

STANDARDIZED EXPANDED NUTRITION SURVEY (SENS)

FINAL REPORT

Gorom Refugee Camp

South Sudan

Surveys conducted: 17-20 September 2018



TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS.....	2
ACKNOWLEDGMENTS	3
EXECUTIVE SUMMARY	4
INTRODUCTION	9
BACKGROUND	9
<i>Food Security</i>	10
<i>Health situation</i>	10
<i>Nutrition Situation</i>	11
<i>Wash Situation</i>	12
SURVEY OBJECTIVES	12
METHODOLOGY.....	13
<i>Survey population</i>	13
<i>Sampling procedure for household questionnaire administration</i>	13
<i>Questionnaires</i>	13
<i>Measurement methods</i>	14
<i>Case definitions and calculations</i>	15
<i>Classification of public health problems and targets</i>	17
<i>Training, coordination and supervision</i>	18
<i>Data collection,entry and analysis</i>	18
RESULTS FROM GOROM.....	19
LIMITATIONS	30
DISCUSSION	30
RECOMMENDATIONS	33
APPENDIX 1 - NAMES OF CONTRIBUTORS	35
APPENDIX 2 - SUMMARY OF OVERALL QUALITY OF ANTHROPOMETRIC DATA.....	36
APPENDIX 3 – SURVEY QUESTIONNAIRES.....	37
APPENDIX 4 – EVENTS CALENDER.....	46
APPENDIX 5 – MAP OF GOROM CENTRAL EQUITORIA CAMP	48
APPENDIX 6 - GOROM REFUGEE CAMP LOCATION IN SOUTH SUDAN.....	49

ACRONYMS AND ABBREVIATIONS

ACROSS	Association of Christian Resource Organization Serving South Sudan
ANC	Ante Natal Care
AWD	Acute Watery Diarrhoea
BSFP	Blanket Supplementary Feeding Programme
CDR	Crude Death Rate
CI	Confidence Interval
CMAM	Community Management of Acute Malnutrition
CSB++	Corn-Soya Blend Plus Plus
ENA	Emergency Nutrition Assessment
EPI	Expanded Programme on Immunization
Epi Info	Name of CDC software for epidemiological investigations
GAM	Global Acute Malnutrition
GFR	General Food Ration
GFD	General Food Distribution
HAZ	Height-for-Age z-score
Hb	Haemoglobin
HH	Household
HIS	Health Information System
IYCF	Infant and Young Child Feeding
KCAL	Kilocalorie
MAM	Moderate Acute Malnutrition
MOH	Ministry of Health
MUAC	Middle Upper Arm circumference
NCHS	National Centre for Health Statistics
OTP	Out-patient Therapeutic Programme
ProGres	UNHCR registration database for refugees
SAM	Severe Acute Malnutrition
SC	Stabilization Centre
SD	Standard Deviation
SENS	Standardised Expanded Nutrition Survey
SFP	Supplementary Feeding Programme
SMART	Standardized Monitoring & Assessment of Relief & Transitions
TSFP	Targeted Supplementary Feeding Program
TFP	Therapeutic Feeding Programme
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
WASH	Water, Sanitation, and Hygiene Promotion
WAZ	Weight-for-Age z-score
WFH	Weight-for-height
WHZ	Weight-for-Height z-score
WFP	World Food Programme
WHO	World Health Organization

ACKNOWLEDGMENTS

UNHCR and ACROSS commissioned and coordinated the survey. We gratefully acknowledge the important contributions made by so many thus making this survey possible.

Firstly we would like to acknowledge the UNHCR Representation Office in Juba office for the operational support and the UNHCR Public Health Unit for leading and coordinating the planning, training and field work, the UNHCR Senior Management for general guidance and oversight and the Regional Service Centre (RSC) for technical review of the SENS terms of reference and report.

Secondly we would like to acknowledge the ACROSS team who were involved directly and indirectly in planning and executing the survey.

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

EXECUTIVE SUMMARY

UNHCR and ACROSS carried out the nutrition survey in Gorom refugee camp from 17 to 21 September 2018. The overall aim of the survey was to assess the nutrition situation among the refugee population and to monitor ongoing programme interventions.

The survey was based on the UNHCR Standardized Expanded Nutrition Survey (SENS) guidelines for refugee populations (version 2, 2013). Following four modules of SENS were used (1. anthropometric and health, 2. Anaemia, 3. IYCF, and 4. Food Security). Modules 5. Water Sanitation and Hygiene and 6. Mosquito net coverage were not carried out as access limitations required for module prioritization. The camp has a WASH monitoring system in place and no blanket mosquito net distribution was carried out within the year.

UNHCR population figures from ProGres were used to determine the total population and that of children 6-59 months for survey planning purposes. At the end of August 2018 the Gorom refugee population was 2203 individuals. 393 (17.8%) of these were children under five years.

An exhaustive survey was conducted in relation to children as the total population size of Gorom camp was below 2,500 people rendering sampling unnecessary. All children aged 6-59 months in the camp were surveyed.

A total of six survey teams composed of four members each (one team leader, one haemoglobin measurer, one anthropometric measurer/translator and one anthropometric/haemoglobin measurement assistant) were included in each survey. A standardized training lasting five days, which included a standardization test was provided. Data collection lasted five days. The survey teams were supported by a team of 2 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, which allowed for daily feedback to the survey teams. Data analysis was carried out using ENA for SMART July 9, 2015 version for anthropometric indices and Epi info version 7 for all the other data.

Under the various forms of malnutrition, the survey results showed a prevalence of Global Acute Malnutrition (GAM) of 4.0%. This falls within the acceptable category GAM prevalence <5% according to WHO classification. The prevalence of global stunting among children aged 6-59 months was 17.1% which is within the acceptable WHO range of <20%. Total anaemia prevalence among children aged 6 to 59 months reported 55.2% and among women of reproductive aged between 15-49 years (non-pregnant) was 56.9%. Both categories are classified as of high public health significance as are above 40%. Despite of reducing trends in the prevalence of anaemia compared to the results of SENS 2017 (anaemia was 71.0% and 66.2% among children and women), the high prevalence of anaemia among children aged 6-59 months and non pregnant women aged 15-49 years remains a key concern.

Under infant and young child feeding practices, the proportion of children aged 0-23 months that had timely initiation of breastfeeding within the first hour of delivery was 84.6%. The rate of exclusive breast feeding for the first six months of life was 93.3%. The proportion of children aged 6 to 8 months that were introduced to solid and semi-solid foods on time was 66.7%. 17% of the surveyed children aged 0-23 months were bottle fed and the same proportion also received infant formula. The results above indicate positive gains in terms of breastfeeding practices. Appropriated practices around complementary feeding remain sub optimal indicating the need to continue strengthening the IYCF program to improve feeding practices.

The household diet diversity score (HDDS) reported 4.8 out of 12 food groups. Majority of the refugees (78.5%) in Gorom refugee camp reported to have used negative coping strategies within the last month pre the survey to fill the food assistance gap.

19.7% of children had diarrhoea during the last two weeks prior to the SENS survey, compared to 12.8% reported in SENS 2017.

Maintenance of a comprehensive nutrition program, strengthening of preventative activities including the provision of adequate household food intake, appropriate caring practices with support and promotion of optimal

IYCF practices, health and sanitation at household level are recommended to facilitate optimal nutrition. This to be accomplished through adequate food assistance, support, promotion and protection of infant and young child feeding practices, improved health services, adequate water and sanitation and the expansion of livelihood activities in addition to the treatment of malnourished persons.

The summary results are as below

Table 1: Summary of results

	Gorom (Exhaustive)	Classification of public health significance / target (where applicable)
Children (6-59 months)		
No. of children surveyed	230	
Acute Malnutrition (N=230)		
Global Acute Malnutrition (GAM)	4.0%	Critical if $\geq 15\%$
Moderate Acute Malnutrition (MAM)	4.0%	
Severe Acute Malnutrition (SAM)	0.0%	
Oedema	0%	
Stunting (N=240)		
Total Stunting	17.1%	Critical if $\geq 40\%$
Severe Stunting	2.2%	
Mid Upper Arm Circumference (MUAC) (N=242)		
Prevalence of MUAC $< 125\text{mm}$ or oedema (n=1)	0.4%	
Prevalence of MUAC $< 125\text{ mm}$ and $\geq 115\text{ mm}$, no oedema (n=0)	0.0%	
Prevalence of MUAC $< 115\text{mm}$ and/or oedema (n=1)	0.4%	
Anaemia (6-59 months) (N=230)		
Total Anaemia (Hb $< 11\text{ g/dl}$)	55.2%	High if $\geq 40\%$
Mild (Hb 10-10.9)	29.5%	
Moderate (Hb 7-9.9)	24.3%	
Severe (Hb < 7.0)	1.3%	
Anaemia (6-23 months) (N=88)		
Total Anaemia (Hb $< 11\text{ g/dl}$)	65.9%	
Mild (Hb 10-10.9)	25.0%	
Moderate (Hb 7-9.9)	38.6%	
Severe (Hb < 7.0)	2.2%	
Programme coverage (6-59 months)		
Therapeutic Feeding Program (TFP) (based on MUAC / oedema only) (n=1)	100%	
Targeted Supplementary Feeding Program (TSFP) (based on all admission criteria WHZ and MUAC) (n=9)	44.4%	Target of $\geq 90\%$
Currently receiving CSB++ (6-23 months) (n=88)	48.9%	
Measles vaccination with card (9-59 months) (n=230)	56.1%	
Measles vaccination with card or recall (9-59 months) (n=221)	92.8%	Target of $\geq 95\%$
Vitamin A supplementation coverage with card, within past 6 months (6-59 months) (n=230)	48.7%	
Vitamin A supplementation coverage with card or recall, within past 6 months (6-59 months) (n=230)	83.5%	Target of $\geq 90\%$
Morbidity		
Diarrhoea in past 2 weeks (N=230)	19.7%	

	Gorom (Exhaustive)	Classification of public health significance / target (where applicable)
Infant and young child feeding		
Timely initiation of breastfeeding (n=117)	84.6%	
Exclusive Breastfeeding under 6 months (n=30)	93.3%	
Continued breastfeeding at 1 year(n=22)	95.4%	
Continued breastfeeding at 2 years (n=12)	66.6%	
Introduction of solid, semi-solid or soft foods (n=9)	33.3%	
Consumption of iron-rich or iron-fortified foods (n=88)	67.0%	
Bottle feeding (n=118)	16.9%	
Women 15-49 years (N=135)	% (95% CI)	
Anaemia (non-pregnant) (N=123)		
Total Anaemia (Hb <12.0 g/dl)	56.9 (47.6– 65.8)	High if ≥ 40%
Mild (Hb 11.0-11.9)	30 (22.1 – 39.0)	
Moderate (Hb 8.0-10.9)	23.5 (16.3 – 32.0)	
Severe (Hb<8.0)	3.2 (0.8 - 8.1)	
Programme enrolment pregnant women (N=12)		
Pregnant women currently enrolled in the ANC	91.6 (61.5-99.7)	
Pregnant women currently receiving Iron-folic acid pills	83.3 (51.5-97.9)	
Food security (N=121)	% (95% CI)	
Proportion of HH with a ration card	100 (100 – 100)	
Average HDDS	4.8	
Proportion of households <i>not consuming any</i> vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	7.4 (3.5-13.7)	
Proportion of households consuming either a plant or animal source of vitamin A	86.0 (78.5-91.6)	
Proportion of households consuming organ meat/flesh meat, or fish/seafood	15.7 (9.7-23.4)	
Proportion of households reporting using the following coping strategies over the past month*:		
Borrowed cash, food or other items with or without interest	40.5 (31.6-49.8)	
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)	12.4 (7.1-19.6)	
Requested increased remittances or gifts as compared to normal	8.2 (4.0-14.6)	
Reduced the quantity and/or frequency of meals and snacks	42.9 (34.0-52.2)	
Begged	9.0 (4.6-15.6)	
Engaged in potentially risky or harmful activities	26.4 (18.8-35.2)	
Households reporting using none of the listed coping strategies	21.4 (14.5-29.8)	

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

Interpretation of results:

- The overall nutrition situation is classified as acceptable as the GAM prevalence is 4%¹. In 2017 the GAM prevalence was 5% among children 6-59 months. The reduction from 5.0% to 4.0% in 2018 was not statistically significant ($p>0.05$) but indicates that the acute malnutrition situation is on a downward trend. This was also the case for severe acute malnutrition.
- The 17.1% prevalence of global stunting is acceptable according to WHO standard² but should be interpreted with caution due to the age estimation limitation. 10% of the children 6-59 months had no reliable age documentation. Stunting prevalence remained the same in 2018 compared 2017 as the reduction was not statistically significant ($p>0.05$). In 2017 stunting among children 6-59 months was 17.6%.
- The TFP coverage using MUAC was 100%. The coverage for TSFP was below standard using both the MUAC and WHZ scores criterion. Most of the cases identified with acute malnutrition based on the WHZ scores did not meet the MUAC cut off of <125mm. This indicates the need to strengthen case finding, including innovative ways of identifying cases that are acutely malnourished based on WHZ scores.
- The coverage of measles vaccination and vitamin A supplementation was slightly below the target coverage of $\geq 95\%$ and $\geq 90\%$ respectively indicating the need to continue improving routine and campaign strategies.
- 19.7% of children 6-59 months were reported to have had diarrhoea in the last two weeks prior to the survey indicating a morbidity caseload requiring continued health, water and sanitation services provision. In 2017 SENS around 12.8% of children were reported to have had diarrhoea in the last two weeks of survey.

Total anaemia prevalence in children 6 to 59 months was 55.2% (with 1.3% being severe anaemia). The prevalence among women aged 15-49 years (non-pregnant) was 56.9% (with 3.2% being severe anaemia). The prevalence of anaemia among both categories is critical as it is above the 40% level of public health significance (WHO classification)³. Analysis by age categories indicated that the prevalence of anaemia was higher among children aged 6-23 months (as high as 65.9%, with 2.2% being severe anaemia). The high prevalence of anaemia among children aged 6-59 months and non-pregnant women aged 15-49 years remains a key concern in the camps. It requires to be addressed through multi-sectoral preventive and curative interventions.

