STANDARDISED EXPANDED NUTRITION SURVEY (SENS)

Final report

Pamir & Ajoung Thok refugee camps

Ruweng State

South Sudan

Survey conducted: 3-10 November 2018

SOUTH SUDAN

UNHCR Operational Presence and Refugee Locations in 2018

SUDAN

Abyei area **

Yida
Yida
Ajoung Thok
Pamir
Jamjang
Kodok
Malakal
Bunj

Western
Bahr el Ghazal

Northern
Bahr el Ghazal

Unity

Warrap

Bentiu

Upper Nile

Kaya
Gendrassa
Yusuf Batil
Doro
Bunj
Upper Nile

ETHIOPIA

CENTRAL
AFRICAN
REPUBLIC

Wau

Lakes

Jonglei

Pochalla

Bor

LEGEND

- UNHCR Representation Office
- UNHCR Sub Office
- UNHCR Field Office
- UNHCR Field Unit
- Refugee camp
- Refugee settlement
- Refugee location
- Urban refugee location
- Refugee transit centre
- International boundary
- Undetermined boundary*
- State boundary

Tambura
Source Yubu
Andari
Naandi
Western Equatoria
Makpandu
Maridi
Central
Equatoria
JUBA
Juba
Gorom
Eastern
Equatoria

Yambio

DEMOCRATIC
REPUBLIC OF
THE CONGO

Yei
Lasu
Yei
Morobo

KENYA

UGANDA

30km

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. *Final boundary between the Republic of Sudan and the Republic of South Sudan. **Final status of the Abyei area is not yet determined.
Creation date: 31 Jan 2018   Sources: Geographic data: UNHCR, UNCS, UNDP.   Author: UNHCR Regional Service Centre in Nairobi   Feedback: UNHCR Representation Office in South Sudan

Pamir and Ajoung Thok refugee camps, South Sudan, November 2018 SENS

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ACRONYMS AND ABBREVIATIONS

AHA	Africa Humanitarian Action
ANC	Ante Natal Care
AWD	Acute Watery Diarrhoea
BSFP	Blanket Supplementary Feeding Programme
CDR	Crude Death 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
HIS	Health Information System
IYCF	Infant and Young Child Feeding
IRC	International Rescue Committee
KAP	Knowledge Attitudes and Practices
LLIN	Long-Lasting Insecticidal Net
LRTI	Lower Respiratory Tract Infection
MAM	Moderate Acute Malnutrition
MUAC	Mid Upper Arm Circumference
NCHS	National Centre for Health Statistics
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
TFP	Therapeutic Feeding Programme
U5CDR	Under-5 Crude Death 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

ACKNOWLEDGEMENTS

UNHCR, IRC and AHA commissioned and coordinated the survey. We gratefully acknowledge the important contributions made by so many allowing the surveys implementation.

Firstly we would like to acknowledge all agencies that were involved in planning and executing the surveys. Our sincere appreciation is extended to AHA and IRC for providing staff during the entire duration of the exercise. Thanks to all the drivers who worked tirelessly.

Secondly we would like to acknowledge the UNHCR Jam Jang Sub-office for the operational support, the UNHCR public health unit for leading and coordinating the planning, training, and field work, UNHCR senior management for general guidance and oversight, and the UNHCR regional service centre nutrition and food security unit for the technical review of the report.

Finally, we sincerely thank the refugee population who gave up their time to participate and allowed us to measure their children and, most importantly, to the children themselves. A complete list of key individuals involved can be found at **Appendix 1**.

EXECUTIVE SUMMARY

UNHCR, AHA and IRC carried out the nutrition survey in Pamir and Ajoung Thok refugee camps from 3 to 10 November 2018. Pamir and Ajoung Thok are the official refugee camps in Pariang County, Ruweng State. No nutrition survey was carried out in Yida as comprehensive services were not provided in 2018 in light of 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. There was no blanket mosquito net distribution carried out within the year in Pamir and Ajoung Thok. 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 3 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 3 to 10 November with a one day break on the 7 November 2018. The survey teams were supported by a team of 3 supervisors and 2 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 on a daily basis 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 nutrition situation as indicated by the Global Acute Malnutrition (GAM) prevalence of 5.5% (3.6-8.3 95% C.I) and 6.3% (3.9-10.1 95% C.I) respectively based on weight for height z scores. It is, however, below the critical WHO emergency threshold of 15%. Compared to the situation in 2017 the nutrition situation is improving in Pamir though

the status remained the same[1]. In Ajoung Thok the GAM prevalence increased indicating a deteriorating situation. 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.[2]

The 2018 global stunting prevalence in Pamir was 28.3% (23.9-33.1 95% C.I) while in Ajoung Thok was 28.8% (23.6-34.6 95% C.I). This is categorized as poor according to WHO standards[3]. Stunting prevalence reduced in Pamir in 2018 compared to that in 2017. This remained the same as in 2017 in Ajoung Thok as the reduction in the stunting prevalence was not statistically significant. The prevalence in Ajoung Thok however improved compared to 2015 and 2016. 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.[4]

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 it is above the 40% level of public health significance (WHO classification)[5]. Compared to 2017 the prevalence of anaemia remained the same in Pamir and deteriorated in 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. 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 TFP and TSFP coverage based on all admission criterion in both Pamir and Ajoung Thok did not meet the recommended standard of >90%. This indicates the 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 90.5% which does not meet the recommended ≥95%. In Ajoung Thok the coverage (94.7%) was slightly below the standard. In regard to vitamin A supplementation the target coverage of ≥90% was not met in both camps. Ante natal coverage among pregnant women in Pamir was 88.8% and 90.9% in Ajoung Thok camp. Of these83.3% in Pamir and 90.9% in Ajoung Thok camp reported receiving Iron-folic acid pills. Efforts to strengthen this to be ensured.

21.2% of children aged 6-59 months in Pamir and 10.4% in Ajoung Thok reported to have had diarrhoea in the last two weeks prior to the survey indicating a morbidity caseload requiring continued health services provision.

The rate of timely initiation of breastfeeding was 84.1% and 93.0% while exclusive breastfeeding was 88.1% in Pamir and 94.4% in Ajoung Thok indicating a positive uptake of the breastfeeding messages. Timely introduction of complementary feeding

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[1] P>0.05 therefore the decrease in prevalence was statistically insignificant
[2] WHO child growth standards and identification of severe acute malnutrition in infants and young children. A joint statement by WHO and UNICEF, 2009.
[3] WHO categorization
[4] http://www.who.int/nutrition/topics/globaltargets_stunting_policybrief.pdf
[5] WHO categorization

was 66.6% and 75% in Pamir and Ajoung Thok respectively. This improved compared to the proportion in 2017. Consumption of iron rich foods was low. The proportion of children aged 6 -23 months that had consumed iron-rich or iron-fortified foods in Pamir was 28.4% and 35.4% 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.

Only a small proportion of the refugees in Ajoung Thok and Pamir refugee camps reported *not* using any of the negative coping strategies to fill the food assistance gap. This was 19.8% in Pamir and 28.8% Ajoung Thok. 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 any of the negative coping strategies to fill the food assistance gap in Pamir decreased in 2018 compared to 2017 and remained the same in Ajoung Thok.

Table 1: Summary of Results SENS 2018, 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 (WHO 2006 Growth Standards)					
Global Acute Malnutrition (GAM)	20/365	5.5 (3.6-8.3)	16/252	6.3 (3.9 - 10.1)	Critical if ≥ 15%
Moderate Acute Malnutrition (MAM)	19/365	5.2 (3.4-8.0)	15/252	5.9 (3.6 - 9.6)	
Severe Acute Malnutrition (SAM)	1/365	0.3 (0.0-1.5)	1/252	0.4 (0.1 - 2.2)	
Oedema	0/365	0	0/252	0	
Mid Upper Arm Circumference (MUAC)					
MUAC <125mm and/or oedema	13/367	3.5 (2.1 - 6.0)	7/259	2.7 (1.3-5.5)	
MUAC 115-124 mm	13/367	3.5 (2.1 - 6.0)	5/259	1.9 (0.8-4.4)	
MUAC <115 mm and/or oedema	0/367	0	2/259	0.8 (0.2-2.8)	
Stunting[6]					

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[6] 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)**
(WHO 2006 Growth Standards)					
Total Stunting	102/361	28.3 (23.9 - 33.1)	74/257	28.8 (23.6 -34.6)	Critical if ≥ 40%
Severe Stunting	26/361	7.2 (5.0-10.3)	14/257	5.4 (3.3- 8.9)	
Programme coverage					
Measles vaccination with card or recall (9-59 months)	316/349	90.5 (87.0-93.1)	234/247	94.7 (91.1-97.1)	Target of ≥ 95%
Vitamin A supplementation coverage with card or recall, within past 6 months with card or recall (6-59 months	297/367	80.9 (76.5-84.6)	205/259	79.1 (73.6-83.9)	Target of ≥ 90%
Therapeutic Feeding Program (TFP) (based on all admission criteria WHZ, oedema and MUAC)	0/1	0	1/3	33.3 (9.4-99.2)	Target of ≥ 90%
Targeted Supplementary Feeding Program(TSFP) (based on all admission criteria WHZ and MUAC)	7/26	26.9 (52.1-88.4)	3/18	16.7 (3.5-41.4)	Target of ≥ 90%
Diarrhoea					
Diarrhoea in past 2 weeks	78/367	21.2 (17.3-25.7)	27/259	10.4 (6.9-14.8)	
Anaemia (children 6-59 months)					

Pamir and Ajoung Thok refugee camps, South Sudan, November 2018 SENS

	Pamir		Ajoung Thok		Classification of public health significance or target (where applicable)
	Number / total	% (95% CI)	Number / total	% (95% CI)	
Total Anaemia (Hb <11 g/dl)	172/367	46.8 (41.8-51.9)	119/259	45.9 (39.7-52.2)	High if ≥ 40%
Mild (Hb 10-10.9)	78/367	21.2 (17.3-25.7)	(73/259)	28.1 (22.7-34.0)	
Moderate (Hb 7-9.9)	90/367	24.5 (20.4-29.1)	(43/259)	16.6 (12.2-21.7)	
Severe (Hb <7)	4/367	1.0 (0.4-2.7)	(3/259)	1.1 (0.2-3.3)	
Anaemia (children 6-23 months)					
Total Anaemia (Hb <11 g/dl)	81/118	68.6 (59.4-76.8)	47/79	59.4 (47.8-70.4)	High if ≥ 40%
Mild (Hb 10-10.9)	38/118	32.2 (23.9-41.4)	31/79	39.2 (28.4-50.8)	
Moderate (Hb 7-9.9)	42/118	35.5 (27.0-44.9)	16/79	20.2 (12.0-30.8)	
Severe (Hb <7)	1/118	0.8 (0.0-4.6)	0	0	

Pamir and Ajoung Thok refugee camps, South Sudan, November 2018 SENS

	Pamir		Ajoung Thok		Classification of public health significance or target (where applicable)
	Number / total	% (95% CI)	Number / total	% (95% CI)	
CHILDREN 0-23 months					
IYCF indicators					
Timely initiation of breastfeeding	133/158	84.1 (77.5-89.4)	107/115	93.0 (86.7-96.9)	
Exclusive breastfeeding under 6 months	37/42	88.1 (74.3-96.0)	34/36	94.4 (81.3-99.3)	
Continued breastfeeding at 1 year	31/33	93.9 (79.7-99.2)	19/19	100	
Continued breastfeeding at 2 years	10/18	55.5 (30.7-78.4)	3/10	30.0 (6.6-65.2)	
Introduction of solid, semi-solid or soft foods	12/18	66.6 (40.9-86.6)	9/12	75 (42.8-94.5)	
Consumption of iron-rich or iron-fortified foods	33/116	28.4 (20.4-37.5)	28/79	35.4 (25.0-47.0)	
Bottle feeding	13/158	8.2 (4.4-13.6)	4/115	3.4 (0.9-8.6)	
Proportion of children 6-23 months who received CSB++ in the last 24 hours	19/116	16.3 (10.1-24.3)	17/79	21.5 (13.0-32.2)	
WOMEN 15-49 years					
Anaemia (non-pregnant)					
Total Anaemia (Hb <12 g/dl)	33/143	23.0 (16.4-30.8)	49/128	38.2 (29.8-47.2)	High if ≥ 40%

Pamir and Ajoung Thok refugee camps, South Sudan, November 2018 SENS

	Pamir		Ajoung Thok		Classification of public health significance or target (where applicable)
	Number / total	% (95% CI)	Number / total	% (95% CI)	
Mild (Hb 11-11.9)	24/143	16.7 (11.0-23.9)	38/128	29.6 (21.9-38.4)	
Moderate (Hb 8-10.9)	8/143	5.5 (2.4-10.7)	11/128	8.5 (4.3-14.8)	
Severe (Hb <8)	1/143	0.7 (0.0-3.8)	0/128	0	
Programme enrolment pregnant women					
Pregnant women currently enrolled in the ANC	16/18	88.8 (65.2-98.6)	10/11	90.9 (58.7-99.7)	
Pregnant women currently receiving Iron-folic acid pills	15/18	83.3 (58.5-96.4)	10/11	90.9 (58.7-99.7)	
Food Security					
Proportion of HH with a ration card	171/171	100	142/142	100	
Average Household Diet Diversity Score(HDDS)		3.4		3.8	
Proportion of households *not consuming any* vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	77/171	45.0 (37.4-52.8)	59/142	41.5 (33.3-50.1)	
Proportion of households consuming either a plant or animal source of vitamin A	62/171	36.2 (29.0-43.9)	48/142	33.8 (26.0-42.2)	
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	16/171	9.3 (5.4-14.7)	18/142	12.6 (7.6-19.2)	
Proportion of households reporting using the following negative coping strategies over the past month*:					

Pamir and Ajoung Thok refugee camps, South Sudan, November 2018 SENS

	Pamir		Ajoung Thok		Classification of public health significance or target (where applicable)
	Number / total	% (95% CI)	Number / total	% (95% CI)	
Borrowed cash, food or other items with or without interest	91/171	53.2 (39.1-54.5)	63/142	44.3 (36.0-52.9)	
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)	35/170	20.5 (14.7-27.4)	19/142	13.3 (8.3-20.1)	
Requested increased remittances or gifts as compared to normal	16/171	9.3 (5.4-14.7)	6/142	4.2 (1.5-8.9)	
Reduced the quantity and/or frequency of meals and snacks	95/170	55.8 (48.0-63.4)	84/142	59.1 (50.6-67.3)	
Begged	17/171	9.9 (5.9-15.4)	7/142	4.9 (2.0-9.8)	
Engaged in potentially risky or harmful activities	12/171	7.0 (3.6-11.9)	8/142	5.6 (2.4-10.8)	
Households reporting using none of the listed negative coping strategies	34/171	19.8 (14.1-26.6)	41/142	28.8 (21.5-37.0)	

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

Results Interpretation

- The prevalence of Global Acute Malnutrition (GAM) of 5.5% (3.6-8.3 95% C.I) and 6.3% (3.9-10.1 95% C.I) in Pamir and Ajoung Thok respectively, is poor[7] but below the critical WHO emergency threshold of 15%. Compared to the situation in 2017 the nutrition situation is improving in Pamir though the status remained the same[8]. In Ajoung Thok the GAM prevalence increased indicating a deteriorating situation.

- The prevalence of global stunting in Pamir was 28.3% (23.9-33.1 95% C.I) while in Ajoung Thok was 28.8% (23.6-34.6 95% C.I). This is categorized as poor according to WHO standards[9]. Stunting prevalence reduced in Pamir in 2018 compared to that in 2017. In Ajoung Thok this remained the same as in 2017 as the reduction in the stunting prevalence was not statistically significant. It however remained lower than that in 2015 and 2016. In 2017 stunting among children 6-59 months in Pamir and Ajoung Thok was 35%. 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.

- The TFP and TSFP coverage based on all admission criteria in both Pamir and Ajoung Thok did not meet the recommended standard of >90%. This indicates the need to strengthen active case finding, referral at the community level and the screening at the facility level among others. This to include an innovative way of identifying cases that are acutely malnourished based on WHZ scores.

- The coverage of measles vaccination in Pamir was 90.5%, which is below the recommended ≥95%. In Ajoung Thok the coverage (94.7%) was slightly below the standard. In regard to vitamin A supplementation the target coverage of ≥90% was not met in both camps. Ante natal coverage in Pamir was 88.8% and 90.9% in Ajoung Thok camp. Efforts to strengthen this to be ensured.

- 21.2% of children 6-59 months in Pamir and 10.4% in Ajoung Thok reported to have had diarrhea in the last two weeks prior to the survey indicating a morbidity caseload requiring continued health services provision

- 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) respectively. This is high as it is above the 40% level of public health significance according to the WHO classification[10]. Compared to 2017 the prevalence of anaemia remained the same in Pamir and deteriorated in Ajoung Thok. Children 6-23 tend to be more affected by anaemia. The prevalence of anaemia among children aged 6-23 months was 68.6% and 59.4% in Pamir and Ajoung Thok camps respectively. The prevalence of anaemia among women aged 15-49 years (non-pregnant) was 23% in Pamir and 38.2% in Ajoung Thok. This is considered to be of medium public health significance and is above the <20% UNHCR target. Only a low proportion of households consumed food groups containing iron and vitamin A (<37%)

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[7] WHO 2000 categorization

Prevalence %	Critical	Serious	Poor	Acceptable
Low weight-for-height	≥15	10-14	5-9	<5

[8] P>0.05 therefore the decrease in prevalence was statistically insignificant
[9] WHO categorization
[10] WHO categorization

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

which is indicative of an inadequate diet that is likely to be contributing to the micronutrient deficiencies.

