

# STANDARDISED EXPANDED NUTRITION SURVEY (SENS)

## Final report

Pamir & Ajoung Thok refugee camps

Ruweng State

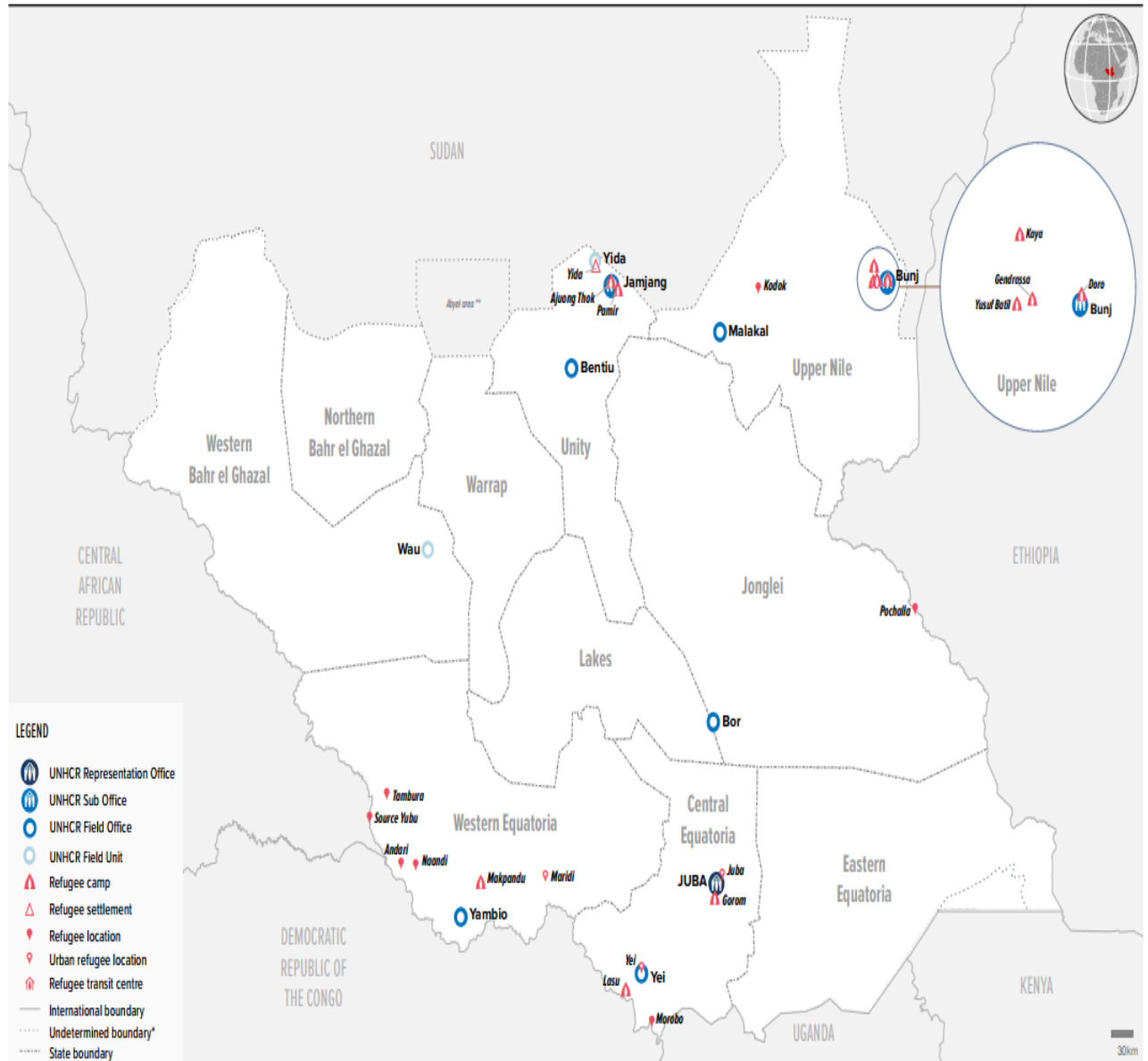
South Sudan

Survey conducted: 6-14 November 2017



# SOUTH SUDAN

## UNHCR Operational Presence and Refugee Locations in 2018



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

## TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS.....	3
ACKNOWLEDGMENTS.....	4
EXECUTIVE SUMMARY.....	5
1 Introduction .....	18
1.1 Description of the population.....	19
1.2 Food security situation .....	19
1.3 Health situation .....	20
1.4 Nutrition situation .....	20
1.5 WASH situation.....	23
2 SURVEY OBJECTIVES.....	24
3 METHODOLOGY.....	25
3.1 Sample size.....	25
3.2 Sampling procedure: selecting households and individuals.....	26
3.3 Questionnaire and measurement methods.....	26
3.4 Case definitions, inclusion criteria and calculations .....	28
3.5 Classification of public health problems and targets.....	31
3.6 Training, coordination and supervision .....	32
3.7 Data collection .....	32
3.8 Data analysis.....	32
4 RESULTS.....	34
4.1 Results-Pamir .....	34
4.1.1 Anthropometry and Health-Children 6-59 months.....	34
4.1.2 Anaemia Results Children 6 – 59 months .....	41
4.1.3 IYCF Children 0-23 months.....	42
4.1.4 Anaemia: Women 15-49 years.....	43
4.1.5 Food Security .....	44
4.2 Results-Ajounk Thok .....	46
4.2.1 Anthropometry and Health; Children 6-59 months .....	46
4.2.2 Anaemia Results Children 6 – 59 Months .....	55
4.2.3 IYCF Children 0-23 Months .....	57
4.2.4 Anaemia: Women 15-49 Years .....	58
4.2.5 Food Security .....	60
5 LIMITATIONS .....	62
6 DISCUSSION .....	62
7 RECOMMENDATIONS AND PRIORITIES .....	66
8 APPENDICES .....	68
8.1 Appendix 1 – Name of key survey contributors .....	68
8.2 Appendix 2- Summary of overall quality of anthropometric data .....	69
8.3 Appendix 3 – Survey questionnaires .....	71
8.4 Appendix 4 – Events Calendar .....	80
8.5 Appendix 5 – Pamir and Ajounk Thok location in Ruweng, south Sudan ....	81

## 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
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. Our gratitude also goes to WFP for supporting the training. 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 in Juba 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 6 to 14 November 2017. Pamir and Ajoung Thok are the official refugee camps in Pariang. No nutrition survey was carried out in Yida as comprehensive services were not provided in 2016 in light of its exit strategy. Refugees from Yida continue to be relocated to Pamir and Ajuong Thok refugee camps. The overall aim of the survey was to assess the nutrition situation among the refugee population and to monitor the current programme interventions. In each camp a cross-sectional survey was conducted using the UNHCR Standardised Expanded Nutrition Survey (SENS) version 2, 2013 guidelines and the Standardised Monitoring and Assessments of Relief and Transitions (SMART) guidelines. 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 9<sup>th</sup>, 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 21.

A total of six survey teams composed of five members each (one team leader, one hemoglobin measurer, two anthropometric measurers/translators and one hemoglobin 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 6-14 with a one day break on the 12 November 2017. The survey teams were supported by a team of 4 supervisors and 1 coordinator 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 five modules. 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 9<sup>th</sup>, 2015 version for anthropometric indices and Epi info version 7 for the rest of the indicators.

The prevalence of Global Acute Malnutrition (GAM) was 2.8 (1.4-5.4 95% C.I) in Ajoung Thok camp based on WHZ scores which is acceptable<sup>1</sup> and below the critical WHO emergency threshold of 15%. Of note, however, is that the higher confidence interval falls under the poor nutrition category thus the need for concerted efforts to keep the prevalence low. Compared to the situation in 2016 the situation remained the

<sup>1</sup> WHO 2000 categorization

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

same as the reduction in the GAM prevalence was not statistically significant ( $p>0.05$ ). The proportion of children with a MUAC <12.5cm in Ajoung Thok camp was 3.5% (1.9-6.3 95% C.I) which is slightly higher than the weight for height z score indicating the need to use a combined admission criteria into the nutrition programme. In Pamir camp the GAM prevalence based on WHZ score was 8.2% (5.6-11.7 95% C.I) indicating a poor nutrition situation as per WHO classification. The proportion of children with MUAC <12.5cm in Pamir camp was 6.5% (4.3-9.8 95% C.I). This was the first nutrition survey to be conducted in Pamir camp where most new arrivals are hosted. The data will thus act as the baseline.

The prevalence of global stunting in Pamir and Ajoung Thok camps was approximately 35%. This is categorised as serious according to WHO standard<sup>2</sup>. Stunting prevalence indicated a reduction from 40.9% in 2016 in Ajoung Thok but the reduction in the stunting prevalence was not statistically significant. 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.<sup>3</sup>

Total anaemia prevalence among children 6 to 59 months in Pamir was high 44.5% while in Ajoung Thok it was of medium concern, hence serious (35.3%)<sup>4</sup>. The anaemia prevalence in Ajoung Thok reduced compared to 53.6% in 2016. Children 6-23 months tend to be most affected by anaemia compared to the 24-59 months age category. The prevalence of anaemia among children aged 6-23 months was 62.7% and 58.1% in Pamir and Ajoung Thok camps which is classified as of high public health significance according to the WHO classification. This requires strengthening of anaemia prevention and control interventions. 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 criteria in Pamir did not meet the recommended standard of >90%. In Ajoung Thok the TFP coverage met the recommended standard but the TSFP did not. 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 89.9% which does not meet the recommended  $\geq 95\%$ . In Ajoung Thok the target was met. In regard to vitamin A supplementation the target coverage of  $\geq 90\%$  was met in both camps. Both the measles and vitamin A coverage improved in Ajoung Thok compared to 2016 when the coverage was below the target. Ante natal coverage in Pamir was 88.2% and 80% in Ajoung Thok camp. Efforts to maintain and strengthen this to be ensured.

<sup>2</sup> WHO categorization

Prevalence %	Critical	Serious	Poor	Acceptable
Low height-for-age	$\geq 40$	30-39	20-29	<20

<sup>3</sup> [http://www.who.int/nutrition/topics/globaltargets\\_stunting\\_policybrief.pdf](http://www.who.int/nutrition/topics/globaltargets_stunting_policybrief.pdf)

<sup>4</sup> WHO categorization

Prevalence %	High	Medium	Low
Anaemia	$\geq 40$	20-39	5-19

22% of children aged 6-59 months in Pamir and 13.9% 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 79.9% and 87.1% while exclusive breastfeeding was above 80% in Pamir and Ajoung Thok indicating a positive uptake of the breastfeeding messages. Timely introduction of complementary feeding and consumption of iron rich foods was, however, low in Pamir at 37.5% and 24.3% respectively indicating sub optimal feeding practices. In Ajoung Thok this was 61.9% and 87.4% which is better than Pamir but still needs to be increased to cover most of the children. There is thus a need to strengthen the Infant and Young Child Feeding (IYCF) promotion program in regard to appropriate complementary feeding.

Only a small proportion of the refugees in Ajoung Thok and Pamir refugee camps reported *not* using negative coping strategies to fill the food assistance gap. This was 34.8% in Pamir and 37.2 % 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.

Table 1: Summary of Results SENS 2017, Pamir and Ajoung Thok refugee camps, South Sudan

	Pamir		Ajoung Thok		
	Number / total	% (95% CI)	Number / total	% (95% CI)	Classification of public health significance or target (where applicable)
<b>CHILDREN 6-59 months</b>					
<b>Acute Malnutrition (WHO 2006 Growth Standards)</b>					
Global Acute Malnutrition (GAM)	26/317	8.2 (5.7-11.7)	8/285	2.8 (1.4-5.4)	Critical if ≥ 15%
Moderate Acute Malnutrition (MAM)	24/317	7.6 (5.1-11.0)	7/285	2.5 (1.2-5.0)	
Severe Acute Malnutrition (SAM)	2/317	0.6 (0.2-2.3)	1/285	0.4 (0.1-2.0)	
Oedema	0/317	0(0-0)	0/285	0(0-0)	
<b>Mid Upper Arm Circumference (MUAC)</b>					
MUAC <125mm and/or oedema	21/321	6.5 (4.3-9.8)	10/287	3.5 (1.9-6.3)	
MUAC 115-124 mm	19/321	5.9 (3.8-9.1)	8/287	2.8 (1.4-5.4)	
MUAC <115 mm and/or oedema	2/321	0.6 (0.2-2.2)	2/287	0.7 (0.2-2.5)	

	Pamir		Ajoung Thok		
	Number / total	% (95% CI)	Number / total	% (95% CI)	Classification of public health significance or target (where applicable)
<b>Stunting<sup>5</sup> (WHO 2006 Growth Standards)</b>					
Total Stunting	111/314	35.4 (30.3-40.8)	98/276	35.5 (30.1-41.3)	Critical if ≥ 40%
Severe Stunting	36/314	11.5 (8.4-15.5)	30/276	10.9 (7.7-15.1)	
<b>Programme coverage</b>					
Measles vaccination with card or recall (9-59 months)	266/296	89.9 (85.8-93.1)	259/266	97.4 (94.7-98.9)	Target of ≥ 95%
Vitamin A supplementation coverage with card or recall, within past 6 months with card or recall (6-59 months)	293/323	90.7 (87.1-93.4)	285/287	99.3 (97.5-99.9)	Target of ≥ 90%
Therapeutic Feeding Program (TFP) (based on all admission criteria WHZ, oedema and MUAC)	2/2	0	1/1	100	Target of ≥ 90%
Targeted Supplementary Feeding Program(TSFP) (based on all admission criteria WHZ and MUAC)	12/18	66.7 (41.0-86.7)	2/13	15.4 (1.9-45.5)	Target of ≥ 90%
<b>Diarrhoea</b>					
Diarrhoea in past 2 weeks	71/323	22.0 (17.8-26.8)	40/287	13.9 (10.2-18.5)	

<sup>5</sup> 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)
<b>Anaemia (children 6-59 months)</b>					
Total Anaemia (Hb <11 g/dl)	142/319	44.5 (39.2-50.0)	100/283	35.3 (29.8-41.2)	High if ≥ 40%
Mild (Hb 10-10.9)	99/319	31.0 (26.2-36.3)	53/283	18.7 (14.4-23.8)	
Moderate (Hb 7-9.9)	43/319	13.5 (10.2-17.7)	47/283	16.6 (12.5-21.4)	
Severe (Hb <7)	0/319	0	0	0)	
<b>Anaemia (children 6-23 months)</b>					
Total Anaemia (Hb <11 g/dl)	69/110	62.7 (53.0-71.8)	54/93	58.1 (47.4-68.2)	High if ≥ 40%
Mild (Hb 10-10.9)	47/110	42.7 (33.3-52.5)	24/93	25.8 (17.3-35.9)	
Moderate (Hb 7-9.9)	22/110	20 (13.0-28.7)	30/93	32.3 (22.9-42.6)	
Severe (Hb <7)	0		0	0	
<b>CHILDREN 0-23 months</b>					
<b>IYCF indicators</b>					
Timely initiation of breastfeeding	111/139	79.9	108/124	87.1	

	Pamir		Ajoung Thok		
	Number / total	% (95% CI)	Number / total	% (95% CI)	Classification of public health significance or target (where applicable)
		(72.2-86.2)		(79.9-92.4)	
Exclusive breastfeeding under 6 months	24/28	85.7 (67.3-96.0)	26/29	89.7 (72.7-97.8)	
Continued breastfeeding at 1 year	20/21	95.2 (76.1-99.9)	21/22	95.5 (77.2-99.9)	
Continued breastfeeding at 2 years	15/21	71.4 (47.8-88.7)	7/13	53.9 (25.1-80.8)	
Introduction of solid, semi-solid or soft foods	9/24	37.5 (18.8-59.4)	13/21	61.9 (38.4-81.9)	
Consumption of iron-rich or iron-fortified foods	27/111	24.3 (16.7-33.4)	83/95	87.4 (79.0-93.3)	
Bottle feeding	1/139	0.7 (0-3.9)	0/124	0	
Proportion of children 6-23 months who received CSB++ in the last 24 hours	3/111	2.7 (0.6-7.7)	78/95	82.1 (72.9-89.2)	
<b>WOMEN 15-49 years</b>					
<b>Anaemia (non-pregnant)</b>					
Total Anaemia (Hb <12 g/dl)	22/108	20.4 (13.2-29.2)	38/137	27.7 (20.4-36.0)	High if ≥ 40%
Mild (Hb 11-11.9)	16/108	14.8 (8.7-22.9)	25/137	18.3 (12.2-25.8)	

	Pamir		Ajoung Thok		Classification of public health significance or target (where applicable)
	Number / total	% (95% CI)	Number / total	% (95% CI)	
Moderate (Hb 8-10.9)	6/108	5.7 (2.1-11.7)	11/137	8.0 (4.1-13.9)	
Severe (Hb <8)	0	0	2/137	1.5 (0.2-5.1)	
<b>Programme enrolment pregnant women</b>					
Pregnant women currently enrolled in the ANC	15/17	88.2 (63.6-98.5)	8/10	80 (44.4-97.5)	
Pregnant women currently receiving Iron-folic acid pills	15/17	88.2 (63.6-98.5)	8/10	80 (44.4-97.5)	
<b>Food Security</b>					
Proportion of HH with a ration card	155/155	100	156/156	100	
Average House Hold Diversity Score(HDDS)		4.0		3.8	
Proportion of households consuming either a plant or animal source of vitamin A	31/154	20.1 (14.1-27.3)	33/156	21.2 (15.0-28.4)	
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	53/154	34.4 (27.0-42.5)	37/156	23.7 (17.3-31.2)	
<b>Proportion of households reporting using the following coping strategies over the past month*:</b>					
Borrowed cash, food or other items with or without interest	60/155	38.7 (31-46.9)	60/156	38.5 (30.8-46.6)	

	Pamir		Ajong Thok		
	Number / total	% (95% CI)	Number / total	% (95% CI)	Classification of public health significance or target (where applicable)
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)	45/155	29.0 (22.0-36.9)	45/156	27.6 (20.7-35.3)	
Requested increased remittances or gifts as compared to normal	7/155	4.5 (1.8-9.1)	8/155	5.2 (2.3-9.9)	
Reduced the quantity and/or frequency of meals and snacks	87/155	56.1 (47.9-64.1)	89/155	57.4 (49.2-65.3)	
Begged	28/155	18.1 (12.4-25.0)	20/155	12.9 (8.1-19.2)	
Engaged in potentially risky or harmful activities	13/155	8.4 (4.5-13.9)	4/155	2.6 (0.7-6.5)	
Households reporting using none of the listed coping strategies (n=21)	54/155	34.8 (27.4-42.9)	58/155	37.4 (29.8-45.5)	

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

## Results Interpretation

- The prevalence of Global Acute Malnutrition (GAM) was 2.8 (1.4-5.4 95% C.I) in Ajoung Thok based on WHZ scores which is acceptable<sup>6</sup> and below the critical WHO emergency threshold of 15%. Of note however, is that the higher confidence interval falls under the poor nutrition category. Compared to the situation in 2016 the situation remained the same as the reduction in the GAM prevalence was not statistically significant ( $p>0.05$ ). The proportion of children with a MUAC <12.5cm in Ajoung Thok camp was 3.5% (1.9-6.3 95% C.I) which is slightly higher than the weight for height z score indicating the need to use a combined admission criteria in nutrition programme. In Pamir camp the GAM prevalence was 8.2% (5.6-11.7 95% C.I) indicating a poor nutrition situation as per WHO classification. The proportion of children with MUAC <12.5cm in Pamir camp was 6.5% (4.3-9.8 95% C.I).
- The prevalence of global stunting in Ajoung Thok was 35.5% (30.1-41.3 95% C.I) while in Pamir it was 35.1% (30.1-40.5 95% C.I). This is categorized as serious according to WHO standard<sup>7</sup>. Stunting prevalence remained the same as in 2016 in Ajoung Thok as the reduction in the stunting prevalence was not statistically significant. In 2016 stunting among children aged 6-59 months in Ajoung Thok was 40.9% (36.3-45.6 95% C.I). 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.<sup>8</sup>
- The TFP and TSFP coverage based on all admission criteria in Pamir did not meet the recommended standard of >90%. In Ajoung Thok the TFP coverage met the recommended standard but the TSFP did not. This indicates the need to strengthen active case finding, referral both at the community level and the screening at the facility level. 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 89.9% which does not meet the recommended  $\geq 95\%$ . In Ajoung Thok the target was met. In regard to vitamin A supplementation the target coverage of  $\geq 90\%$  was met in both camps. Both the measles and vitamin A coverage improved in Ajoung Thok compared to 2016 when the coverage was below the target.
- 22% of children 6-59 months in Pamir and 13.9% 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

<sup>6</sup> WHO 2000 categorization

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

<sup>7</sup> WHO categorization

Prevalence %	Critical	Serious	Poor	Acceptable
Low height-for-age	$\geq 40$	30-39	20-29	<20

<sup>8</sup> [http://www.who.int/nutrition/topics/globaltargets\\_stunting\\_policybrief.pdf](http://www.who.int/nutrition/topics/globaltargets_stunting_policybrief.pdf)

- Total anaemia prevalence among children aged 6 to 59 months in Pamir was 44.5%. This is high as it is above the 40% level of public health significance according to the WHO classification<sup>9</sup>. In Ajoung Thok the anaemia prevalence was 35.2%. This is serious as it falls under medium classification of public health significance. This reduced compared to 53.6% in 2016. The prevalence of anaemia among children aged 6-23 months was 62.7% and 58.1% in Pamir and Ajoung Thok camps. This is classified as of high public health significance according to WHO classification and requires strengthening of anaemia prevention and control interventions. The prevalence of anaemia among women aged 15-49 years (non-pregnant) was 20.4% Pamir and 38% in Ajoung Thok. This is considered to be of medium public health significance and is above the expected <20% UNHCR target. Only a low proportion of households consumed food groups containing iron and vitamin A (<35%) 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 79.9% and 87.1% and exclusive breastfeeding was 85.7% in Pamir and 89.7% in Ajoung Thok. This indicates a positive uptake of the exclusive breastfeeding message. Timely introduction of complementary feeding was 37.5% in Pamir and 61.9% in Ajoung Thok. Consumption of iron-rich or iron-fortified foods was 24.3% and 87.4% in Pamir and Ajoung Thok respectively. There is need to continue strengthening the IYCF program to improve the infant and young child feeding practices to optimal levels. More is required in Pamir as the indicators are worse than in Ajoung Thok.
- 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 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 38.7 and 38.5%, sold assets 29 and 27.6%, requested increased remittances/gifts 4.5 and 5.2%, reduced quantity or frequency of meals 56.1 and 57.4%, begged 18.1 and 12.9%, and engaged in potential risky or harmful activities 8.4 and 2.6% 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 requires attention.
- Only approximately a third of the refugees in Pamir and Ajoung Thok reported not using any of the above 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.

