FINAL REPORT FOR ANTHROPOMETRY AND MORTALITY SURVEY MAYENDIT COUNTY, UNITY STATE SOUTH SUDAN

JUNE 2016

Acknowledgment

I would like to acknowledge the individuals and institutions who contributed towards the successful completion of the anthropometry and mortality SMART survey conducted in Mayendit County, Unity State, South Sudan.

Special appreciation goes to:

- Samaritan's Purse International Relief (SP) for their facilitation and relentless support, with funding from OFDA, throughout the survey period. Special thanks goes to Ruth Sanders (National M & E Manager), Peter Ndungu (Nutrition Program Manager- Mayendit), Wario Gollo (WFP Nutritionist) and the entire SP staff.
- Joseph Wangai (Assistant Technical Consultant) who assisted in overseeing the survey in Mayendit North.
- Mayendit County administration for their support with regards to security updates and for ensuring smooth operations.
- Survey enumerators, caregivers, local authorities and the general community for their cooperation and participation.

Thank you all.

Consultant
Martin N. Njoroge
Email: nmartinnjenga@gmail.com

TABLE OF CONTENTS

Acknowledgment 2
List of Tables 4
List of Figures 4
Abbreviations 5
EXECUTIVE SUMMARY 6
INTRODUCTION 9
Background 9
Objectives 10
Specific Objectives 10
METHODOLOGY 11
Survey Methodology 11
a) Geographic Target area and Population Group: 11
b) Survey period 11
c) Survey design 11
d) Sample size 11
e) Cluster selection 12
f) Selection of households. 12
Survey Implementation 12
a) Survey team recruitment 12
b) Survey period 12
c) Survey training 12
d) Survey management and organization 13
e) Data collection and field work 13
f) Data quality 13
g) Data Management and Analysis 14
h) Survey Limitations 14
RESULTS 15
Demographic characteristics 15
Anthropometric results (based on WHO standards 2006): 15
a) Distribution by sex and age 15
b) Wasting 16
c) Underweight 17
d) Stunting 18
Mortality 19
Child Morbidity and Health Seeking Behaviour 20
Immunization and Supplementation 21
i. Vitamin A 21
ii. Measles Vaccination 21
iii. Deworming 21
Food Security and Livelihoods (Qualitative) 21
Results 22
DISCUSSION 24
a) Immediate factors 24

b) Underlying factors 24
c) Basic causes 25
CONCLUSION 26
RECOMMENDATIONS 27
ANNEXES 28
Annex 1: Selected Clusters 28
Annex 2: Plausibility Results 30
Annex 3: Mortality Questionnaire 31
Annex 4: Food Security and Livelihoods Guide 32
Annex 5: Anthropometry Questionnaire 33
Annex 6: Map of Mayendit County 34

List of Tables

Table 1: Summary of key findings, Mayendit County, Unity State, South Sudan, May 2016. ..7
Table 2: Sample size calculation parameters 11
Table 3: Survey demographics results 15
Table 4: Distribution of age and sex of sample 16
Table 5: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex 16
Table 6: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema 17
Table 7: Prevalence of underweight based on weight-for-age z-scores by sex 17
Table 8: Prevalence of underweight by age, based on weight-for-age z-scores 18
Table 9: Prevalence of stunting based on height-for-age z-scores and by sex 18
Table 10: Retrospective mortality results 19
Table 11: Prevalence of reported illness in children in the two weeks prior to interview, Mayendit County, Unity State, South Sudan, May 2016. 20

List of Figures

Figure 1: IPC classification for S. Sudan for projection period Jan- Mar 2016 9
Figure 2: Gaussian Curve for Malnutrition by WHZ 16
Figure 3: Population pyramid 20
Figure 4: Immunization and supplementation coverage 21

