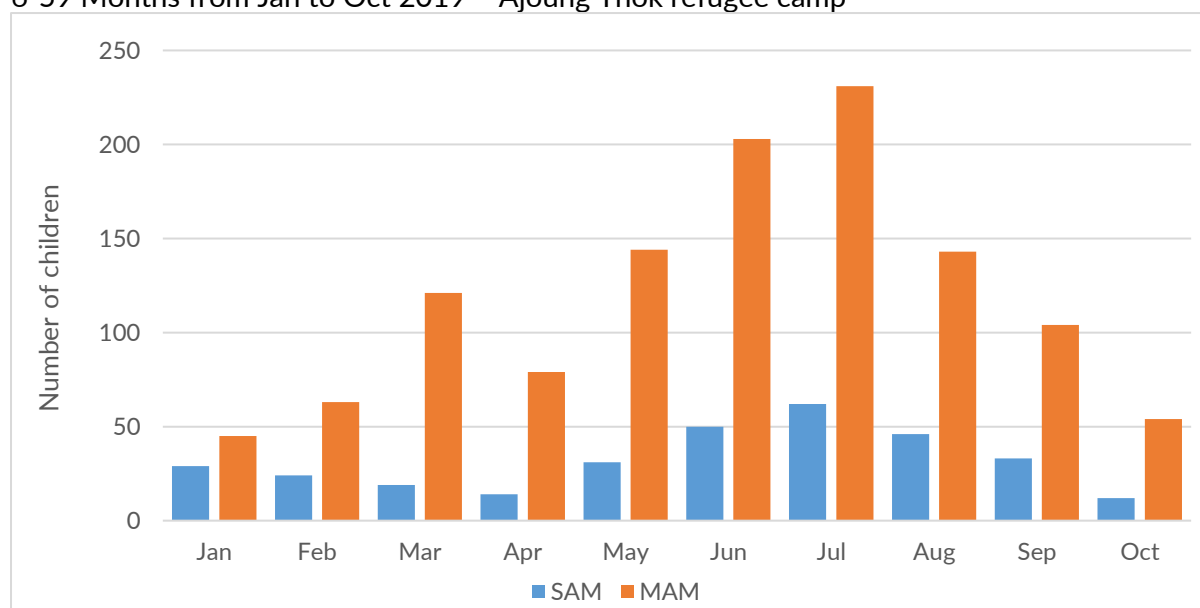
BSFP was provided monthly for all children aged 6-23 months and PLWs throughout the year. In Pamir the coverage was for 92% and 100% respectively while in Ajoung Thok it was 92% and 88% respectively[17] as per the 2019 monthly BSFP monitoring reports.

New arrival MUAC screening in 2019 at the Pamir and Ajoung Thok reception centres reported 90 (11.8%) out of the 760 children aged 6-59 screened to have had a MUAC <12.5cm or WHZ-score <-2 or oedema. 17% of the PLW had a MUAC <23cm. This indicates vulnerability among the new arrivals in terms of nutrition and food security on arrival and the need for the provision of timely interventions.

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[17] UNHCR 2019 monthly BSFP monitoring reports

The average proportion of PLWs with MUAC <23cm from the quarterly Mass MUAC screening data was 8% in 2019 indicating the need for continued support of this group

1.5 WASH situation

Pamir and Ajoung Thok refugee camps are in an area with medium groundwater potential which is less affected by seasonal fluctuations. The population of both camps rely on groundwater supply for their daily needs. At the end of 2019 Pamir refugee camp had nine motorized boreholes, all of which are solarized, and operating on solar-generator hybrid system. Ajoung Thok has 11 motorized deep wells, all solarized, seven of which use solar-generator hybrid system. The water infrastructure above allows the access of clean drinking water.

Findings from the October 2019 WASH Knowledge Attitude and Practices (KAP) survey noted that all the surveyed households reported access to drinking water from an improved source (tap stands/water yards). Majority of the surveyed households (99%) reported using ≤ 30minutes for a round trip to collect water. The average number of Litres of water Per person per Day (L/P/D) was 21.7 Pamir and 23.5 Ajoung Thok. The average individual water consumption met the SPHERE standards of at least 15 litres per person per day (l/p/d) in both camps. The average also met the UNHCR standard of >20l/p/d. Despite the positive average, only 68% of the households had ≥15l/p/d. Households with <15l/p/d reported to not have enough containers to carry or store water. 76% of the households reported having at least 10 litres of portable water storage containers. A household had average number of 2-3 containers for water collection. Efforts to maintain the ≥20l/p/d and provide enough water containers to continue being put in place.

From the KAP survey as of October 2019, average household latrine coverage was 66% in Ajoung Thok and 58% in Pamir. This translates to an average ratio of 7 persons per latrine in Ajoung Thok and 9 in Pamir, which meets the UNHCR's post-emergency standard of 20 persons per latrine. 89% of the refugee households reported using household/family and communal latrines. Although open defecation was only reported by 1% of the households, faecal matter evidence in the living areas was found in 17.4% of the households. 60% of the household reported that young children practice open defecation, but this is thereafter disposed in the latrines or buried. Messages on timely and safe disposal of children excreta should be continued.

In terms of hygiene, most of the households could identify at least three critical times of hand washing (84% and 91% in Ajoung Thok and Pamir respectively). Soap, ash, and water only were used for hand washing. During the KAP survey 53% of the households in Ajoung Thok and 85% in Pamir had soap for hand washing. The households without soap highlighted they had ran out soap and were waiting for the next distribution. Hygiene promotion and provision of adequate soap should be ensured.

2   SURVEY OBJECTIVES

Specific primary objectives of the survey

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

b.   To determine the prevalence of stunting among children 6-59 months.

c.   To determine the coverage of measles vaccination among children 9-59 months.

d.   To determine the coverage of vitamin A supplementation in the last six months among children 6-59 months.

e.   To determine the coverage of de-worming in the last six months among children 12-59 months

f.   To assess the two-week period prevalence of diarrhoea among children 6-59 months.

g.   To determine the prevalence of anaemia among children 6-59 months and women of reproductive aged 15-49 years (non-pregnant).

h.   To investigate IYCF practices among children 0-23 months.

i.   To determine the coverage of ration cards and the duration the GFD ration lasts for recipient households.

j.   To determine the extent to which negative coping strategies are used by households.

k.   To assess household dietary diversity.

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

Secondary objectives:

a.   To determine the enrolment in targeted supplementary feeding and outpatient feeding programmes for children 6-59 months.

b.   To determine enrolment into Antenatal Care clinic and coverage of iron-folic acid supplementation in pregnant women.

3   METHODOLOGY

In Jamjang refugee camps, a cross-sectional survey was conducted using the UNHCR Standardized Expanded Nutrition Survey (SENS) version 2, 2013 guidelines http://sens.unhcr.org/ and Standardized Monitoring and Assessments of Relief and Transitions (SMART) methodology https://smartmethodology.org/ guidelines, see www.sens.org. Systematic random sampling was used to identify the survey respondents.

3.1   Sample size

The sample size was calculated using the Emergency Nutrition Assessment (ENA) for Standardized Monitoring and Assessment of Relief and Transitions (SMART) software version July 9th, 2015 following UNHCR SENS guidelines version 2 (2013). The GAM prevalence estimated in Pamir and Ajoung Thok was based on the 2018 survey results. The higher confidence interval for both was used as little was known about the progress made since the last surveys. The percentage of under-5 and average household size was derived from the UNHCR ProGres database. The total population surveyed was derived from the UNHCR ProGres database. At the end of September 2019, Pamir and Ajoung Thok had population figures of 34145 and 39357 individuals respectively[18]. A non-response rate of 10% was used in both camps.

See table below with the specific parameters used.

Table 6: Parameters used to calculate sample size

Location	Pamir	Ajoung Thok
Total camp population (UNHCR ProGres October 2018)	34145	39357
% population under 5 (UNHCR ProGres October 2018)	22	18.7
Estimated GAM prevalence. (upper C.I SENS 2018) (%)	8.3	10.1
± Desired Precision (%)	3	3.5
None-response rate (%)	10	10
Average household size	4.2	4.9
Number of Children (ENA)	231	273
Number of Households for Anthropometry and Health module (ENA for SMART) including none response rate	308	368
Number of households for children anaemia	308	368
Number of households for IYCF	308	368
Number of households for women anaemia (half of HHs as per SENS guidelines)	154	184
Number of households for food security (half of HHs as per SENS guidelines)	154	184

As the population of children under five was less than 10,000 in both camps a correction factor was used while cacluating the sample size using ENA for SMART software during sample size calculation.

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[18] UNHCR ProGres data October 2019

The sample size for anthropometry and health was used for the IYCF and child anaemia modules. Following UNHCR SENS guidelines half the sample size of anthropometry (every other household) was used as the sample size for women anaemia and food security modules. See table above for details

3.2   Sampling procedure: selecting households and individuals

Systematic random sampling was used to identify the survey respondents. Houses/tents were physically labelled with unique numbers per zone/block/compound 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[19] as verified through neighbours were labelled but not included in the sampling frame. The sampling interval per camp was calculated based on actual number of houses/tents that were physically verified before the survey and the sample size. Using the list generated from the physical counting and labelling of houses/tents in the camps, a sampling interval for each camp was determined by dividing the total number of verified tents/houses by the estimated sample. The first household was thereafter determined randomly using the 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.

All the eligible household members were included in the survey; that is all children 6 to 59 months and women 15 to 49 years in a sampled household. The interview was conducted in most cases with the mother in the household or in her absence with an adult member of the household who was knowledgeable with the everyday running of the household. The survey defined a household as the number of people who regularly stay together and eat from the same pot.

In the event of an absent household or individual, the team members returned to the household during the day. If the household or individual was not found after returning, the household or individual was counted as an absentee and was not replaced. If an individual or household refused to participate, it was considered a refusal and the individual or household was not replaced with another. If a selected child was disabled with a physical deformity preventing certain anthropometric measurements, the child was still included in the assessment for the relevant indicators. If it was determined that a selected household did not have any eligible children, the relevant questionnaires were administered to the household.

3.3 Questionnaire and measurement methods

The questionnaires are attached in **Appendix 3.**

The questionnaires were prepared in English language and administered in the local language with the help of the enumerators that spoke the local language (Arabic). The questionnaires were pre-tested before the survey.

Four module questionnaires from SENS were designed to provide information on the relevant indicators of the different target groups as indicated in the survey objectives. The four module questionnaire covered the following areas and the following measurements:

Children 6-59 months- This included questions and measurements of children aged 6-59 months. Information was collected on anthropometric status, oedema, and enrolment in selective

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[19] An empty house/tent or shelter was considered as abandoned and excluded from the nutrition survey if no one was present in that house/tent for the last one month

feeding programmes, immunization (measles), vitamin A supplementation, deworming and morbidity from diarrhea in past two weeks before the survey and hemoglobin status.

Infant 0-23 months- This included questions on infant and young child feeding for children aged 0- 23 months.

Women 15-49 years- This included questions and measurements of women aged 15 – 49 years. Information was collected on women's pregnancy status, coverage of iron-folic acid pills and ANC attendance for pregnant women, and hemoglobin status for non-pregnant women.

Food Security- This included questions on access and use of the GFD ration, negative coping mechanisms used by household members and household dietary diversity.

Measurement methods

Household-level indicators

Food security: The questionnaire used was from UNHCR's Standardized Expanded Nutrition Survey (SENS) Guidelines for Refugee Populations Version 2 (2013).

Individual-level indicators

Sex of children: gender was recorded as male or female.

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

Age of women 15-49 years: Reported age was recorded in years.

Weight of children 6-59 months: measurements were taken to the closest 100 grams using an electronic scale (SECA scale). All children were weighed without clothes. The double-weighing technique was used to weigh young children unable to stand on their own or unable to understand instructions not to move while on the scale.

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

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

MUAC of children 6-59 months: MUAC was measured at the mid-point of the left upper arm between the elbow and the shoulder and taken to the closest millimeter using a standard tape. MUAC was recorded in millimeters.

Child enrolment in selective feeding programme for children 6-59 months: selective feeding programme coverage was assessed for the outpatient therapeutic programme and for the supplementary feeding programme. This was verified by card or by showing images of the products given at the different programs

Measles vaccination in children 6-59 months: measles vaccination was assessed by checking for the measles vaccine on the EPI card if available or by asking the caregiver to recall if no EPI card was available. For ease of data collection, results were recorded on all children but were only analysed for children aged 9-59 months

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

Deworming in last 6 months in children 12-59 months: whether the child received a deworming tablet over the past six months was recorded by asking the caregiver to recall if information was not available on the EPI card. A deworming tablet sample was shown to the caregiver when asked to recall.

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

Diarrhea in last 2 weeks in children 6-59 months: an episode of diarrhea is defined as three loose stools or more in 24 hours. Caregivers were asked if their child had suffered episodes of diarrhea in the past two weeks prior to the survey.

ANC enrolment and iron and folic acid pills coverage: if the surveyed woman was pregnant, it was assessed whether she was enrolled in the ANC programme and was receiving iron-folic acid pills. An iron-folic acid pill image was shown to the pregnant woman when asked to recall.

Infant and young child feeding practices in children 0-23 months: infant and young child feeding practices was assessed based on UNHCR Standardized Expanded Nutrition Survey (SENS) Guidelines for Refugee Populations version 2 (2013).
Referrals: Children aged 6-59 months were referred to health centre/post for treatment when MUAC was < 12.5 cm, WHZ <-2 z-score or oedema was present.

3.4 Case definitions and calculations

Malnutrition in children 6-59 months: Acute malnutrition was defined using weight-for-height index values or the presence of oedema and classified as show in the table below. Main results are reported after analysis using the WHO 2006 Growth Standards.

Table 7: Definitions of acute malnutrition using weight-for-height and/or oedema in children 6–59 months

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

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

Table 8: Definitions of stunting using height-for-age in children 6–59 months

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

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

Table 9: Definitions of underweight using weight-for-age in children 6–59 months

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

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

Table 10 : MUAC malnutrition cut-offs in children 6-59 months

Categories of MUAC values
<125 mm
≥ 115 mm and <125 mm
< 115 mm

Child enrolment in selective feeding programme for children 6-59 months: Feeding programme coverage is estimated during the nutrition survey using the direct method as follows (reference: Emergency Nutrition Assessment: Guidelines for field workers. (Save the Children 2004):
Coverage of SFP programme (%) =

$$100 \times$$

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

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

Coverage of OTP programme (%) =

$$100 \times$$

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

Infant and young child feeding practices in children 0-23 months: Infant and young child feeding practices were assessed based on the UNHCR SENS IYCF module (Version 2 (2013) that is based on WHO recommendations (WHO, 2007 as follows):

Timely initiation of breastfeeding in children aged 0-23 months:
Proportion of children 0-23 months who were put to the breast within one hour of birth

$$\frac{\text{Children 0-23 months who were put to the breast within one hour of birth}}{\text{Children 0-23 months of age}}$$

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

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

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

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

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

$$\frac{\text{Infants 6–8 months of age who received solid, semi-solid or soft foods during the previous day}}{\text{Infants 6–8 months of age}}$$

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

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

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

$$\frac{\text{Children 20–23 months of age who received breast milk during the previous day}}{\text{Children 20–23 months of age}}$$

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

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

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

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

Children 0–23 months of age

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

Table 11: Definition of anaemia (WHO 2000)

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

3.5 Classification of public health problems and targets

Anthropometric data: UNHCR's target for the prevalence of global acute malnutrition (GAM) for children 6-59 months of age by camp, country and region is < 10% and the target for the prevalence of severe acute malnutrition (SAM) is <2%. The table below shows the classification of public health significance of the anthropometric results for children under-5 years of age according to WHO:

Table 12: Classification of public health significance for children under 5 years of age

Prevalence %	Very High	High	Medium	Low	Very low
Low weight-for-height	≥15	10-<15	5-10	2.5-<5	<2.5
Low height-for-age[20]	≥30	20-<30	10-<20	2.5-<10	<2.5
Label	Critical	Serious	Poor	Acceptable	
Low weight-for-age[21]	≥30	20-29	10-19	<10	

Selective feeding programmes:
UNHCR Strategic Plan for Nutrition and Food Security 2008-2012 includes the following indicators. The table below shows the targeted performance indicators for malnutrition treatment programmes according to UNHCR Strategic Plan for Nutrition and Food Security 2008-2012 (same as Sphere Standards).

Table 13: Performance indicators for selective feeding programmes (UNHCR Strategic Plan for Nutrition and Food Security 2008-2012)*

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

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[20] WHO/UNICEF categorization, prevention of malnutrition threshold-children under 5 years of age, December 2018
[21] WHO (1995) Physical Status: The Use and Interpretation of Anthropometry and WHO (2000) The Management of Nutrition in Major Emergencies

OTP	>75%	<10%	<15%	>50%	>70%	>90%

* Also meet SPHERE standards for performance

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

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

Anaemia data: UNHCR Global Strategy for Public Health(2017-2019) states that the targets for the prevalence of anaemia in children 6-59 months of age and in women 15-49 years of age should be <20%. The severity of the public health situation should be classified according to WHO criteria as shown in the table below.

Table 14: Classification of public health significance (WHO 2000)

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

3.6   Training, coordination and supervision

The surveys were coordinated by Terry Theuri (UNHCR Nutrition and Food security officer-Juba), Lilian Igube (UNHCR Associate Nutrition and Food security officer- Jam Jang) and Gideon Ndawula (UNHCR Associate Public Health officer -Jam Jang) in collaboration with Dassan Hategekimana (WFP), Mathew Kelion (IRC Health and Nutrition Manager) Lobut Charles Yengi (IRC Nutrition Manager) and Emmanuel Isadru (AHA Nutrition Manager).

A total of six survey teams composed of four members each (one team leader, one haemoglobin measurer, one anthropometric measurer/translator and one anthropometric/haemoglobin measurement assistant were included in each survey.

A five-days training was carried out from 14th to 18th October 2019 at the Pamir UNHCR conference room. Training topics were shared between the UNHCR and WFP nutritionists and public health officer. The training focused on: the objectives of the survey, roles and responsibilities of each team member, familiarization with the questionnaires by reviewing the purpose of each question; interviewing skills and recording of data; interpretation of calendar of events and age determination; how to take anthropometric measurements, common errors and data recording using the mobile phone Open Data Kit (ODK) technology. A practical session on anthropometric measurements, anaemia testing was also carried out for practice as well as a standardisation test. This was followed by a pilot test where each team was asked to collect data from three households. The pilot test was conducted in Pamir using part of the households that had not been sampled to participate in the survey. A feedback session was conducted after the teams returned from the exercise to address challenges encountered.

3.7   Data collection

Data collection lasted nine days. Data collection started in Pamir from 21st to 24th October 2019. In Ajoung Thok data was collected from 25th to 31st October 2019. The weekend in-between the data collection (26th and 27th) was given to the teams to allow them to recuperate. The data collection was supervised throughout by UNHCR, WFP, IRC and AHA team. Data was collected using the ODK for Android platform using six Samsung Tablets and six HTC phones. Each team thus had two phones.

3.8 Data analysis

At the end of each day's data collection, the UNHCR, WFP, IRC and AHA coordination and supervision team checked each questionnaire for completeness and then finalised the questionnaires. Once the questionnaires were finalised, they were sent to the server for synchronisation and export. After exporting the data, the anthropometric data plausibility check was conducted to identify areas and teams that need more supervision or to be strengthened. Teams that required more supervision were given more attention on the following day of the survey.

The ODK exported data in csv format, for cleaning and analysis the data was saved in Microsoft Excel 2007 format. The nutritional indices were cleaned using flexible cleaning criteria from the observed mean (also known as SMART flags in the ENA for SMART software), rather than the reference mean (also known as WHO flags in the ENA for SMART software). This flexible cleaning approach is recommended in the UNHCR SENS Guidelines (Version 2, 2013) in accordance with SMART recommendations. For the weight-for-height index, a cleaning window of +/- 3 SD value contained in the SMART for ENA software was used.

Anthropometry indices were analysed using the ENA for SMART July 9th, 2015 version. Epi Info version 7.2.3.1 was used to analyse all the other data.

4   RESULTS

4.1 RESULTS FROM PAMIR REFUGEE CAMP

Table 15 below shows actual number of children captured during the survey versus the survey sample targeted children in the survey

Table 15 : Actual number of children captured during the survey Pamir camp versus the target.

	Target (No.)	Total surveyed (No.)	% of the target
Children 6-59 months	231	258	>100%

By the end of SENS in Pamir >100% of the targeted children was covered. The SENS guidelines recommend that at least 80% of the targeted children to be covered.

4.1.1   Anthropometric results (based on WHO Growth Standards 2006) and Health

The coverage of age documentation was 68% (children having an exact birth date). As 32% of the children did not have an exact birthday stunting and the underweight data should be interpreted with caution.

Table 16 : Distribution of age and sex of sample- Pamir refugee camp, South Sudan (October 2019)

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy: girl
6-17	35	52.2	32	47.8	67	26.0	1.1
18-29	30	49.2	31	50.8	61	23.6	1.0
30-41	34	61.8	21	38.2	55	21.3	1.6
42-53	28	53.8	24	46.2	52	20.2	1.2
54-59	10	43.5	13	56.5	23	8.9	0.8
Total	137	53.1	121	46.9	258	100.0	1.1

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 1.1 which indicates that both sexes were equally represented in the survey.