- The rate of exclusive breastfeeding of 93.3%, introduction of solid, semi-solid or soft foods 66.7%, and consumption of iron-rich or iron-fortified foods 67.0% improved greatly compared to 2017. The introduction of solid, semi-solid or soft foods and consumption of iron-rich or iron-fortified foods remain sub optimal indicating the need for continued IYCF program strengthening to improve feeding practices.
- Under food security: 100% of the HHs had a ration card; the household diet diversity score was 4.8 out of 12 food groups; most of the households reported using one or more of the negative coping strategies (borrowed cash or food 40.5%, sold assets 12.4%, reduced quantity or frequency of meals 42.9%, begged 9.0%, and engaged in potential risky or harmful activities 26.4%). Only a small proportion of the refugees

¹ WHO 2000 categorization

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

² WHO categorization

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

³ WHO categorization

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

in Gorom (21.4%) reported not using any of the negative coping strategies to fill the food assistance gap (a 70% 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.

Recommendations

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 children, pregnant and lactating women, people living with HIV/AIDS and TB patients on treatment. This to include active case finding and community mobilization. (UNHCR, UNICEF, WFP and ACROSS).
- Ensure all the children aged U5 in the community screened and referred 6-59 months children identified with a MUAC less than 125mm get enrolled into the management of acute malnutrition programs through community outreach follow up at household level (ACROSS)
- Community outreach, triage areas and nutrition centres to systematically screen and refer all persons with anaemia signs and symptoms (palmar pallor).
- Ensure monthly blanket supplementary feeding programme for children 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 ACROSS)
- Conduct two step MUAC and WHZ scores (for children with MUAC at risk) screening during BSFP and at the health facilities' triage areas to ensure both high MUAC and WHZ score coverage (ACROSS)
- Continue strengthening the capacity of the nutrition facility in terms of provision of adequate staff and training to ensure quality provision of both curative and preventative components of nutrition (UNHCR, WFP, UNICEF and ACROSS)
- Expand and strengthen preventative nutrition components including Infant and Young Child Feeding (IYCF) and community outreach education aspects to stop the various forms of malnutrition from occurring in the first place. (UNHCR, UNICEF and ACROSS)
- Continue implementing the micronutrient reduction strategy to curb the high anaemia prevalence.
- Conduct follow up quarterly mass MUAC screening to monitor the evolution of the nutrition situation at the community level. (ACROSS)
- 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 ACROSS).
- Undertake a follow up annual joint nutrition survey to analyze trends and facilitate program impact evaluation in 2018. (UNHCR, ACROSS, WFP and UNICEF).

Food security related

- Provision of a General Food Ration (GFR) providing the recommended minimum dietary requirements (2100kcal/person/day) and milling assistance (UNHCR, ACROSS and WFP).
- Continue the routine joint monthly food basket monitoring on site and ensure the inclusion of the refugee camp in the post distribution monitoring at the household level to ensure that refugees receive their entitlement (UNHCR, ACROSS and WFP).
- Expand the coverage of sustainable food security and livelihood solutions to allow diet diversity and to complement the general food distribution. This to include the promotion of all year-round production of micronutrient-rich foods or crops in home gardens, fruit trees and small animal husbandry. (UNHCR, WFP and ACROSS).

Health related

Maintain and strengthen the provision of comprehensive primary health programme for refugee and host populations in Central Equatoria. (UNHCR and ACROSS)

- Ensure all anaemia referral cases are tested and provided with appropriate treatment if indicated
- UNICEF, ACROSS and UNHCR to ensure the EPI program and Vitamin A supplementation campaigns and routine programs are strengthened to increase coverage to acceptable standards.

WASH related

- Ensure the provision of safe drinking-water, use of improved sanitation and hygiene promotion (UNHCR and ACROSS)

INTRODUCTION

This report presents the results of nutrition survey conducted in Gorom refugee camp from 17 to 20 September 2018.

This report is divided into the following sections:

- *Background:* This section sets out background information related to the health, nutrition and food security and WASH situation for Gorom camp;
- *Methodology;*
- *Results:* presents the findings;
- *Discussion; and*
- *Recommendations.*

BACKGROUND

Gorom Refugee camp is located 24 km from Juba city. It has an estimated refugee population of 2203⁴ who are mainly of Ethiopian nationality. The Anyuak refugees from Ethiopia have been in Gorom settlement since 2011.

A number of humanitarian organisations work in Gorom refugee camp to ensure delivery of essential services and supplies to the refugees. Key partners in terms of the provision of the health, nutrition and food assistance services include UNHCR, WFP, UNICEF and ACROSS. 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. UNICEF in collaboration with UNHCR provides support to the nutrition programme. ACROSS implements the health, nutrition and food assistance programme.

Results from a rapid nutrition survey carried out at the end of the 2016 showed the prevalence of global acute malnutrition (GAM) prevalence of 6.6%. This indicated a poor nutrition situation based on the WHO classification (acute malnutrition between 5-9% is considered poor). Recommendations from the survey highlighted the need to set up a comprehensive nutrition program to prevent malnutrition and rehabilitate all identified malnourished cases. In 2017 the GAM prevalence was 5% coupled with critical anaemia levels. The need to build on the nutrition efforts from 2016 was highlighted. A follow up survey was also noted as necessary to evaluate the impact of initiated and on-going interventions to ensure provision of optimal health and nutritional care for the refugee population.

⁴ UNHCR ProGres August 2018 population

Food security

Refugees in the Gorom camp continue to mainly depend on the WFP provided (GFR) with limited access to additional sources of food/income. The 30% reduced General Food Distribution (GFD) provided to all registered refugees remained the same from January to September 2018. It consisted of 350g sorghum, 33g of beans, 20ml of vegetable oil and 3.3g salt. This cumulates to approximately 406 grams/person/day providing 1475 kilocalories/person/day. This provided 70.2% of the recommended food ration of 2100 kcal/person/day). There was no food distribution in July 2018. This was attributed to the refugees rejecting the kind of sorghum that was provided. This was on the basis of it's not meeting their preference and alleged the particular variety had caused digestive problems in the previous month.

From the NutVal analysis, the reduced ration has an inadequate micronutrient profile. The ration does not provide a fortified flour option like CSB+. It provided only 54% of the daily iron requirements. Sorghum, which contributed the bulk of the iron (non-heme iron form) in the food is high in phytates, anti-nutrients that inhibit iron absorption in the body. Vitamin C, a nutrient that plays a key role in the facilitating iron absorption was also barely available from the GFD ration. The ration provided only 3% of vitamin C. In addition, vitamin C is very easily destroyed when cooking at high temperatures. Other key micro nutrients including Vitamin A, folate and Vitamin B12 were also insufficient as the ration provided 33%, 60% and 0% of these respectively. Ways to fill the nutrient gap should thus be explored to avert the consequences.

See breakdown below showing the monthly ration provision

Table 2: General food ration provision by month – Gorom refugee camp, Central Equatoria, 2017

Ration provided in g/p/d	Recommended	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<i>Cereal</i>	500g	350	350	350	350	350	350	0	350	350
<i>Pulses</i>	50g	33.3	33.3	33.3	33.3	33.3	33.3	0	33.3	33.3
<i>Vegetable oil</i>	30g	20	20	20	20	20	20	0	20	20
<i>Salt</i>	5g	3.3	3.3	3.3	3.3	0	0	0	3.3	3.3
<i>CSB+</i>	50g	0		0	0	0	0	0	0	0
<i>Kcal</i>	2100	1475	1475	1475	1475	0	0	1475	1475	1475
	% of recommended met	70.2	70.2	70.2	70.2	70.2	0	70.2	70.2	70.2

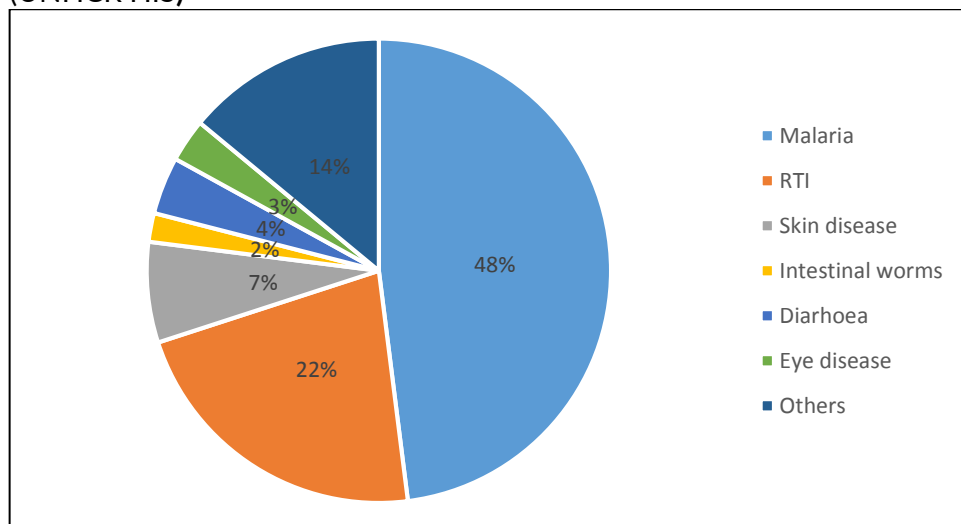
Health situation

Gorom refugee camp has one Primary Health Care Centre.

The overall crude mortality rate for Gorom camp from the UNHCR health information system (January to September 2018) was 0.1/10000/day while under-five mortality rate was 0.3/10000/day, which was below the emergency threshold of <1 and <2 respectively. This indicates a stable population.

The main causes of illness in 2018 were malaria, respiratory tract infections, skin diseases, eye diseases, intestinal worms and diarrhoea.

Figure 1: Under-five proportional morbidity from January-September 2018; Gorom, Central Equatoria camps (UNHCR HIS)



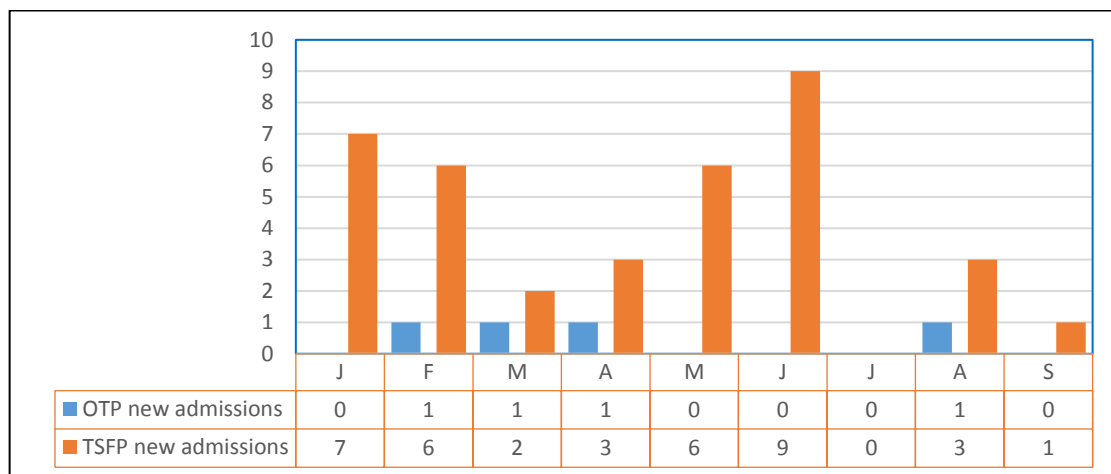
Nutrition Situation

Nutrition services and activities in the camp at the time of the survey included:

- Targeted Supplementary Feeding Programmes (TSFP) for moderately acute malnourished 6-59 months using PlumpySup.
- Outpatient therapeutic feeding programmes for severely acute malnourished children.
- Blanket Supplementary Feeding Program (BSFP) using CSB++ targeting children 6 to 23 months and Pregnant and Lactating Women (PLW). Both children and PLW receive 200g/person/day of CSB++.
- Infant and young child feeding support and promotion programme.
- MUAC screening of children 6-59 months at the triage area of the PHCC.
- Community Outreach MUAC screening.

From January to September 2018 there were 41 children 6-59 admissions of which 4 were admitted to the Outpatient Therapeutic Program (OTP) and 37 in the Targeted Supplementary Feeding Program (TSFP). At the end of September 2018 there were 10 children 6-59 months enrolled in both the OTP and TSFP program. PLW admitted to the TSFP program from January to September 2018 were 29. There was an additional 58 acute malnourished children and 27 PLW from the host community. The number of admissions in 2018 reduced compared to 2017 by 21%. This could be due to improvement in the nutrition services (TSFP program using proper supplementary feeding food products and BSFP in place). There was no pipeline break for ready to use therapeutic and supplementary foods. BSFP however, faced some pipeline breaks for 3/9 months between January and September 2018.

Figure 2: Admissions to the selective feeding program (OTP & TSFP) January- September 2018 (Health Information System)



WASH situation

Access to water in Gorom in 2018 was maintained through 9 boreholes (1 motorized, 2 solarized boreholes and 6 India Mark II Hand pumps). The camp has a 40,000 liters storage tank capacity. Routine water quality management (testing and chlorination of boreholes) and maintenance was carried out regularly during the year. Gorom has 20 trained pump mechanics and 14 water user management committees that facilitate the maintenance at the community level. An average of 19.2 litres per person per day was available in 2018 which meets the minimum SPHERE standard but is lower than the UNHCR standard of ≥ 20 liters per person per day. The population in Gorom will continue to require the water to be maintained within the minimum standards.

As of end of September 2018, Gorom had 64 functional latrines (57 household pit latrines and 7 public communal latrines serving a population of 2203 individuals (796 households). There are 4 hygiene promoters. The overall average number of persons/hygiene promoter ratio was 550 in Gorom. Soap is distributed on a monthly basis at 250g per person per month. This does not meet the 500g per person per month standard.

SURVEY OBJECTIVES

Specific primary objectives of the survey

- To measure the prevalence of acute malnutrition among children 6-59 months.
- To measure the prevalence of stunting among children 6-59 months.
- To determine the coverage of measles vaccination among children 9-59 months.
- To determine the coverage of vitamin A supplementation in the last six months among children 6-59 months.
- To determine the two-week period prevalence of diarrhoea among children 6-59 months.
- To measure the prevalence of anaemia among children 6-59 months and women of reproductive aged 15-49 years (non-pregnant).
- To investigate IYCF practices among children 0-23 months.
- To determine the coverage of ration cards and the duration the GFD ration lasts for recipient households.
- To determine the extent to which negative coping strategies are used by households.
- To assess household dietary diversity.
- To establish workable recommendations on actions to be taken to address the situation.