Abbreviations

BCC	Behavior Change Communication
BSFP	Blanket Supplementary Feeding Program
CI	Confidence Interval
CMR	Crude Mortality Rate
ENA	Emergency Nutrition Assessment
EPI	Expanded Program on Immunization
DEFF	Differentiation
FGD	Focus Group Discussion
FSL	Food Security and Livelihoods
GAM	Global Acute Malnutrition
GFD	General Food Distribution
GOSS	Government of South Sudan
HAZ	Height for Age Z score
IDP	Internally Displaced People
IMCI	Integrated Management of Childhood Illnesses
KAP	Knowledge Attitude and Practices
KII	Key Informant Interview
LAZ	Length for Age Z score
MAM	Moderate Acute Malnutrition
MUAC	Mid Upper Arm Circumference
NIWG	Nutrition Information Working Group
OFDA	Office of US Foreign Disaster Assistance
OTP	Outpatient Therapeutic Program
PHCC/U	Primary Health Care Center/ Unit
PPS	Probability Proportion to Size
SAM	Severe Acute Malnutrition
SD	Standard Deviation
SMART	Standardized Monitoring & Assessment in Relief and Transition
SP	Samaritan's Purse
SSRA/C	South Sudan Rehabilitation Agency/ Commission
TSFP	Targeted Supplementary Feeding Program
U5MR	Under 5 Mortality Rate
UNICEF	United Nations Children's Fund
UNIDO	Universal Interventions and Development Organization
WASH	Water, Sanitation, and Hygiene
WAZ	Weight for Age Z score
WFP	World Food Program
WHO	World Health Organization
WHZ	Weight for Height Z score
WLZ	Weight for Length Z score

EXECUTIVE SUMMARY

Introduction

Mayendit County is one of the nine counties of Unity State; it borders Leer, Koch, Tonj North, Tonj East, Rumbek North, and Panyijar counties, and has 13 payams. Agriculture is the county's primary economic activity. The people are nomadic agro- pastoralists who engage in both agriculture and rearing of livestock, especially cattle. Fishing is also prevalent in the area.

Samaritan's Purse International Relief (SP) and Universal Interventions and Development Organization (UNIDO) are implementing various interventions in the county - namely food security, nutrition, health, and water, sanitation, and hygiene (WASH).

In order to understand and assess the nutrition and mortality situation in Mayendit County, Samaritan's Purse - with funding from OFDA - conducted a Nutrition and Mortality SMART survey from the 15th to the 25th of May 2016.

Objectives

The overall survey objective was to determine the nutrition status among children aged 6-59 months and to estimate crude and under-five retrospective mortality rates in Mayendit County. This also included collecting morbidity data (2-week recall), immunization and supplementation coverage, and a qualitative component on Food Security and Livelihoods (FSL).

Methodology

The survey was a cross-sectional study with two-stage cluster sampling using SMART methodology. Anthropometric data, two-week retrospective morbidity, measles and vitamin A coverage, and retrospective mortality data was collected. The sampling frame was drawn from the population of all 13 payams. The first stage involved random selection of 48 clusters based on probability proportional to size (PPS) using the ENA for SMART software Nov 2013 version (9th July 2015 update).

Results

A total of 567 households were visited for the mortality survey. The total population sample was 4,629.

Findings of the nutrition survey indicate a poor nutrition situation among the surveyed population as per World Health Organization (WHO) standards. The prevalence of Global Acute Malnutrition (GAM) in Mayendit County based on weight for height z scores/and or oedema was 22.8% (19.3 - 26.7 95% C.I.) and the prevalence of Severe Acute Malnutrition (SAM) was 5.2% (3.5 - 7.5 95% C.I.). The poor nutrition situation is attributed to poor food security due to the insecurity, which can lead to high incidence of disease among children aged 6-59 months.

Results for Anthropometry, Mortality, and Immunization and Morbidity indicators are summarized below.

Table 1: Summary of key findings, Mayendit County, Unity State, South Sudan, May 2016