- The rate of timely initiation of breastfeeding was 84.1% and 93.0% and exclusive breastfeeding was 88.1% and 94.4% in Pamir and Ajoung Thok respectively. This indicates continued positive uptake of breastfeeding messages. Timely introduction of complementary feeding was 66.6% in Pamir and 75% in Ajoung Thok. Consumption of iron-rich or iron-fortified foods was 28.4% and 35.4% in Pamir and Ajoung Thok respectively. There is need to continue strengthening the IYCF program and diet diversification to improve the infant and young child feeding practices to optimal levels especially around complementary feeding and diet diversity.

- 100% of the HHs had a ration card in both camps indicating that all refugee have access to food assistance. The household diet diversity score in Pamir was 3.4 out of 12 food groups and in Ajoung Thok was 3.8. Most households reported using one or more of the negative coping strategies (borrowed cash or food 53.2 and 44.3%, sold assets 20.5 and 13.3%, requested increased remittances/gifts 9.3 and 4.2%, reduced quantity or frequency of meals 55.8 and 59.1%, begged 9.9 and 4.9%, and engaged in potential risky or harmful activities 7.0 and 5.6% 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.

- Only 19.8% and 28.8% 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 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.

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. This to include active case finding and community mobilization (UNHCR, UNICEF, WFP and AHA and IRC).

- Ensure all children aged 6-59 in the community are screened and those identified with a MUAC less than 125mm referred for enrolment into the management of acute malnutrition program. This to be carried out through community outreach program at the household level with referral to the health/nutrition facilities in Pamir and Ajoung Thok (AHA and IRC).

- Conduct the two step MUAC and WHZ scores (for children with MUAC at risk) screening monthly at the Blanket Supplementary Feeding Program (BSFP) site for children aged 6-23 months and at the health facility triage area for all presenting children 24-59 months at both Pamir and Ajoung Thok to ensure both high MUAC and WHZ score coverage. 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 programme 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 (UNHCR, WFP, AHA and IRC).

- Continue strengthening the capacity of the nutrition facilities in terms of staff 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 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 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 survey to analyse trends and facilitate program impact evaluation in 2018 (UNHCR, WFP and UNICEF, AHA and IRC).

Food security related

- Food assistance providing the recommended minimum dietary requirements (2100kcal/person/day) in both refugee camps). Adequate in kind food to be prepositioned for 2019 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 2019. This to include the promotion of all year-round production of micronutrient-rich foods or crops in home gardens, fruit trees and small animal husbandry (UNHCR, WFP, AHA, IRC and food security and livelihood actors).

Health related

Maintain the provision of comprehensive primary health programme for refugee and surrounding host populations in both camps. This to include:

- The strengthening of the routine Expanded Programme on Immunization (EPI) and immunization campaigns 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).
- The maintenance and strengthening of reproductive health (UNHCR, AHA and IRC).
- Ensure all anaemia referral cases are tested and provided with appropriate treatment if indicated (UNHCR, AHA and IRC).
- Maintenance of adequate potable water provision (UNHCR, SP, AHA and IRC).
- Hygiene promotion and latrine coverage 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 3 to 10 November 2018.
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 Ruweng 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)[11]. Since Yida is recognised as a refugee settlement and given the exit strategy, only lifesaving assistance is provided to the refugees. 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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[11]UNHCR ProGres data, October 2018

implements the water and sanitation programme.

1.1 Description of the population

The SENS was conducted from 3 to 10 November 2018. At the end of October 2018, Pamir and Ajoung Thok had population figures of 31890 and 43719 individuals respectively[12]. Children less than five years accounted for 23% of the population in Pamir and 20.3% 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 2018 the refugees in Pamir and Ajoung Thok camps continued to receive a 29% reduced ration scale. 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. Salt was only available for three months. From July 2018 the GFD pipelines faced some challenges. In the months of July and August 2018 pulses and vegetable oil were provided at a 50% ration scale due to a pipeline break. This reduced the overall kcal/person/day for these months to 69%. In September and October 2018 cereals were provided at a 50% ration scale, pulses at 100% and oil was not provided. This further reduced the overall kcal/person/day for these months to 48%.

From the NutVal analysis, the reduced ration has an inadequate micronutrient profile. The ration does not provide a fortified flour option 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 micro nutrients 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.

Milling assistance continued in 2018. 300SSP was provided per person per month from January to April 2018. From May to August 375SSP was provided. A range of 450 to 490SSP was provided for the rest of the months. The increased amount across the months was to cater for market price inflation. Milling assistance is essential for better utilization of the grain provided by the general food distribution.

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[12] UNHCR ProGres data October 2018

See breakdown below showing the monthly ration provision

Table 2: General food ration provision by month – Pamir & Ajoung Thok refugee camps, 2018

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	21	21	21	21	21	15	15	0	0
Salt	5g	3.5	0	3.5	0	0	0	0	0	0	2.5
CSB+	50g	0	0	0	0	0	0	0	0	0	0
Kcal	2100	1491	1491	1491	1491	1491	1491	1438	1438	1017	1017
% of (recommended 2100 kcal/p/d) met		71	71	71	71	71	71	69	69	48.4	48.4

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.

Mortality trends monitoring using the UNHCR Health Information System (HIS) show that mortality rates were below the emergency thresholds of 2/10000/day for under five death rate (U5DR) and 1/10000/day for crude death rate (CDR) in the refugee population from January to October 2018 indicating effectiveness health services provision in the camps.

Respiratory Tract Infection (RTI) was the main cause of morbidity among children under 5 in both Pamir and Ajoung Thok refugee locations. Other leading morbidities included malaria, diarrhoea, skin disease, eye disease, and intestinal worms. Figures 4 and 5 illustrate the common causes of morbidity among children under 5 years in Pamir and Ajoung Thok.

Figure 1: Top Five Causes of Morbidity in Children Under-5; Pamir refugee camp, Jan-Oct 2018
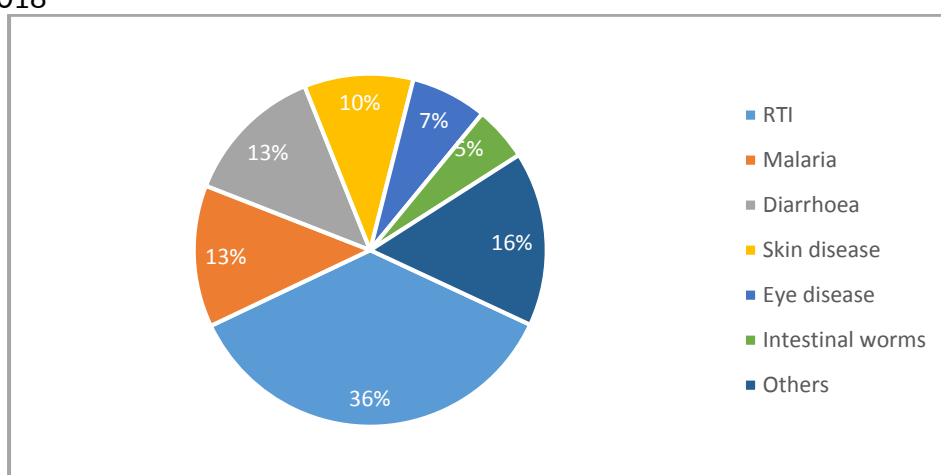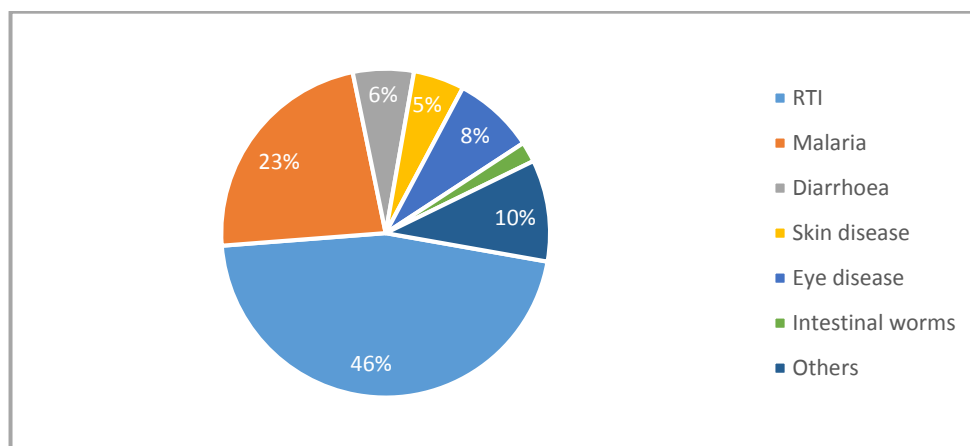
Figure 2: Top Five Causes of Morbidity in Children Under-5; Ajoung Thok refugee camp, Jan-Oct 2018

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. The main conduit for this intervention are the mother to mother support groups and community health workers. IYCF counselling is also integrated into the Ante Natal Care (ANC) and Post-Natal Care (PNC) services. There is also integration of IYCF, CMAM, the Out Patient Department (OPD) and the Expanded Programme for Immunisation (EPI).
- MUAC screening of children 6-59 months at the triage area of the PHCC.
- Community Outreach MUAC screening at the community level.
- An anaemia strategy was developed in the second half of 2017. In 2018 it continued to be mainstreamed into the various health, nutrition and livelihood interventions.

In total 916 and 1554 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 2018. The number of admission decreased in both Pamir and Ajoung Thok compared to the same period in 2017. Admission trends in the management of acute malnutrition programmes in Pamir and Ajoung Thok show peak admissions in March to May 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 2018.

Figure 3: Number of admissions to treatment programmes for SAM and MAM among Children 6-59 Months from Jan to Oct 2018 - Pamir refugee camp
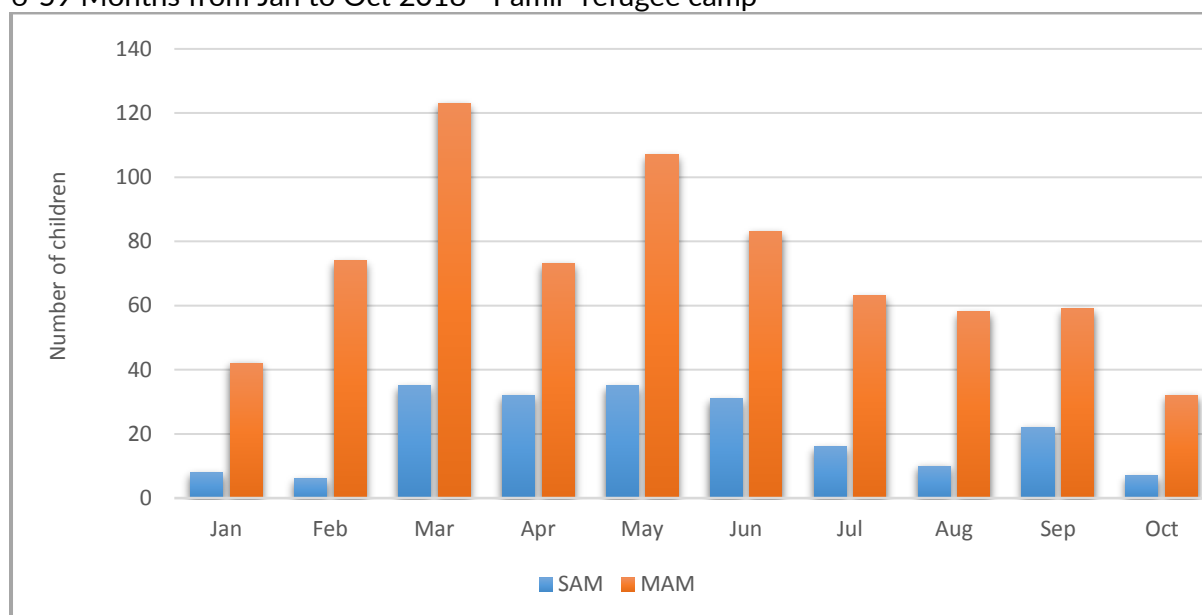
Figure 4: Number of admissions to treatment programmes for SAM and MAM among Children 6-59 Months from Jan to Oct 2018 – Ajoung Thok refugee camp
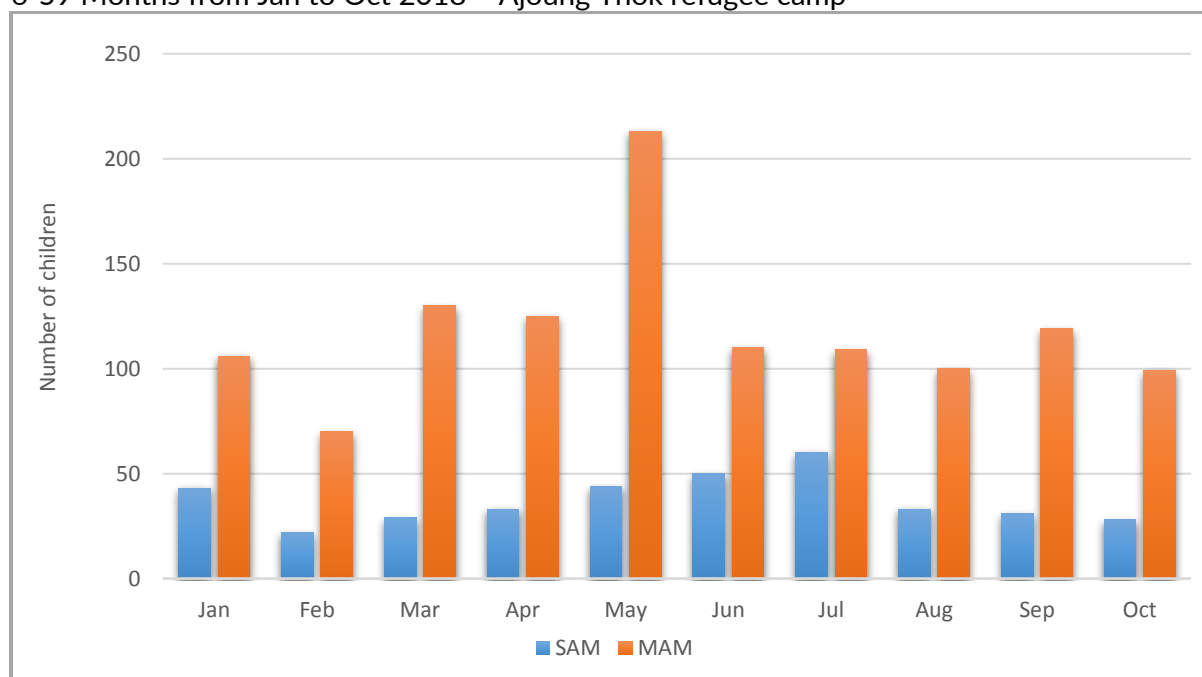
BSFP was provided monthly for all children aged 6-23 months and PLWs throughout the year. In Pamir the coverage was for 92% and 86% respectively while in Ajoung Thok it was 79% and 73% respectively[13] as per the 2018 monthly BSFP monitoring reports.

New arrival MUAC screening in 2018 at the Pamir and Ajoung Thok reception centres reported 230 (6.7%) out of the 3454 children aged 6-59 screened in 2018 to have had a MUAC <12.5cm. This indicates the vulnerability among the new arrivals in terms of nutrition and food security on arrival and the need for the provision of timely interventions. The prevalence of GAM in

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[13] UNHCR 2018 monthly BSFP monitoring reports

Pamir improved in 2018 compared to that in 2017. Comparison of the 2015, 2016 and 2017 results show a decreasing trend in the GAM prevalence in Ajoung Thok. In 2018 however there was an increase indicating a deteriorating situation. This could be due to due to pipeline breaks in the last quarter of the year when the survey was carried out. This was in terms of the GFD, BSFP and use of alternate products for the management of moderate acute malnutrition (CSB++ instead of Plumpy'Sup) coupled with the continued limited diet diversity challenges.

Stunting prevalence remained the same as in 2017 in both Pamir and Ajoung Thok as the reduction in the stunting prevalence was not statistically significant. The prevalence in Ajoung Thok however improved compared to 2015 and 2016.

The anaemia situation among children aged 6 to 59 months continued to be high in 2018 at >40% average in both refugee camps

1.5 WASH situation

Pamir and Ajoung Thok refugee camps are located 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 2018 Pamir refugee camp had nine motorized boreholes, all of which are solarized, and operating on solar-generator hybrid system. In addition to this Pamir also has five functional blue hand pumps. The camp has a total permanent storage (elevated steel tanks) capacity of $200m^3$, with another new high capacity ($100m^3$) elevated steel tank being installed. Ajoung Thok has 11 motorized deep wells, all of them are solarized with seven being solar-generator hybrid system. The camp also has seven hand pumps and a total permanent storage (elevated steel tanks) capacity of $700m^3$. The water infrastructure above allows the access of clean drinking water.

Findings from the November 2018 WASH KAP survey noted that all the surveyed households reported accessing drinking water from an improved source (tap stands/water yards). The average number of litres of water per person per day was 21 litres in both Pamir and 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. Majority of the surveyed households (97.7% in Ajoung Thok and 95.8% in Pamir) reported using ≤ 30minutes for a round trip to collect water. 97% of the households reported having at least 10 litres of portable water storage containers. A household had average number of 3 containers for water collection. Efforts to maintain the ≥20l/p/d to continue being put in place.

On sanitation, UNHCR and Water and Sanitation partner Samaritan's Purse (SP) continue phasing out emergency sanitation facilities with a concurrent shift from communal to household latrines. Communal latrines were only constructed for the new arrivals in 2018. Usable family latrines stood at 4,908 in Ajoung Thok and 2,288 in Pamir at the end of 2018. The KAP survey found that this translated to 58% access to either a household or communal latrines. The rest either used the dig and cover method (23.5%) or practiced open defecation (18.5%). The access needs to be improved further to end the use of open defecation.