Secondary objectives:

- To determine the coverage of of targeted supplementary and therapeutic feeding programmes for children 6-59 months.

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

METHODOLOGY

Survey population

The refugee population in Gorom at the end of August 2018 was 2203 individuals (796 households). 393 (17.8%) of these were children under five years.⁵

Sampling procedure: house hold questionnaire administration

An exhaustive survey was conducted as the total refugee population size of Gorom camp was below 2,500 people rendering sampling unnecessary. All children 6-59 months in the camp were surveyed. All the households were included for the anthropometry, anaemia and IYCF modules. For the women questionnaire and the food security modules, half of the households were sampled.

See **table 3** below with the details.

Household target for Anthropometry and Health module (ENA for SMART)	796 (All)
Household targeted for children Anaemia module (UNHCR SENS guidelines)	796 (All)
Households target for IYCF module (UNHCR SENS Guidelines)	796 (All)
Household target for women Anaemia module (UNHCR SENS guidelines)	398 (half)
Household target for Food Security module (UNHCR SENS Guidelines)	398 (half)

The surveys were undertaken by six teams composed of four members each (one team leader, one haemoglobin measurer, one anthropometric measurer/translator and one anthropometric/haemoglobin measurement assistant). Each team was allocated the villages to survey. Village locations and boundaries was discussed during the training to ensure all teams knew where to go.

If an individual or an entire household was absent the teams were instructed to return to the household or revisit the absent individual on the same or the next survey day. If they were unsuccessful after this, the individual or the household was recorded as absent and they were not replaced with another individual.

If the individual or an entire household refused to participate then it was considered a refusal and the individual or the household were not replaced with another.

If a selected child was living with a disability or a physical deformity preventing certain anthropometric measurements the child was still included in the assessment of the other indicators

If it was determined that a selected household did not have any eligible children, the other relevant questionnaires were administered to the household (anaemia measurement for women and food security)

Questionnaires

The paper version of the questionnaires is attached under **Appendix 3**

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

⁵ UNHCR ProGres August 2018

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

Children 6-59 months- This included questions and measurements of children aged 6-59 months. Information was collected on anthropometric status, oedema, and enrolment in selective feeding programmes, immunisation (measles), vitamin A supplementation and morbidity from diarrhoea in past two weeks before the survey and haemoglobin 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 haemoglobin 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 millimetre using a wooden height board (Shorr Productions). Height was used to decide on whether a child should be measured lying down (length) or standing up (height). Children less than 87cm were measured lying down, while those greater than or equal to 87cm were measured standing up.

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

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

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

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

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

Haemoglobin 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 decilitre 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.

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

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

Infant and young child feeding practices in children 0-23 months: infant and young child feeding practices was assessed based on UNHCR Standardized Expanded Nutrition Survey (SENS) Guidelines for Refugee Populations version 2 (2013).

Referrals: Children aged 6-59 months were referred to health centre/post for treatment when MUAC was < 12.5 cm, WHZ < -2 or oedema was present.

Case definitions and calculations

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

Table 4: Definitions of acute malnutrition using weight-for-height and/or oedema in children 6–59 months

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

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

Table 5: Definitions of stunting using height-for-age in children 6–59 months

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

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

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

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

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

Table 7: MUAC malnutrition cut-offs in children 6-59 months

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

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

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

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

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

Timely initiation of breastfeeding in children aged 0-23 months:

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

Exclusive breastfeeding under 6 months:

$$\frac{\text{Proportion of infants 0–5 months of age who are fed exclusively with breast milk: (including expressed breast milk or from a wet nurse, ORS, drops or syrups (vitamins, breastfeeding minerals, medicines))}}{\text{Infants 0–5 months of age who received only breast milk during the previous day}}$$

Continued breastfeeding at 1 year:

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

Introduction of solid, semi-solid or soft foods:

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

Children ever breastfed:

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

Children born in the last 24 months who were ever breastfed

Children born in the last 24 months

Continued breastfeeding at 2 years:

Proportion of children 20–23 months of age who are fed breast milk

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

Children 20–23 months of age

Consumption of iron rich or iron fortified foods in children aged 6-23 months

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

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

Children 6–23 months of age

Bottle feeding:

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

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

Children 0–23 months of age

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

Table 8: Definition of anaemia (WHO 2000)

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

Classification of public health problems and targets

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

Table 9: Classification of public health significance for children under 5 years of age ⁶

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

⁶ WHO (1995) Physical Status: The Use and Interpretation of Anthropometry and WHO (2000) The Management of Nutrition in Major Emergencies

Selective feeding programmes:

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

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

	Recovery	Case fatality	Defaulter rate	Coverage		
				Rural areas	Urban areas	Camps
SFP	>75%	<3%	<15%	>50%	>70%	>90%
TFP	>75%	<10%	<15%	>50%	>70%	>90%

* Also meet SPHERE standards for performance

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

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

Anaemia data: UNHCR Global Strategy for Public Health(2017-2018) states that the targets for the prevalence of anaemia in children 6-59 months of age and in women 15-49 years of age should be $<20\%$. The severity of the public health situation should be classified according to WHO criteria as shown in the table below.

Table 11: Classification of public health significance (WHO 2000)

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

Training, coordination and supervision

The survey was coordinated by Terry Theuri (UNHCR Nutrition and Food security officer) in collaboration with the ACROSS health and nutrition team including Dr Robert Napoleon, Diana Wesley Anyango and Michael Olweny.

The surveys were undertaken by six teams composed of four members each (one team leader, one haemoglobin measurer, one anthropometric measurer/translator and one anthropometric/haemoglobin measurement assistant). The team leaders/enumerators were qualified staff, while the anthropometric measurers were home health promoters.

The teams were supervised on a daily basis.

A five day training was carried out from 10-14 September 2018. The training focused on: the purpose and 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. A practical session on anthropometric measurements was also carried out for practice as well as a standardisation test. Post the training the data collection tools were then reviewed based on the feedback from the team.

Data collection, entry and analysis

Data collection lasted for 5 days from 17-20 September 2018. Each survey team explained the purpose of the survey and issues of confidentiality and obtained verbal consent before proceeding with the survey in the selected households. The informed consent form is shown in **Appendix 3**.

The UNHCR Nutrition and Food Security Officer (survey coordinator) and Associate Health Information System Officer supported the data collection supervision during the first two days of data collection. Post this the ACROSS nutrition officer continued the support until the end of data collection. Data was collected using the ODK for Android platform using six Samsung phones. An addition six phones were also provided as back up. Each team thus had two phones.

At the end of each day's data collection, the survey coordinator checked each and every questionnaire for completeness and then finalised the questionnaires on the phones. Once the questionnaires were finalised, they were sent to the server for synchronisation and exporting. After exporting the data, the anthropometric data plausibility check was conducted to identify areas and teams that need more supervision or to be strengthened. Practical feedback to ensure accuracy and thoroughness in gaps identified was provided each morning. The final SMART plausibility report with a summary of the key quality criteria is shown in **Appendix 2**.

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

Anthropometry indices were analysed using the ENA for SMART July 9, 2015 version. Epi Info version 7 was used to analyse all the other data.

RESULTS FROM GOROM

CHILDREN 6-59 MONTHS INDICATORS, GOROM CAMP, CENTRAL EQUITORIA (SEPTEMBER 2018)

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

Table 12: Actual number of children captured during the survey in Gorom versus the UNHCR ProGres population target, (September 2018)

Target group	Subjects measured/interviewed during the survey
All children 6-59 months in Gorom	230

All children aged 6-59 months that were found in Gorom refugee camps during the survey period were surveyed.

Anthropometric results (based on WHO Growth Standards 2006)

The coverage of age documentation was 90% (children having an exact birth date).

Table 13: Distribution of age and sex of sample-Gorom camp, Central Equatoria (September 2018)

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy: girl
6-17	35	50.7	34	49.3	69	30.0	1.0
18-29	22	46.8	25	53.2	47	20.4	0.9
30-41	27	50.0	27	50.0	54	23.5	1.0
42-53	22	57.9	16	42.1	38	16.5	1.4
54-59	10	45.5	12	54.5	22	9.6	0.8
Total	116	50.4	114	49.6	230	100.0	1.0

The overall sex ratio was 1.0 (sex ratio should be between 0.8-1.2) confirming that both sexes were equally distributed.

Table 14: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex- Gorom camp, Central Equatoria (September 2018)

	All n = 227	Boys n = 114	Girls n = 113
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(9) 4.0 %	(3) 2.6 %	(6) 5.3 %
Prevalence of moderate malnutrition (<-2 z-score and ≥ -3 z-score, no oedema)	(9) 4.0 %	(3) 2.6 %	(6) 5.3 %
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(0) 0.0 %	(0) 0.0 %	(0) 0.0 %

The prevalence of oedema is 0.0%. Data excludes SMART flags

Figure 3: Trends in the prevalence of global and severe acute malnutrition based on WHO growth standards in children aged 6-59 months from 2016-2018 - Gorom refugee camp, south Sudan.

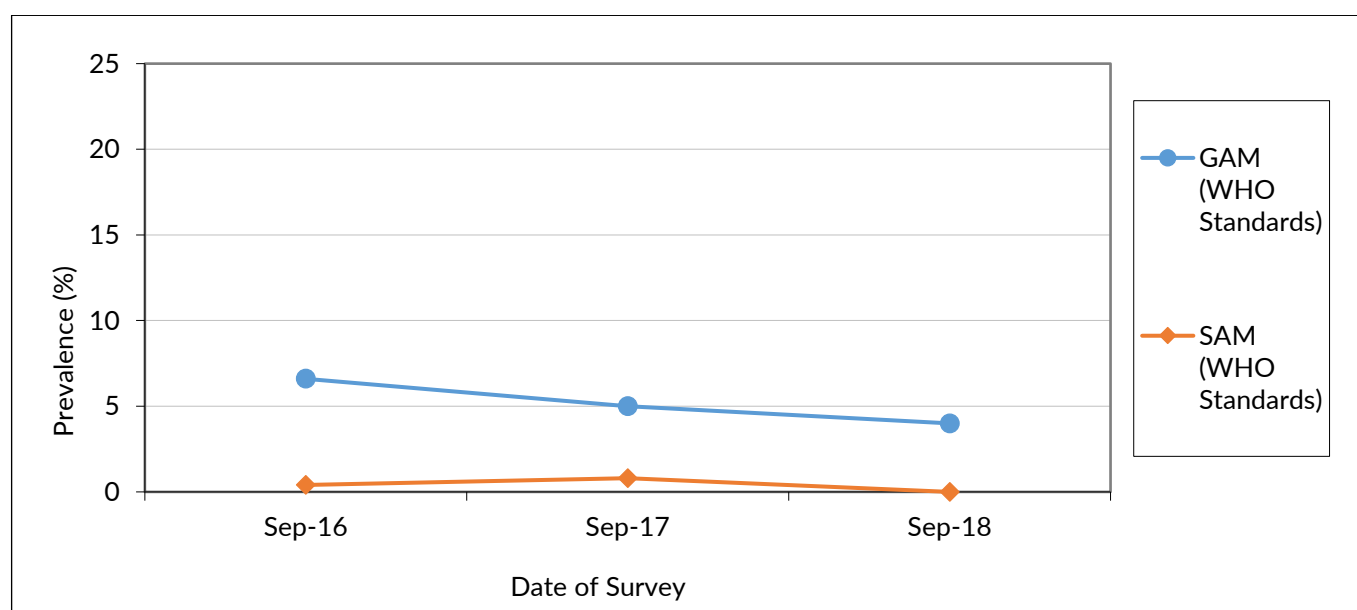


Table 15: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema- Gorom camp, Central Equatoria (September 2018)

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (≥ -3 and <-2 z-score)		Normal (≥ -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	68	0	0.0	3	4.4	65	95.6	0	0.0
18-29	47	0	0.0	3	6.4	44	93.6	0	0.0
30-41	53	0	0.0	1	1.9	52	98.1	0	0.0
42-53	37	0	0.0	2	5.4	35	94.6	0	0.0
54-59	22	0	0.0	0	0.0	22	100.0	0	0.0
Total	227	0	0.0	9	4.0	218	96.0	0	0.0

Figure 4: Trend in the prevalence of wasting by age in children 6-59 months- Gorom camp, Central Equatoria (September 2018)

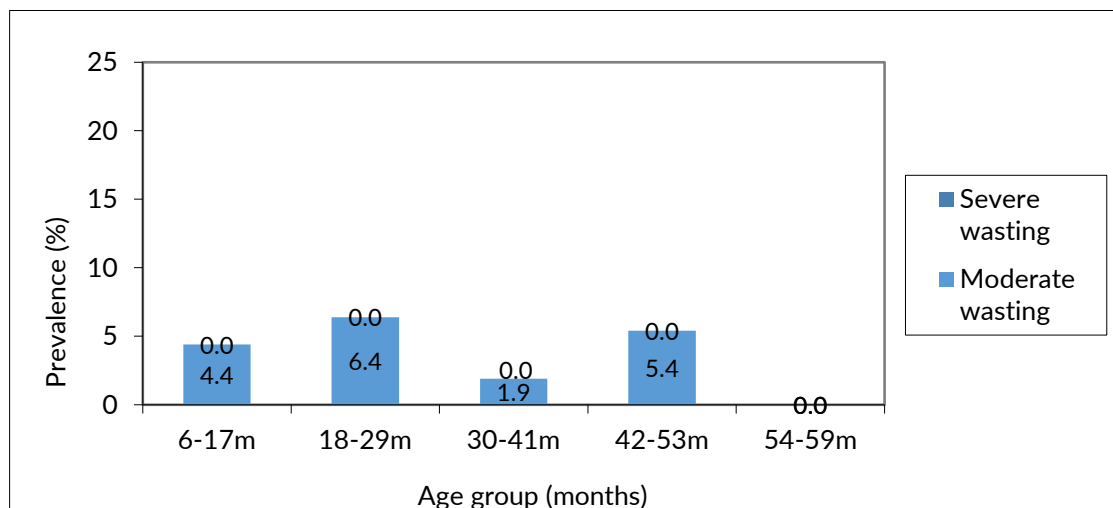


Table 16: Distribution of severe acute malnutrition and oedema based on weight-for-height z-scores- Gorom camp, Central Equatoria (September 2018)

	<-3 z-score*	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 1 (0.4%)	Not severely malnourished No. 227 (99.6 %)

*Includes Flags

The figure below shows that the weight-for-height z-score distribution is shifted to the left, illustrating a poorer status than the international WHO Standard population of children aged 6-59 months.