Children 6-59 months Anthropometric Results(WHO 2006 Standards)		
INDEX	**INDICATOR**	**MAY 2016**
WHZ- scores	Prevalence of global malnutrition (<-2 z-score and/or oedema)	(172) **22.8 %** (19.3 - 26.7 95% C.I.)
	Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(133) 17.6 % (14.9 - 20.8 95% C.I.)
	Prevalence of severe malnutrition (<-3 z-score and/ or no oedema)	(39) 5.2 % (3.5 - 7.5 95% C.I.)
HAZ- scores	Prevalence of stunting (<-2 z-score)	(111) **14.9 %** (12.0 - 18.4 95% C.I.)
	Prevalence of moderate stunting (<- z-scores and >=-3 z-score)	(89) 12.0 % (9.7 - 14.6 95% C.I.)
	Prevalence of severe stunting (<-3 z-score)	(22) 3.0 % (1.8 - 4.9 95% C.I.)
WAZ- scores	Prevalence of underweight (<-2 z-score)	(173) **23.0 %** (20.2 - 26.0 95% C.I.)
	Prevalence of moderate underweight (<- z-scores and >=-3 z-score)	(142) 18.9 % (16.4 - 21.5 95% C.I.)
	Prevalence of severe underweight (<-3 z-score)	(31) 4.1 % (2.9 - 5.8 95% C.I.)
MUAC	Prevalence of global malnutrition (< 125 mm and/or oedema)	(97) **12.9 %** (9.5 - 17.2 95% C.I.)
	Prevalence of moderate malnutrition (< 125 mm and >=115mm and/or oedema)	(85) 11.3 % (8.1 - 15.5 95% C.I.)
	Prevalence of severe malnutrition (< 125 mm and/or oedema)	(12) 1.6 % (0.9 - 2.9 95% C.I.)
Mortality results (106 days retrospective period)		
CMR (deaths/10,000/day)	**1.08 [**0.79-1.48, 95% CI] **DEFF 1.34**	
U5MR (deaths in children <5/10,000/day	**0.64** [0.21-1.98, 95% CI] **DEFF 1.91**	
Measles immunization & Vitamin A supplementation		
Measles coverage ≥ 9 months	Overall Immunization Coverage Verified by card Verified by mothers recall	**60.8%** **76.8%** **23.2%**
Vitamin A coverage (6-59) last 6 months	Overall Vitamin A coverage	**25%**
Deworming (12-59) last 6 months	Overall deworming coverage	**29.7%**

Morbidity for the last 2 weeks		
Child illness in the last 2 weeks	Yes No	**55.9%** **44.1%**
Proportion of children by type of sickness	Fever Cough Diarrhea Skin Infection Eye Infections Others	**63.6%** **32.1%** **47.1 %** **10%** **4.1%** **0.1%**
Health seeking behavior		
Treatment sought	Sought treatment WHERE?: • PHCU • Traditional practitioner • Hospital	**81.1%** **96.3%** **2.1%** **0.8%**

Conclusion and Recommendations

The findings of the assessment depict a poor nutrition situation, above the WHO emergency threshold in Mayendit County which is being caused by an interplay of factors ranging from household food insecurity, disease, poor maternal care practices, and limited program coverage. This calls for concerted efforts with an integrated approach on the interventions being implemented in the area with a special focus on a Blanket Supplementary Feeding Program (BSFP) since the nutrition situation is classified above emergency in Mayendit County. In addition, a Targeted Supplementary Feeding Program (TSFP) should be scaled up due to the high cases of moderately malnourished children and an Outpatient Therapeutic Program (OTP) due to the high numbers of severely malnourished children. In addition, the nutrition program currently being implemented by the various partners requires a behavior change communication strategy (BCC) with an emphasis on infant and young child feeding in order to improve the nutrition situation. In addition, the health programs implemented both in the North and South Mayendit should be scaled up with an increased focus on integrated management of childhood illnesses (IMCI). The food security and livelihoods (FSL) programs implemented in the area require immediate scale-up as the population start the dry period and as drought renders most of the households vulnerable to food insecurity and eventually malnutrition. The FSL program needs to focus on empowering the livelihoods of the population e.g. providing fishing nets, in order for them to mitigate household food insecurity. In addition, there is urgent need to review the half-ration per month currently provided and to increase this to full rations, especially in the coming months which are anticipated to be lean months. This is also the need to address intra-household and inter-household food sharing. Lastly, there is an urgent need to increase the coverage and scale up of the programs currently implemented in Mayendit County, due to its vastness and inaccessibility, in order to have a wider reach to vulnerable populations.