<sup>9</sup> WHO categorization

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

## **Recommendations and Priorities**

### **Nutrition related**

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

Ensure all children identified with a MUAC less than 125mm get enrolled into the management of acute malnutrition programs. This to be carried out through community outreach at household level and referral to the health/nutrition facility (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).

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 a UNHCR and save the children initiative for support, promotion, and protection of Infant and Young Child Feeding (IYCF) and community outreach education aspects to stop malnutrition from occurring in the first place. (UNHCR, UNICEF, AHA and IRC).

Roll out 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**

Provision of a general food ration providing the minimum dietary requirements (2100kcal/person/day) in both camps (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. A joint assessment mission to be carried out in 2018 to further guide the improvement of food security (UNHCR, WFP, AHA, IRC and food security and livelihood actors).

**Health related**

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

- The maintenance of the routine Expanded Programme on Immunization (EPI) and immunization campaigns in Pamir and Ajourng Thok. Pamir to strengthen measles vaccination coverage in 2018. (UNHCR, AHA and IRC).
- Prevention, control of infection, vector borne diseases especially around malaria and helminths (UNHCR, AHA, SP and IRC).
- The maintenance and strengthening of reproductive health (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).

## 1 Introduction

This report presents the results of nutrition survey conducted in Pamir and Ajoung Thok refugee camps from 6 to 14 November 2017.

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 a settlement where refugees first settled without assistance from neither UNHCR nor from the government also has a sizeable number of refugees (54869)<sup>10</sup>. Officially, Yida is not recognised as a refugee camp but a settlement, as such 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 implements the water and sanitation programme.

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<sup>10</sup>UNHCR ProGres data, October 2017

## 1.1 Description of the population

The SENS was conducted from 6 to 14 November 2017. At the end of October 2017, Pamir and Ajoung Thok had population figures of 16847 and 37630 individuals respectively<sup>11</sup>. Children less than five years accounted for 23.5% of the population in Pamir and 20.2% 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 mainly 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 2017 the refugees in Pamir and Ajoung Thok camps continued to receive the 29% reduced ration scale. This consisted of 350g sorghum, 35g of yellow split peas, 21ml of vegetable oil and 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. In the months of July and August pulses were provided at a 50% ration scale due to a pipeline break. This reduced the overall kcal/person/day for these months to 69%. Refugees continue to highlight the reduced ration as one of the key shock they face. This was corroborated by the low proportion with an acceptable food consumption score in the second half of 2016 (29%)<sup>12</sup> and the high anaemia and stunting levels in the refugee camps. The latter could be due to the inadequacy of the ration both in terms of the quantity and quality.

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 thus be explored to avert the consequences.

Milling assistance was reintroduced in the fourth quarter of 2017 at first using milling vouchers for a month post which cash for milling is provided. 1.5USD ( $\approx$  300SSP) is provided per person. Milling assistance is essential for better utilization of the grain provided by the general food distribution.

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<sup>11</sup> UNHCR ProGres data October 2017

<sup>12</sup>WFP Post food distribution outcome monitoring report 2016

See breakdown below showing the monthly ration provision

**Table 2:** General food ration provision by month – Pamir & Ajoung Thok refugee camps, 2017

Ration provided in g/p/d	Standard	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
<i>Cereal</i>	500g	350	350	350	350	350	350	350	350	350	350
<i>Pulses</i>	50g	35	35	35	35	35	35	25	25	35	35
<i>Vegetable oil</i>	30g	21	21	21	21	21	21	20	20	21	21
<i>Salt</i>	5g	5	5	5	5	5	5	3.3	3.3	5	5
<i>CSB+</i>	50g	0	0	0	0	0	0	0	0	0	0
<i>Kcal</i>	2100	1491	1491	1491	1491	1491	1491	1457	1457	1491	1491
% of standard (recommended 2100 kcal/p/d) met		71	71	71	71	71	71	69	69	71	71

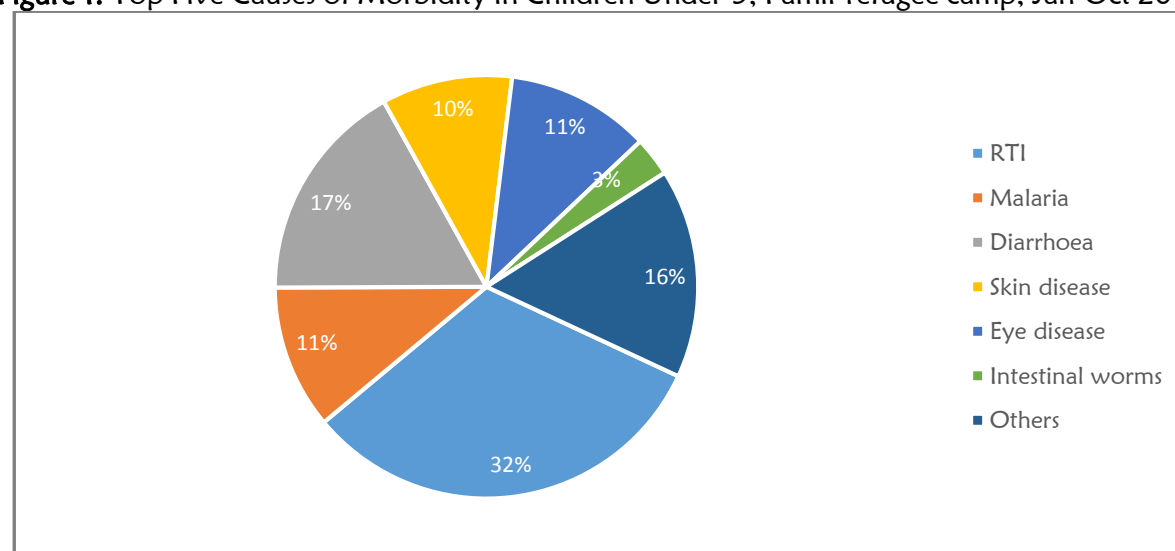
### 1.3 Health situation

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.

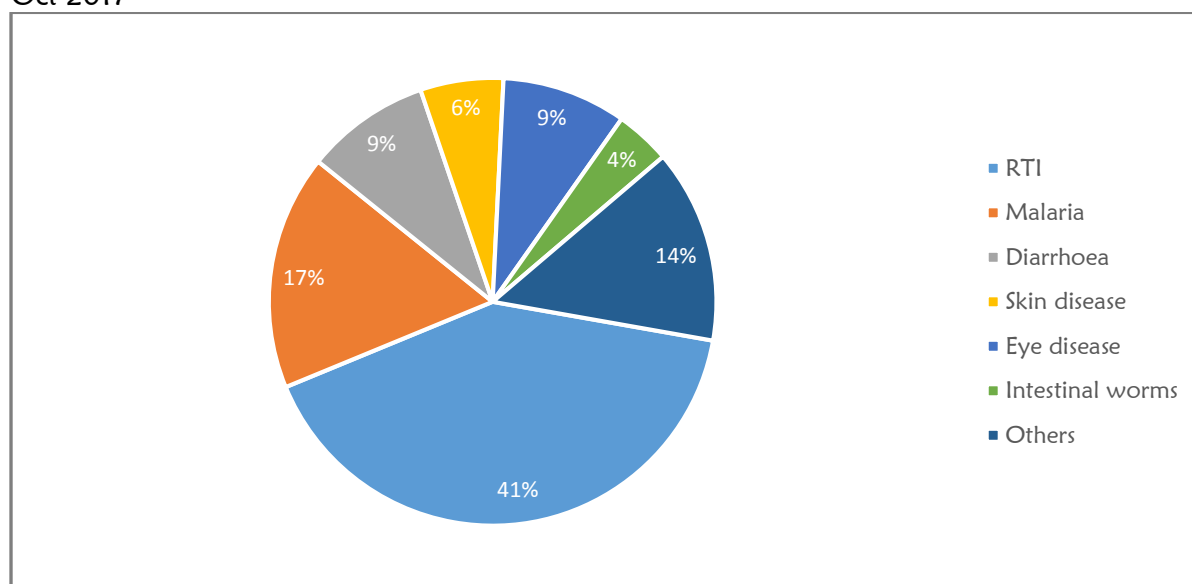
Mortality trends monitoring using the UNHCR Health Information System (HIS) show that mortality rates were below the emergency thresholds of 2/10000/day for under five death rate (U5DR) and 1/10000/day for crude death rate (CDR) in the refugee population from January to October 2017 indicating effectiveness 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 acute diarrhoea, malaria, eye disease, skin 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 2017



**Figure 2:** Top Five Causes of Morbidity in Children Under-5; Ajourng Thok refugee camp, Jan-Oct 2017



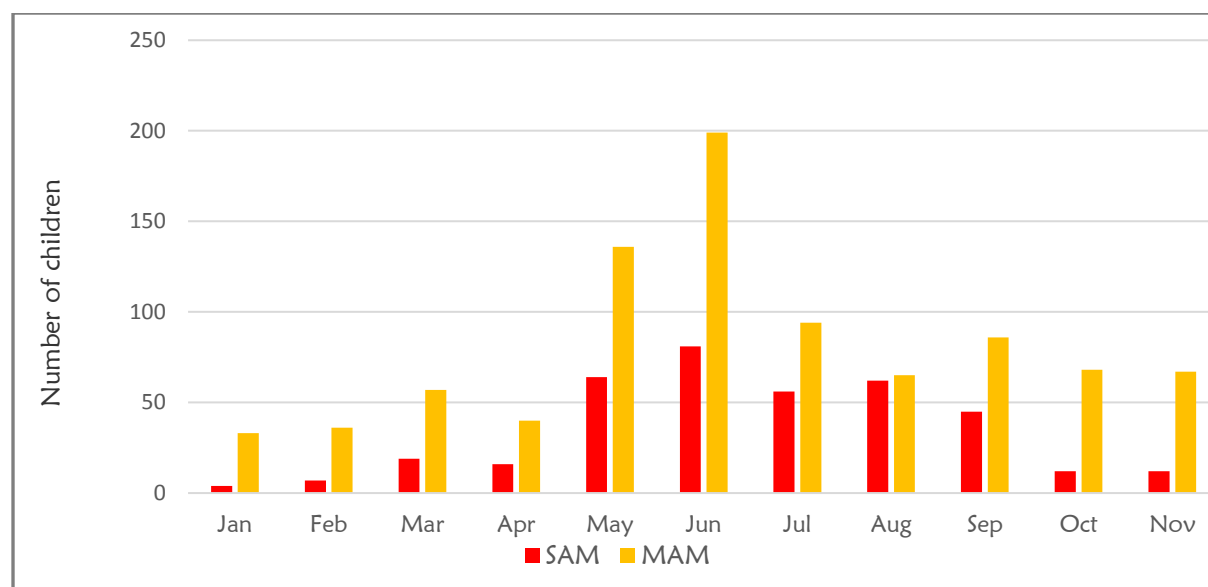
#### 1.4 Nutrition situation

Nutrition services provided at the two refugee camps include:

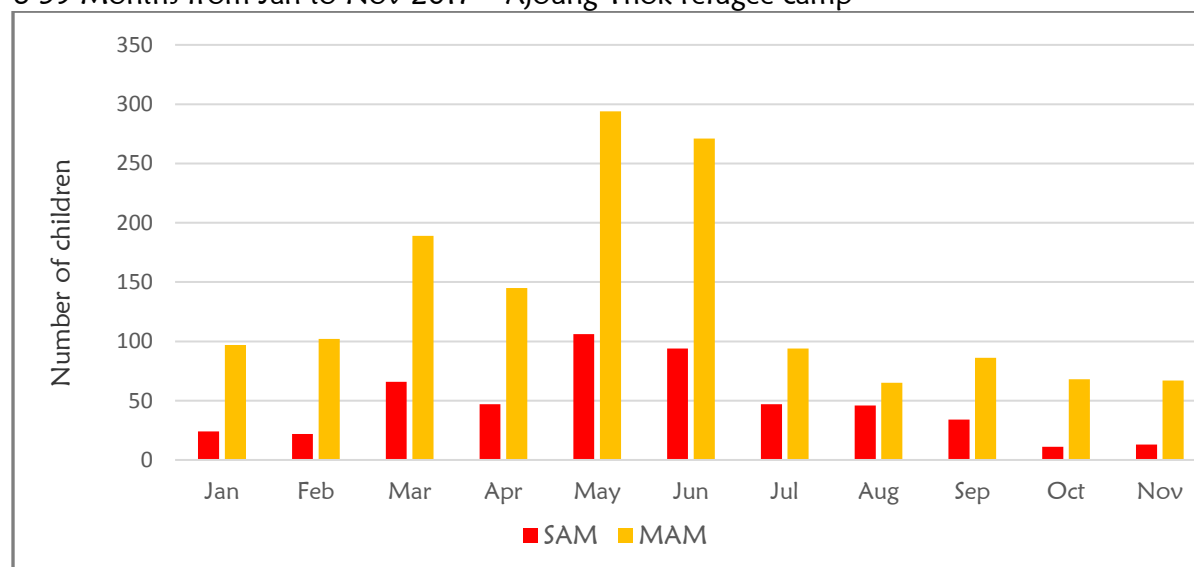
- Targeted Supplementary Feeding Programmes (TSFP) for moderately acute malnourished children aged 6-59 months using Plumpy'Sup or Corn Soya Blend Plus Plus (CSB++).
- Outpatient and inpatient therapeutic feeding programmes for severely acute malnourished children.
- Blanket Supplementary Feeding Program (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 will be mainstreamed into the various health, nutrition and livelihood interventions.

In total 1881 and 2132 children 6-59 months were admitted for rehabilitation from acute malnutrition in Pamir and Ajourng Thok refugee camps respectively from January to November 2017. The number of admission increased in Ajourng Thok compared to the same period in 2016. Admission trends in the management of acute malnutrition programmes in Pamir and Ajourng Thok show peak admissions in May and June 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 2017.

**Figure 3:** Number of admissions to treatment programmes for SAM and MAM among Children 6-59 Months from Jan to Nov 2017 - Pamir refugee camp



**Figure 4:** Number of admissions to treatment programmes for SAM and MAM among Children 6-59 Months from Jan to Nov 2017 – Ajoung Thok refugee camp



BSFP was provided monthly for all children aged 6-23 months and PLWs throughout the year. The coverage was 88.6% and 87.9% respectively as per the 2017 monthly BSFP monitoring reports.

This is the first nutrition survey to be carried out in Pamir refugee camp. It will thus serve as the baseline. New arrival MUAC screening in 2017 at the Pamir reception centre reported 270 (11.6%) out of the 2321 children aged 6-59 screened in 2017 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.

Comparison of the 2015, 2016 and 2017 results show a decreasing trend in the GAM prevalence in Ajoung Thok. This could be due to the stability of the Ajoung Thok population which received minimal new arrivals in 2017. In 2017 the Ajoung Thok GAM prevalence was 2.8%

(1.4-5.4 95% C.I) compared to 4.3 % ( 2.5-7.4 95%CI) and 8.4 % ( 5.9-12.0 95%CI) in 2016 and 2015 respectively. There was also no pipeline break of the CMAM therapeutic and TSFP supplies. BSFP was carried out throughout the year for children 6-23months.

Stunting prevalence in Ajoung Thok has largely remained the same for the last three years although in 2017 a downward trend was realised. In 2017 the stunting level in Ajoung Thok was 35.5% (30.1-41.3 95% C.I) while in 2016 and 2015 total stunting was 40.9%(36.3-45.6 95% CI) and 40.4 % ( 36.0-45.0 95% CI) respectively.

The anaemia situation among children aged 6 to 59 months in Ajoung Thok continued to be high in 2017 but reduced compared to the two previous years.

## 1.5 WASH situation

Pamir and Ajoung Thok refugee camps are located in an area with high groundwater potential which is not affected by seasonal fluctuations. The population of both camps rely on groundwater supply for their daily needs. Pamir refugee camp had eight boreholes successfully drilled in 2017. Four of these are motorized (hybrid) and the other four equipped with Blue Pump hand pump. In addition to this Pamir also has four functional hybrid deep wells, one hand pump and total permanent storage (elevated steel tanks) capacity of 200m<sup>3</sup>. Ajoung Thok has 11 motorized deep wells, seven of which are solar/generator hybrids. The camp also has seven hand pumps as well as total permanent storage (elevated steel tanks) capacity of 700m<sup>3</sup>. The water infrastructure above allows the access of clean drinking water.

Findings from the November 2017 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 liters of water per person per day was 19 liters in Ajoung Thok and 20 liters in Pamir. The average individual water consumption meets the SPHERE standards of at least 15 litres per person per day (lpppd) in both camps. The average also meets the UNHCR standard of >20lpppd in Pamir. All the households reported using ≤ 30minutes for a round trip to collect water. A household had average number of 4 containers for water collection. The most common used containers were 10 liters and 20 liters containers. Lack of enough water collection/storage containers was noted as the main reason household used less than adequate amount of water. Efforts to increase this to ≥20l/p/d to continue being put in place.

