

Standardised Expanded Nutrition Survey (SENS) REPORT (Pamir, Unity State, South Sudan)

Survey conducted: October/November 2021



UNHCR

IN COLLABORATION WITH

(WFP, IRC, & AHA)



Table of Contents

Acknowledgement	5
1.1 Background information	6
2 Objectives	8
2.1 Specific primary objectives of the survey	8
2.2 Secondary objectives:	9
3 Methodology	9
3.1 Sampling procedure: selecting households and individuals	10
3.2 Questionnaire and measurement methods	11
4 Results Interpretation.....	16
4.1 Interpretation of results:	17
5 Recommendations and Priorities.....	18
5.1 Nutrition related	18
5.2 Food security related.....	19
5.3 Health and WASH related	20
5.3.1 Health situation	20
5.3.2 Nutrition situation.....	22
5.3.3 Anaemia in children 6-59 months and women of reproductive age:	28
5.4 Training, coordination, and supervision	30
5.5 Data collection	30
5.6 Data analysis	30
6 Results from Pamir Refugee Camp	31
6.1 Demography indicators	31
6.2 Anthropometric results (based on WHO Growth Standards 2006)	33
6.3 Feeding Programme Enrolment Coverage.....	37
6.4 Health results	39
6.5 Anaemia Results Children 6 – 59 Months	40
6.6 IYCF Children 0-23 Months	41
6.7 Anaemia and physiological status in women 15-49 Years	42
6.8 Food security	45
7 Limitations.....	48
8 Discussion.....	49
8.1 Nutritional Status of Young Children.....	49
8.2 Morbidity	50
8.3 Programme Coverage	50
8.4 Measles vaccination and Vitamin A supplementation.....	50
8.5 Anaemia among Young Children and Women.....	50
8.6 IYCF Indicators.....	51
8.7 Food Security	52
9 Recommendations and Priorities.....	53

9.1	Nutrition related	53
9.2	Food security related.....	54
9.3	Health and WASH related	54
10	Appendices.....	55
10.1	Appendix 1: Name of contributors	55
10.2	Appendix 2: Summary of overall quality of anthropometric data (weight-for-height data)	56
10.3	Appendix 3 – Survey questionnaires.....	57
10.4	Events Calendar	57

List of Tables

Table 1.	<i>The parameters used to calculate the sample size are as shown in the table below:</i>	9
Table 2.	SUMMARY OF KEY FINDINGS.....	13
Table 3.	<i>WHO prevalence thresholds for wasting in children aged 6-59 months (low weight for height)</i>	16
Table 4.	<i>WHO prevalence thresholds for stunting in children aged 6-59 months (low height for age)</i>	16
Table 5.	<i>WHO classification of public health significance for the prevalence of Anaemia (Children 6- 59month-old and non-pregnant Women 15-49 years old)²</i>	17
Table 6.	<i>Definitions of acute malnutrition using weight-for-height and/or oedema in children 6–59 months</i>	25
Table 7.	Definitions of stunting using height-for-age in children 6–59 months	26
Table 8.	Definitions of underweight using weight-for-age in children 6–59 months.....	26
Table 9.	MUAC malnutrition cut-offs in children 6-59 months.....	26
Table 10.	Definition of anaemia (WHO 2000)	28
Table 11.	Classification of public health significance for children under 5 years of age.....	29
Table 12.	Performance indicators for selective feeding programmes (UNHCR Strategic Plan for Nutrition and Food Security 2008-2012)*	29
Table 13.	Classification of public health significance (WHO 2000)	29
Table 14.	Actual number of children captured during the survey Pamir camp versus the UNHCR ProGres population target, (September 2021) target and actual number captured.....	31
Table 15.	Household size and composition	31
Table 16.	Household head profile	32
Table 17.	Age dependency ratio categories by household	33
Table 18.	Distribution of age and sex of sample	33
Table 19.	Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex.....	33
Table 20.	Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema.....	34
Table 21.	Distribution of acute malnutrition and oedema based on weight-for-height z-scores .	35
Table 22.	Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex	35
Table 23.	Prevalence of combined GAM and SAM based on WHZ and MUAC cut off's (and/or oedema) and by sex*	35
Table 24.	Prevalence of underweight based on weight-for-age z-scores by sex	36
Table 25.	Prevalence of stunting based on height-for-age z-scores and by sex	36
Table 26.	Prevalence of stunting by age based on height-for-age z-scores.....	36
Table 27.	Prevalence of overweight based on weight for height cut off's and by sex (no oedema)	37
Table 28:	Nutrition treatment programme enrolment coverage based on all admission criteria (weight-for-height, MUAC, oedema)	37

Table 29: Nutrition treatment programme enrolment coverage based on MUAC and oedema only	37
Table 30: Measles vaccination coverage for children aged 9-59 months (N=361)	39
Table 31: Vitamin A Supplementation for Children Aged 6-59 Months within Past 6 Months (N=374)	39
Table 32: Prevalence of diarrhea	39
Table 33: Use of ORS and Zinc during diarrhoea episode	39
Table 34: Deworming coverage	40
Table 35: Prevalence of total anaemia, anaemia categories, and mean haemoglobin concentration in children 6-59 months of age and by age group	40
Table 36: Prevalence of Infant and Young Child Feeding Practices Indicators	41
Table 37: Prevalence of intake of certain foods in children aged 0-23 months	42
Table 38: Women Physiological Status and Age	42
Table 39: Women Malnutrition Prevalence by MUAC	43
Table 40: Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 Years)	43
Table 41: ANC Enrolment and Iron-Folic Acid Pills Coverage among Pregnant Women (15-49 Years)	44
Table 42: Ration card coverage	45
Table 43: Duration of the general in-kind food distribution	45
Table 44: CASH for milling assistance coverage	45
Table 45: Description of cash utilization	45
Table 46: Description of basic needs not met by the households	46
Table 47: Households by categories of coverage of basic needs	46
Table 48: Food coping strategies used by the surveyed population over the past month	46
Table 49: Average Food Consumption Score (FCS) and proportion by Classification	47
Table 50: Consumption frequency categories of each nutrient rich food groups (FCS-N)	47
Table 51: Food acquisition sources	48

List of Figures

Figure 1. Top Five Causes of Morbidity in Children Under-5; Pamir refugee camp, Jan-Oct 2021	21
Figure 2. Top Five Causes of Mortality in Children Under-5; Pamir refugee camp, Jan-Oct 2021	21
Figure 3. Number of admissions to treatment programmes for SAM and MAM among Children 6-59 Months from Jan to October 2021 - Pamir refugee camp	22
Figure 4. Population pyramid of Pamir refugee camp	32
Figure 5. Prevalence of Global, Moderate and Severe Acute Malnutrition	34
Figure 6. Prevalence of Global, Moderate and Severe Stunting (6-59 m)	34
Figure 7. Coverage of Measles Vaccination and Vitamin A Supplementation in last 6 months ..	39
Figure 8. Coverage of deworming in last 6 months	40
Figure 9. 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 (2021)	41
Figure 10. Mean Hemoglobin Concentration with 95% Confidence Intervals in Children 6-59 months	41
Figure 11. Prevalence of Key IYCF Indicators	42
Figure 12. Frequency consumption of Protein, Vit A and Haem iron Rich Food from 2019 to 2021	44
Figure 13. Prevalence of total anaemia, anaemia categories, and mean haemoglobin concentration in Women 15-49 years of age- Pamir refugee camp, south Sudan (2021)	44
Figure 14. Prevalence of Key reproductive Health Indicators for Pregnant Women	45
Figure 15. Food consumption score (FCS) profiles and rCSI	47

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1.1 Background information

Pamir refugee settlement is located in Pariang County of Ruweng Administrative area in South Sudan. The refugees are from South Kordofan State of the neighbouring Sudan where there is ongoing fighting between the rebel group Sudan People's Liberation Army – North (SPLA-N) and the Sudan government's Sudan Armed Forces (SAF). At the time of the survey in October, 2021, the refugee population in Pamir refugee settlement was 42,229. According to the UNHCR ProGres database as of July 2021, 18.4% of the Pamir population is children under 5 years of age.

Key partners in terms of the provision of the health, nutrition and food security services include UNHCR, WFP, UNICEF and IRC and Samaritan Purse. 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 supplementary feeding program which aims at preventing malnutrition and treating moderate malnourished cases. UNICEF in collaboration with UNHCR provides support to the nutrition CMAM and IYCF programmes. IRC implements the health and nutrition program while SP carries out the general food security distribution and implements the water and sanitation Programme.

1.2 Summary of the Survey

The nutrition survey was conducted between October and November 2021. The United Nations High Commissioner for Refugees (UNHCR) led and coordinated the survey in collaboration with the World Food Programme, International Rescue Committee (IRC) and Africa Humanitarian Action (AHA). In Pamir camp, a cross-sectional survey was conducted using the UNHCR Standardised Expanded Nutrition Survey (SENS) version 3 (2019) (<http://sens.unhcr.org/>), guidelines and the Standardised Monitoring and Assessments of Relief and Transitions (SMART) guidelines (<https://smartmethodology.org/>). Systematic random sampling was used to identify the survey respondents.

The survey had a total of 5 modules. The modules included, 1. Demography in all targeted households, 2. anthropometry and health targeting all children aged 6 to 59 months in all the sampled households; 3. Infant and Young Child Feeding (IYCF) targeting all children aged 0 to 23 months in all the sampled households; 4. anaemia targeting all children aged 6 to 59 months in all the sampled households and all non-pregnant women 15 to 49 years in every other sampled household. 5. Food security targeting every other sampled household. The Water Sanitation and

Hygiene (WASH) and mosquito net coverage 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. The Emergency Nutrition Assessment (ENA) software version 2020 was used to calculate the sample size and to select households for participating in the survey. The parameters used to calculate the sample size can be found under table 1.

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 survey teams were supported by a team of 6 supervisors and 1 coordinator who roved between the teams duration the data collection.

Mobile phone questionnaires using Open Data Kit (ODK) android software was used for data collection for all the 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 2020 version for anthropometric indices and Epi info version 7 for the rest of the indicators.

The prevalence of Global Acute Malnutrition (GAM) was 4.7 (3.0 - 7.2 95% C.I.) based on WHZ scores which is acceptable¹ and below the critical WHO emergency threshold of 15%. Of note, however, 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 2019 the situation has changed as the reduction in the GAM prevalence was statistically significant. The proportion of children with a MUAC <12.5cm in Pamir was 1.8 % (0.9 - 3.7 95% C.I.) which is lower than the weight for height Z score indicating the need to use a combined admission criteria with more efforts on weight for height Z-score. This was the fourth nutrition survey to be conducted in Pamir camp where most new arrivals are hosted.

The prevalence of global stunting in Pamir was approximately 22.5%. This is categorized as high according to WHO standard². Stunting prevalence changed in 2021 in Pamir as the reduction in the stunting prevalence was statistically significant compared to 2019. 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.

Total anemia prevalence among children 6 to 59 months in Pamir was 36.95% classified as medium public health significance (WHO classification). The anemia prevalence in Pamir reduced compared to 47.3% in 2019. Anemia is recognized to adversely affect the cognitive performance, behaviors and physical growth of infants, preschool, and school-aged children, and increase the likelihood of associated morbidities. Anemia is not only an indicator of potential iron deficiency in populations but can also be taken as a proxy indicator for other micronutrient deficiencies.

65.6% of children aged 6-59 months in Pamir reported to have had diarrhea in the last two weeks prior to the survey indicating a morbidity caseload requiring continued health services provision

The rate of exclusive breastfeeding was above 94.55% in Pamir 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 65.6% which is better 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 Pamir refugee camps reported *not* using 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.

2 Objectives

2.1 *Specific primary objectives of the survey*

- a. To measure the prevalence of acute malnutrition among children 6-59 months.
- b. To measure the prevalence of stunting among children 6-59 months.
- c. To determine the coverage of measles vaccination among children 9-59 months.
- d. To determine the coverage of vitamin A supplementation in the last six months among children 6-59 months.
- e. To determine the two-week period prevalence of diarrhea among children 6-59 months.

- f. To measure the prevalence of anemia among children 6-59 months and women of reproductive aged 15-49 years (non-pregnant).
- g. To investigate IYCF practices among children 0-23 months.
- h. To determine the coverage of ration cards and the duration the GFD ration lasts for recipient households.
- i. To determine the extent to which negative coping strategies are used by households.
- j. To assess household dietary diversity.
- k. To establish recommendations on actions to be taken to address the situation.

2.2 Secondary objectives:

- a. To determine the coverage of targeted supplementary and therapeutic feeding programmes for children 6-59 months.
- b. To determine the enrolment to blanket supplementary program for children 6-23 months.
- c. To determine enrolment into Antenatal Care clinic and coverage of iron-folic acid supplementation in pregnant women.

3 Methodology

The survey was conducted using the UNHCR Standardized Expanded Nutrition Survey (SENS) version 3 (2019) www.sens.unhcr.org, and the Standardized Monitoring and Assessments of Relief and Transitions (SMART) guidelines (<https://smartmethodology.org/>).

The Emergency Nutrition Assessment (ENA) software version January 11th, 2020 was used to calculate the sample size. To select households for participating in the survey, systematic random sampling was used.

Table 1. The parameters used to calculate the sample size are as shown in the table below:

	Pamir
Estimated prevalence (%) (survey 2017 /ProGres) ³)	11.7
± Desire precision (%) (UNHCR SENS guidelines)	3.5
Average household size (surveys 2019/ ProGres))	4.8
Design Effect (UNHCR SENS guidelines))	1
<5 population (%) (survey 2019/ ProGres))	18.4

Non response households (%)	10
Total camp population (ProGres)	42,229
Households to be included for Anthropometry and Health module (ENA for SMART)	394 (31 children)

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 197 households in Pamir for the women anaemia and food security module.

3.1 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 shelters⁴ 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.