INTRODUCTION

Background

Unity State is the second largest state in the Upper Nile region bordering Southern Kordofan in the north; it also borders Warrap, Lakes, Jonglei, and Upper Nile States. Unity State has an area of 38,837 square kilometers (14,995 sq. mi) and is composed of nine counties, which are divided into a Southern area and a Northern area[1], namely Mayom, Rubkona, Panrieng, Leer, Guit, Koch, Abiemnom, Mayendit, and Payinjiar. Socio-economically, the people of Unity State depend on agricultural production, cattle keeping, fishing, hunting, and local trading.

Mayendit County is one of the nine counties of Unity State; it borders Leer to the east and Koch to the North. With the current state expansion it falls under Southern Liech State with the state quarter in Leer and Tonj North to the west, Ayod to the north east across the Nile and Panyijar counties to the south. Mayendit County has 13 payams. The county is naturally separated between the North and the less populated South by large swamps. Mayendit North has had minimal humanitarian assistance since May 2015, when all partners in the area were forced to relocate due to insecurity. There have been repeated displacements across the area and the January-March 2016 Integrated Phase Classification (IPC) survey classified the nutrition status as 'very critical'.

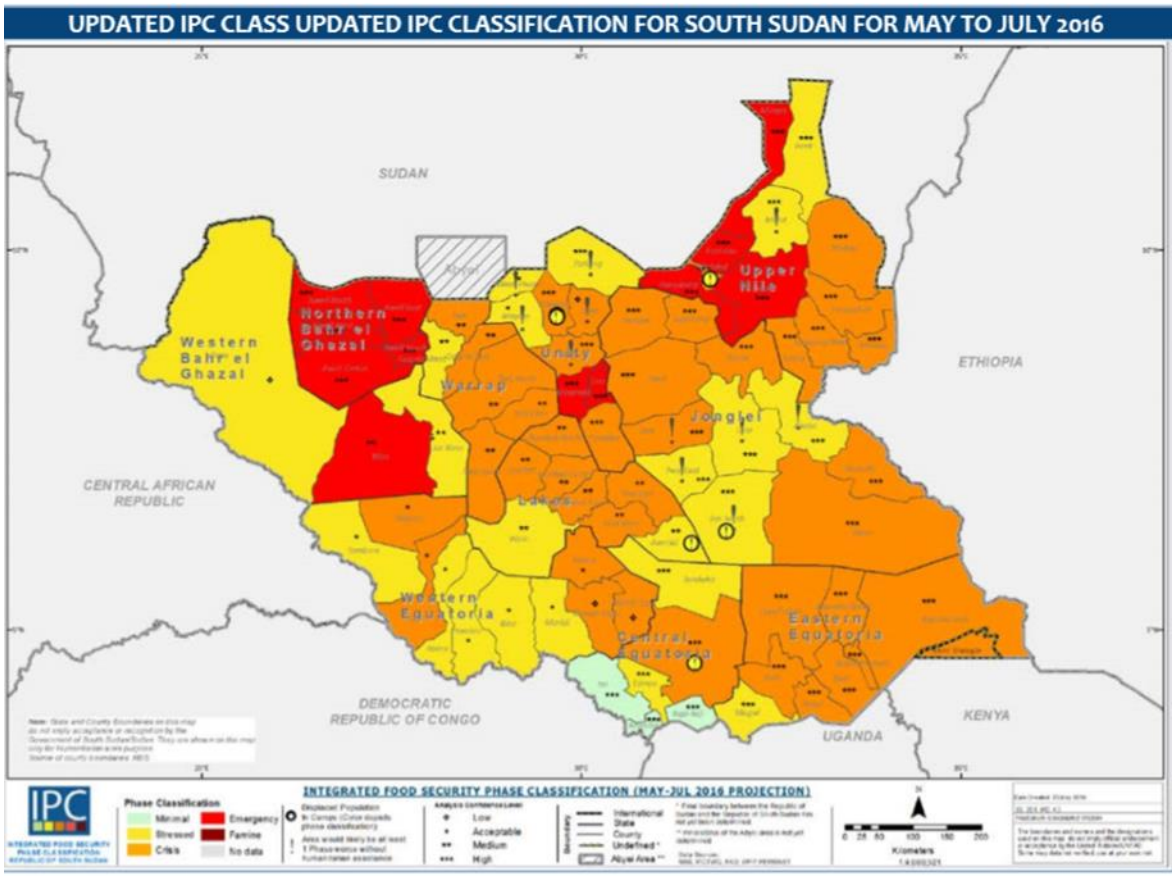


Figure 1: IPC classification for S. Sudan for projection period Jan-Mar 2016

[1] http://www.ssddrc.org/states

The map above according to the IPC Acute Food Insecurity Analysis released on February 8, 2016, highlights that the situation in south-central Unity is severe and likely to deteriorate even further from January to March 2016 as most significant and flood related food sources become unavailable with the onset of the dry season. In addition, the IPC Technical Working Group in South Sudan had projected that Unity State would be classified as an emergency between January and March 2016.

Mayendit County has had no SMART survey data representative of the whole county; however, UNIDO performed a SMART assessment in Mayendit North (April 2016) whose findings indicate poor nutrition among the surveyed population according to WHO standards. The prevalence of GAM based on weight for height z scores/and or oedema was 24.2% (20.4 – 28.5 95% CI) and the prevalence of SAM was 4.0% (2.4 – 6.6 95% CI). Samaritan's Purse also conducted a SMART survey in Mayendit South in December 2015 which indicated a poor nutrition situation. The survey results showed that the prevalence of GAM based on weight for height z scores /and or oedema was 16.1% [(12.1 - 21.0 95% C.I.) and the prevalence of SAM was 2.4% [1.3 – 4.5, 95% C.I.].