On sanitation, UNHCR and WASH partner Samaritan's Purse (SP) embarked on phasing out emergency sanitation facilities with a concurrent shift from communal to household latrines. Usable family latrines stood 4,372 in Ajoung Thok and 1,558 in Pamir at the end of 2017. The KAP survey found that this translated to 79% of the households in Ajoung Thok and 74% in Pamir having access to either a household, communal or institutional latrine. The rest either used the dig and cover method or practiced open defecation. 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 (76% and 83% in Ajoung Thok and Pamir respectively). Soap, ash and water only was used for hand washing. During the KAP survey, 54% and 64% of the households in Ajoung Thok and Pamir respectively reported to have used 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:

- a. To determine the prevalence of acute malnutrition among children aged 6-59 months;
- b. To determine the prevalence of stunting among children aged 6-59 months;
- c. To determine the coverage of measles vaccination among children aged 9-59 months;
- d. To determine the coverage of vitamin A supplementation in the last six months among children aged 6-59 months;
- e. To determine the two-week period prevalence of diarrhoea among children aged 6-59 months;
- f. To measure the prevalence of anaemia among children aged 6-59 months *and* among women of reproductive aged between 15-49 years (non-pregnant);
- g. To investigate IYCF practices among children aged 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; and
- k. To establish recommendations on actions to be taken to address the situation

Secondary objectives:

- a. To determine the coverage of targeted supplementary and therapeutic feeding programmes for children aged 6-59 months; and
- b. To determine enrolment into Antenatal Care (ANC) 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 9<sup>th</sup>, 2015 following UNHCR SENS methodology. The GAM prevalence estimate in Pamir was based on the Yida 2016 survey GAM result as part of the population in Pamir had been transferred from Yida. In Ajuong Thok the GAM prevalence estimate was based on the 2016 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 (23.5% and 4.3 respectively) for Pamir and the 2016 survey results for Ajuong Thok (22.2% and 5.7 respectively). The 2016 survey results was used in the case of Ajuong Thok to better reflect reality. The total population surveyed was derived from the ProGres database. Pamir has a total population of 16847 and Ajuong Thok had 37630<sup>13</sup>. A non-response rate of 5% was used in both camps as household listing was carried out right before the survey data collection.

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	Ajuong Thok
Total camp population (UNHCR ProGres October 2017)	16847	37630
% population under 5 (UNHCR ProGres October 2017)	23.5	22.2
Estimated GAM prevalence (%)	12.5	7.4
± Desired Precision (%)	3.5	3
Non response rate (%)	5	5
Average household size	4.3	5.7
Number of Children (ENA)	313	282
Number of Households for Anthropometry and Health module (ENA for SMART) including none response rate	362	260

As the population of children under five was less than 10,000 a correction factor was used while calculating 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 module. This translated to 181 households in Pamir and 130 households in Ajuong Thok for the women anaemia and food security module.

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<sup>13</sup> UNHCR ProGres data October 2017

### 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<sup>14</sup> 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.

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

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<sup>14</sup> 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

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.

**Health seeking behavior: for children that were ill,** whether the caregiver took the child to the health center for treatment.

**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 (%) =

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

Coverage of TFP programme (%) =

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

**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

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

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))

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

Infants 0–5 months of age

*Continued breastfeeding at 1 year:*

Proportion of children 12–15 months of age who are fed breast milk

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

Children 12–15 months of age

*Introduction of solid, semi-solid or soft foods:*

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

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

Infants 6–8 months of age

*Children ever breastfed:*

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

Children born in the last 24 months who were ever breastfed

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

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

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 fortified in the home with a product that included iron during the previous day

Children 6–23 months of age

*Bottle feeding:*

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

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

Children 0–23 months of age

**Anaemia 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 <sup>15</sup>

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)\*

	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.

<sup>15</sup> WHO (1995) Physical Status: The Use and Interpretation of Anthropometry and WHO (2000) The Management of Nutrition in Major Emergencies

**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 Ndwula (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 Muni Safi (IRC Deputy Health and Nutrition Manager).

A total of six survey teams composed of five members each (one team leader, one hemoglobin measurer, two anthropometric measurers/translators and one hemoglobin 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. The teams were supervised on a daily basis.

A five day training was carried out from 31 October to 4 November 2017 at the Ajoung Thok training center. Training topics were shared between the lead survey coordinator (UNHCR Nutrition and Food security officer Juba) and the (WFP Nutrition Programme Assistant – Mella Taban) who travelled from Juba to part facilitate the training. 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 the Ajoung Thok 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 started in Ajoung Thok was carried out from 6 to 8 November 2017. In Pamir data was collected from 10 to 11 and 13 to 14 November 2017. One day was given in-between data collection in Pamir for the teams to recuperate. The data collection was supervised throughout by the UNHCR, IRC and AHA coordination and supervision team. Data was collected using the ODK for Android platform using eight Phantom Techno phones and four 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  $\pm 3$  SD value contained in the SMART for ENA software was used.

Anthropometry indices were analysed using the ENA for SMART July 9<sup>th</sup>, 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 UNHCR ProGres population target

**Table 12:** Actual number of children captured during the survey Pamir camp versus the UNHCR ProGres population target, (September 2017) target and actual number captured

	Target (No.)	Total surveyed (No.)	% of the target
Children 6-59 months	313	323	103.2%

By the end of SENS in Pamir 103.2% 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 72% (children having an exact birth date). As 28% 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 (2017)

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy: girl
6-17	32	43.2	42	56.8	74	23.1	0.8
18-29	42	53.8	36	46.2	78	24.3	1.2
30-41	33	42.9	44	57.1	77	24.0	0.8
42-53	34	49.3	35	50.7	69	21.5	1.0
54-59	13	56.5	10	43.5	23	7.2	1.3
Total	154	48.0	167	52.0	321	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 (2017)

	All n = 317	Boys n = 151	Girls n = 166
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(26) 8.2 % (5.7 - 11.7 95% C.I.)	(9) 6.0 % (3.2 - 10.9 95% C.I.)	(17) 10.2 % (6.5 - 15.8 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(24) 7.6 % (5.1 - 11.0 95% C.I.)	(8) 5.3 % (2.7 - 10.1 95% C.I.)	(16) 9.6 % (6.0 - 15.1 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(2) 0.6 % (0.2 - 2.3 95% C.I.)	(1) 0.7 % (0.1 - 3.7 95% C.I.)	(1) 0.6 % (0.1 - 3.3 95% C.I.)

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

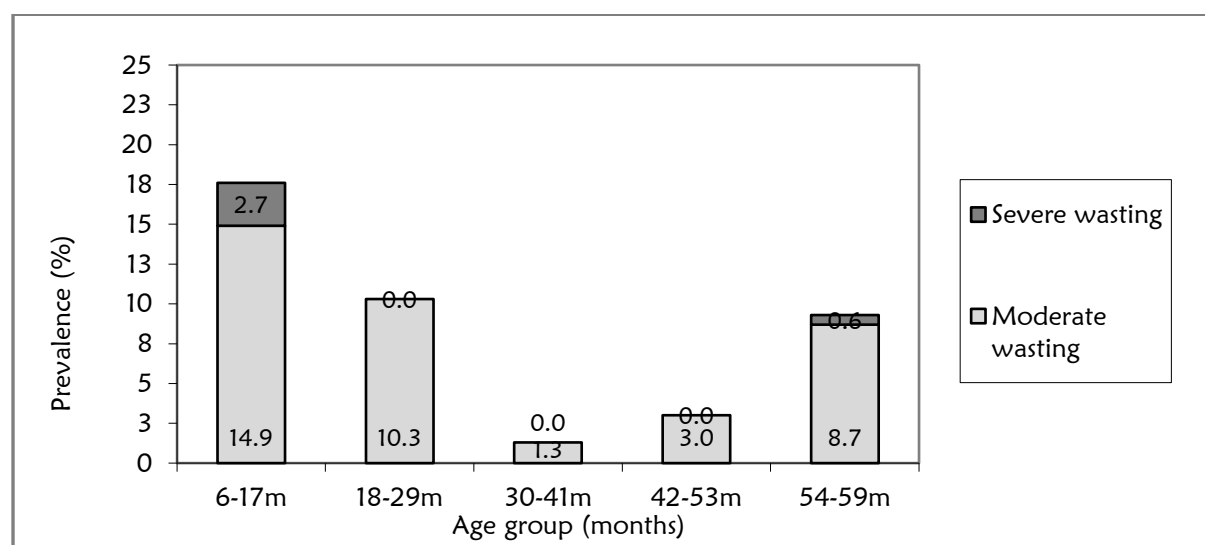
There was no difference between boys and girls in the prevalence of acute malnutrition ( $p>0.05$ )

**Table 15:** Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema- Pamir refugee camp, south Sudan (2017)

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting ( $\geq -3$ and $< -2$ z-score)		Normal ( $\geq -2$ z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	74	2	2.7	11	14.9	61	82.4	0	0.0
18-29	78	0	0.0	8	10.3	70	89.7	0	0.0
30-41	75	0	0.0	1	1.3	74	98.7	0	0.0
42-53	67	0	0.0	2	3.0	65	97.0	0	0.0
54-59	23	0	0.0	2	8.7	21	91.3	0	0.0
<b>Total</b>	<b>317</b>	<b>2</b>	<b>0.6</b>	<b>24</b>	<b>7.6</b>	<b>291</b>	<b>91.8</b>	<b>0</b>	<b>0.0</b>

Children aged 6-17 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 (2017)



**Table 16:** Distribution of acute malnutrition and oedema based on weight-for-height z-scores- Pamir refugee camp, south Sudan (2017)

	<-3 z-score	$\geq -3$ z-score
<b>Oedema present</b>	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
<b>Oedema absent</b>	Marasmic No. 2 (0.6 %)	Not severely malnourished No. 316 (99.4 %)

**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 (2017)

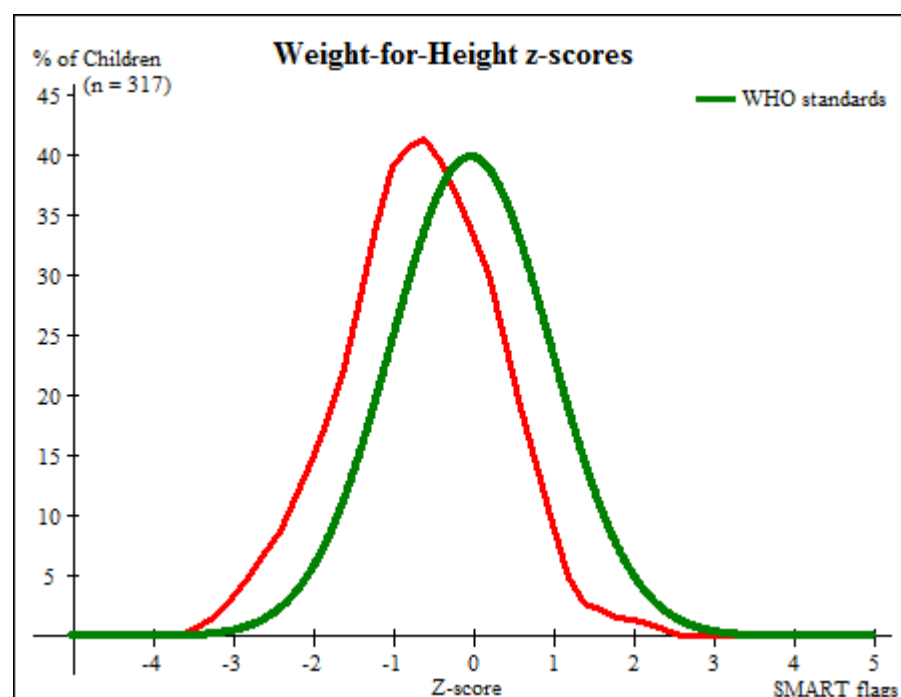


Figure 6 above shows that the distribution for weight-for-height z-scores for the survey sample is shifted to the left, illustrating poor nutritional status of the surveyed population than the international WHO Standard population of children aged 6-59 months - Pamir refugee camp, south Sudan (2017)

**Table 17:** Prevalence of acute malnutrition based on MUAC cut offs (and/or oedema) and by sex- Pamir refugee camp, south Sudan (2017)

	All n = 321	Boys n = 154	Girls n = 167
<b>Prevalence of global malnutrition (<math>&lt; 125</math> mm and/or oedema)</b>	(21) 6.5 % (4.3 - 9.8 95% C.I.)	(5) 3.2 % (1.4 - 7.4 95% C.I.)	(16) 9.6 % (6.0 - 15.0 95% C.I.)
<b>Prevalence of moderate malnutrition (<math>&lt; 125</math> mm and <math>\geq 115</math> mm, no oedema)</b>	(19) 5.9 % (3.8 - 9.1 95% C.I.)	(5) 3.2 % (1.4 - 7.4 95% C.I.)	(14) 8.4 % (5.1 - 13.6 95% C.I.)
<b>Prevalence of severe malnutrition (<math>&lt; 115</math> mm and/or oedema)</b>	(2) 0.6 % (0.2 - 2.2 95% C.I.)	(0) 0.0 % (0.0 - 2.4 95% C.I.)	(2) 1.2 % (0.3 - 4.3 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 2017 (11.6%) the survey MUAC  $< 125$ mm proportion above is lower indicating the likelihood of the nutrition program being able to reduce the 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 (2017)

Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting ( $\geq 115$ mm and < 125 mm)		Normal ( $\geq 125$ mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	74	1	1.4	12	16.2	61	82.4	0	0.0
18-29	78	0	0.0	5	6.4	73	93.6	0	0.0
30-41	77	1	1.3	1	1.3	75	97.4	0	0.0
42-53	69	0	0.0	1	1.4	68	98.6	0	0.0
54-59	23	0	0.0	0	0.0	23	100.0	0	0.0
<b>Total</b>	<b>321</b>	<b>2</b>	<b>0.6</b>	<b>19</b>	<b>5.9</b>	<b>300</b>	<b>93.5</b>	<b>0</b>	<b>0.0</b>

Children aged 6-17 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 (2017)

	All n = 321	Boys n = 154	Girls n = 167
Prevalence of underweight (<-2 z-score)	(76) 23.7 % (19.4 - 28.6 95% C.I.)	(30) 19.5 % (14.0 - 26.4 95% C.I.)	(46) 27.5 % (21.3 - 34.8 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and $\geq -3$ z-score)	(58) 18.1 % (14.2 - 22.6 95% C.I.)	(22) 14.3 % (9.6 - 20.7 95% C.I.)	(36) 21.6 % (16.0 - 28.4 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(18) 5.6 % (3.6 - 8.7 95% C.I.)	(8) 5.2 % (2.7 - 9.9 95% C.I.)	(10) 6.0 % (3.3 - 10.7 95% C.I.)

**Table 20:** Prevalence of underweight by age, based on weight-for-age z-scores - Pamir refugee camp, south Sudan (2017)

Age (mo)	Total no.	Severe underweight (<-3 z-score)		Moderate underweight ( $\geq -3$ and <-2 z-score)		Normal ( $\geq -2$ z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	74	6	8.1	8	10.8	60	81.1	0	0.0
18-29	78	6	7.7	20	25.6	52	66.7	0	0.0
30-41	77	4	5.2	16	20.8	57	74.0	0	0.0
42-53	69	2	2.9	12	17.4	55	79.7	0	0.0
54-59	23	0	0.0	2	8.7	21	91.3	0	0.0
<b>Total</b>	<b>321</b>	<b>18</b>	<b>5.6</b>	<b>58</b>	<b>18.1</b>	<b>245</b>	<b>76.3</b>	<b>0</b>	<b>0.0</b>

Children aged 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 (2017)

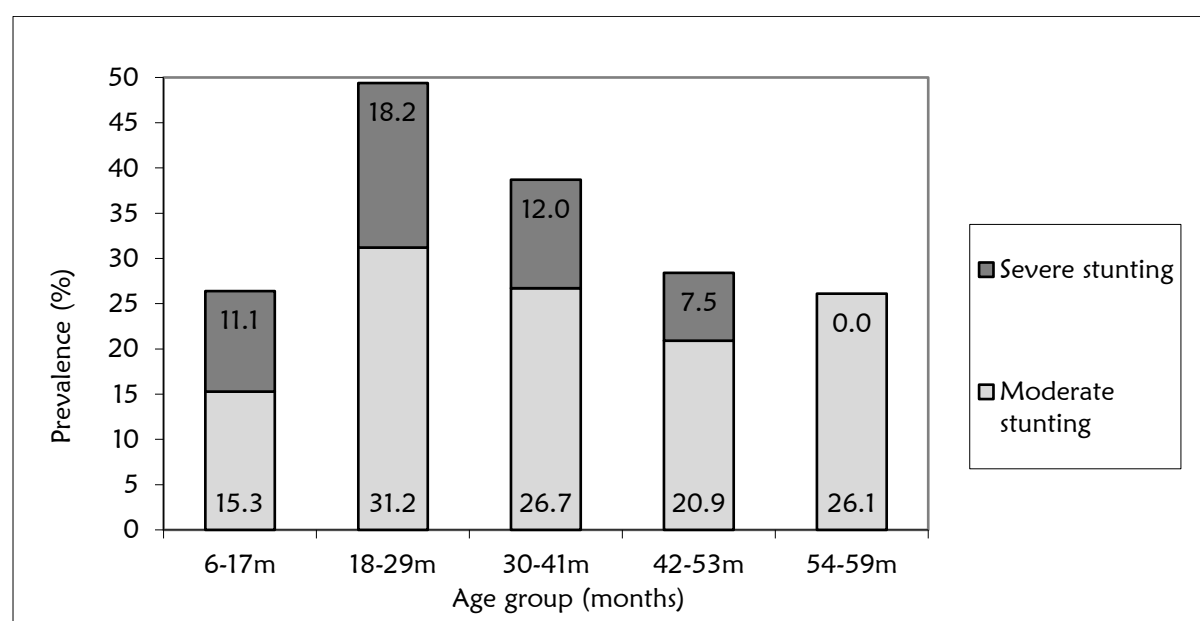
	All n = 314	Boys n = 150	Girls n = 164
Prevalence of stunting ( $<-2$ z-score)	(111) 35.4 % (30.3 - 40.8 95% C.I.)	(55) 36.7 % (29.4 - 44.6 95% C.I.)	(56) 34.1 % (27.3 - 41.7 95% C.I.)
Prevalence of moderate stunting ( $<-2$ z-score and $\geq -3$ z-score)	(75) 23.9 % (19.5 - 28.9 95% C.I.)	(36) 24.0 % (17.9 - 31.4 95% C.I.)	(39) 23.8 % (17.9 - 30.8 95% C.I.)
Prevalence of severe stunting ( $<-3$ z-score)	(36) 11.5 % (8.4 - 15.5 95% C.I.)	(19) 12.7 % (8.3 - 18.9 95% C.I.)	(17) 10.4 % (6.6 - 16.0 95% C.I.)

**Table 22:** Prevalence of stunting by age based on height-for-age z-scores - Pamir refugee camp, south Sudan (2017)

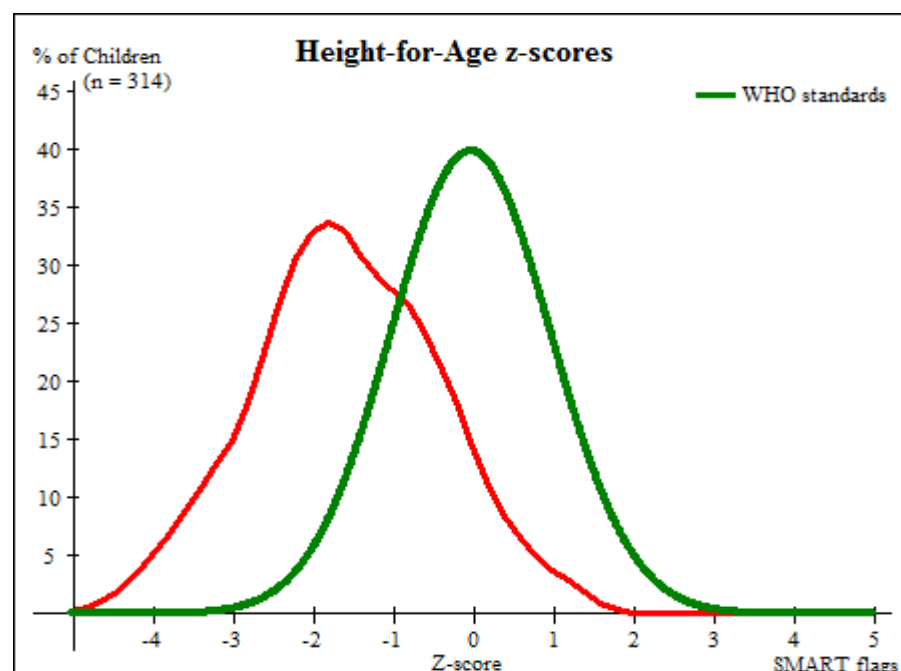
Age (mo)	Total no.	Severe stunting ( $<-3$ z-score)		Moderate stunting ( $\geq -3$ and $<-2$ z-score )		Normal ( $\geq -2$ z score)	
		No.	%	No.	%	No.	%
6-17	72	8	11.1	11	15.3	53	73.6
18-29	77	14	18.2	24	31.2	39	50.6
30-41	75	9	12.0	20	26.7	46	61.3
42-53	67	5	7.5	14	20.9	48	71.6
54-59	23	0	0.0	6	26.1	17	73.9
Total	314	36	11.5	75	23.9	203	64.6

Children aged 18-29 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 (2017)



**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 (2017)



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 2:** Prevalence of overweight based on weight for height cut offs and by sex (no oedema) - Pamir refugee camp, south Sudan (2017)

	All n = 317	Boys n = 151	Girls n = 166
Prevalence of overweight (WHZ > 2)	(2) 0.6 % (0.2 - 2.3 95% C.I.)	(1) 0.7 % (0.1 - 3.7 95% C.I.)	(1) 0.6 % (0.1 - 3.3 95% C.I.)
Prevalence of severe overweight (WHZ > 3)	(0) 0.0 % (0.0 - 1.2 95% C.I.)	(0) 0.0 % (0.0 - 2.5 95% C.I.)	(0) 0.0 % (0.0 - 2.3 95% C.I.)