3.2 Questionnaire and measurement methods

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 questionnaires covered the following areas and the following measurements:

Children 6-59 months- This included questions and measurements of children aged 6-59 months. Information was collected on anthropometric status, oedema, and enrolment in selective feeding programmes, immunization (measles), vitamin A supplementation and morbidity from diarrhea in past two weeks before the survey and hemoglobin status.

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

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

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

Measurement methods

Household-level indicators

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

Individual-level indicators

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

Birth date or age in months for children 0-59 months: the exact date of birth (day, month, and year) was recorded from either an EPI card, child health card or birth notification if available. If no

reliable proof of age was available, age was estimated in months using a local event calendar and recorded in months on the questionnaire/Phone. If the child's age could not be determined by using a local events calendar or by probing, the child's length/height was used for inclusion; the child had to measure between 65 cm and 110 cm.

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

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

Height/Length of children 6-59 months: children's height or length was taken to the closest millimeter using a wooden height board. 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 analyzed 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.

Table 2. SUMMARY OF KEY FINDINGS

	Number / total	% (95% CI)	Classification of public health significance or target (where applicable)
CHILDREN 6-59 months			
Acute Malnutrition (WHO 2006 Growth Standards)			
Global Acute Malnutrition (GAM)	18/387	4.7% (3.0 - 7.2%)	Very high/critical if ≥ 15% (WHO-UNICEF) UNHCR Target of < 10%
Moderate Acute Malnutrition (MAM)	16/387	4.1% (2.6 - 6.6%)	
Severe Acute Malnutrition (SAM)	2/387	0.5% (0.1 - 1.9%)	UNHCR Target of < 2%
Oedema	1/387	0.3%	
Mid Upper Arm Circumference (MUAC)			
MUAC <125 mm and/or oedema	7/387	1.8% (0.9 - 3.7%)	
MUAC 115-124 mm	5/387	1.3% (0.6 - 3.0%)	
MUAC <115 mm and/or oedema	2/387	0.5% (0.1 - 1.9%)	
Stunting (WHO 2006 Growth Standards)			
Total Stunting	87/387	22.5% (18.6 - 26.9%)	Very high/critical if ≥ 30% (WHO-UNICEF)

	Number / total	% (95% CI)	Classification of public health significance or target (where applicable)
Severe Stunting	17/387	4.4% (2.8 - 6.9%)	
Programme enrolment and coverage			
Measles vaccination with card or recall (9-59 months)	348/361	96.4% (93.9-97.9%)	Target of \geq 95%
Vitamin A supplementation within past the 6 months with card or recall	380/387	98.1% (96.3-99.1%)	Target of \geq 90%
Outpatient Therapeutic Program (OTP) enrolment rate (based on all admission criteria WHZ, oedema and MUAC)	0/3	0.0% (0.0-0.0%)	
Targeted Supplementary Feeding Program (TSFP) enrolment rate (based on all admission criteria WHZ and MUAC)	6/18	33.3% (13.3-59.0%)	
Deworming coverage within past 6 months (12-59 months)	325/339	95.9% (93.2-97.5%)	
BSFP enrolment	86/125	68.8% (59.9-76.8%)	
Diarrhoea			
Diarrhoea in the last 2 weeks	16/387	4.1% (2.6-6.6%)	
Anaemia			
Total Anaemia (Hb < 11 g/dl)	143/387	37.0% (32.3-41.9%)	High if \geq 40% Target of < 20%
Mild (Hb 10-10.9)	86/387	22.2% (18.4-26.6%)	
Moderate (Hb 7-9.9)	57/387	14.7% (11.5-18.6%)	
Severe (Hb < 7)	0/387	0.0% (0.0-0.0%)	
CHILDREN 0-23 months			
IYCF indicators			
Timely initiation of breastfeeding	173/180	96.1% (92.2-98.4%)	UNHCR Target of \geq 85%
Exclusive breastfeeding under 6 months	52/55	94.6% (84.9-98.9%)	UNHCR Target of \geq 75%
Continued breastfeeding at 1 year	28/29	96.6% (82.2-99.9%)	
Continued breastfeeding at 2 years	14/23	60.9% (38.5-80.3%)	
Introduction of solid, semi-solid or soft foods	17/26	65.4% (44.3-82.8%)	
Consumption of iron-rich or iron-fortified foods	82/125	65.6% (56.6-73.9%)	UNHCR Target of \geq 60%
Bottle feeding	1/180	0.6% (0.0-3.1%)	UNHCR Target of < 5%

	Number / total	% (95% CI)	Classification of public health significance or target (where applicable)
WOMEN 15-49 years			
Anaemia (non-pregnant)			
Total Anaemia (Hb <12 g/dl)	34/182	18.7% (13.3-25.1%)	High if ≥ 40% (WHO) UNHCR Target of < 20%
Mild (Hb 11-11.9)	27/182	14.8% (10.0-20.9%)	
Moderate (Hb 8-10.9)	7/182	3.9% (1.6-7.8%)	
Severe (Hb <8)	0/182	0.0% (0.0-0.0%)	
Programme enrolment pregnant women			
Pregnant women currently enrolled in the ANC	26/28	92.9% (76.5-99.1%)	
Pregnant women currently receiving Iron-folic acid pills	26/28	92.9% (76.5-99.1%)	
DEMOGRAPHY			
Household size and Composition			
Average household size (mean, SD / range)		5.2±2.6	
Percent of children U2	182/1977	9.2%	
Percent of children U5	436/1977	22.1%	
Percent of pregnant women	45/1977	2.3%	
Household Head Profile			
Female headed households	229/379	60.4% (55.4-65.2%)	
Male headed households	134/379	35.4% (30.7-40.3%)	
Children headed households	1/379	0.3% (0.1-1.5%)	
Age dependency ratio			
Average age dependency ratio (mean, SD / range)		1.9±1.7	
FOOD SECURITY			
Proportion of households receiving a food assistance (in-kind and/or cash grants and/or food vouchers)	199/199	100% (98.2-100.0%)	
Average number of days general food ration lasts out of [insert cycle] days (mean, SD or range)		19.3±5.1	
Negative household coping strategies			
Rely on less preferred and/or less expensive foods	195/199	98.0% (94.9-99.5%)	

	Number / total	% (95% CI)	Classification of public health significance or target (where applicable)
Borrow food, or rely on help from a friend or relative	158/199	79.4 % (73.1-84.8%)	
Reduce the number of meals eaten in a day	192/199	96.5% (92.9-98.6%)	
Limit portion sizes at mealtime	191/199	96.0% (92.2-98.3%)	
Reduce consumption by adults so children could eat	150/199	75.4% (68.8%-81.2%)	
Average rCSI (mean, SD / range)		17.6±8.6	
Food Consumption Score (FCS)			
Average FCS (mean, SD / range)		19.9±7.6	
FCS profiles:			
Acceptable	9/199	4.52% (2.09%-8.41%)	
Borderline	60/199	30.15% (23.86%-37.04%)	
Poor	130/199	65.3% (58.27%-71.92%)	

4 Results Interpretation

Table 3. WHO prevalence thresholds for wasting in children aged 6-59 months (low weight for-height)

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

Table 4. WHO prevalence thresholds for stunting in children aged 6-59 months (low height for-age)

Previous prevalence ranges	Label	prevalence ranges	Label
-	-	<2.5	Very low
<20%	Acceptable	2.5 - < 10	Low
20 – 30%	Poor	10 - < 20	Medium

30 – 39%	Serious	20 - < 30	High
>40%	Critical	≥ 30	Very high

Table 5. WHO classification of public health significance for the prevalence of Anaemia (Children 6-59month-old and non-pregnant Women 15-49 years old)²

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

Source: WHO (2000)

4.1 Interpretation of results:

The prevalence of Global Acute Malnutrition (GAM) was 4.7 (3.0 - 7.2 95% C.I.) in Pamir based on WHZ scores which is acceptable and below the critical WHO emergency threshold of 15%. Compared to the situation in 2019 the situation has changed as the GAM prevalence reduction was statistically significant. The proportion of children with a MUAC <12.5cm was 1.8 % (0.9 - 3.7 95% C.I.) which is lower than the weight for height z score indicating the need to use a combined admission criteria with much emphasis on weight for height Z score.

The prevalence of global stunting in Pamir was 22.5%. This is categorized as high according to WHO standard. Stunting prevalence changed in 2021 in Pamir as the reduction in the stunting prevalence was statistically significant compared to 2019. Stunting is an outcome of inadequate nutrition and repeated bouts of infection during the first 1000 days of a child's life. Stunting before the age of 2 years predicts poorer cognitive and educational outcomes in later childhood. The TFP and TSFP coverage based on all admission criteria in Pamir met the recommended standard of >90%. This indicates the need to be maintained by continuing with 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.

The coverage of measles vaccination in Pamir was 96.4% (93.94%-97.88%) which meet the recommended ≥95%. In regard to vitamin A supplementation the target coverage of ≥90% was met in Pamir camps. Both the measles and vitamin A coverage improved in 2021 compared to 2019 when the coverage was below the target.

65.6% of children aged 6-59 months in Pamir reported to have had diarrhea in the last two weeks prior to the survey indicating a morbidity caseload requiring continued health services provision, and improvement in preventive measures specifically water, sanitation and hygiene (WASH).

Total anemia prevalence among children 6 to 59 months in Pamir was high 36.95%. The anemia prevalence in Pamir reduced compared to 47.3% in 2019. Anemia is recognized to adversely affect the cognitive performance, behaviours and physical growth of infants, preschool and school-aged children, and increase the likelihood of associated morbidities. Anemia 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 rate of exclusive breastfeeding was above 94.55% in Pamir 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 65.6% which is better 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.

Under food security: 100% of the HHs had a ration card in Pamir camps; the household diet diversity In Pamir most of the households reported using one or more of the negative coping strategies (borrowed cash or food 79.4, reduced quantity or frequency of meals 96.5. limit portion sizes at mealtime 95.9%, reduced consumption by adults so children eat 75.4%. Approximately a third of the refugees in Pamir reported using any of the negative coping strategies to fill the food assistance gap (50% of the recommended general food ration is provided per person per month). 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.

5 Recommendations and Priorities

5.1 Nutrition related

Continue 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 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 (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 Pamir camp 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 (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 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 and IRC).

Expand and strengthen preventative nutrition components including the awareness creation, promotion, protection of Infant and Young Child Feeding (IYCF) and community outreach education aspects to stop malnutrition from occurring in the first place. (UNHCR, UNICEF and IRC).

Continue with the anaemia reduction strategy in Pamir refugee camps to reduce the high anaemia level. This includes 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, and IRC)

Ensure regular 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 and IRC)

Undertake a follow up annual joint nutrition survey to analyses trends and facilitate program impact evaluation in 2022. (UNHCR, WFP and UNICEF and IRC).

5.2 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 utilization 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 2022 to further guide the improvement of food security (UNHCR, WFP, IRC and food security and livelihood actors).

5.3 Health and WASH related

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

- The maintenance of the routine Expanded Programme on Immunization (EPI) and immunization campaigns in Pamir to strengthen measles vaccination coverage in 2022. (UNHCR, and IRC)
- Prevention, control of infection, vector borne diseases especially around malaria and helminths (UNHCR, and IRC).
- The maintenance and strengthening of reproductive health (UNHCR, and IRC).
- Maintenance of adequate clean water provision (UNHCR, and IRC).
- Hygiene promotion and latrine coverage strengthening to facilitate the prevention and control of infections like diarrhea and other hygiene related illnesses. (UNHCR, and IRC).

5.3.1 Health situation

Health care services in Pamir are offered by IRC. The health services 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 0.75/10000/day for crude death rate (CDR) in the refugee population from January to October 2021 indicating effectiveness health services provision in the camps.

Respiratory Tract Infection (RTI) was the main cause of morbidity among children under 5 in Pamir refugee camp. Other leading morbidities included acute diarrhoea, malaria, eye disease, skin disease and intestinal worms. Figures 1 and 2 illustrate the common causes of morbidity among children under 5 years in Pamir.