Figure 5: Distribution of weight-for-height z-scores (based on WHO Growth Standards; the reference population is shown in green) of survey population compared to reference population-Gorom camp, Central Equatoria (September 2018)

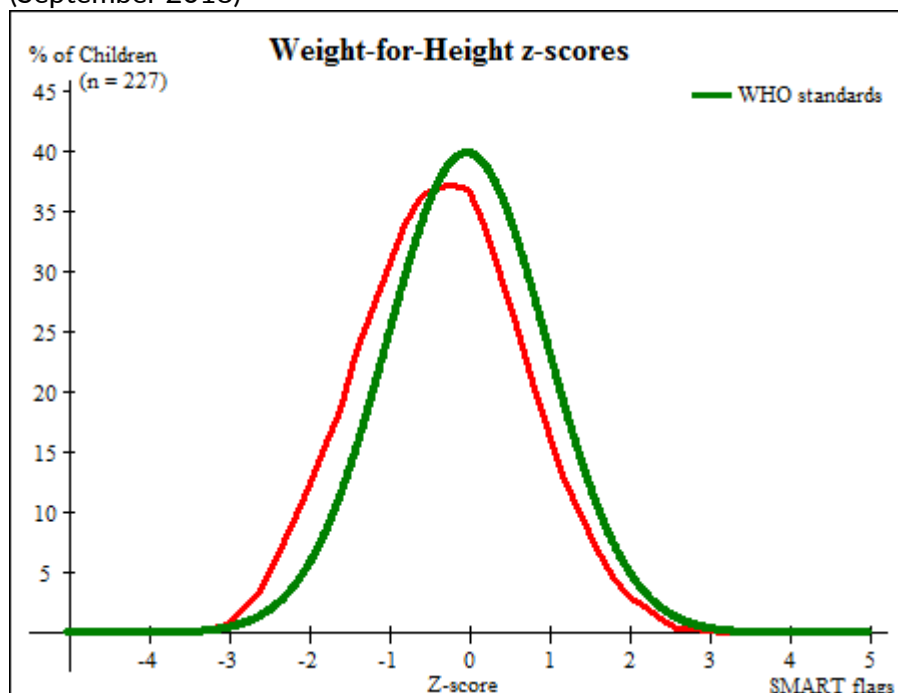


Table 17: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex -Gorom camp, Central Equatoria (September 2018)

	All n = 230	Boys n = 116	Girls n = 114
Prevalence of MUAC (< 125 mm and/or oedema)	(1) 0.4 %	(1) 0.9 %	(0) 0.0 %
Prevalence of MUAC (< 125 mm and >= 115 mm, no oedema)	(0) 0.0 %	(0) 0.0 %	(0) 0.0 %
Prevalence of MUAC (< 115 mm and/or oedema)	(1) 0.4 %	(1) 0.9 %	(0) 0.0 %

Table 18: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema sex -Gorom camp, Central Equatoria (September 2018)

		MUAC (< 115 mm)		MUAC (>= 115 mm and < 125 mm)		MUAC (> = 125 mm)		Oedema	
Age (mo)	Total no.	No.	%	No.	%	No.	%	No.	%
6-17	69	0	0.0	0	0.0	69	100.0	0	0.0
18-29	47	1	2.1	0	0.0	46	97.9	0	0.0
30-41	54	0	0.0	0	0.0	54	100.0	0	0.0
42-53	38	0	0.0	0	0.0	38	100.0	0	0.0
54-59	22	0	0.0	0	0.0	22	100.0	0	0.0
Total	230	1	0.4	0	0.0	229	99.6	0	0.0

Table 19: Prevalence of underweight based on weight-for-age z-scores by sex- Gorom camp, Central Equatoria (September 2018)

	All n = 229	Boys n = 115	Girls n = 114
Prevalence of underweight (< -2 z-score)	(22) 9.6 %	(16) 13.9 %	(6) 5.3 %
Prevalence of moderate underweight (< -2 z-score and >= -3 z-score)	(20) 8.7 %	(15) 13.0 %	(5) 4.4 %
Prevalence of severe underweight (< -3 z-score)	(2) 0.9 %	(1) 0.9 %	(1) 0.9 %

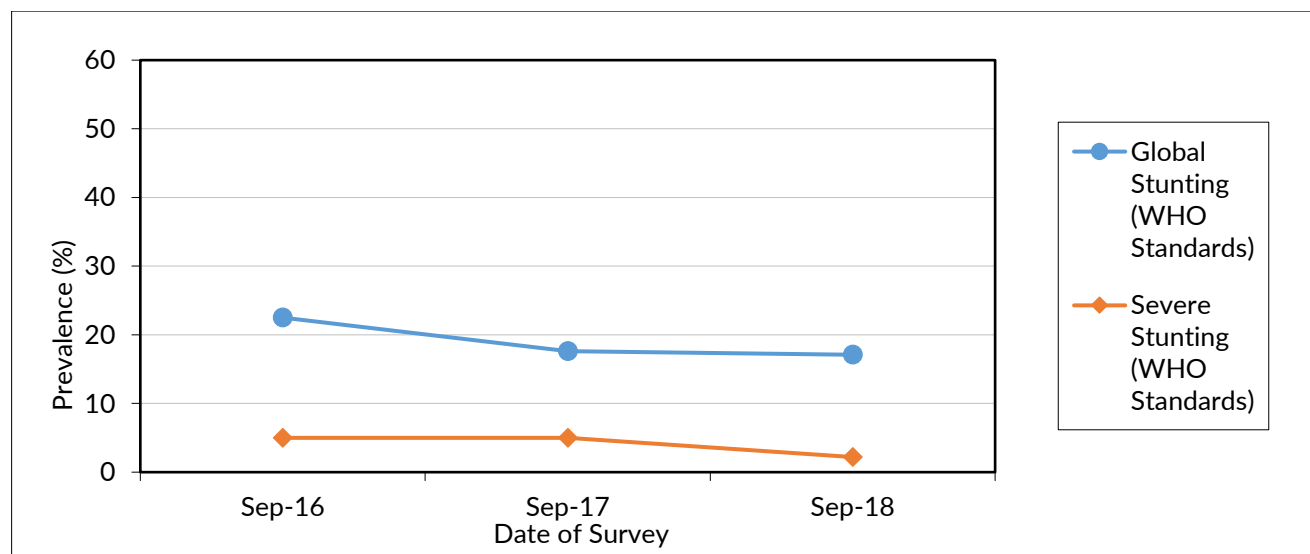
Underweight prevalence was significantly higher for the boys compared to the girls (p<0.05)

Table 20: Prevalence of stunting based on height-for-age z-scores and by sex- Gorom camp, Central Equatoria (September 2018)

	All n = 228	Boys n = 115	Girls n = 113
Prevalence of stunting (< -2 z-score)	(39) 17.1 %	(28) 24.3 %	(11) 9.7 %
Prevalence of moderate stunting (< -2 z-score and >= -3 z-score)	(34) 14.9 %	(23) 20.0%	(11) 9.7 %
Prevalence of severe stunting (< -3 z-score)	(5) 2.2 %	(5) 4.3 %	(0) 0.0 %

The stunting prevalence was significantly higher among the boys compared to girls (p<0.05)

Figure 6: Trends in the prevalence of global and severe stunting based on WHO growth standards in children 6-59 months from 2016-2018, - Gorom refugee camp, south Sudan



Stunting prevalence in Ajoung Thok largely remained the same in 2018 and 2017. In 2017 a downward trend was realised.

Table 21: Prevalence of stunting by age based on height-for-age z-scores- Gorom camp, Central Equatoria (September 2018)

		Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (>= -2 z score)	
Age (mo)	Total no.	No.	%	No.	%	No.	%
6-17	68	1	1.5	7	10.3	60	88.2
18-29	47	1	2.1	10	21.3	36	76.6
30-41	53	2	3.8	7	13.2	44	83.0
42-53	38	1	2.6	5	13.2	32	84.2
54-59	22	0	0.0	5	22.7	17	77.3
Total	228	5	2.2	34	14.9	189	82.9

Figure 7: Trends in the prevalence of stunting by age in children 6-59 months- Gorom camp, Central Equatoria (September 2018)

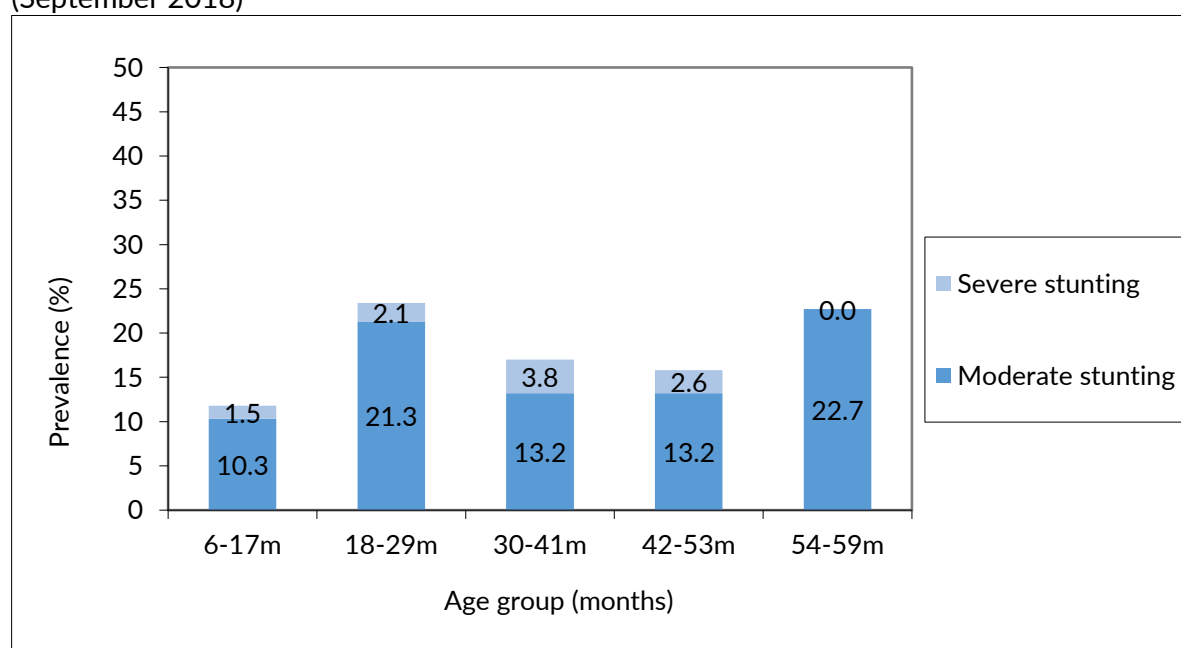


Figure 8: Distribution of height-for-age z-scores (based on WHO growth standards; the reference population is shown in green and the surveyed population is shown in red) of survey population compared to reference population Gorom camp, Central Equatoria (September 2018)

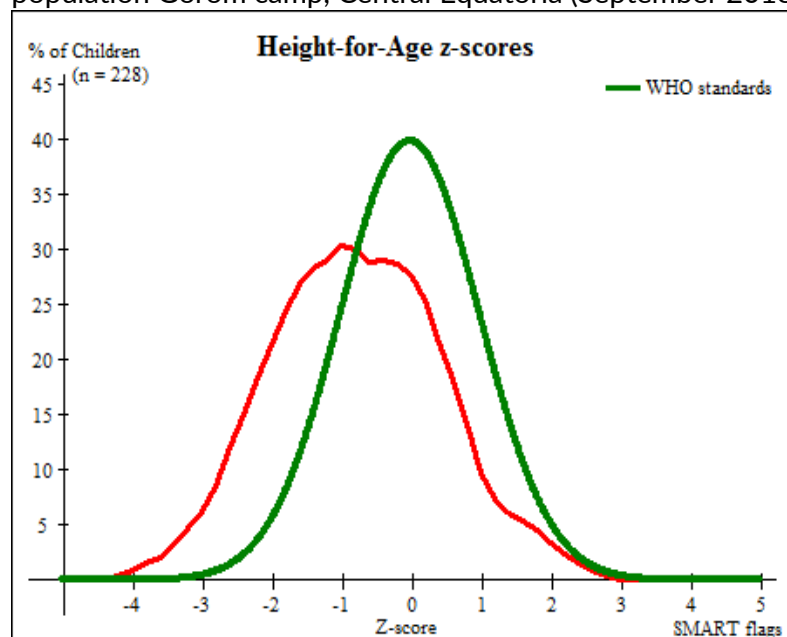


Table 22: Mean z-scores and excluded subjects - Gorom camp, Central Equatoria (September 2018)

Indicator	n	Mean z-scores \pm SD	z-scores available*	not	z-scores out of range
Weight-for-Height	227	-0.34 \pm 0.99	1.00		2
Weight-for-Age	229	-0.66 \pm 1.00	1.00		0
Height-for-Age	228	-0.78 \pm 1.18	1.00		2

Feeding programme enrolment coverage

The TFP enrolment coverage using MUAC met the recommended standard of >90%. The coverage for TSFP was below standard using the WHZ criterion.

Selective feeding programme

Table 23: Nutrition treatment programme coverage based on all admission criteria (weight-for-height, MUAC, oedema) – Gorom camp, Central Equatoria (September 2018)

	Number/total	%
Proportion of children aged 6-59 months with severe acute malnutrition currently enrolled in therapeutic feeding programme*	1/1	100%
Proportion of children aged 6-59 months with moderate acute malnutrition currently enrolled in supplementary feeding programme*	4/9	44.4%

*WHZ flags excluded from analysis

Table 24: Nutrition treatment programme coverage based on MUAC and oedema only- Gorom camp, Central Equatoria (September 2018)

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

Vaccination and supplementation programmes

Measles vaccination coverage

Table 25: Measles vaccination coverage for children aged 9-59 months (n= 221) - Gorom camp, Central Equatoria (September 2018)

	Measles (with card) n=124	Measles (with card <u>or</u> confirmation from mother) n=205
YES	56.1 %	92.8 %

The measles vaccination coverage was slightly below the recommended standard target of $\geq 95\%$. The measles coverage proportion decreased in 2018 compared to that in 2017 (98.2%), ($p < 0.05$).