Table 17 : Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex- Pamir refugee camp, South Sudan (October 2019)

	All n = 257	Boys n = 137	Girls n = 120
Prevalence of global acute malnutrition (<-2 z-score and/or oedema)	(20) 7.8 % (5.1 - 11.7 95% C.I.)	(9) 6.6 % (3.5 - 12.0 95% C.I.)	(11) 9.2 % (5.2 - 15.7 95% C.I.)
Prevalence of moderate acute malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(16) 6.2 % (3.9 - 9.9 95% C.I.)	(7) 5.1 % (2.5 - 10.2 95% C.I.)	(9) 7.5 % (4.0 - 13.6 95% C.I.)
Prevalence of severe acute malnutrition (<-3 z-score and/or oedema)	(4) 1.6 % (0.6 - 3.9 95% C.I.)	(2) 1.5 % (0.4 - 5.2 95% C.I.)	(2) 1.7 % (0.5 - 5.9 95% C.I.)

The prevalence of oedema was 0.4 %. Data excluded SMART flags. Boys and girls were equally wasted; p>0.05.

Figure 4 : Trends in the prevalence of global and severe acute malnutrition based on WHO growth standards in children 6-59 months from 2017 to 2019-Pamir refugee camp, South Sudan.
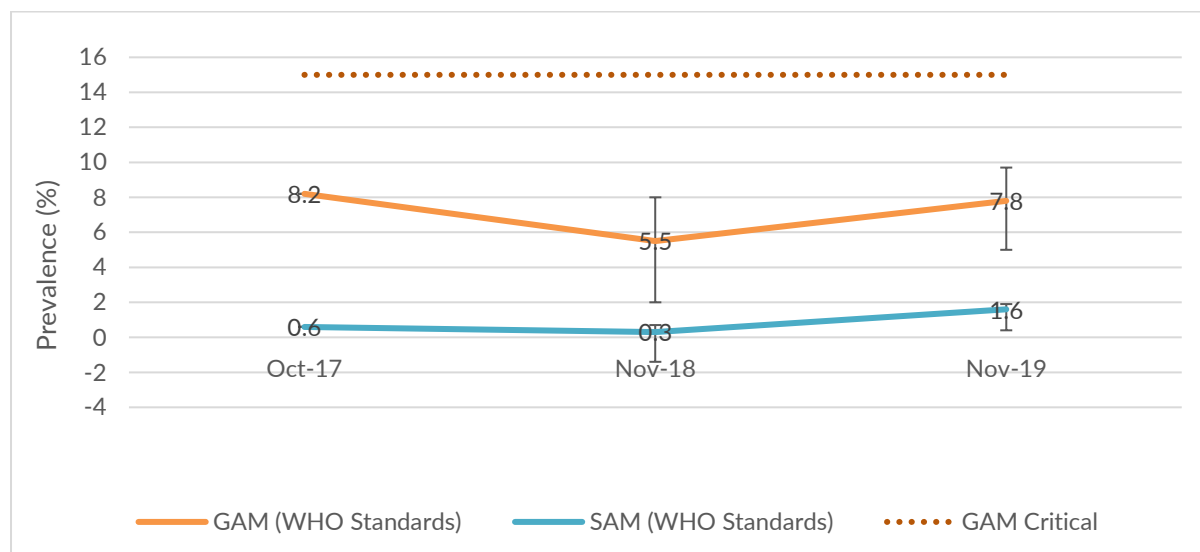
Although there is no statistically significant difference in the GAM and SAM prevalence in 2019 compared to 2018 the increasing trend indicates likely deteriorating situation requiring close monitoring.

Table 18 : Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema- Pamir refugee camp, South Sudan (October 2019)

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	67	0	0.0	4	6.0	63	94.0	0	0.0
18-29	60	1	1.7	7	11.7	51	85.0	1	1.7
30-41	55	1	1.8	3	5.5	51	92.7	0	0.0
42-53	52	0	0.0	1	1.9	51	98.1	0	0.0
54-59	23	1	4.3	1	4.3	21	91.3	0	0.0
Total	257	3	1.2	16	6.2	237	92.2	1	0.4

Children aged 18-29 months tend to be most affected by acute malnutrition

Figure 5 : Trend in the prevalence of wasting by age in children 6-59 months - Pamir refugee camp, South Sudan (October 2019)
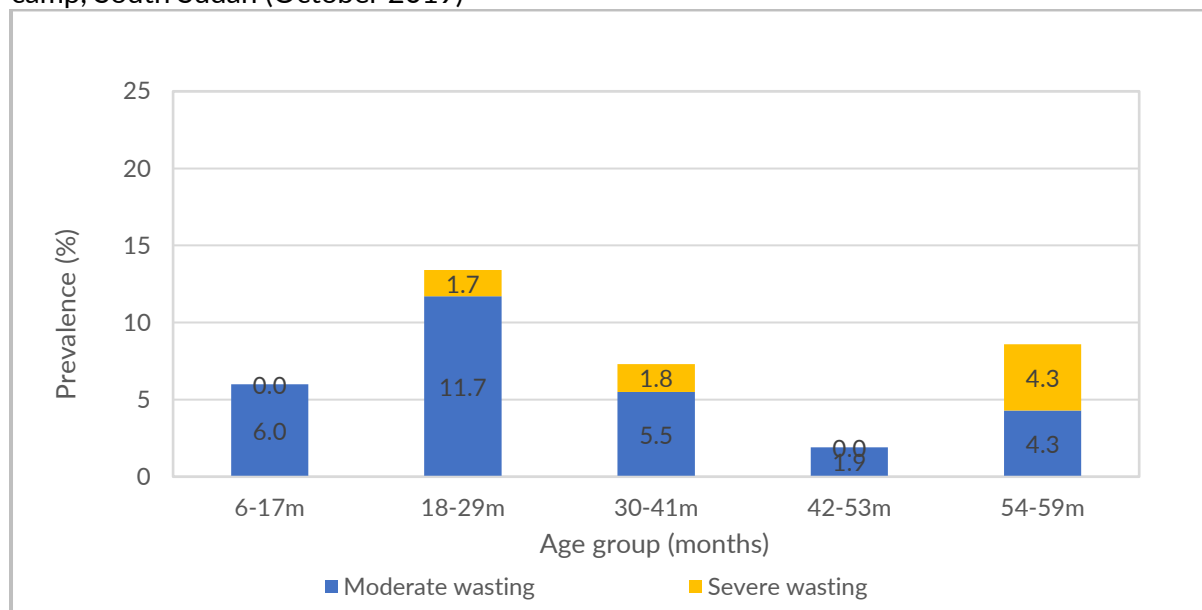
Table 19 : Distribution of acute malnutrition and oedema based on weight-for-height z-scores-Pamir refugee camp, South Sudan (October 2019)

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 1 (0.4 %)
Oedema absent	Marasmic No. 4 (1.6 %)	Not severely malnourished No. 253 (98.1 %)

Figure 6 : Distribution of weight-for-height z-scores (based on WHO growth standards ; the reference population is shown in green and the surveyed population is shown in red) of survey population compared to reference population- Pamir refugee camp, South Sudan (October 2019)
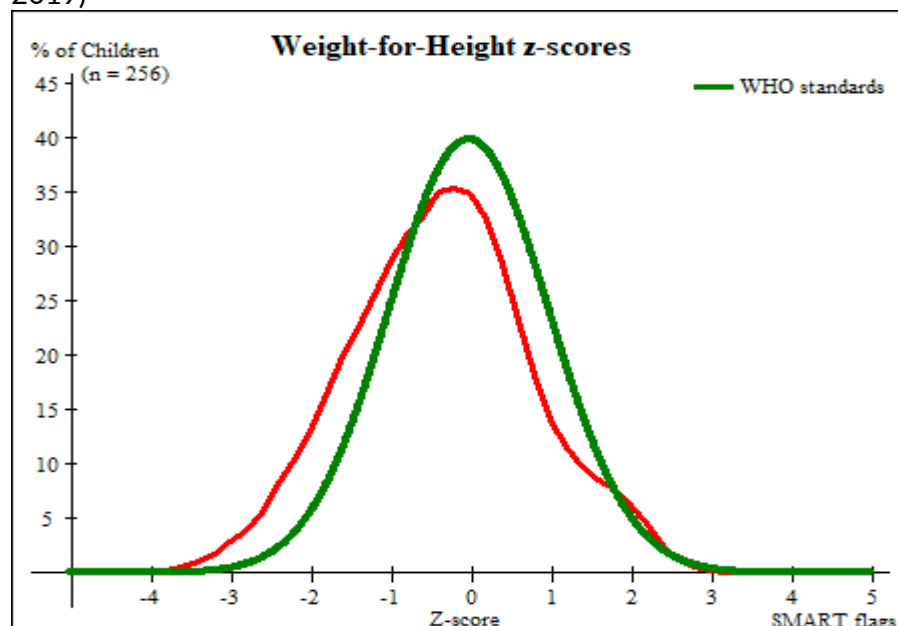
Figure 6 above shows that the distribution for weight-for-height z-scores for the survey sample is shifted to the left, illustrating poor nutritional status of the surveyed population than the international WHO Standard population of children aged 6-59 months

Table 20 : Prevalence of acute malnutrition based on MUAC cut offs (and/or oedema) and by sex- Pamir refugee camp, South Sudan (October 2019)

	All n = 258	Boys n = 137	Girls n = 121
Prevalence of global malnutrition (< 125 mm and/or oedema)	(2) 0.8 % (0.2 - 2.8 95% C.I.)	(1) 0.7 % (0.1 - 4.0 95% C.I.)	(1) 0.8 % (0.1 - 4.5 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(1) 0.4 % (0.1 - 2.2 95% C.I.)	(0) 0.0 % (0.0 - 2.7 95% C.I.)	(1) 0.8 % (0.1 - 4.5 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(1) 0.4 % (0.1 - 2.2 95% C.I.)	(1) 0.7 % (0.1 - 4.0 95% C.I.)	(0) 0.0 % (0.0 - 3.1 95% C.I.)

MUAC is used for screening and detection of acute malnutrition at community level and for admission and discharge in nutrition programmes. Compared with the MUAC proportion among the new arrivals in 2019 (11.8%) the survey MUAC <125mm proportion above is lower indicating the likelihood of the nutrition program being able to prevent additional MUAC malnutrition caseload to a certain extent. There is no difference in the proportion of boy and girls that were malnourished based on MUAC; p>0.05.

Table 21 : Prevalence of acute malnutrition by age, based on MUAC cut offs and/or oedema- Pamir refugee camp, South Sudan (October 2019)

Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	67	0	0.0	1	1.5	66	98.5	0	0.0
18-29	61	0	0.0	0	0.0	61	100.0	1	1.6
30-41	55	0	0.0	0	0.0	55	100.0	0	0.0
42-53	52	0	0.0	0	0.0	52	100.0	0	0.0
54-59	23	0	0.0	0	0.0	23	100.0	0	0.0
Total	258	0	0.0	1	0.4	257	99.6	1	0.4

Children aged 6-17 months tend to be most affected by wasting measured by MUAC

Table 22 : Prevalence of underweight based on weight-for-age z-scores by sex - Pamir refugee camp, South Sudan (October 2019)

	All n = 257	Boys n = 136	Girls n = 121
Prevalence of underweight (<-2 z-score)	(40) 15.6 % (11.6 - 20.5 95% C.I.)	(19) 14.0 % (9.1 - 20.8 95% C.I.)	(21) 17.4 % (11.6 - 25.1 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(34) 13.2 % (9.6 - 17.9 95% C.I.)	(16) 11.8 % (7.4 - 18.3 95% C.I.)	(18) 14.9 % (9.6 - 22.3 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(6) 2.3 % (1.1 - 5.0 95% C.I.)	(3) 2.2 % (0.8 - 6.3 95% C.I.)	(3) 2.5 % (0.8 - 7.0 95% C.I.)

Boys and girls were equally underweight; p>0.05.

Table 23 : Prevalence of underweight by age, based on weight-for-age z-scores - Pamir refugee camp, South Sudan (October 2019)

Age (mo)	Total no.	Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	67	0	0.0	10	14.9	57	85.1	0	0.0
18-29	60	3	5.0	9	15.0	48	80.0	1	1.7
30-41	55	3	5.5	4	7.3	48	87.3	0	0.0
42-53	52	0	0.0	6	11.5	46	88.5	0	0.0
54-59	23	0	0.0	5	21.7	18	78.3	0	0.0
Total	257	6	2.3	34	13.2	217	84.4	1	0.4

Children aged 54-59 months tend to be most underweight followed by the 18-29 age group.

Table 24 : Prevalence of stunting based on height-for-age z-scores and by sex - Pamir refugee camp, South Sudan (October 2019)

	All n = 258	Boys n = 137	Girls n = 121
Prevalence of stunting (<-2 z-score)	(61) 23.6 % (18.9 - 29.2 95% C.I.)	(36) 26.3 % (19.6 - 34.2 95% C.I.)	(25) 20.7 % (14.4 - 28.7 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(43) 16.7 % (12.6 - 21.7 95% C.I.)	(23) 16.8 % (11.5 - 23.9 95% C.I.)	(20) 16.5 % (11.0 - 24.2 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(18) 7.0 % (4.5 - 10.8 95% C.I.)	(13) 9.5 % (5.6 - 15.6 95% C.I.)	(5) 4.1 % (1.8 - 9.3 95% C.I.)

Boys and girls were equally stunted; p>0.05.

Figure 7 : Trends in the prevalence of global and severe stunting based on WHO growth standards in children 6-59 months from 2017 to 2019-Pamir refugee camp, South Sudan. (November 2019)
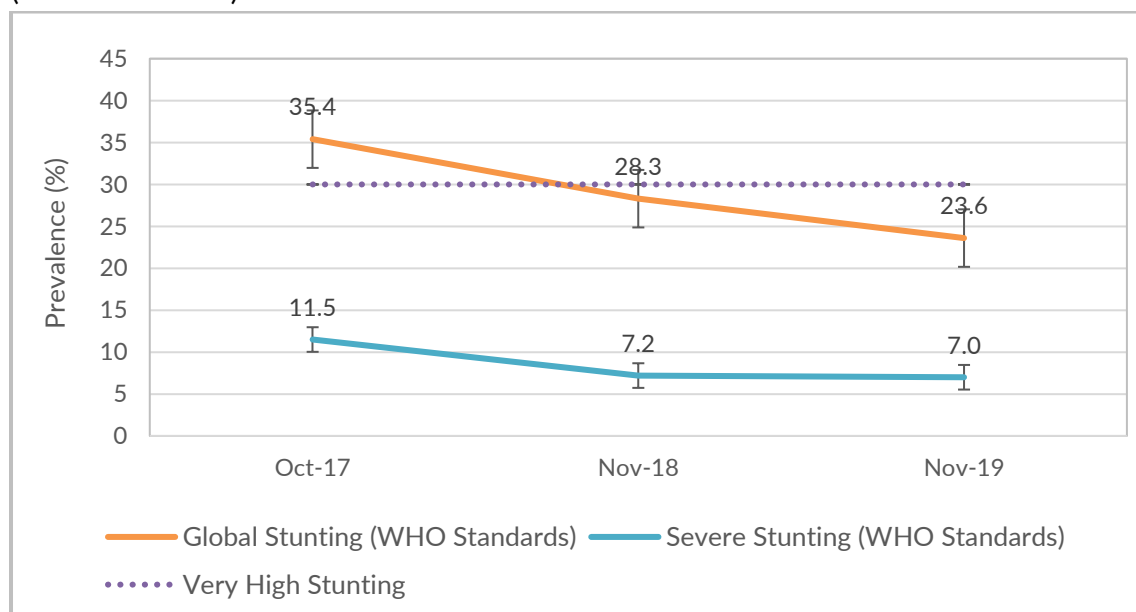
Stunting prevalence remained the same in 2019 as compared to 2018 with the change being statistically insignificant; p.0.05. The figure above however shows a likely reducing stunting trend.

Table 25 : Prevalence of stunting by age based on height-for-age z-scores - Pamir refugee camp, South Sudan (October 2019)

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
		No.	%	No.	%	No.	%
6-17	67	3	4.5	10	14.9	54	80.6
18-29	61	5	8.2	12	19.7	44	72.1
30-41	55	5	9.1	9	16.4	41	74.5
42-53	52	3	5.8	6	11.5	43	82.7
54-59	23	2	8.7	6	26.1	15	65.2
Total	258	18	7.0	43	16.7	197	76.4

Children aged 54-59 and 18-29 months tend to be most stunted.

Figure 8 : Trends in the prevalence of stunting by age in children 6-59 months, - Pamir refugee camp, South Sudan (October 2019)
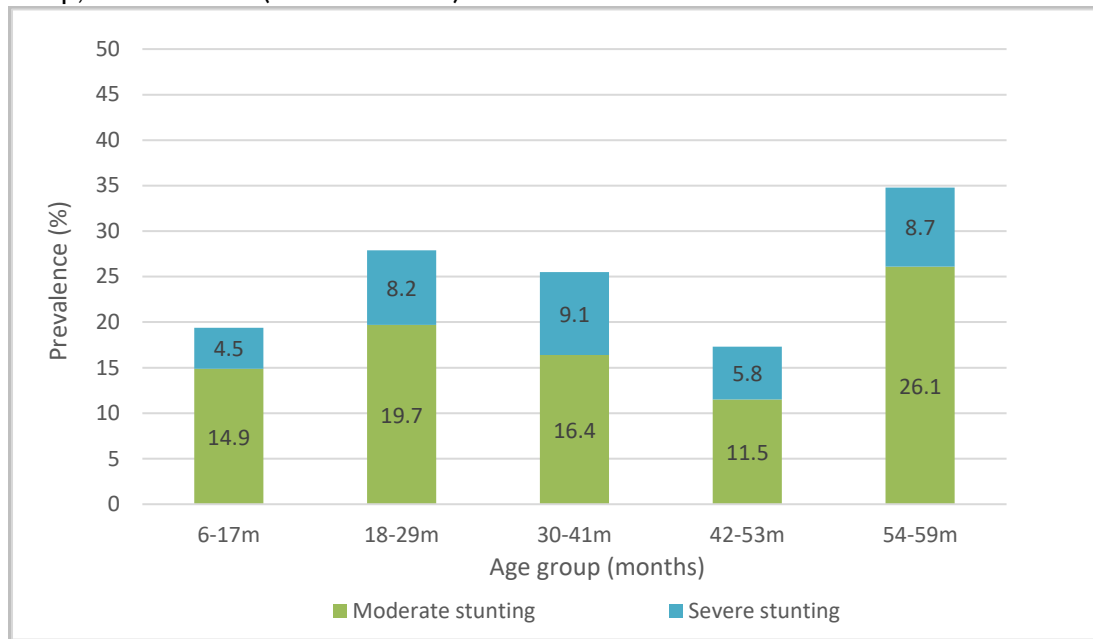
Figure 9 : Distribution of height-for-age z-scores (based on WHO growth standards ; the reference population is shown in green and the surveyed population is shown in red) of survey population compared to reference population - Pamir refugee camp, South Sudan (October 2019)
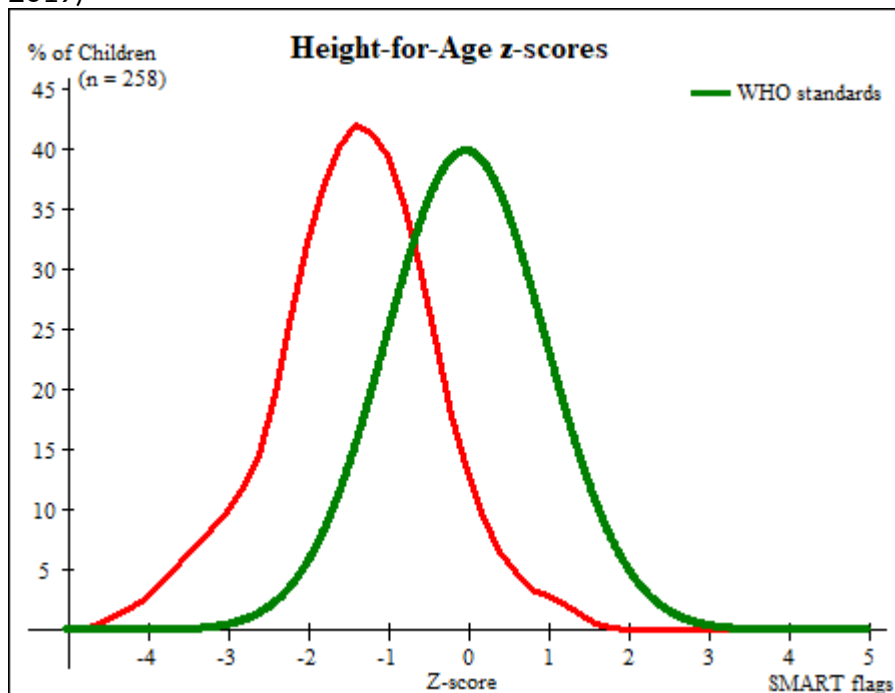
The distribution for height-for-age z-scores for the survey sample is shifted to the left, illustrating poor height for age of the surveyed population compared to the international WHO Standard population of children aged 6-59 months.