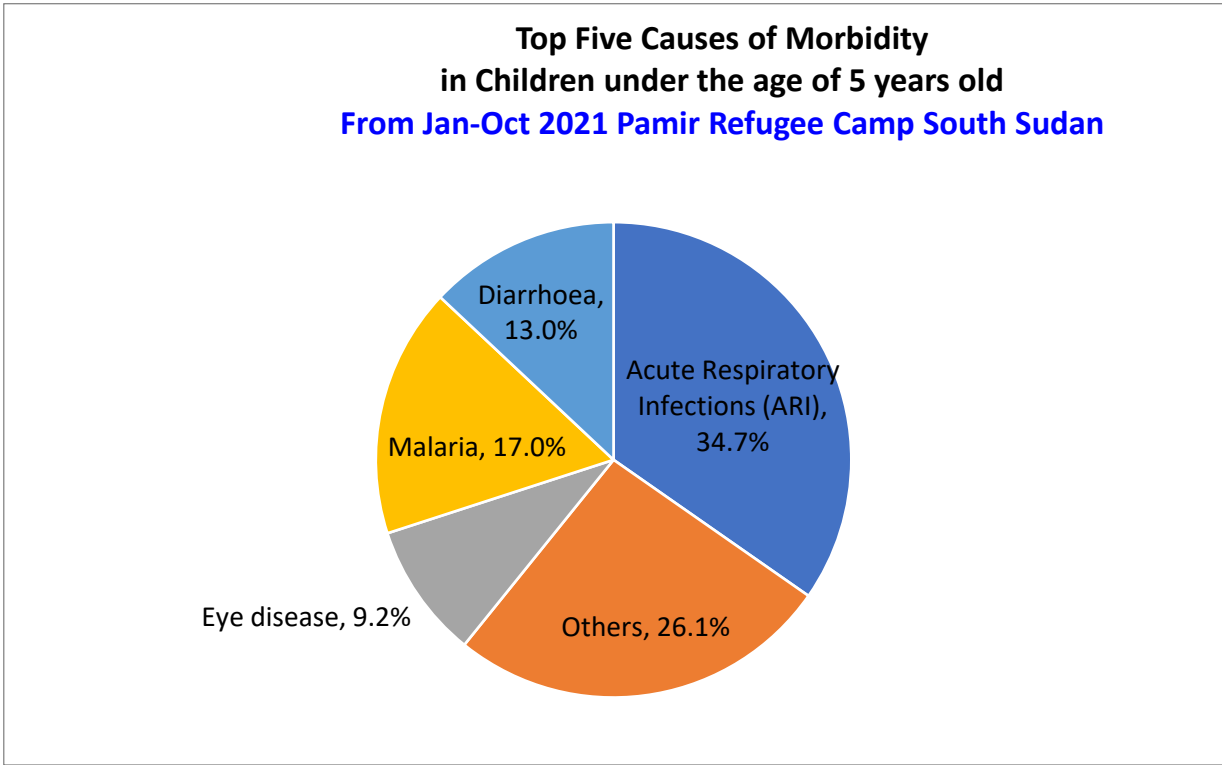


Figure 1. Top Five Causes of Morbidity in Children Under-5; Pamir refugee camp, Jan-Oct 2021

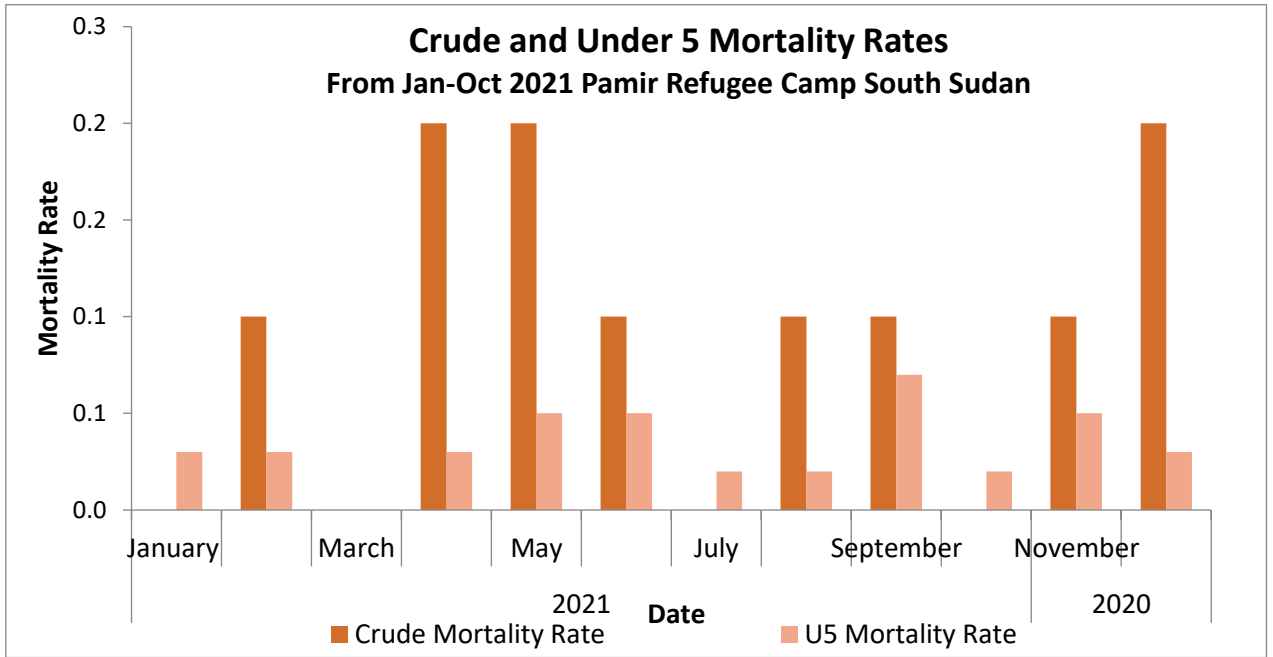


Figure 2. Top Five Causes of Mortality in Children Under-5; Pamir refugee camp, Jan-Oct 2021

5.3.2 Nutrition situation

Nutrition services provided at the two refugee camps include:

- Targeted Supplementary Feeding Programmes (TSFP) for moderately acute malnourished 6-59 months using Plumpy' Sup or Corn Soya Blend 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). Children receive LNS-MQ and PLW receive 200g/person/day of CSB++ respectively.
- Infant and young child feeding support and promotion Programme. The main conduits 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 Outpatient 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.
- In 2022, an anaemia strategy will continue to be mainstreamed into the various health, nutrition, and livelihood interventions.

832 children under five years were admitted for rehabilitation from malnutrition in Pamir from January to October 2021. The number of admissions remained the same compared to the same period in 2021. Admission trends in the management of acute malnutrition programmes in Pamir show peak admissions in May and June months. The peak could be due to the high malaria and respiratory tract infection prevalence because of the beginning of the rainy season. See figure 3 below showing the admissions by month in 2021.

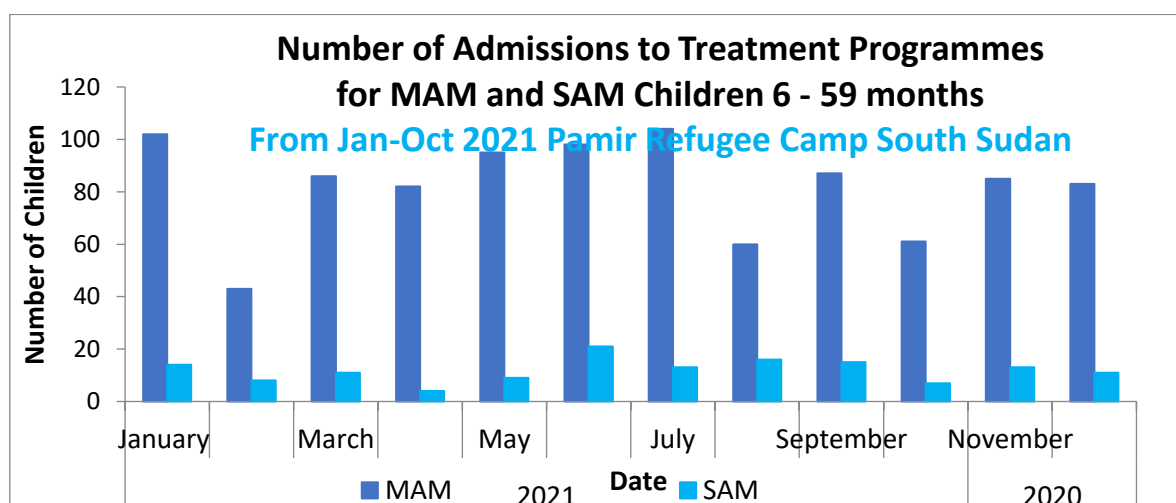


Figure 3. Number of admissions to treatment programmes for SAM and MAM among Children

6-59 Months from Jan to October 2021 - Pamir refugee camp

This is the fourth nutrition survey to be carried out in Pamir refugee camp. Comparison of the 2019 and 2021 results show a decreasing trend in the GAM prevalence in Pamir. This could be due to minimal new arrivals in 2021. Prevalence was 4.7% in 2021 and 7.8% in 2019 respectively.

Stunting in Pamir was approximately 22.5%. This is categorized as high according to WHO standard⁵. Stunting prevalence changed in 2021 in Pamir as the reduction in the stunting prevalence was statistically significant compared to 2019. Stunting is an outcome of inadequate nutrition and repeated bouts of infection during the first 1000 days of a child's life. Stunting before the age of 2 years predicts poorer cognitive and educational outcomes in later childhood.

The anaemia situation among children aged 6 to 59 months in Pamir continued to be high in 2021 but reduced compared to the previous years.

WASH situation:

Indicators		Baseline (KAY survey 2019)	KAP findings (2021)		Comments
Indicator type	Indicators		Result	Sampled respondents	
Outcome	Percent of households collecting drinking water from protected/treated sources (motorised borehole)	100%	100%	1,448 repondence	
Outcome	Percent of households who spend less than 30 minute at water point to collect water for household uses.	99%	98%	1,419 of 1448	
Outcome	Percent of household with average 20 or more l/p/d of potable water collected at household level	47%	58	839 of 1448	
Outcome	Average # liters of potable 2 water available per person per day	23.40 Liters	22.7; litres Pamir 20.1)		

- 23% of the respondents used less than 15 l/p/d mainly due to shortage of water storage containers (76%).

- 70% of the respondents had two and above water storage containers in a capacity of 10 liters and above.
- From the survey, 76% of the HHs mentioned that adult females are responsible for water collection.

Water treatment and safety

- 68% of the respondents clean their drinking water containers every time they use them and mainly wash the containers using specific products such as soap, budra² powder which is lower than the 2020 KAP Survey findings which indicated that all the respondents wash their drinking water containers.
 - 59% of the households treat water for drinking in Pamir where the methodologies that they use for treating the water include: boiling, using filter cloth and some use sun exposure.

Hygiene

- Overall 52% of the respondents had soap available at their homes at the time of the survey. The HHs that did not have soap gave reasons such as run out of soap and can not afford to buy additional soap which is a decrease as compared to the 2020 KAP Survey findings which was at 68%.
- Overall, 79% of the respondents mentioned that they got the soap for use through NGO Distribution such as from AHA, IRC while 21% of the respondents purchased their own soap from the market.
- 84% of the respondents just use water in the absence of soap to wash their hands.
- 78.8% of the HHs mentioned at least three critical times for handwashing such as after defecation, after cleaning babies' bottom, before food preparation, before feeding children and before eating.,
- Overall 49% of the HHs had handwashing facilities where 86% of them did not have water in them and 61% of the HHs did not have soap next to them.
- 56.7% of the HHs preferred home visits from the Community health workers (CHWs) to receive hygiene and sanitation messages.

Sanitation

- 100% of respondents indicated having access to latrines and were using them through the use of communal latrines (22%) and Household latrines (78%)⁶; however only 34% of them mentioned that the facilities provided adequate privacy.

- Overall, 71% of the latrines were observed by enumerators to be completed and clean with absence of faeces or used anal cleansing material on the slab and within a 5 metres radius around the latrine.
- Majority of the materials used for superstructure was bricks(72%) and the commonly used type of slab was concrete slabs(90%).
- Based on observation by the enumerators, 27% of the surroundings of the HHs within 20 metres radius had evidence of faecal matter which is higher as compared to 2020 KAP Survey findings that was at 17.4%.
- 100% of the respondents mentioned that the latrines are not suitable for persons with special needs as they do not have supportive rails.
- Overall, 52% of the children U5 practiced open defecation and the fecal matter was either collected and disposed of in the latrine or by digging a hole and burying it.
- Overall, 24% of the adults practice open defecation especially at night and they gave reasons such as it is too dark to walk to the latrine at night and this is mainly practised by respondents that access communal latrines.
- 97% of the HHs have bathing shelters in Pamir camps.

Waste Management

- 98% of the HHs had safe waste disposal facilities, mainly communal pits and household pits; based on observation as the enumerators walked to the homes of the respondents, 62% of the homes had solid waste disposed around the surrounding hence evidence of poor management of solid wastes around their homes.
- 100% of the respondents mentioned that there was presence of vectors around their homes and mentioned the vectors such as mosquitoes, cockroaches, flies and rodents.

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

Categories of acute malnutrition	Z-scores (WHO Growth Standard 2006)	Bilateral oedema
Global acute malnutrition	< -2 z-scores	Yes/No
Moderate acute malnutrition	< -2 z-scores and \geq -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 7. 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 8. 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 9. MUAC malnutrition cut-offs in children 6-59 months

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

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

Coverage of SFP programme (%) =

100 x

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

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

Coverage of TFP programme (%) =

100 x

No. of surveyed children with SAM according to TFP criteria who reported being registered in TFP

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

5.3.3 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 10. 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

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 11. Classification of public health significance for children under 5 years of age

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 12. 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.

Table 13. Classification of public health significance (WHO 2000)

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

5.4 Training, coordination, and supervision

The surveys were coordinated by Maria (UNHCR Nutrition and Food security officer Juba), Sebit (UNHCR Public Health Officer) and Lilian Igube (UNHCR Associate Nutrition and Food security officer Jam Jang) in collaboration with Ajang (Senior M & E Officer) and Lobut Charles (IRC Nutrition Officer), David (AHA Nutrition Supervisor).

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 5 days. The teams were supervised daily.

A five day training was carried out from 18th October to 22nd November 2021 at Pamir UNHCR Field Office. Training topics were shared between the lead survey coordinators. 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, IPC measures during survey, anaemia testing was also carried out for practice as well as a standardization 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 Ajong Thok using part of the households that had been sampled to participate in the survey. A feedback session was conducted after the teams returned from the exercise to address challenges encountered.

5.5 Data collection

In Pamir data was collected from 1st to 5th November 2021. 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 six Samsung phones. Each team thus had one phones

5.6 Data analysis

At the end of each day's data collection, the UNHCR, IRC and AHA coordination and supervision team checked each questionnaire for completeness and then finalised the questionnaires. Once the questionnaires were finalised, they were sent to the server for 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 Excel format for cleaning and analysis. The nutritional indices were cleaned using flexible cleaning criteria from the observed mean (also known as SMART flags in the ENA for SMART software version 2020), 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 3) in accordance with SMART recommendations. For the weight-for-height index, a cleaning window of +/- 3 SD value contained in the SMART for ENA software was used.

6 Results from Pamir Refugee Camp

Table 14. Actual number of children captured during the survey Pamir camp versus the UNHCR ProGres population target, (September 2021) target and actual number captured

	Target (No.)	Total surveyed (No.)	% of the target
Children 6-59 months	311	387	124.4%

By the end of SENS in Pamir 124.42% of the targeted children was covered. The SENS guidelines recommend that at least 80% of the targeted children to be covered.