Vitamin A supplementation coverage

Table 26: Vitamin A supplementation for children aged 6-59 months within past 6 months (n=230) - Gorom camp, Central Equatoria (September 2018)

	Vitamin A capsule (with card) n=112	Vitamin A capsule (with card <u>or</u> confirmation from mother) n=192
YES	48.7 %	83.5 %

The vitamin A coverage was below the recommended standard target of $\geq 90\%$. The vitamin A coverage proportion decreased in 2018 compared to that in 2017 (90.5%), ($p < 0.05$).

Diarrhoea

19.7% of the children 6-59 months reported to have had diarrhoea two weeks prior to the survey.

Table 27 : Period prevalence of Diarrhoea

	Number/total	%
Children that had diarrhoea in the last two weeks (6-59 months)	45/228	19.7%

Anaemia Results Children 6 – 59 months

The total anaemia prevalence among children 6 to 59 months is 55.2% indicating a problem of high public health significance. Children 6-23 tend to be more affected. This reduced significantly compared to that in 2017 (71%), ($p < 0.05$).

Table 28: 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 = 230	6-23 months n=88	24-59 months n=142
Total Anaemia (Hb<11.0 g/dL)	(127) 55.2%	(58) 65.9%	(69) 48.5%
Mild Anaemia (Hb 10.0-10.9 g/dL)	(68) 29.5%	(22) 25.0%	(46) 32.3%
Moderate Anaemia (7.0-9.9 g/dL)	(56) 24.3%	(34) 38.6%	(22) 15.4%
Severe Anaemia (<7.0 g/dL)	(3) 1.3%	(2) 2.2%	(1) 0.7%
Mean Hb, g/dL (95% CI) [range]	10.6 g/dL	10.3 g/dL	10.9 g/dL

Table 29: Prevalence of Moderate and Severe Anaemia in Children 6-59 Months of Age and By Age Group

	6-59 months n = 230	6-23 months n=88	24-59 months n=142
Moderate and Severe Anaemia (Hb<10.0 g/dL)	(59) 25.6 %	(36) 40.9%	(23) 16.1 %

IYCF: Children 0-23 months**Table 30: Prevalence of Infant and Young Child Feeding Practices Indicators**

Indicator	Age range	Number/total	Prevalence (%)
Timely initiation of breastfeeding	0-23 months	99/117	84.6
Exclusive breastfeeding under 6 months	0-5 months	28/30	93.3
Continued breastfeeding at 1 year	12-15 months	21/22	95.4
Continued breastfeeding at 2 years	20-23 months	8/12	66.6
Introduction of solid, semi-solid or soft foods	6-8 months	3/9	33.3
Consumption of iron-rich or iron-fortified foods	6-23 months	59/88	67.0
Bottle feeding	0-23 months	20/118	16.9

Prevalence of intake**Infant formula****Table 31: Infant Formula Intake 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)	9/118	7.6

Fortified blended foods**Table 32: CSB++ Intake in Children Aged 6-23 Months**

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB++	43/88	48.8

WOMEN 15-49 YEAR INDICATORS

Anaemia Women 15-49 years

Table 33: Women Physiological Status and Age

Physiological status	Number/total	% of sample
Non-pregnant	123	91.2
Pregnant	12	8.8
Mean age (range)	28 (15-49)	

Table 34: Prevalence of Anaemia and Haemoglobin Concentration in Non-Pregnant Women of Reproductive Age (15-49 Years)

Anaemia - Women of reproductive age 15-49 years (non-pregnant)	All n = 123
Total Anaemia (<12.0 g/dL)	(70) 56.9% (47.6 – 65.8 95% CI)
Mild Anaemia (11.0-11.9 g/dL)	(37) 30.0% (22.1 – 39.0 95% CI)
Moderate Anaemia (8.0-10.9 g/dL)	(29) 23.5% (16.3 – 32.0 95% CI)
Severe Anaemia (<8.0 g/dL)	(4) 3.2 (0.8 – 8.1 95% CI)
Mean Hb, g/dL (SD) [range]	11.6 g/dL 1.5 [6.1-15.2]

Table 35: ANC Enrolment and Iron-Folic Acid Pills Coverage among Pregnant Women (15-49 Years)

	Number /total	% (95% CI)
Currently enrolled in ANC programme	11/12	91.6 (61.5-99.7)
Currently receiving iron-folic acid pills	10/12	83.3 (51.5-97.9)

FOOD SECURITY INDICATORS

Access to food assistance

Table 36: Ration card coverage

	Number/total	% (95% CI)
Proportion of households with a ration card	121/121	100%

All the households surveyed had a ration card

Negative household coping strategies

The refugees in Gorom refugee camp, like the rest of camps in South Sudan, receive a reduced food ration at a 70% scale.

Table 37: Coping strategies used by the surveyed population over the past month

	Number/total	% (95% CI)
Proportion of households reporting using the following coping strategies over the past month*:		
Borrowed cash, food or other items with or without interest	49/121	40.5 (31.6-49.8)
Sold any assets that would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)	15/121	12.4 (7.1-19.6)
Requested increased remittances or gifts as compared to normal	10/121	8.2 (4.0-14.6)
Reduced the quantity and/or frequency of meals and snacks	52/121	42.9 (34.0-52.2)
Begged	11/121	9.0 (4.6-15.6)
Engaged in potentially risky or harmful activities	32/121	26.4 (18.8-35.2)
Proportion of households reporting using none of the coping strategies over the past month	26/121	21.4 (14.5-29.8)

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

Only 21.4% of households were not under significant stress to meet their needs as indicated by the proportion of household using none of the negative coping strategies over the past month prior to the survey.

Household dietary diversity

The last general food distribution ended 23 days prior to the start of the survey data collection. The survey was carried out during the beginning of the harvest season. This is thus the likely best scenario.

Table 38: AVERAGE HDDS*

	Mean (Standard deviation or 95% CI)
Average HDDS	4.8 (1.5)

Figure 9: Proportion of households consuming different food groups within last 24 hours

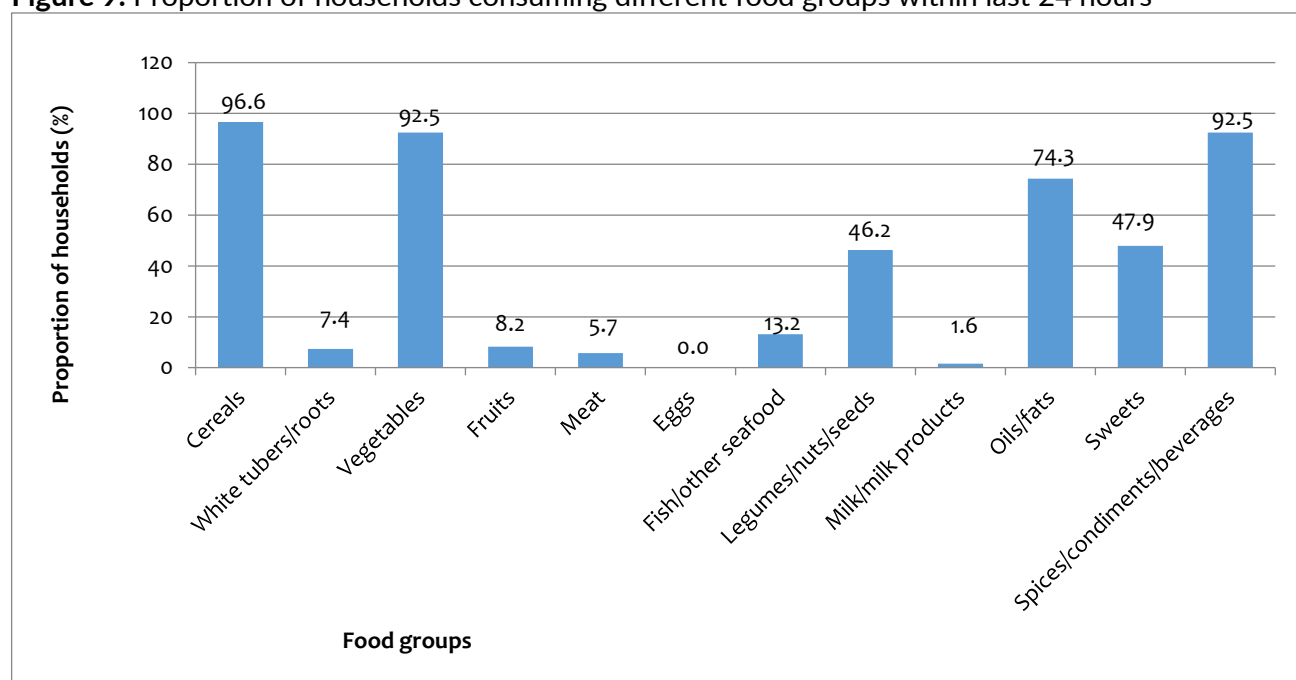


Table 39: Consumption of micronutrient rich foods by households

	Number/total	% (95% CI)
Proportion of households <i>not consuming any</i> vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	9/121	7.4 (3.4-13.6)
Proportion of households consuming either a plant or animal source of vitamin A	104/121	85.9 (78.4-91.6)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	19/121	15.7 (9.73-23.4)

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

LIMITATIONS

- The total number of children found during the survey was lower than the expected number from the UNHCR ProGres database. This could have been due to some families being away and others no longer living in the camp.
- The age documentation coverage was 90%. 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.
- The camp has access limitations in terms of the number of hours that can be spent in the camp and days that the UN staff can access. Security escort is also required for the movement to and from the camp. This called for careful planning to allow for support supervision from the survey coordinator during the accessible days.

DISCUSSION

Nutritional status of young children and mortality

The prevalence of global acute malnutrition in Gorom camp (4%) is acceptable based on the WHO classification (acute malnutrition between 0-5 percent is considered acceptable). The prevalence of severe acute malnutrition was 0% based on the WHZ scores which meets the UNHCR acceptable level of <2%. 0.4% of the surveyed children, however had a MUAC proportion of <115mm. The GAM and SAM prevalence in 2018 remained the same as that in 2017 [GAM (5.0%) and SAM (0.8%)]. This is because the reduction was not significant ($p>0.05$). The reduction is however an indicator of likely positive gains from the current interventions. They should be maintained and strengthened. A comprehensive CMAM program was set up in 2017 and continued in 2018. Appropriate ready to use therapeutic and supplementary foods for the management of acute malnutrition were in place and no pipeline break was experienced in 2018. In addition to this blanket supplementary feeding continued for children 6-23 months and pregnant and lactating women. BSFP supplies faced some pipeline breaks for 3/9 months between January and September 2018. Prepositioning of supplies in the camp to continue being advocated for in 2019.

Stunting refers to a deficit in height relative to age due to a long-term process of linear growth retardation. 'Stunting is a well-established risk marker of poor child development. Stunting before the age of 2 years predicts poorer cognitive and educational outcomes in later childhood and adolescence. Factors that contribute to stunted growth and development include poor maternal health and nutrition, inadequate infant and young child feeding practices, and infection.'⁸ The prevalence of global stunting among children 6-59 months was 17.1% which is within the acceptable WHO range of <20%. Of note though is that 10% of the population had no age documentation thus stunting results need to be interpreted with caution. The stunting prevalence remained the same in 2018 compared to 2017 (17.6). Action across multiple areas continues to be necessary to maintain the stunting levels below 20%. This to include promotion of infant and young child feeding practices, ensuring adequate water and sanitation, infection control and maternal health and nutrition support.⁹

Morbidity

The interaction of nutrition and infection are cyclic with each exacerbating the other. 19.7 % of children 6-59 months 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, and community hygiene promotion and awareness 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 and intestinal worms) should also be given special attention.

Programme coverage children 6 – 59 months

⁷ (CDC/WFP: A manual: Measuring and Interpreting Mortality and Malnutrition, 2005).

⁸ WHA Global Nutrition Targets 2025: Stunting policy brief

⁹ Allen LH. Nutritional influences on linear growth: a general review, Eur J Clin Nutr 1994; 48:S75-S89.

Selective feeding programme

The TFP coverage using MUAC met the recommended standard of >90%. The coverage for TSFP was below standard using the WHZ criterion. Of note is that none of the TSFP cases that met the WHZ criterion, also met the MUAC criteria for admission into the supplementary feeding program. The TFP MUAC coverage indicates effective screening at the community level where MUAC is used. Of concern is the children that meet the WHZ score admission criteria but are not captured by MUAC screening as noted from all the moderate malnourished cases identified during the survey. 8 of the 9 cases that met the WHZ score criteria were not captured by MUAC. In this light, a mixed criteria for admission using MUAC or WHZ scores to capture the children missed by either MUAC or the WHZ scores admission criteria to be continued. In addition to this a two stage screening to be carried out during the monthly BSFP visits for children 6-23 months and for all children 24-59 visiting the health centre. All children found to be at risk (125 -135mm) for the 6-23months and (125-150mm) for the 24-59 months to go through a second stage weight for height z-score measurement. Any child found to meet the admission criteria using the WHZ scores to be enrolled into the appropriate program.

Measles vaccination and vitamin A supplementation

The coverage for measles vaccination and vitamin A supplementation in the last 6 months was slightly below the recommended standard target of $\geq 95\%$ and $\geq 90\%$ respectively. This indicates the need for improved routine and campaign strategies. The coverage of the use of EPI cards also improved in regard to vitamin A supplementation but reduced for measles vaccination. Improvement on this should also be ensured.

Anaemia in Young Children and Women

The survey results showed that total anaemia prevalence among children 6 to 59 months was 55.2%. This is very high as it is above 40%.¹⁰ The anaemia problem was more severe among children 6 to 23 months than in older children. Although anaemia prevalence was high, approximately 29.5% of the children were mildly anaemic. The prevalence of moderate and severe anaemia among children 6 to 59 was 25.6%. If only moderate and severe anaemia is considered, the anaemia prevalence is of medium public health concern which is classified as of medium public health significance.

Total anaemia prevalence among non-pregnant women 15-49 years was 56.9 % (47.6–65.8 95% CI). According to the WHO classification the women anaemia prevalence is of high public health significance.

The anaemia prevalence improved among both children and non-pregnant women 15-49 years improved compared that in 2017 (71% and 66.2% respectively). The prevalence however remains very high.