In terms of hygiene, most of the households could identify at least three critical times of hand washing (92% and 95% in Ajoung Thok and Pamir respectively). Soap, ash, and water only were used for hand washing. During the KAP survey only 63% of the households 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 ways to access adequate soap

should be continued.

2   SURVEY OBJECTIVES

The survey objectives were as follows:
Specific primary objectives of the survey

      a.   To measure the prevalence of acute malnutrition among children 6-59 months.
      b.   To measure 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 two-week period prevalence of diarrhoea among children 6-59 months.
      f.   To measure the prevalence of anaemia among children 6-59 months and women of reproductive aged 15-49 years (non-pregnant).
      g.   To investigate IYCF practices among children 0-23 months.
      h.   To determine the coverage of ration cards and the duration the GFD ration lasts for recipient households.

      i.   To determine the extent to which negative coping strategies are used by households.
      j.   To assess household dietary diversity.
      k.   To establish recommendations on actions to be taken to address the situation.

Secondary objectives:

      a.   To determine the coverage of of targeted supplementary and therapeutic 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

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 methodology version 2 (2013). The GAM prevalence estimated in Pamir and Ajoung Thok was based on the 2017 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. Pamir had a total population of 31890 and Ajoung Thok had 43719[14]. A non-response rate of 10% was used in both camps.

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[14] UNHCR ProGres data October 2018

A systematic random sampling methodology was used for both camps. See table below with the specific parameters used.

Table 3: Parameters used to calculate sample size

Location	Pamir	Ajoung Thok
Total camp population (UNHCR ProGres October 2017)	31890	43719
% population under 5 (UNHCR ProGres October 2017)	23	20.3
Estimated GAM prevalence (%)	11.7	5.4
± Desired Precision (%)	3.5	3
Non response rate (%)	10	10
Average household size	4.2	4.3
Number of Children (ENA)	309	212
Number of Households for Anthropometry and Health module (ENA for SMART) including none response rate	395	300

As the population of children under five was less than 10,000 a correction factor was used while cacluating the sample size.

The sample size for anthropometry and health was used for the IYCF and child anaemia. Half the sample size of anthropometry (every other household) was used as the sample size for women anaemia and food security modules. This translated to 198 households in Pamir and 150 households in Ajoung Thok for the women anaemia and food security module.

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 actually living in the camps at the time of the survey, empty shelters[15] 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 on a daily basis.

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.

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[15] 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

In the event of an absent household or individual, the team members returned to the household during the course of 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 feeding programmes, immunization (measles), vitamin A supplementation 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.

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 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 4: 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 5: 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 6: 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 7: 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 (%) =

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

Coverage of TFP programme (%) =

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

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.

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 <u>fortified in the home with a product that included iron during the previous day</u>

Children 6–23 months of age

Bottle feeding:
Proportion of children 0-23 months of age who are fed with a bottle
<u>Children 0–23 months of age who were fed with a bottle during the previous day</u>

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 8: 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 9: Classification of public health significance for children under 5 years of age [16]

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

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

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[16] WHO (1995) Physical Status: The Use and Interpretation of Anthropometry and WHO (2000) The Management of Nutrition in Major Emergencies

	Recovery	Case fatality	Defaulter rate	Coverage		
				Rural areas	Urban areas	Camps
SFP	>75%	<3%	<15%	>50%	>70%	>90%
TFP	>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(2017-2018) 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 11: 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), Gideon Ndawula (UNHCR Associate Public Health officer -Jam Jang) and Lilian Igube (UNHCR Associate Nutrition and Food security officer- Jam Jang) in collaboration with Zachariah Ndegwa (AHA Nutrition Coordinator) and Ronald Komakech (IRC and 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 day training was carried out from 29 October to 2 November 2018 at the Pamir UNHCR conference room. Training topics were shared between the UNHCR 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 eight days. Data collection started in Pamir was carried out from 3 to 6 November 2018. In Ajoung Thok data was collected from 8 to 10 November 2018. One day was given in-between data collection in Pamir and Ajoung Thok for the teams to recuperate. The data collection was supervised throughout by UNHCR, IRC and AHA coordination and supervision team. Data was collected using the ODK for Android platform using six Samsung Tablets and six HTC one phones. Each team thus had two phones.

3.8 Data analysis

At the end of each day's data collection, the UNHCR, IRC and AHA coordination and supervision team checked each and every questionnaire for completeness and then finalised the questionnaires. Once the questionnaires were finalised, they were sent to the server for synchronisation and exporting. After exporting the data, the anthropometric data plausibility check was conducted to identify areas and teams that need more supervision or to be strengthened. Teams that 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 was used to analyse all the other data.

4   RESULTS

4.1 RESULTS FROM PAMIR REFUGEE CAMP

Table 12 below shows actual number of children captured during the survey versus the survey sample target based on UNHCR ProGres population

Table 12: 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	309	367	>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 57% (children having an exact birth date). As 43% of the children did not have an exact birthday stunting and the underweight data should be interpreted with caution.

Table 13: Distribution of age and sex of sample- Pamir refugee camp, south Sudan (November 2018)

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy: girl
6-17	38	48.1	41	51.9	79	21.5	0.9
18-29	48	48.0	52	52.0	100	27.2	0.9
30-41	40	44.9	49	55.1	89	24.3	0.8
42-53	35	47.9	38	52.1	73	19.9	0.9
54-59	12	46.2	14	53.8	26	7.1	0.9
Total	173	47.1	194	52.9	367	100.0	0.9

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

Table 14: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex- Pamir refugee camp, south Sudan (November 2018)

	All n = 365	Boys n = 172	Girls n = 193
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(20) 5.5 % (3.6 - 8.3 95% C.I.)	(6) 3.5 % (1.6 - 7.4 95% C.I.)	(14) 7.3 % (4.4 - 11.8 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(19) 5.2 % (3.4 - 8.0 95% C.I.)	(6) 3.5 % (1.6 - 7.4 95% C.I.)	(13) 6.7 % (4.0 - 11.2 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(1) 0.3 % (0.0 - 1.5 95% C.I.)	(0) 0.0 % (0.0 - 2.2 95% C.I.)	(1) 0.5 % (0.1 - 2.9 95% C.I.)

The prevalence of oedema was 0.0 %. Data excluded SMART flags

Table 15: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema- Pamir refugee camp, south Sudan (November 2018)

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	Total no.	No.	%	No.	%	No.	%	No.	%
6-17	79	0	0.0	4	5.1	75	94.9	0	0.0
18-29	100	1	1.0	6	6.0	93	93.0	0	0.0
30-41	87	0	0.0	2	2.3	85	97.7	0	0.0
42-53	73	0	0.0	3	4.1	70	95.9	0	0.0
54-59	26	0	0.0	4	15.4	22	84.6	0	0.0
Total	365	1	0.3	19	5.2	345	94.5	0	0.0

Children aged 54-59 and 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 (November 2018)
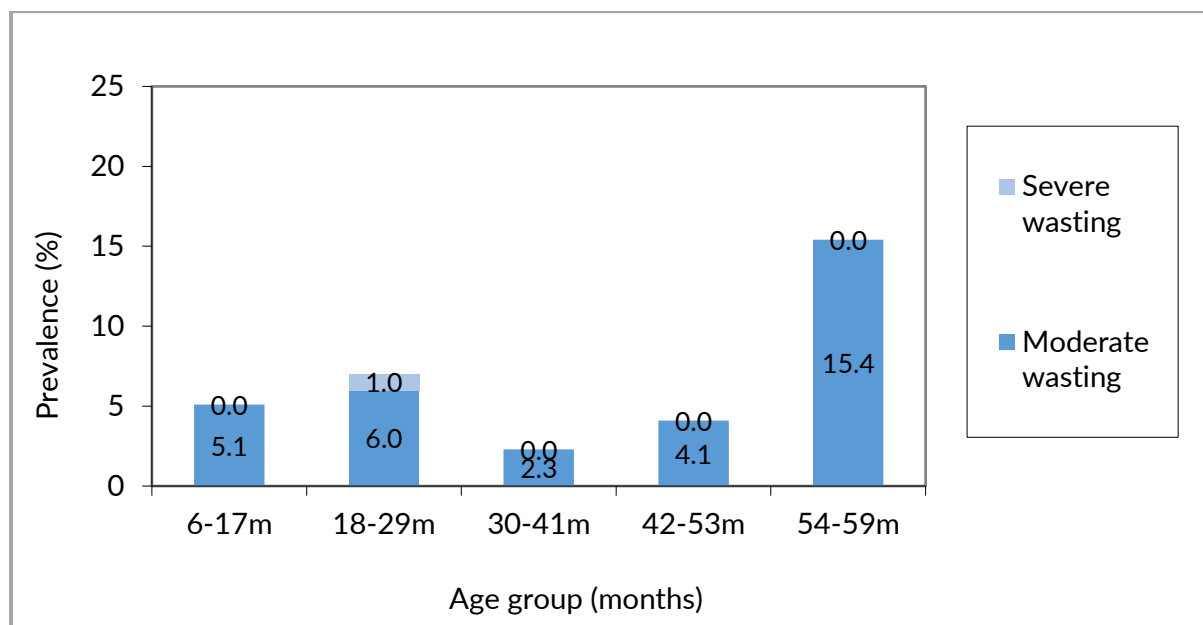
Table 16: Distribution of acute malnutrition and oedema based on weight-for-height z-scores- Pamir refugee camp, south Sudan (November 2018)

	<-3 z-score	**>=-3 z-score**
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 1 (0.3 %)	Not severely malnourished No. 365 (99.7 %)

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 (November 2018)
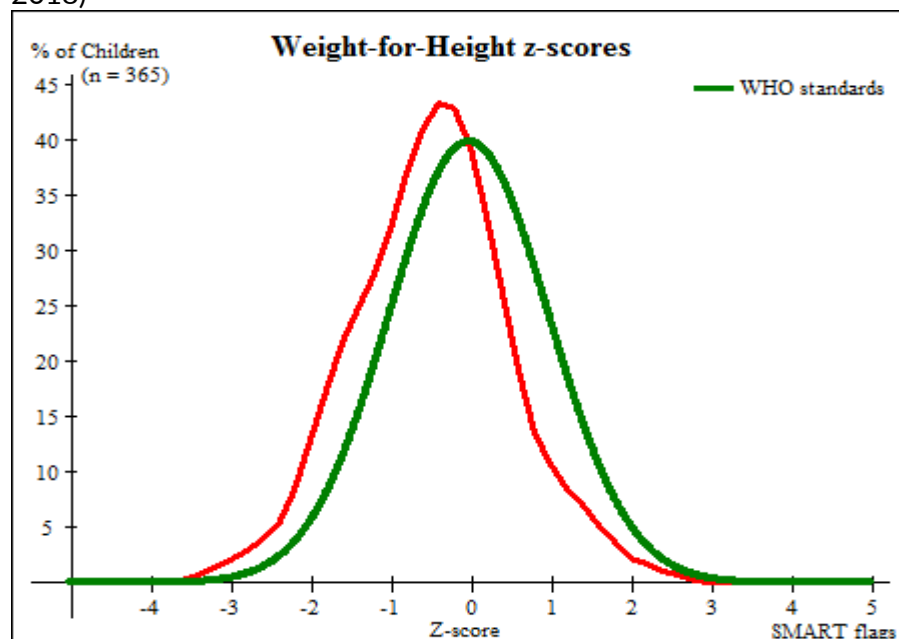
Figure 6 above shows that the distribution for weight-for-height z-scores for the survey sample is shifted to the left, illustrating poor nutritional status of the surveyed population than the international WHO Standard population of children aged 6-59 months

Table 17: Prevalence of acute malnutrition based on MUAC cut offs (and/or oedema) and by sex- Pamir refugee camp, south Sudan (November 2018)

	All n = 367	**Boys** n = 173	**Girls** n = 194
Prevalence of global malnutrition (< 125 mm and/or oedema)	(13) 3.5 % (2.1 - 6.0 95% C.I.)	(1) 0.6 % (0.1 - 3.2 95% C.I.)	(12) 6.2 % (3.6 - 10.5 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(13) 3.5 % (2.1 - 6.0 95% C.I.)	(1) 0.6 % (0.1 - 3.2 95% C.I.)	(12) 6.2 % (3.6 - 10.5 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(0) 0.0 % (0.0 - 1.0 95% C.I.)	(0) 0.0 % (0.0 - 2.2 95% C.I.)	(0) 0.0 % (0.0 - 1.9 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 2018 (6.3%) 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.

Table 18: Prevalence of acute malnutrition by age, based on MUAC cut offs and/or oedema- Pamir refugee camp, south Sudan (November 2018)

Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	79	0	0.0	3	3.8	76	96.2	0	0.0
18-29	100	0	0.0	7	7.0	93	93.0	0	0.0
30-41	89	0	0.0	3	3.4	86	96.6	0	0.0
42-53	73	0	0.0	0	0.0	73	100.0	0	0.0
54-59	26	0	0.0	0	0.0	26	100.0	0	0.0
Total	367	0	0.0	13	3.5	354	96.5	0	0.0

Children aged 18-29 months tend to be most affected by wasting measured by MUAC

Table 19: Prevalence of underweight based on weight-for-age z-scores by sex - Pamir refugee camp, south Sudan (November 2018)

	All n = 367	Boys n = 173	Girls n = 194
Prevalence of underweight (<-2 z-score)	(72) 19.6 % (15.9 - 24.0 95% C.I.)	(42) 24.3 % (18.5 - 31.2 95% C.I.)	(30) 15.5 % (11.1 - 21.2 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(64) 17.4 % (13.9 - 21.7 95% C.I.)	(40) 23.1 % (17.5 - 29.9 95% C.I.)	(24) 12.4 % (8.5 - 17.7 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(8) 2.2 % (1.1 - 4.2 95% C.I.)	(2) 1.2 % (0.3 - 4.1 95% C.I.)	(6) 3.1 % (1.4 - 6.6 95% C.I.)

Boys tend to be more affected by underweight compared to girls $p<0.05$

Table 20: Prevalence of underweight by age, based on weight-for-age z-scores - Pamir refugee camp, south Sudan (November 2018)

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	79	1	1.3	18	22.8	60	75.9	0	0.0
18-29	100	3	3.0	21	21.0	76	76.0	0	0.0
30-41	89	4	4.5	12	13.5	73	82.0	0	0.0
42-53	73	0	0.0	11	15.1	62	84.9	0	0.0
54-59	26	0	0.0	2	7.7	24	92.3	0	0.0
Total	367	8	2.2	64	17.4	295	80.4	0	0.0

Children aged 6-17 and 18-29 months tend to be most underweight

Table 21: Prevalence of stunting based on height-for-age z-scores and by sex - Pamir refugee camp, south Sudan (November 2018)

	All n = 361	Boys n = 168	Girls n = 193
Prevalence of stunting (<-2 z-score)	(102) 28.3 % (23.9 - 33.1 95% C.I.)	(60) 35.7 % (28.9 - 43.2 95% C.I.)	(42) 21.8 % (16.5 - 28.1 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(76) 21.1 % (17.2 - 25.6 95% C.I.)	(46) 27.4 % (21.2 - 34.6 95% C.I.)	(30) 15.5 % (11.1 - 21.3 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(26) 7.2 % (5.0 - 10.3 95% C.I.)	(14) 8.3 % (5.0 - 13.5 95% C.I.)	(12) 6.2 % (3.6 - 10.6 95% C.I.)

Boys tend to be more affected by stunting compared to girls p<0.05

Table 22: Prevalence of stunting by age based on height-for-age z-scores - Pamir refugee camp, south Sudan (November 2018)

Age (mo)	Total no.	Severe stunting (<-3 z-score) No.	%	Moderate stunting (>= -3 and <-2 z-score) No.	%	Normal (> = -2 z score) No.	%
6-17	78	2	2.6	18	23.1	58	74.4
18-29	99	10	10.1	22	22.2	67	67.7
30-41	86	7	8.1	21	24.4	58	67.4
42-53	72	6	8.3	12	16.7	54	75.0
54-59	26	1	3.8	3	11.5	22	84.6
Total	361	26	7.2	76	21.1	259	71.7

Children aged 18-29 and 30-41 months tend to be most stunted.