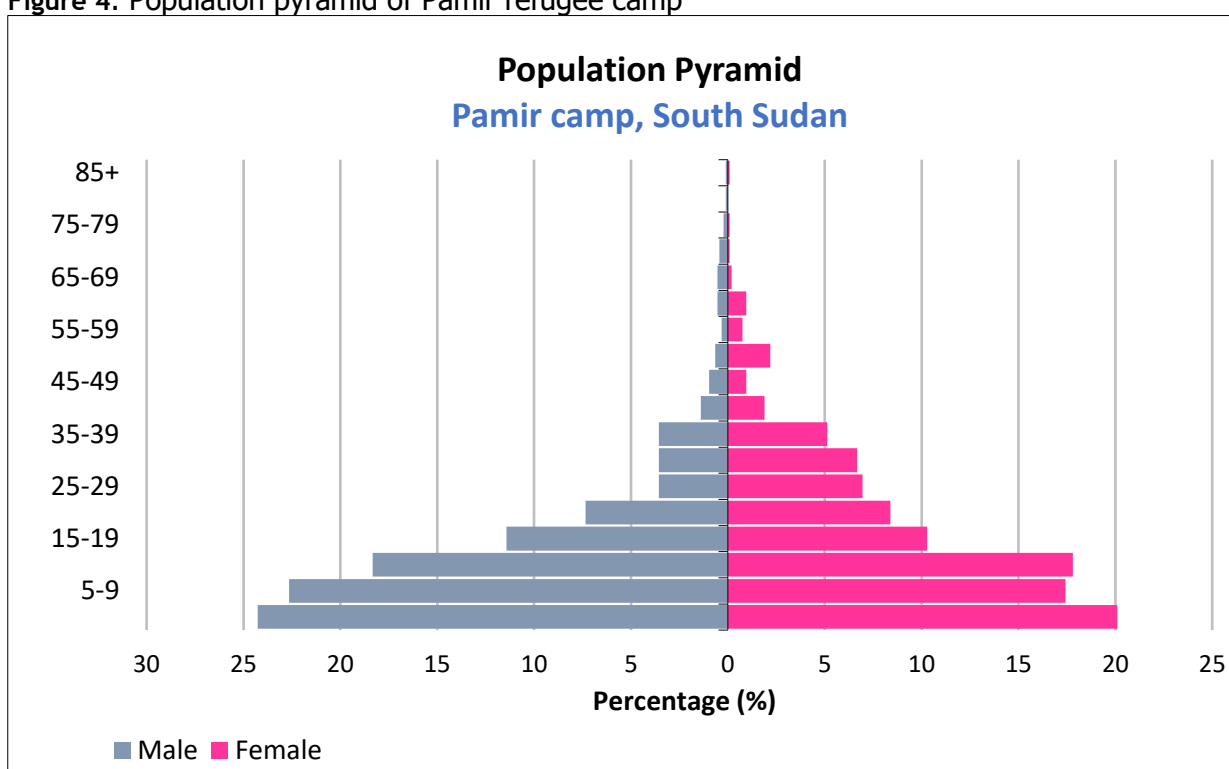
6.1 Demography indicators

Table 15. Household size and composition

Household size and composition		Results
Total population surveyed – Total persons (all ages)		1977
Total U2 surveyed		182
Total U5 surveyed		436
Average household size		5.2
Household size categories	1-4 person(s)	35.9%
	5-6 persons	29.8%
	7-9 persons	30.6%
	≥ 10 persons	3.7%
Household composition	Children under two	0.5
	Children under five	1.2
	Children aged 5-14 years	2.0
	Members aged 15-64 years	2.0

Household size and composition		Results
	Members aged 65 years and above	0.05
Percent of children U2		9.2%
Percent of children U5		22.1%
Percent pregnant women (15-49 years)		2.3%
Percent of elders (65 years and above)		0.9%
Sex ratio		0.88

Figure 4. Population pyramid of Pamir refugee camp



Household head profile

Table 16. Household head profile

	Number/total	% (95% CI)
Female headed households (working age 15-64 years)	229/379	60.4% (55.4-65.2)
Male headed households (working age 15-64 years)	134/379	35.4% (30.7-40.3)
Children headed households (under 15 years)	1/379	0.3% (0.1-1.5)
Elderly headed households (65 years and above)	15/379	4.0% (2.4-6.4)
Mean age of household head in years (Mean±SD)	36.0±12.6	

Almost half of the household are headed by female and 4.9% of households headed by elderly.

Age dependency ratio

Table 17.Age dependency ratio categories by household

Age dependency categories		Age dependency ratio	Number / Total	% (95% CI)
Category I	1 dependent or less per non-dependent member	≤ 1	150/377	39.8% (35.0-44.8)
Category II	Up to 3 dependents per 2 non-dependent members	1.1-1.5	43/377	11.4% (8.6-15.0)
Category III	Up to 2 dependents per non-dependent members (1.5<DR≤2)	1.6-2.0	63/377	16.7% (13.3-20.8)
Category IV	More than 2 dependents per non- dependent members (DR>2)	≥2.1	121/377	32.1% (27.6-37.0)
Mean age dependency ration		Mean±SD	379	1.9±1.7

There are 32.1% households had more than 2 dependents per non-dependent members, which is a high proportion.

6.2 Anthropometric results (based on WHO Growth Standards 2006)

Table 18. Distribution of age and sex of sample

AGE (mo)	Boys		Girls		Total		Ratio
	no.	%	no.	%	no.	%	Boy:girl
6-17	57	63.3	33	36.7	90	23.3	1.7
18-29	38	44.2	48	55.8	86	22.2	0.8
30-41	46	48.4	49	51.6	95	24.5	0.9
42-53	42	50.6	41	49.4	83	21.4	1.0
54-59	19	57.6	14	42.4	33	8.5	1.4
Total	202	52.2	185	47.8	387	100.0	1.1

Table 19. Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex

	All n = 387	Boys n = 202	Girls n = 185
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(18) 4.7 % (3.0 - 7.2 95% C.I.)	(8) 4.0 % (2.0 - 7.6 95% C.I.)	(10) 5.4 % (3.0 - 9.7 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(16) 4.1 % (2.6 - 6.6 95% C.I.)	(6) 3.0 % (1.4 - 6.3 95% C.I.)	(10) 5.4 % (3.0 - 9.7 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(2) 0.5 % (0.1 - 1.9 95% C.I.)	(2) 1.0 % (0.3 - 3.5 95% C.I.)	(0) 0.0 % (0.0 - 2.0 95% C.I.)

The prevalence of oedema is 0.3 %

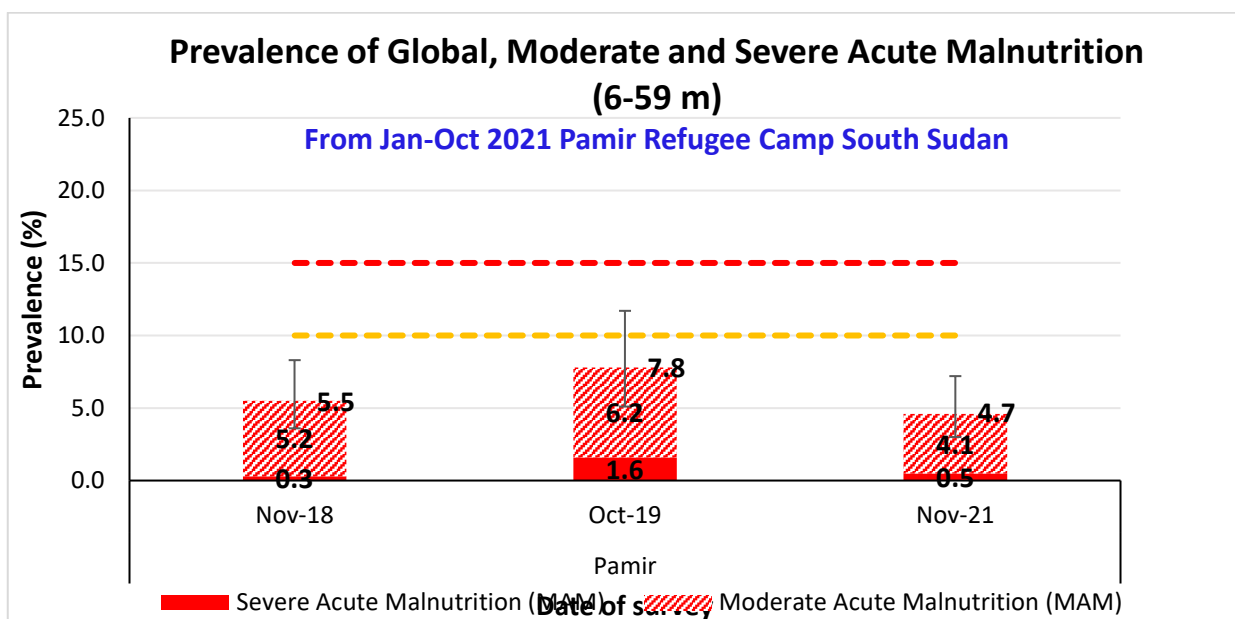


Figure 5. Prevalence of Global, Moderate and Severe Acute Malnutrition

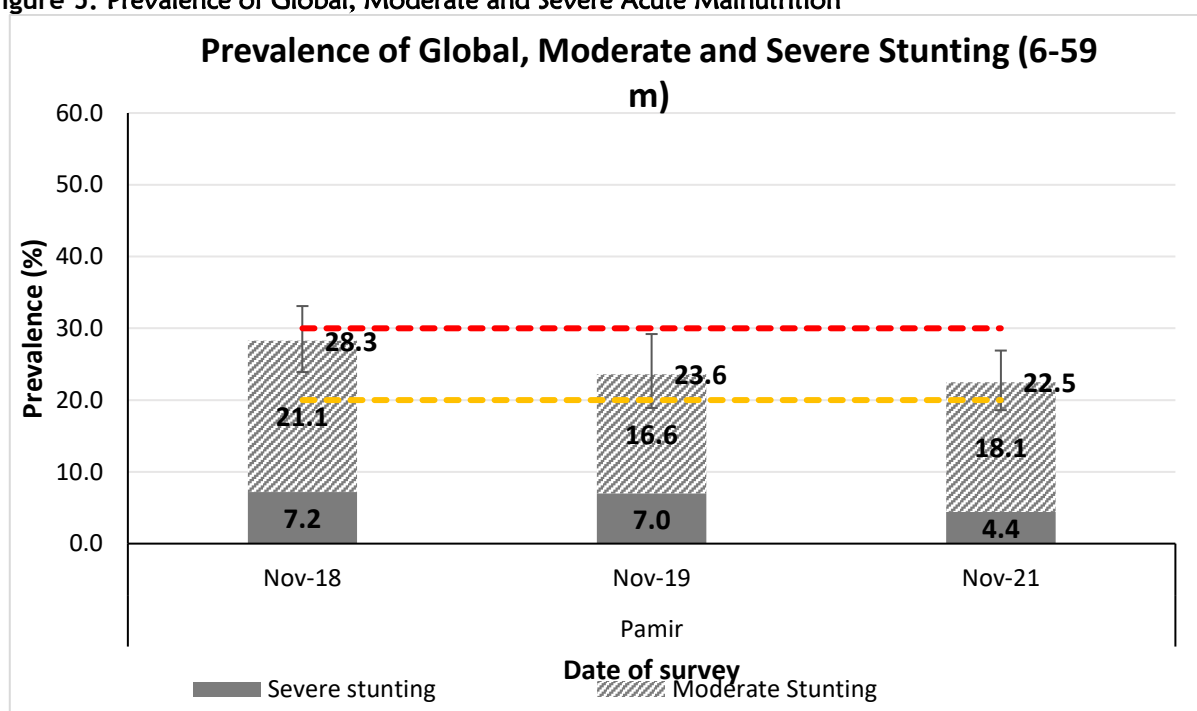


Figure 6. Prevalence of Global, Moderate and Severe Stunting (6-59 m)

Table 20. Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	90	0	0.0	4	4.4	86	95.6	0	0.0
18-29	86	0	0.0	3	3.5	83	96.5	0	0.0
30-41	95	0	0.0	6	6.3	89	93.7	0	0.0

42-53	83	0	0.0	3	3.6	80	96.4	0	0.0
54-59	33	1	3.0	0	0.0	31	93.9	1	3.0
Total	387	1	0.3	16	4.1	369	95.3	1	0.3

Table 21. Distribution of acute malnutrition and oedema based on weight-for-height z-scores

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor. 0 (0.0 %)	Kwashiorkor. 1 (0.3 %)
Oedema absent	Marasmic No. 1 (0.3 %)	Not severely malnourished 385 (99.5 %)

Table 22. Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex

	All n = 387	Boys n = 202	Girls n = 185
Prevalence of global malnutrition (< 125 mm and/or oedema)	(7) 1.8 % (0.9 - 3.7 95% C.I.)	(4) 2.0 % (0.8 - 5.0 95% C.I.)	(3) 1.6 % (0.6 - 4.7 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(5) 1.3 % (0.6 - 3.0 95% C.I.)	(2) 1.0 % (0.3 - 3.5 95% C.I.)	(3) 1.6 % (0.6 - 4.7 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(2) 0.5 % (0.1 - 1.9 95% C.I.)	(2) 1.0 % (0.3 - 3.5 95% C.I.)	(0) 0.0 % (0.0 - 2.0 95% C.I.)

Table 23. Prevalence of combined GAM and SAM based on WHZ and MUAC cut off's (and/or oedema) and by sex*

	All n = 387	Boys n = 202	Girls n = 185
Prevalence of combined GAM (WHZ <-2 and/or MUAC < 125 mm and/or oedema)	(21) 5.4 % (3.6 - 8.2 95% C.I.)	(10) 5.0 % (2.7 - 8.9 95% C.I.)	(11) 5.9 % (3.4 - 10.3 95% C.I.)
Prevalence of combined SAM (WHZ < -3 and/or MUAC < 115 mm and/or oedema)	(3) 0.8 % (0.3 - 2.3 95% C.I.)	(3) 1.5 % (0.5 - 4.3 95% C.I.)	(0) 0.0 % (0.0 - 2.0 95% C.I.)