Table 26 : Prevalence of overweight based on weight for height cut offs and by sex (no oedema) - Pamir refugee camp, South Sudan (October 2019)

	All n = 257	Boys n = 137	Girls n = 120
Prevalence of overweight (WHZ > 2)	(4) 1.6 % (0.6 - 3.9 95% C.I.)	(3) 2.2 % (0.7 - 6.2 95% C.I.)	(1) 0.8 % (0.1 - 4.6 95% C.I.)
Prevalence of severe overweight (WHZ > 3)	(0) 0.0 % (0.0 - 1.5 95% C.I.)	(0) 0.0 % (0.0 - 2.7 95% C.I.)	(0) 0.0 % (0.0 - 3.1 95% C.I.)

There was no significant difference between overweight in Boys versus girls; p>0.05.

Table 27 : Prevalence of overweight by age, based on weight for height (no oedema) - Pamir refugee camp, South Sudan (October 2019)

Age (mo)	Total no.	Overweight (WHZ > 2)		Severe Overweight (WHZ > 3)	
		No.	%	No.	%
6-17	67	0	0.0	0	0.0
18-29	60	1	1.7	0	0.0
30-41	55	2	3.6	0	0.0
42-53	52	1	1.9	0	0.0
54-59	23	0	0.0	0	0.0

Table 28 : Mean z-scores, design effects and excluded subjects - Pamir refugee camp, South Sudan (October 2019)

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	256	-0.37±1.11	1.00	1	1
Weight-for-Age	257	-1.04±0.94	1.00	1	0
Height-for-Age	258	-1.41±0.99	1.00	0	0

* There were no oedema cases

Feeding Programme Enrolment Coverage

In Pamir refugee camp, the OTP and TSFP enrolment coverage based on both all admission criteria and using MUAC and Oedema only was way below the recommended standard of >90%. This was also the case for OTP enrolment based on MUAC and Oedema. The TSFP enrolment based on MUAC and Oedema met the standard.

Selective feeding programme

Table 29 : Programme enrolment coverage for acutely malnourished children based on MUAC, oedema and WHZ- Pamir refugee camp, South Sudan (October 2019)

	Number/total	% (95% CI)
Proportion of children aged 6-59 months with severe acute malnutrition currently enrolled in outpatient therapeutic programme*	0/4	0
Proportion of children aged 6-59 months with moderate acute malnutrition currently enrolled in supplementary feeding programme*	1/16	6.3 (0.2-30.2)

The enrolment coverage for targeted TSFP and OTP using the combined criterion did not meet recommended standard of >90%.

Table 30 : Programme enrolment coverage for acutely malnourished children based on MUAC and oedema - Pamir refugee camp, South Sudan (October 2019)

	Number/total	% (95% CI)
Proportion of children aged 6-59 months with severe acute malnutrition currently enrolled in outpatient therapeutic programme	0/1	0
Proportion of children aged 6-59 months with moderate acute malnutrition currently enrolled in outpatient therapeutic programme	1/1	100

OTP enrolment based on MUAC and Oedema did not meet the recommended target. The TSFP enrolment based on MUAC and Oedema met the standard.

Measles vaccination coverage results

Table 31 : Measles vaccination coverage for children aged 9-59 months (N=240) - Pamir refugee camp, South Sudan (October 2019)

	Measles (with card) n=67	Measles (with card <u>or</u> confirmation from mother) n=225
YES	27.9% (22.3-34.1 95% CI)	93.8 (89.9-96.5 95% CI)

The measles vaccination coverage was slightly below the recommended target of ≥ 95%. The coverage remained the same as in 2018; p>0.05.

Vitamin A supplementation coverage results

Table 32 : Vitamin A supplementation for children aged 6-59 months in past 6 months (N=258) - Pamir refugee camp, South Sudan (October 2019)

	Vitamin A capsule (with card) n=21	Vitamin A capsule (with card <u>or</u> confirmation from mother) n=243
YES	8.1% (5.1-12.1 95% CI)	94.1 (90.6-96.7 95% CI)

The vitamin A supplementation coverage met the recommended target of ≥ 90%. The coverage remained the same as in 2018; p>0.05.

Diarrhoea Results

Table 33 : Period prevalence of diarrhoea- Pamir refugee camp, South Sudan (October 2019)

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	64/258	24.8 (19.7-30.5)

The period prevalence of diarrhoea remained the same as that in 2018 (21.2%); p>0.05.

Table: 34 Deworming coverage- Pamir refugee camp, South Sudan. (October 2019)

	Number/total	% (95% CI)
Children received a deworming tablet in the last six months (12-59 months)	159/215	74.0 (67.6-79.7)

Deworming coverage was slightly below the recommended target of ≥75%

4.1.2   Anaemia Results Children 6 – 59 months

The total anaemia prevalence among children 6 to 59 months was 47.3 (41.1-53.6 95% CI). This is critical as it is above the 40% level of public health significance. Children aged 6-23 were the most severely affected by anaemia.

Table 35 : Prevalence of total anaemia, anaemia categories, and mean haemoglobin concentration in children 6-59 months of age and by age group- Pamir refugee camp, South Sudan (October 2019)

	6-59 months n =258	6-23 months n=95	24-59 months n=163
Total Anaemia (Hb<11.0 g/dL)	(122) 47.3 (41.1-53.6 95% CI)	(65) 68.4 (58.1-77.6 95% CI)	(57) 35.0 (27.7-42.8 95% CI)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(81) 31.4 (25.8-37.4 95% CI)	(33) 34.7 (25.3-45.2 95% CI)	(48) 29.5 (22.6-37.1 95% CI)
Moderate Anaemia (7.0-9.9 g/dL)	(40) 15.5 (11.3-20.5 95% CI)	(32) 33.7 (24.3-44.1 95% CI)	(8) 4.9 (2.1-9.4 95% CI)
Severe Anaemia (<7.0 g/dL)	(1) 0.4 (0.0-2.1 95%CI)	0	(1) 0.6 (0.02-3.4 95%CI)
Mean Hb, g/dL [range]	11.0 g/dL [6.8-13.6]	10.3 g/dL [7.6-12.9]	11.3 g/dL [6.8-13.6]

Table 36 : Prevalence of moderate and severe anaemia in children 6-59 months of age and by age group- Pamir refugee camp, South Sudan (October 2019)

	6-59 months n = 258	6-23 months n=95	24-59 months n=163
Moderate and Severe Anaemia (Hb<10.0 g/dL)	(41) 15.9 % (11.7-20.9 95% CI)	(32) 33.7% (24.3-44.1 95% CI)	(9) 5.5 % (2.6-10.2 95% CI)

Figure 10 : Trends in anaemia categories in children 6-59 months from 2017-2019- Pamir refugee camp, South Sudan
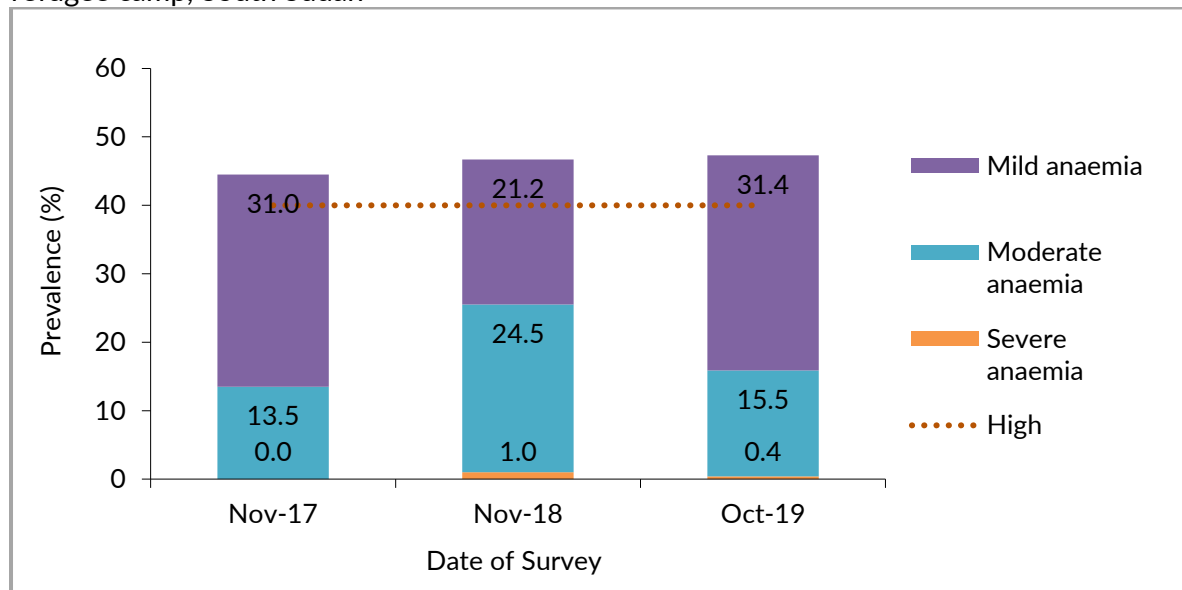
The prevalence of mild anaemia increased in 2019 compared to 2018; Moderate anaemia decreased in 2019 compared to 2018; p<0.05. Overall the anaemia prevalence remained the same as in 2018.

Figure 11 : Trend in total anaemia (<11 g/dl), and moderate and severe anaemia (<10 g/dl) with 95% CI in children 6-59 months from 2017- 2019- Pamir refugee camp, South Sudan (October 2019)
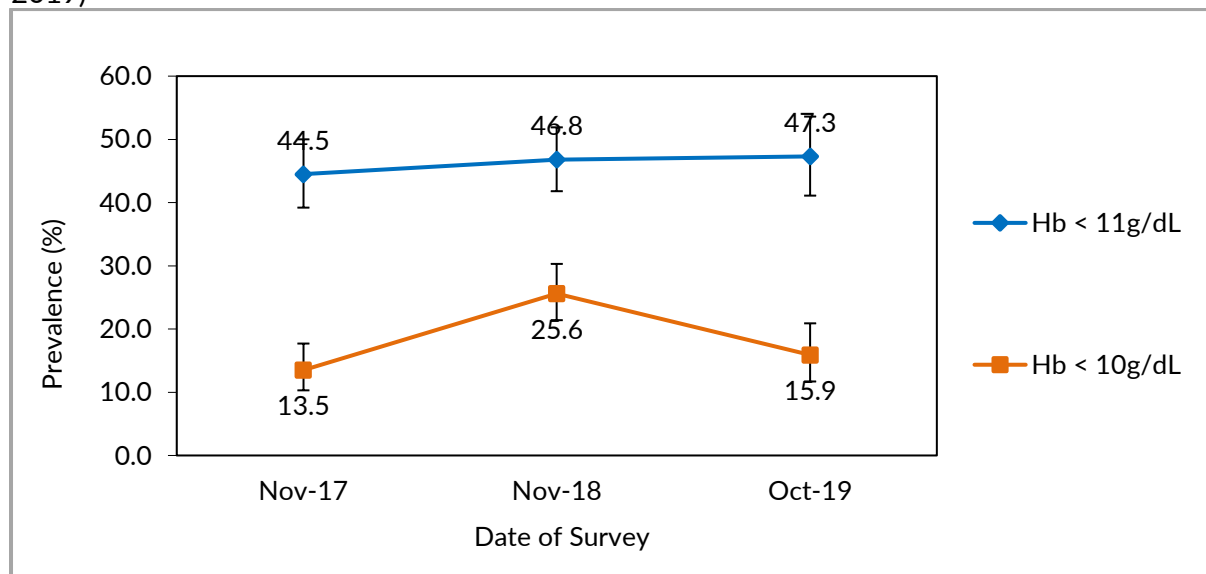
The proportion of the total moderate and severe anaemia reduced in 2019 compared to 2018

Figure 12 : Trend in mean haemoglobin concentration in children 6-59 months from 2017-2019- Pamir refugee camp, South Sudan
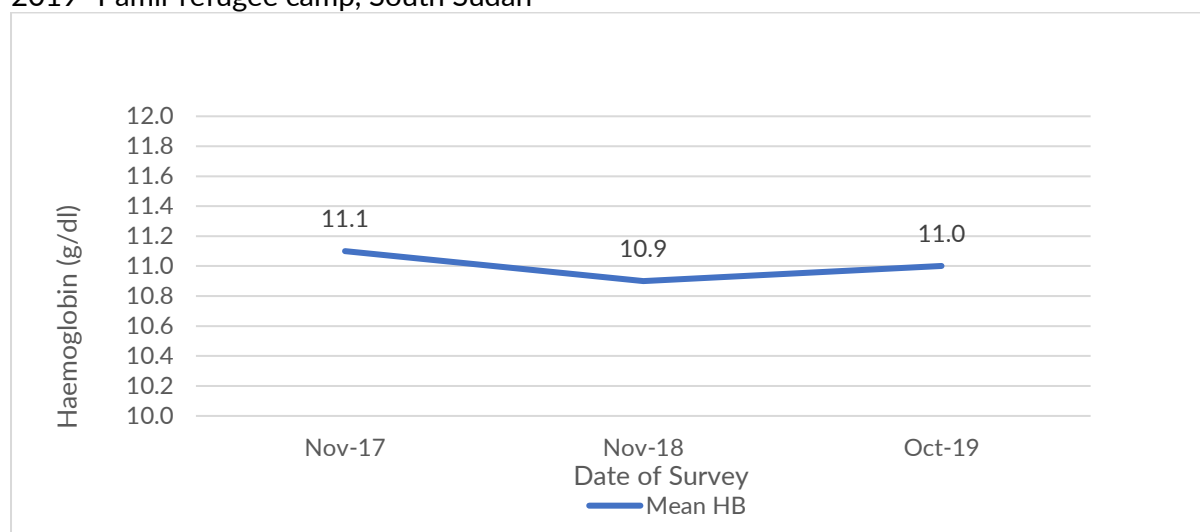
4.1.3 IYCF: Children 0-23 months

Table 37 : Prevalence of infant and young child feeding practices indicators- Pamir refugee camp, South Sudan (October 2019)

Indicator	Age range	Number/ total	Prevalence (%)	95% CI
Timely initiation of breastfeeding	0-23 months	106/118	89.8	82.9-94.6
Exclusive breastfeeding under 6 months	0-5 months	23/23	100	100
Continued breastfeeding at 1 year	12-15 month	19/19	100	100
Continued breastfeeding at 2 years	20-23 month	7/17	58.8	32.9-81.6
Introduction of solid, semi-solid or soft foods	6-8 months	13/18	72.2	46.5-90.3
Consumption of iron-rich or iron-fortified foods	6-23 months	47/95	49.5	39.1-59.9
Bottle feeding	0-23 months	2/117	1.7	0.2-6.0

Prevalence of intake

Infant formula

Table 38 : Infant formula intake in children aged 0-23 months- Pamir refugee camp, South Sudan (October 2019)

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	2/118	1.7 (0.2-6.0)

Fortified blended foods

Table 39 : CSB++ intake in children aged 6-23 Months - Pamir refugee camp, South Sudan (October 2019)

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB++	18/95	19.0 (11.6-28.3)

The proportion above is low indicating that the provided CSB ++ does not last throughout the month

4.1.4   Anaemia Women 15-49 years

Table 40 : Women Physiological Status and Age- Pamir refugee camp, South Sudan (October 2019)

Physiological status	Number/total	% of sample
Non-pregnant	99	90
Pregnant	11	10
Mean age (range)	25.6 (15-49)	

Table 41 : Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 Years) - Pamir refugee camp, South Sudan (October 2019)

Anaemia - Women of reproductive age 15-49 years	All n = 99
Total Anaemia (<12.0 g/dL)	(28) 28.3 (19.7-38.2)95% CI)
Mild Anaemia (11.0-11.9 g/dL)	(14) 14.1 (8.0-22.6)95% CI)
Moderate Anaemia (8.0-10.9 g/dL)	(14) 14.1 (8.0-22.6)95% CI)
Severe Anaemia (<8.0 g/dL)	0
Mean Hb, g/dL (SD) [range]	12.4 g/dL 1.2 [8.9-14.5]

The UNHCR Strategic Plan for Nutrition and Food Security states that the target for the prevalence of anaemia in women 15-49 years of age should be < 20%.

Table 42 : ANC enrolment and iron-folic acid pills coverage among pregnant women (15-49 years) - Pamir refugee camp, South Sudan (October 2019)

	Number /total	% (95% CI)
Currently enrolled in ANC programme	10/11	90.9 (58.7-99.8)
Currently receiving iron-folic acid pills	10/11	90.9 (58.7-99.8)

4.1.5 Food Security

Access to food assistance

Table 43: Ration card coverage

	Number/total	% (95% CI)
Proportion of households with a ration card	152/152	100

All the surveyed households had a ration card

Negative household coping strategies
The refugees in Pamir refugee camps receive a reduced food ration at a 70% scale.

Table 44: Coping strategies used by the surveyed population over the past month - Pamir refugee camp, South Sudan (October 2019)

	Number/total	% (95% CI)
Proportion of households reporting using the following coping strategies over the past month*:		
Borrowed cash, food or other items with or without interest	56/152	36.8 (29.2-45.0)
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)	24/152	15.8 (10.4-22.6)
Requested increased remittances or gifts as compared to normal	13/152	8.6 (4.6-14.2)
Reduced the quantity and/or frequency of meals and snacks	72/152	47.4 (39.2-55.6)
Begged	6/152	4.0 (1.5-8.4)
Engaged in potentially risky or harmful activities	8/152	5.3 (2.3-10.1)
Proportion of households reporting using none of the negative coping strategies over the past month	53/152	34.9 (27.3-43.0)

* The total was over 100% as households used several negative coping strategies.

Only 34.9% of households were not under significant stress to meet their needs as indicated by the proportion of household using none of the negative coping strategies over the past month prior to the survey.

Household dietary diversity

The last general food distribution ended 7+ days prior to the start of the survey data collection. The survey was carried out during the end of the harvest season.

Table 45: Average HDDS*- Pamir refugee camp, South Sudan (October 2019)

	Mean (Standard deviation)
Average HDDS	5.6 (1.2)

Figure 13: Proportion of households consuming different food groups within last 24 hours - Pamir refugee camp, South Sudan (October 2019)
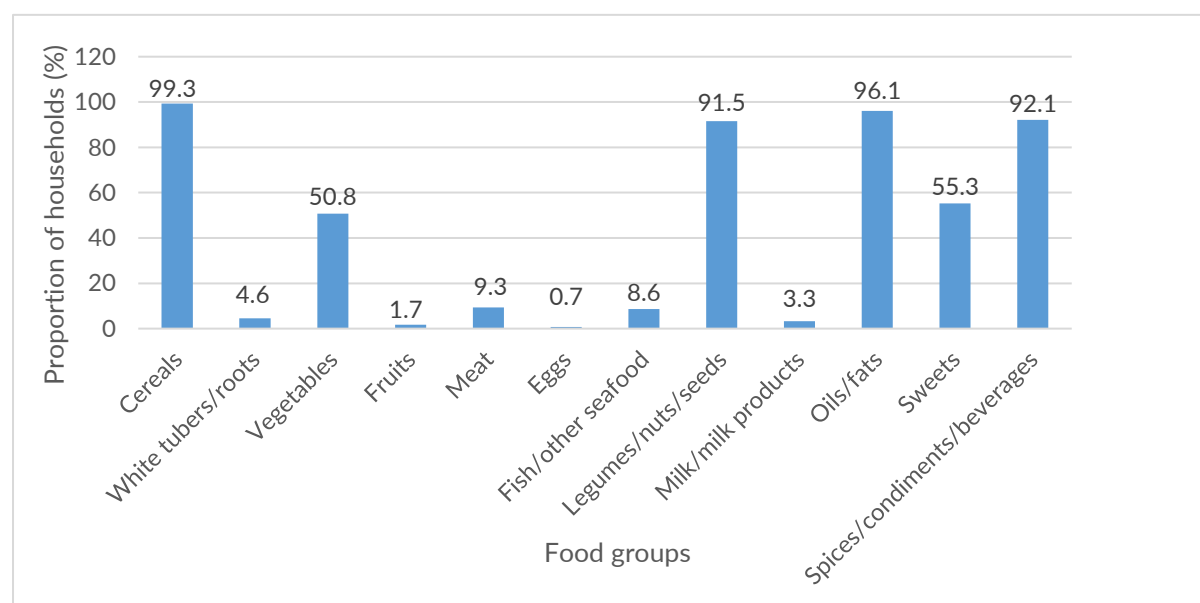
Cereals, pulses and oils were the most consumed food groups. These are the GFD provided food items.

Table 46: Consumption of micronutrient rich foods by households- Pamir refugee camp, South Sudan (October 2019)

	Number/total	% (95% CI)
Proportion of households *not consuming any* vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	14/152	9.2 (5.1-15.0)
Proportion of households consuming either a plant or animal source of vitamin A	117/152	77.0 (69.5-83.4)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	24/152	15.8 (10.4-22.6)

The low proportions of households consuming food groups containing iron above is indicative of an inadequate diet that is likely to be contributing to the micronutrient deficiencies

4.2 RESULTS FROM AJOUNG THOK REFUGEE CAMP

The table below shows the actual number of children captured during the survey versus the survey sample target.

Table 47 : Actual number of children captured during the survey in Ajoung Thok versus the target

	Target (No.)	Total surveyed (No.)	% of the target
Children 6-59 months	273	290	>100%

The required sample size was reached in Ajoung Thok.