The anaemia prevalence can be attributed to a number of factors that characterise the camp population. Chief among the contributors to the high anaemia prevalence is a diet, which is poor in micronutrients. The GFD basket provided 54% of the daily iron requirements. Sorghum, which contributed 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 provided 2% of the recommended daily intake of vitamin C, a nutrient that plays a pivotal role in iron absorption. The HDDS indicated that only 15.7% of the households consumed food sources rich in iron. 33% of children 6-23 months reported to have not consumed iron rich foods the day before the survey. 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 a contributor 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. Implementation should be continued in 2019 to achieve better gains.

IYCF Indicators

Infant and young child feeding practices directly affect the nutritional status of children under two years of age and, ultimately, impact child survival. Protecting, and improving on, infant and young child feeding practices in children aged 0-23 months of age is therefore critical to improved nutrition, health and development of children¹¹.

¹⁰ WHO classification of public health significance

¹¹ WHO, Indicators for Assessing Infant and Young Child Feeding Practices, WHO 2010

From the survey results the proportion of children 0-23 months that had timely initiation of breast milk within the first hour of delivery was 84.6%. 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 breast feeding for the first six months of life was 93.3%. The risk of neonatal death is increased approximately fourfold if milk-based fluids or solids are provided to breastfed neonates. Breastmilk alone (exclusive) satisfies the nutritional and fluid requirements of an infant for the first complete six months of life in all settings and climates.¹² Continued breastfeeding at 1 year was 95.4% and up to two years was 66.6%. The relatively good proportion of positive breastfeeding practices attained in Gorom refugee camp so far can be attributed to the integration of nutrition and reproductive health, where IYCF messaging is part of the ANC visits' package and part of the maternity's promoted practices. The proportion of children that continue to breastfeed up to two years should be improved and the rest of the appropriate practices maintained. This to be ensured by maintaining the use of community support groups and integrated IYCF in the various health and nutrition contact points.

The proportion of children 6 to 8 months that were introduced to solid and semi-solid foods on time was 33.3%. This remained the same as in 2017 but indicated an improving status. After six months, adequate and appropriate infant complementary foods become necessary to complement breastmilk in order to meet the energy and other nutrient requirements of the infant (timely complementary feeding). There is need to ensure IYCF messaging addresses this important component of complementary feeding as this has a direct bearing on stunting outcomes of the children. The messaging has to be coupled by livelihood options that support diet diversity.

16.9% of the surveyed children aged 0-23 months were bottle fed. 7.6% received infant formula. Bottle-feeding increased in 2018 compared to 2017 indicating the need for aggressive campaign to discourage the practice. Infant formula is a nonhuman milk product formulated from animal milk or vegetable protein (soy) and adapted to the physiological characteristics of infants. The risks of infection or malnutrition from using breastmilk substitutes are likely to be greater than the risk of HIV transmission through breastfeeding. In addition to this bottle feeding is associated with increased diarrhoeal disease due to the contamination likelihood of the bottle and nipple. It is therefore necessary to support all women to achieve early initiation and exclusive breastfeeding for the first six completed months and the continuation of breastfeeding into the second year of life to provide the best chance of survival for infants and young children¹³

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

Food security indicators

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. Majority of the refugees in Gorom refugee camp had access to food assistance as indicated by the coverage of ration cards (100%). The general food ration is however provided at a 70% ration scale which provides 1475kcal/p/d. To fill the gap in food assistance most of the refugees reported using negative coping strategies (78.6%). Only 21.4% reported to have used none of the survey listed coping strategies indicating the proportion likely to have benefited from livelihood programs' support. Advocacy to fill the food assistance gap to be continued.

¹² UNHCR SENS guidelines for refugee populations, Version 2 (2013)

¹³ Operation Guidance on IFE, section 5.2.8, v2.1, Feb 2007

RECOMMENDATIONS AND PRIORITIES

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 children, pregnant and lactating women, people living with HIV/AIDS and TB patients on treatment. This to include active case finding and community mobilization. (UNHCR, UNICEF, WFP and ACROSS).
- Ensure all the children aged U5 in the community screened and referred 6-59 months children identified with a MUAC less than 125mm get enrolled into the management of acute malnutrition programs through community outreach follow up at household level (ACROSS)
- Community outreach, triage areas and nutrition centres to systematically screen and refer all persons with anaemia signs and symptoms (palmar pallor).
- Ensure monthly blanket supplementary feeding programme for children 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 ACROSS)
- Conduct two step MUAC and WHZ scores (for children with MUAC at risk) screening during BSFP and at the health facilities' triage areas to ensure both high MUAC and WHZ score coverage (ACROSS)
- Continue strengthening the capacity of the nutrition facility in terms of provision of adequate staff and training to ensure quality provision of both curative and preventative components of nutrition (UNHCR, WFP, UNICEF and ACROSS)
- Expand and strengthen preventative nutrition components including Infant and Young Child Feeding (IYCF) and community outreach education aspects to stop the various forms of malnutrition from occurring in the first place. (UNHCR, UNICEF and ACROSS)
- Continue implementing the micronutrient reduction strategy to curb the high anaemia prevalence.
- Conduct follow up quarterly mass MUAC screening to monitor the evolution of the nutrition situation at the community level. (ACROSS)
- 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 ACROSS).
- Undertake a follow up annual joint nutrition survey to analyze trends and facilitate program impact evaluation in 2018. (UNHCR, ACROSS, WFP and UNICEF).

Food security related

- Provision of a General Food Ration (GFR) providing the recommended minimum dietary requirements (2100kcal/person/day) and milling assistance (UNHCR, ACROSS and WFP).
- Continue the routine joint monthly food basket monitoring on site and ensure the inclusion of the refugee camp in the post distribution monitoring at the household level to ensure that refugees receive their entitlement (UNHCR, ACROSS and WFP).
- Expand the coverage of sustainable food security and livelihood solutions to allow diet diversity and to complement the general food distribution. This to include the promotion of all year-round production of micronutrient-rich foods or crops in home gardens, fruit trees and small animal husbandry. (UNHCR, WFP and ACROSS).

Health related

Maintain and strengthen the provision of comprehensive primary health programme for refugee and host populations in Central Equatoria. (UNHCR and ACROSS)

- Ensure all anaemia referral cases are tested and provided with appropriate treatment if indicated
- UNICEF, ACROSS and UNHCR to ensure the EPI program and Vitamin A supplementation campaigns and routine programs are strengthened to increase coverage to acceptable standards.

WASH related

- Ensure the provision of safe drinking-water, use of improved sanitation and hygiene promotion (UNHCR and ACROSS)

APPENDICES

Appendix 1: Names of contributors

	Name	Role	Organisation
1	Lero Ochalla Omot	Enumerator	ACROSS
2	Akune Odhieng Ochalla	Enumerator	ACROSS
3	Angwomi Christine Abwola	Enumerator	ACROSS
4	Ojullu Okwier Gwoy	Enumerator	ACROSS
5	Anthony Ngor Maluil	Enumerator	ACROSS
6	Kochan Owar Okello	Enumerator	ACROSS
7	Oman Obang Ogoni	Enumerator	ACROSS
8	Kwarkuch Ojullu Dingech	Enumerator	ACROSS
9	Anga Achudo Opol	Enumerator	ACROSS
10	Ajullu James Marko	Enumerator	ACROSS
11	Omot Omot Nyigwo	Enumerator	ACROSS
12	Taban Moris Eliloma	Enumerator	ACROSS
13	Adeng Bak Makuach	Enumerator- Hb measurement	Juba
14	Adong Stella Bily	Enumerator- Hb measurement	Juba
15	Langoya Moses Chiluba	Enumerator- Hb measurement	Juba
16	Onesmus Boya Dario	Enumerator- Hb measurement	Juba
17	Odong Kene Paul	Enumerator- Hb measurement	Juba
18	Poni Josephine Diliga	Enumerator- Hb measurement	Juba
19	Olweny Michael Wilson	Team leader/Supervisor	Juba
20	Patrick Inonget William	Team leader	Juba
21	Nyuma Robert Ben	Team leader	ACROSS
22	Lui Alex Mula	Team leader	ACROSS
24	Ajwang Doreen	Team leader	ACROSS
25	Draba Jane	Supervisor	ACROSS
26	Diana Chicago Wesley	Supervisor	ACROSS
27	Dr Robert P. Napoleon	Operational support	ACROSS
28	Terry Theuri	Coordinator	UNHCR
29	Sebit Mustafa	Supervisor	UNHCR
30	Robert Akua	Trainer	WFP
31	Ismail Kassim	Trainer	UNICEF

Data analysis and report compilation

Terry Theuri (Nutrition and Food Security officer, UNHCR Juba, South Sudan)

Report review

Gebrewold Petros Yohannes (Senior Public Health Officer, UNHCR Juba, South Sudan),

Naser Mohmand (Senior Regional Nutrition and Food security officer, Regional Service Centre, Nairobi)

Funding

UNHCR and ACROSS supported the survey. UNICEF and WFP fund the nutrition and food security program

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

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Flagged data (% of out of range subjects)	Incl	%	0-2.5 0	>2.5-5.0 5	>5.0-7.5 10	>7.5 20	0 (0.4 %)
Overall Sex ratio (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<=0.001 10	0 (p=0.895)
Age ratio(6-29 vs 30-59) (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<=0.001 10	0 (p=0.172)
Dig pref score - weight	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	0 (7)
Dig pref score - height	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	4 (13)
Dig pref score - MUAC	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	0 (5)
Standard Dev WHZ .	Excl	SD	<1.1 and >0.9 0	<1.15 and >0.85 5	<1.20 and >0.80 10	>=1.20 or <=0.80 20	0 (0.99)
Skewness WHZ	Excl	#	<±0.2 0	<±0.4 1	<±0.6 3	>=±0.6 5	0 (0.06)
Kurtosis WHZ	Excl	#	<±0.2 0	<±0.4 1	<±0.6 3	>=±0.6 5	1 (-0.30)
Poisson dist WHZ-2	Excl	p	>0.05 0	>0.01 1	>0.001 3	<=0.001 5	0 (p=)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	5 %

The overall score of this survey is 5 %, this is excellent.

Appendix 3:

Nutrition Surveys Questionnaires 2018

Greeting and Reading of Rights

THIS STATEMENT IS TO BE READ TO THE HEAD OF THE HOUSEHOLD OR, IF THEY ARE ABSENT, ANOTHER ADULT MEMBER OF THE HOUSE BEFORE THE INTERVIEW. DEFINE A HOUSEHOLD AS A GROUP OF PEOPLE WHO LIVE TOGETHER AND ROUTINELY EAT OUT OF SAME POT. DEFINE HEAD OF HOUSEHOLD AS MEMBER OF THE FAMILY WHO MANAGES THE FAMILY RESOURCES AND IS THE FINAL DECISION MAKER IN THE HOUSE.

Hello, my name is _____ and I work with [organization/institution]. We would like to invite your household to participate in a survey that is looking at the nutrition and health status of people living in this camp.

UNHCR and ACROSS are working in the nutrition and health sectors are sponsoring this nutrition survey

Taking part in this survey is totally your choice. You can decide to not participate or stop taking part at any time and for any reason. If you stop being in this survey it will not have any negative effects on how you or your household is treated or what aid you receive.

If you agree to participate, I will ask you some questions about your family. We will then measure the arm circumference, weight and height of children who are older than 6 months up to 5 years. In addition to these assessments we will also test a small amount of blood from the finger of the children and women to see if they have anaemia.

Before we start to ask you any questions or take any measurements, we will ask you to give your verbal consent. Be assured that any information that you will provide will be kept strictly confidential.

You can ask me any questions that you have about this survey before you decide whether to participate.
Thank you

Questionnaire for Children 6-59 months (every HH)

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

Date (dd/mm/yyyy)					Team Number				Village			Block		
_ _ _ _ / _ _ _ _ / _ _ _ _ _ _ _ _ _					_ _				_ _ _ _			_ _ _ _		
CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8	CH9***	CH10***	CH11	CH12	CH13	CH14	CH15
ID	HH	Consent given 1=yes 2=no 3=absent	Sex (m/f)	Birthdate* dd/mm/yyyy	Age** cwiri (months) Dwodi	Weight (kg) ±100g	Height (cm) ±0.1cm	Oedema (y/n)	MUAC (mm)	If MUAC <12.5cm is Child enrolled 1=SFP 2=TFP 3=None	Measles <i>Nyilaal ocwobo ki jaath ajwoa</i> 1=yes card 2=yes recall 3=no or don't know	Vit. A in past 6 months <i>Nyilaal amadho Vit A ki koot dwadii abicel?</i> (show capsule) 1=yes card 2=yes recall 3=no or don't know	Diarrhoea in past 2 weeks# <i>Nyilaal omak leth ec ki koot juu ariew?</i> 1=yes 2=no 8=DK	HB (g/dl)
01				/ /										
02				/ /										
03				/ /										
04														
05														
06														
07														
08														
09														

*Record from EPI/health card/age documentation if available. Leave blank if no valid age documentation. **Estimate using event calendar and recall if age documentation not available. #Diarrhoea: 3 or more loose stools within 24hrs

***C9 & C10: REFER TO CLINIC FOR MALNUTRITION IF NOT ALREADY ENROLED IN TSFP / OTP IF OEDEMA=Y OR MUAC < 12.5CM; C15: REFER IF HB IS<7 G/DL

Questionnaire for **WOMEN 15-49 YEARS** (every other HH)

This questionnaire is to be administered to all women aged between 15 and 49 years IN THE SELECTED HH

Date (dd/mm/yyyy)					Camp	Team Number	Village Number	Block Number
_ _ _ _ / _ _ _ _ / _ _ _ _ _ _ _ _						_ _ _ _	_ _ _ _	_ _ _ _
W1	W2	W3	W4	W5	W6	W7	W8*	W9
Woman ID	HH	Consent given 1=yes 2=no 3=absent	Age (years) cwiri	Are you pregnant? <i>Ngeeti inamaai</i> 1=yes 2=no (GO TO WM 8) 8=DK (GO WM 8)	Are you currently enrolled in the ANC? <i>Ino cobo ki mar jo jey?</i> 1=yes 2=no (If no, STOP)	Are you currently receiving iron-folate tablets? (SHOW PILL) <i>Ino moo kiin?</i> 1=yes (STOP NOW) 2= no (STOP NOW) 8=DK (STOP NOW) <i>Bung gin ngäac</i>	Hb (g/dL) (Only for non-pregnant women) <i>Kipper maan moa nak ngeet ge ba in maal keerge</i>	Woman referred for anaemia <i>Mn mo kwa kipper tar kääc</i> 1=yes 2=no
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