*With SMART or WHO flags a missing MUAC/WHZ or not plausible WHZ value is considered as normal when the other value is available

Table 24. Prevalence of underweight based on weight-for-age z-scores by sex

	All n = 386	Boys n = 201	Girls n = 185
Prevalence of underweight (<-2 z-score)	(41) 10.6 % (7.9 - 14.1 95% C.I.)	(22) 10.9 % (7.3 - 16.0 95% C.I.)	(19) 10.3 % (6.7 - 15.5 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and ≥-3 z-score)	(35) 9.1 % (6.6 - 12.3 95% C.I.)	(20) 10.0 % (6.5 - 14.9 95% C.I.)	(15) 8.1 % (5.0 - 12.9 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(6) 1.6 % (0.7 - 3.3 95% C.I.)	(2) 1.0 % (0.3 - 3.6 95% C.I.)	(4) 2.2 % (0.8 - 5.4 95% C.I.)

Table 25. Prevalence of stunting based on height-for-age z-scores and by sex

	All n = 387	Boys n = 202	Girls n = 185
Prevalence of stunting (<-2 z-score)	(87) 22.5 % (18.6 - 26.9 95% C.I.)	(45) 22.3 % (17.1 - 28.5 95% C.I.)	(42) 22.7 % (17.3 - 29.3 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and ≥-3 z-score)	(70) 18.1 % (14.6 - 22.2 95% C.I.)	(34) 16.8 % (12.3 - 22.6 95% C.I.)	(36) 19.5 % (14.4 - 25.8 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(17) 4.4 % (2.8 - 6.9 95% C.I.)	(11) 5.4 % (3.1 - 9.5 95% C.I.)	(6) 3.2 % (1.5 - 6.9 95% C.I.)

Table 26. Prevalence of stunting by age based on height-for-age z-scores

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (≥-3 and <-2 z-score)		Normal (≥-2 z score)	
		No.	%	No.	%	No.	%
6-17	90	3	3.3	9	10.0	78	86.7
18-29	86	7	8.1	18	20.9	61	70.9
30-41	95	2	2.1	20	21.1	73	76.8
42-53	83	2	2.4	19	22.9	62	74.7

54-59	33	3	9.1	4	12.1	26	78.8
Total	387	17	4.4	70	18.1	300	77.5

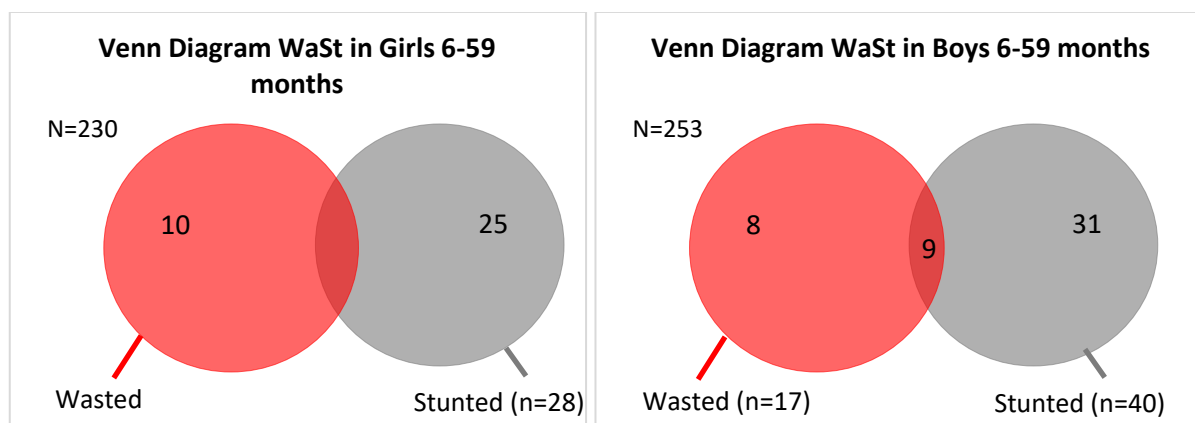


Table 27. Prevalence of overweight based on weight for height cut off's and by sex (no oedema)

	All n = 387	Boys n = 202	Girls n = 185
Prevalence of overweight (WHZ > 2)	(6) 1.6 % (0.7 - 3.3 95% C.I.)	(4) 2.0 % (0.8 - 5.0 95% C.I.)	(2) 1.1 % (0.3 - 3.9 95% C.I.)
Prevalence of severe overweight (WHZ > 3)	(1) 0.3 % (0.0 - 1.4 95% C.I.)	(0) 0.0 % (0.0 - 1.9 95% C.I.)	(1) 0.5 % (0.1 - 3.0 95% C.I.)

6.3 Feeding Programme Enrolment Coverage

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

Table 28: Nutrition treatment programme enrolment coverage based on all admission criteria (weight-for-height, MUAC, oedema)

	Number/total	% (95% CI)
Proportion of children aged 6-59 months with severe acute malnutrition currently enrolled in outpatient therapeutic programme*	0/3	0.0 (0.0-0.0)
Proportion of children aged 6-59 months with moderate acute malnutrition currently enrolled in supplementary feeding programme*	6/18	33.3 (13.3-59.0)

Table 29: Nutrition treatment programme enrolment coverage based on MUAC and oedema only

	Number/total	% (95% CI)
Proportion of children aged 6-59 months with severe acute malnutrition currently enrolled in outpatient therapeutic programme	0/2	0.0 (0.0-0.0)

Proportion of children aged 6-59 months with moderate acute malnutrition currently enrolled in supplementary feeding programme*	5/5	100.0 (47.8-100.0)
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6.4 Health results

Table 30: Measles vaccination coverage for children aged 9-59 months (N=361)

	Measles (with card) n=114	Measles (confirmation from mother) n=234	Measles (No or don't know) n=13
YES	31.6% (27.0-36.6)	64.8% (59.8-69.6)	3.6% (2.1-6.1)

Table 31: Vitamin A Supplementation for Children Aged 6-59 Months within Past 6 Months (N=374)

	Vitamin A capsule (with card) n=1	Vitamin A capsule (confirmation from mother) n=379	Vitamin A capsule (No or don't know) n=7
YES	0.3% (0.1-1.5)	97.9% (96.0-99.0)	1.8% (0.9-3.7)

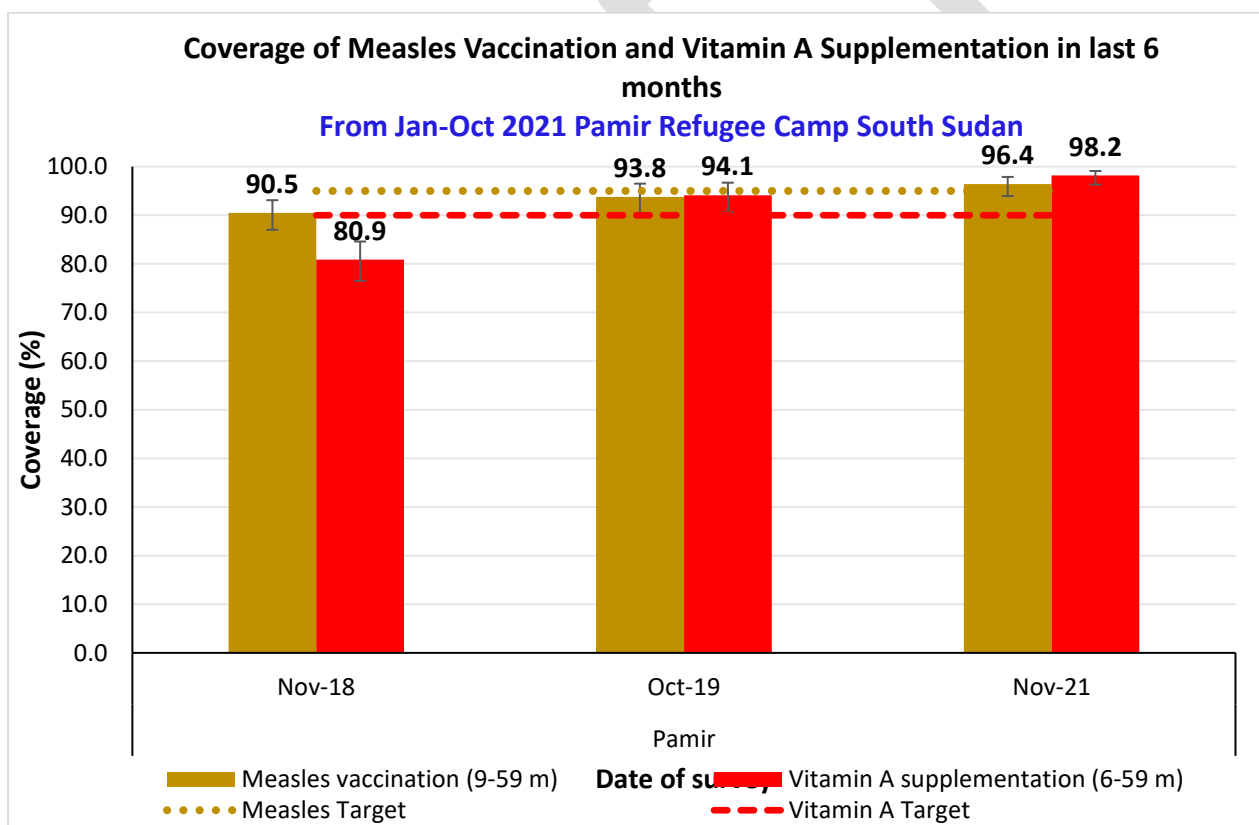


Figure 7. Coverage of Measles Vaccination and Vitamin A Supplementation in last 6 months

Table 32: Prevalence of diarrhoea

	Number/total	% (95% CI)
Diarrhoea in the last two weeks (6-59 months)	16/387	4.1 (2.6-6.6)

Table 33. Use of ORS and Zinc during diarrhoea episode

	Number/total	% (95% CI)
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ORS use during diarrhoea episode	13/16	81.3% (54.4-96.0)
Zinc tablet or syrup use during diarrhoea episode	13/16	81.3% (54.4-96.0)

More than 75% of the surveyed children who had diarrhoea episode in the last two weeks received treatment either using ORS or Zinc.

Table 34: Deworming coverage

	Number/total	% (95% CI)
Children received a deworming tablet in the last six months (12-59 months)	325/339	95.9% (93.2-97.5)

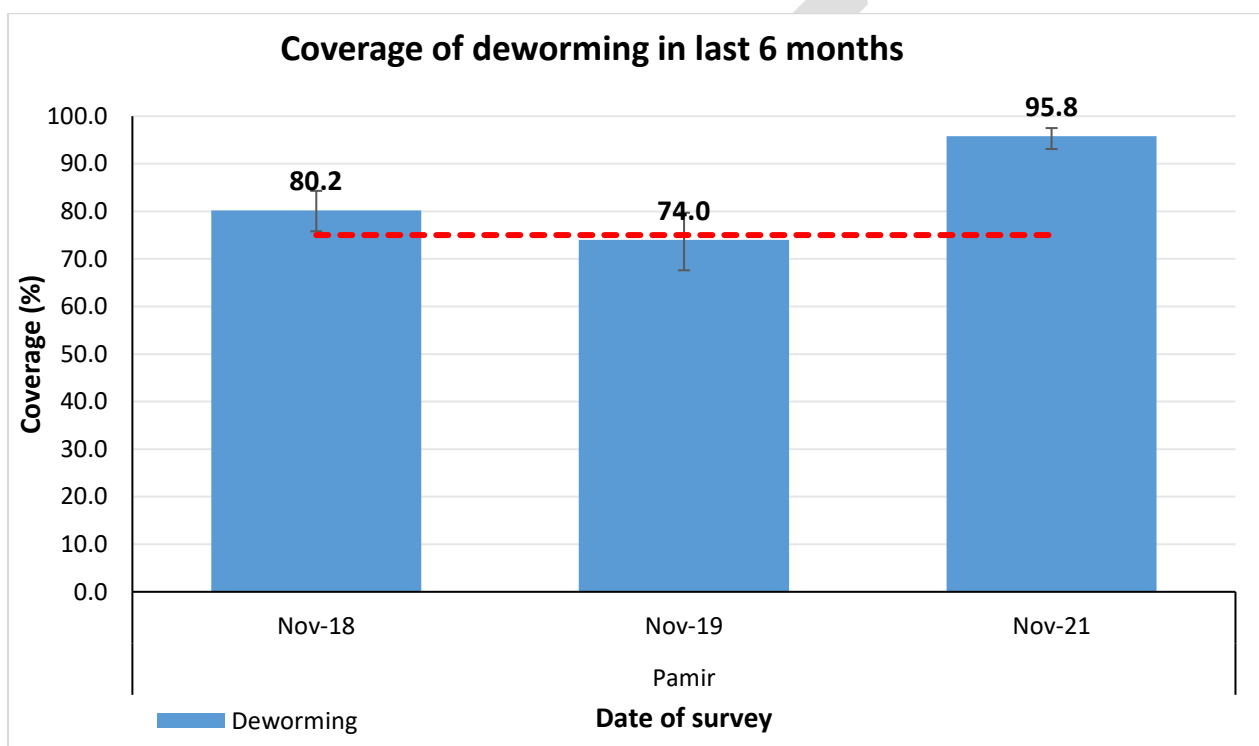


Figure 8. Coverage of deworming in last 6 months

6.5 Anaemia Results Children 6 – 59 Months

The total anaemia prevalence among children 6 to 59 months was 36.9%. This is classified as medium public health significance as it falls between the 20-39%. Children aged 6-23 were the most severely affected by anaemia.