Figure 7: Trends in the prevalence of stunting by age in children 6-59 months, - Pamir refugee camp, south Sudan (November 2018)
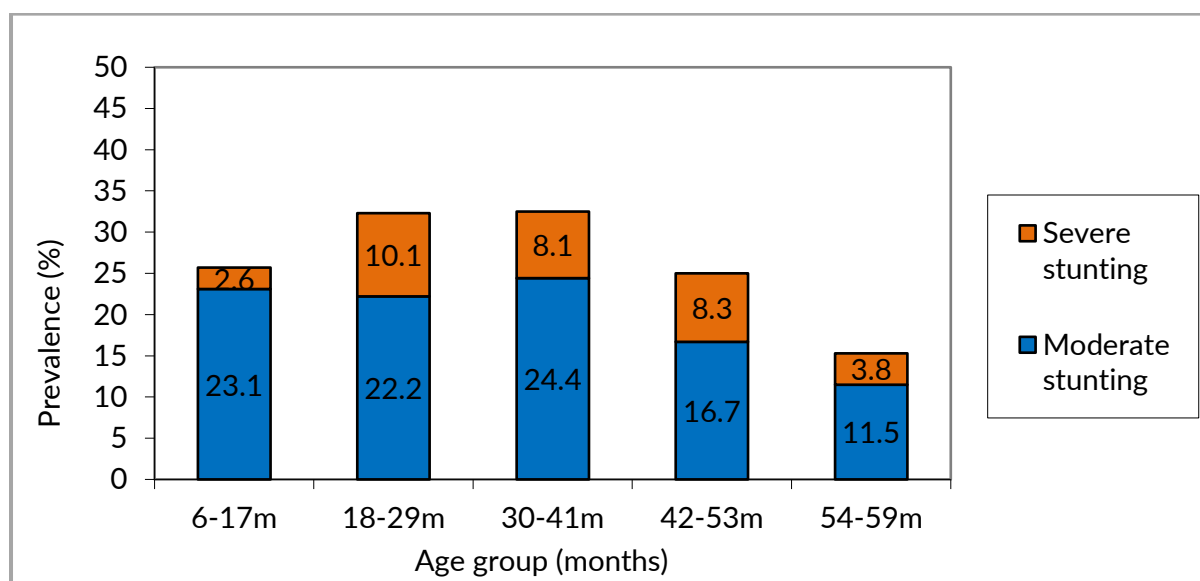
Figure 8: Distribution of height-for-age z-scores (based on WHO growth standards; the reference population is shown in green and the surveyed population is shown in red) of survey population compared to reference population - Pamir refugee camp, south Sudan (November 2018)
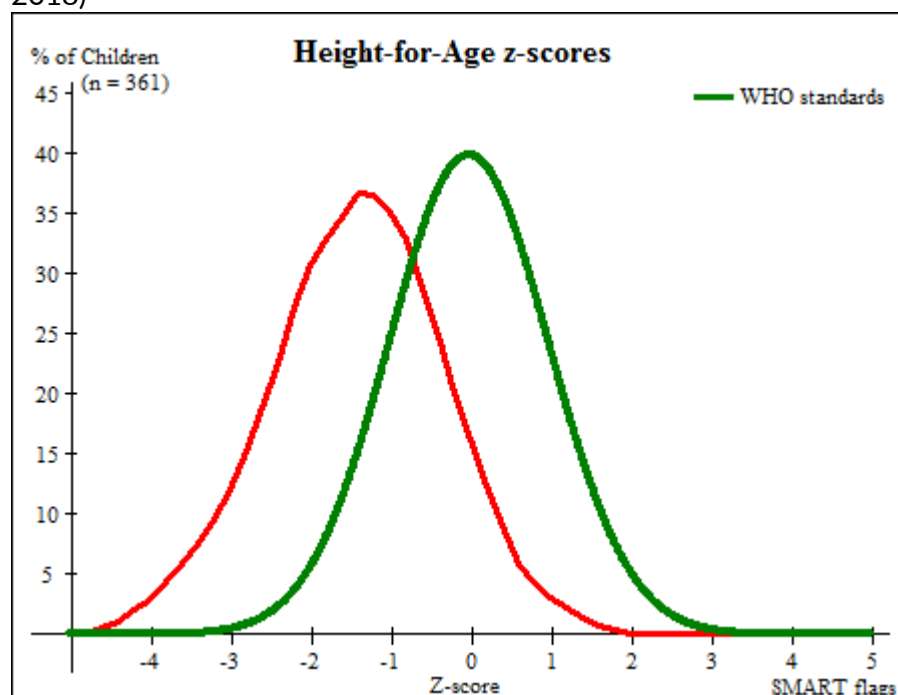
The distribution for height-for-age z-scores for the survey sample is shifted to the left, illustrating poor height for age of the surveyed population compared to the international WHO Standard population of children aged 6-59 months.

Table 23: Prevalence of overweight based on weight for height cut offs and by sex (no oedema) - Pamir refugee camp, south Sudan (November 2018)

	All n = 365	Boys n = 172	Girls n = 193
Prevalence of overweight (WHZ > 2)	(3) 0.8 % (0.3 - 2.4 95% C.I.)	(1) 0.6 % (0.1 - 3.2 95% C.I.)	(2) 1.0 % (0.3 - 3.7 95% C.I.)
Prevalence of severe overweight (WHZ > 3)	(0) 0.0 % (0.0 - 1.0 95% C.I.)	(0) 0.0 % (0.0 - 2.2 95% C.I.)	(0) 0.0 % (0.0 - 2.0 95% C.I.)

Table 24: Prevalence of overweight by age, based on weight for height (no oedema) - Pamir refugee camp, south Sudan (November 2018)

Age (mo)	Total no.	Overweight (WHZ > 2)		Severe Overweight (WHZ > 3)	
		No.	%	No.	%
6-17	79	0	0.0	0	0.0
18-29	100	1	1.0	0	0.0
30-41	87	1	1.1	0	0.0
42-53	73	1	1.4	0	0.0
54-59	26	0	0.0	0	0.0
Total	365	3	0.8	0	0.0

Table 25: Mean z-scores, design effects and excluded subjects - Pamir refugee camp, south Sudan (November 2018)

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	365	-0.48±0.97	1.00	1	1
Weight-for-Age	367	-1.10±0.94	1.00	0	0
Height-for-Age	361	-1.41±1.06	1.00	1	5

* There were no oedema cases

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

Table 26: Programme enrolment coverage for acutely malnourished children based on MUAC, oedema and WHZ- Pamir refugee camp, south Sudan (November 2018)

	Number/total	% (95% CI)
Supplementary feeding programme coverage	7/26	26.9 (52.1-88.4)
Therapeutic feeding programme coverage	0/1	0(0-0)

Table 27: Programme enrolment coverage for acutely malnourished children based on MUAC and oedema - Pamir refugee camp, south Sudan (November 2018)

	Number/total	% (95% CI)
Supplementary feeding programme coverage	7/13	53.8 (25.1-80.7)

Measles vaccination coverage results

Table 28: Measles vaccination coverage for children aged 9-59 months (N=349) - Pamir refugee camp, south Sudan (November 2018)

	Measles (with card) n=103	Measles (with card or confirmation from mother) n=316
YES	29.5% (24.9-34.5 95% CI)	90.5 % (87.0-93.1 95% CI)

The measles vaccination coverage did not meet the recommended target of ≥ 95%. The coverage remained the same as in 2017 (89.9%).

Vitamin A supplementation coverage results

Table 29: Vitamin A supplementation for children aged 6-59 months in past 6 months (N=367) - Pamir refugee camp, south Sudan (November 2018)

	Vitamin A capsule (with card) n=61	Vitamin A capsule (with card or confirmation from mother) n=297
YES	16.6% (13.1-20.7 95% CI)	80.9% (76.5-84.6 95% CI)

The vitamin A supplementation coverage did not meet the recommended target of ≥ 90%. The coverage reduced compared to 2017 (90.7%).

Diarrhoea Results

Table 30: Period prevalence of diarrhoea- Pamir refugee camp, south Sudan (November 2018)

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	78/367	21.2 (17.3-25.7)

The period prevalence of diarrhoea remained the same as that in 2017 (22%).

4.1.2   Anaemia Results Children 6 – 59 months

The total anaemia prevalence among children 6 to 59 months was 46.8% (41.8-51.9 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 31: 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 (November 2018)

	6-59 months n = 367	6-23 months n=118	24-59 months n=249
Total Anaemia (Hb<11.0 g/dL)	(172) 46.8 (41.8-51.9 95% CI)	(81) 68.6 (59.4-76.8 95% CI)	(91) 36.5 (30.5-42.8 95% CI)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(78) 21.2 (17.3-25.7 95% CI)	(38) 32.2 (23.9-41.4 95% CI)	(40) 16.0 (11.7-21.2 95% CI)
Moderate Anaemia (7.0-9.9 g/dL)	(90) 24.5 (20.4-29.1 95% CI)	(42) 35.5 (27.0-44.9 95% CI)	(48) 19.2 (14.5-24.7 95% CI)
Severe Anaemia (<7.0 g/dL)	(4) 1.0 (0.4-2.7 95%CI)	(1) 0.8 (0.0-4.6 95%CI)	(3)1.2 (0.2-3.4 95%CI)
Mean Hb, g/dL [range]	10.9 g/dL [5.7-15.1]	10.3 g/dL [6.9-12.9]	11.2 g/dL [5.7-15.1]

Table 32: Prevalence of moderate and severe anaemia in children 6-59 months of age and by age group- Pamir refugee camp, south Sudan (November 2018)

	6-59 months n = 367	6-23 months n=118	24-59 months n=249
Moderate and Severe Anaemia (Hb<10.0 g/dL)	(94) 25.6 % (21.4-30.3 95% CI)	(43) 36.4% (27.7-45.8 95% CI)	(51) 20.4 % 15.6-26.0 95% CI)

4.1.3 IYCF: Children 0-23 months

Table 33: Prevalence of infant and young child feeding practices indicators- Pamir refugee camp, south Sudan (November 2018)

Indicator	Age range	Number/ total	Prevalence (%)	95% CI
Timely initiation of breastfeeding	0-23 months	133/158	84.1	77.5-89.4
Exclusive breastfeeding under 6 months	0-5 months	37/42	88.1	74.3-96.0
Continued breastfeeding at 1 year	12-15 month	31/33	93.9	79.7-99.2
Continued breastfeeding at 2 years	20-23 month	10/18	55.5	30.7-78.4
Introduction of solid, semi-solid or soft foods	6-8 months	12/18	66.6	40.9-86.6
Consumption of iron-rich or iron-fortified foods	6-23 months	33/116	28.4	20.4-37.5
Bottle feeding	0-23 months	13/158	8.2	4.4-13.6

Prevalence of intake

Infant formula

Table 34: Infant formula intake in children aged 0-23 months- Pamir refugee camp, south Sudan (November 2018)

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	8/158	5.0 (2.2-9.7)

Fortified blended foods

Table 35: CSB++ intake in children aged 6-23 Months - Pamir refugee camp, south Sudan (November 2018)

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB++	19/116	16.3(10.1-24.3)

4.1.4 Anaemia Women 15-49 years

Table 36: Women Physiological Status and Age- Pamir refugee camp, south Sudan (November 2018)

Physiological status	Number/total	% of sample
Non-pregnant	143	88.8
Pregnant	18	11.2
Mean age (range)	25.4(15-49)	

Table 37: Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 Years) - Pamir refugee camp, south Sudan (November 2018)

Anaemia - Women of reproductive age 15-49 years	All n = 143
Total Anaemia (<12.0 g/dL)	(33) 23.0 (16.4-30.8 95% CI)
Mild Anaemia (11.0-11.9 g/dL)	(24) 16.7 (11.0-23.9 95% CI)
Moderate Anaemia (8.0-10.9 g/dL)	(8) 5.5 (2.4-10.7 95% CI)
Severe Anaemia (<8.0 g/dL)	(1) 0.7 (0.0-3.8 95 % CI)
Mean Hb, g/dL (SD) [range]	12.6 g/dL 1.2 [7.8-15.9]

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 38: ANC enrolment and iron-folic acid pills coverage among pregnant women (15-49 years) - Pamir refugee camp, south Sudan (November 2018)

	Number /total	% (95% CI)
Currently enrolled in ANC programme	16/18	88.8 (65.2-98.6)
Currently receiving iron-folic acid pills	15/18	83.3(58.5-96.4)

4.1.5   Food Security

Access to food assistance

Table 39: Ration card coverage

	Number/total	% (95% CI)
Proportion of households with a ration card	171/171	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 40: Coping strategies used by the surveyed population over the past month - Pamir refugee camp, south Sudan (November 2018)

	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	91/171	53.2 (39.1-54.5)
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)	35/170	20.5 (14.7-27.4)
Requested increased remittances or gifts as compared to normal	16/171	9.3 (5.4-14.7)
Reduced the quantity and/or frequency of meals and snacks	95/170	55.8 (48.0-63.4)
Begged	17/171	9.9 (5.9-15.4)
Engaged in potentially risky or harmful activities	12/171	7.0 (3.6-11.9)
Proportion of households reporting using none of the negative coping strategies over the past month	34/171	19.8 (14.1-26.6)

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

Only 19.8% 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 16+ days prior to the start of the survey data collection. The survey was carried out during the end of the harvest season.

Table 41: Average HDDS*- Pamir refugee camp, south Sudan (November 2018)

	Mean (Standard deviation)
Average HDDS	3.3 (1.5)

Figure 9: Proportion of households consuming different food groups within last 24 hours - Pamir refugee camp, south Sudan (November 2018)
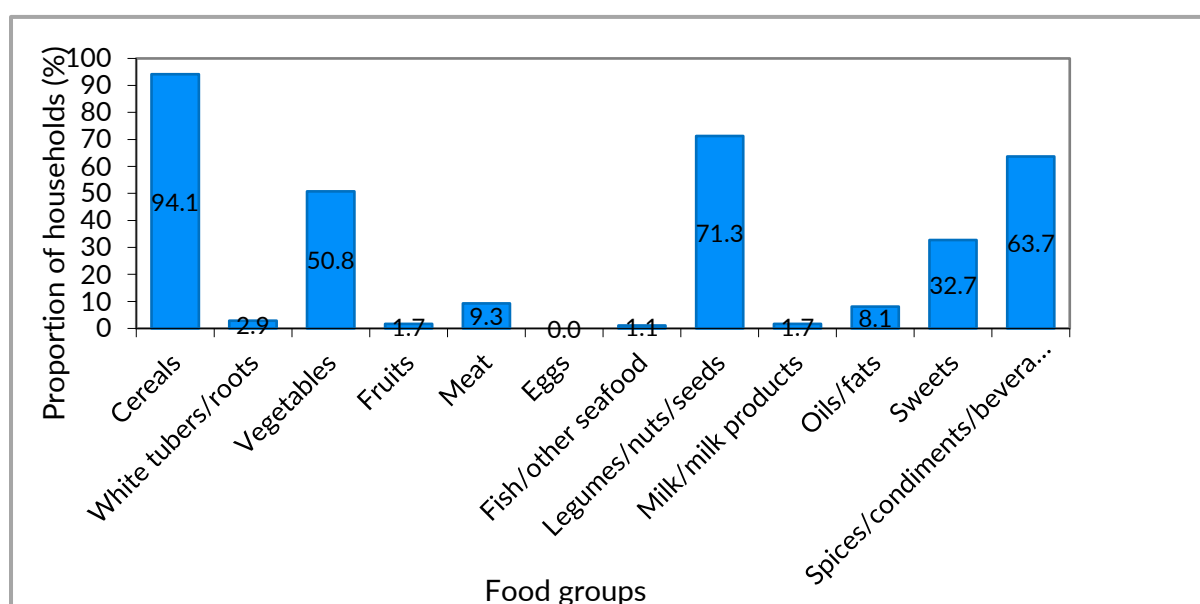
Table 42: Consumption of micronutrient rich foods by households- Pamir refugee camp, south Sudan (November 2018)

	Number/total	% (95% CI)
Proportion of households *not consuming any* vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	77/171	45.0 (37.4-52.8)
Proportion of households consuming either a plant or animal source of vitamin A	62/171	36.2 (29.0-43.9)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	16/171	9.3 (5.4-14.7)

The low proportions of households consuming food groups containing iron and vitamin A 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 43: 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	212	259	>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 75% (children having an exact birth date). As 25% of the children did not have an exact birthday stunting and the underweight data should be interpreted with caution.

Table 44: Distribution of age and sex of sample- Ajoung Thok refugee camp, south Sudan (November 2018)

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy: girl
6-17	26	51.0	25	49.0	51	19.7	1.0
18-29	39	56.5	30	43.5	69	26.6	1.3
30-41	23	41.1	33	58.9	56	21.6	0.7
42-53	33	51.6	31	48.4	64	24.7	1.1
54-59	10	52.6	9	47.4	19	7.3	1.1
Total	131	50.6	128	49.4	259	100.0	1.0

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

Table 45: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex - Ajoung Thok refugee camp, south Sudan (November 2018)

	All n = 252	Boys n = 126	Girls n = 126
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(16) 6.3 % (3.9 - 10.1 95% C.I.)	(7) 5.6 % (2.7 - 11.0 95% C.I.)	(9) 7.1 % (3.8 - 13.0 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(15) 6.0 % (3.6 - 9.6 95% C.I.)	(6) 4.8 % (2.2 - 10.0 95% C.I.)	(9) 7.1 % (3.8 - 13.0 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(1) 0.4 % (0.1 - 2.2 95% C.I.)	(1) 0.8 % (0.1 - 4.4 95% C.I.)	(0) 0.0 % (0.0 - 3.0 95% C.I.)

The prevalence of oedema was 0.0 %. Data excluded SMART flags

Figure 10: Trends in the prevalence of global and severe acute malnutrition based on WHO growth standards in children aged 6-59 months from 2015-November 2018 - Ajoung Thok refugee camp, south Sudan.
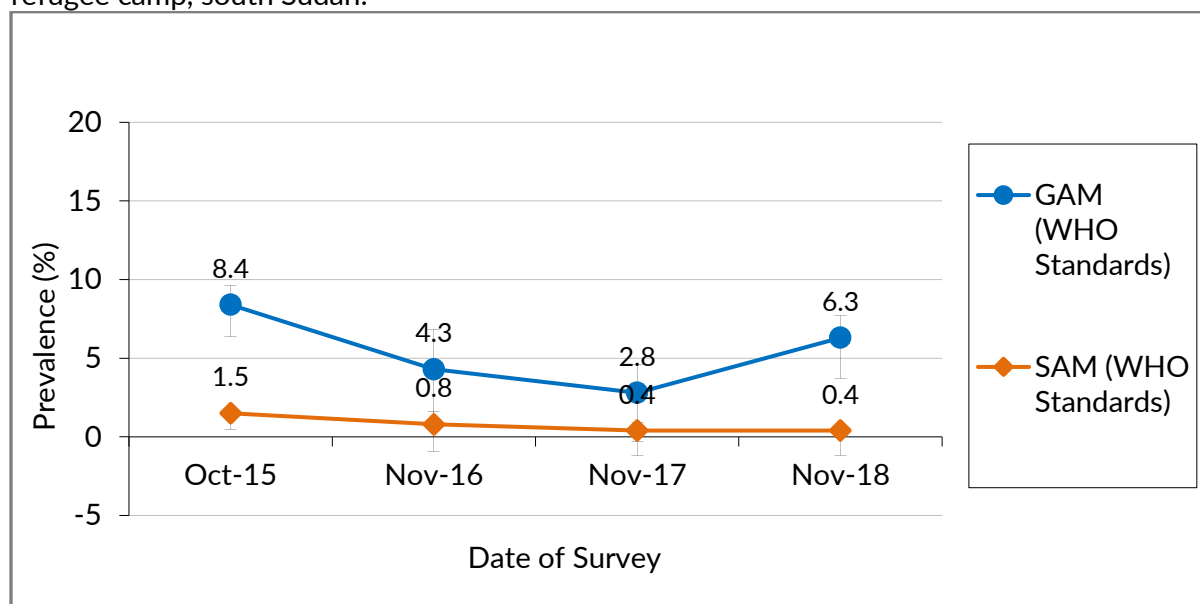
Comparison of the 2018 results with the past two year indicate an increasing trend in the GAM prevalence in Ajoung Thok.