**Table 23:** Prevalence of overweight by age, based on weight for height (no oedema) - Pamir refugee camp, south Sudan (2017)

Age (mo)	Total no.	Overweight (WHZ > 2)		Severe Overweight (WHZ > 3)	
		No.	%	No.	%
6-17	74	1	1.4	0	0.0
18-29	78	0	0.0	0	0.0
30-41	75	1	1.3	0	0.0
42-53	67	0	0.0	0	0.0
54-59	23	0	0.0	0	0.0
Total	317	2	0.6	0	0.0

**Table 24:** Mean z-scores, design effects and excluded subjects - Pamir refugee camp, south Sudan (2017)

Indicator	n	Mean z-scores ± SD	Design Effect (z- score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	317	-0.65±0.94	1.00	3	1
Weight-for-Age	321	-1.34±0.98	1.00	0	0
Height-for-Age	314	-1.57±1.15	1.00	3	4

\* There were no oedema cases

### Feeding programme coverage results

The coverage for targeted SFP and TFP using both the MUAC and combined criterion did not meet recommended standard of >90%. Of note however, is that the three children that were eligible for TFP admission were enrolled in the SFP program instead.

**Table 25:** Programme coverage for acutely malnourished children based on MUAC, oedema and WHZ- Pamir refugee camp, south Sudan (2017)

	Number/total	% (95% CI)
Supplementary feeding programme coverage	12/18	66.7(41.0-86.7)
Therapeutic feeding programme coverage	2/2	0(0-0)

**Table 26:** Programme coverage for acutely malnourished children based On MUAC and oedema - Pamir refugee camp, south Sudan (2017)

	Number/total	% (95% CI)
Supplementary feeding programme coverage	13/31	41.9(24.5-60.9)
Therapeutic feeding programme coverage	1/1	0(0-0)

### Measles vaccination coverage results

**Table 27:** Measles vaccination coverage for children aged 9-59 months (N=296) - Pamir refugee camp, south Sudan (2017)

	Measles (with card) n=30	Measles (with card <u>or</u> confirmation from mother) n=266
YES	27.4% (22.4-32.8 95% CI)	89.9 % (85.8-93.1 95% CI)

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

## Vitamin A supplementation coverage results

**Table 28:** Vitamin A supplementation for children aged 6-59 months in past 6 months (N=323)  
- Pamir refugee camp, south Sudan (2017)

	Vitamin A capsule (with card) n=21	Vitamin A capsule (with card <u>or</u> confirmation from mother) n=293
YES	6.5% (4.3-9.7 95% CI)	90.7% (87.1-93.4 95% CI)

The vitamin A supplementation coverage met the recommended target of  $\geq 90\%$ .

## Diarrhoea Results

**Table 29:** Period prevalence of diarrhoea- Pamir refugee camp, south Sudan (2017)

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	71/323	22 (17.8-26.8)

### 4.1.2 Anaemia Results Children 6 – 59 months

The total anaemia prevalence among children 6 to 59 months was 44.5% (39.2-50.0 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 30:** 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 (2017)

	6-59 months n = 319	6-23 months n=110	24-59 months n=206
Total Anaemia (Hb<11.0 g/dL)	(142) 44.5 % (39.2-50.0 95% CI)	(69) 62.7 (53.0-71.8 95% CI)	(72) 35.0 (28.5-41.9 95% CI)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(99) 31.0% (26.2-36.3 95% CI)	(47) 42.7 (33.3-52.5 95% CI)	(51) 24.8 (19.0-31.2 95% CI)
Moderate Anaemia (7.0-9.9 g/dL)	(43) 13.5% (10.2-17.7 95% CI)	(22) 20 (13.0-28.7 95% CI)	(21) 10.2 (6.4-15.2 95% CI)
Severe Anaemia (<7.0 g/dL)	(0)%	(0)%	(0)%
Mean Hb, g/dL [range]	11.1 g/dL [7.1-14]	10.6 g/dL [7.1-12.7]	11.3 g/dL [7.1-13.9]

**Table 31:** Prevalence of moderate and severe anaemia in children 6-59 months of age and by age group- Pamir refugee camp, south Sudan (2017)

	<b>6-59 months</b> n = 319	<b>6-23 months</b> n=110	<b>24-59 months</b> n=206
<b>Moderate and Severe Anaemia (Hb&lt;10.0 g/dL)</b>	(43) 13.5 % (10.3-17.7 95% CI)	(22) 20.0% (13-28.7 95% CI)	(21) 10.2 % (6.4-15.2 95% CI)

#### 4.1.3 IYCF: Children 0-23 months

**Table 32:** Prevalence of infant and young child feeding practices indicators- Pamir refugee camp, south Sudan (2017)

Indicator	Age range	Number/ total	Prevalence (%)	95% CI
Timely initiation of breastfeeding	0-23 months	111/139	79.9	72.2-86.2
Exclusive breastfeeding under 6 months	0-5 months	24/28	85.7	67.3-96.0
Continued breastfeeding at 1 year	12-15 months	20/21	95.2	76.1-99.9
Continued breastfeeding at 2 years	20-23 month	15/21	71.4	47.8-88.7
Introduction of solid, semi-solid or soft foods	6-8 months	9/24	37.5	18.8-59.4
Consumption of iron-rich or iron-fortified foods	6-23 months	27/111	24.3	16.7-33.4
Bottle feeding	0-23 months	1/139	0.7	0-3.9

#### Prevalence of intake

##### Infant formula

**Table 33:** Infant formula intake in children aged 0-23 months- Pamir refugee camp, south Sudan (2017)

	Number/total	% (95% CI)
<b>Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)</b>	3/139	2.2 (0.5-6.2)

##### Fortified blended foods

**Table 34:** CSB++ intake in children aged 6-23 Months - Pamir refugee camp, south Sudan (2017)

	Number/total	% (95% CI)
<b>Proportion of children aged 6-23 months who receive CSB++</b>	3/111	2.7 (0.6-7.7)

#### 4.1.4 Anaemia Women 15-49 years

**Table 35:** Women Physiological Status and Age- Pamir refugee camp, south Sudan (2017)

Physiological status	Number/total	% of sample
Non-pregnant	108	86.4
Pregnant	17	13.6
Mean age (range)	26.7(15-49)	

**Table 36:** Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 Years) - Pamir refugee camp, south Sudan (2017)

<b>Anaemia - Women of reproductive age 15-49 years</b>	<b>All n = 108</b>
<b>Total Anaemia (&lt;12.0 g/dL)</b>	(22) 20.4% (13.2-29.2 95% CI)
<b>Mild Anaemia (11.0-11.9 g/dL)</b>	(16) 14.8% (8.7-22.9 95% CI)
<b>Moderate Anaemia (8.0-10.9 g/dL)</b>	(6) 5.7% (2.1-11.7 95% CI)
<b>Severe Anaemia (&lt;8.0 g/dL)</b>	0
<b>Mean Hb, g/dL</b>	12.9 g/dL
<b>(SD)</b>	1.2
<b>[range]</b>	[10-15.3]

The UNHCR Strategic Plan for Nutrition and Food Security (2008-2010) states that the target for the prevalence of anaemia in women 15-49 years of age should be < 20%.

**Table 3:** ANC enrolment and iron-folic acid pills coverage among pregnant women (15-49 years) - Pamir refugee camp, south Sudan (2017)

	Number /total	% (95% CI)
<b>Currently enrolled in ANC programme</b>	15/17	88.2 (63.6-98.5)
<b>Currently receiving iron-folic acid pills</b>	15/17	88.2 (63.6-98.5)

### 4.1.5 Food Security

#### Access to food assistance

**Table 38:** Ration card coverage

	Number/total	% (95% CI)
<b>Proportion of households with a ration card</b>	155/155	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 39:** Coping strategies used by the surveyed population over the past month - Pamir refugee camp, south Sudan (2017)

	Number/total	% (95% CI)
<b>Proportion of households reporting using the following coping strategies over the past month*:</b>		
Borrowed cash, food or other items with or without interest	60/155	38.7 (31-46.9)
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)	45/155	29.0 (22.0-36.9)
Requested increased remittances or gifts as compared to normal	7/155	4.5 (1.8-9.1)
Reduced the quantity and/or frequency of meals and snacks	87/155	56.1 (47.9-64.1)
Begged	28/155	18.1 (12.4-25.0)
Engaged in potentially risky or harmful activities	13/155	8.4(4.5-13.9)
<b>Proportion of households reporting using none of the coping strategies over the past month</b>	54/155	34.8(27.4-42.9)

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

Only 34.8% 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.

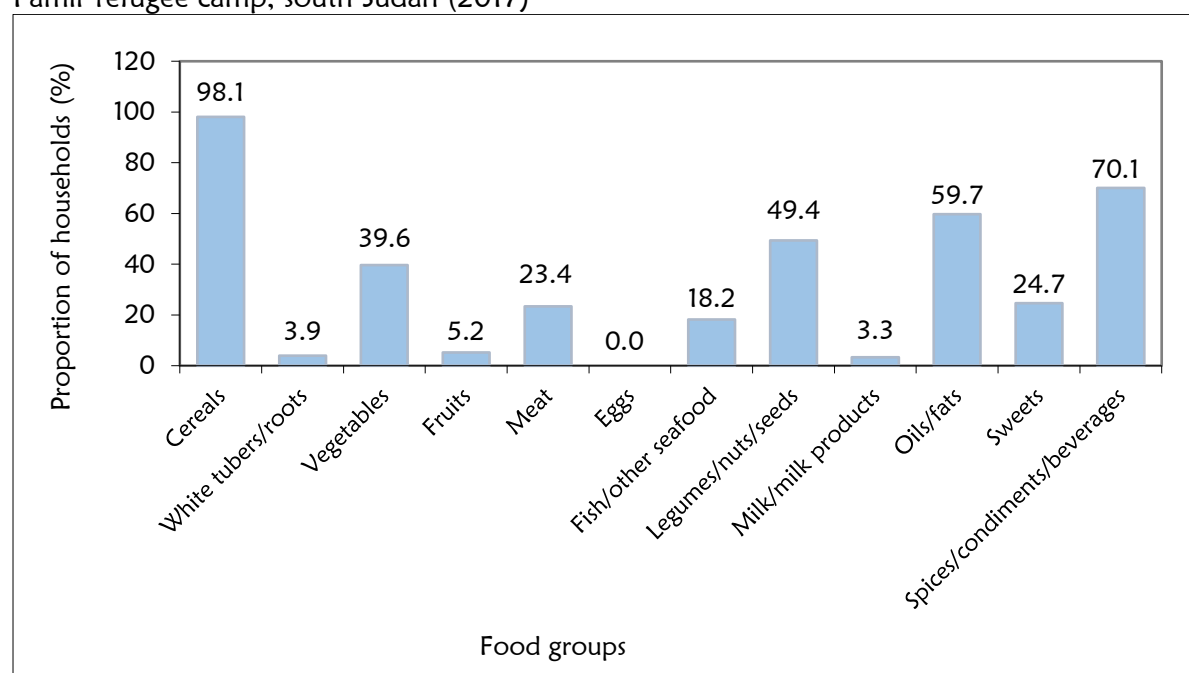
#### Household dietary diversity

The last general food distribution ended 21+ days prior to the start of the survey data collection. The survey was carried out during the end of the harvest season.

**Table 40:** Average HDDS\*- Pamir refugee camp, south Sudan (2017)

	Mean (Standard deviation or 95% CI)
<b>Average HDDS</b>	4.0 (2.1)

**Figure 9:** Proportion of households consuming different food groups within last 24 hours - Pamir refugee camp, south Sudan (2017)



**Table 41:** Consumption of micronutrient rich foods by households- Pamir refugee camp, south Sudan (2017)

	Number/total	% (95% CI)
Proportion of households <i>not consuming any</i> vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	70/154	45.5 (37.4-53.7)
Proportion of households consuming either a plant or animal source of vitamin A	31/154	20.1 (14.1-27.3)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	53/154	34.4 (27.0-42.5)

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 UNHCR ProGres population target.

**Table 42:** Actual number of children captured during the survey in Ajoung Thok versus the UNHCR ProGres population target

	Target (No.)	Total surveyed (No.)	% of the target
Children 6-59 months	282	287	101.8%

The required sample size was reached in Ajoung Thok.

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

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

**Table 43:** Distribution of age and sex of sample- Ajoung Thok refugee camp, south Sudan (2017)

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy: girl
6-17	37	52.1	34	47.9	71	24.7	1.1
18-29	26	44.1	33	55.9	59	20.6	0.8
30-41	40	58.0	29	42.0	69	24.0	1.4
42-53	32	49.2	33	50.8	65	22.6	1.0
54-59	13	56.5	10	43.5	23	8.0	1.3
Total	148	51.6	139	48.4	287	100.0	1.1

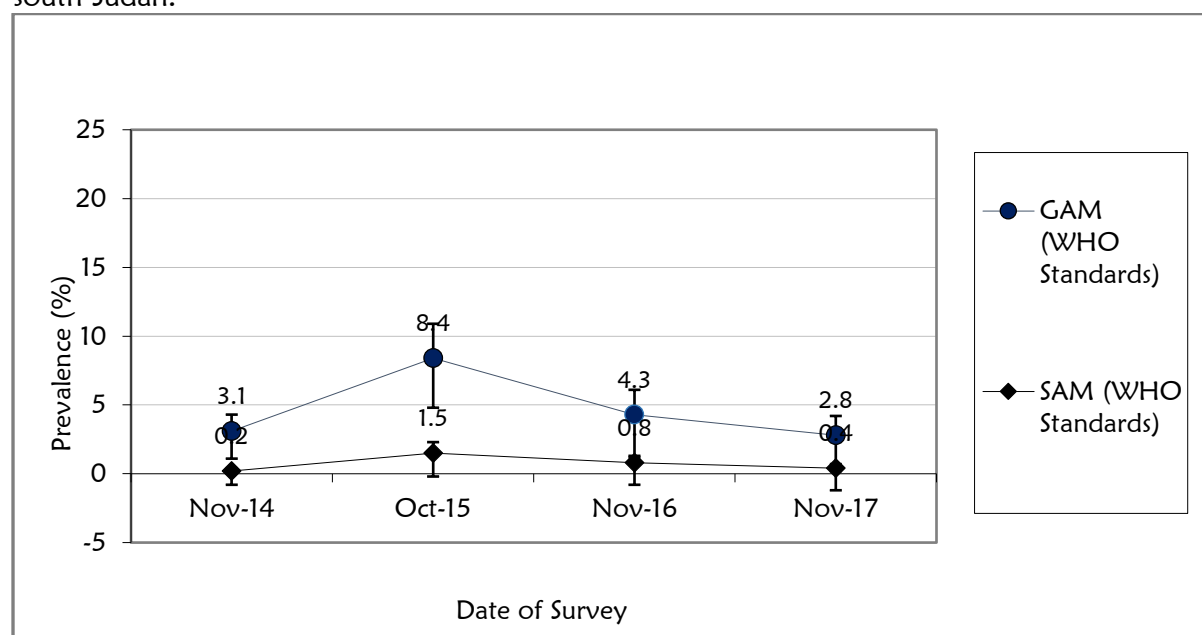
All the children who participated in the survey were considered using the actual age from an official document or using an events calendar to estimate the age of the child.

**Table 44:** Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex - Ajoung Thok refugee camp, south Sudan (2017)

	All n = 285	Boys n = 146	Girls n = 139
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(8) 2.8 % (1.4 - 5.4 95% C.I.)	(7) 4.8 % (2.3 - 9.6 95% C.I.)	(1) 0.7 % (0.1 - 4.0 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(7) 2.5 % (1.2 - 5.0 95% C.I.)	(6) 4.1 % (1.9 - 8.7 95% C.I.)	(1) 0.7 % (0.1 - 4.0 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(1) 0.4 % (0.1 - 2.0 95% C.I.)	(1) 0.7 % (0.1 - 3.8 95% C.I.)	(0) 0.0 % (0.0 - 2.7 95% C.I.)

The prevalence of oedema was 0.0 %. Data excluded SMART flags  
Boys were more acutely malnourished than girls.  $p < 0.05$

**Figure 1:** Trends in the prevalence of global and severe acute malnutrition based on WHO growth standards in children aged 6-59 months from 2014-2017 - Ajoung Thok refugee camp, south Sudan.



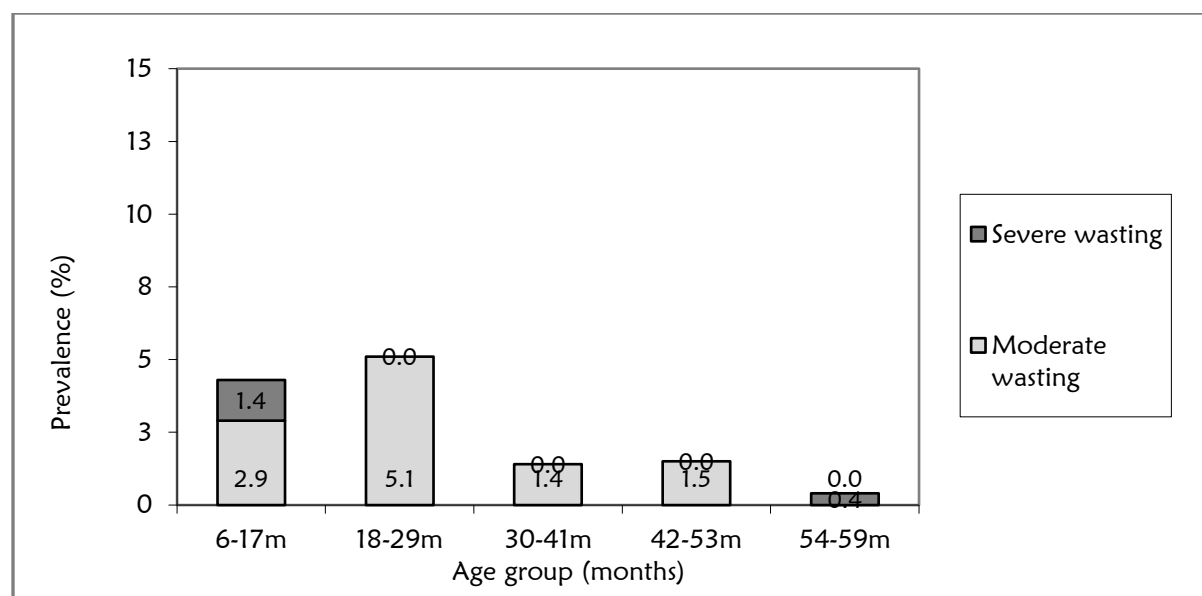
Comparison of the 2015, 2016 and 2017 results show a decreasing trend in the GAM prevalence in Ajoung Thok.