Table 35: Prevalence of total anaemia, anaemia categories, and mean haemoglobin concentration in children 6-59 months of age and by age group

	6-59 months n = 387	6-23 months n=125	24-59 months n=244
Total Anaemia (Hb<11.0 g/dL)	(143) 37.0% (32.3-41.9)	(79) 63.2 (54.1-71.7)	(64) 24.4 (19.4-30.1)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(86) 22.2% (18.4-26.6)	(43) 34.4 (26.1-43.4)	(43) 16.4 (12.1-21.5)
Moderate Anaemia	(57) 14.7%	(36) 28.8	(21) 8.0

(7.0-9.9 g/dL)	(11.5-18.6)	(21.1-37.6)	(5.0-12.0)
Severe Anaemia (<7.0 g/dL)	0	0	0
Mean Hb (g/dL) [range]	11.3±1.3	10.5±1.2	11.6±1.2

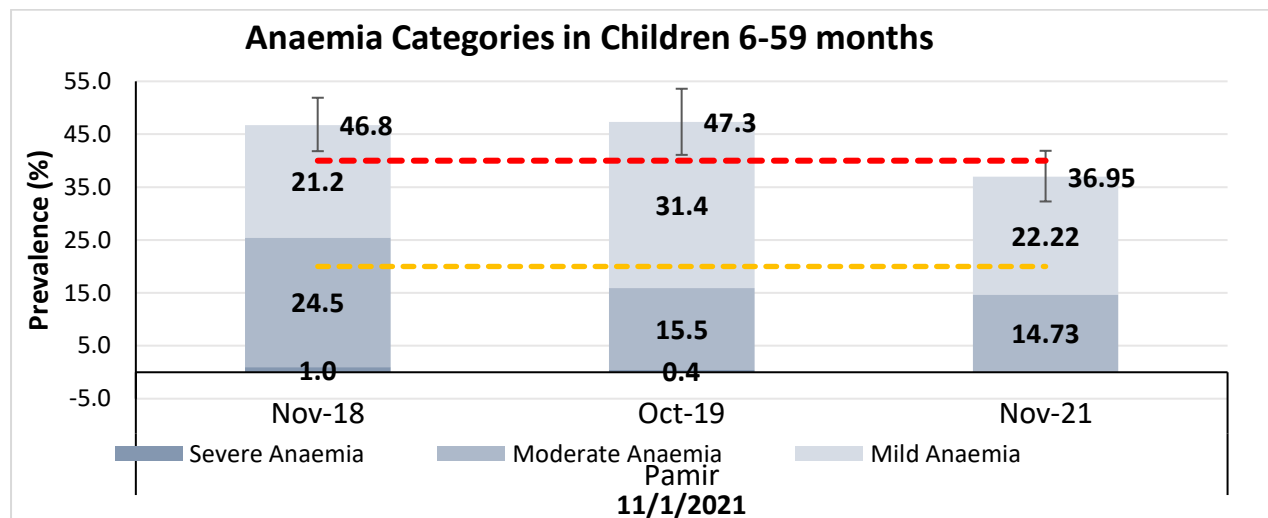


Figure 9. Prevalence of total anaemia, anaemia categories, and mean haemoglobin concentration in children 6-59 months of age and by age group- Pamir refugee camp, south Sudan (2021)

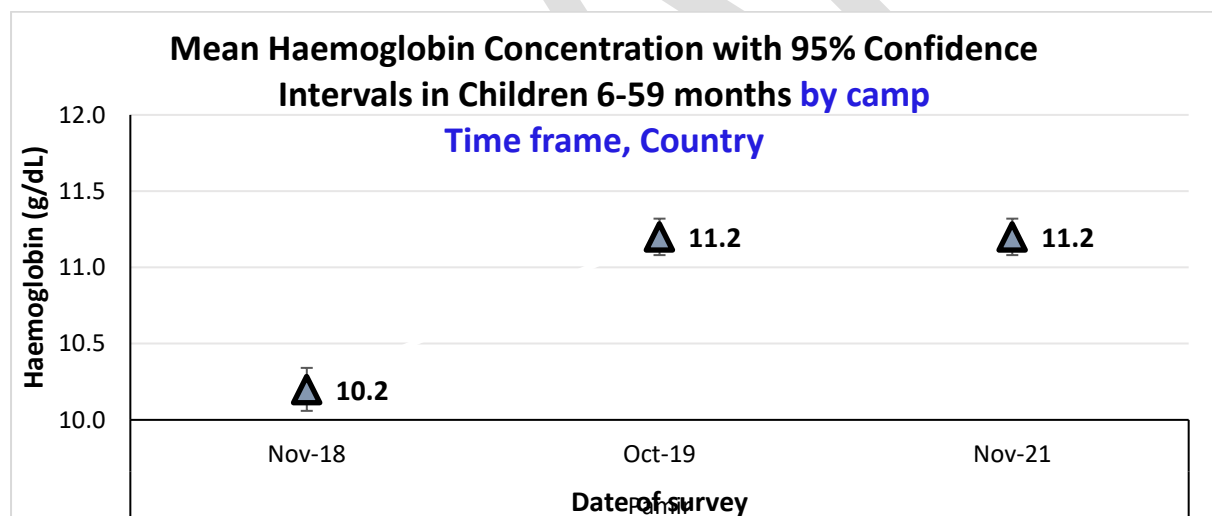


Figure 10. Mean Hemoglobin Concentration with 95% Confidence Intervals in Children 6-59 months

6.6 IYCF Children 0-23 Months

Table 36: Prevalence of Infant and Young Child Feeding Practices Indicators

Indicator	Age range	Number/ total	Prevalence (%)	95% CI
Timely initiation of breastfeeding	0-23 months	173/180	96.1	(92.2-98.4)
Exclusive breastfeeding under 6 months	0-5 months	52/55	94.6	(84.9-98.9)

Continued breastfeeding at 1 year	12-15 months	28/29	96.6	(82.2-99.9)
Continued breastfeeding at 2 years	20-23 months	14/23	60.9	(38.5-80.3)
Introduction of solid, semi-solid or soft foods	6-8 months	17/26	65.4	(44.3-82.8)
Consumption of iron-rich or iron- fortified foods	6-23 months	82/125	65.6	(56.6-73.9)
Bottle feeding	0-23 months	1/180	0.6	(0.0-3.1)

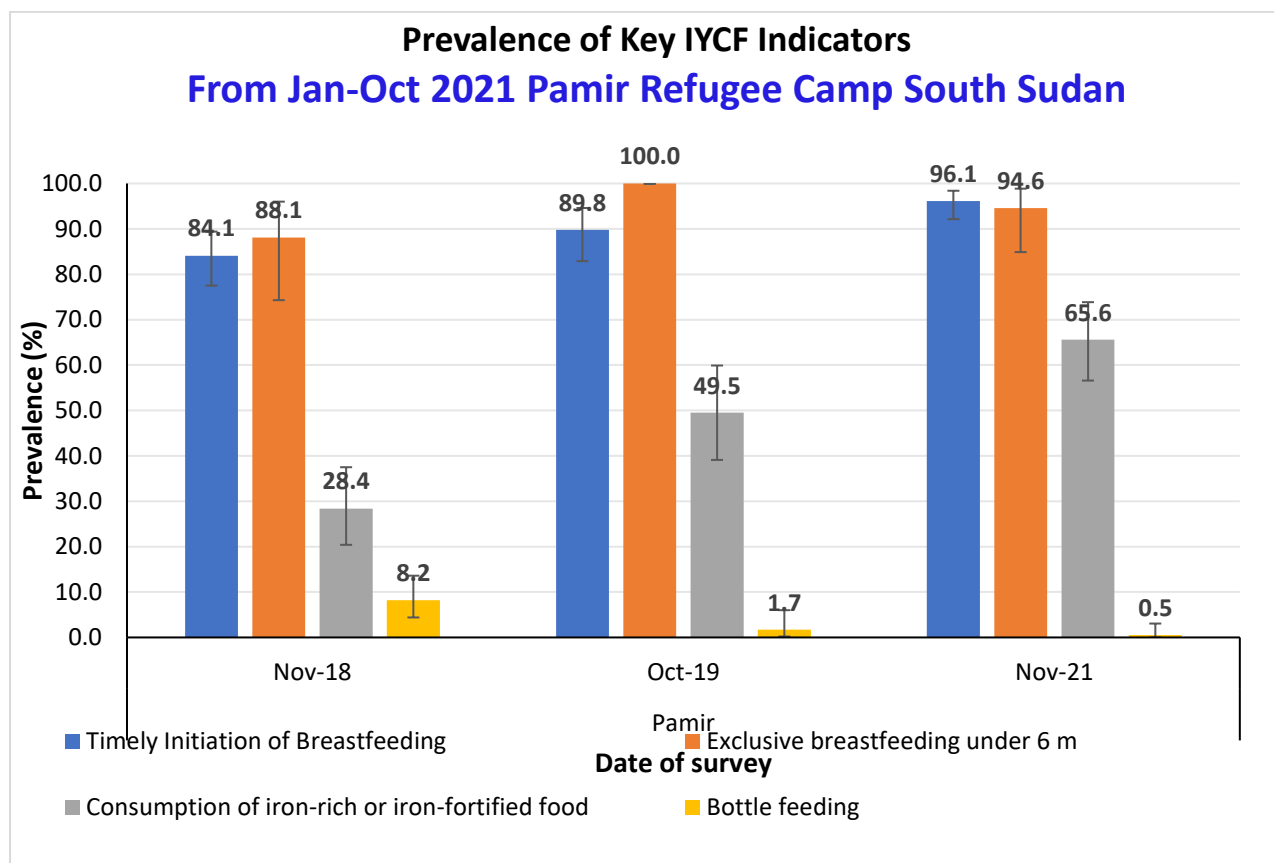


Figure 11. Prevalence of Key IYCF Indicators

Prevalence of Intake Analysis

Table 37. Prevalence of intake of certain foods in children aged 0-23 months

	Number/total	% (95% CI)
Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	1/180	0.6% (0.0-3.1)
Proportion of children aged 6-23 months who receive CSB++	38/125	30.4% (22.5-39.3)
Proportion of children aged 6-23 months who receive LNS	67/125	53.6% (44.5-62.6)

6.7 Anaemia and physiological status in women 15-49 Years

Table 38: Women Physiological Status and Age

Physiological status	Number/total	% (95% CI)
Non-pregnant	182/210	86.7 (81.3-91.0)
Pregnant	28/210	13.3 (9.1-18.7)
Non-pregnant and non-lactating women	102/210	48.6 (41.6-55.6)
Lactating women with an infant less than 6 months	29/81	35.8 (25.5-47.2)
Lactating women with an infant greater than 6 months	52/81	64.2 (52.8-74.6)
Mean age (range)	27.0 (15-49)	

Table 39. Women Malnutrition Prevalence by MUAC

Physiological status	Number/total	% of sample (95% CI)
MUAC<23.0cm in pregnant and lactating women	3/54	5.6% (1.2-15.4)
MUAC≥23.0cm in pregnant and lactating women	51/54	94.4% (84.6-98.8)

Table 40: Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 Years)

Anaemia - Women of reproductive age 15-49 years	All n = 267
Total Anaemia (<12.0 g/dL)	(34) 18.7% (13.3-25.1)
Mild Anaemia (11.0-11.9 g/dL)	(27) 14.8% (10.0-20.9)
Moderate Anaemia (8.0-10.9 g/dL)	(7) 3.9% (1.6-7.8)
Severe Anaemia (<8.0 g/dL)	0
Mean Hb, g/dL [range]	13.0±1.2

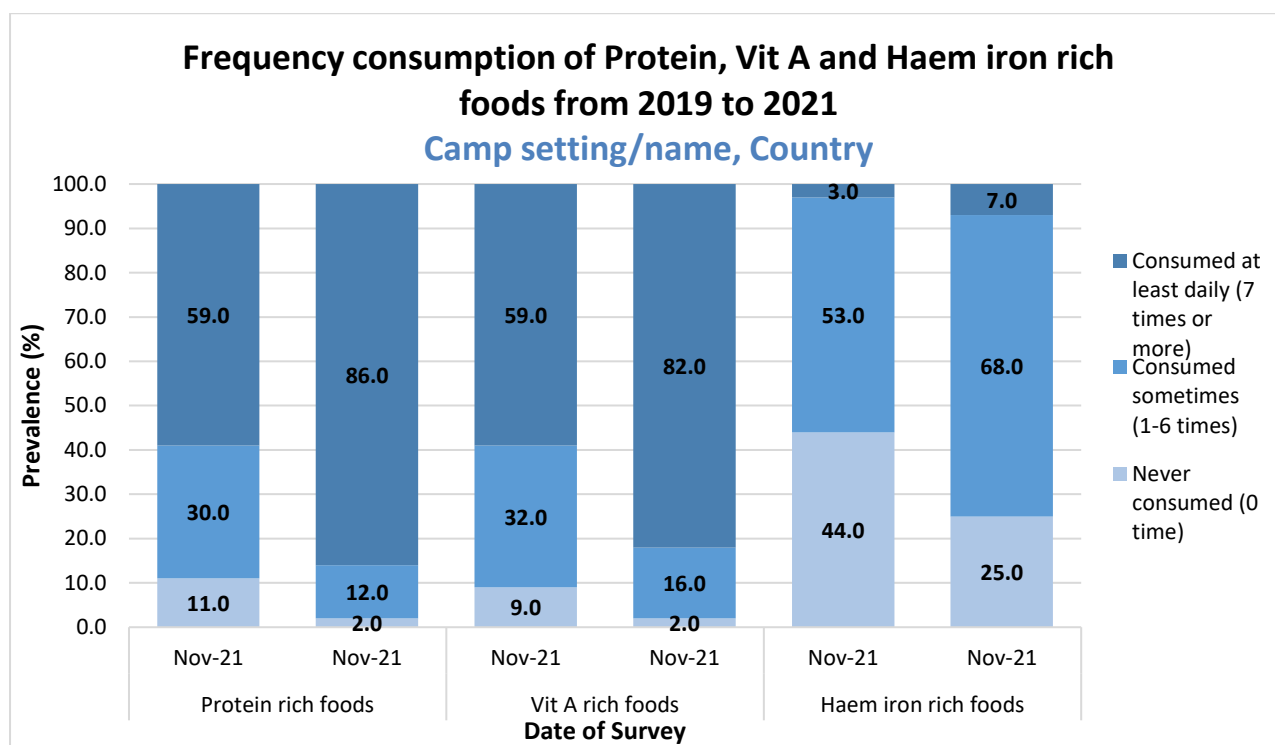


Figure 12. Frequency consumption of Protein, Vit A and Haem iron Rich Food from 2019 to 2021