Table 46: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema- Ajoung Thok refugee camp, south Sudan (November 2018)

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	50	0	0.0	3	6.0	47	94.0	0	0.0
18-29	65	0	0.0	3	4.6	62	95.4	0	0.0
30-41	55	0	0.0	2	3.6	53	96.4	0	0.0
42-53	63	0	0.0	6	9.5	57	90.5	0	0.0
54-59	19	1	5.3	1	5.3	17	89.5	0	0.0
Total	252	1	0.4	15	6.0	236	93.7	0	0.0

Children aged 54-59 and 42-53 months tend to more wasted compared to the other age groups

Figure 11: Trend in the prevalence of wasting by age in children 6-59 months- Ajoung Thok refugee camp, south Sudan (November 2018)
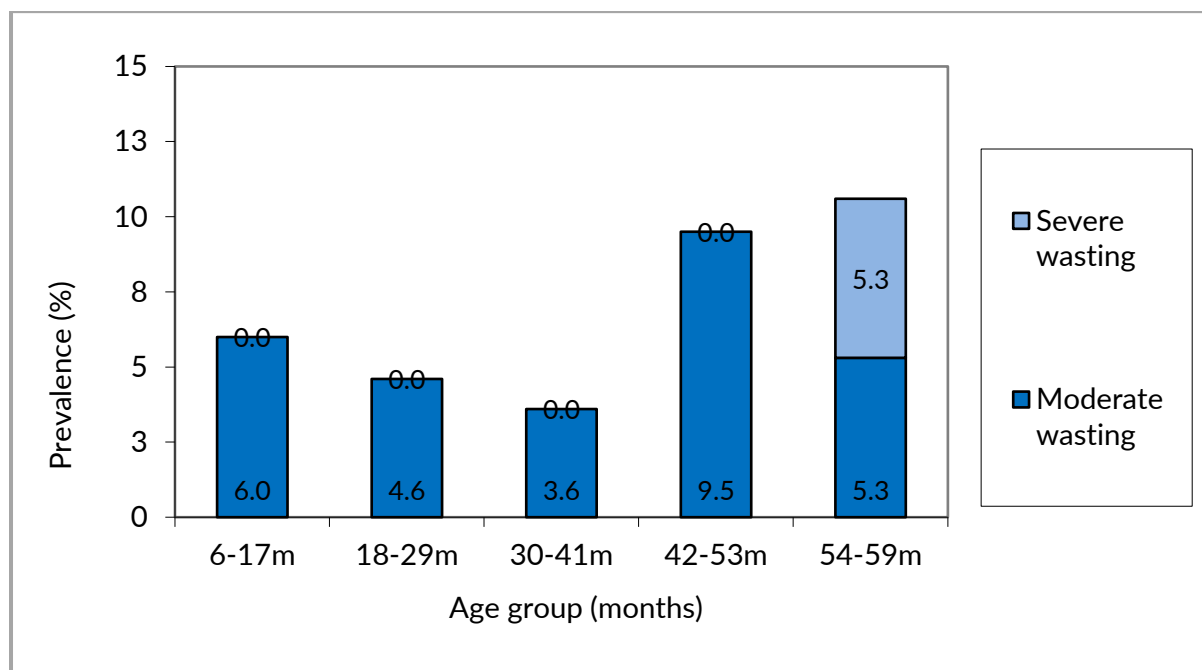
Table 47: Distribution of severe acute malnutrition and oedema based on weight-for-height z-scores - Ajoung Thok refugee camp, south Sudan (November 2018)

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 7 (2.7 %)	Not severely malnourished No. 251 (97.3 %)

Figure 12: 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 (November 2018)
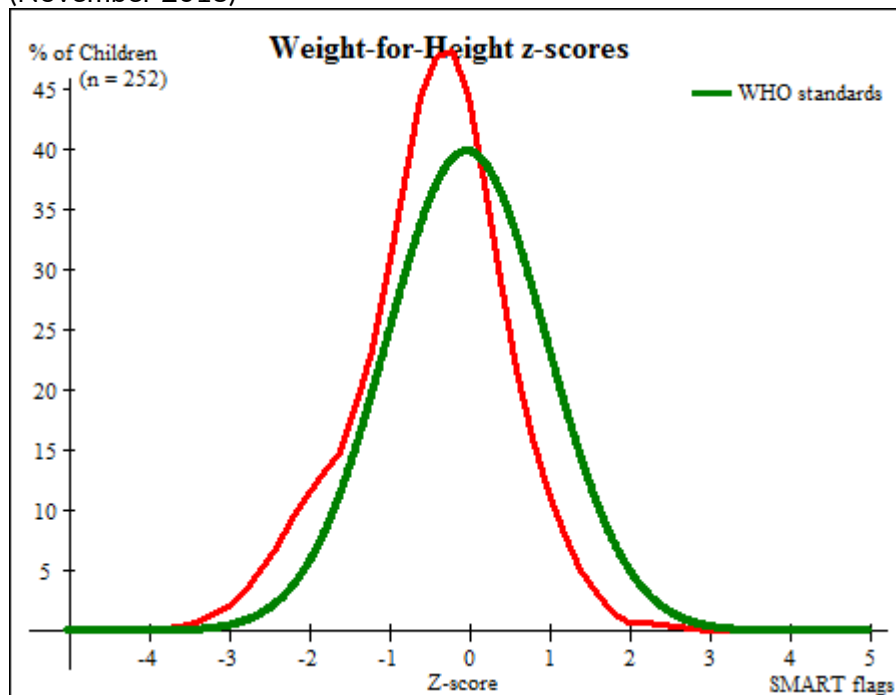
The figure above shows that the weight-for-height z-score distribution is shifted to the left, illustrating a poorer status than the international WHO Standard population of children aged 6-59 months.

Table 48: Prevalence of MUAC malnutrition- Ajoung Thok refugee camp, south Sudan (November 2018)

	All n = 259	Boys n = 131	Girls n = 128
Prevalence of global malnutrition (< 125 mm and/or oedema)	(7) 2.7 % (1.3 - 5.5 95% C.I.)	(4) 3.1 % (1.2 - 7.6 95% C.I.)	(3) 2.3 % (0.8 - 6.7 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(5) 1.9 % (0.8 - 4.4 95% C.I.)	(4) 3.1 % (1.2 - 7.6 95% C.I.)	(1) 0.8 % (0.1 - 4.3 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(2) 0.8 % (0.2 - 2.8 95% C.I.)	(0) 0.0 % (0.0 - 2.8 95% C.I.)	(2) 1.6 % (0.4 - 5.5 95% C.I.)

There was no difference in the MUAC malnutrition between boys and girls, $p>0.05$.

Table 49: Prevalence of MUAC malnutrition by age, based on MUAC cut offs and/or oedema- Ajoung Thok refugee camp, south Sudan (November 2018)

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	51	1	2.0	2	3.9	48	94.1	0	0.0
18-29	69	1	1.4	3	4.3	65	94.2	0	0.0
30-41	56	0	0.0	0	0.0	56	100.0	0	0.0
42-53	64	0	0.0	0	0.0	64	100.0	0	0.0
54-59	19	0	0.0	0	0.0	19	100.0	0	0.0
Total	259	2	0.8	5	1.9	252	97.3	0	0.0

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

Table 50: Prevalence of underweight based on weight-for-age z-scores by sex - Ajoung Thok refugee camp, south Sudan (November 2018)

	All n = 257	Boys n = 129	Girls n = 128
Prevalence of underweight (<-2 z-score)	(43) 16.7 % (12.7 - 21.8 95% C.I.)	(20) 15.5 % (10.3 - 22.7 95% C.I.)	(23) 18.0 % (12.3 - 25.5 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(34) 13.2 % (9.6 - 17.9 95% C.I.)	(14) 10.9 % (6.6 - 17.4 95% C.I.)	(20) 15.6 % (10.3 - 22.9 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(9) 3.5 % (1.9 - 6.5 95% C.I.)	(6) 4.7 % (2.1 - 9.8 95% C.I.)	(3) 2.3 % (0.8 - 6.7 95% C.I.)

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

Table 51: Prevalence of underweight by age, based on weight-for-age z-scores and/or oedema- Ajoung Thok refugee camp, south Sudan (November 2018)

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	51	2	3.9	5	9.8	44	86.3	0	0.0
18-29	68	2	2.9	12	17.6	54	79.4	0	0.0
30-41	56	1	1.8	7	12.5	48	85.7	0	0.0
42-53	63	3	4.8	8	12.7	52	82.5	0	0.0
54-59	19	1	5.3	2	10.5	16	84.2	0	0.0
Total	257	9	3.5	34	13.2	214	83.3	0	0.0

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

Table 52: Prevalence of stunting based on height-for-age z-scores and by sex - Ajoung Thok refugee camp, south Sudan (November 2018)

	All n = 257	Boys n = 130	Girls n = 127
Prevalence of stunting (<-2 z-score)	(74) 28.8 % (23.6 - 34.6 95% C.I.)	(38) 29.2 % (22.1 - 37.6 95% C.I.)	(36) 28.3 % (21.2 - 36.7 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(60) 23.3 % (18.6 - 28.9 95% C.I.)	(31) 23.8 % (17.3 - 31.9 95% C.I.)	(29) 22.8 % (16.4 - 30.9 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(14) 5.4 % (3.3 - 8.9 95% C.I.)	(7) 5.4 % (2.6 - 10.7 95% C.I.)	(7) 5.5 % (2.7 - 10.9 95% C.I.)

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

Figure 13: Trends in the prevalence of global and severe stunting based on who growth standards in children 6-59 months from 2015-November 2018, - Ajoung Thok refugee camp, south Sudan
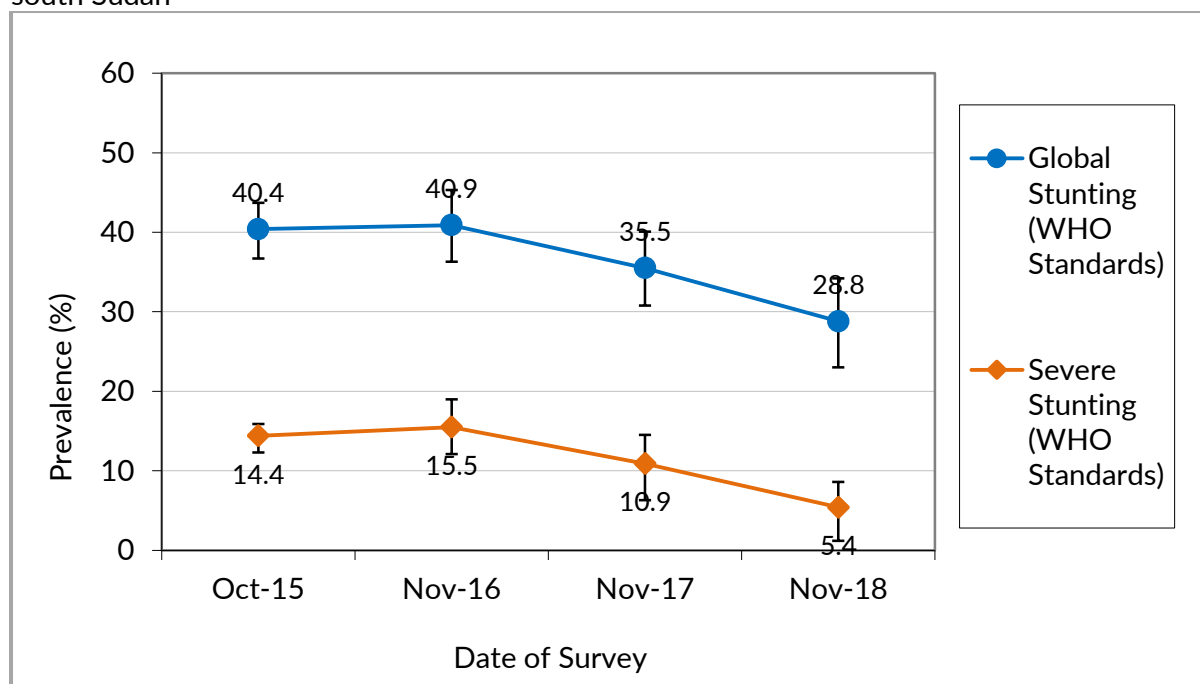
Stunting prevalence in Ajoung Thok indicates a downward trend compared to the past years.

Table 53: Prevalence of stunting by age based on height-for-age Z-Scores - Ajoung Thok refugee camp, south Sudan (November 2018)

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	51	5	9.8	9	17.6	37	72.5
18-29	69	4	5.8	16	23.2	49	71.0
30-41	55	2	3.6	15	27.3	38	69.1
42-53	63	2	3.2	19	30.2	42	66.7
54-59	19	1	5.3	1	5.3	17	89.5
Total	257	14	5.4	60	23.3	183	71.2

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

Figure 14: Trends in the prevalence of stunting by age in children 6-59 months, - Ajoung Thok refugee camp, south Sudan (November 2018)
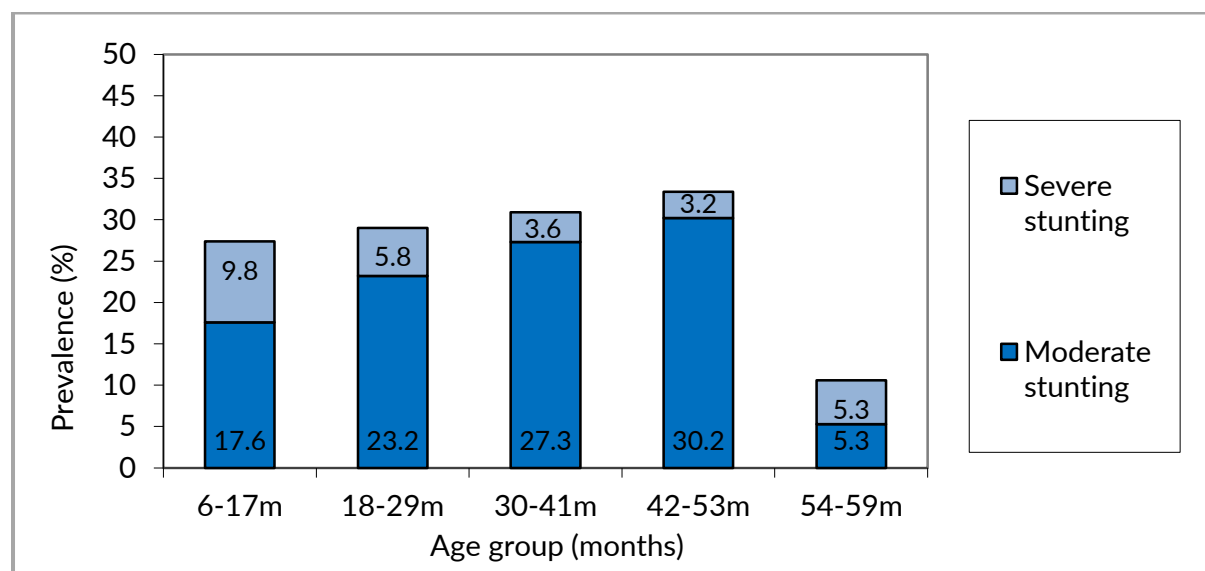
Figure 15: Distribution of height-for-age z-scores (based on WHO growth standards; the reference population is shown in green and the surveyed population is shown in red) of survey population compared to reference population - Ajoung Thok refugee camp, south Sudan (November 2018)
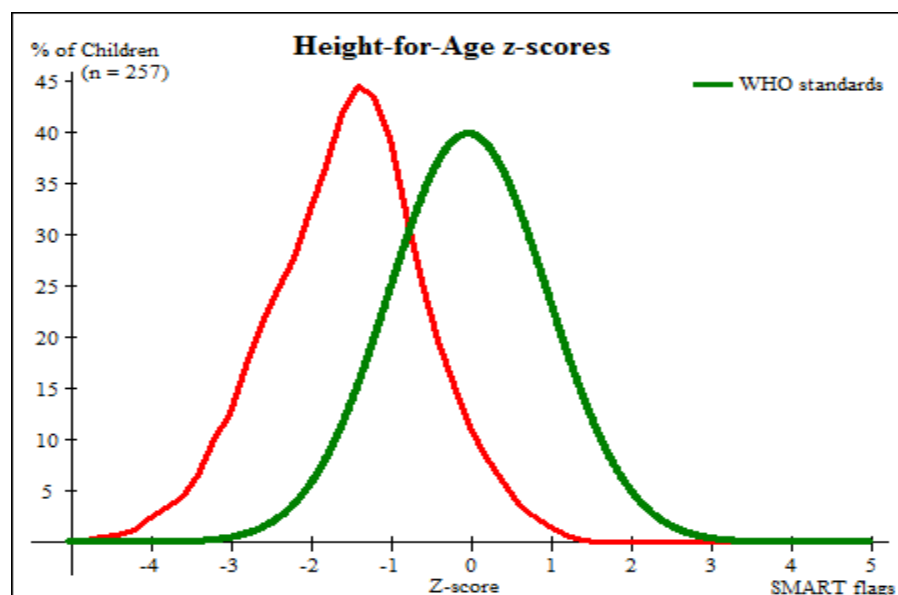
The distribution for height-for-age z-scores for the survey sample is shifted to the left, illustrating poor height for age of the surveyed population compared to the international WHO Standard population of children aged 6-59 months.