**Table 45:** Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema- Ajoung Thok refugee camp, south Sudan (2017)

		Severe wasting ( $< -3$ z-score)		Moderate wasting ( $\geq -3$ and $< -2$ z-score)		Normal ( $\geq -2$ z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
Age (mo)	Total no.								
6-17	69	1	1.4	2	2.9	66	95.7	0	0.0
18-29	59	0	0.0	3	5.1	56	94.9	0	0.0
30-41	69	0	0.0	1	1.4	68	98.6	0	0.0
42-53	65	0	0.0	1	1.5	64	98.5	0	0.0
54-59	23	0	0.0	0	0.0	23	100.0	0	0.0
Total	285	1	0.4	7	2.5	277	97.2	0	0.0

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

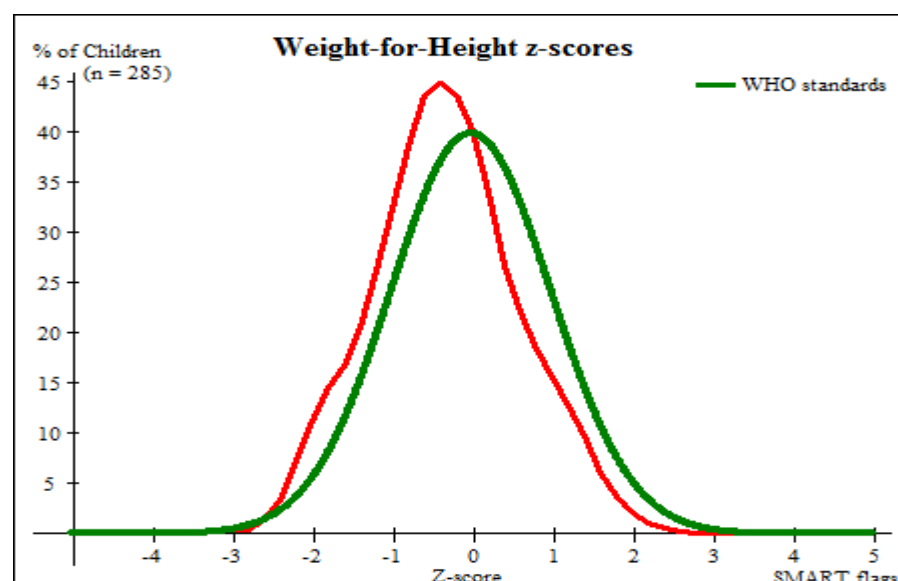
**Figure 2:** Trend in the prevalence of wasting by age in children 6-59 months- Ajoung Thok refugee camp, south Sudan (2017)



**Table 46:** Distribution of severe acute malnutrition and oedema based on weight-for-height z-scores - Ajoung Thok refugee camp, south Sudan (2017)

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 2 (0.7 %)	Not severely malnourished No. 285 (99.3 %)

**Figure 3:** 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 (2017)



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 47:** Prevalence of MUAC malnutrition- Ajoung Thok refugee camp, south Sudan (2017)

	All n = 287	Boys n = 148	Girls n = 139
Prevalence of global malnutrition ( $< 125$ mm and/or oedema)	(10) 3.5 % (1.9 - 6.3 95% C.I.)	(5) 3.4 % (1.5 - 7.7 95% C.I.)	(5) 3.6 % (1.5 - 8.1 95% C.I.)
Prevalence of moderate malnutrition ( $< 125$ mm and $\geq 115$ mm, no oedema)	(8) 2.8 % (1.4 - 5.4 95% C.I.)	(3) 2.0 % (0.7 - 5.8 95% C.I.)	(5) 3.6 % (1.5 - 8.1 95% C.I.)
Prevalence of severe malnutrition ( $< 115$ mm and/or oedema)	(2) 0.7 % (0.2 - 2.5 95% C.I.)	(2) 1.4 % (0.4 - 4.8 95% C.I.)	(0) 0.0 % (0.0 - 2.7 95% C.I.)

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

**Table 48:** Prevalence of MUAC malnutrition by age, based on MUAC cut offs and/or oedema- Ajoung Thok refugee camp, south Sudan (2017)

		Severe wasting ( $< 115$ mm)		Moderate wasting ( $\geq 115$ mm and $< 125$ mm)		Normal ( $\geq 125$ mm )		Oedema	
Age (mo)	Total no.	No.	%	No.	%	No.	%	No.	%
6-17	71	2	2.8	6	8.5	63	88.7	0	0.0
18-29	59	0	0.0	2	3.4	57	96.6	0	0.0
30-41	69	0	0.0	0	0.0	69	100.0	0	0.0
42-53	65	0	0.0	0	0.0	65	100.0	0	0.0
54-59	23	0	0.0	0	0.0	23	100.0	0	0.0
Total	287	2	0.7	8	2.8	277	96.5	0	0.0

Children aged 6-17 tend to be most wasted based on MUAC measurement

**Table 49:** Prevalence of underweight based on weight-for-age z-scores by sex - Ajoung Thok refugee camp, south Sudan (2017)

	All n = 284	Boys n = 145	Girls n = 139
Prevalence of underweight ( $< -2$ z-score)	(45) 15.8 % (12.1 - 20.5 95% C.I.)	(26) 17.9 % (12.5 - 25.0 95% C.I.)	(19) 13.7 % (8.9 - 20.4 95% C.I.)
Prevalence of moderate underweight ( $< -2$ z-score and $\geq -3$ z-score)	(34) 12.0 % (8.7 - 16.3 95% C.I.)	(21) 14.5 % (9.7 - 21.1 95% C.I.)	(13) 9.4 % (5.5 - 15.3 95% C.I.)
Prevalence of severe underweight ( $< -3$ z-score)	(11) 3.9 % (2.2 - 6.8 95% C.I.)	(5) 3.4 % (1.5 - 7.8 95% C.I.)	(6) 4.3 % (2.0 - 9.1 95% C.I.)

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

**Table 50:** Prevalence of underweight by age, based on weight-for-age z-scores and/or oedema-Ajounj Thok refugee camp, south Sudan (2017)

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	69	2	2.9	9	13.0	58	84.1	0	0.0
18-29	58	2	3.4	6	10.3	50	86.2	0	0.0
30-41	69	3	4.3	10	14.5	56	81.2	0	0.0
42-53	65	3	4.6	6	9.2	56	86.2	0	0.0
54-59	23	1	4.3	3	13.0	19	82.6	0	0.0
<b>Total</b>	<b>284</b>	<b>11</b>	<b>3.9</b>	<b>34</b>	<b>12.0</b>	<b>239</b>	<b>84.2</b>	<b>0</b>	<b>0.0</b>

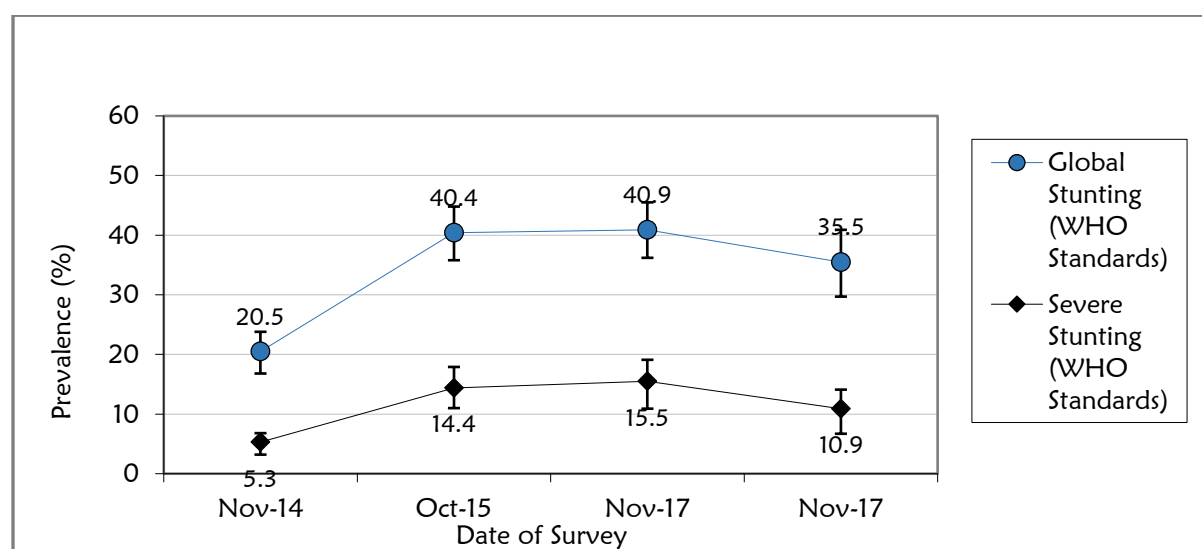
Children aged 30-41 tend to be most underweight compared to the other age groups.

**Table 51:** Prevalence of stunting based on height-for-age z-scores and by sex - Ajounj Thok refugee camp, south Sudan (2017)

	All n = 276	Boys n = 143	Girls n = 133
Prevalence of stunting (<-2 z-score)	(98) 35.5 % (30.1 - 41.3 95% C.I.)	(57) 39.9 % (32.2 - 48.0 95% C.I.)	(41) 30.8 % (23.6 - 39.1 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(68) 24.6 % (19.9 - 30.0 95% C.I.)	(41) 28.7 % (21.9 - 36.6 95% C.I.)	(27) 20.3 % (14.3 - 27.9 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(30) 10.9 % (7.7 - 15.1 95% C.I.)	(16) 11.2 % (7.0 - 17.4 95% C.I.)	(14) 10.5 % (6.4 - 16.9 95% C.I.)

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

**Figure 4:** Trends in the prevalence of global and severe stunting based on who growth standards in children 6-59 months from 2014-2017, - Ajounj Thok refugee camp, south Sudan



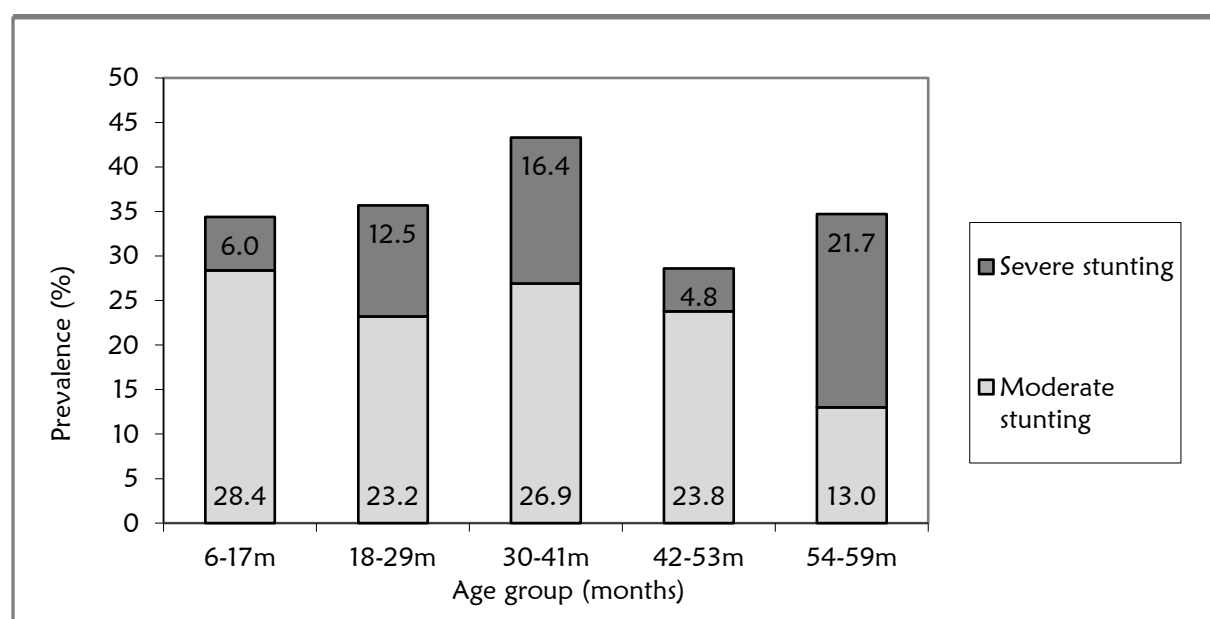
Stunting prevalence in Ajoung Thok largely remained the same in 2015 and 2016. In 2017 a downward trend was realised.

**Table 52:** Prevalence of Stunting By Age Based On Height-For-Age Z-Scores - Ajoung Thok refugee camp, south Sudan (2017)

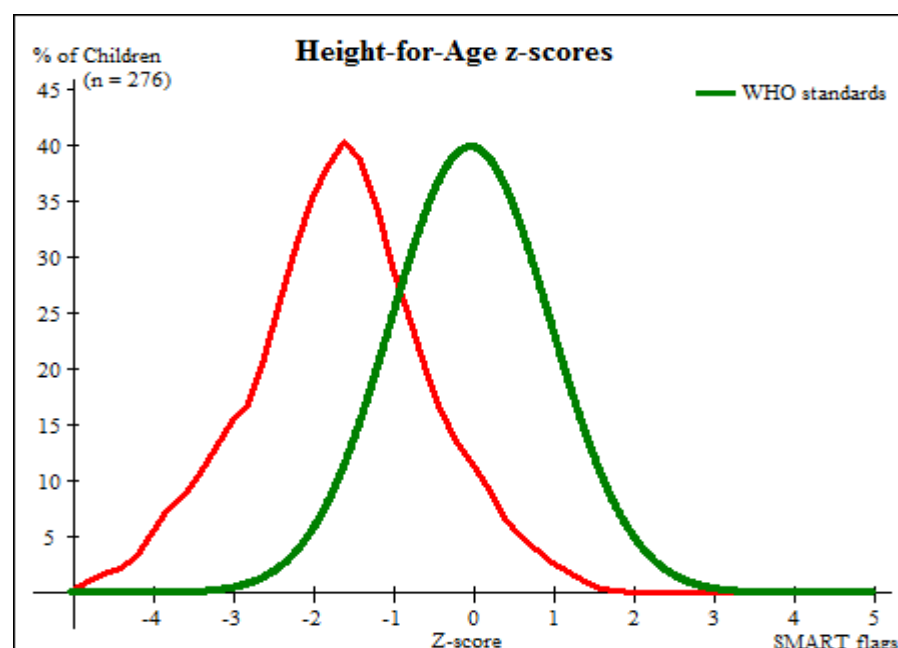
Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting ( $\geq -3$ and $< -2$ z-score)		Normal ( $\geq -2$ z score)	
		No.	%	No.	%	No.	%
6-17	67	4	6.0	19	28.4	44	65.7
18-29	56	7	12.5	13	23.2	36	64.3
30-41	67	11	16.4	18	26.9	38	56.7
42-53	63	3	4.8	15	23.8	45	71.4
54-59	23	5	21.7	3	13.0	15	65.2
Total	276	30	10.9	68	24.6	178	64.5

Children aged 30-41 tend to be most stunted compared to the other age groups.

**Figure 5:** Trends in the prevalence of stunting by age in children 6-59 months, - Ajoung Thok refugee camp, south Sudan (2017)



**Figure 6:** Distribution of height-for-age z-scores (based on WHO growth standards; the reference population is shown in green and the surveyed population is shown in red) of survey population compared to reference population - Ajoung Thok refugee camp, south Sudan (2017)



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 53:** Prevalence of Overweight Based on Weight for Height Cut offs and by Sex (No Oedema) - Ajoung Thok refugee camp, south Sudan (2017)

	All n = 285	Boys n = 146	Girls n = 139
Prevalence of overweight (WHZ > 2)	(1) 0.4 % (0.1 - 2.0 95% C.I.)	(0) 0.0 % (0.0 - 2.6 95% C.I.)	(1) 0.7 % (0.1 - 4.0 95% C.I.)
Prevalence of severe overweight (WHZ > 3)	(0) 0.0 % (0.0 - 1.3 95% C.I.)	(0) 0.0 % (0.0 - 2.6 95% C.I.)	(0) 0.0 % (0.0 - 2.7 95% C.I.)

**Table 54:** Prevalence of overweight by age, based on weight for height (no oedema) - Ajoung Thok refugee camp, south Sudan (2017)

Age (mo)	Total no.	Overweight (WHZ > 2)		Severe Overweight (WHZ > 3)	
		No.	%	No.	%
6-17	69	1	1.4	0	0.0
18-29	59	0	0.0	0	0.0
30-41	69	0	0.0	0	0.0
42-53	65	0	0.0	0	0.0
54-59	23	0	0.0	0	0.0
Total	285	1	0.4	0	0.0

**Table 55:** Mean Z-Scores, Design Effects and Excluded Subjects - Ajoung Thok refugee camp, south Sudan (2017)

Indicator	n	Mean z-scores $\pm$ SD	Design Effect (z-score $< -2$ )	z-scores not available*	z-scores out of range
Weight-for-Height	285	- 0.34 $\pm$ 0.90	1.00	0	2
Weight-for-Age	284	-1.14 $\pm$ 0.93	1.00	0	3
Height-for-Age	276	-1.66 $\pm$ 1.09	1.00	0	11

\* There were no oedema cases found during the survey.

### Feeding programme coverage results

The coverage for TFP using both the MUAC and combined criterion met the recommended standard of  $>90\%$ . This was not the case for TSFP coverage using both the MUAC and combined criterion. This was low and did not meet the recommended standard of  $>90\%$ . Of note is that 15.4% of the eligible to SFP children were enrolled in the TFP program. If this is factored the SFP coverage based on MUAC, oedema and WHZ totals 30.7% (9.1-61.4 95% CI). This was also the case for the SFP coverage based on MUAC and oedema only. 25% of the eligible to SFP children were enrolled in the TFP program. If this is factored the SFP coverage based on MUAC and oedema only totals 50% (15.7-84.3 95% CI).

**Table 56:** Programme coverage for acutely malnourished children based on MUAC, oedema and WHZ- Ajoung Thok refugee camp, south Sudan (2017)

	Number/total	% (95% CI)
Supplementary feeding programme coverage	2/13	15.4(1.9-45.5)
Therapeutic feeding programme coverage	1/1	100%

**Table 57:** Programme Coverage for Acutely Malnourished Children Based On MUAC and Oedema - Ajoung Thok refugee camp, south Sudan (2017)

	Number/total	% (95% CI)
Supplementary feeding programme coverage	2/8	25(3.2-65.1)
Therapeutic feeding programme coverage	1/1	100%

### Measles Vaccination Coverage Results

**Table 58:** Measles vaccination coverage for children aged 9-59 months (N=266) - Ajoung Thok refugee camp, south Sudan (2017)

	Measles (with card) n=66	Measles (with card <u>or</u> confirmation from mother) n=259
YES	24.8% (19.7-30.5 95% CI)	97.4% (94.7-98.9 95% CI)

The measles vaccination coverage met the recommended target of  $\geq 95\%$ . The card coverage however reduced significantly compared to the 41% in 2016

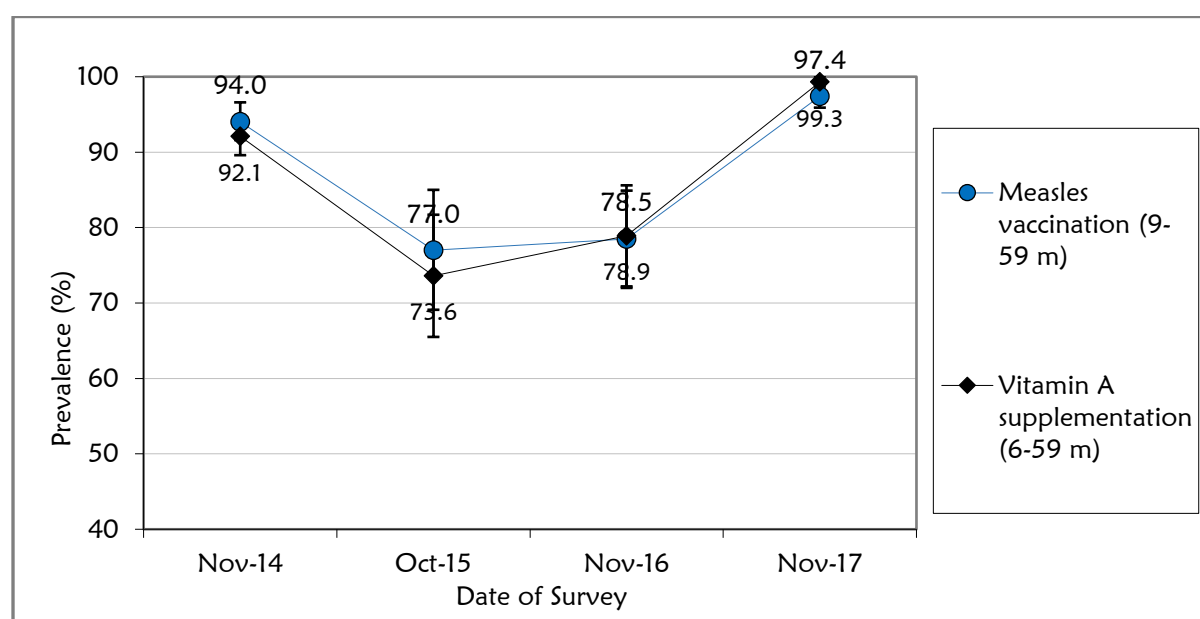
### Vitamin A Supplementation Coverage Results

**Table 59:** Vitamin A Supplementation for Children Aged 6-59 Months within Past 6 Months (N= 287) - Ajoung Thok refugee camp, south Sudan (2017)

	Vitamin A capsule (with card) n=20	Vitamin A capsule (with card <u>or</u> confirmation from mother) n=285
YES	7.0% (4.3-10.6 95% CI)	99.3 % (97.5-99.9 95% CI)

The coverage of vitamin A coverage met the recommended target of  $\geq 90\%$ . The card coverage however reduced significantly compared to the 38.1% in 2016

**Figure 7:** Trends in the coverage of measles vaccination and vitamin A supplementation in last 6 months in children aged 6-59 months from 2014-2017- Ajoung Thok refugee camp, south Sudan



Both the measles vaccination and the vitamin A supplementation coverage improved significantly compared to that in 2016 when the coverage was 78.5% and 78.9% respectively.  $p > 0.05$

### Diarrhoea Results

**Table 60:** Period prevalence of diarrhoea- Ajoung Thok refugee camp, south Sudan (2017)

	Number/total	% (95% CI)
Diarrhoea in the last two weeks	40/287	13.9 (10.2-18.5)

The period prevalence of diarrhoea reduced in 2017 in comparison to the 21% in 2016

## 4.2.2 Anaemia Results Children 6 – 59 Months

The total anaemia prevalence among children 6 to 59 months was 35.3% (29.8-41.2 95% CI). This is serious as it falls between the 20-39% ranges of public health significance. Children aged 6-23 were the most severely affected by anaemia.