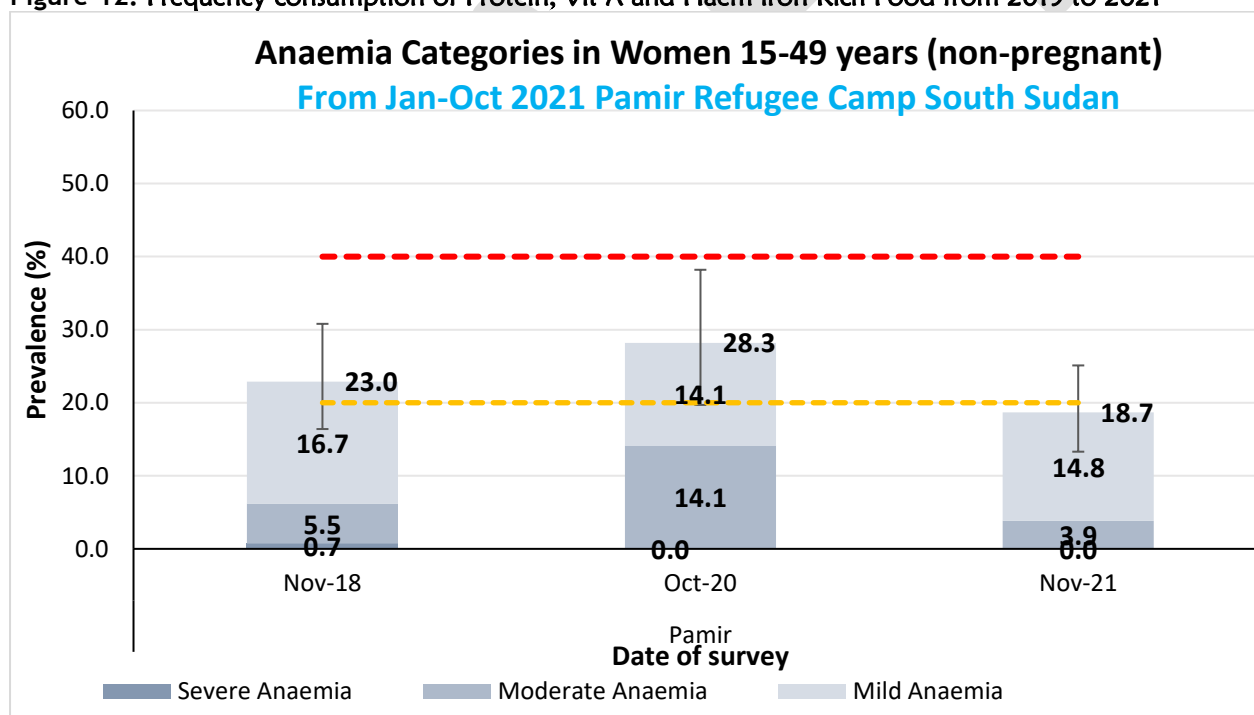


Figure 13. Prevalence of total anaemia, anaemia categories, and mean haemoglobin concentration in Women 15-49 years of age- Pamir refugee camp, south Sudan (2021)

Table 41: ANC Enrolment and Iron-Folic Acid Pills Coverage among Pregnant Women (15-49 Years)

	Number /total	%(95% CI)
Currently enrolled in ANC programme	28/29	96.6 (82.2-99.9)
Currently receiving iron-folic acid pills	27/29	93.1 (77.2-99.2)

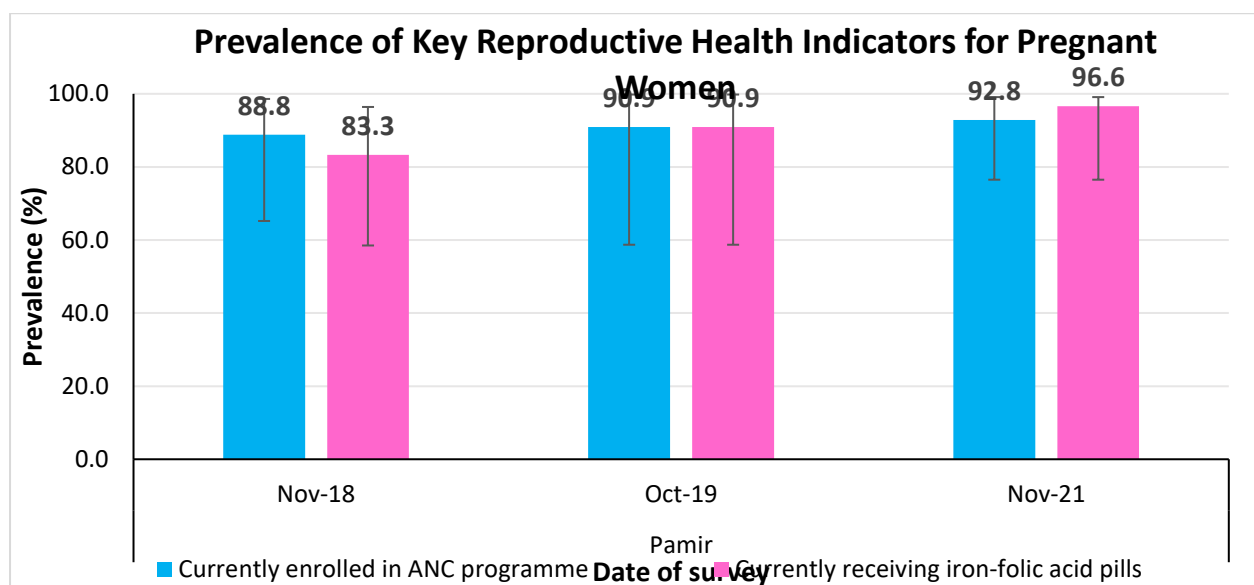


Figure 14. Prevalence of Key reproductive Health Indicators for Pregnant Women

6.8 Food security

Table 42: Ration card coverage

	Number/total	% (95% CI)
Proportion of households with a ration card	199/199	100 (98.2-100.0)

All the surveyed households had a ration card.

Table 43: Duration of the general in-kind food distribution

	Number (days)
Mean [range]	19.3±5.1

CASH assistance and utilisation

Table 44: CASH for milling assistance coverage

	Number/total	% (95% CI)
Proportion of households received Cash in the last cycle	199/199	100 (98.2-100)

Table 45: Description of cash utilization

Basic needs not met by the households:	Number/total	% (95% CI)
Food	159/198	80.3% (74.1-85.6)
Water	0/198	0.0%
Hygiene items, clothes, shoes	53/198	26.8% (20.7-33.5)
Health costs (including medicines)	7/198	3.5% (1.4-7.2)
Rent, shelter repair, household items (e.g. mattress, blankets, jerrycan), utilities and bills (e.g. electricity, water bills, phone calling credit)	1/198	0.5% (0.0-2.8)

Firewood / fuel for cooking or heating	7/198	3.5% (1.4-7.2)
Assets for a livelihood activity (e.g. seeds, tools, farming, fishing, petty trade, etc.)	0/198	0.0%
Debts repayment	0/198	0.0%
Saved some money, support other family members, relatives, friends	0/198	0.0%
Education (e.g. school fees, uniform, books)	4/198	2.0% (0.6-5.1)
Other	58/198	29.3% (23.1-36.2)

Coverage of basic needs

Table 46. Description of basic needs not met by the households

Basic needs not met by the households:	Number/total	% (95% CI)
Food	116/199	58.3% (51.1-65.2)
Water	1/199	0.5% (0.0-2.8)
Hygiene items, clothes, shoes	188/199	94.5% (90.3-97.2)
Health costs (including medicines)	6/199	3.0% (1.1-6.5)
Rent, shelter repair, household items (e.g. mattress, blankets, jerrycan), utilities and bills (e.g. electricity, water bills, phone calling credit)	52/199	26.1% (20.2-32.8)
Firewood / fuel for cooking or heating	41/199	20.6% (14.8-26.1)
Assets for a livelihood activity (e.g. seeds, tools, farming, fishing, petty trade, etc.)	16/199	8.0% (4.7-12.7)
Debts repayment	7/199	3.5% (1.4-7.1)
Saved some money, support other family members, relatives, friends	1/199	0.5% (0.0-2.8)
Education (e.g. school fees, uniform, books)	35/199	17.6% (12.6-23.6)
Other	65/199	32.7% (26.2-39.7)

The category of basic needs cannot be met reported the most are: food, hygiene items, others, house, education, and fuel for cooking, others.

Table 47. Households by categories of coverage of basic needs

Proportion of households in each category of coverage of basic needs	Number/total	% (95% CI)
All basic needs are met (100%)	0/199	0.0%
More half basic needs are met (>50%)	196/199	99.0% (96.5-99.9)
Few basic needs are met (<50%)	3/199	1.0% (0.1-3.5)
Basic needs are not met (0%)	0/199	0.0%

Most families reported can meet all basic needs, most households reported more than half of their basic needs are met.

Negative household coping strategies

Table 48: Food coping strategies used by the surveyed population over the past month

	Number/total	% (95% CI)
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Proportion of households reporting using the following coping strategies over the past month*:		
Relied on less preferred and/or less expensive food	195/199	98.0 (94.9-99.5)
Borrowed food or relied on help from a friend or relative	158/199	79.4 (73.1-84.8)
Reduced the number of meals eaten in a day	192/199	96.5 (92.9-98.6)
Limited portion size at mealtime	191/199	96.0 (92.2-98.3)
Reduced consumption by adults so that children could eat	150/199	75.4 (68.8-81.2)
Average rCSI (mean, SD / range)		17.6±8.6

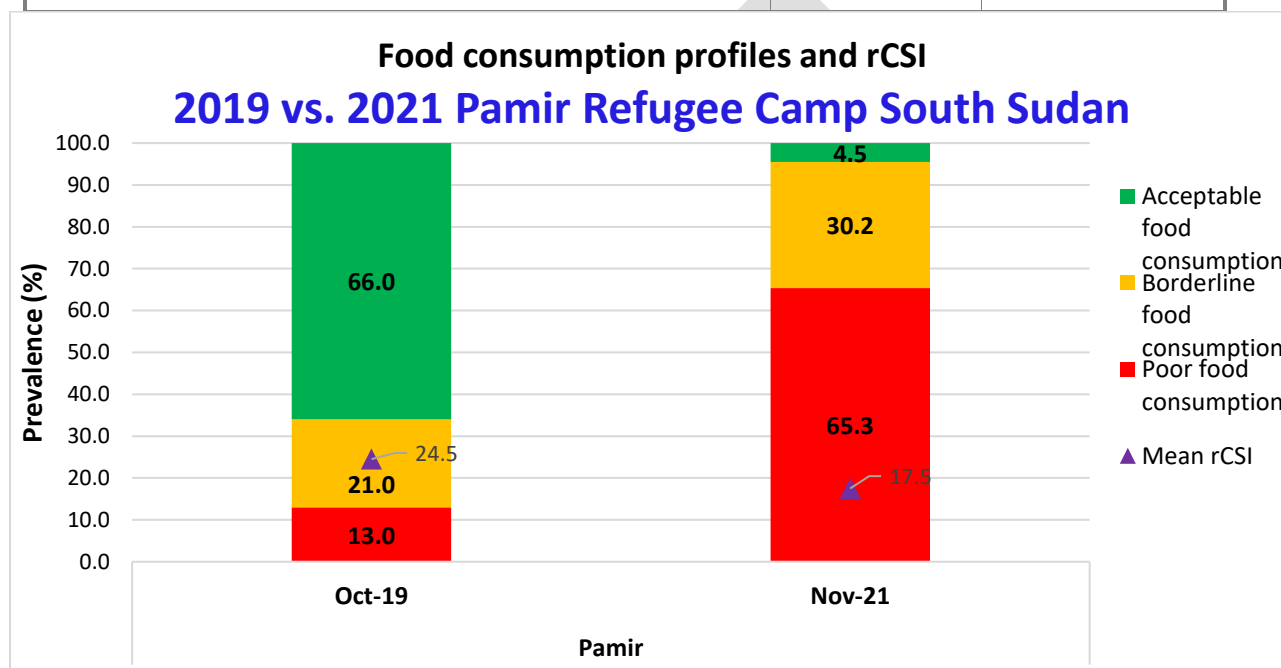


Figure 15. Food consumption score (FCS) profiles and rCSI

Food Consumption Score

Table 49: Average Food Consumption Score (FCS) and proportion by Classification

Food consumption	Number/total	% (95% CI)
Average FCS (mean, SD/range)	199	19.9±7.6
Poor: 0-21	130/199	65.3 (58.3-71.9)
Borderline: 21.5-35	60/199	30.2 (23.9-37.0)
Acceptable: >35	9/199	4.5 (2.1-8.4)

Table 50. Consumption frequency categories of each nutrient rich food groups

(FCS-N)

Nutrient rich food groups	Consumption frequency categories	Number/total	% (95% CI)
Vitamin A rich foods	Never	82/199	41.2% (34.3-48.4)
	Sometimes	117/199	58.8% (51.6-65.7)
	At least daily	0/199	0.0% (0.0-0.0)
Protein rich foods	Never	5/199	2.5% (0.8-5.8)
	Sometimes	193/199	97.0% (93.6-98.9)
	At least daily	1/199	0.5% (0.0-2.8)
Haem iron rich foods	Never	169/199	84.9% (79.2-89.6)
	Sometimes	30/199	15.1% (10.4-20.8)
	At least daily	0/199	0.0% (0.0-0.0)

In terms of the nutrient rich food, 72.6% households reported consumed Vitamin A rich foods (sometimes or daily), 96.6% reported consumed protein rich foods, while only 13.2% reported consumed Haem iron rich foods.