Table 54: Prevalence of overweight based on weight for height cut offs and by sex (no oedema) - Ajoung Thok refugee camp, south Sudan (November 2018)

	All n = 252	Boys n = 126	Girls n = 126
Prevalence of overweight (WHZ > 2)	(1) 0.4 % (0.1 - 2.2 95% C.I.)	(0) 0.0 % (0.0 - 3.0 95% C.I.)	(1) 0.8 % (0.1 - 4.4 95% C.I.)
Prevalence of severe overweight (WHZ > 3)	(0) 0.0 % (0.0 - 1.5 95% C.I.)	(0) 0.0 % (0.0 - 3.0 95% C.I.)	(0) 0.0 % (0.0 - 3.0 95% C.I.)

Table 55: Prevalence of overweight by age, based on weight for height (no oedema) - Ajoung Thok refugee camp, south Sudan (November 2018)

Age (mo)	Total no.	Overweight (WHZ > 2) No.	%	Severe Overweight (WHZ > 3) No.	%
6-17	50	0	0.0	0	0.0
18-29	65	0	0.0	0	0.0
30-41	55	1	1.8	0	0.0
42-53	63	0	0.0	0	0.0
54-59	19	0	0.0	0	0.0
Total	252	1	0.4	0	0.0

Table 56: Mean Z-scores, design effects and excluded subjects - Ajoung Thok refugee camp, south Sudan (November 2018)

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	252	-0.46±0.92	1.00	1	6
Weight-for-Age	257	-1.22±0.86	1.00	1	1
Height-for-Age	257	-1.52±0.94	1.00	0	2

* There were no oedema cases found during the survey.

Feeding programme enrolment coverage results

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

Table 57: Programme enrolment coverage for acutely malnourished children based on MUAC, oedema and WHZ- Ajoung Thok refugee camp, south Sudan (November 2018)

	Number/total	% (95% CI)
Supplementary feeding programme coverage	3/18	16.7 (3.5-41.4)
Therapeutic feeding programme coverage	1/3	33.3 (9.4-99.2)

Table 58: Programme enrolment coverage for acutely malnourished children based on MUAC and oedema - Ajoung Thok refugee camp, south Sudan (November 2018)

	Number/total	% (95% CI)
Supplementary feeding programme coverage	1/5	20 (0.5-71.6)
Therapeutic feeding programme coverage	1/2	50 (1.2-98.7)

Measles Vaccination Coverage Results

Table 59: Measles vaccination coverage for children aged 9-59 months (N=247) - Ajoung Thok refugee camp, south Sudan (November 2018)

	Measles (with card) n=53	Measles (with card <u>or</u> confirmation from mother) n=234
YES	21.4% (16.5-27.1 95% CI)	94.7% (91.1-97.1 95% CI)

The measles vaccination coverage did not meet the recommended target of ≥ 95%.

Vitamin A Supplementation Coverage Results

Table 60: Vitamin A Supplementation for Children Aged 6-59 Months within Past 6 Months (N=259) - Ajoung Thok refugee camp, south Sudan (November 2018)

	Vitamin A capsule (with card) n=6	Vitamin A capsule (with card <u>or</u> confirmation from mother) n=205
YES	2.3% (0.8-4.9 95% CI)	79.1 % (73.6-83.9 95% CI)

The coverage of vitamin A coverage did not meet the recommended target of ≥ 90%.

Figure 16: Trends in the coverage of measles vaccination and vitamin A supplementation in last 6 months in children aged 6-59 months from 2015-2018- Ajoung Thok refugee camp, south Sudan
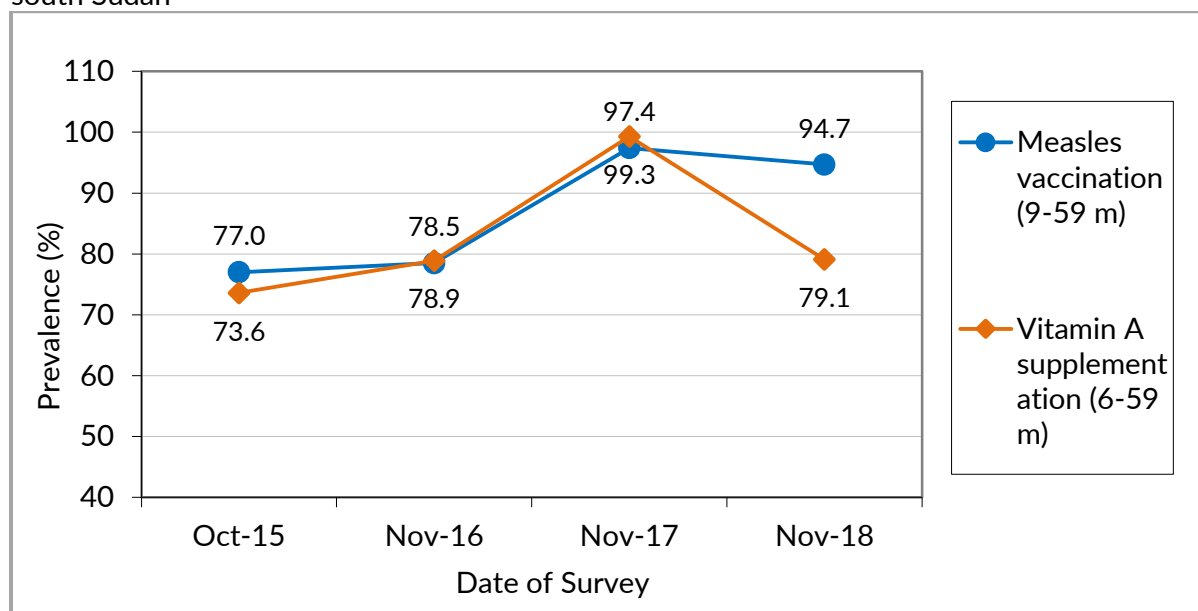
Measles vaccination coverage remained the same as in 2017 with the decrease in 2018 being statistically insignificant. The downward trend however is of concern. Vitamin A supplementation coverage decreased significantly compared to 2017 (p<0.05).

Diarrhoea Results

Table 61: Period prevalence of diarrhoea- Ajoung Thok refugee camp, south Sudan (November 2018)

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	27/259	10.4 (6.9-14.8)

The period prevalence of diarrhoea remained the same in November 2018 in comparison to the 13.9% in 2017 with the decrease not being statistically significant (p>0.05).

4.2.2 Anaemia Results Children 6 – 59 Months

The total anaemia prevalence among children 6 to 59 months was 45.9% (39.7-52.2 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 62: 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 (November 2018)

	6-59 months n = 259	6-23 months n=79	24-59 months n=180
Total Anaemia **(Hb<11.0 g/dL)**	(119) 45.9% (39.7-52.2 95% CI)	(47) 59.4 (47.8-70.4 95% CI)	(72) 40.0 (32.7-47.5 95% CI)
Mild Anaemia **(Hb 10.0-10.9 g/dL)**	(73) 28.1% (22.7-34.0 95% CI)	(31) 39.2 (28.4-50.8 95% CI)	(42 23.3 (17.3-30.2 95% CI)
Moderate Anaemia **(7.0-9.9 g/dL)**	(43) 16.6% (12.2-21.7 95% CI)	(16) 20.2 (12.0-30.8 95% CI)	(27) 15.0 (10.1-21.0 95% CI)
Severe Anaemia **(<7.0 g/dL)**	(3)1.1% (0.2-3.3 95 CI)	0	(3)1.6% (0.3-4.7 95 CI)
Mean Hb (g/dL) **[range]**	11.0 g/dL [6.4-13.9]	10.6 g/dL [7.4-12.7]	11.1 g/dL [6.4-13.9]

Table 63: Prevalence of moderate and severe anaemia in children 6-59 months of age and by age group- Ajoung Thok refugee camp, south Sudan (November 2018)

	6-59 months n = 259	6-23 months n=79	24-59 months n=180
Moderate and Severe **Anaemia** **(Hb<10.0 g/dL)**	(46) 17.7% (13.3-22.9 95% CI)	(16) 20.5 (12.0-30.8 95% CI)	(30) 16.6 (11.5-22.9 95% CI)

Figure 17: Trends in anaemia categories in children 6-59 months from 2015-2018- Ajoung Thok refugee camp, south Sudan
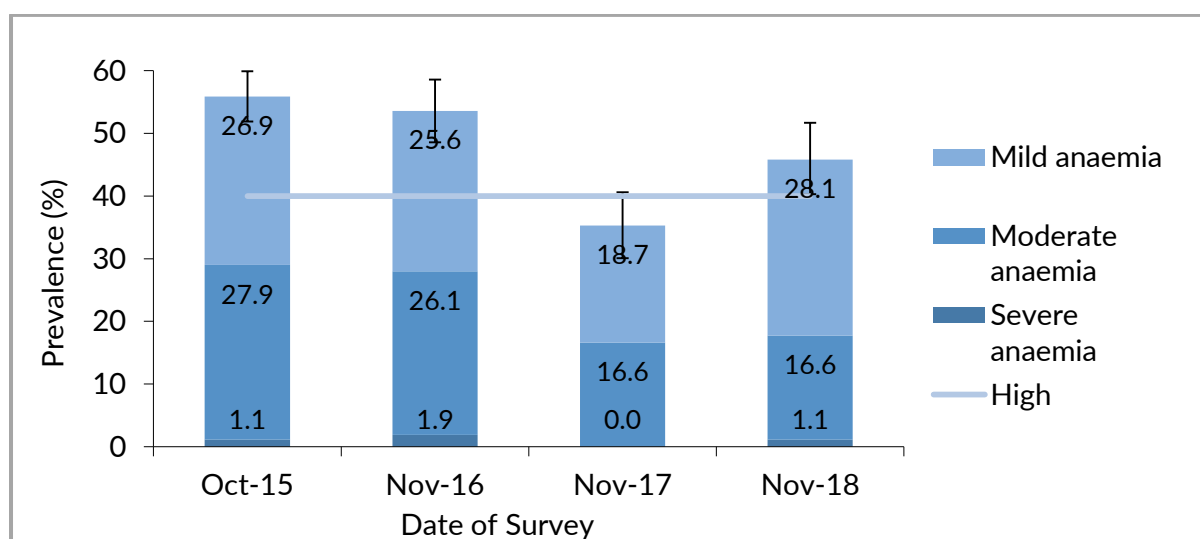
The prevalence of mild anaemia increased in November 2018 compared to that in 2017, p<0.05

Figure 18: Trend in total anaemia (<11 g/dl), and moderate and severe anaemia (<10 g/dl) with 95% CI in children 6-59 months from 2015- 2018- Ajoung Thok refugee camp, south Sudan
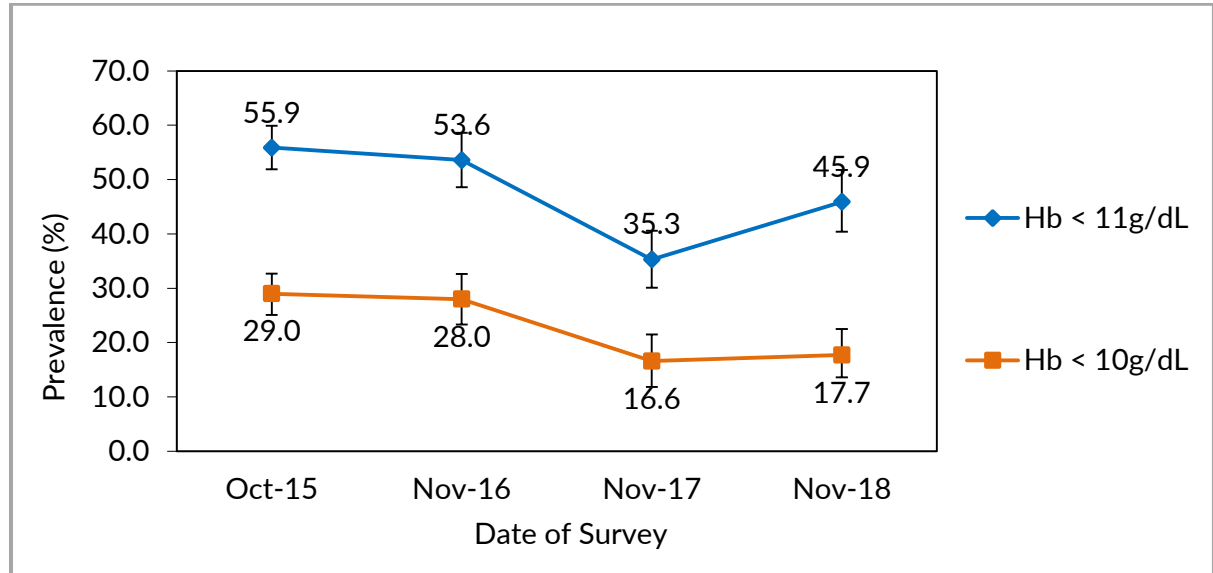
Figure 19: Trend in mean haemoglobin concentration with 95% CI in children 6-59 months from 2015- 2018- Ajoung Thok refugee camp, south Sudan
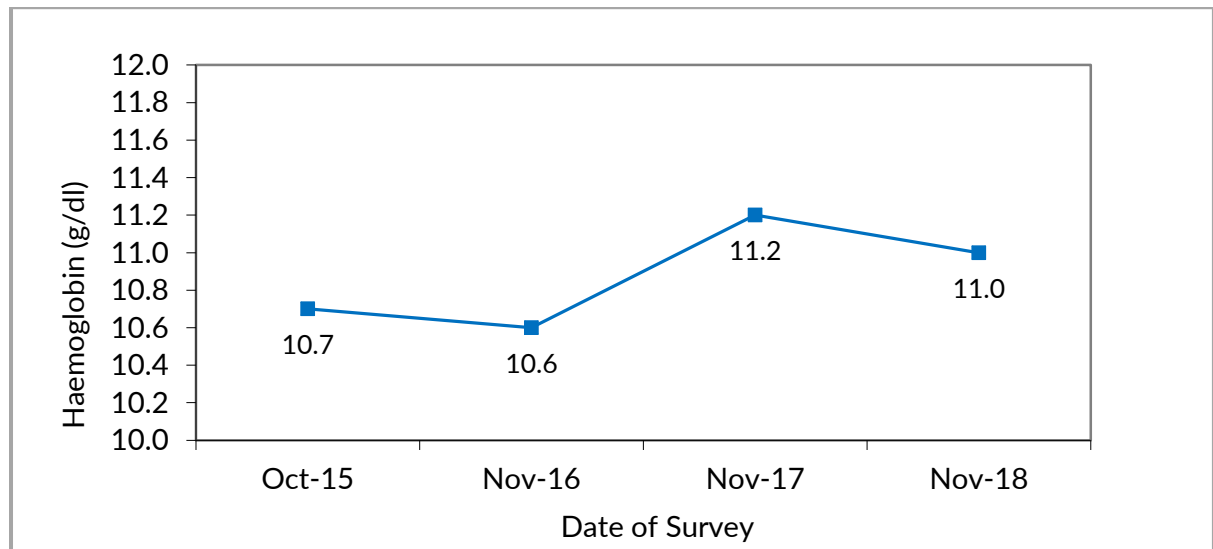
4.2.3 IYCF Children 0-23 Months

Table 64: Prevalence of Infant and Young Child Feeding Practices Indicators- Ajoung Thok refugee camp, south Sudan (November 2018)

Indicator	Age range	Number/ total	Prevalence (%)	95% CI
Timely initiation of breastfeeding	0-23 months	107/115	93.0	(86.7-96.9)
Exclusive breastfeeding under 6 months	0-5 months	34/36	94.4	(81.3-99.3)
Continued breastfeeding at 1 year	12-15 months	19/19	100	100-100
Continued breastfeeding at 2 years	20-23 months	3/10	30.0	(6.6-65.2)
Introduction of solid, semi-solid or soft foods	6-8 months	9/12	75	(42.8-94.5)
Consumption of iron-rich or iron-fortified foods	6-23 months	28/79	35.4	(25.0-47.0)
Bottle feeding	0-23 months	4/115	3.4	(0.9-8.6)