*W8: Refer to the clinic for anaemia if HB is <8.0 g/dl

IYCF Questionnaire (1 questionnaire per child 0 -23 months)

Date (dd/mm/yyyy)	Team Number	Village Number	Block Number	HH Number
_ _ _ _ / _ _ _ _ /2017	_ _ _ _	_ _ _ _	_ _ _ _	_ _ _ _

No	QUESTION	ANSWER CODES	
SECTION IF1			
IF1	Sex	Male 1 Female 2	_ _
IF2	Birthdate RECORD FROM AGE DOCUMENTATION. LEAVE BLANK IF NO VALID AGE DOCUMENTATION Nyilaal olwaaro go kayi wane	Day/Month/Year..... _ _ _ _ / _ _ _ _ / _ _ _ _ _	
IF3	Child's age in months	IF AGE DOCUMENTATION NOT AVAILABLE, ESTIMATE USING EVENT CALENDAR. IF AGE DOCUMENTATION AVAILABLE, RECORD THE AGE IN MONTHS FROM THE DATE OF BIRTH	_ _ _ _
IF4	Has [NAME] ever been breastfed? (Nyilaal obeerö ni dhooth)	Yes (Kare)..... 1 No (patha kare).....2 DK8 (Bung gin mo ngäc)	_ _ IF ANSWER IS 2 or 8 GO TO IF7
IF5	How long after birth did you first put [NAME] to the breast? (Akany mo nyiedi ni nyilaal mo lwaaro ke go eno ne kith dhe thunho?)	Less than one hour1 (ni caa aciel kere pang) Between 1 and 23 hours2 (akiic caa aciel keel 23) More than 24 hours3 (Opodho ki baat caae mo 24) DK(Bung gin mo ngec).....8	_ _
IF6	Was [NAME] breastfed yesterday during the day or at night? (Nyilaal odhooth ya waare ki wang cang/waar?)	Yes (kare).....1 No (pathakare).....2 DK8 (Bung gin mo ngec)	_ _
SECTION IF2)			
IF7	Now I would like to ask you about liquids that [NAME] may have had yesterday during the day and at night. I am interested in whether your child had the item even if it was combined with other foods. (Enno amanya go ni peenya kiper jammi moa kwil mo niit ji nyilal yaware ki yie cang ki war. Ya met ki mar cammi moi ji nyilaal mari keel ne beede ni ee jabo ki cammi mogo) Yesterday, during the day or at night, did [NAME] receive any of the following? (Ya wääri ki di cäng wala wär nyilaal o gitö ki re moi?)		

	<p>ASK ABOUT EVERY LIQUID. IF ITEM WAS GIVEN, CIRCLE '1'. IF ITEM WAS NOT GIVEN, CIRCLE '2'. IF CAREGIVER DOESN'T KNOW, CIRCLE '8'. EVERY LINE MUST HAVE A CODE.</p> <p>7A Plain water (pii kere):</p> <p>7B. Infant formula: for example Nan 1, nan 2, s26. (Ya waare ki waar wala dicang nyilaal amadho ki : (Caak mo cuk?)</p> <p>7C. Milk such as tinned, powdered, or fresh animal milk: for example (Niddo). (Ya waare ki waar wala dicang nyilaal amadho ki: (Coak wala caak jur moa näk mo läny)</p> <p>7D. Juice or juice drinks e.g mango, apple juice bought in shops. (Ya waare ki waar wala dicang nyilaal amadho ki: (Pii nyijäth mwØa ngweeth teeng manga, apple ki mØØk)</p> <p>7E. Clear broth (Ya waare ki waar wala dicang nyilaal amadho ki: (cwiege)</p> <p>7F. Sour milk or yogurt for example: (Ya waare ki waar wala dicang nyilaal amadho ki: (Caak mwØa wac)</p> <p>7G. Thin porridge for example: (Ya waare ki waar wala dicang nyilaal amadho ki: (Pimo, Ajakalei)</p> <p>7H. Tea or coffee with milk (Ya waare ki waar wala dicang nyilaal amadho ki: (cääye wala caak, Buna wala caak)</p> <p>7I. Any other water-based: for example sodas, other sweet drinks, herbal infusion, gripe water, clear tea with no milk, black coffee, ritual (Ya waare ki waar wala dicang nyilaal amadho ki: (soda, Kerekede, caay/buna mo caak bungo ree?)</p>	<p>1=Yes (kare) 2=No (Pathakare) 3=DK (bung gin mo ngec)</p> <p>7A.....1 2 8</p> <p>7B.....1 2 8</p> <p>7C.....1 2 8</p> <p>7D.....1 2 8</p> <p>7E.....1 2 8</p> <p>7F.....1 2 8</p> <p>7G.....1 2 8</p> <p>7H.....1 2 8</p> <p>7I.....1 2 8</p>	
IF8	<p>Yesterday, during the day or at night, did [NAME] eat solid or semi-solid (soft, mushy) food? (Yaa waare ki wäär , dicang nyilaal acamo ki cammi mo joom-mo guuro?)</p>	<p>Yes (kare).....1 No (patha kare)2 DK (Bung gin ngäac)8</p>	<p> __ </p>
SECTION IF3			
IF9	<p>Did [NAME] drink anything from a bottle with a nipple yesterday during the day or at night? (Nyilaal amadho kigiir piny yie thootho ya waare ka dicang ki waar?)</p>	<p>Yes (kare).....1 No (patha kare).....2 DK (Bung gin ngäac).....8</p>	<p> __ </p>
SECTION IF4			
IF10	<p>Is child aged 6-23 months? REFER TO QF2 Nyilaal cwiiye ena ri dwade abiciel keel piera ariew kadak?</p>	<p>Yes (kare).....1 No (patha kare).....2</p>	<p> __ </p> <p>IF ANSWER IS 2 STOP NOW</p>
IF11	<p>Now I would like to ask you about some particular foods [NAME] may eat. I am interested in whether your child had the item even if it was combined with other foods. Yesterday, during the day or at night, did [NAME] consume any of the following? (Enno amanya go ni peenya kipper cam mano cam nyilaali. Yiea omino wal nyilaal mari ogito keel dee naa ojaabo ki cammi mook)</p> <p>ASK ABOUT EVERY ITEM. IF ITEM WAS GIVEN, CIRCLE '1'. IF ITEM WAS NOT GIVEN, CIRCLE '2'. IF CAREGIVER DOESN'T KNOW, CIRCLE '8'. EVERY LINE MUST HAVE A CODE.</p>	<p>Yes No DK</p>	
IF12	<p>11A. Flesh foods for example: beef, goat, lamb, mutton, pork, rabbit, chicken, duck, liver, kidney, heart. (Nyilaal acamo ya waare ki ringo teengi:</p>	<p>11A.....1 2 8</p>	

(Riingo, Reo, Caap riing teeng, rieng dhieng, ring diel, ring roomo, ring othur, ring apwoo ring, gwieno, badho cwiny, rogi ki winyo?		
11C. FBF++ : for example CSB++ (Ya waare nyilaal acamo ki mo mana ngweeth ka dicang/waar?)	11C.....1	2 8
11D. RUTF : for example Plumpy'Nut® (SHOW SACHET) (Ya waare ki dicang waar nyilaal acamo ka apulli wala athiloomi?)	11D.....1	2 8
11E. RUSF : for example Plumpy'Sup® (SHOW SACHET) (Ya waare ki dicang, waar nyillal acamo ka apuuli wala athiloomi?)	11E.....1	2 8
11G. Infant formula: for example NAN 1, nan 2, s26). (Ya waare ki waar, dicang nyilaal amadho ki caak teeng Nan 1, Nan 2?	11G.....1	2 8
11H. List any iron fortified solid, semi-solid or soft foods designed specifically for infants and young children available in the local setting that are different than distributed commodities (Ya waare ki waar dicang nyilaal acamo ki cam mo jappo ka teeng: piimo mo jaabo ka athiloomi)	11H.....1	2 8

Food Security questionnaire (1 questionnaire per every other household)

Date (dd/mm/yyyy)		Camp	Team Number
_ _ _ _ / _ _ _ _ /2017			_ _ _ _
Village Number		Block Number	Household
_ _ _ _		_ _ _ _	_ _ _ _
No	QUESTION	ANSWER CODES	
SECTION 1			
1.	Does your household have a ration card? (<i>woapaci jire da kaat mar cam?</i>)	Yes.....1 No.....2	_ _ IF ANSWER IS 1 GO TO Q3
2.	Why do you not have a ration? (<i>jiri bunge caat mar cam aper ngo?</i>)	Not given one at registration, even if eligible.....1 Lost card.....2 Traded/Sold card.....3 New arrival who is eligible but not yet registered4 Not eligible (not in targeting criteria)5 Other.....6	_ _
3.	Does your household receive full or reduced food ration?	Full (10kg Sorghum).....1 Reduced.....2 Other.....3	
4.	How many days did the food from the general food aid ration from the cycle of [August] month last? (<i>A ninè Adī ni thum cammi mari mar dwa a bara wala dwaana poodho?</i>)	Number of Days _____ IF ANSWER IS > or =30 days GO TO Q5	_ _ _ _
5.	In the last month, have you or anyone in your household	Yes (<i>kare</i>).....1	

	borrowed cash, food or other items with or without interest? (<i>Dwaay mana podho da dhaanho mo kado ki girpiny mo. Da dhaanhø mo mäyö gir piny, kwon paari yi dwaay mana poodho kimet ec mari wala ki teek, dwogi no meeto, dwogi ni kare?</i>)	No (<i>patha kare</i>).....2 DK8 (<i>Bung gin ngäac</i>)	__
6.	In the last month, have you or anyone in your household sold any assets that you would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)? (<i>yi dwaay mana poodho iini, dhaanho mo ena paari ogadho ki jammi mwoa nak kiri gadho, teeng koodhi, koomi, lay ki mook?</i>)	Yes (<i>kare</i>).....1 No (<i>patha kare</i>).....2 DK8 (<i>Bung gin ngäac</i>)	__
7.	In the last month, have you or anyone in your household been requested increased remittances or gifts as compared to normal? (<i>Yi dwaay mana podhoo, iini dhaanho mo ena dogo mo peoki kony, muuy mo cire di meedo ki go?</i>)	Yes (<i>kare</i>).....1 No (<i>patha kare</i>).....2 DK8 (<i>Bung gin ngäac</i>)	__
8.	In the last month, have you or anyone in your household reduced the quantity and/or frequency of meals and snacks? (<i>Yi dwaay mana podhoo da dhaanho mo wala ino kan wak rikwaan cam mono cami?</i>)	Yes (<i>kare</i>).....1 No (<i>patha kare</i>).....2 DK8 (<i>Bung gin ngäac</i>)	__
9.	In the last month, have you or anyone in your household begged? (<i>Yi dwaay mana pÖÖdhÖ. Da dhaanhÖ mopeo kipper kony?</i>)	Yes (<i>kare</i>).....1 No (<i>patha kare</i>).....2 DK8 (<i>Bung gin ngäac</i>)	__
10.	In the last month, have you or anyone in your household engaged in: killing of wild animals, cutting of big trees and selling, stealing, cross boarder smuggling, charcoal burning or any other risky or harmful activities (<i>Yi dwäay mana pÖdhÖ iini nago ki laac paap, iina ngudoki jeni moadongo, ogathige, iina kwatto, nyibobel, keew angoli kijoo m raac, tiie moriyyo?</i>)	Yes (<i>kare</i>).....1 No (<i>patha kare</i>).....2 DK8 (<i>Bung gin ngäac</i>)	__

SECTION 2

11.	Now I would like to ask you about the types of foods that you or anyone else in your household ate yesterday during the day and at night. (<i>Enno amanya go ni peenya ki with caami, mocami/ Mocam dhaanho mo ena paari ya waare ka dicang/ waar?</i>) I am interested in whether you or anyone else in your household had the item even if it was combined with other foods. I am interested in knowing about meals, beverages and snacks eaten or drank inside or outside the home. (<i>Yiea omiino wala ini, dhaanho mo ena paari jire da jami, keel dee naa ojaabo ki caami mook amanya go nee ngaa teengig gion math, caami, soda yi paari, wok?</i>)	<p>READ THE LIST OF FOODS AND DO NOT PROBE. RECORD (1) IN THE BOX IF ANYONE IN THE HOUSEHOLD ATE THE FOOD IN QUESTION, OR (0) IN THE BOX IF NO ONE IN THE HOUSEHOLD ATE THE FOOD.</p>	
	<p>1. Cereals: e.g. Sorghum, maize, wheat, rice Ya waare ki waar, dicang nyillaal acamo ki kwon teeng:(<i>cindi, ruuc, abay,beel?</i>)</p> <p>2. White roots and tubers: e.g. White potatoes, white</p>	1..... __	2..... __

yam, white cassava, white sweet potato or other foods made from roots (*lweet jenni mwØa tar teeng, bääle mwØa mar, Ajwaale mwØa tar, opeelemwØa tar ki mØØk?*)

3A. Vitamin A rich vegetables and tubers: e.g. pumpkin, orange sweet potato, tomato + other locally available vitamin A rich vegetables

Nyilaal ocamo ki with a marmoi teeng : (okono, Ajwala mana ngweeth, tim tim?)