Table 51. Food acquisition sources

Food acquisition sources	Number/total	% (95% CI)
Purchase (using cash grants and/or with their own cash)	157/199	78.9% (72.6-84.4)
Own production (crops, livestock, fishing/ hunting, gathering)	16/199	8.0% (4.7-12.7)
Borrowed (loan/credit from traders)	12/199	6.0% (3.2-10.3)
Received as gift (from family relatives or friends/ neighbour)	4/199	2.0% (0.6-5.1)
Food assistance	5/199	2.5% (0.8-5.8)
Other	5/199	2.5% (0.8-5.8)

The main source for food reported was purchasing (78.9%), followed by own production and gift.

7 Limitations

In Pamir, Percentage of children with no exact birthday: **6 %**. 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 weeks⁷

✚ TSPF/TFP enrolment 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 must be interpreted with caution.
- ✚ The training and the questionnaire were in English but questionnaires were administered in Arabic. This could have affected the understanding of the questions and ultimately the responses given.

8 Discussion

8.1 *Nutritional Status of Young Children*

The prevalence of Global Acute Malnutrition (GAM) was 4.7 (3.0 - 7.2 95% C.I.) based on WHZ scores which is acceptable⁸ and below the critical WHO emergency threshold of 15%. Of note, however, 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 2019 the situation has changed as the reduction in the GAM prevalence was statistically significant. The proportion of children with a MUAC <12.5cm in Pamir was 1.8 % (0.9 - 3.7 95% C.I.) which is lower than the weight for height Z score indicating the need to use a combined admission criteria with more efforts on weight for height Z-score. This was the fourth nutrition survey to be conducted in Pamir camp where most new arrivals are hosted.

The prevalence of global stunting in Pamir was approximately 22.5%. This is categorized as high according to WHO standard⁹. Stunting prevalence changed in 2021 in Pamir as the reduction in the stunting prevalence was statistically significant compared to 2019. 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.

65.6% of children aged 6-59 months in Pamir reported to have had diarrhea in the last two weeks prior to the survey indicating a morbidity caseload requiring continued health services provision

8.2 Morbidity

The interactions of nutrition and infection are cyclic with each exacerbating the other. 65.6% of children aged 6-59 months in Pamir 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.

8.3 Programme Coverage

Selective feeding program

The TFP and TSFP Programme coverage indicator using WHZ, MUAC and oedema in Pamir meet the recommended standard of >90%.

8.4 Measles vaccination and Vitamin A supplementation

The coverage of measles vaccination in Pamir was 96.4% (93.94%-97.88%) which meet the recommended $\geq 95\%$. In regard to vitamin A supplementation the target coverage of $\geq 90\%$ was met in Pamir camps. Both the measles and vitamin A coverage improved in 2021 compared to 2019 when the coverage was below the target.

8.5 Anaemia among Young Children and Women

The survey results showed that Total anemia prevalence among children 6 to 59 months in Pamir was high 36.95%. The anemia prevalence in Pamir reduced compared to 47.3% in 2019. Anemia is recognized to adversely affect the cognitive performance, behaviour and physical growth of infants, preschool and school-aged children, and increase the likelihood of associated morbidities. Anemia is not only an indicator of potential iron deficiency in populations, but can also be taken as a proxy indicator for other micronutrient deficiencies.

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 3.9%. 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 18.94% in Pamir. According to the WHO classification the women anaemia prevalence is of medium public health significance. The survey showed coverage of ANC of 96.6.2% in Pamir. Iron-folic acid coverage was the same as the ANC coverage.

The anaemia prevalence can be attributed to a number of factors that characterize 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 86.0% of the households in Pamir consumed food sources rich in iron during the survey. This was mostly from the BSFP ration. The refugee diet lacks animal protein a good source of bioavailable iron. Malaria and intestinal worms' infection are among the top five morbidities among the refugee population that could also be contributing to the high anaemia prevalence. Malaria and intestinal worm treatment and prevention should be continued. A strategy to address anaemia and other micronutrient deficiencies in the south Sudan refugee camps was drawn in the second half of 2017. There was full implementation of this is essential in Pamir refugee camps in 2021.

8.6 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 good to improved nutrition, health, and development of children¹⁰.

From the survey results proportion of children 0-23 months that had timely initiation of breast milk within the first hour of delivery was 96.1% in Pamir. 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 94.67% in Pamir. The risk of neonatal death was decreased as milk-based fluids or solids are not 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. The results above indicate there is a relatively positive uptake of the exclusive breastfeeding and the need to continue breast feeding up to two years. 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 65.6% in Pamir. After six months, adequate and appropriate infant complementary foods become necessary to complement breastmilk 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.

Only a very small proportion of the surveyed children aged 0-23 months were bottle fed <1% in Pamir. This was also the case in the case of infants that received infant formula. The importance of not using bottles and discouragement of the use of infant formula unless indicated as a last result to continue being emphasized. 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 diarrheal 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

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.

8.7 Food Security

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

All the households in 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 50% ration scale. Most of the households reported using one or more of the negative coping strategies ((borrowed cash or food 79.4, reduced quantity or frequency of meals 96.5. limit portion sizes at mealtime 95.9%, reduced

consumption by adults so children eat 75.4%. Approximately a third of the refugees in Pamir reported using any of the negative coping strategies to fill the food assistance gap (50% of the recommended general food ration is provided per person per month). 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.

9 Recommendations and Priorities

9.1 *Nutrition related*

Continue the implementation of the comprehensive 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 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 (IRC)

Conduct the two step MUAC and WHZ scores (for children with MUAC at risk) screening monthly at the 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 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 (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, 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 and IRC).

Expand and strengthen preventative nutrition components including the awareness creation, promotion, protection of Infant and Young Child Feeding (IYCF) and community outreach education aspects to stop malnutrition from occurring in the first place. (UNHCR, UNICEF, and IRC)

Continue strengthening the anaemia reduction strategy in Pamir 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, and IRC)

Ensure regular 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 and IRC)

Undertake a follow up annual joint nutrition survey to analyse trends and facilitate program impact evaluation in 2022s. (UNHCR, WFP and UNICEF and IRC)

9.2 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 utilization 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, IRC and food security and livelihood actors)

9.3 Health and WASH related

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

- ✚ The strengthening routine immunization programs supported by immunization campaigns in Pamir and Ajourng Thok in order to increase measles vaccination coverage in 2018 to the level >95% to prevent measles outbreaks. (UNHCR and IRC)
- ✚ Prevention, control of infection, vector borne diseases especially around malaria and helminths (UNHCR, AHA, IRC)
- ✚ The maintenance and strengthening of reproductive health and newborn care (UNHCR, and IRC)
- ✚ Maintenance of adequate clean water provision (UNHCR, SP, and IRC)

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

10 Appendices

10.1 Appendix 1: Name of contributors

No.	Name	Role	Organization
1	Rahama Ramadan	Team Leader	IRC
2	Bulkan Saleh	Anthropometric measurer	IRC
3	Bakhit Alfande	Assistant Measurer	AHA
4	Ataib Hassen	Hb measurer	AHA
5	Mangisto Adam	Team Leader	IRC
6	Zakaria Hassan	Anthropometric measurer	AHA
7	Gasim Idriss	Assistant Measurer	AHA
8	Omar Tijani	Hemoglobin measurer	IRC
9	Taarik Kodi	Team leader	AHA
10	Basma Mubarak	Anthropometric measurer	IRC
11	Kodi Paul	Assistant Measurer	IRC
12	Mustafa Siliman	HB measurer	AHA
13	Zabulun Samahan	Team leader	AHA
14	Kaisar Musa	Anthropometric measurer	AHA
15	Juma Saed	Assistant anthropometric measurer	IRC
16	Mubarak Khamis	Hb measurer	AHA
17	Ramadan Hassan	Team Leader	IRC
18	Kukuman David	Anthropometric measurer	IRC
19	Kumi Musa	Assistant anthropometric measurer	IRC
20	Isaac Jacob	Hb measurer	AHA
21	Isaih Musa	Team Leader	AHA

22	James Fadul	Anthropometric measurer	AHA
23	Lily Ismail	Assistant Anthropometric measurer	IRC
24	Bashir Siliman	HB measurer	IRC
25	Lobut Charles (Nutrition Officer)	Supervisor	IRC
26	Ajang Yuot(Snr M&E Officer)	Supervisor	IRC
27	Sebit Mustafa	Coordinator	UNHCR
28	Lilian Igube	Coordinator	UNHCR
29	Maria Chidumu	Survey Lead Coordinator	UNHCR
30	David Akonyu (Dr)	Supervisor	AHA
31	James Drichi	Supervisor	AHA
32	Lomurye Emmanuel	Supervisor	AHA

Data analysis and report compilation

Ajang, Charles, (Nutrition Officer, UNHCR Juba, South Sudan)

Report review

Ashenafi, Dr Mathew, Lilian Igube, Maria, Sebit and Heqian.

Findings

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

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

Pamir

Overall data quality

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

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

Overall Sex ratio Incl p >0.1 >0.05 >0.001 <=0.001
(Significant chi square) 0 2 4 10 0 (p=0.387)

Age ratio(6-29 vs 30-59) Incl p >0.1 >0.05 >0.001 <=0.001
(Significant chi square) 0 2 4 10 0 (p=0.853)

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

UNHCR SENS – Version 3

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

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

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

Skewness WHZ Excl # <±0.2 <±0.4 <±0.6 >=±0.6
0 1 3 5 1 (0.31)

Kurtosis WHZ Excl # <±0.2 <±0.4 <±0.6 >=±0.6
0 1 3 5 0 (-0.01)

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

OVERALL SCORE WHZ = 0-9 10-14 15-24 >25 3 %

The overall score of this survey is 3 %, this is excellent.

10.3 Appendix 3 – Survey questionnaires

10.4 Events Calendar

Seasons	Religious Holiday	Other Events	Months / Years	Age (M)	Height Rang
Groundnut harvest		Global hand-washing day	October 2021	0	
1st Maize harvest			September 2021	1	
Weeding of crops, Last groundnut harvest		World breastfeeding week	August 2021	2	
Sorghum, maize groundnut planting continues			July 2021	3	
Rain starts, Sorghum, maize groundnut planting		World refugee day (20 June)	June 2021	4	
		SPLA day	May 2021	5	
Land preparation start			April 2021	6	
Land preparation start		Celebration of Yusuf Kuwa	March 2021	7	65-70 cm
			February 2021	8	
		New year celebrations	January 2021	9	

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	Christmas (25 Dec)	World Aid Day	December 2020	10	71-76 cm
Sorghum harvest			November 2019	11	
Groundnut harvest	Comboni day	Global hand-washing day	October 2018	12	
1st Maize harvest	Bible course		September 2020	13	77-80 cm
Weeding of crops, Last groundnut harvest		World breastfeeding week	August 2020	14	
Sorghum, maize groundnut planting continues			July 2020	15	
Rain starts, Sorghum, maize groundnut planting		World refugee day (20 June)	June 2020	16	
		SPLA day	May 2020	17	
Land preparation start			April 2020	18	
Land preparation start		Celebration of Yusuf Kuwa	March 2020	19	
			February 2020	20	81-86 cm
		New year celebrations	January 2020	21	
	Christmas (25 Dec)	World Aid Day	December 2019	22	
Sorghum harvest			November 2019	23	
Groundnut harvest	Comboni day	Global hand-washing day	October 2018	24	
1st Maize harvest	Bible course		September 2019	25	87-90 cm
Weeding of crops, Last groundnut harvest		World breastfeeding week	August 2019	26	
Sorghum, maize groundnut planting continues			July 2019	27	
Rain starts, Sorghum, maize groundnut planting		World refugee day (20 June)	June 2019	28	
		SPLA day	May 2019	29	
Land preparation start			April 2019	30	
Land preparation start		Celebration of Yusuf Kuwa	March 2018	31	
			February 2019	32	
		New year celebrations	January 2019	33	
	Christmas (25 Dec)	World Aid Day	December 2018	34	
Sorghum harvest			November 2018	35	
Groundnut harvest	Comboni day	Global hand-washing day	October 2017	36	
1st Maize harvest	Bible course		September 2018	37	

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Weeding of crops, Last groundnut harvest		World breastfeeding week	August 2018	38	91-99 cm
Sorghum, maize groundnut planting continues			July 2018	39	
Rain starts, Sorghum, maize groundnut planting		World refugee day (20 June)	June 2018	40	
		SPLA day	May 2018	41	
Land preparation start			April 2018	42	
Land preparation start		Celebration of Yusuf Kuwa	March 2017	43	
			February 2018	44	
		New year celebrations	January 2018	45	
	Christmas (25 Dec)	World Aid Day	December 2017	46	
Sorghum harvest			November 2017	47	
Groundnut harvest	Comboni day	Global hand-washing day	October 2017	48	100-110 cm
1st Maize harvest	Bible course		September 2017	49	
Weeding of crops, Last groundnut harvest		World breastfeeding week	August 2017	50	
Sorghum, maize groundnut planting continues		SPLA day	July 2017	51	
Rain starts, Sorghum, maize groundnut planting		World refugee day (20 June)	June 2017	52	
		SPLA day	May 2017	53	
Land preparation start			April 2016	54	
Land preparation start		Celebration of Yusuf Kuwa	March 2017	55	
			February 2017	56	
		New year celebrations	January 2017	57	
Groundnut harvest	Christmas (25 Dec)	World Aid Day	December 2016	58	
Sorghum harvest	Comboni day	Global hand-washing day	November 2016	59	
			October 2016	60	