Figure 2: Key IYCF indicators from 2014-November 2018- Ajoung Thok refugee camp, south Sudan
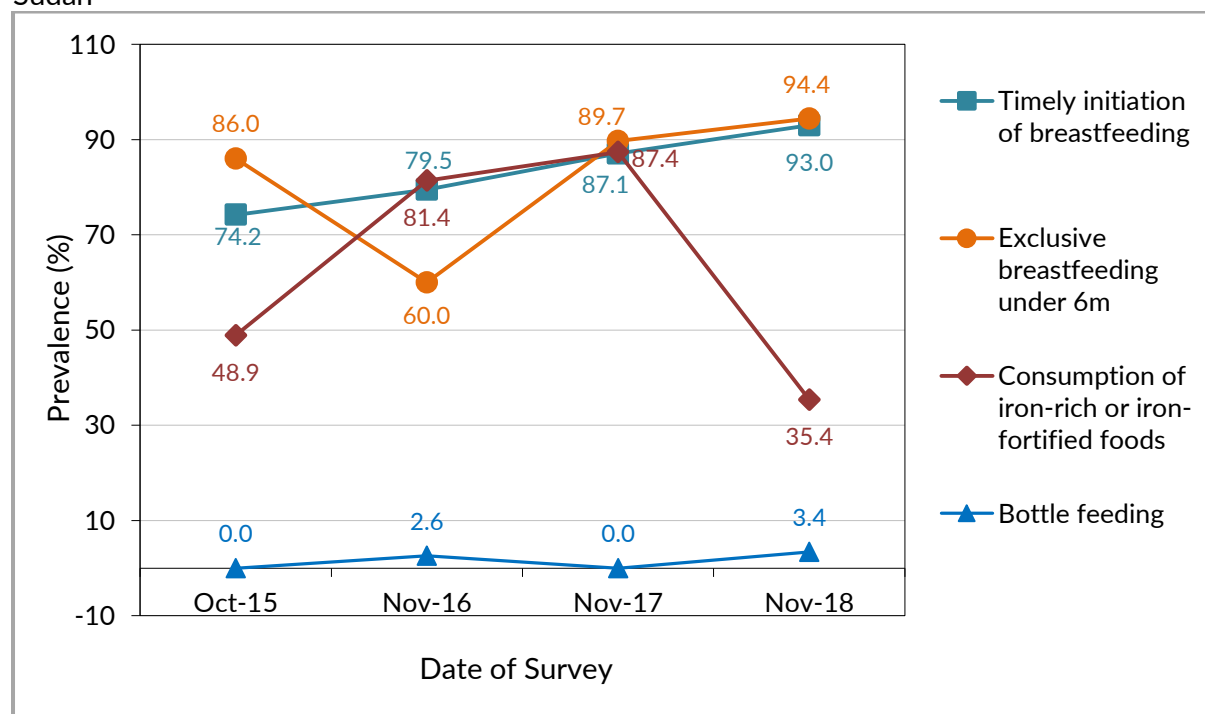
Prevalence of Intake

Infant Formula

Table 65: Infant formula intake in children aged 0-23 months- Ajoung Thok refugee camp, south Sudan (November 2018)

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	3/114	2.6 (0.5-7.5)

Fortified Blended Foods

Table 66: CSB++ Intake in Children Aged 6-23 Months - Ajoung Thok refugee camp, south Sudan (November 2018)

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB++	17/79	21.5 (13.0-32.2)

4.2.4   Anaemia; Women 15-49 Years

Table 67: Women Physiological Status and Age- Ajoung Thok refugee camp, south Sudan (November 2018)

Physiological status	Number/total	% of sample
Non-pregnant	128	92
Pregnant	11	8
Mean age (range)	24.7(15-46)	

Table 68: Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 Years) - Ajoung Thok refugee camp, south Sudan (November 2018)

Anaemia - Women of reproductive age 15-49 years	All n = 128
Total Anaemia (<12.0 g/dL)	(49) 38.2% (29.8-47.2 95% CI)
Mild Anaemia (11.0-11.9 g/dL)	(38) 29.6% (21.9-38.4 95% CI)
Moderate Anaemia (8.0-10.9 g/dL)	(11) 8.5% (4.3-14.8 95% CI)
Severe Anaemia (<8.0 g/dL)	0
Mean Hb, g/dL (SD) [range]	12.4g/dL 1.1 [9.2-16.8]

Figure 21: Trends in anaemia categories in women of reproductive age (non-pregnant) from 2015-2018- Ajoung Thok refugee camp, south Sudan
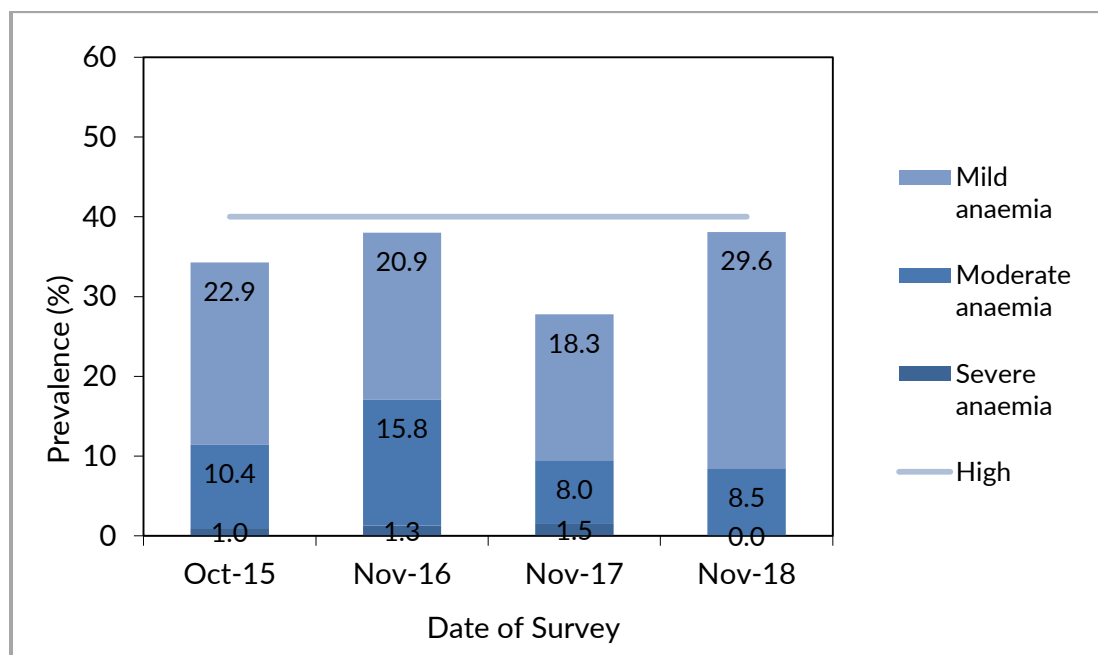
Mild anaemia increased in 2018 compared to 2017 (p<0.05).

Figure 3: Trends in mean haemoglobin concentration with 95% CI in women of reproductive age (non-pregnant) from 2015-2018- Ajoung Thok refugee camp, south Sudan
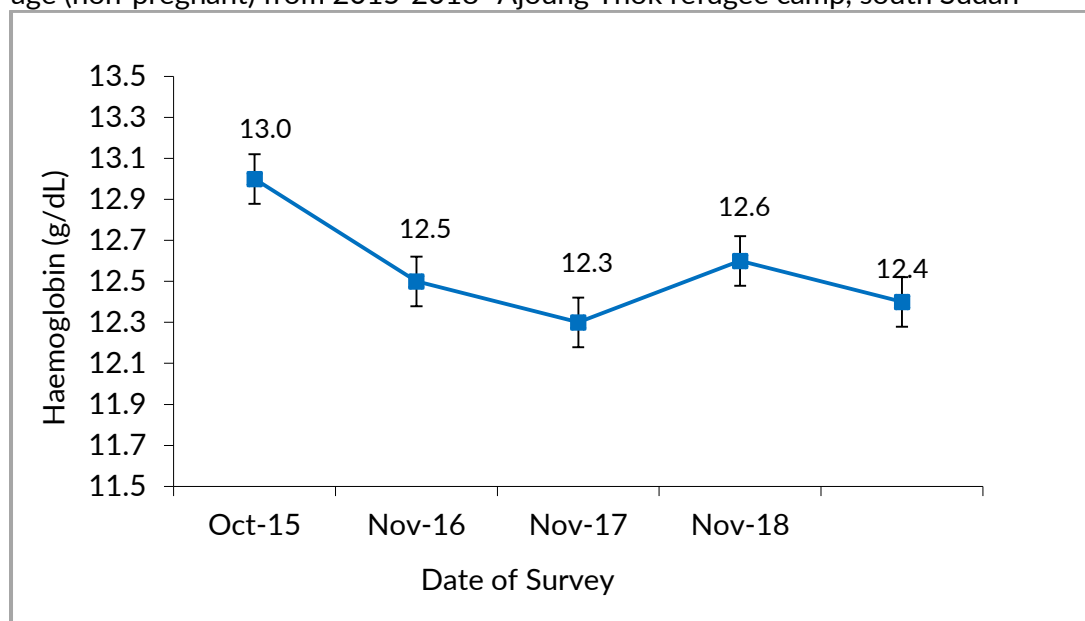
The difference in the mean haemoglobin 2018 as compared to 2017 was not statistically significant, p>0.05.

Table 69: ANC Enrolment and Iron-Folic Acid Pills Coverage among Pregnant Women (15-49 Years) - Ajoung Thok refugee camp, south Sudan (November 2018)

	Number /total	% (95% CI)
Currently enrolled in ANC programme	10/11	90.9 (58.7-99.7)
Currently receiving iron-folic acid pills	10/11	90.9 (58.7-99.7)

4.2.5 Food security

Access to food assistance

Table 70: Ration card coverage

	Number/total	% (95% CI)
Proportion of households with a ration card	142/142	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 71: Coping strategies used by the surveyed population over the past month - Ajoung Thok refugee camp, south Sudan (November 2018)

	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	63/142	44.3 (36.0-52.9)
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)	19/142	13.3 (8.2-20.1)
Requested increased remittances or gifts as compared to normal	6/142	4.2 (1.5-8.9)
Reduced the quantity and/or frequency of meals and snacks	84/142	59.1 (50.6-67.3)
Begged	7/142	4.9 (2.0-9.8)
Engaged in potentially risky or harmful activities	8/142	5.6 (2.4-10.8)
Proportion of households reporting using none of the negative coping strategies over the past month	41/142	28.8 (21.5-37.0)

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

Only 28.8% 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 20+ days prior to the start of the survey data collection. The survey was carried out during the end of the harvest season.

Table 72: Average HDDS- Ajoung Thok refugee camp, south Sudan (November 2018)

	Mean (Standard deviation or 95% CI)
Average HDDS	3.7 (1.6)

Figure 23: Proportion of households consuming different food groups within last 24 hours - Ajoung Thok refugee camp, south Sudan (November 2018)
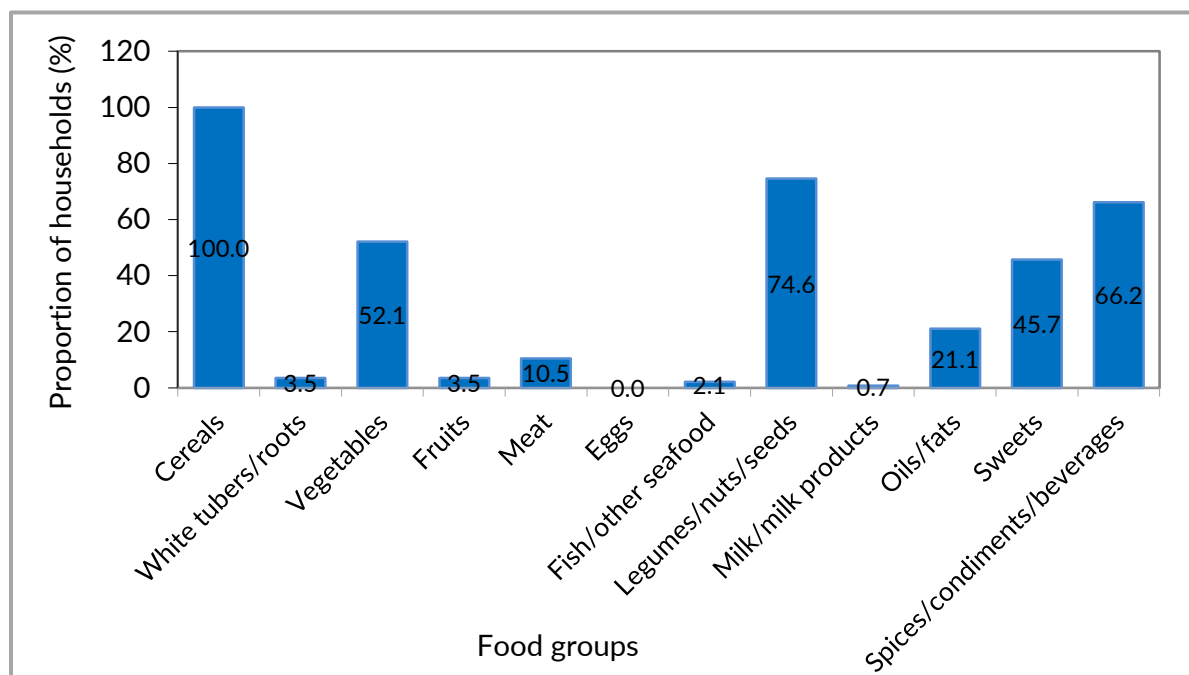
Table 73: Consumption of micronutrient rich foods by households- Ajoung Thok refugee camp, south Sudan (November 2018)

	Number/total	% (95% CI)
Proportion of households *not consuming any* vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	59/142	41.5 (33.3-50.1)
Proportion of households consuming either a plant or animal source of vitamin A	48/142	33.8 (26.0-42.2)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	18/142	12.6 (7.6-19.2)

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

5 Limitations

- The age documentation coverage was 57% and 75% 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[17]

- TSFP/TFP 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 questionnaire was in English but questionnaire were admitted in Arabic. This could have affected the understanding of the questions and ultimately the responses given.

6 Discussion

Nutritional Status of Young Children

The prevalence of GAM of 5.5% (3.6-8.3 95% C.I) and 6.3% (3.9-10.1 95% C.I) in Pamir and Ajoung Thok respectively, is poor[18] but below the critical WHO emergency threshold of 15%. The prevalence of SAM was 0.3% and 0.4% in Pamir and Ajoung Thok respectively. The prevalence of SAM is within the UNHCR acceptable level of <2%. Compared to the situation in 2017 the nutrition situation is improving in Pamir though the status remained the same. In Ajoung Thok the prevalence of moderate acute malnutrition increased significantly indicating a deteriorating situation. Reasons behind the increasing malnutrition burden to be investigated. In both refugee camps the CMAM program continued within the year. There was adequate therapeutic feeding supplies with no pipeline breaks. TSFP in Ajoung Thok faced supply challenges thus MAM cases were mostly managed using CSB++. This was not the case in Pamir where adequate Plumpy'Sup was available throughout the year. The better MAM management outcome in Pamir compared to Ajoung Thok could have been due to the use of the appropriate product –Plumpy'Sup. In addition to this preventive BSFP also continued throughout the year except the last two months of the year due to a 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 prevalence of global stunting in Pamir was 28.3% (23.9-33.1 95% C.I) while in Ajoung Thok was 28.8% (23.6-34.6 95% C.I). This is categorized as poor according to WHO standards[19]. Stunting prevalence reduced in Pamir in 2018 compared to that in 2017. This remained the

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

[18] WHO 2000 categorization

Prevalence %	Critical	Serious	Poor	Acceptable
Low weight-for-height	≥15	10-14	5-9	<5

[19] WHO categorization

same as in 2017 in Ajoung Thok as the reduction in the stunting prevalence was not statistically significant. It however improved compared to 2015 and 2016. In 2017 stunting among children 6-59 months in Pamir and Ajoung Thok was 35%. Severe stunting was 7.2 (5.0-10.3 95%CI) and 5.4% (3.3-8.9 95% C.I) respectively. Severe stunting prevalence in Pamir although indicating a downward trend in 2018, remained the same as that in 2017. In Ajoung Thok the prevalence of severe stunting reduced compared to that in 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.'[20] Driving these immediate causes is food insecurity, inappropriate childcare practices, maternal education, access to health services, and water, hygiene and sanitation conditions. These factors are embedded in the larger political, economic and social cultural environment. Although gains have been achieved in terms of increased ANC coverage (≈90%), heath facility deliveries (>90%), practices like family planning remains poor[21], low birth weight proportion in 2018 was approximately 4% for both camps[22]. These factors are likely to contribute to stunting. Other likely contributors to stunting include poor sanitation conditions leading to diarrhoeal diseases. Approximately 18.5% of the population in Pamir and Ajoung Thok practice open defecation. Literacy levels are low among the refugees especially women. Caregiver literacy levels have an inverse relationship with malnutrition including stunting. The lower the literacy level of the caregiver, the more likely they are to have a malnourished child.[23] Stunting levels were highest among children 30 to 41 month's age categories in both camps. This is likely to be a result of poor child care and feeding practices. 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).[24]

Morbidity
The interactions of nutrition and infection are cyclic with each exacerbating the other. 21.2% and 10.4% 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 need to maintain the current health service provision. Top morbidities (respiratory tract infections, malaria, diarrhoea skin/eye disease and intestinal worms) should also be given special attention.

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[20] WHA Global Nutrition Targets 2025: Stunting policy brief
[21] UNHCR HIS 2017 (65% in Pamir and 35% in Ajoung Thok)
[22] UNHCR HIS 2017
[23] WHO, Childhood Stunting: Challenges and Opportunities. Report of a Promoting Health and Preventing Childhood Stunting Colloquium. Geneva: World Health Organisation; 2014

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

Programme Coverage / enrolment

Selective feeding program enrolment
The TFP 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 TFP and TSFP coverage measures 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 TFP and TSFP nutrition programmes. BSFP coverage from the 2018 monthly monitoring reports was 79.1% in Pamir and 91.6% in Ajoung Thok for children aged 6-23 months. 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 (25% in Pamir and 6.2% 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 -135mm) 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.

Measles vaccination and Vitamin A supplementation

The coverage of measles vaccination in Pamir was 90.5% which does not meet the recommended ≥95%. In Ajoung Thok the target was slightly below the target (94.7%). The coverage remained the same at that in 2017 but indicated a downward trend. In regard to vitamin A supplementation the target coverage of ≥90% was not met in both camps. The coverage reduced in both camps compared to that in 2017. Ante natal coverage in Pamir was 88.8% and 90.9% in Ajoung Thok camp. This remained the same as in 2017.

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.[25] Measles vaccination is also associated with large reductions (23%) in all-cause childhood mortality.[26] The decrease in the coverage of Vitamin A and downward measles coverage trend is of concern. Strengthening of both routine vaccination and campaigns should be looked into in 2019 to ensure standards are met.