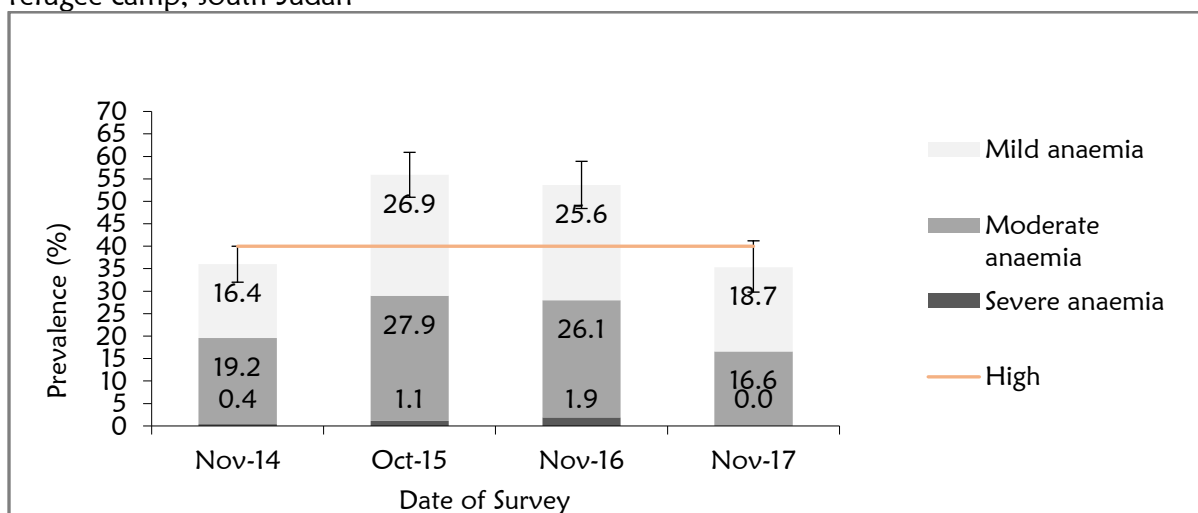
**Table 61:** Prevalence of total anaemia, anaemia categories, and mean haemoglobin concentration in children 6-59 months of age and by age group- Ajoung Thok refugee camp, south Sudan (2017)

	6-59 months n = 283	6-23 months n=93	24-59 months n=190
<b>Total Anaemia (Hb&lt;11.0 g/dL)</b>	(100) 35.3% (29.8-41.2 95% CI)	(54) 58.1 (47.4-68.2 95% CI)	(46) 24.2 (18.3-30.9 95% CI)
<b>Mild Anaemia (Hb 10.0-10.9 g/dL)</b>	(53) 18.7% (14.4-23.8 95% CI )	(24) 25.8 (17.3-35.9 95% CI )	(29) 15.3 (10.5-21.2 95% CI )
<b>Moderate Anaemia (7.0-9.9 g/dL)</b>	(47) 16.6% (12.5-21.4 95% CI )	(30) 32.3 (22.9-42.6 95% CI)	(17) 9.0 (5.3-13.9 95% CI)
<b>Severe Anaemia (&lt;7.0 g/dL)</b>	0	0	0
<b>Mean Hb (g/dL) [range]</b>	11.2 g/dL [7.6-14.1]	10.5 g/dL [7.6-12.9]	11.6 g/dL [7.6-14.1]

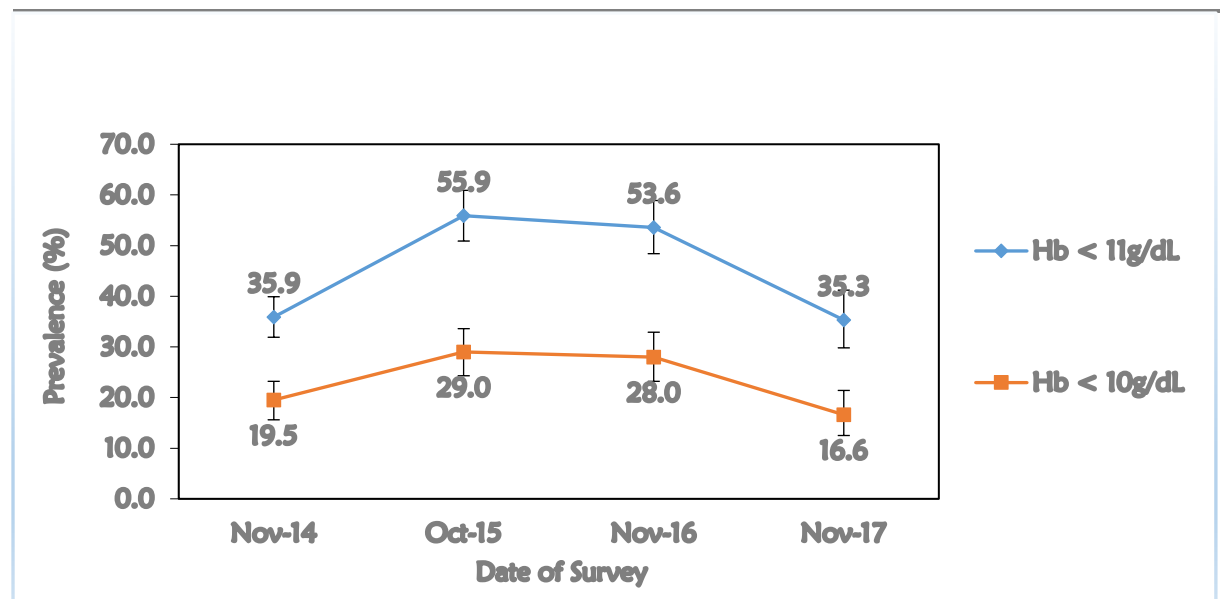
**Table 62:** Prevalence of moderate and severe anaemia in children 6-59 months of age and by age group- Ajoung Thok refugee camp, south Sudan (2017)

	6-59 months n = 283	6-23 months n=93	24-59 months n=190
<b>Moderate and Severe Anaemia (Hb&lt;10.0 g/dL)</b>	(47) 16.6% (12.5-21.4 95% CI )	(30) 32.3 (22.9-42.6 95% CI)	(17) 9.0 (5.3-13.9 95% CI)

**Figure 8:** Trends in anaemia categories in children 6-59 months from 2014-2017- Ajoung Thok refugee camp, south Sudan

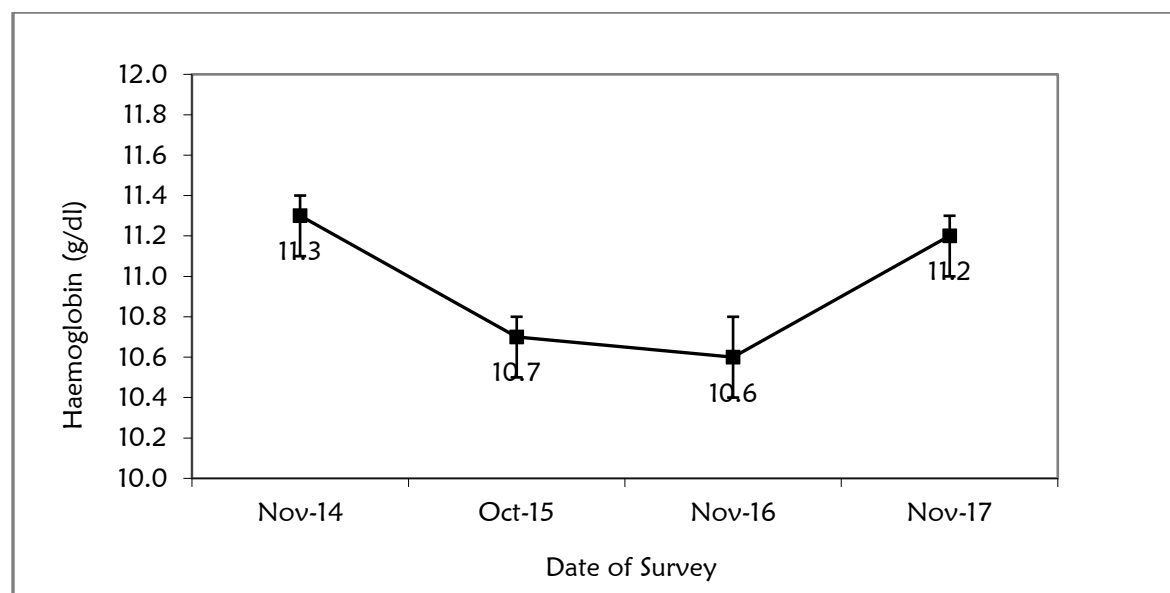


**Figure 9:** Trend in total anaemia (<11 g/dl), and moderate and severe anaemia (<10 g/dl) with 95% CI in children 6-59 months from 2014-2017- Ajoung Thok refugee camp, south Sudan



The prevalence of anaemia reduced in 2017 compared to that in 2016,  $p < 0.05$

**Figure 10:** Trend in mean haemoglobin concentration with 95% CI in children 6-59 months from 2014-2017- Ajoung Thok refugee camp, south Sudan

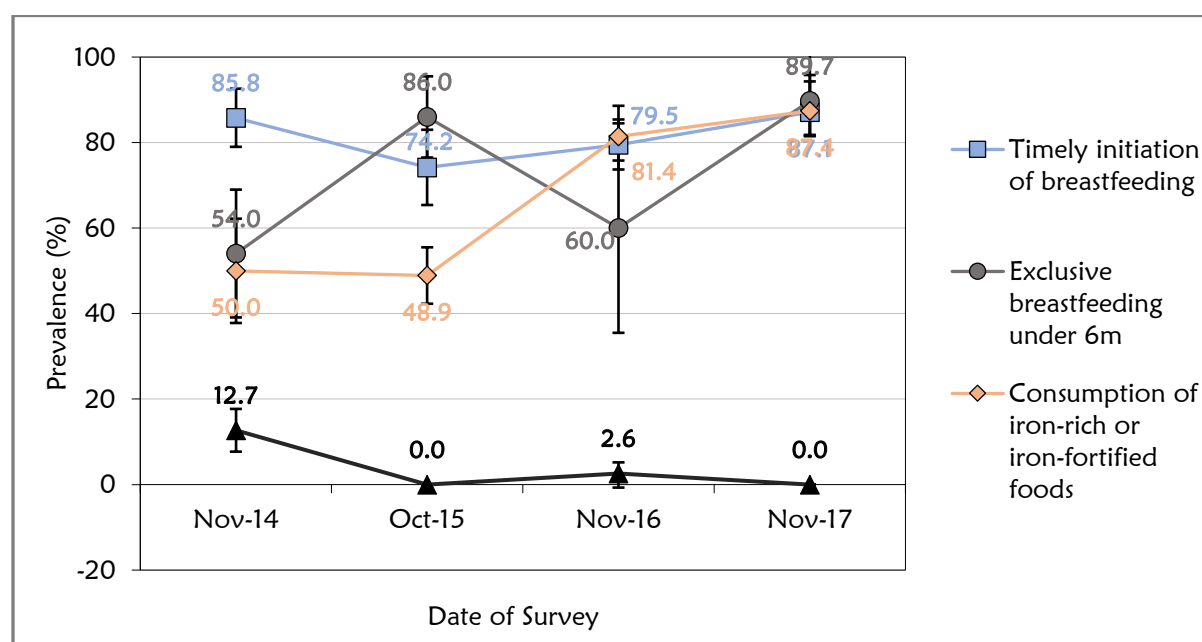


### 4.2.3 IYCF Children 0-23 Months

**Table 63:** Prevalence of Infant and Young Child Feeding Practices Indicators- Ajoung Thok refugee camp, south Sudan (2017)

Indicator	Age range	Number/total	Prevalence (%)	95% CI
Timely initiation of breastfeeding	0-23 months	108/124	87.1	79.9-92.4
Exclusive breastfeeding under 6 months	0-5 months	26/29	89.7	72.7-97.8
Continued breastfeeding at 1 year	12-15 months	21/22	95.5	77.2-99.9
Continued breastfeeding at 2 years	20-23 months	7/13	53.9	25.1-80.8
Introduction of solid, semi-solid or soft foods	6-8 months	13/21	61.9	38.4-81.9
Consumption of iron-rich or iron-fortified foods	6-23 months	83/95	87.4	79.0-93.3
Bottle feeding	0-23 months	0/124	0	0

**Figure 11:** Key IYCF indicators from 2014-2017- Ajoung Thok refugee camp, south Sudan



## Prevalence of Intake

### Infant Formula

**Table 64:** Infant formula intake in children aged 0-23 months- Ajoung Thok refugee camp, south Sudan (2017)

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	2/124	1.6 (0.2-5.7)

### Fortified Blended Foods

**Table 65:** CSB++ Intake in Children Aged 6-23 Months - Ajoung Thok refugee camp, south Sudan (2017)

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB++	78/95	82.1 (72.9-89.2)

## 4.2.4 Anaemia; Women 15-49 Years

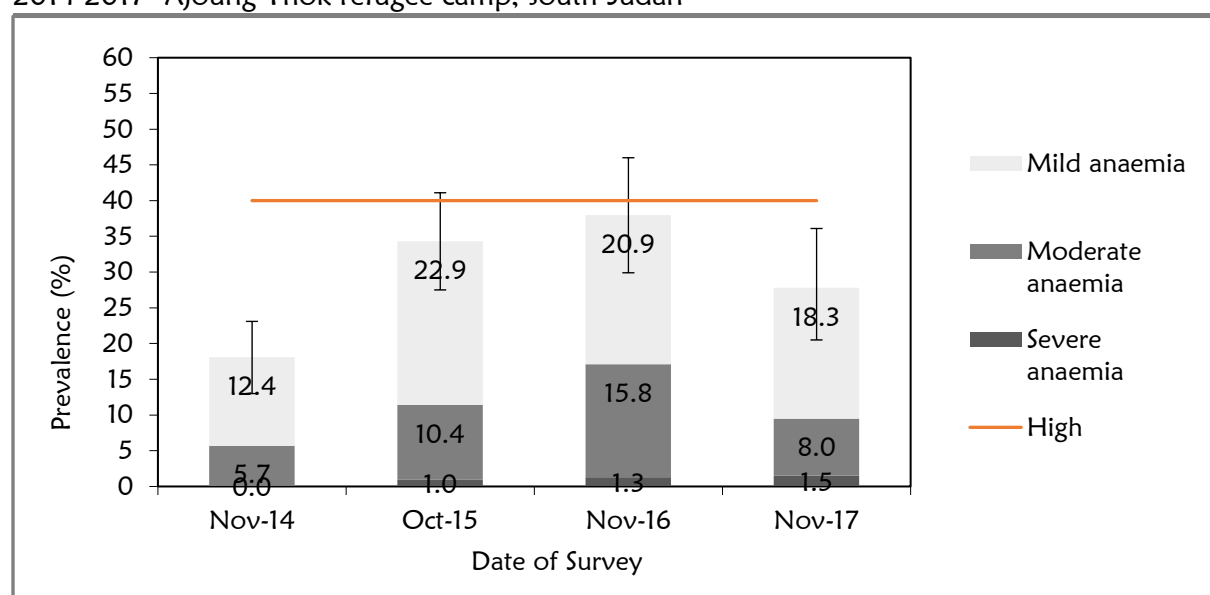
**Table 66:** Women Physiological Status and Age- Ajoung Thok refugee camp, south Sudan (2017)

Physiological status	Number/total	% of sample
Non-pregnant	137	93.2
Pregnant	10	6.8
Mean age (range)	25.8(15-48)	

**Table 67:** Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 Years) - Ajoung Thok refugee camp, south Sudan (2017)

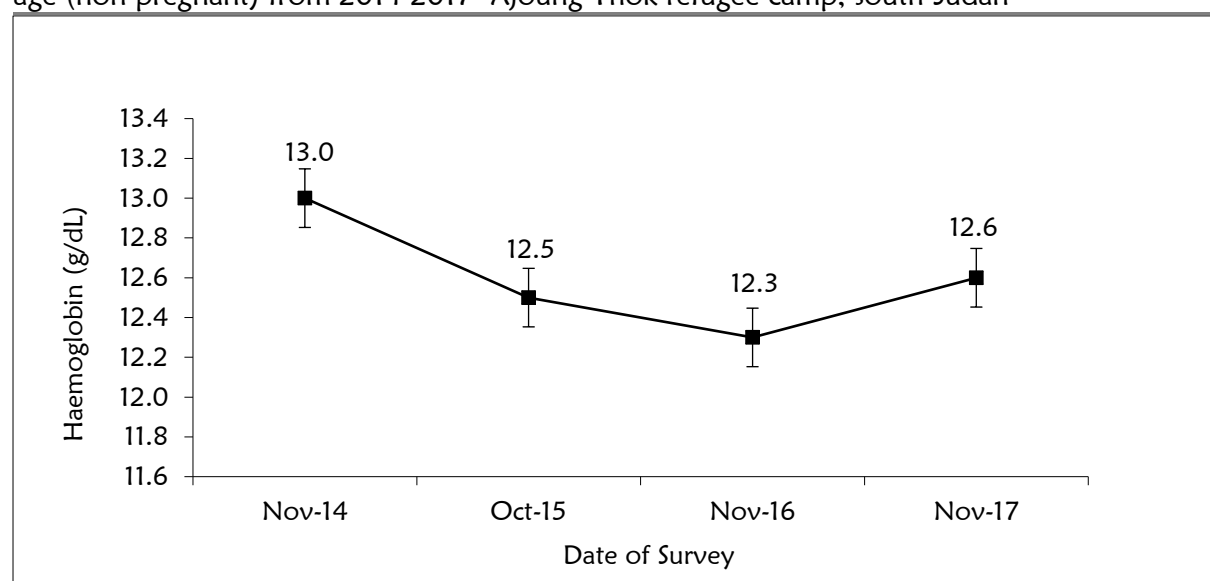
Anaemia - Women of reproductive age 15-49 years	All n = 137
Total Anaemia (<12.0 g/dL)	(38) 27.7% (20.4-36.0 95% CI)
Mild Anaemia (11.0-11.9 g/dL)	(25) 18.3% (12.2-25.8 95% CI)
Moderate Anaemia (8.0-10.9 g/dL)	(11) 8.0% (4.1-13.9 95% CI)
Severe Anaemia (<8.0 g/dL)	(2) 1.5 (0.2-5.1 95% CI)
Mean Hb, g/dL (SD) [range]	12.6 g/dL 1.5 [7.2-16.2]

**Figure 12:** Trends in anaemia categories in women of reproductive age (non-pregnant) from 2014-2017- Ajoung Thok refugee camp, south Sudan



The anaemia situation among children aged 6 to 59 months in Ajoung Thok continued to be high in 2017 but reduced compared to the two previous years

**Figure 13:** Trends in mean haemoglobin concentration with 95% ci in women of reproductive age (non-pregnant) from 2014-2017- Ajoung Thok refugee camp, south Sudan



The mean haemoglobin remained the same in 2017 as compared to the past years above. The difference was not statistically significant,  $p > 0.05$ .