4.2.1 Anthropometric results (based on WHO Growth Standards 2006) and Health

The coverage of age documentation was 77% (children having an exact birth date). As 23% of the children did not have an exact birthday stunting and the underweight data should be interpreted with caution.

Table 48 : Distribution of age and sex of sample- Ajoung Thok refugee camp, South Sudan (October 2019)

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy: girl
6-17	31	49.2	32	50.8	63	21.7	1.0
18-29	38	44.2	48	55.8	86	29.7	0.8
30-41	25	46.3	29	53.7	54	18.6	0.9
42-53	30	50.0	30	50.0	60	20.7	1.0
54-59	15	55.6	12	44.4	27	9.3	1.3
Total	139	47.9	151	52.1	290	100.0	0.9

All the children who participated in the survey were considered using the actual age from an official document or using an events calendar to estimate the age of the child. The overall boy: girl ratio was 0.9 which indicates that both sexes were equally represented in the survey.

Table 49 : Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex - Ajoung Thok refugee camp, South Sudan (October 2019)

	All n = 287	Boys n = 138	Girls n = 149
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(26) 9.1 % (8.3 - 9.9 95% C.I.)	(14) 10.1 % (6.1 - 16.3 95% C.I.)	(12) 8.1 % (6.8 - 9.5 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(20) 7.0 % (6.4 - 7.6 95% C.I.)	(9) 6.5 % (3.5 - 11.9 95% C.I.)	(11) 7.4 % (6.2 - 8.7 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(6) 2.1 % (1.9 - 2.3 95% C.I.)	(5) 3.6 % (1.6 - 8.2 95% C.I.)	(1) 0.7 % (0.6 - 0.8 95% C.I.)

The prevalence of oedema was 0.0 %. Data excluded SMART flags. Boys and girls were equally wasted; p>0.05.

Figure 14 : Trends in the prevalence of global and severe acute malnutrition based on WHO growth standards in children aged 6-59 months from 2015-November 2019 - Ajoung Thok refugee camp, South Sudan.
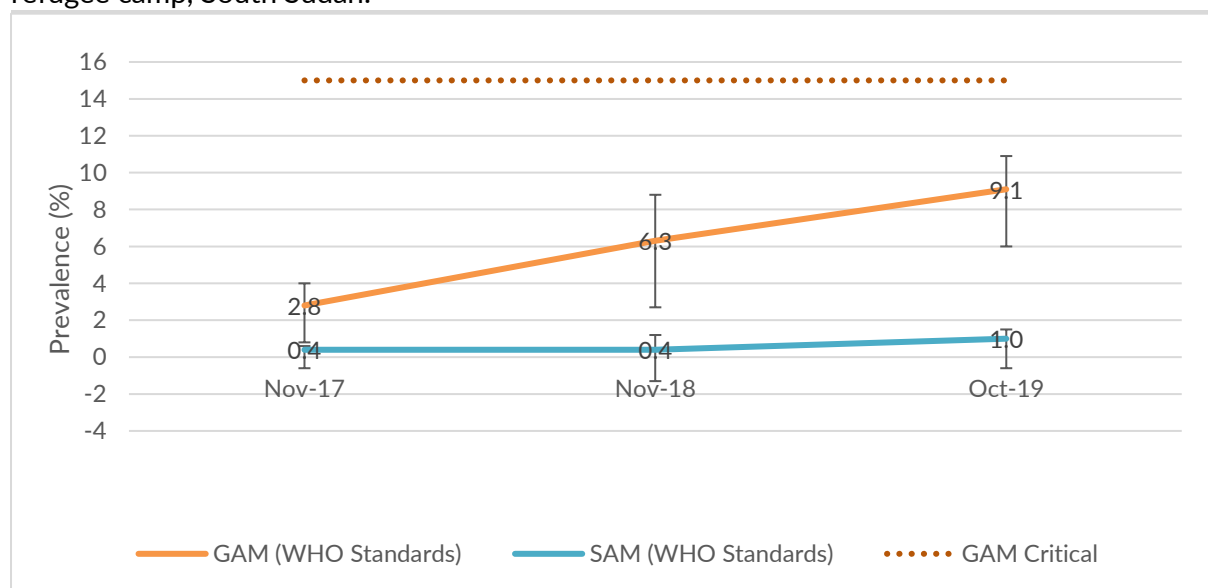
Comparison of the 2019 results with 2017 and 2018 indicate an increasing trend in the GAM prevalence in Ajoung Thok.

Table 50 : Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema- Ajoung Thok refugee camp, South Sudan (October 2019)

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	62	1	1.6	5	8.1	56	90.3	0	0.0
18-29	85	3	3.5	7	8.2	75	88.2	0	0.0
30-41	54	1	1.9	1	1.9	52	96.3	0	0.0
42-53	59	0	0.0	2	3.4	57	96.6	0	0.0
54-59	27	1	3.7	5	18.5	21	77.8	0	0.0
Total	287	6	2.1	20	7.0	261	90.9	0	0.0

Children aged 54-59 and 18-29 months tend to more wasted compared to the other age groups

Figure 15 : Trend in the prevalence of wasting by age in children 6-59 months- Ajoung Thok refugee camp, South Sudan (October 2019)
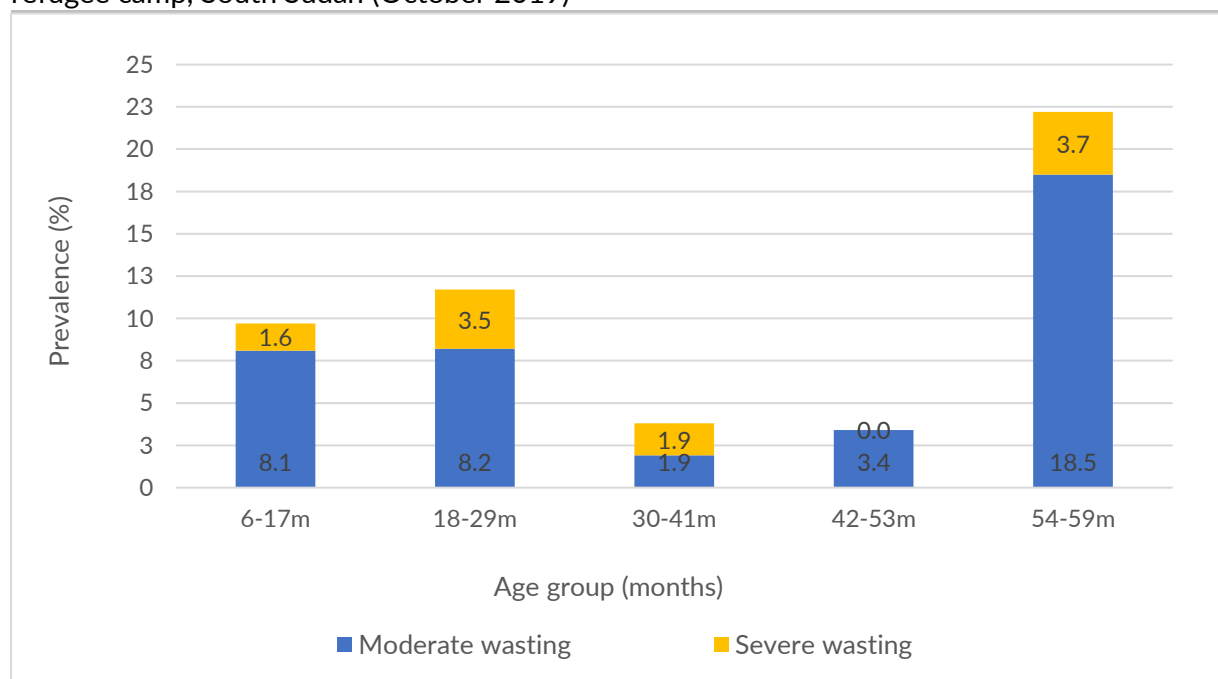
Table 51 : Distribution of severe acute malnutrition and oedema based on weight-for-height z-scores - Ajoung Thok refugee camp, South Sudan (October 2019)

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 9 (3.1 %)	Not severely malnourished No. 281 (96.9 %)

Figure 16 : Distribution of weight-for-height z-scores (based on WHO growth standards ; the reference population is shown in green and the surveyed population is shown in red) of survey population compared to reference population - Ajoung Thok refugee camp, South Sudan (October 2019)
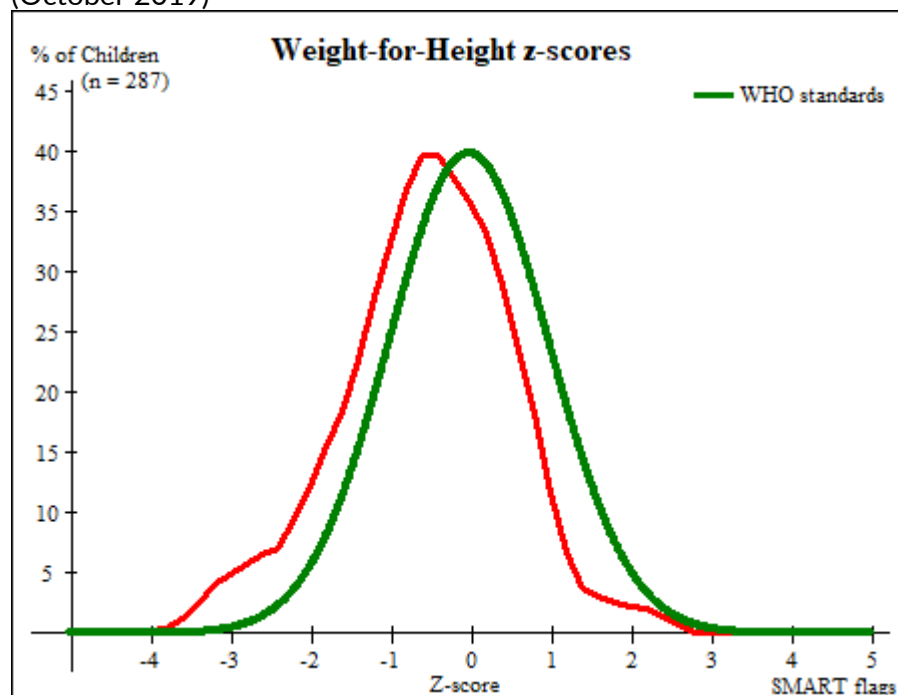
The figure above shows that the weight-for-height z-score distribution is shifted to the left, illustrating a poorer status than the international WHO Standard population of children aged 6-59 months.

Table 52 : Prevalence of MUAC malnutrition- Ajoung Thok refugee camp, South Sudan (October 2019)

	All n = 290	Boys n = 139	Girls n = 151
Prevalence of global malnutrition (< 125 mm and/or oedema)	(3) 1.0 % (0.9 - 1.1 95% C.I.)	(3) 2.2 % (0.7 - 6.2 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(2) 0.7 % (0.6 - 0.8 95% C.I.)	(2) 1.4 % (0.4 - 5.1 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(1) 0.3 % (0.3 - 0.4 95% C.I.)	(1) 0.7 % (0.1 - 4.0 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)

The difference in the MUAC malnutrition between boys and girls was not significant, p>0.05.

Table 53 : Prevalence of MUAC malnutrition by age, based on MUAC cut offs and/or oedema- Ajoung Thok refugee camp, South Sudan (October 2019)

Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	63	0	0.0	2	3.2	61	96.8	0	0.0
18-29	86	1	1.2	0	0.0	85	98.8	0	0.0
30-41	54	0	0.0	0	0.0	54	100.0	0	0.0
42-53	60	0	0.0	0	0.0	60	100.0	0	0.0
54-59	27	0	0.0	0	0.0	27	100.0	0	0.0
Total	290	1	0.3	2	0.7	287	99.0	0	0.0

Children aged 6-17 and 18-29 months tend to be most wasted based on MUAC measurement

Table 54 : Prevalence of underweight based on weight-for-age z-scores by sex - Ajoung Thok refugee camp, South Sudan (October 2019)

	All n = 288	Boys n = 138	Girls n = 150
Prevalence of underweight (<-2 z-score)	(43) 14.9 % (13.7 - 16.3 95% C.I.)	(29) 21.0 % (15.0 - 28.6 95% C.I.)	(14) 9.3 % (7.9 - 11.0 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(38) 13.2 % (12.1 - 14.4 95% C.I.)	(26) 18.8 % (13.2 - 26.2 95% C.I.)	(12) 8.0 % (6.7 - 9.5 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(5) 1.7 % (1.6 - 1.9 95% C.I.)	(3) 2.2 % (0.7 - 6.2 95% C.I.)	(2) 1.3 % (1.1 - 1.6 95% C.I.)

There was a significant difference in the underweight prevalence between boys and girls, boy tend to be more underweight than girls. $P<0.05$

Table 55 : Prevalence of underweight by age, based on weight-for-age z-scores and/or oedema- Ajoung Thok refugee camp, South Sudan (October 2019)

Age (mo)	Total no.	Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	62	2	3.2	3	4.8	57	91.9	0	0.0
18-29	85	1	1.2	13	15.3	71	83.5	0	0.0
30-41	54	0	0.0	5	9.3	49	90.7	0	0.0
42-53	60	1	1.7	12	20.0	47	78.3	0	0.0
54-59	27	1	3.7	5	18.5	21	77.8	0	0.0
Total	288	5	1.7	38	13.2	245	85.1	0	0.0

Children aged 18-29 months tend to be most underweight compared to the other age groups.

Table 56 : Prevalence of stunting based on height-for-age z-scores and by sex - Ajoung Thok refugee camp, South Sudan (October 2019)

	All n = 286	Boys n = 137	Girls n = 149
Prevalence of stunting **(<-2 z-score)**	(65) 22.7 % (20.8 - 24.8 95% C.I.)	(38) 27.7 % (20.9 - 35.8 95% C.I.)	(27) 18.1 % (15.2 - 21.4 95% C.I.)
Prevalence of moderate stunting **(<-2 z-score and >=-3 z-score)**	(53) 18.5 % (16.9 - 20.2 95% C.I.)	(31) 22.6 % (16.4 - 30.3 95% C.I.)	(22) 14.8 % (12.4 - 17.5 95% C.I.)
Prevalence of severe stunting **(<-3 z-score)**	(12) 4.2 % (3.8 - 4.6 95% C.I.)	(7) 5.1 % (2.5 - 10.2 95% C.I.)	(5) 3.4 % (2.8 - 4.0 95% C.I.)

There was no difference in the stunting prevalence between boys and girls, p>0.05

Figure 17 : Trends in the prevalence of global and severe stunting based on who growth standards in children 6-59 months from 2017- 2019, - Ajoung Thok refugee camp, South Sudan
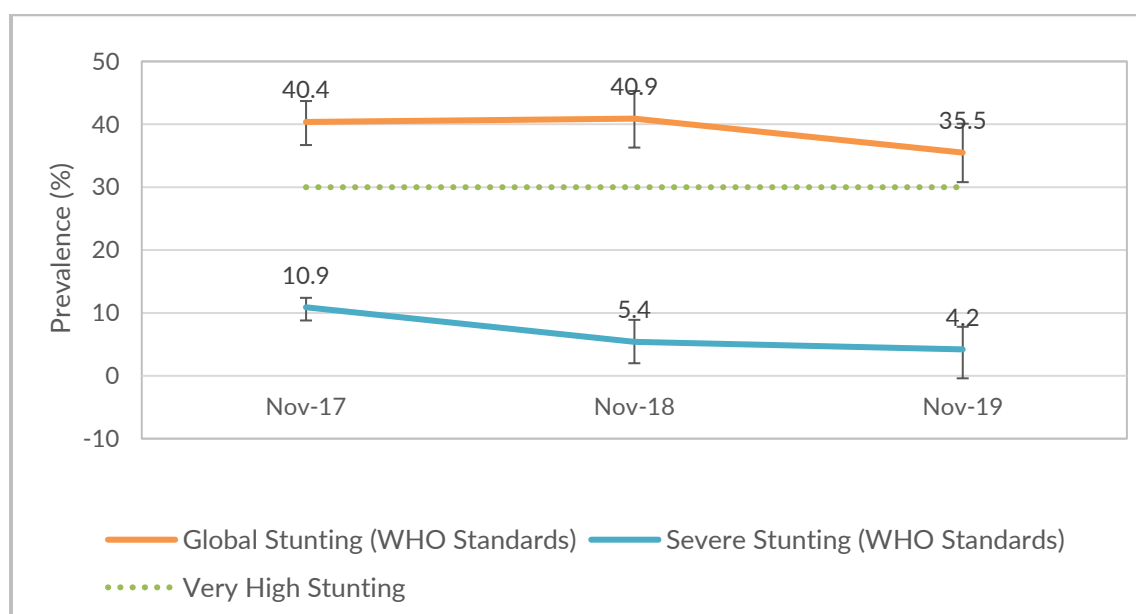
Stunting prevalence in Ajoung Thok indicates a downward trend compared to the past years.

Table 57 : Prevalence of stunting by age based on height-for-age Z-Scores - Ajoung Thok refugee camp, South Sudan (October 2019)

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
		No.	%	No.	%	No.	%
6-17	60	2	3.3	5	8.3	53	88.3
18-29	85	4	4.7	18	21.2	63	74.1
30-41	54	2	3.7	11	20.4	41	75.9
42-53	60	2	3.3	18	30.0	40	66.7
54-59	27	2	7.4	1	3.7	24	88.9
Total	286	12	4.2	53	18.5	221	77.3

Children aged 42-53 months tend to be most stunted compared to the other age groups.

Figure 18 : Trends in the prevalence of stunting by age in children 6-59 months, - Ajoung Thok refugee camp, South Sudan (October 2019)
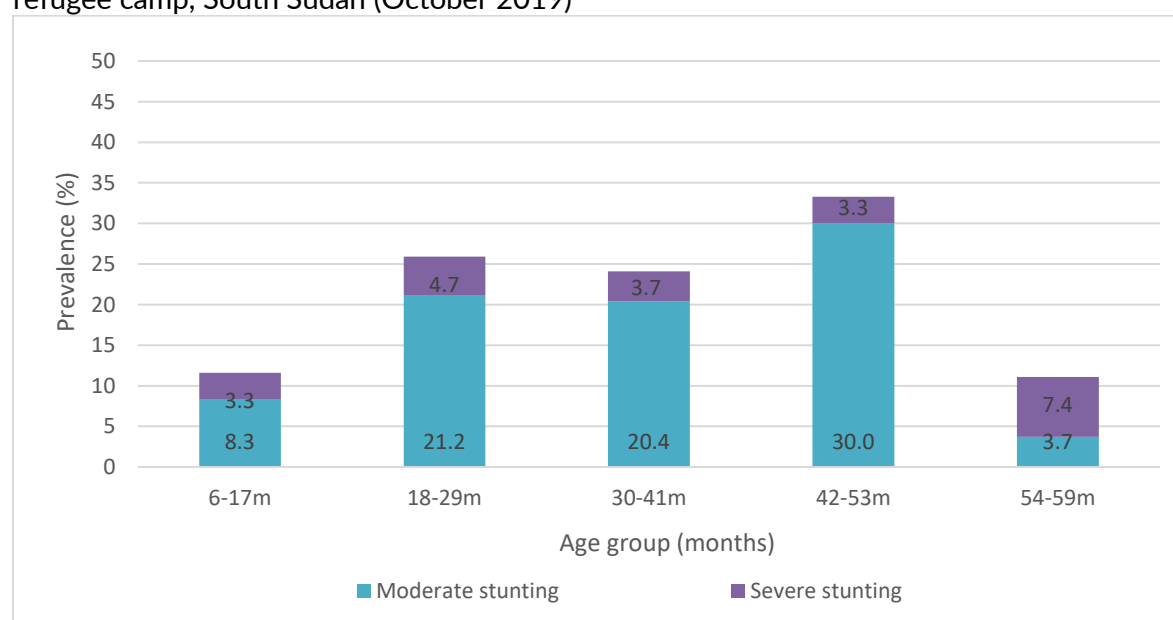
Figure 19 : Distribution of height-for-age z-scores (based on WHO growth standards ; the reference population is shown in green and the surveyed population is shown in red) of survey population compared to reference population - Ajoung Thok refugee camp, South Sudan (October 2019)
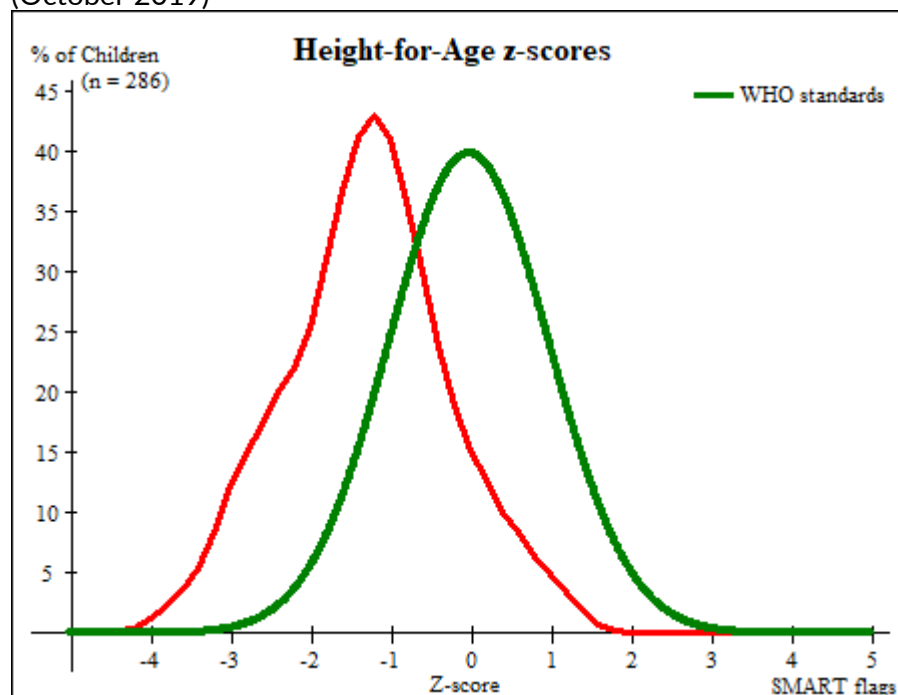
The distribution for height-for-age z-scores for the survey sample is shifted to the left, illustrating poor height for age of the surveyed population compared to the international WHO Standard population of children aged 6-59 months.