Ongoing interventions in the county are:

- Samaritan's Purse implements nutrition, WASH, and FSL interventions in Southern Mayendit.
- Universal Intervention for Humanitarian Organization (UNIDO) implements various programs including health and nutrition, WASH, child protection, and education in Mayendit North and partly in the South.

Objectives

The overall objective was to provide anthropometric data along with mortality and morbidity rates using the SMART methodology for Mayendit County. Food security and livelihoods information was to be collected using qualitative methods.

Specific Objectives

- To estimate the prevalence of acute malnutrition of children aged 6-59 months
- To estimate the retrospective Crude Under Five Mortality rates.
- To estimate the prevalence of some common child illnesses (suspected measles, diarrhea and acute respiratory illnesses).
- To estimate the coverage of measles vaccination, Vitamin A supplementation, and deworming status among children aged 6-59 months.
- To describe the current household food security and livelihoods situation.

METHODOLOGY

Survey Methodology

a) Geographic Target area and Population Group:

The SMART nutrition survey was carried out in Mayendit County, Unity State, South Sudan. The study population was children from the age of 6 to 59 months.

b) Survey period

The survey was conducted from the 15th to the 25th of May 2016. Training for enumerators lasted four days and involved a standardization test and piloting.

c) Survey design

The SMART survey adopted a cross-sectional household survey design. A two-stage cluster sampling was employed to select the households participating in the surveys. Cluster sampling using the probability proportional to population size (PPS) method was used to select clusters by the ENA software. All villages were included in the initial sample selection with each village considered a cluster.

d) Sample size

A sample size of 48 clusters of 12 households (576 households) was chosen and was expected to be enough to ensure representativeness with acceptable precision. This was different from what was presented for methodology. The sample size was reviewed from 678, which was earlier based on an assumption of a 90-day recall period from the Mortality sample. This was later reduced to 576 due to the recall period of 106 days which was determined in the field as provided the most accurate date for the recall period. The earlier proposal was initially 48 clusters with 14 households per clusters; this was revised to 48 clusters with 12 households which provided a target of 576 households. This is represented in the table below:

Table 2: Sample size calculation parameters

Parameter	Anthro	Mortality	Justification
Estimated Prevalence	24.2	3.34	This is adopted the April 2016 small-scale SMART Survey in Mayendit North by UNIDO.
Desired Precision	4.0	0.6	Recommendation from Global SMART Guideline/April, 2016 small-scale SMART in Mayendit North by UNIDO.
Design Effect	1.5	1.09	Recommendation from Global SMART Guideline/April, 2016 small-scale SMART Survey in Mayendit North by UNIDO.
Recall Days		106	Confirmed from field.
Average HH Size	7.7	7.7	April 2016 small-scale SMART Survey in Mayendit North by UNIDO.
% Children Under-Five	22.1		April 2016 small-scale SMART Survey in Mayendit North by UNIDO.
% Non-Response	10	10	To Cater for Expected Non-Response Rate based on April 2016 small-scale SMART in Mayendit North by UNIDO.
Sample Size	**522**	**576**	

e) Cluster selection

Two-stage cluster sampling was used. In the first stage, clusters were randomly selected based on PPS using the ENA for SMART software (July 2015 update). Village-level population figures were updated with the support of the South Sudan Rehabilitation Agency (SSRA) focal persons and the payam chiefs who enabled accurate population estimates in consideration of population migration in and out.

f) Selection of households

Simple random sampling was used to select the households which involved listing all the households in the selected cluster, and assigning each household a number which was written down on a piece of paper. Each piece of paper was then folded and the enumerators, with the participation of the village leaders/elders/chiefs randomly sampled the 12 households.

A household was defined as consisting of all persons with family or other social relationships among themselves eating from the same cooking pot and sharing a common roof.

Survey Implementation

Survey details (methodology) were discussed with the Nutrition Information Working Group (NIWG) – South Sudan for validation of the methodology prior to the survey exercise and after the survey for the preliminary results. Validation of both happened on 12th May 2016 and 9th June 2016 respectively. Relevant information on security and access were obtained from the SP security focal person and South Sudan Rehabilitation Commission (SRRC) authorities in Mayendit County. Meetings were held with the respective administrative authorities on arrival by the survey team.

a) Survey team recruitment

Recruitment was conducted on 14th May 2016 by the consultant and SP Nutrition Program Manager. The recruitment of the survey team was done based on their prior experience in a similar survey and educational background.

b) Survey period

The survey was conducted from the 15h to the 25th of May 2016 (to include enumerators training and data collection of both the SMART data on nutrition, mortality and morbidity and qualitative data on FSL).

c) Survey training

The teams were trained intensively for four days. The training focused on survey objectives, methodology, anthropometric measurements, field procedures, interviewing techniques, administration of the survey tools, and conducting focus group discussions (FGDs) and key informant interviews (KIIs). A standardization test and field test were conducted as part of the training. The standardization test was to evaluate accuracy and precision of the survey enumerator's measurements, each enumerator took measurements of 10 children (aged 6-59 months) twice.

d) Survey management and organization

The survey had six teams each comprising of one team leader and two survey assistants. The teams were actively supervised by the consultant, technical assistant consultant for Mayendit North, and Samaritan's Purse staff who were on the field with them. Each team was assisted by a village guide (recruited at the village level) to lead and guide the survey team within the village in locating the selected households.

e) Data collection and field work

Anthropometric survey

Structured questionnaires were used to collect anthropometric and morbidity data from all children within the eligible age range (0-59 months) using an anthropometric questionnaire. The collected data was:

- **Age:** The age of the children was determined using a local calendar of events (no birth records available). The calendar of local events was jointly developed with the survey assistants and community leaders. A separate calendar of events was adapted for the northern and southern parts of the county to consider memorable events in each area.
- **Sex:** Male or female.
- **Weight:** Children's weights were taken without clothes using SECA digital scales (100 g precision).
- **Height/length:** Children were measured using wooden UNICEF measuring boards (precision of 0.1 cm). Children less than 87 cm were measured lying down, while those greater than or equal to 87 cm were measured standing up.
- **Mid-upper arm circumference:** MUAC measurements were taken at the mid-point of the left upper arm using child tapes (precision of 0.1 cm).
- **Bilateral Pitting Oedema:** Assessed by the application of normal thumb pressure on both feet for three seconds. Occurrence of pitting oedema on both feet upon release of the fingers indicated nutritional oedema classified as severely malnourished.
- **Referral:** All severely malnourished children found were referred using referral forms to UNIDO while all moderately malnourished children were referred to SP.

Child Morbidity:

Two-weeks retrospective morbidity data was collected from mothers/caregivers of all children included in the anthropometric measurement. The mother/caregiver was asked whether or not the child had diarrhea, cough, fever, skin infection, or eye infection in the two weeks preceding the survey.