**Table 68:** ANC Enrolment and Iron-Folic Acid Pills Coverage among Pregnant Women (15-49 Years) - Ajoung Thok refugee camp, south Sudan (2017)

	Number /total	% (95% CI)
Currently enrolled in ANC programme	8/10	80 (44.4-97.5)
Currently receiving iron-folic acid pills	8/10	80 (44.4-97.5)

## Food security

### Access to food assistance

**Table 69:** Ration card coverage

	Number/total	% (95% CI)
<b>Proportion of households with a ration card</b>	156/156	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 70:** Coping strategies used by the surveyed population over the past month - Ajoung Thok refugee camp, south Sudan (2017)

	Number/total	% (95% CI)
<b>Proportion of households reporting using the following coping strategies over the past month*:</b>		
Borrowed cash, food or other items with or without interest	60/156	38.5 (30.8-46.6)
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)	45/156	27.6 (20.7-35.3)
Requested increased remittances or gifts as compared to normal	8/155	5.2 (2.3-9.9)
Reduced the quantity and/or frequency of meals and snacks	89/155	57.4 (49.2-65.3)
Begged	20/155	12.9 (8.1-19.2)
Engaged in potentially risky or harmful activities	4/155	2.6(0.7-6.5)
<b>Proportion of households reporting using none of the coping strategies over the past month</b>	58/155	37.4(29.8-45.5)

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

Only 37.4.8% 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.

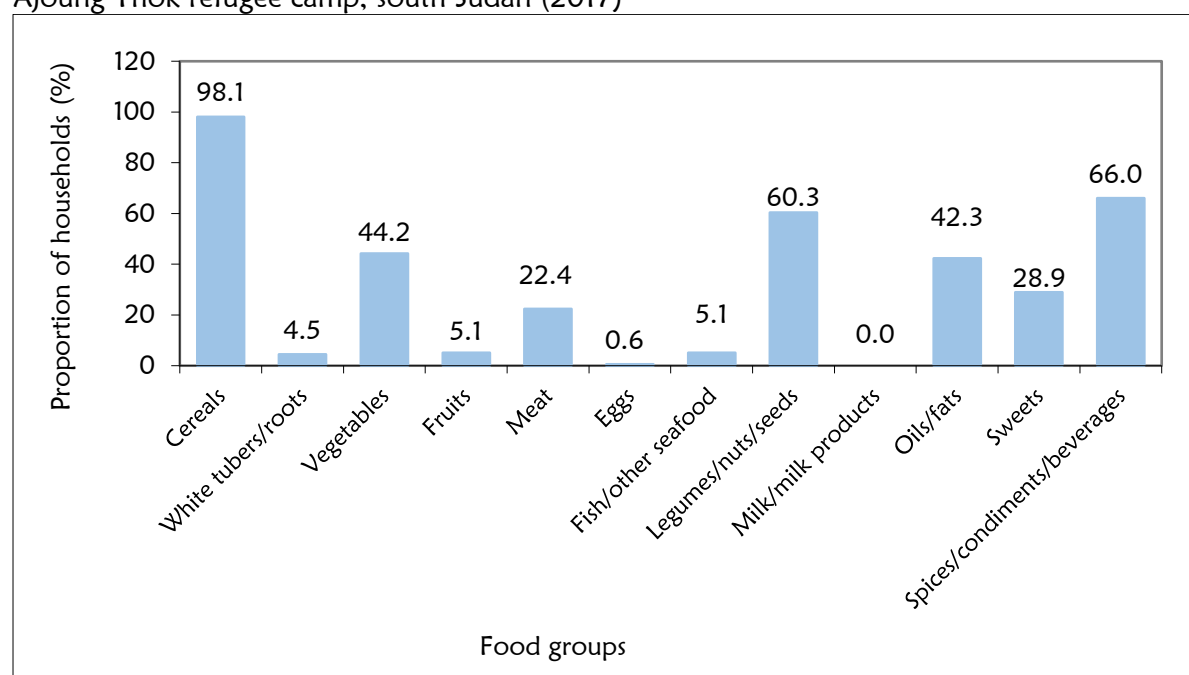
### Household dietary diversity

The last general food distribution ended 26+ days prior to the start of the survey data collection. The survey was carried out during the end of the harvest season.

**Table 71:** Average HDDS- Ajoung Thok refugee camp, south Sudan (2017)

	Mean (Standard deviation or 95% CI)
<b>Average HDDS</b>	3.8 (2.0)

**Figure 23:** Proportion of households consuming different food groups within last 24 hours - Ajoung Thok refugee camp, south Sudan (2017)



**Table 72:** Consumption of micronutrient rich foods by households- Ajoung Thok refugee camp, south Sudan (2017)

	Number/total	% (95% CI)
Proportion of households <i>not consuming any</i> vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	75/156	48.1 (40.0-56.2)
Proportion of households consuming either a plant or animal source of vitamin A	33/156	21.2 (15.0-28.4)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	37/156	23.7 (17.3-31.2)

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 72% and 77% in Pamir and Ajoung Thok respectively. Although an event calendar was used by the surveyors to ascertain age, stunting results need to be interpreted with caution because z-scores for height-for-age require accurate ages to within two weeks<sup>16</sup>
- 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 Global Acute Malnutrition (GAM) in Pamir camp 8.2% (5.6-11.7 95% C.I) is poor based on the WHO classification (acute malnutrition between 5-9% is considered poor). The prevalence of Severe Acute Malnutrition (SAM) was 0.6% (0.2-2.2 95% C.I). The prevalence of SAM is within the UNHCR acceptable level of <2%. This was the first nutrition survey to be conducted in Pamir. The data will thus act as the baseline.

In Ajoung Thok GAM prevalence was 2.8 (1.4-5.4 95% C.I) based on WHZ scores which is acceptable and below the critical WHO emergency threshold of 15%. Of note however is that the higher confidence interval for the latter, falls under the poor nutrition category thus the need for concerted efforts to keep the prevalence low. Children 6-17 months had the highest proportion of wasting followed by the 18-29 months age group. Extra attention to these groups is thus necessary. The proportion of children with a MUAC <12.5cm in Ajoung Thok was 3.5% (1.9-6.3 95% C.I) which is slightly higher than the WHZ-score malnutrition indicating the need to use a combined admission criteria. Compared to the situation in 2015 and 2016 the GAM and SAM prevalence has been on a downward trend in Ajoung Thok indicating positive gains from the interventions in place. Comprehensive management of acute malnutrition continued in 2017. In addition to this the preventive Blanket Supplementary Feeding Programme (BSFP) also continued throughout 2017. All children aged 6-23 months were targeted and received 200g/person/day super cereal plus monthly in 2017. Children 24-59 months also benefited from the BSFP program for five months (January to March and November to December 2017) as WFP had adequate stock to expand the age range in both camps.

The prevalence of global stunting in Pamir was 35.1% (30.1-40.5 95% C.I) while in Ajoung Thok was 35.5% (30.1-41.3 95% C.I). This is categorized as serious according to WHO standard. Severe stunting was 11.5% (8.4-15.5 95% C.I) and 10.9% (7.7-15.195% C.I) respectively. Total and severe stunting prevalence in Ajoung Thok although indicating a downward trend in 2017, remained the same as that in 2015 and 2016. The reduction was not

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<sup>16</sup> (CDC/WFP: A manual: Measuring and Interpreting Mortality and Malnutrition, 2005).

statistically significant  $p > 0.05$ ). In 2016 stunting among children 6-59 months in Ajoung Thok was 40.9% (36.3-45.6 95% C.I) and in 2015 was 40.4(36.0-45.0 95% CI).

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, inadequate infant and young child feeding practices, and infection.'<sup>17</sup> Although gains have been achieved in terms of increased ANC coverage ( $\geq 80\%$ ), health facility deliveries ( $\geq 95\%$ ), practices like family planning remains poor<sup>18</sup>. Low birth weight proportion in 2017 was 4% in Pamir and 1% in Ajoung Thok<sup>19</sup>. These factors are likely to contribute to stunting. Other likely contributors to stunting include poor sanitation conditions leading to diarrhoeal diseases. Approximately 26% and 21% of the population in Pamir and Ajoung Thok respectively 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.<sup>20</sup> Stunting levels are high among children 18 to 29 months and 30 to 41 months age categories. This is likely to be a result of poor child care and feeding practices. Action across multiple areas continues to be necessary to reduce the stunting levels.

### **Morbidity**

The interactions of nutrition and infection are cyclic with each exacerbating the other. 22% and 14% 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 (malaria, respiratory tract infections, skin and eye disease, intestinal worms and watery diarrhoea) should also be given special attention.

### **Programme Coverage**

#### **Selective feeding program**

The TFP and TSFP programme coverage indicator using WHZ, MUAC and oedema in Pamir did not meet the recommended standard of  $>90\%$ . In Ajoung Thok the TFP coverage met the recommended standard but the TSFP did not. 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 TFP and TSFP and Ajoung Thok TSFP nutrition programmes. BSFP coverage from the 2017 monthly monitoring reports was 88.6% for children aged 6-23 which is slightly below the 90% target. There is need to strengthen case finding both at the community level and the screening at the facility level. This to include an innovative way of identifying cases that are acutely malnourished based on WHZ scores.

### **Measles vaccination and Vitamin A supplementation**

The coverage of measles vaccination in Pamir was 89.9% which does not meet the recommended  $\geq 95\%$ . In Ajoung Thok the target was met. With regard to vitamin A

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<sup>17</sup> WHA Global Nutrition Targets 2025: Stunting policy brief

<sup>18</sup> UNHCR HIS 2017 (65% in Pamir and 35% in Ajoung Thok)

<sup>19</sup> UNHCR HIS 2017

<sup>20</sup> WHO, Childhood Stunting: Challenges and Opportunities. Report of a Promoting Health and Preventing Childhood Stunting Colloquium. Geneva: World Health Organisation; 2014

supplementation the target coverage of  $\geq 90\%$  was met in both camps. Both the measles and vitamin A coverage improved in Ajoung Thok compared to 2016 when the coverage was below the target. These results are combined for both the card and by recall. The improvement is as a result of continued routine EPI and supplementation activities.

### **Anaemia among Young Children and Women**

The survey results showed that total anaemia prevalence among children aged 6 to 59 months in Pamir was 44.5%. This is critical as it is above the 40% level of public health significance according to the WHO classification. In Ajoung Thok the anaemia prevalence was 35.2%. This is serious as it falls under medium classification of public health significance. This reduced compared to 53.6% in 2016. 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 62.7% and 58.1% in Pamir and Ajoung Thok respectively compared to 24.2% and 35% 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 13.5% and 16.6% in Ajoung Thok. The findings showed that if only moderate and severe anaemia was considered, the anaemia prevalence is of low public health concern

The prevalence of anaemia among women aged 15-49 years (non-pregnant) was 20.4% in Pamir and 38% 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 88.2% in Pamir and 80% in Ajoung Thok respectively. Iron-folic acid coverage was the same as the ANC coverage.

The anaemia prevalence can be attributed to a number of factors that characterise the camp population. Chief among the contributors to the high anaemia prevalence is the diet which is poor in micronutrients. 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 34.4% and 23.7% of the households in Pamir and Ajoung Thok respectively consumed food sources rich in iron. Only 24.3% of children aged 6-23 months had consumed iron rich foods in Pamir during the survey. In Ajoung Thok the proportion was higher at 87.4. 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. A strategy to address anaemia and other micronutrient deficiencies in the south Sudan refugee camps was drawn in the second half of 2017. The full implementation of this is essential in Pamir and Ajoung Thok refugee camps. This to be carried out in 2018.

### **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<sup>21</sup>.

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<sup>21</sup> WHO, Indicators for Assessing Infant and Young Child Feeding Practices, WHO 2010

From the survey results proportion of children 0-23 months that had timely initiation of breast milk within the first hour of delivery was 79.9% in Pamir and 87.1% in Ajoung Thok. Early initiation (within one hour of birth) of exclusive breastfeeding significantly reduces the risk of neonatal mortality. Infants for whom initiation of breastfeeding is delayed to more than 24 hours after birth are 2.4 times more likely to die during their first month of life. Efforts to ensure all delivered children receive timely initiation of breast milk should thus be continued.

The rate of exclusive breastfeeding for the first six months of life was 85.7% in Pamir and 89.7% 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.<sup>22</sup> Continued breastfeeding at 1 year was 95.2% in Pamir and 95.5% in Ajoung Thok and up to two years was 71.4 and 53.9% respectively. The results above indicate there is a relatively positive uptake of the exclusive breastfeeding and the need to continue breast feeding up to one year. This to continue being enforced. Uptake of the need to continue breastfeeding into the second year message needs to be strengthened. Barriers to this including birth spacing to continue being advised.

Timely introduction of complementary feeding among children 6 to 8 months was 37.5% in Pamir and 61.9% in Ajoung Thok. After six months, adequate and appropriate infant complementary foods become necessary to complement breastmilk in order to meet the energy and other nutrient requirements of the infant (timely complementary feeding). There is need to ensure IYCF messaging addresses this important component of complementary feeding as this has a direct bearing on stunting outcomes of the children. More is required in Pamir as the indicators are worse than in Ajoung Thok.

Only a very small proportion of the surveyed children aged 0-23 months were bottle fed <1% in Pamir and none in Ajoung Thok. This was also the case in the case of infants that received infant formula. Only 2.2% and 1.6% 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 resort to continue being emphasised. 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<sup>23</sup>

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.

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<sup>22</sup> UNHCR SENS guidelines for refugee populations, Version 2 (2013)

<sup>23</sup> Operation Guidance on IFE, section 5.2.8, v2.1, Feb 2007

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 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 or food 38.7 and 38.5%, sold assets 29 and 27.6%, requested increased remittances/gifts 4.5 and 5.2%, reduced quantity or frequency of meals 56.1 and 57.4%, begged 18.1 and 12.9%, and engaged in potential risky or harmful activities 8.4 and 2.6% in Pamir and Ajoung Thok respectively). Only approximately a third of the refugees in Pamir and Ajoung Thok 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. (UNHCR, UNICEF, WFP and AHA and IRC).

Ensure all children identified with a MUAC less than 125mm get enrolled into the management of acute malnutrition programs. This to be carried out through community outreach at household level and referral to the health/nutrition facility (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).

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 a UNHCR and save the children initiative for support, promotion, and protection of Infant and Young Child Feeding (IYCF) and community outreach education aspects to stop malnutrition from occurring in the first place. (UNHCR, UNICEF, AHA and IRC).

Roll out 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**

Provision of a general food ration providing the minimum dietary requirements (2100kcal/person/day) in both camps (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. A joint assessment mission to be carried out in 2018 to further guide the improvement of food security (UNHCR, WFP, AHA, IRC and food security and livelihood actors).

#### **Health related**

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

- The maintenance of the routine Expanded Programme on Immunization (EPI) and immunization campaigns in Pamir and Ajoung Thok. Pamir to strengthen measles vaccination coverage in 2018. (UNHCR, AHA and IRC).
- Prevention, control of infection, vector borne diseases especially around malaria and helminths (UNHCR, AHA, SP and IRC).
- The maintenance and strengthening of reproductive health (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	Kute Samuel	Team Leader	IRC
2	Juma Said	Assistant anthropometric measurer	IRC
3	Dwoki Wani Buyu Dyori	Team Leader	IRC
4	Bakhit Alfande Kuku	Team Leader	AHA
5	Sijali Swali	Team Leader	IRC
6	Gasim Idriss Kuku	Team Leader	AHA
7	Ateib Hissein	HB measurer	AHA
8	Zakaria Hassan	Haemoglobin measurer	AHA
9	Amir Abbass Abdullah	HB measurer	AHA
10	Isaac Jacob Kafi	HB measurer	AHA
11	Ismail Musa Kodi	HB measurer	AHA
12	Mustafa Siliman Anur	HB measurer	AHA
13	Rahama Ramadan	Anthropometric measurer	IRC
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16	David Montkuer Deng	Anthropometric measurer	AHA
17	Mangisto Adam	Team Leader	IRC
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19	Bashir Suliman	Assistant HB measurer	IRC
20	Azibiar Kawaja	Assistant anthropometric measurer	AHA
21	Laluba Kumi	Assistant anthropometric measurer	IRC
22	Kodi Paul	Assistant HB measurer	AHA
23	Farid Nimir Hissen	Assistant Anthropometric measurer	AHA
24	John Abdallah Treke	Assistant HB measurer	IRC
25	Israel John	Assistant HB measurer	IRC
26	Basma Mubarak Khatan	Anthropometric measurer	IRC
27	Lilly Ismail Kodi	Anthropometric measurer	IRC
28	Tarik Kodi	Assistant anthropometric measurer	AHA
29	Khamis Ochono Tutu	Assistant HB measurer	IRC
30	Kukuman David Kukuman	Assistant anthropometric measurer	IRC
31	Zachariah Wambugu	Supervisor	AHA
32	Muni Safi Musa (Dr)	Supervisor	IRC
33	Lilian Igube	Supervisor/coordinator	UNHCR
34	Gideon I. Ndawula (Dr)	Supervisor/coordinator	UNHCR
35	Terry Njeri Theuri	Lead coordinator	UNHCR
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## Data analysis and report compilation

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## Report review

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## Funding

UNHCR, IRC and AHA supported the survey. UNICEF and WFP fund most of the nutrition and food security program

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

### Pamir

### Overall data quality

Criteria	Flags*	Unit	Excl.	Good	Accept	Problematic	Score
Flagged data (% of out of range subjects)	Incl	%	0-2.5 0	>2.5-5.0 5	>5.0-7.5 10	>7.5 20	<b>0</b> (0.3 %)
Overall Sex ratio (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<=0.001 10	<b>0</b> (p=0.468)
Age ratio (6-29 vs 30-59) (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<=0.001 10	<b>0</b> (p=0.613)
Dig pref score - weight	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	<b>0</b> (5)
Dig pref score - height	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	<b>0</b> (5)
Dig pref score - MUAC	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	<b>2</b> (8)
Standard Dev WHZ .	Excl	SD	<1.1 and 0	<1.15 >0.85 5	<1.20 or >0.80 10	>=1.20 <=0.80 20	<b>0</b> (0.94)
Skewness WHZ	Excl	#	<±0.2 0	<±0.4 1	<±0.6 3	>=±0.6 5	<b>0</b> (-0.07)
Kurtosis WHZ	Excl	#	<±0.2 0	<±0.4 1	<±0.6 3	>=±0.6 5	<b>0</b> (0.01)
Poisson dist WHZ-2	Excl	p	>0.05 0	>0.01 1	>0.001 3	<=0.001 5	<b>0</b> (p=)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	<b>2</b> %

The overall score of this survey is 2 %, this is excellent.