Table 58 : Prevalence of overweight based on weight for height cut offs and by sex (no oedema) - Ajoung Thok refugee camp, South Sudan (October 2019)

	All n = 287	Boys n = 138	Girls n = 149
Prevalence of overweight (WHZ > 2)	(3) 1.0 % (1.0 - 1.1 95% C.I.)	(2) 1.4 % (0.4 - 5.1 95% C.I.)	(1) 0.7 % (0.6 - 0.8 95% C.I.)
Prevalence of severe overweight (WHZ > 3)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(0) 0.0 % (0.0 - 2.7 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)

There was no difference in overweight among girls versus boys; p>0.05

Table 59 : Prevalence of overweight by age, based on weight for height (no oedema) - Ajoung Thok refugee camp, South Sudan (October 2019)

Age (mo)	Total no.	Overweight (WHZ > 2) No.	%	Severe Overweight (WHZ > 3) No.	%
6-17	62	1	1.6	0	0.0
18-29	85	0	0.0	0	0.0
30-41	54	1	1.9	0	0.0
42-53	59	1	1.7	0	0.0
54-59	27	0	0.0	0	0.0
Total	287	3	1.0	0	0.0

Table 60 : Mean Z-scores, design effects and excluded subjects - Ajoung Thok refugee camp, South Sudan (October 2019)

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	287	-0.55±1.04	1.00	0	3
Weight-for-Age	288	-1.10±0.90	1.00	0	2
Height-for-Age	286	-1.28±1.01	1.00	0	4

* There were no oedema cases found during the survey.

Feeding Programme Enrolment Coverage

In Ajoung Thok refugee camp, the OTP and TSFP enrolment coverage based on both all admission criteria and using MUAC and Oedema only was way below the recommended standard of >90%.

Selective feeding programme

Table 61 : Nutrition treatment programme enrolment coverage based on all admission criteria (weight-for-height, MUAC, oedema) -Ajoung Thok refugee camp, South Sudan. (October 2019)

	Number/total	% (95% CI)
Proportion of children aged 6-59 months with severe acute malnutrition currently enrolled in outpatient therapeutic programme*	0/6	0
Proportion of children aged 6-59 months with moderate acute malnutrition currently enrolled in supplementary feeding programme*	1/21	4.8 (0.1-23.8)

Table 62 : Nutrition treatment programme enrolment coverage based on MUAC and oedema only - Ajoung Thok refugee camp, South Sudan (October 2019)

	Number/total	% (95% CI)
Proportion of children aged 6-59 months with severe acute malnutrition currently enrolled in outpatient therapeutic programme	0/1	0
Proportion of children aged 6-59 months with moderate acute malnutrition currently enrolled in outpatient therapeutic programme	0/2	0

Measles Vaccination Coverage Results

Table 63 : Measles vaccination coverage for children aged 9-59 months (N=276) - Ajoung Thok refugee camp, South Sudan (October 2019)

	Measles (with card) n=59	Measles (with card or confirmation from mother) n=273
YES	21.4% (16.7-26.7 95% CI)	98.9% (96.9 -99.8 95% CI)

The measles vaccination coverage met the recommended target of ≥ 95%.

Vitamin A Supplementation Coverage Results

Table 64 : Vitamin A Supplementation for Children Aged 6-59 Months within Past 6 Months (N=290) - Ajoung Thok refugee camp, South Sudan (October 2019)

	Vitamin A capsule (with card) n=14	Vitamin A capsule (with card or confirmation from mother) n=285
YES	4.8% (2.7-8.0 95% CI)	98.3% (96.0- 99.4 95% CI)

The coverage of vitamin A coverage met the recommended target of ≥ 90%.

Figure 20 : Trends in the coverage of measles vaccination and vitamin A supplementation in last 6 months in children aged 6-59 months from 2017-2019- Ajoung Thok refugee camp, South Sudan
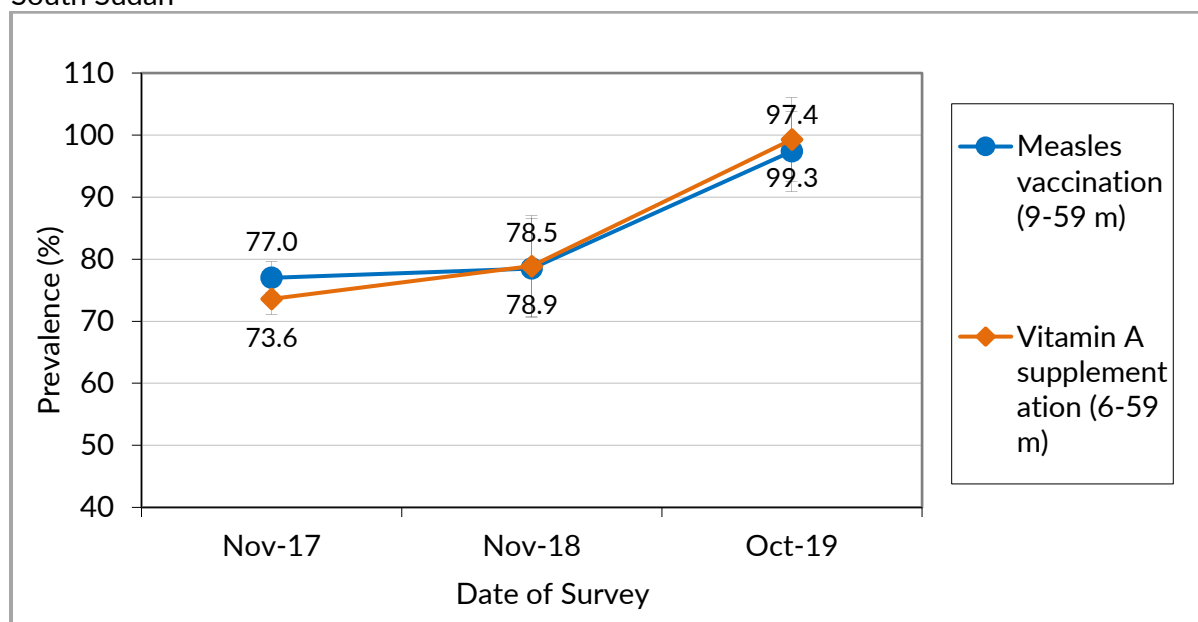
Measles vaccination and Vitamin A supplementation coverage improved in 2019 compared to the past two years.

Diarrhoea Results

Table 65 : Period prevalence of diarrhoea- Ajoung Thok refugee camp, South Sudan (October 2019)

	Number/total	% (95% CI)
Diarrhoea in the last two weeks (6-59 months)	27/290	9.3 (6.2-13.3)

The period prevalence of diarrhoea remained the same in 2018; p>0.05).

Table 66: Deworming coverage- Ajoung Thok refugee camp, South Sudan. (October 2019)

	Number/total	% (95% CI)
Children received a deworming tablet in the last six months (12-59 months)	185/262	70.6 (64.7-76.1)

Deworming coverage was below the recommended target of ≥75%

4.2.2 Anaemia Results Children 6 – 59 Months

The total anaemia prevalence among children 6 to 59 months was 44.1(38.3-50.1 95% CI). This is of critical public health significance as it is above 40%. Children aged 6-23 were the most severely affected by anaemia.

Table 67 : Prevalence of total anaemia, anaemia categories, and mean haemoglobin concentration in children 6-59 months of age and by age group- Ajoung Thok refugee camp, South Sudan (October 2019)

	6-59 months n = 290	6-23 months n=106	24-59 months n=184
Total Anaemia (Hb<11.0 g/dL)	(128) 44.1% (38.3-50.1 95% CI)	(66) 62.3 (52.3-71.5 95% CI)	(62) 33.7 (26.9-41.0 95% CI)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(76) 26.2% (21.2-31.7 95% CI)	(33) 31.1 (22.5-40.9 95% CI)	(43) 23.4 (17.5-30.2 95% CI)
Moderate Anaemia (7.0-9.9 g/dL)	(51) 17.6% (13.4-22.5 95% CI)	(32) 30.2 (21.6-39.9 95% CI)	(19) 10.3 (6.3-15.7 95% CI)
Severe Anaemia (<7.0 g/dL)	(1) 0.3% (0-1.9 95 CI)	0.9 (0.0-5.1 95% CI)	0
Mean Hb (g/dL) [range]	11.1 g/dL [5.9-14.8]	10.5 g/dL [5.9-13.9]	11.5 g/dL [7.3-14.8]

Table 68 : Prevalence of moderate and severe anaemia in children 6-59 months of age and by age group- Ajoung Thok refugee camp, South Sudan (October 2019)

	6-59 months n = 290	6-23 months n=106	24-59 months n=184
Moderate and Severe Anaemia (Hb<10.0 g/dL)	(52) 17.9% (13.7-22.8 95% CI)	(33) 31.1 (22.5-40.9 95% CI)	(19) 10.3 (6.3-15.7 95% CI)

Figure 21 : Trends in anaemia categories in children 6-59 months from 2017-2019- Ajoung Thok refugee camp, South Sudan
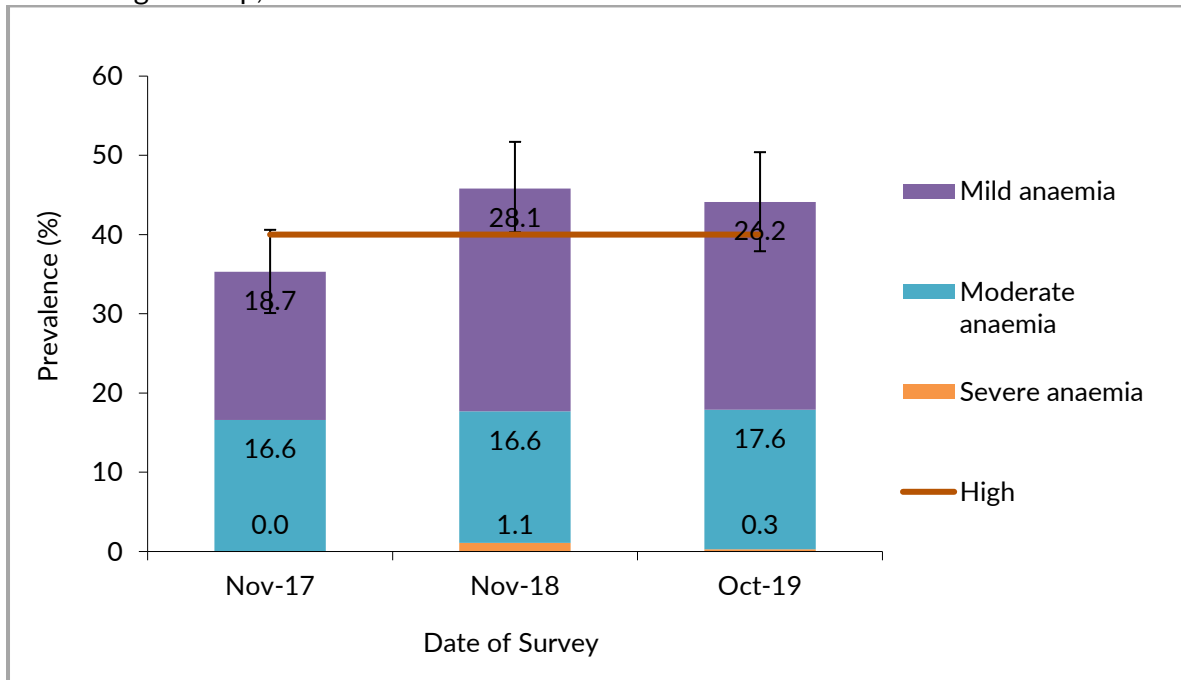
The prevalence of mild anaemia increased in 2019 and 2018 compared to that in 2017, p<0.05 but remained the same as in 2018; p>0.05. The other categories have remained the same across the years.

Figure 22 : Trend in total anaemia (<11 g/dl), and moderate and severe anaemia (<10 g/dl) with 95% CI in children 6-59 months from 2017- 2019- Ajoung Thok refugee camp, South Sudan
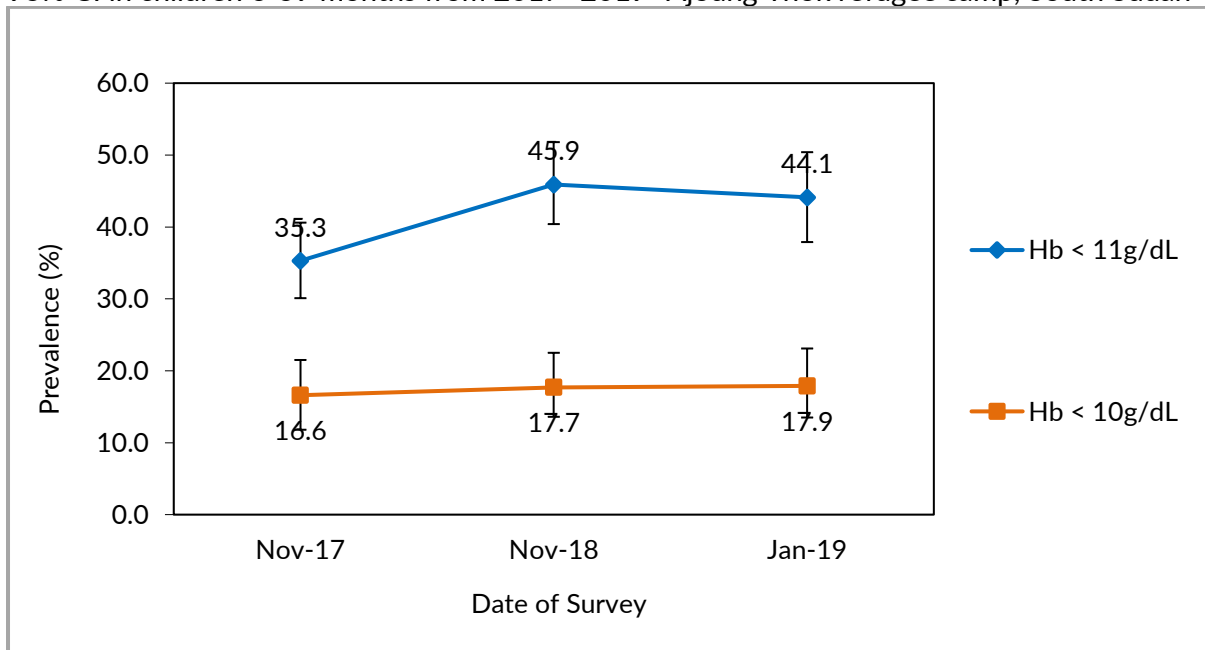
Figure 23 : Trend in mean haemoglobin concentration with 95% CI in children 6-59 months from 2017- 2019- Ajoung Thok refugee camp, South Sudan
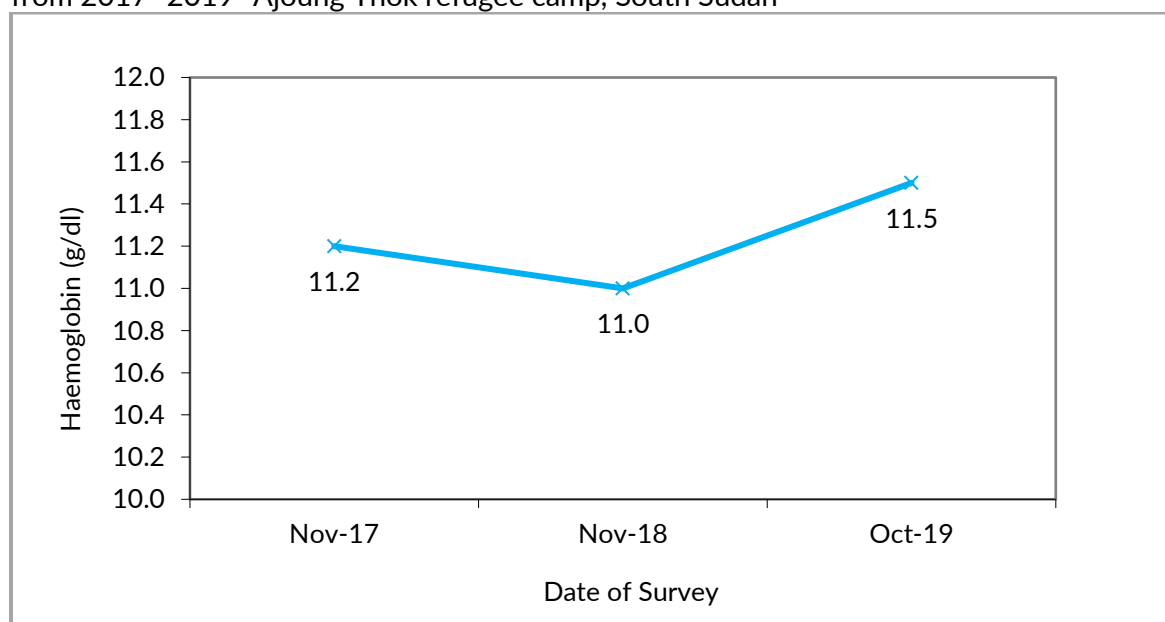
4.2.3   IYCF Children 0-23 Months

Table 69 : Prevalence of Infant and Young Child Feeding Practices Indicators- Ajoung Thok refugee camp, South Sudan (October 2019)

Indicator	Age range	Number/ total	Prevale nce (%)	95% CI
Timely initiation of breastfeeding	0-23 months	129/139	92.8	(87.2-96.5)
Exclusive breastfeeding under 6 months	0-5 months	31/33	93.9	93.9 (79.8-99.3)
Continued breastfeeding at 1 year	12-15 months	25/26	96.2	96.2 (80.4-99.9)
Continued breastfeeding at 2 years	20-23 months	14/24	58.3	58.3 (36.6-77.9)
Introduction of solid, semi-solid or soft foods	6-8 months	13/14	92.9	92.9 (66.1-99.8)
Consumption of iron-rich or iron-fortified foods	6-23 months	63/106	59.4	59.4 (49.5-68.9)
Bottle feeding	0-23 months	1/139	0.7	0.7 (0.0-3.9)

Figure 14 : Key IYCF indicators from 2014-November 2019- Ajoung Thok refugee camp, South Sudan
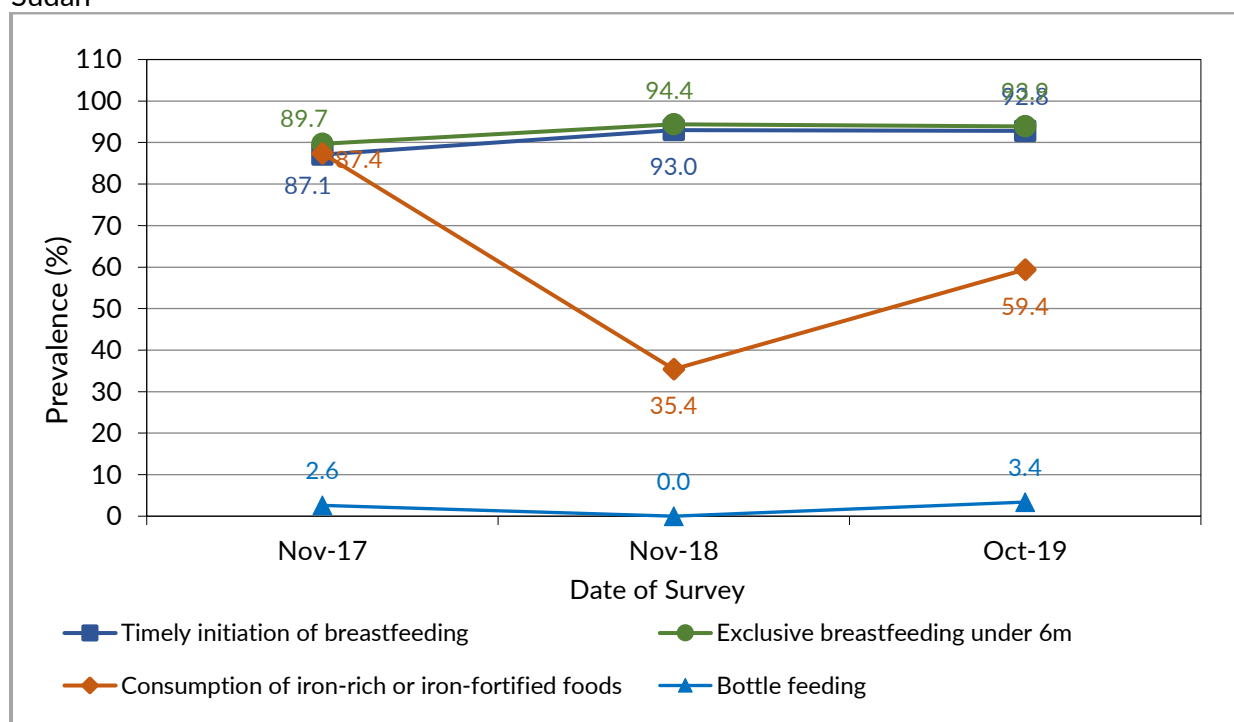
Prevalence of Intake