Mortality

Retrospective mortality data was collected in all the visited households, including those with no children aged 6-59 months. A recall period of 106 days was used.

f) Data quality

Data quality was ensured through: the recruitment of a highly qualified survey team, survey assistant training with emphasis on age estimation using calendar of local events, a standardization test, piloting, close supervision of the teams by the Consultant, technical

consultant (for Mayendit North), SP and UNIDO staff, daily meetings during data collection to address challenges, data entry completed on a daily basis, and daily plausibility checks.

g) Data Management and Analysis

ENA for SMART software 2011 version (July 9th, 2015 update) was used to enter and analyze anthropometric and mortality data. Morbidity data was analyzed using Excel.

h) Survey Limitations

- Access challenges due to the poor road network and the swampy nature of the area at this period of the year (many flooded areas).
- Long travel hours as teams had to walk long distances in flooded areas (2-4 hours, one way) to access villages.

RESULTS

Demographic characteristics

A total of 567 households were visited for the mortality survey. The total population sample was 4,628.5 as summarized in the table below.

Table 3: Survey demographics results

Parameters	Results
Total number of households	567
Total population sampled	4,629
Males	2,149
Females	2,480
Sex Ratio	0.86
Birth rate	0.77
In-migration rate (Joined)	4.52
Out-migration (Left)	13.29
Average household size	8.2
Total population of children under 5	879
% of under-five population	20.1%

Anthropometric results (based on WHO standards 2006):

From the results, a total of 825 children (428 boys, 397 girls) aged 6-59 months were assessed for their nutritional status through anthropometric measurements from 567 households out of the 576 households planned registering a non-response rate of 2%. The sample size was achieved as there was a high number of children included in the survey (above the expected 719 children for this number of households), which can be explained by large household size of 8.2 persons per household.

The data analysis for Weight for Height Z scores (WHZ) was done with 754 children (391 boys, 363 girls) based on the SMART exclusion criteria as recommended by the NIWG. The overall data quality was scored as excellent (score of 2%, see Annex 3 plausibility check on anthropometric results), and the standard deviation (SD) for WHZ was 1.05. The age ratio of 6-29 months versus 30-59 months was 0.115. The design effect for WHZ <-2 was 1.43 which indicated a normal distribution (as expected with no indication of pockets of malnutrition).

a) Distribution by sex and age

The ages of the children were determined by recall using the calendar of local events developed by the survey teams during the training. From the results, among the surveyed children, boys and girls were equally represented (boys/girls ratio was p=0.495). The age ratio of 6-29 months to 30-59 months was 0.95, meaning there was normal distribution (the value is expected to be around 0.85).

This is as shown in the table below:

Table 4: Distribution of age and sex of sample

	Boys		Girls		Total		Ratio
AGE (mo.)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy: girl**
6-17	89	52.7	80	47.3	169	22.4	1.1
18-29	106	53.3	93	46.7	199	26.4	1.1
30-41	85	50.9	82	49.1	167	22.1	1.0
42-53	81	56.6	62	43.4	143	19.0	1.3
54-59	30	39.5	46	60.5	76	10.1	0.7
Total	391	51.9	363	48.1	754	100.0	1.1

b) Wasting

Estimation of prevalence of malnutrition was done based on WHO 2006 standards. The prevalence of GAM was 22.8 % (19.3 - 26.7 95% C.I.) and the prevalence of SAM was 5.2 % (3.5 - 7.5 95% C.I.) The nutrition situation is critical (above the emergency/critical level of 15% according to the WHO classification), as shown below.

Table 5: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex

	All n = 754	**Boys** n = 391	**Girls** n = 363
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(172) 22.8 % (19.3 - 26.7 95% C.I.)	(97) 24.8 % (19.9 - 30.4 95% C.I.)	(75) 20.7 % (16.5 - 25.6 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(133) 17.6 % (14.9 - 20.8 95% C.I.)	(74) 18.9 % (14.9 - 23.7 95% C.I.)	(59) 16.3 % (12.7 - 20.6 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(39) 5.2 % (3.5 - 7.5 95% C.I.)	(23) 5.9 % (3.8 - 8.9 95% C.I.)	(16) 4.4 % (2.4 - 8.0 95% C.I.)