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 it is above the 40% level of public health significance (WHO classification)[27]. 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. The findings showed that if only moderate and severe anaemia was

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

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

[27] WHO categorization

considered, the anaemia prevalence is of medium public health concern in Pamir and low public health concern in Ajoung Thok.

The change in the prevalence of total anaemia in Pamir was not statistically significant. Of note however is the increase in the proportion of moderate anaemic category from 13.5% in 2017 to 24.5% in 2018 indicating deterioration of the mild anaemic cases. In Ajoung Thok total anaemia prevalence increased in 2018 compared to 2017. This was majorly under the mild anaemia category.

The prevalence of anaemia among women aged 15-49 years (non-pregnant) was 23% in Pamir and 38.2% in Ajoung Thok. According to the WHO classification the women anaemia prevalence is of medium public health significance. The survey showed coverage of ANC of 88.8% in Pamir and 90.9% in Ajoung Thok respectively. Iron-folic acid coverage was 83.3% and 90.9 respectively.

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 9.3% and 12.6% of the households in Pamir and Ajoung Thok respectively consumed food sources rich in haem iron. Only 28.4% and 35.4% of children aged 6-23 months had consumed iron rich foods in Pamir and Ajoung Thok respectively during the survey. This was mostly from the BSFP ration. The refugee diet lacks animal protein a good source of bioavailable iron. Malaria and intestinal worms' infection are among the top five morbidities among the refugee population that could also be contributing to the high anaemia prevalence. Malaria and intestinal worm treatment and 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. 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 2019.

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[28].

From the survey results proportion of children 0-23 months that had timely initiation of breast milk within the first hour of delivery was 84.1% in Pamir and 93% 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.

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[28] WHO, Indicators for Assessing Infant and Young Child Feeding Practices, WHO 2010

The rate of exclusive breastfeeding for the first six months of life was 88.1% in Pamir and 94.4% 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.[29] Continued breastfeeding at 1 year was 93.9% in Pamir and 100% in Ajoung Thok and up to two years was 55.5% and 30% 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. This to continue being enforced. Uptake of the practice to continue breastfeeding into the second year message needs to be strengthened. Barriers to this including birth spacing to continue being addressed.

Timely introduction of complementary feeding among children 6 to 8 months was 66.6% in Pamir and 75% 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.

8.2% and 3.4% of the surveyed children aged 0-23 months were bottle fed in Pamir and Ajoung Thok respectively. The proportion of bottle fed children increased in 2018 compared to 2017. 5% and 2.6% of the surveyed children aged 0-23 months in Pamir and Ajoung Thok respectively received infant formula. The importance of not using bottles and discouragement of the use of infant formula unless indicated as a last result to be highly sensitised in 2019. 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[30]

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. 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 3.4 out of 12 food groups and in Ajoung Thok was 3.8. Most of the households reported using one or more of the negative coping strategies (borrowed cash

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[29] UNHCR SENS guidelines for refugee populations, Version 2 (2013)
[30] Operation Guidance on IFE, section 5.2.8, v2.1, Feb 2007

or food 53.2 and 44.3%, sold assets 20.5 and 13.3%, requested increased remittances/gifts 9.3 and 4.2%, reduced quantity or frequency of meals 55.8 and 59.1%, begged 9.9 and 4.9%, and engaged in potential risky or harmful activities 7.0 and 5.6% in Pamir and Ajoung Thok respectively). Only 19.8% and 28.8% 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 thus be explored to avert the consequences. This to include the expansion of livelihood to complement the food assistance in place

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. This to include active case finding and community mobilization (UNHCR, UNICEF, WFP and AHA and IRC).

- Ensure all children aged 6-59 in the community are screened and those identified with a MUAC less than 125mm referred for enrolment into the management of acute malnutrition program. This to be carried out through community outreach program at the household level with referral to the health/nutrition facilities in Pamir and Ajoung Thok (AHA and IRC).

- Conduct the two step MUAC and WHZ scores (for children with MUAC at risk) screening monthly at the Blanket Supplementary Feeding Program (BSFP) site for children aged 6-23 months and at the health facility triage area for all presenting children 24-59 months at both Pamir and Ajoung Thok to ensure both high MUAC and WHZ score coverage. 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 programme 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 (UNHCR, WFP, AHA and IRC).
- Continue strengthening the capacity of the nutrition facilities in terms of staff 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 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 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 survey to analyse trends and facilitate program impact evaluation in 2018 (UNHCR, WFP and UNICEF, AHA and IRC).

Food security related

- Food assistance providing the minimum dietary requirements (2100kcal/person/day) in both refugee camps). Adequate in kind food to be prepositioned for 2019 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 2019. This to include the promotion of all year-round production of micronutrient-rich foods or crops in home gardens, fruit trees and small animal husbandry (UNHCR, WFP, AHA, IRC and food security and livelihood actors).

Health related

Maintain the provision of comprehensive primary health programme for refugee and surrounding host populations in both camps. This to include:

- The strengthening of the routine Expanded Programme on Immunization (EPI) and immunization campaigns 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).
- The maintenance and strengthening of reproductive health (UNHCR, AHA and IRC).
- Ensure all anaemia referral cases are tested and provided with appropriate treatment if indicated (UNHCR, AHA and IRC).
- Maintenance of adequate clean water provision (UNHCR, SP, AHA and IRC).

- Hygiene promotion and latrine coverage 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	Ateib Hussein Musa	Enumerator	AHA
3	Adail Ali Achabi	Enumerator	AHA
4	David Montkuer Deng	Enumerator	AHA
5	Lilly Ismail Kodi	Team leader	IRC
6	Omar Tijani Fakali	Enumerator	IRC
7	Zabulan Samahan	Enumerator	AHA
8	Isreal John	Enumerator	IRC
9	Isaiah Musa	Team leader	AHA
10	Bashir Siliman Ali	Enumerator	IRC
11	John Abdallah	Enumerator	IRC
12	Rahama Ramadan	Enumerator	IRC
13	Aloro Swale Sijali	Team leader	IRC
14	Bakhit Alfande Kuku	Enumerator	AHA
15	Kumi Ditti	Enumerator	AHA
16	Maria Isaac Komi	Enumerator	AHA
17	Kute Samuel Lamael	Team leader	IRC
18	Kaisar Musa	Enumerator	AHA
19	Fadina Tia	Enumerator	AHA
20	Mustafa Suleiman Anur	Enumerator	AHA
21	Ramadan Hassan	Team leader	IRC
22	Kukuman David Kukuman	Enumerator	IRC
23	Taarik Kodi	Enumerator	AHA
24	Juma Said Komi	Enumerator	IRC
25	Zachariah Wambugu	Supervisor	AHA
26	Ronald Komakech	Supervisor	IRC
27	Lilian Igube	Supervisor/coordinator	UNHCR
28	Gideon I. Ndawula (Dr)	Supervisor/coordinator	UNHCR
29	Terry Njeri Theuri	Lead coordinator	UNHCR

Data analysis and report compilation
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Report review
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8.2 Appendix 2: Summary of overall quality of anthropometric data (weight-for-height data)

Pamir

Overall data quality

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Criteria                 Flags* Unit  Excel. Good     Accept  Problematic  Score

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

Overall Sex ratio        Incl   p     >0.1  >0.05    >0.001   <=0.001
(Significant chi square)                 0     2          4       10        0 (p=0.273)

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=0.277)

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

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

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

Standard Dev WHZ         Excl   SD    <1.1  <1.15    <1.20    >=1.20
.                                      and   and      and       or
.                        Excl   SD    >0.9  >0.85    >0.80    <=0.80
                                         0     5         10       20        0 (0.97)

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

Kurtosis  WHZ            Excl   #     <±0.2 <±0.4    <±0.6    >=±0.6
                                         0     1          3        5        1 (0.24)

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

OVERALL SCORE WHZ =                    0-9   10-14    15-24     >25        1 %
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The overall score of this survey is 1 %, this is excellent.

Ajoung Thok

Overall data quality

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Criteria                 Flags* Unit  Excel. Good    Accept  Problematic  Score

Flagged data             Incl    %    0-2.5 >2.5-5.0 >5.0-7.5  >7.5
(% of out of range subjects)            0      5       10       20        0 (2.3 %)

Overall Sex ratio        Incl    p    >0.1  >0.05    >0.001   <=0.001
(Significant chi square)                0      2        4       10        0 (p=0.852)

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=0.901)

Dig pref score - weight  Incl    #    0-7   8-12     13-20     > 20
                                        0      2        4       10        2 (9)

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

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

Standard Dev WHZ         Excl    SD   <1.1  <1.15    <1.20    >=1.20
.                                     and   and      and       or
.                        Excl    SD   >0.9  >0.85    >0.80    <=0.80
                                        0      5       10       20        0 (0.92)

Skewness  WHZ            Excl    #    <±0.2 <±0.4    <±0.6    >=±0.6
                                        0      1        3        5        1 (-0.34)

Kurtosis  WHZ            Excl    #    <±0.2 <±0.4    <±0.6    >=±0.6
                                        0      1        3        5        3 (0.44)

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

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

The overall score of this survey is 10 %, 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)						Camp			Team Number				Block	
|___|___|/|___|___|/|___|___||___|___|									|___|___|				|___|___|	

CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8	CH9***	CH10***	CH11	CH12	CH13	CH14	CH15
ID	HH	Consent given 1=yes 2=no 3=absent	Sex (m/f)	Birthdate* dd/mm/yyyy	Age** (months)	Weight (kg) ±100g	Height (cm) ±0.1cm	Oedema (y/n)	MUAC (mm)	Is this Child enrolled in a nutrition program الطفل المسجل 1=TSFP 2=TFP (SC or OTP) 3=None	Measles الحصبة 1=yes card 2=yes recall 3=no or don't know	Vit. A in past 6 months (show capsule) 1=yes card 2=yes recall 3=no or don't know	Diarrhoea in past 2 weeks# 1=yes 2=no 8=DK	Haemoglobin g/dl
01				/ /										
02				/ /										
03				/ /										
04				/ /										
05				/ /										
06				/ /										
07				/ /										
08				/ /										
09				/ /										
10				/ /										
11				/ /										
12				/ /										
15														

*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

IYCF Questionnaire (0-23 months) (every household)

No	QUESTION الاسئلة	ANSWER CODES الجابات	
SECTION IF1			
IF1	Sex نوع	Male زكر..1 Female انثى..2	|___|
IF2	Birthdate التاريغ الميلاد RECORD FROM AGE DOCUMENTATION. LEAVE BLANK IF NO VALID AGE DOCUMENTATION سجل من وثِق	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 وثِقةتاريغ 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 رغية لمعرفة ازا طفلك حتلا لة مواد حتلا لو مغلوط مع 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 (Libto Mama) [طفل مرضيى 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, Formost) 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	

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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 ازكر بعض من السوائل مثل مشروبات غازية و 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...لااعرف.....................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	Yesنعم..........................1 No لا ....2 DK لا اعرف 8	|___|

SECTION IF4

Is child aged 6-23 months? هل طفلك عمره 6-23 شهر REFER TO IF2	Yesنعم............................1 Noلا..............................2	|___| **IF ANSWER IS 2 STOP NOW** ازا اللجا بة 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 غزا 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 المواداعطى 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++ صويا ا وف ول زرة م ثل ال قوى ال غزاء ++ 	11C............................1 2 8	
11D. **RUTF** : for example Plumpy'Nut® (SHOW SACHET) ف ى ي س تعامل هؤة ال جا ال غزاء ال محـلى ال غزئ ية هؤى سجل ال علاج	11D............................1 2 8	
11E. **RUSF** : for example Plumpy'Sup® (SHOW SACHET) هؤة سجل ف ى دالا ضا محـلى ال جاهؤة ال كل الموجو ال كل	11E............................1 2 8	
11G. Infant formula: for example Libto Mama. ازكر ال ر ضى ال ط فل ل و صد فة الا قوى حدي دى ال ال غزئ ية ا سماء هؤة من بـ عض	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. Sorghum+groundnut, Pumpkin +groundnut** (ل ين سجل	11H............................1 2 8	

شبة الغزي بعض الغزي من فرق ولدة المنطقة في الموجون يرضى والاط فال لاط فال الم صنع (او و صلب صلب

شبة الغزي بعض الغزي من فرق ولدة المنطقة في الموجون يرضى والاط فال لاط فال الم صنع (او و صلب صلب

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 الـ بطاقـة	HH الـ بـ يت ربـة	**Consent given** اعطى الـ قـ بول 1=yes نعم 2=no لا 3=absent الغائب	**Age** العمر (السنة) (years)	**Are you pregnant?** حامل اذ تـ هل؟ 1=yes عم ذ 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		Hb قرص الدم فـ g/dL) **(Only for non-pregnant women)** فقط للنساء غير الحبلى
01								
02								
03								
04								
05								
06								
07								
08								
09								
10								
11								
12								
13								

Food Security questionnaire (1 questionnaire per every other household)

Date (dd/mm/yyyy)	Camp	Block Number
|___|___|/|___|___|/November 2018		|___|___|
HH Number		**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	|___|
3.	How many days did the food from the general food aid ration from the cycle of [September] month last? كم عدد الايام التي كفاك فيها الطعام من الحصة الغذائية التي استلمتها في [أدخل الشهر]؟	Number of Days _____ _____ **IF ANSWER IS > or =30 days GO TO Q5**	|___|___|
4.	In the last month, have you or anyone in your household borrowed cash, food or other items with or without interest?	Yes .... 1 No .... 2 Don't Know............................8	|___|

	في الشهر الماضي، هل قمت أو هل قامت أسرتك باقتراض المال، الطعام أو غير مواد مع أو دون فائدة لتلبية احتياجات الطعام الأساسية؟		
5.	In the last month, have you or anyone in your household sold any assets that you would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)? في الشهر الماضي، هل قمت أو هل قامت أسرتك ببيع ممتلكات (مجوهرات، هواتف، أثاث، أجهزة كهربائية، أدوات انتاجية، مواش، الخ) لتلبية احتياجات الطعام الأساسية؟	Yes .... 1 No .... 2 Don't Know...........................8	|___|
6.	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	|___|
7.	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	|___|
8.	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	|___|
9.	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. 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 أسالك 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.	**READ THE LIST OF FOODS AND DO NOT PROBE. RECORD (1) IN THE BOX IF ANYONE IN THE HOUSEHOLD ATE 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, tomaoto, pumpkin, squash that are orange inside + other locally available vitamin A rich vegetables (e.g. red sweet pepper) 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, 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	3C..|___|

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pepper, onion, eggplant, cucumber,) +
other locally available vegetables

أية خضار أخرى

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......................................|___|
10. 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
Sorghum harvest			November 2018	0	
Groundnut harvest			October 2018	1	
1st Maize harvest			September 2018	2	
Weeding of crops, Last groundnut harvest			August 2018	3	
Sorghum, maize groundnut planting continues			July 2018	4	
Rain starts, Sorghum, maize groundnut planting		World refugee day (20 June)	June 2018	5	
		SPLA day	May 2018	6	65-70 cm
Land preparation start			April 2018	7	
Land preparation start		Celebration of Yusuf Kuwa	March 2018	8	
			February 2018	9	71-76 cm
		New year celebrations	January 2018	10	
	Christmas (25 Dec)		December 2017	11	
Sorghum harvest			November 2017	12	
Groundnut harvest			October 2017	13	
1st Maize harvest	Bible course		September 2017	14	
Weeding of crops, Last groundnut harvest			August 2017	15	
Sorghum, maize groundnut planting continues			July 2017	16	77-80 cm
Rain starts, Sorghum, maize groundnut planting		World refugee day (20 June)	June 2017	17	
		SPLA day	May 2017	18	
Land preparation start			April 2017	19	
Land preparation start		Celebration of Yusuf Kuwa	March 2017	20	
			February 2017	21	
		New year celebrations	January 2017	22	81-86 cm
	Christmas (25 Dec)		December 2016	23	
Sorghum harvest			November 2016	24	
Groundnut harvest			October 2016	25	
1st Maize harvest	Bible course		September 2016	26	
Weeding of crops, Last groundnut harvest			August 2016	27	
Sorghum, maize groundnut planting continues			July 2016	28	
Rain starts, Sorghum, maize groundnut planting		World refugee day (20 June)	June 2016	29	
		SPLA day	May 2016	30	87-90 cm
Land preparation start			April 2016	31	
Land preparation start		Celebration of Yusuf Kuwa	March 2016	32	
			February 2016	33	
		New year celebrations	January 2016	34	
	Christmas (25 Dec)		December 2015	35	
Sorghum harvest			November 2015	36	
Groundnut harvest			October 2015	37	
1st Maize harvest	Bible course		September 2015	38	
Weeding of crops, Last groundnut harvest			August 2015	39	91-99 cm
Sorghum, maize groundnut planting continues			July 2015	40	
Rain starts, Sorghum, maize groundnut planting		World refugee day (20 June)	June 2015	41	
		SPLA day	May 2015	42	
Land preparation start			April 2015	43	
Land preparation start		Celebration of Yusuf Kuwa	March 2015	44	
			February 2015	45	
		New year celebrations	January 2015	46	
	Christmas (25 Dec)		December 2014	47	
Sorghum harvest			November 2014	48	
Groundnut harvest			October 2014	49	100-110 cm
1st Maize harvest	Bible course		September 2014	50	
Weeding of crops, Last groundnut harvest			August 2014	51	
Sorghum, maize groundnut planting continues			July 2014	52	
Rain starts, Sorghum, maize groundnut planting		World refugee day (20 June)	June 2014	53	
		SPLA day	May 2014	54	
Land preparation start			April 2014	55	
Land preparation start		Opening of Ajoung Thok	March 2014	56	
			February 2014	57	
		New year celebrations	January 2014	58	
	Christmas (25 Dec)		December 2013	59	
Sorghum harvest			November 2013	60	

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

8.5 Appendix 5: Pamir and Ajoung Thok location in Ruweng, south Sudan