Infant Formula

Table 70 : Infant formula intake in children aged 0-23 months- Ajoung Thok refugee camp, South Sudan (October 2019)

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	2/139	1.4 (0.2-5.1)

Fortified Blended Foods

Table 71 : CSB++ Intake in Children Aged 6-23 Months - Ajoung Thok refugee camp, South Sudan (October 2019)

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB++	19/106	17.9 (11.2-26.6)

The proportion above is low indicating that the provided CSB ++ does not last throughout the month

4.2.4   Anaemia; Women 15-49 Years

Table 72 : Women Physiological Status and Age- Ajoung Thok refugee camp, South Sudan (October 2019)

Physiological status	Number/total	% of sample
Non-pregnant	150	87.7
Pregnant	21	12.3
Mean age (range)	24.4 (15-46)	

Table 73 : Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 Years) - Ajoung Thok refugee camp, South Sudan (October 2019)

Anaemia - Women of reproductive age 15-49 years	All n = 150
Total Anaemia (<12.0 g/dL)	(51) 34.0% (26.5-42.2 95% CI)
Mild Anaemia (11.0-11.9 g/dL)	(34) 26.7% (16.2-30.2 95% CI)
Moderate Anaemia (8.0-10.9 g/dL)	(17) 11.3% (6.7-17.5 95% CI)
Severe Anaemia (<8.0 g/dL)	0
Mean Hb, g/dL (SD) [range]	12.4g/dL 1.2 [8.4-16.1]

Figure 25 : Trends in anaemia categories in women of reproductive age (non-pregnant) from 2017-2019- Ajoung Thok refugee camp, South Sudan
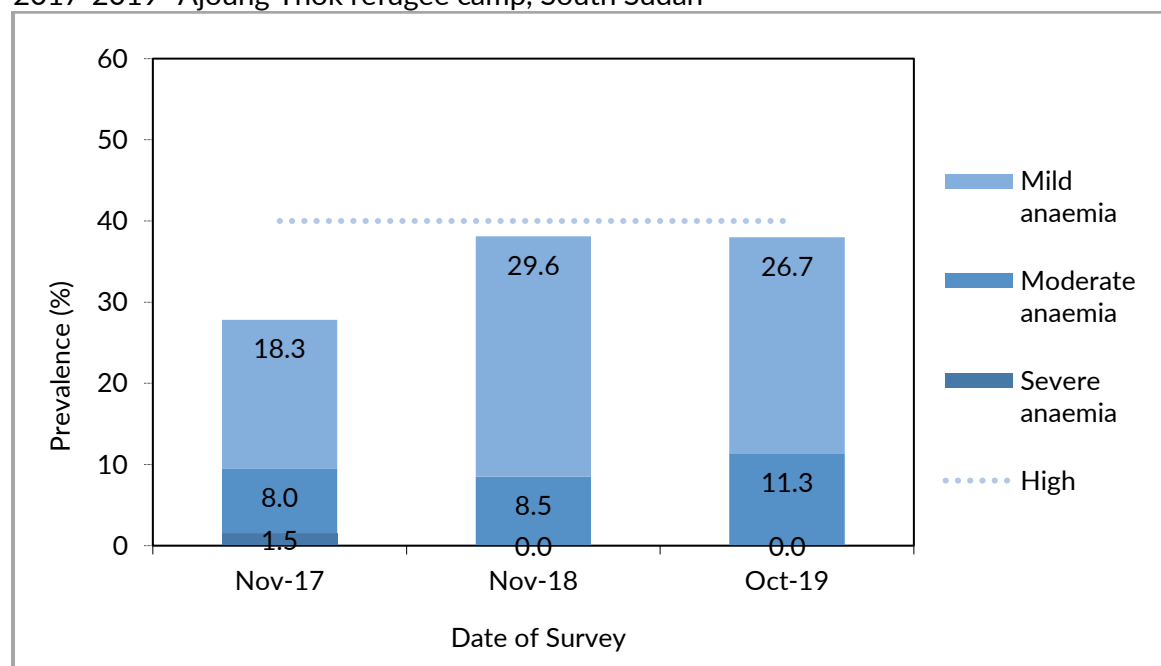
The change across the years among the various categories has not been statistically significant; p>0.05. The indication of likely increasing trend under the moderate anaemia category in 2019 however requires attention.

Figure 26 : Trends in mean haemoglobin concentration with 95% CI in women of reproductive age (non-pregnant) from 2017-2019- Ajoung Thok refugee camp, South Sudan
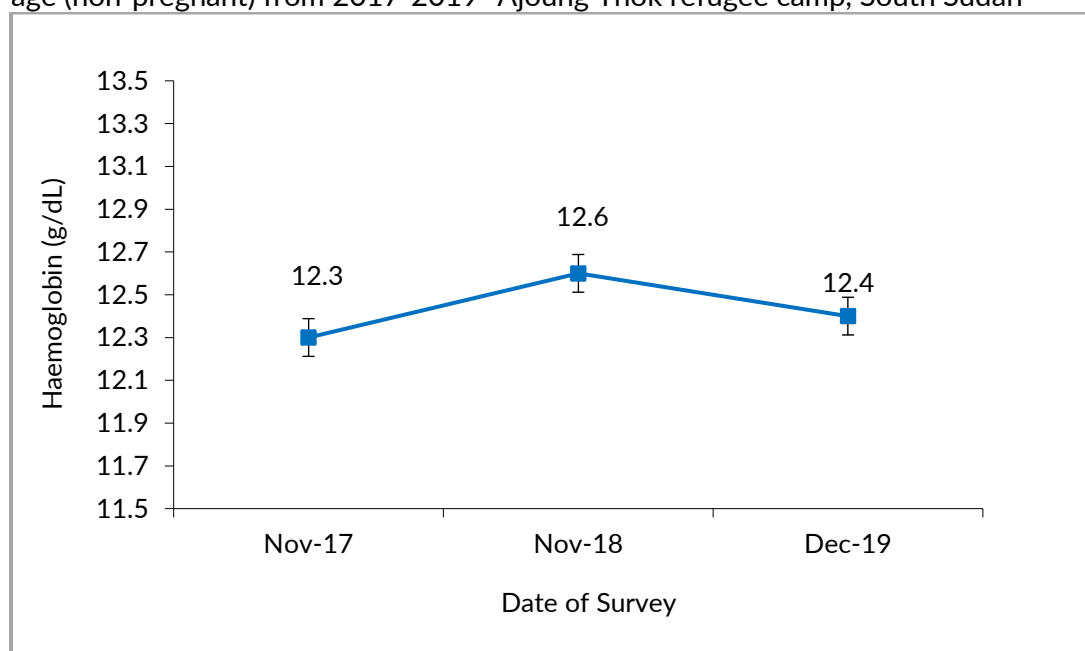
The difference in the mean haemoglobin 2019 as compared to 2018 was not statistically significant, p>0.05.

Table 74 : ANC Enrolment and Iron-Folic Acid Pills Coverage among Pregnant Women (15-49 Years) - Ajoung Thok refugee camp, South Sudan (October 2019)

	Number /total	% (95% CI)
Currently enrolled in ANC programme	19/21	90.5 (69.6-98.8)
Currently receiving iron-folic acid pills	18/21	85.7 (63.7-97.0)

4.2.5 Food security

Access to food assistance

Table 75: Ration card coverage

	Number/total	% (95% CI)
Proportion of households with a ration card	197/197	100

All the surveyed households had a ration card.

Negative household coping strategies
The refugees in Ajoung Thok refugee camp receive a reduced food ration at a 70% scale.

Table 76: Coping strategies used by the surveyed population over the past month - Ajoung Thok refugee camp, South Sudan (October 2019)

	Number/total	% (95% CI)
Proportion of households reporting using the following coping strategies over the past month*:		
Borrowed cash, food or other items with or without interest	51/197	25.9 (19.9 – 32.6)
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)	29/197	14.7 (10.1- 20.5)
Requested increased remittances or gifts as compared to normal	17/197	8.6 (5.1-13.5)
Reduced the quantity and/or frequency of meals and snacks	84/197	42.6 (35.6- 49.9)
Begged	8/197	4.1 (1.8-7.8)
Engaged in potentially risky or harmful activities	15/197	7.6 (4.3-12.3)
Proportion of households reporting using none of the negative coping strategies over the past month	84/197	42.6 (35.6-49.9)

* The total was over 100% as households used several negative coping strategies.

Only 42.6% of households were not under significant stress to meet their needs as indicated by the proportion of household using none of the negative coping strategies over the past month prior to the survey. This improved significantly compared to the 28.8 proportion in 2018.

Household dietary diversity

The last general food distribution ended 14+ days prior to the start of the survey data collection. The survey was carried out during the end of the harvest season.

Table 77: Average HDDS- Ajoung Thok refugee camp, South Sudan (October 2019)

	Mean (Standard deviation or 95% CI)
Average HDDS	5.8 (1.3)

Figure 27: Proportion of households consuming different food groups within last 24 hours - Ajoung Thok refugee camp, South Sudan (October 2019)
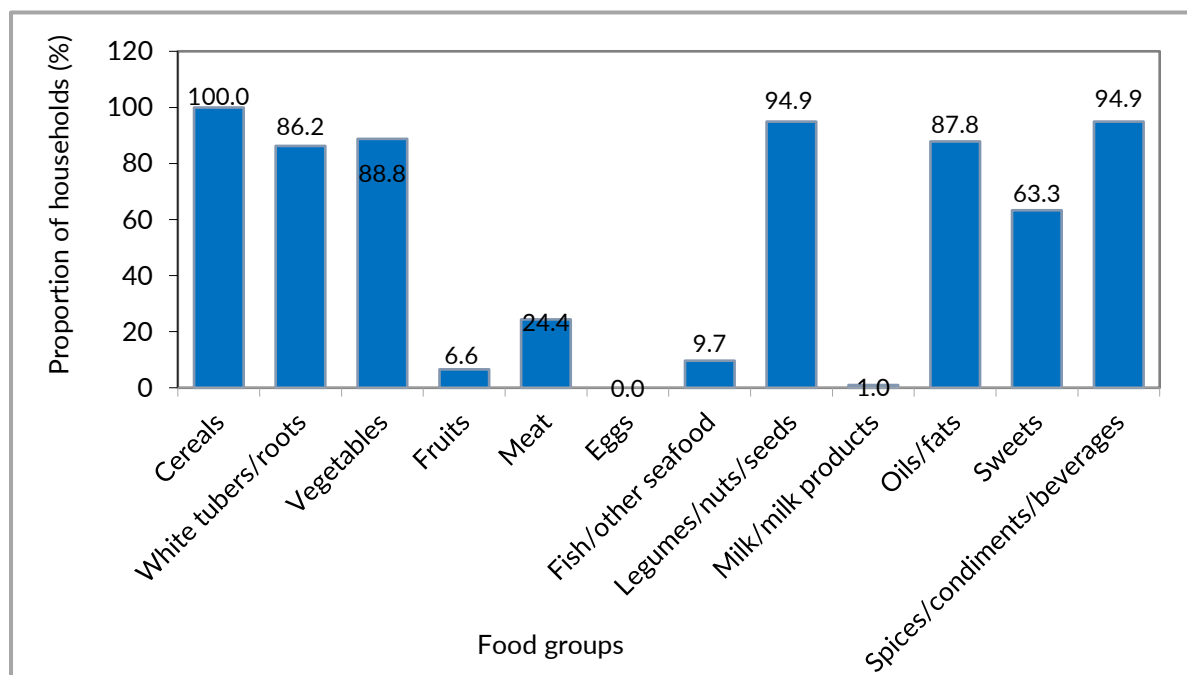
Consumption of vegetables, meat, fish, legumes and oils increased in 2019. In 2018 the proportion was 52.1%, 10.5%, 2.1%, 74.6% and 21.1% respectively.

Table 78: Consumption of micronutrient rich foods by households- Ajoung Thok refugee camp, South Sudan (October 2019)

	Number/total	% (95% CI)
Proportion of households *not consuming any* vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	18/197	9.1 (5.5-14.1)
Proportion of households consuming either a plant or animal source of vitamin A	137/197	69.5 (62.6-75.9)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	58/197	29.4 (23.2-36.3)

The low proportions of households consuming food groups containing iron and vitamin A and food sources of haem iron above is indicative of an inadequate diet that is likely to be contributing to the micronutrient deficiencies

5   LIMITATIONS

- The age documentation coverage was 68% and 77% in Pamir and Ajoung Thok respectively. Although an event calendar was used by the surveyors to ascertain age, stunting results need to be interpreted with caution because z-scores for height-for-age require accurate ages to within two weeks[22]

- TSFP/OTP coverage results should be interpreted with caution due to the small number of cases that were sampled during the survey. This indicator is rather interpreted as measuring enrolment coverage not programme coverage.

- Due to the small survey sample size for some indicators such as the exclusive breastfeeding "introduction of solid, semi-solid or soft foods" and the "continued breastfeeding at 2 years" indicators, these results have to be interpreted with caution.

- The training and the questionnaires were in English, but questionnaires were admitted in Arabic. This could have affected the understanding of the questions and ultimately the responses given.

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[22] (CDC/WFP: A manual: Measuring and Interpreting Mortality and Malnutrition, 2005).

6   DISCUSSION

Nutritional Status of Young Children

The prevalence of GAM of 7.8% (5.1-11.7 95% C.I) and 9.1% (8.3-9.9 95% C.I) in Pamir and Ajoung Thok respectively, is poor[23] but below the critical WHO emergency threshold of 15%. The prevalence of SAM was 1.6% and 2.1% in Pamir and Ajoung Thok respectively. SAM prevalence in Ajoung Thok is above the UNHCR acceptable level of <2%. Compared to the situation in 2018 the nutrition situation remained the same with the changes not being statistically significant, but the increasing trend indicates a likely deteriorating situation[24]. In both refugees camps the CMAM program continued within the year. There were adequate therapeutic feeding supplies with no pipeline breaks. TSFP in both Pamir and Ajoung Thok faced Plumpy'Sup supply challenges for three and four months respectively. During these months (February to May and December 2019) MAM cases were managed using CSB++. In addition to the CMAM program was the prevention of malnutrition/bridge the nutrient gap BSFP which continued throughout the year without any pipeline break. All children aged 6-23 months were targeted and received 200g/person/day super cereal plus monthly. Both treatment and prevention of acute malnutrition interventions should be continued to keep the prevalence below 15% and to contribute to the malnutrition reduction to the acceptable level (<5%).

The 2019 global stunting prevalence in Pamir was 23.6% (18.9-29.2 95% C.I) while in Ajoung Thok was 22.7% (20.8-24.8 95% C.I). This is categorized as high according to WHO standards[25]. Severe stunting was 7.0% (4.5-10.8 95%CI) and 4.2% (3.8 - 4.6 95% C.I) respectively. Stunting prevalence remained the same as in 2018 in Pamir and decreased in Ajoung Thok. In 2018 stunting among children 6-59 months in Pamir and Ajoung Thok was 28.3% and 35.5%. Stunting has been on a downward trend since 2017. Stunting refers to a deficit in height relative to age due to a long-term process of linear growth retardation. 'Stunting is a well-established risk marker of poor child development. Stunting before the age of 2 years predicts poorer cognitive and educational outcomes in later childhood and adolescence. Factors that contribute to stunted growth and development include poor maternal health and nutrition resulting in likely intrauterine growth retardation, inadequate infant and young child feeding practices, and frequent infection.' Although gains have been achieved in terms of increased ANC coverage (≈90%), livebirths attended by skilled personnel (>95%), maternal health and nutrition remain a challenge as indicated by the anaemia and malnutrition prevalence among women. Anaemia remains of medium public health concern. An average of 8% of the PLWs were malnourished in 2019 based on the quarterly Mass MUAC data. Other likely contributors to stunting include poor sanitation conditions leading to diarrhoeal diseases. Approximately 17.4% of the household visited during the KAP survey had child faecal matter evidence in their compounds; soap remains inadequate indicating a likely risk factors for diarrhoea. Stunting levels were highest from 18 months onwards in both camps indicating vulnerability post the breast-feeding period. Inappropriate childcare and feeding practices could be contributing to this. Tackling the burden of stunting requires a multifaceted approach across multiple areas including taking advantage of the window of opportunity to prevent long-lasting consequences of stunting in the first 1000 days of a child's life (the first two years of a child's life and the nine months of life in their mother's womb).[26]

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[23] WHO 2000 categorization

[24] P>0.05 therefore the decrease in prevalence was statistically insignificant

[25] WHO/UNICEF categorization, prevention of malnutrition threshold-children under 5 years of age, December 2018

[26] The Lancet Progression on growth faltering , February 2017

Morbidity

The interactions of nutrition and infection are cyclic with each exacerbating the other. 24.8% and 9.8% of children aged 6-59 months in Pamir and Ajoung Thok camps respectively were reported to have had diarrhoea in the last two weeks prior to the survey indicating a morbidity burden needing attention. Interventions to prevent diarrhoea, including safe drinking-water, use of improved sanitation and hand washing with soap need to be strengthened and maintained. To reduce the morbidity caseload there is also the need to maintain the current health service provision. Top morbidities (respiratory tract infections, malaria, diarrhoea and skin/eye disease) should also be given special attention.

Programme enrolment coverage

The OTP and TSFP programme enrolment coverage indicator using WHZ, MUAC and oedema in both Pamir and Ajoung Thok did not meet the recommended standard of >90%. The OTP and TSFP coverage measure the enrolment efficacy of these programmes. Although the sample sizes of these indicators were very low to allow meaningful conclusions to be drawn, the coverage highlights the high rate of exclusion under the Pamir and Ajoung Thok OTP and TSFP nutrition programmes. There is need to strengthen case finding both at the community level and the screening at the facility level. Only a small proportion of the children that met the WHZ score admission criteria were captured by MUAC in both camps (21.4% in Pamir and 6.9% in Ajoung Thok) highlighting the need for the use a mixed criteria using MUAC or WHZ scores to capture the children missed by either MUAC or the WHZ scores admission criteria. In addition to this a two-stage screening to be carried out during the monthly BSFP visits for children 6-23 months and for all children 24-59 visiting the health centre. All children found to be at risk (125 -145mm) for the 6-23months and (125-155mm) for the 24-59 months to go through a second stage weight for height z-score measurement. Any child found to meet the admission criteria using the WHZ scores to be enrolled into the appropriate program.

BSFP coverage from the 2019 monthly monitoring reports was 92% in Pamir and 100% in Ajoung Thok for children aged 6-23 months but the 24-hour diet recall showed that this ration was not being eaten by majority of the children indicating utilisation challenges at the household level. Appropriate use of the CSB++ for the targeted children to continue being sensitised in 2020.

Measles vaccination, Vitamin A supplementation and deworming coverage

The coverage of measles vaccination in Pamir was 93.6%. This is slightly below the recommended ≥95%. In Ajoung Thok the target was met (98.9%). The coverage remained the same at that in 2018 but indicated a downward trend. Vitamin A supplementation target coverage of ≥90% was met in both camps. Ante natal coverage in Pamir was 90.9% and 90.5% in Ajoung Thok camp. This remained the same as in 2018.

Vitamin A supplementation is recommended for the prevention of morbidity and mortality in children under five years of age in areas at risk of vitamin A deficiency.[27] Measles vaccination is also associated with large reductions (23%) in all-cause childhood mortality.[28] Maintenance of both routine vaccination and campaigns should continue in 2020 including strengthening of the measles coverage to meet the recommended standard in Pamir.

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[27] https://www.who.int/elena/titles/review_summaries/vitaminA-children/en/

[28] Global measles and rubella strategic plan: 2012-2020. WHO

Deworming coverage was assessed for the first time in 2019. This will act as a baseline for comparison in subsequent years. 74% of children aged 6-59 months in Pamir and 70.6% in Ajoung Thok reported to have been dewormed in the last six months prior to the survey. This was slightly below the UNHCR target of ≥75%. Intestinal worms were among the top ten morbidities in the Jamjang refugee camps indicating the need for continued deworming. Worm infections interfere with children's nutrition uptake which can result in malnutrition, anaemia and stunted growth. Deworming is recommended as a public health intervention for all young children 12–59 months of age, school going children and women of reproductive age.[29] Routine and campaign deworming to be continued in both camps.