## Ajong Thok

### Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Flagged data (% of out of range subjects)	Incl	%	0-2.5 0	>2.5-5.0 5	>5.0-7.5 10	>7.5 20	<b>0</b> (0.7 %)
Overall Sex ratio (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<=0.001 10	<b>0</b> (p=0.595)
Age ratio (6-29 vs 30-59) (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<=0.001 10	<b>0</b> (p=0.825)
Dig pref score - weight	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	<b>0</b> (5)
Dig pref score - height	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	<b>2</b> (10)
Dig pref score - MUAC	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	<b>0</b> (6)
Standard Dev WHZ .	Excl	SD	<1.1 and >0.9 0	<1.15 and >0.85 5	<1.20 and >0.80 10	>=1.20 or <=0.80 20	<b>5</b> (0.90)
Skewness WHZ	Excl	#	<±0.2 0	<±0.4 1	<±0.6 3	>=±0.6 5	<b>0</b> (0.09)
Kurtosis WHZ	Excl	#	<±0.2 0	<±0.4 1	<±0.6 3	>=±0.6 5	<b>0</b> (-0.14)
Poisson dist WHZ-2	Excl	p	>0.05 0	>0.01 1	>0.001 3	<=0.001 5	<b>0</b> (p=)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	<b>7</b> %

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

## 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
<b>SECTION IF1</b>		
IF1	Sex نوع	Male ذكر ..... 1 Female انثى ..... 2
IF2	Birthdate التاريخ الميلاد RECORD FROM AGE DOCUMENTATION. LEAVE BLANK IF NO VALID AGE DOCUMENTATION سجل من وثيق	Day/Month/Year.....     /     /         يوم/شهر/سنة
IF3	Child's age in months سنة الطفل في شهر	IF AGE DOCUMENTATION NOT AVAILABLE, ESTIMATE USING EVENT CALENDAR. IF AGE DOCUMENTATION AVAILABLE, RECORD THE AGE IN MONTHS FROM THE DATE OF BIRTH اذا لا توجد وثقة تاريخ الميلاد ضمن التاريخ خلال حدث في المحلى
IF4	Has [NAME] ever been breastfed? هل (الاسم) دائما يرضى	Yes نعم ..... 1 No لا ..... 2 DK لا اعرف ..... 8
IF5	How long after birth did you first put [NAME] to the breast? بعد الميلاد مباشراً كم من زمن رضيع الطفل؟	Less than one hour ساعة من ..... 1 Between 1 and 23 hours بين 1 و 23 ساعة ..... 2 More than 24 hours أكثر من 24 ساعة ..... 3 DK لا اعرف ..... 8
IF6	Was [NAME] breastfed yesterday during the day or at night? هل رضيع الطفل خلال نهار ام الليل؟	Yes نعم ..... 1 No لا ..... 2 DK لا اعرف ..... 8
<b>SECTION IF2</b>		
IF7	<p>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?</p> <p>الان اريد اسال عن السائل ممكن اخذت خلال النهار امس و في ليل. الى رغبة لمعرفة اذا طفلك له مواد حتلا لو مغلوط مع بعض من اكل خلال يوم او ليل امس(اسم) هل استلام بعض من مذكورة:</p> <p>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.</p> <p>اسال عن السائل اذا اخزوا ضع دائرة في (1) و اذا لم تاخذ ضع دائرة في (2) و ام اذا لا اعرف ضع دائرة في (8)</p>	
	<p>Yes No DK</p>	
	7A. Plain water مياه السهل	7A.....1 2 8
	7B. Infant formula: for example (Libto Mama) ] طفل مرضى على سبيل المثال اضيف عيش المالحى من [ اكل قوى غير قوى(ميتومامة, ليتونيل)	7B.....1 2 8
	7C. Milk such as tinned, powdered, or fresh animal milk: for example (Nido, Formost) لبن علبة المجفف او لحم حيوان طازج على سبيل المثال اضيف بعض لبن علب	7C.....1 2 8
	7D. Juice or juice drinks (Gungules-Aradeb, Kedem) عصير او مشروب عصير اضيف مشروبات المحلى (قفوليس, اريديب, قديم).	7D.....1 2 8
	7E. Clear broth or Soup مرق الصافى	7E.....1 2 8
	7F. Sour milk or yogurt for example: (Zabadi , Roob) لبن حامض (زبادي , روب)	7F.....1 2 8
	7G. Thin porridge for example: (Medida Khafif)	7G.....1 2 8

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نثّة خفيف اذكر اسم المحلى (مديدة خفيف)

<p>7H. Tea or coffee with milk الشاي لبن او قهوة</p>	<p>7H.....1 2 8</p>				
<p>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 من بعض اذكر بعض السوائل مثل مشروبات غازية و مشروبات الشاي خالي من لبن مشروبات الحلوة مشروبات عشبية</p>	<p>7I.....1 2 8</p>				
<p>Yesterday, during the day or at night, did [NAME] eat solid or semi-solid (soft, mushy) food? امس خلال اليوم او الليل هل (اسم) اكلت اكل صلب ام شبة صلب (لبن عصبي)</p>	<table border="1"> <tr> <td>Yes نعم.....1</td> <td rowspan="3"> __ </td> </tr> <tr> <td>No لا.....2</td> </tr> <tr> <td>DK... لا اعرف.....8</td> </tr> </table>	Yes نعم.....1	__	No لا.....2	DK... لا اعرف.....8
Yes نعم.....1	__				
No لا.....2					
DK... لا اعرف.....8					
SECTION IF3					
<p>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 حلمة امس خلال النهار او الليل</p>	<table border="1"> <tr> <td>Yes نعم.....1</td> <td rowspan="3"> __ </td> </tr> <tr> <td>No لا.....2</td> </tr> <tr> <td>DK... لا اعرف.....8</td> </tr> </table>	Yes نعم.....1	__	No لا.....2	DK... لا اعرف.....8
Yes نعم.....1	__				
No لا.....2					
DK... لا اعرف.....8					
SECTION IF4					
<p>Is child aged 6-23 months? هل طفلك عمره 6-23 شهر</p>	<table border="1"> <tr> <td>Yes نعم.....1</td> <td rowspan="3"> __ </td> </tr> <tr> <td>No لا.....2</td> </tr> <tr> <td>DK... لا اعرف.....8</td> </tr> </table>	Yes نعم.....1	__	No لا.....2	DK... لا اعرف.....8
Yes نعم.....1	__				
No لا.....2					
DK... لا اعرف.....8					
<p>REFER TO IF2</p> <p>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 اسال بعض غراء ت (اسم) توكل طفلك لة هزى المواد حتى لو مخلوت مع اغذية اخرى امس خلال الليل او نهار (اسم) يا كل التالي:</p> <p>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.</p> <p>اسال كل المواد اذا المواد قد ضع دائرة (1) اذا المواد اعطى دائرة (2) و اذا لم تعرف ضع دائرة (8) كل خطوط عن تكن لة رمز</p>					
<p style="text-align: right;">Yes No DK</p>					
<p>11A. <b>Flesh foods</b> for example: beef, goat, lamb, mutton, pork, rabbit, chicken, duck, liver, kidney, heart غذاء لحمى (سجل كل لحم العامة مثل سمك دجاج وكبد) على سبيل مثال لحم بقرة ضان بط ارنب لحم خنزير كبد كلية</p>	<p>11A.....1 2 8</p>				
<p>11C. <b>FBF++</b> : for example CSB++ الغذاء القوى ال زرة مثل ال قوى ال غذاء</p>	<p>11C.....1 2 8</p>				
<p>11D. <b>RUTF</b> : for example Plumpy'Nut® (SHOW SACHET) سجل ال علاج فى ي سد تعامل هرة ال جا ال غذاء المدلى ال غزدة ية هزى</p>	<p>11D.....1 2 8</p>				
<p>11E. <b>RUSF</b> : for example Plumpy'Sup® (SHOW SACHET) ال كل هرة سجل فى ي دالا ضامدلى ال جا هرة ال جاهزة ال كل الموجو</p>	<p>11E.....1 2 8</p>				
<p>11G. Infant formula: for example Libto Mama من بعض اذكر الرضى ال ط فل لوصفة ال قوى. حديدى ال ال غزدة ية اسماء هرة</p>	<p>11G.....1 2 8</p>				
<p>11H. List any <b>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</b> لا لاط فال المصنع لى ن سجل (او و صلب صلب شبة ال غزدة ي بعض ال غزى من فرق ولة الم منطقة فى ال الموجون ي رضى والاط فال</p>	<p>11H.....1 2 8</p>				

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
<b>ID</b> ال بطاقة	<b>HH</b> ال بيت ربة	<b>Consent given</b> اعطى ال قد بول  1=yes نعم 2=no لا 3=absent الغائب	<b>Age (السنة)</b> العمر (years)	<b>Are you pregnant?</b> هل حامل اذت  1=yes نعم 2=no لا (GO TO WM 8) 8=DK لا اعرف (GO TO WM 8)	<b>Are you currently enrolled in the ANC programme?</b> هل سجلت في برنامج المؤتمر الوطنى الافريقى 1=yes 2=no (If no, STOP) 8=DK (If DK, STOP)	<b>Are you currently receiving iron-folate pills (SHOW PILL)?</b> تستلم حبوب حامض الفوليك الحديدية حاليا 1=yes (STOP NOW) قف الان 2=no (STOP NOW) قف الان 8=DK (STOP NOW) قف الان	<b>Hb</b> الدم ف قر (g/dL)  <b>(Only for non-pregnant women)</b> فقط للنساء غير الحبل
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													
_ _ / _ _ /2017		_ _													
HH Number		Team Number													
_ _ _ _		_ _													
No	QUESTION	ANSWER CODES													
<b>SECTION 1</b>															
<b>1.</b>	Does your household have a ration card? هل تملك أسرتك بطاقة تموينية؟	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:80%;">Yes .....</td> <td style="width:20%; text-align: right;">1</td> <td rowspan="2" style="width:10%; vertical-align: middle; text-align: center;"> <b>IF ANSWER IS 1 GO TO Q3</b> </td> </tr> <tr> <td>No .....</td> <td style="text-align: right;">2</td> </tr> </table>	Yes .....	1	<b>IF ANSWER IS 1 GO TO Q3</b>	No .....	2								
Yes .....	1	<b>IF ANSWER IS 1 GO TO Q3</b>													
No .....	2														
<b>2.</b>	Why do you not have a ration? لم لا تملك أسرتك بطاقة تموينية؟	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:80%;">Not given one at registration, even if eligible .....</td> <td style="width:20%; text-align: right;">1</td> <td rowspan="6" style="width:10%; vertical-align: middle; text-align: center;">  _ _  </td> </tr> <tr> <td>Lost card.....</td> <td style="text-align: right;">2</td> </tr> <tr> <td>Traded/Sold card.....</td> <td style="text-align: right;">3</td> </tr> <tr> <td>New arrival who is eligible but not yet registered .....</td> <td style="text-align: right;">4</td> </tr> <tr> <td>Not eligible (not in targeting criteria).....</td> <td style="text-align: right;">5</td> </tr> <tr> <td>Other(Specify) .....</td> <td style="text-align: right;">6</td> </tr> </table>	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
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														
<b>3.</b>	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]؟	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:80%;">Number of Days _____</td> <td style="width:20%;"></td> <td rowspan="2" style="width:10%; vertical-align: middle; text-align: center;">  _ _ _  </td> </tr> <tr> <td>IF ANSWER IS &gt; or =30 days GO TO Q5</td> <td></td> </tr> </table>	Number of Days _____		_ _ _	IF ANSWER IS > or =30 days GO TO Q5									
Number of Days _____		_ _ _													
IF ANSWER IS > or =30 days GO TO Q5															
<b>4.</b>	In the last month, have you or anyone in your household borrowed cash, food or other items with or without interest? في الشهر الماضي، هل قمت أو هل قامت أسرتك بإقتراض المال، الطعام أو غير مواد مع أو دون فائدة لتلبية احتياجات الطعام الأساسية؟	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:80%;">Yes .....</td> <td style="width:20%; text-align: right;">1</td> <td rowspan="3" style="width:10%; vertical-align: middle; text-align: center;">  _ _  </td> </tr> <tr> <td>No .....</td> <td style="text-align: right;">2</td> </tr> <tr> <td>Don't Know.....</td> <td style="text-align: right;">8</td> </tr> </table>	Yes .....	1	_ _	No .....	2	Don't Know.....	8						
Yes .....	1	_ _													
No .....	2														
Don't Know.....	8														

5.	<p>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.)?</p> <p>في الشهر الماضي، هل قمت أو هل قامت أسرته ببيع ممتلكات (مجوهرات، هواتف، أثاث، أجهزة كهربائية، أدوات إنتاجية، مواش، الخ) لتلبية احتياجات الطعام الأساسية؟</p>	<p>Yes ..... 1</p> <p>No .....2</p> <p>Don't Know.....8</p>	_
6.	<p>In the last month, have you or anyone in your household requested increased remittances or gifts as compared to normal?</p> <p>في الشهر الماضي، هل طلبت أو هل طلبت أسرته زيادة التحويلات المالية أو الهدايا مقارنة مع الوضع الطبيعي لتلبية احتياجات الطعام الأساسية؟</p>	<p>Yes ..... 1</p> <p>No .....2</p> <p>Don't Know.....8</p>	_
7.	<p>In the last month, have you or anyone in your household reduced the quantity and/or frequency of meals and snacks?</p> <p>في الشهر الماضي، هل قمت أو هل قامت أسرته بتقليل كمية أو عدد وجبات الطعام لتتكيف مع نقص الطعام أو المال لشرائه؟</p>	<p>Yes ..... 1</p> <p>No .....2</p> <p>Don't Know.....8</p>	_
8.	<p>In the last month, have you or anyone in your household begged (asked for help from strangers to support your food needs)?</p> <p>في الشهر الماضي، هل قمت أو هل قام أي فرد من أفراد أسرته بالتسول لتلبية احتياجات الطعام الأساسية؟</p>	<p>Yes ..... 1</p> <p>No .....2</p> <p>Don't Know.....8</p>	_
9.	<p>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</p> <p>في الشهر الماضي، هل قمت أو هل قام أي فرد من أفراد أسرته بـ [عدد نشاطات يحتمل أن تكون خطرة أو مؤذية مثل نشاطات محلية غير قانونية] أو بأي نشاطات خطرة أو مؤذية أخرى لتلبية احتياجات الطعام الأساسية؟</p>	<p>Yes ..... 1</p> <p>No .....2</p> <p>Don't Know.....8</p>	_
SECTION 2			

<p>11 .</p>	<p>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.</p> <p>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.</p> <p>الآن أود أن أسالك حول نوع الأطعمة التي تناولتها أو تناولتها أسرته البارحة أثناء النهار أو الليل. أنا مهتم في إذا ما كنت أنت أو أي أحد من أفراد أسرته تناول أي طعام حتى لو امتزج مع طعام آخر. أشمل جميع الوجبات، بما فيه الوجبات الخفيفة، والمشروبات التي تناولتها أو تناولتها أسرته داخل أو خارج البيت.</p>	<p><b>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.</b></p>
	<p><b>1. Cereals:</b> Sorghum, millet. maize, rice أية حبوب</p> <p><b>2. White roots and tubers:</b> Any white cassava, white sweet potatoes or other foods made from roots أية جذور البيضاء</p> <p><b>3A. Vitamin A rich vegetables and tubers:</b> 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</p> <p><b>3B. Dark green leafy vegetables:</b> 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</p> <p><b>3C. Other vegetables:</b> Any other vegetables (e.g. Okra, cabbage, green</p>	<p>1..... __ </p> <p>2..... __ </p> <p>3A..... __ </p> <p>3B..... __ </p> <p>3C..... __ </p>

pepper, onion, eggplant, cucumber,) + <i>other locally available vegetables</i>	
أية خضار أخرى	
<b>4A. Vitamin A rich fruits:</b> Any mango (ripe, fresh and dried), ripe papaya, and 100% fruit juice made from these + <i>other locally available vitamin A rich fruits</i>	4A..... __
أية فواكه غنية بالفيتامين أ	
<b>4B. Other fruits:</b> Any other fruits such as guava, tamarind, baobab, lemon including wild fruits and 100% fruit juice made from these	4B..... __
أية أنواع أخرى من الفواكه	
<b>5A. Organ meat:</b> Liver, kidney, heart and intestines	5A..... __
أية لحوم عضوية	
<b>5B. Flesh meats:</b> Beef, pork, mutton, poultry, rabbit meat, Bush meat and guinea fowl meat	5B..... __
أية لحوم	
<b>6. Eggs:</b>	6..... __
أي بيض	
<b>7. Fish and seafood:</b> Samak	7..... __
أي سمك و ثمار البحر	
<b>8. Legumes, nuts and seeds:</b> Groundnut, Simsim, Ades, Yellow split peas, beans(JarJaro), pumpkin seeds	8..... __
أية بقول، مكسرات و بذور	

<p><b>9. Milk and milk products:</b> Any milk, infant formula, cheese, yogurt or other milk products:</p> <p>أي حليب و منتجاته</p> <p><b>10. Oils and fats :Zed</b></p> <p>أية زيوت و دهون</p> <p><b>10. Sweets:</b> sugar, honey, sweetened soda or sweetened juice drinks, sugary foods such as chocolates, candies, cookies, sweet biscuits and cakes</p> <p>أية سكريات</p> <p><b>12. Spices, condiments, beverages:</b> (Any spices (black pepper, salt), condiments (soy sauce, hot sauce), coffee, tea, alcoholic beverages.</p> <p>أية بهارات، توابل و مشروبات</p>	<p>9..... __ </p> <p>10..... __ </p> <p>11..... __ </p> <p>12..... __ </p>
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## 8.4: Events Calendar

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

Seasons	Religious Holidays	Other Events	Months / Years	Age (M)	Height Range
Sorghum harvest			November 2017	0	
Groundnut harvest			October 2017	1	
1st Maize harvest			September 2017	2	
Weeding of crops, Last groundnut harvest			August 2017	3	
Sorghum, maize groundnut planting continues			July 2017	4	
Rain starts, Sorghum, maize groundnut planting		World refugee day (20 June)	June 2017	5	
		SPLA day	May 2017	6	65-70 cm
Land preparation start			April 2017	7	
Land preparation start		Celebration of Yusuf Kuwa	March 2017	8	71-76 cm
			February 2017	9	
		New year celebrations	January 2017	10	
	Christmas (25 Dec)		December 2016	11	
Sorghum harvest			November 2016	12	77-80 cm
Groundnut harvest			October 2016	13	
1st Maize harvest	Bible course		September 2016	14	
Weeding of crops, Last groundnut harvest			August 2016	15	
Sorghum, maize groundnut planting continues			July 2016	16	
Rain starts, Sorghum, maize groundnut planting		World refugee day (20 June)	June 2016	17	
		SPLA day	May 2016	18	
Land preparation start			April 2016	19	
Land preparation start		Celebration of Yusuf Kuwa	March 2016	20	81-86 cm
			February 2016	21	
		New year celebrations	January 2016	22	
	Christmas (25 Dec)		December 2015	23	
Sorghum harvest			November 2015	24	
Groundnut harvest			October 2015	25	87-90 cm
1st Maize harvest	Bible course		September 2015	26	
Weeding of crops, Last groundnut harvest			August 2015	27	
Sorghum, maize groundnut planting continues			July 2015	28	
Rain starts, Sorghum, maize groundnut planting		World refugee day (20 June)	June 2015	29	
		SPLA day	May 2015	30	
Land preparation start			April 2015	31	
Land preparation start		Celebration of Yusuf Kuwa	March 2015	32	
			February 2015	33	
		New year celebrations	January 2015	34	
	Christmas (25 Dec)		December 2014	35	
Sorghum harvest			November 2014	36	
Groundnut harvest			October 2014	37	91-99 cm
1st Maize harvest	Bible course		September 2014	38	
Weeding of crops, Last groundnut harvest			August 2014	39	
Sorghum, maize groundnut planting continues			July 2014	40	
Rain starts, Sorghum, maize groundnut planting		World refugee day (20 June)	June 2014	41	
		SPLA day	May 2014	42	
Land preparation start			April 2014	43	
Land preparation start		Celebration of Yusuf Kuwa	March 2014	44	
			February 2014	45	
		New year celebrations	January 2014	46	
	Christmas (25 Dec)		December 2013	47	
Sorghum harvest			November 2013	48	
Groundnut harvest			October 2013	49	100-110 cm
1st Maize harvest	Bible course		September 2013	50	
Weeding of crops, Last groundnut harvest			August 2013	51	
Sorghum, maize groundnut planting continues			July 2013	52	
Rain starts, Sorghum, maize groundnut planting		World refugee day (20 June)	June 2013	53	
		SPLA day	May 2013	54	
Land preparation start			April 2013	55	
Land preparation start		Opening of Ajoung Thok	March 2013	56	
			February 2013	57	
		New year celebrations	January 2013	58	
	Christmas (25 Dec)		December 2012	59	
Sorghum harvest			November 2012	60	

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