3B. Dark green leafy vegetables: Any dark green leafy vegetables, including wild forms + locally available vitamin A rich leaves such as cassava leaves, pumpkin leaves, bean leaves kale, spinach *Nyilaal omwo ki caami ya waare/dicangi wala ocamo ki caami moi teeng : (Bøøng Babura, Bøøng Okonno, Boo, Nyiwacwie kudra?)*

3C. Other vegetables: Any other vegetables (e.g. cabbage, green pepper, onion, eggplant) + *other locally available vegetables Nyilaal ocamo ka amar moi ya waare/dicangi teeng: (Amar mook teeng, Adimit mana mar, bacal, ocook?)*

4A. Vitamin A rich fruits: Any mango (ripe, fresh and dried), ripe papaya, and 100% fruit juice made from these + *other locally available vitamin A rich fruits. Nyilaal ocamo ki nyi jenni mo cipi ki Vitamin A decani /ya waare teeng (olilu, manga, papaya?)*

4B. Other fruits: Any other fruits such as banana, lemon, avocado including wild fruits and 100% fruit juice made from these. *Nyilaal omadho ki pi nyi jeni teeng: (bala, leemun, abökadö?)*

5A. Organ meat: *Nyilaal mari ya waare/dicangi ocamo ki:(Riing cwiny, Rogi, Wenyo obaw?)*

5B. Flesh meats:*Nyilaal ya waare /dicangi acamo ki : (Riingo?)*

6. Eggs: *Nyilaal ya waare /dicangi acamo ki (Tong gwieni, tong badho, tong akuuru?)*

7. Fish and seafood: *Ya waare/dicangi nyilaal acamo ki : (Rëö, caap yi naam)*

3A.....|__|

3B.....|__|

3C.....|__|

4A.....|__|

4B.....|__|

5A.....|__|

5B.....|__|

6.....|__|

7.....|__|

Annex 4: Event calendar for Gorom refugee camp, 2018

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

Seasons	Religious Holidays	Other Events	Months / Years	Age (M)	Height Range
Harvest of groundnuts & Beans		Ethiopian new year (Sept)	September 2018	0	
			August 2018	1	
Crop Weeding continues			July 2018	2	
Weeding of crops		World refugee day (20 June)	June 2018	3	
			May 2018	4	
Planting season			April 2018	5	
Land preparation			March 2018	6	65-70 cm
			February 2018	7	
Renovation/Building of houses		CPA & New year celebrations	January 2018	8	71-76 cm
	Christmas (25 Dec)	Gambella genocide remembrance	December 2017	9	
Post harvest			November 2017	10	
Harvest of Sorghum			October 2017	11	
Harvest of groundnuts & beans		Ethiopian new year (Sept)	September 2018	12	77-80 cm
			August 2017	13	
Crop Weeding continues			July 2017	14	
Weeding of crops		World refugee day (20 June)	June 2017	15	
			May 2017	16	
Planting season			April 2017	17	
Land preparation			March 2017	18	
			February 2017	19	
Renovation/Building of houses		CPA & New year celebrations	January 2017	20	81-86 cm
	Christmas (25 Dec)	Gambella genocide remembrance	December 2016	21	
Post harvest			November 2016	22	
Harvest of Sorghum			October 2016	23	
Harvest of groundnuts & beans		Ethiopian new year (Sept)	September 2016	24	87-90 cm
			August 2016	25	
Crop Weeding continues			July 2016	26	
Weeding of crops		World refugee day (20 June)	June 2016	27	
			May 2016	28	
Planting season			April 2016	29	
Land preparation			March 2016	30	
			February 2016	31	
Renovation/Building of houses		CPA & New year celebrations	January 2016	32	
	Christmas (25 Dec)	Gambella genocide remembrance	December 2015	33	
Post harvest			November 2015	34	
Harvest of Sorghum			October 2015	35	
Harvest of groundnuts & beans		Ethiopian new year (Sept)	September 2015	36	91-99 cm
			August 2015	37	
Crop Weeding continues			July 2015	38	
Weeding of crops		World refugee day (20 June)	June 2015	39	
			May 2015	40	
Planting season			April 2015	41	
Land preparation			March 2015	42	
			February 2015	43	
Renovation/Building of houses		CPA & New year celebrations	January 2015	44	
	Christmas (25 Dec)	Gambella genocide remembrance	December 2014	45	
Post harvest			November 2014	46	
Harvest of Sorghum			October 2014	47	
Harvest of groundnuts & beans		Ethiopian new year (Sept)	September 2014	48	100-110 cm
			August 2014	49	
Crop Weeding continues			July 2014	50	
Weeding of crops		World refugee day (20 June)	June 2014	51	
			May 2014	52	
Planting season			April 2014	53	
Land preparation			March 2014	54	
			February 2014	55	
Renovation/Building of houses		CPA & New year celebrations	January 2014	56	
	Christmas (25 Dec)	Gambella genocide remembrance	December 2013	57	
Post harvest			November 2013	58	
Harvest of Sorghum			October 2013	59	
Harvest of groundnuts & beans		Ethiopian new year (Sept)	September 2013	60	

How to Use a Local Events Calendar

Survey inclusion and exclusion criteria

Survey inclusion criteria: these are the cut-off birth dates for children to be eligible to participate in the 6-59 months sample.

- Included in the survey are all children born between October 2013 and September 2018.

Survey exclusion criteria: all children born as of these dates are excluded from the sample (i.e. they are over 59 months or under 6):

- Excluded from the survey are all children born before October 2013 or after March 2018.

When to use the events calendar?

- The events calendar is a tool that helps determine the approximate age of children who have no reliable administrative documents (birth certificate, child's health notebook, etc.)
- It includes all different events that occurred during the 60 months that preceded the survey, and serves as a reference and check-list for surveyors and surveyed populations.

How to use the events calendar

- Use a line of questions phrased as follows: "**<name> was he/she born before or after <event>?**"
- Choose the events in the most appropriate column of the calendar to reduce the range at each question.
- The child's mother usually knows either the age of the child in years, or the birth date (but without any official corroboration. In both cases, it is necessary to refine the age estimation by using the events calendar.

1. When the mother knows the age in years, convert the age in months using the calendar and ask her questions relating to the events that occurred around the child's birth. Specify with the mother:

- On the calendar, whether a particular even occurred about the time the child was born (e.g. end of Ramadan); ask the mother whether the birth occurred before or after this event;
- Ask her the season in which the child was born: rain, warm or cold season, etc.;
- This information will allow you to estimate the child's age in a more reliable and accurate way.

2. When the mother knows the child's birth date, but has no official document to prove it:

- Locate the birth date on the calendar;
- Ask the mother questions on events that occurred around the child's birth (religious holiday, celebration, season, etc.) in order to estimate the age in actual months.

3. When the mother knows neither the age nor the birth date, the events listed in the calendar will help her remember the circumstances of her child's birth and to estimate the age in months:

- Ask the mother, or the person who cares for the child, if she remembers the period or an event that surrounded the birth of the child;
- According to her answer, ask further questions to locate the month and year of the birth.

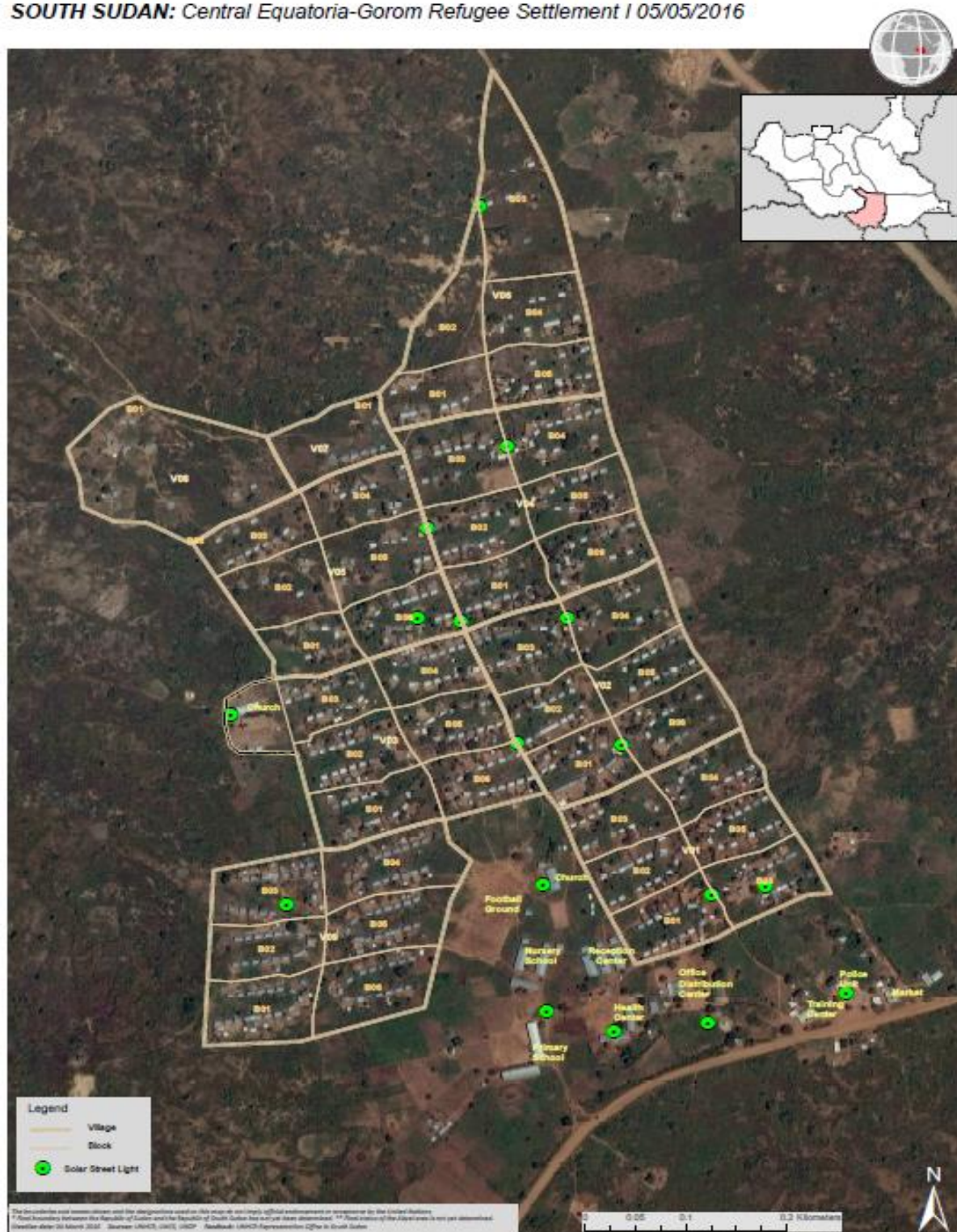
4. When it is absolutely impossible to get any reliable indication from the mother, look for a child of similar stature in the neighbourhood:

- Determine the age of the other child;
- Estimate the age difference between both children using the calendar;
- Deduce the age of the surveyed child.

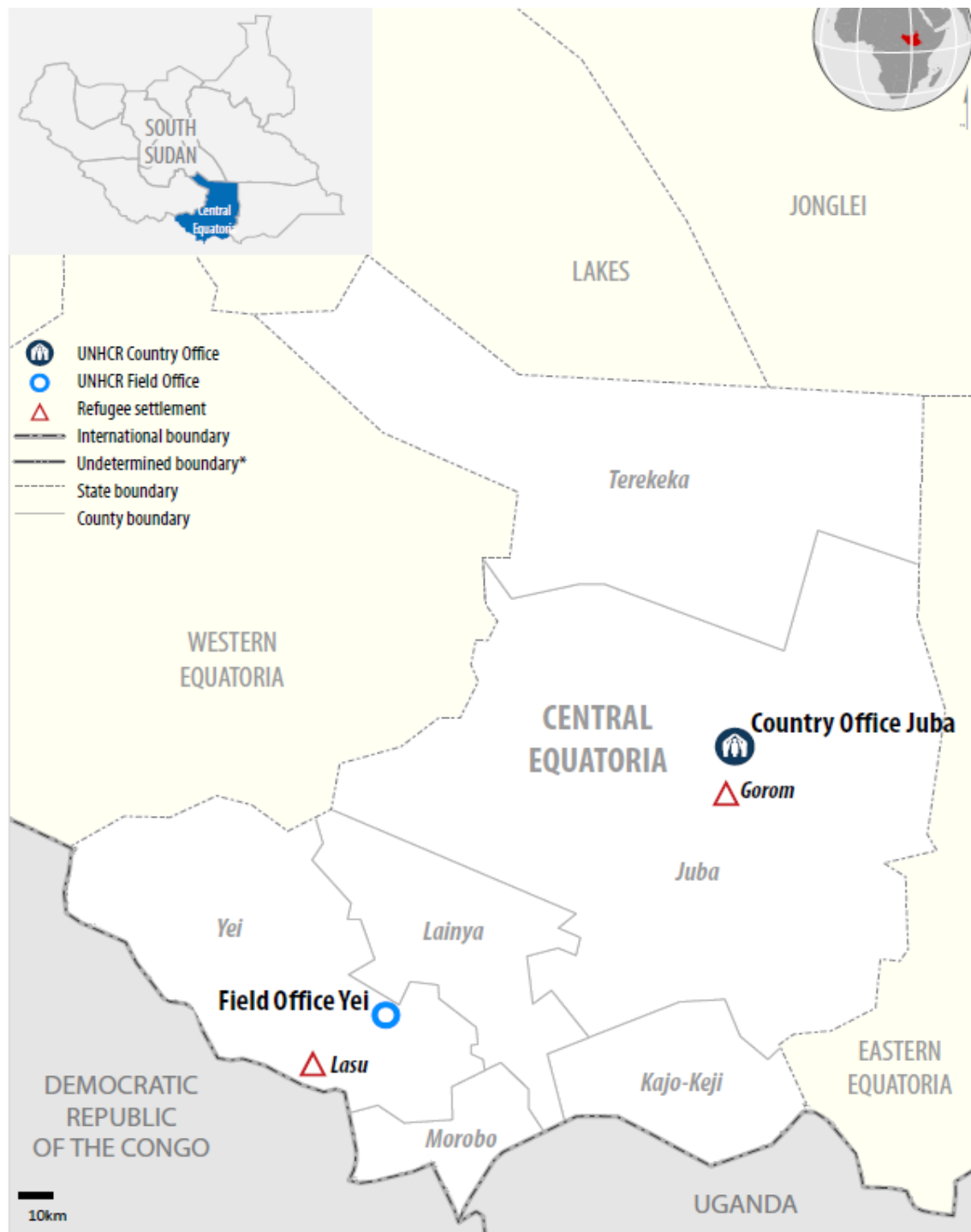
*To determine the age of a child, the surveyor must enter on the questionnaire either the date of birth or the age in months, **but not both**. If the child has a health notebook or an official identity document that indicates his/her birth date; write down the birth date on the questionnaire.*

Appendix 5 – Map of Gorom refugee camp

SOUTH SUDAN: Central Equatoria-Gorom Refugee Settlement | 05/05/2016



Appendix 6 -Gorom refugee location in south Sudan



The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.
 * Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. Sources: UNCS, UNHCR, UNDP