Anaemia among Young Children and Women

Total anaemia prevalence among children aged 6 to 59 months in Pamir and Ajoung Thok was 46.8% (41.8-51.9 95% C.I) and 45.9% (39.7-52.2 95% C.I) which indicates a critical situation as this is above the 40% level of public health significance (WHO classification)[30]. The anaemia problem was more pronounced among children aged 6 to 23 months than in older children. Total anaemia prevalence among this age group was 68.6% and 59.4% in Pamir and Ajoung Thok respectively compared to 36.5% and 40% among children aged 24 to 59 months.

Although anaemia prevalence was high, majority of the children were mildly anaemic. The prevalence of moderate and severe anaemia among children aged 6 to 59 in Pamir was 25.6% and 17.7% in Ajoung Thok. In Pamir the global anaemia prevalence remained the same as in 2018. The prevalence of mild anaemia increased in 2019 compared to 2018 while moderate and severe anaemia decreased in 2019 compared to 2018; p<0.05. The decrease in moderate and severe anaemia is a positive trend as it indicates a decrease in anaemia severity. In Ajoung Thok the prevalence of the various anaemia categories remained the same as in 2018.

The prevalence of anaemia among women aged 15-49 years (non-pregnant) was 28.3% in Pamir and 22.7% in Ajoung Thok. According to the WHO classification the women anaemia prevalence is of medium public health significance. This indicates that maternal nutrition remains a priority area that should be prioritised. Maternal undernutrition increases the probability of low birth weights and increased the risk of maternal mortality.[31] The survey showed coverage of ANC of 90.9% in Pamir and 90.5% in Ajoung Thok respectively. Iron-folic acid coverage was 90.0% and 85.7 respectively. This should be strengthened and maintained in 2020

The GFD basket provides 53% of the daily iron requirements. Sorghum, which contributes the bulk of this iron provision is high in phytates, anti-nutrients that inhibit iron absorption in the body. In addition to this the GFD only provides 2% of the recommended daily intake of vitamin C, a nutrient that plays a pivotal role in iron absorption. The HDDS indicated that only 15.8% and 29.4% of the households in Pamir and Ajoung Thok respectively consumed food sources rich in haem iron. Only 49.5% and 59.4% of children aged 6-23 months had consumed iron rich foods in Pamir and Ajoung Thok respectively during the survey. Although this increased compared to 2018 the proportion remains low thus the need to scale up the effort. The refugee diet lacks animal protein a good source of bioavailable iron. Malaria and intestinal worms'

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[29] https://www.who.int/nutrition/publications/guidelines/deworming/en/
[30] WHO categorization

[31] Essential nutrition actions: improving maternal, new-born, infant and young child health and nutrition; WHO 2013.

infection are among the top morbidities among the refugee population that could also be contributing to the high anaemia prevalence. Disease prevention should be continued.

Anaemia is recognised to adversely affect the cognitive performance, behaviour and physical growth of infants, preschool and school-aged children, and increase the likelihood of associated morbidities[32]. Anaemia is not only an indicator of potential iron deficiency in populations but can also be taken as a proxy indicator for other micronutrient deficiencies. The strategy to address anaemia and other micronutrient deficiencies in the South Sudan refugee camps should continue to be prioritised in 2020.

IYCF Indicators

Infant and young child feeding practices directly affect the nutritional status of children under two years of age and, ultimately, impact child survival. Protecting, and improving on, infant and young child feeding practices in children aged 0-23 months of age is therefore critical to improved nutrition, health and development of children[33].

From the survey results proportion of children 0-23 months that had timely initiation of breast milk within the first hour of delivery was 89.8% in Pamir and 92.8% in Ajoung Thok. Early initiation (within one hour of birth) of exclusive breastfeeding significantly reduces the risk of neonatal mortality. Infants for whom initiation of breastfeeding is delayed to more than 24 hours after birth are 2.4 times more likely to die during their first month of life. Efforts to ensure all delivered children receive timely initiation of breast milk should thus be continued.

The rate of exclusive breastfeeding for the first six months of life was 100% in Pamir and 93.9% in Ajoung Thok. The risk of neonatal death is increased approximately fourfold 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 in all settings and climates.[34] Continued breastfeeding at 1 year was 100% in Pamir and 96.2% in Ajoung Thok and up to two years was 58.8% and 58.3% respectively.

The results above indicate there is a relatively positive uptake of initiation of timely and exclusive breastfeeding and the need to continue breast feeding up to one year which all met the UNHCR target of ≥ 85%; ≥ 75% and ≥ 90% respectively. This to continue being enforced. Uptake of the practice to continue breastfeeding into the second-year message needs to be strengthened as this was slightly below the UNHCR target of ≥60%. Barriers to this including birth spacing to continue being addressed.

Timely introduction of complementary feeding among children 6 to 8 months was 72.2% in Pamir and 92.9% in Ajoung Thok. After six months, adequate and appropriate infant complementary foods become necessary to complement breastmilk in order to meet the energy and other nutrient requirements of the infant (timely complementary feeding). There is need to ensure IYCF messaging addresses this important component of complementary feeding as this has a direct bearing on stunting outcomes of the children.

1.7% and 0.7% of the surveyed children aged 0-23 months were bottle fed in Pamir and Ajoung Thok respectively. 1.7% and 1.4% of the surveyed children aged 0-23 months in Pamir and Ajoung Thok respectively received infant formula. The proportion of bottle-fed and infant

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[32] Iron deficiency anaemia. Assessment, Prevention and Control-A guide for program managers, WHO 2001
[33] WHO, Indicators for Assessing Infant and Young Child Feeding Practices, WHO 2010

[34] UNHCR SENS guidelines for refugee populations, Version 2 (2013)

formula fed children showed a downward trend in 2019 compared to 2018. The importance of not using bottles and discouragement of the use of infant formula unless indicated as a last result should continue to be sensitised. Infant formula is a nonhuman milk product formulated from animal milk or vegetable protein (soy) and adapted to the physiological characteristics of infants. The risks of infection or malnutrition from using breastmilk substitutes are likely to be greater than the risk of HIV transmission through breastfeeding. In addition to this bottle feeding is associated with increased diarrhoeal disease due to the contamination likelihood of the bottle and nipple. It is therefore necessary to support all women to achieve early initiation and exclusive breastfeeding for the first six completed months and the continuation of breastfeeding into the second year of life to provide the best chance of survival for infants and young children[35]

Some of the IYCF results should be interpreted with caution as the sample is small to draw meaningful conclusions. These findings, however, give an idea of the status of infant and young feeding practices among the surveyed population.

Food Security

Food insecurity is one of the causes of undernutrition as it directly affects the nutritional status of an individual[36]. It is a direct cause of malnutrition in terms of dietary intake and an underlying cause in terms of access to and utilisation of food. Improving overall food security is therefore critical to improved nutrition, health and long-term development of children and other household members.

All the households in both camps had access to food assistance as indicated by the 100% ration card coverage. The general food ration in both camps is provided at a 71% ration scale which provides 1491 out of the recommended 2100 kilocalories/person/day. The household diet diversity score in Pamir was 5.6 out of 12 food groups and in Ajoung Thok was 5.8. Most households reported using one or more of the negative coping strategies (borrowed cash or food 36.8 and 25.9%, sold assets 15.8 and 14.7%, requested increased remittances/gifts 8.6 and 8.6%, reduced quantity or frequency of meals 47.4 and 42.6%, begged 4 and 4.1%, and engaged in potential risky or harmful activities 5.3 and 7.6% in Pamir and Ajoung Thok respectively). Only 34.9% and 42.6% of the refugees in Pamir and Ajoung Thok respectively reported not using any of the negative coping strategies to fill the food assistance gap. This group is likely to be benefiting from the complementary livelihood interventions in place. This however needs to be scaled up to increase the proportion to cover majority of the population.

From the NutVal analysis, the reduced ration has an inadequate micronutrient profile. The ration does not provide a fortified flour option like CSB+. It provided only 53% of the daily iron requirements. Sorghum, which contributed the bulk of the iron (non-heme iron form) in the food is high in phytates, anti-nutrients that inhibit iron absorption in the body. Vitamin C, a nutrient that plays a key role in the facilitating iron absorption was also barely available from the GFD ration. The ration provided only 2% of vitamin C. In addition, vitamin C is very easily destroyed when cooking at high temperatures. Other key micro nutrients including Vitamin A, folate and Vitamin B12 were also insufficient as the ration provided 35%, 46% and 0% of these respectively. Ways to fill the nutrient gap should continue to be explored to avert the consequences. This to include the expansion of livelihood to complement the food assistance in place

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[35] Operation Guidance on IFE, section 5.2.8, v2.1, Feb 2007
[36] The state of food security and nutrition in the world; building climate resilience for food security and nutrition; FAO 2018

7 RECOMMENDATIONS AND PRIORITIES

Nutrition related

Continue and strengthen the implementation of the comprehensive Community based Management of Acute Malnutrition (CMAM) program providing both therapeutic and supplementary feeding programs to facilitate the rehabilitation of identified acute malnourished persons including children, pregnant and lactating women, people living with HIV/AIDS and TB patients on treatment and others with chronic illnesses. (UNHCR, UNICEF, WFP and AHA and IRC).

Maintain community outreach active case finding and referral. This to ensure all children identified with a MUAC less than 12.5cm are referred and enrolled into the management of acute malnutrition programs.

Conduct the two step MUAC and WHZ scores (for children with MUAC at risk) screening monthly at all the contact points at the facility level to allow the identification of the increased malnutrition based on WHZ scores as compared to MUAC. This to include the Blanket Supplementary Feeding Program (BSFP) site for children aged 6-23 months, Expanded Program of Immunisation (EPI) areas and at the health facility triage area for all presenting children aged 24-59 months at both Pamir and Ajoung Thok. In addition to this the result from this to be documented to complement the quarterly mass MUAC screening to facilitate the nutrition situation evolution monitoring (AHA and IRC).

Growth monitoring for all children under five years at the various contact points including the mother child clinic during EPI, triage areas, nutrition centres and during consultations.

Ensure monthly blanket supplementary feeding for children aged 6-23 months, pregnant and lactating women using a fortified blended food or lipid-based supplement to prevent malnutrition and to cover the nutrient gap these vulnerable groups have in light of a predominant grain based general food diet. Appropriate utilisation of the BSFP ration at the household level to continue being sensitised (UNHCR, WFP, AHA and IRC).

Continue to strengthen capacity development of nutrition and health staffs and community workers through training to facilitate quality provision of both curative and preventative components of nutrition (UNHCR, WFP, UNICEF, AHA and IRC).

Expand and strengthen preventative nutrition components including the awareness creation, implementation of the multi-sectoral IYCF friendly framework a UNHCR and save the children initiative for support, promotion, and protection of Infant and Young Child Feeding (IYCF) and community outreach education aspects to stop malnutrition from occurring in the first place. (UNHCR, UNICEF, AHA and IRC).

Continue implementing the anaemia reduction strategy in Pamir and Ajoung Thok refugee camps to reduce the very high anaemia levels. This to include systematic screening and referral of all persons with anaemia signs and symptoms (palmar pallor) at the community level. Health centres to provide appropriate diagnosis, treatment and follow up for anaemia detected cases (UNHCR, AHA and IRC).

Ensure regular supervision, monitoring, quarterly joint monitoring and yearly program performance evaluations in all camps to assess performance progress and formulate recommendations for any identified gaps. (UNHCR, WFP, UNICEF, AHA and IRC).

Undertake a follow up annual joint nutrition surveys (SENS) in all camps to analyse trends, assess program impact and facilitate evidence-based recommendations for nutrition programming. (UNHCR, WFP and UNICEF, AHA and IRC).

Food security related

Food assistance providing the minimum dietary requirements (2100kcal/person/day) in both refugee camps). This to include fortified blended food. Adequate in-kind food to be prepositioned for 2020 needs during the dry season when road access is favourable. (WFP, UNHCR and SP)

Continue providing milling assistance to facilitate the utilisation of the whole grain provided as the general food ration cereal option (WFP, UNHCR and SP).

Explore various ways of providing sustainable food security and livelihood solutions to complement the general food distribution. Recommendations from the 2018 joint assessment mission to guide the improvement of food security in 2020 (UNHCR, WFP, AHA, IRC and food security and livelihood actors).

Health related

Maintain and strengthen the provision of comprehensive primary health care programme to reduce the disease burden among the refugees in Maban. (UNHCR, AHA and IRC)

Maintain Vitamin A supplementation, strengthen deworming and maintain routine Expanded Program of Immunization (EPI) and campaigns as per National Ministry of Health schedule in Pamir and Ajoung Thok. (UNHCR, AHA and IRC)

Prevention, control of infection, vector borne diseases especially around malaria and helminths (UNHCR, AHA, Mentor Initiative, SP and IRC).

Maintain and strengthen reproductive health interventions at both the health facilities and community level. This to include healthy timing and spacing of pregnancies to improve birth outcomes, allow for continued breastfeeding until at least 24 months, reduce the risk of iron deficiency anaemia and maternal mortality among women thus improved nutrition for both the mothers and their children. The maintenance and strengthening of reproductive health (UNHCR, AHA and IRC).

Water Sanitation and Hygiene promotion related

Maintenance of adequate clean water provision and provision of adequate water storage containers (UNHCR, SP, AHA and IRC).

Hygiene promotion, latrine coverage and provision of adequate soap strengthening to facilitate the prevention and control of infections like diarrhea and other hygiene related illnesses. (UNHCR, SP, AHA and IRC).

8 APPENDICES

8.1 Appendix 1: Name of contributors

No.	Name	Role	Organization
1	Mangisto Adam Karta	Team leader	IRC
2	Kaisar Musa Anur	Assistant Measurerr	AHA
3	Ateib Hussein Musa	Hemoglobin Measurer	AHA
4	Kukuman David Kukuman	Main Measurer	IRC
5	Kute Samuel Lamael	Team leader	IRC
6	Zacharia Hassan Abtarin	Main Measurer	AHA
7	Bakhit Alfande Kuku	Hemoglobin Measurer	AHA
8	Kodi Paul Abdurahaman	Assistant Measurer	IRC
9	Ramadan Hassan Mundo	Team leader	IRC
10	Fadul Tutu James	Main Measurer	AHA
11	Mustafa Siliman Anur	Hemoglobin Measurer	AHA
12	Isaac Jacob Kafi	Assistant Measurer	AHA
13	Taarik Kodi	Team leader	AHA
14	David Monykuer Deng	Main Measurer	AHA
15	Juma Said Komi	Assistant Measurer	IRC
16	Bashir Siliman Ali	Hemoglobin Measurer	IRC
17	Zabulan Samahan	Team leader	AHA
18	Omar Tijani Fakali	Hemoglobin Measurer	IRC
19	Lilly Ismail Kodi	Main Measurer	IRC
20	Bulkan Saleh Siliman	Assistant Measurer	IRC
21	Isaiah Musa	Team leader	AHA
22	Kumi Ditti	Main Measurer	AHA
23	Hanadi Andrew	Assistant Measurer	IRC
24	Rahama Ramadan	Hemoglobin Measurer	IRC
25	Opio Sam	Supervisor	AHA
26	Emmanuel Isadru	Supervisor	AHA
27	Lobut Charles Yengi	Supervisor	IRC
28	Lilian Igube	Supervisor/coordinator	UNHCR
29	Gideon I. Ndawula (Dr)	Supervisor/coordinator	UNHCR
30	Terry Njeri Theuri	Lead coordinator	UNHCR
31	Dassan Hategekimana	Supervisor	WFP

8.2 Appendix 2: Summary of overall quality of anthropometric data (weight-for-height data)

Pamir

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 (0.4 %)

Overall Sex ratio      Incl   p     >0.1  >0.05    >0.001   <=0.001
(Significant chi square)              0      2        4        10       0 (p=0.319)

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=0.237)

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

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

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

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       5 (1.11)

Skewness  WHZ          Excl    #    <±0.2 <±0.4    <±0.6    >=±0.6
                                      0      1        3        5        0 (0.03)

Kurtosis  WHZ          Excl    #    <±0.2 <±0.4    <±0.6    >=±0.6
                                      0      1        3        5        0 (-0.18)

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.

Ajoung Thok

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Flagged data (% of out of range subjects)	Incl	%	0-2.5 0	>2.5-5.0 5	>5.0-7.5 10	>7.5 20	**0** (1.0 %)
Overall Sex ratio (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<=0.001 10	**0** (p=0.481)
Age ratio(6-29 vs 30-59) (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<=0.001 10	**2** (p=0.063)
Dig pref score - weight	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	**0** (7)
Dig pref score - height	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	**2** (12)
Dig pref score - MUAC	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	**2** (9)
Standard Dev WHZ .	Excl	SD	<1.1 and	<1.15 and	<1.20 and	>=1.20 or	
.	Excl	SD	>0.9 0	>0.85 5	>0.80 10	<=0.80 20	**0** (1.04)
Skewness WHZ	Excl	#	<±0.2 0	<±0.4 1	<±0.6 3	>=±0.6 5	**1** (-0.26)
Kurtosis WHZ	Excl	#	<±0.2 0	<±0.4 1	<±0.6 3	>=±0.6 5	**1** (0.28)
Poisson dist WHZ-2	Excl	p	>0.05 0	>0.01 1	>0.001 3	<=0.001 5	**5** (p=0.000)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**13** %

The overall score of this survey is 13 %, this is good.

8.3 Appendix 3 – Survey questionnaires

Questionnaire for Children 6-59 months (every HH)

THIS QUESTIONNAIRE IS TO BE ADMINISTERED TO ALL CARETAKERS OF A CHILD THAT LIVES WITH THEM AND IS BETWEEN 6-59 MONTHS OF AGE

Date (dd/mm/yyyy)					Team Number				Block	Compound		Plot		Block
|___|___|/|___|___|/|___|___||___|___|					|___|			|___|___|	|___|___|		|___|___|		|___|___|

CH1	CH2	CH 3	CH4	CH5	CH6	CH7	CH8	CH9	CH10	CH11	CH12	CH13	CH14	CH15	CH16	CH17	CH18
ID	HH	Consent given 1=Yes 2=No 3=Absent	Sex (M/F)	Birth date* dd/mm/yyyy	Age** in months	Oedema*** (Y/N)	MUAC*** (CM)	Weight (KG) ±100g	Height (CM) ±0.1cm	Is child enrolled in the nutrition program? 1=TSFP 2=OTP/SC 3=None	Is the child enrolled in to the BSFP program 1_Yes 2-No	Has the child been vaccinated against Measles 1=Yes card 2=Yes recall 3=No or don't know	Has the child received Vitamin A in past 6 months (show capsule) 1=Yes card 2=Yes recall 3=No or don't know	Was the child dewormed in the past 6 months (show capsule) 1=Yes card 2=No or don't know	Has [name] had diarrhea in the last two weeks, including today? # 1=yes 2=no 3=Unknown	If yes, was [name] the taken to the health facility? 1=Yes 2=No 8=DK	HB (g/dl)
01				/ /													
02				/ /													
03																	
04																	
05																	

*Record from EPI/health card/age documentation if available. Leave blank if no valid age documentation. **Estimate using event calendar and recall if age documentation not available. ***C9 & C10: Refer to clinic for malnutrition if not already enrDiarrheaTSFP / OTP/SC if oedema=y or MUAC < 12.5cm. #Diarrhea: 3 or more loose stools within 24hrs

Date (dd/mm/yyyy)	Camp	Block/Compound/Plot Number
|___|___|/|___|___|/2019		|___|___||___|___||___|___|
		Team Number
		|___|___|

No	QUESTION الاسئلللة	ANSWER CODES الجابات	
SECTION IF1			
IF1	Sex نوع	Male زكر.......................................1 Female انثى.......................................2	|___|
IF2	Birthdate التاريخ الميلاد RECORD FROM AGE DOCUMENTATION. LEAVE BLANK IF NO VALID AGE DOCUMENTATION سجل من وثيق	Day/Month/Year...|___|___| /|___|___|/ |___|___||___|___| **يوم/شهر/سنة**	
IF3	Child's age in months سنة الطفل فى شهر	IF AGE DOCUMENTATION NOT AVAILABLE, ESTIMATE USING EVENT CALENDAR. IF AGE DOCUMENTATION AVAILABLE, RECORD THE AGE IN MONTHS FROM THE DATE OF BIRTH ازا لا توجد وثقتاريغ الميلاد خمن التارغ حدث فى المحلى	|___|___|
IF4	Has [NAME] ever been breastfed? هل (الاسم) دائما يرضى	Yes نعم.......................................1 No لا.......................................2 DK لا اعرف 8	|___| **IF ANSWER IS 2 or 8 GO TO IF7**
IF5	How long after birth did you first put [NAME] to the breast? بعد الميلاد مباشراً كم من زمن رضيض الطفل؟	Less than one hour بعد اقل من ساعة..........1 Between 1 and 23 hours بين 1 و 23 ساعة 2 More than 24 hours اكثر من 24 ساعة ......3 DK لا اعرف.......................................8	|___|
IF6	Was [NAME] breastfed yesterday during the day or at night? هل رضيض الفللك خلال نهار ام الليل؟	Yes نعم ....1 No لا ....2 DK لا اعرف 8	|___|
SECTION IF2			
IF7	Now I would like to ask you about liquids that [NAME] may have had yesterday during the day and at night. I am interested in whether your child had the item even if it was combined with other foods. Yesterday, during the day or at night, did [NAME] receive any of the following? الان اريد اسال عن السائل ممكن اخزت خلال النهار امس و فى ليل.لى رغبة لمعرفة ازا طفلك لو حتلا مع مواد مغلوط بعض من اكل خلال يوم او ليل امس(اسم) هل استلام بعض من مزكورة:		

ASK ABOUT EVERY LIQUID. IF ITEM WAS GIVEN, CIRCLE '1'. IF ITEM WAS NOT GIVEN, CIRCLE '2'. IF CAREGIVER DOESN'T KNOW, CIRCLE '8'. EVERY LINE MUST HAVE A CODE. اسال عن السائل ازا اخزوا ضع دئرة فى (1) و ازا لم تاخز ضع دئرة فى (2) و ام ازا لاعرف ضع دئرة فى (8)			
	Yes	No	DK
7A. Plain water مياة السهل	7A..........................1	2	8
7B. Infant formula: for example (Nan, Mami) [طفل مرضىى على سبيل المثال اضيف عيش الماحلى من اكل قوى غير قوى(مبتومامة, لبتونيل)	7B..........................1	2	8
7C. Milk such as tinned, powdered, or fresh animal milk: for example (Nido, cow milk, goat milk) لبن علبة المجفيف او لحم حيوان طازج على سبيل المثل اضيف بعض لبن علب	7C..........................1	2	8
7D. Juice or juice drinks (Gungules-Aradeb, Kedem) عصير او مشروب عصير اضيف مشروبات المحلى (قنفوليس, اريديب, قديم) .	7D..........................1	2	8
7E. Clear broth or Soup مرق الصافى	7E..........................1	2	8
7F. Sour milk or yogurt for example: (Zabadi , Roob) لبن حامض (زبادي , روب)	7F..........................1	2	8
7G. Thin porridge for example: (Medida Khafif) نثة خفيف ازكر اسم المحلى (مديدة خفيف)	7G..........................1	2	8
7H. Tea or coffee with milk الشاى لبن او قهوة	7H..........................1	2	8
7I. Any other water-based liquids (kastar), Serilak): for example sodas, other sweet drinks, herbal infusion, gripe water, clear tea with no milk, black coffee, ritual fluids و ازكر بعض من السوائل مثل مشروبات غازية مشرونبا ت الشاى خالى من لبن مشروبات الحلوة مشروبات عشبية	7I..........................1	2	8

Yesterday, during the day or at night, did [NAME] eat solid or semi-solid (soft, mushy) food? امس خلال اليوم او اليل هل (اسم) اكلت اكل صلب ام شبة صلب (لين عصبى)	Yesنعم......................1 No لا......................2 DK... لاعرف..............8	|___|

SECTION IF3

Did [NAME] drink anything from a bottle with a nipple yesterday during the day or at night? هل (اسم) شرب اى شئ من زجاج لة حلمةا امس خلال النها ر او اليل	Yes نعم ....1 No لا......................2 لا اعرف DK 8	|___|

SECTION IF4

Is child aged 6-23 months? هل طفلك عمره 6-23 شهر REFER TO IF2	Yes نعم ....1 No لا.....................2	|___| **IF ANSWER IS 2 STOP NOW** ازا اللجابة 2 قف الان

Now I would like to ask you about some particular foods [NAME] may eat. I am interested in whether your child had the item even if it was combined with other foods. Yesterday, during the day or at night, did [NAME] consume any of the following?

الان اريد عن اسا ل بعض غزاء ت (اسم)توكل طفلك لة هزى المواد حتى لو مخلوت مع اغزية اخرى خلال اليل او نها ر (اسم) يا كل التا لي:

ASK ABOUT EVERY ITEM. IF ITEM WAS GIVEN, CIRCLE '1'. IF ITEM WAS NOT GIVEN, CIRCLE '2'. IF CAREGIVER DOESN'T KNOW, CIRCLE '8'. EVERY LINE MUST HAVE A CODE.

اسا ل كل المواد ازا المواد قد ضع دائرة (1)ازا الموادعطى دائرة (2)و ازا لم تعرف ضع دائرة (8) كل خطوط عن تكن لة رمز

		Yes	No	DK
11A. **Flesh foods** for example: beef, goat, lamb, mutton, pork, rabbit, chicken, duck, liver, kidney, heart غزاء لحمى (سجل كل لحم العا مة مثل سمك دجاج وكبد)على سبيل مثا ل لحم بقر ضا ن بط ارنب لحم خنزير كبد كلية	11A...1 2 8			
11C. **FBF++** : for example CSB++ الغزاء القوى مثل زرة وفول صويا	11C.............................1 2 8			
11D. **RUTF** : for example Plumpy'Nut® (SHOW SACHET) الجا هزة يستعامل فى العلاج سجل هزى الغزئية المحلى الغزاء	11D.........................1 2 8			
11E. **RUSF** : for example Plumpy'Sup® (SHOW SACHET) محلى دالاضا فى سجل هزة الكل الموجو الكل الجاهزة	11E..1 2 8			
11G. Infant formula: for example Nan, Mami. االقوى لوصفة الطفل الرضى ازكر بعض من هزة اسماء الغزئية ال حديدى	11G..1 2 8			
11H. **List any *iron fortified* solid, semi-solid or soft foods designed specifically for infants and young children available in the local setting that are different than distributed commodities. Celerac; Food with groundnut and green leaves added to it** سجل لين المصنع) للاطفال والاطفال يرضى الموجون فى المنطقة ولة فرق من الغزي بعض الغزئي شبة صلب (وصلب او	11H.............................1 2 8			

QUESTIONNAIRE for Women 15-49 years (every other household)

Date of interview (dd/mm/yyyy)				Camp	Block number		Team
|___|___|/|___|___|/|___|___||___|___|					|___|___|		|___|___|

WM1	WM2	WM3	WM4	WM5	WM6	WM7	WM8
ID البطاقة	HH ربة البيت	Consent given القبول اعطى 1=yes نعم 2=no لا 3=absent الغائب	Age العمر (السنة) (years)	Are you pregnant? هل انت؟ حامل 1=yes نعم 2=no لا (GO TO WM 8) 8=DK لااعرف (GO TO WM 8)	Are you currently enrolled in the ANC programme? هل سجلت فى برنامج المؤتمر الوطنى الافريقى 1=yes 2=no (If no, STOP) 8=DK (If DK, STOP)	Are you currently receiving iron-folate pills (SHOW PILL)? تستلم حبوب حامض الفوليك الحديدية حاليا 1=yes (STOP NOW) قف الان 2=no (STOP NOW) قف الان 8=DK (STOP NOW) قف الان	فقر الدم Hb g/dL (Only for non-pregnant women) فقط للنساء غير الحبلى
01							
02							
03							
04							
05							
06							
07							
08							
09							
10							

DK-Don't Know. Refer any woman with HB <8g/dl

Food Security questionnaire (1 questionnaire per every other household)

Date (dd/mm/yyyy)	Camp	Block/Compound/Plot Number
|___|___|/|___|___|/2019		|___|___||___|___||___|___|
		Team Number
		|___|___|

No	QUESTION	ANSWER CODES	
SECTION 1			
1.	Does your household have a ration card? هل تملك أسرتك بطاقة تموينية؟	Yes .... 1 No 2	|___| **IF ANSWER IS 1 GO TO Q3**
2.	Why do you not have a ration? لم لا تملك أسرتك بطاقة تموينية؟	Not given one at registration, even if eligible............................ 1 Lost card .... 2 Traded/Sold card .... 3 New arrival who is eligible but not yet registered .... 4 Not eligible (not in targeting criteria)...................................... 5 Other(Specify) 6	|___|
As the households are receiving a reduced ration are they using any of the below coping strategies			
3.	In the last month, have you or anyone in your household borrowed cash, food or other items with or without interest? في الشهر الماضي، هل قمت أو هل قامت أسرتك بإقتراض المال، الطعام أو غير مواد مع أو دون فائدة لتلبية احتياجات الطعام الأساسية؟	Yes .... 1 No .... 2 Don't Know..............................8	|___|
4.	In the last month, have you or anyone in your household sold any assets that you would not have normally sold (furniture,	Yes .... 1 No 2	|___|

	seed stocks, tools, other NFI, livestock etc.)? في الشهر الماضي، هل قمت أو قامت أسرتك ببيع ممتلكات (مجوهرات، هواتف، أثاث، أجهزة كهربائية، أدوات انتاجية، مواشٍ، الخ) لتلبية احتياجات الطعام الأساسية؟	Don't Know...........................8	
5.	In the last month, have you or anyone in your household requested increased remittances or gifts as compared to normal? في الشهر الماضي، هل طلبت أو هل طلبت أسرتك زيادة التحويلات المالية أو الهدايا مقارنة مع الوضع الطبيعي لتلبية احتياجات الطعام الأساسية ؟	Yes .... 1 No .... 2 Don't Know...........................8	|___|
6.	In the last month, have you or anyone in your household reduced the quantity and/or frequency of meals and snacks? في الشهر الماضي، هل قمت أو هل قامت أسرتك بتقليل كمية أو عدد وجبات الطعام لتتكيف مع نقص الطعام أو المال لشرائه؟	Yes .... 1 No .... 2 Don't Know...........................8	|___|
7.	In the last month, have you or anyone in your household begged (asked for help from strangers to support your food needs)? في الشهر الماضي، هل قمت أو هل قام أي فرد من أفراد أسرتك بالتسول لتلبية إحتياجات الطعام الأساسية؟	Yes .... 1 No .... 2 Don't Know...........................8	|___|
8.	In the last month, have you or anyone in your household engaged in: hunting wild animals, cutting of big trees and selling, stealing(taking something from someone/other people without their knowledge to support your food needs), cross boarder smuggling, charcoal burning or any other risky or harmful activities في الشهر الماضي، هل قمت أو هل قام أي فرد من أفراد أسرتك ب [عدد نشاطات يحتمل أن تكون خطرة أو مؤذية مثل نشاطات محلية غير قانونية] أو بأي نشاطات خطرة أو مؤذية أخرى لتلبية إحتياجات الطعام الأساسية؟	Yes .... 1 No .... 2 Don't Know...........................8	|___|
SECTION 2			
1 1.	Now I would like to ask you about the types of foods that you or anyone else in your household ate yesterday during the day and at night.	**READ THE LIST OF FOODS AND DO NOT PROBE. RECORD (1) IN THE BOX IF ANYONE IN THE HOUSEHOLD ATE**	

I am interested in whether you or anyone else in your household had the item even if it was combined with other foods. I am interested in knowing about meals, beverages and snacks eaten or drank inside or outside the home. الآن أود أن أسألك حول نوع الأطعمة التي تناولتها أو تناولتها أسرتك البارحة أثناء النهار او الليل. أنا مهتم في إذا ما كنت أنت أو أي احد من أفراد أسرتك تناول أي طعام حتى لو امتزج مع طعام أخر. أشمل جميع الوجبات، بما فيه الوجبات الخفيفة، و المشروبات التي تناولتها أو تناولتها أسرتك داخل أو خارج البيت.	**THE FOOD IN QUESTION, OR** *(0)* **IN THE BOX IF NO ONE IN THE HOUSEHOLD ATE THE FOOD.**
1. Cereals: Sorghum, millet. maize, rice أية حبوب	1..|___|
2. White roots and tubers: Any white cassava, white sweet potatoes or other foods made from roots أية جذور البيضاء	2..|___|
3A. **Vitamin A rich vegetables and tubers**: Any carrot, tomato, pumpkin, squash that are orange inside + other locally available vitamin A rich vegetables أية الخضار و درنات الغنية بالفيتامين أ	3A..|___|
3B. Dark green leafy vegetables: Any dark green leafy vegetables, including wild forms + locally available vitamin A rich leaves such as cassava leaves, Pumpkin leaves, cassava leaves, Kerkede leaves, Kudra, bean leaves, أية خضار ذات الأوراق الخضراء الداكنة بما فيه البرية منها	3B..|___|
3C. Other vegetables: Any other vegetables (e.g. Okra, cabbage, green pepper, onion, eggplant, cucumber,) + *other locally available vegetables* أية خضار أخرى	3C..|___|

4A. Vitamin A rich fruits: Any mango (ripe, fresh and dried), ripe papaya, and 100% fruit juice made from these + *other locally available vitamin A rich fruits*

أية فواكه غنية بالفيتامين أ

4A.....................................|___|

4B. Other fruits: Any other fruits such as guava, tamarind, baobab, lemon including wild fruits and 100% fruit juice made from these

أية أنواع أخرى من الفواكه

4B.....................................|___|

5A. Organ meat: Liver, kidney, heart and intestines

أية لحوم عضوية

5A.....................................|___|

5B. Flesh meats: Beef, pork, mutton, poutry, rabbit meat, Bush meat and guinea fowl meat

أية لحوم

5B.....................................|___|

6. Eggs:

أي بيض

6.....................................|___|

7. Fish and seafood: Samak

أي سمك و ثمار البحر

7.....................................|___|

8. Legumes, nuts and seeds: Groundnut, Simsim, Ades, Yellow split peas, beans(JarJaro), pumpkin seeds

أية بقول، مكسرات و بذور

8.....................................|___|

9. Milk and milk products: Any milk, infant formula, cheese, yogurt or other milk products:

أي حليب و منتجاته

9.....................................|___|

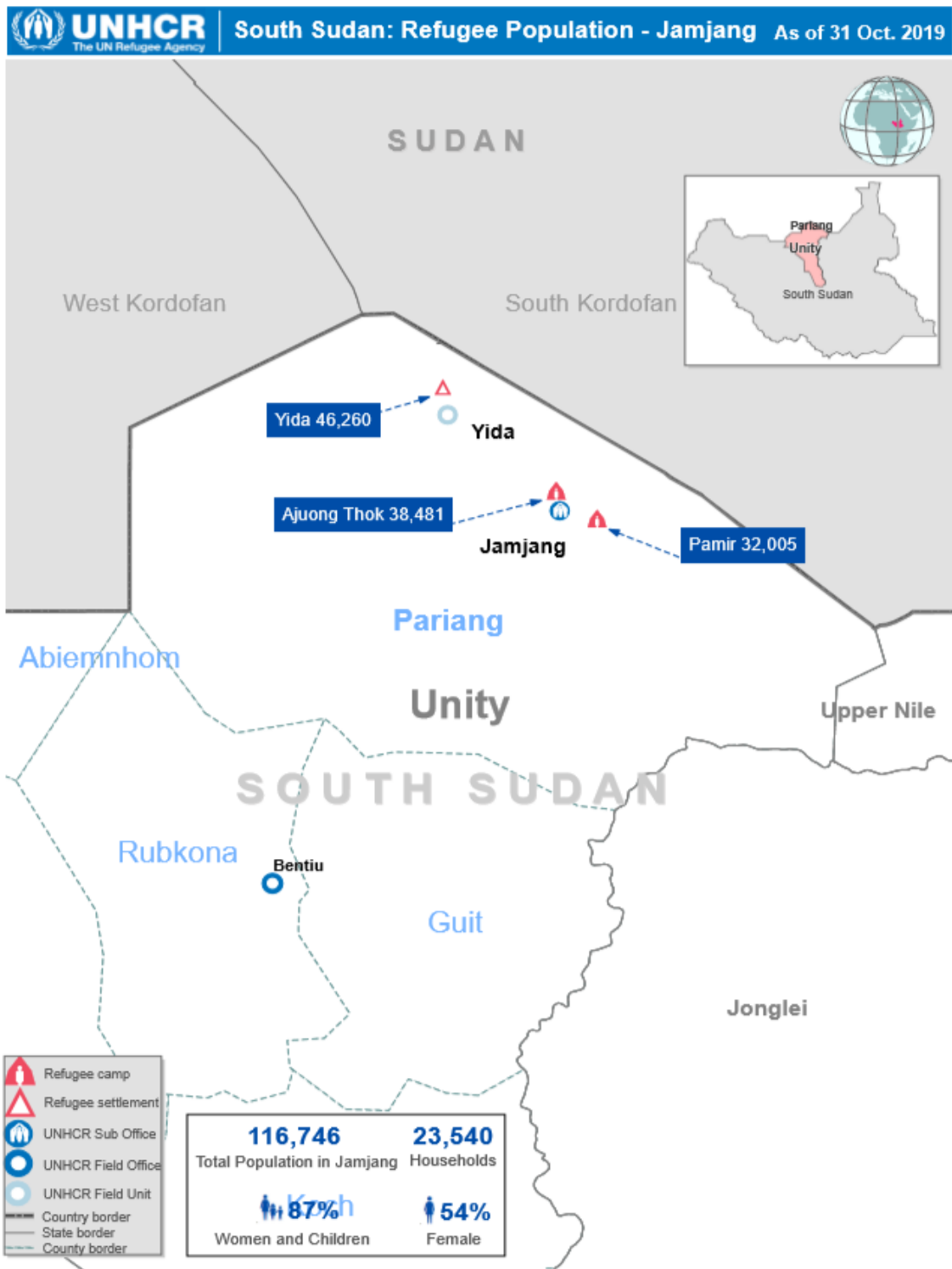|	
10. Oils and fats :Zed أية زيوت و دهون	10...|___|
9. **Sweets**: sugar, honey, sweetened soda or sweetened juice drinks, sugary foods such as chocolates, candies, cookies, sweet biscuits and cakes أية سكريات	11...|___|
12. Spices, condiments, beverages: (Any spices (black pepper, salt), condiments (soy sauce, hot sauce), coffee, tea, alcoholic beverages. أية بهارات، توابل و مشروبات	12...|___|

8.4: Events Calendar

Seasons	Religious Holidays	Other Events	Months / Years	Age (M)	Height Range
Groundnut harvest		Global hand-washing day	October 2019	0	
1st Maize harvest			September 2019	1	
Weeding of crops, Last groundnut harvest		World breastfeeding week	August 2019	2	
Sorghum, maize groundnut planting continues			July 2019	3	
Rain starts, Sorghum, maize groundnut planting		World refugee day (20 June)	June 2019	4	
		SPLA day	May 2019	5	
Land preparation start			April 2019	6	65-70 cm
Land preparation start		Celebration of Yusuf Kuwa	March 2019	7	
			February 2019	8	71-76 cm
		New year celebrations	January 2019	9	
	Christmas (25 Dec)	World Aid Day	December 2018	10	
Sorghum harvest			November 2018	11	
Groundnut harvest	Comboni day	Global hand-washing day	October 2018	12	
1st Maize harvest	Bible course		September 2018	13	
Weeding of crops, Last groundnut harvest		World breastfeeding week	August 2018	14	
Sorghum, maize groundnut planting continues			July 2018	15	
Rain starts, Sorghum, maize groundnut planting		World refugee day (20 June)	June 2018	16	77-80 cm
		SPLA day	May 2018	17	
Land preparation start			April 2018	18	
Land preparation start		Celebration of Yusuf Kuwa	March 2018	19	
			February 2018	20	
		New year celebrations	January 2018	21	
	Christmas (25 Dec)	World Aid Day	December 2017	22	81-86 cm
Sorghum harvest			November 2017	23	
Groundnut harvest	Comboni day	Global hand-washing day	October 2017	24	
1st Maize harvest	Bible course		September 2017	25	
Weeding of crops, Last groundnut harvest		World breastfeeding week	August 2017	26	
Sorghum, maize groundnut planting continues			July 2017	27	
Rain starts, Sorghum, maize groundnut planting		World refugee day (20 June)	June 2017	28	
		SPLA day	May 2017	29	
Land preparation start			April 2017	30	
Land preparation start		Celebration of Yusuf Kuwa	March 2017	31	87-90 cm
			February 2017	32	
		New year celebrations	January 2017	33	
	Christmas (25 Dec)	World Aid Day	December 2016	34	
Sorghum harvest			November 2016	35	
Groundnut harvest	Comboni day	Global hand-washing day	October 2016	36	
1st Maize harvest	Bible course		September 2016	37	
Weeding of crops, Last groundnut harvest		World breastfeeding week	August 2016	38	
Sorghum, maize groundnut planting continues			July 2016	39	
Rain starts, Sorghum, maize groundnut planting		World refugee day (20 June)	June 2016	40	91-99 cm
		SPLA day	May 2016	41	
Land preparation start			April 2016	42	
Land preparation start		Celebration of Yusuf Kuwa	March 2016	43	
			February 2016	44	
		New year celebrations	January 2016	45	
	Christmas (25 Dec)	World Aid Day	December 2015	46	
Sorghum harvest			November 2015	47	
Groundnut harvest	Comboni day	Global hand-washing day	October 2015	48	
1st Maize harvest	Bible course		September 2015	49	
Weeding of crops, Last groundnut harvest		World breastfeeding week	August 2015	50	
Sorghum, maize groundnut planting continues		SPLA day	July 2015	51	100-110 cm
Rain starts, Sorghum, maize groundnut planting		World refugee day (20 June)	June 2015	52	
		SPLA day	May 2015	53	
Land preparation start			April 2015	54	
Land preparation start		Celebration of Yusuf Kuwa	March 2015	55	
			February 2015	56	
		New year celebrations	January 2015	57	
Groundnut harvest	Christmas (25 Dec)	World Aid Day	December 2014	58	
Sorghum harvest	Comboni day	Global hand-washing day	November 2014	59	
			October 2014	60	

Dark grey areas are for children not eligible for 6-59 months surveys.

8.4 Appendix 5: Pamir and Ajoung Thok location in Unity, South Sudan