Figure 2: Gaussian Curve for Malnutrition by WHZ

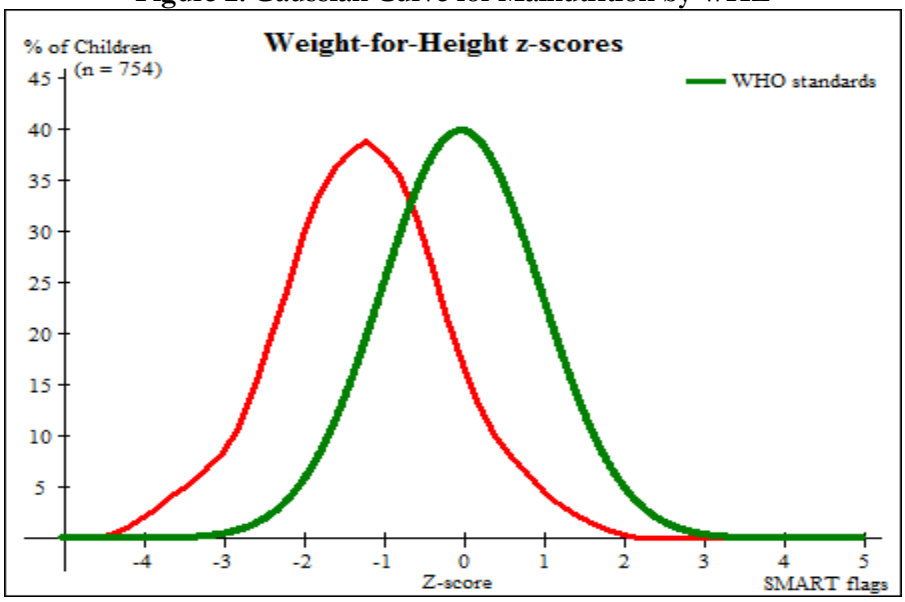


Figure 2 above depicts the WHZ distribution curve (in red) of the survey sample relative to the WHO- Gaussian curve (green). The findings indicate a slight shift to the left of the sample curve which indicates poor nutrition status of the sampled population in comparison to the reference population. The SD for WHZ was 1.05 (which lies within the acceptable range 0.8 – 1.2), indicating representativeness in the sample selection. However, the SD value was slightly high which was indicative of some difference in children between different payam clusters, especially clusters located in the swamps, far-off villages and villages neighboring other counties that were prone to cattle raiding attacks, especially in Mayendit North. This was also as evidenced by the slightly higher design effect (1.43).

Table 6: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
Age mo.	**Total**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	169	19	11.2	38	22.5	112	66.3
18-29	199	8	4.0	21	10.6	170	85.4
30-41	167	3	1.8	29	17.4	135	80.8
42-53	143	8	5.6	28	19.6	107	74.8
54-59	76	1	1.3	17	22.4	58	76.3
Total	754	39	5.2	133	17.6	582	77.2

As depicted by the table above, when the prevalence of wasting is disaggregated by age, the 6-17 months age group is more affected by wasting as compared to the other age-groups. For all the 6-59 months children affected by moderate wasting, 22.5% are aged between 6-17 months while 22.4% are aged 54 -59 months.

The prevalence of GAM based on MUAC was 12.9% (9.5 - 17.2 95% C.I.) and SAM based on MUAC was 1.6 % (0.9 - 2.9 95% C.I.)

c) Underweight

The prevalence of underweight was 23.0% (20.2 - 26.0 95% C.I.). As was the case of acute malnutrition between boys and girls, there was no significant difference in the level of underweight between the boys and girls as they were both equally vulnerable to malnutrition. This is as shown by the table below:

Table 7: Prevalence of underweight based on weight-for-age z-scores by sex

	All n = 753	**Boys** n = 391	**Girls** n = 362
Prevalence of underweight (<-2 z-score)	(173) 23.0 % (20.2 - 26.0 95% C.I.)	(101) 25.8 % (22.0 - 30.0 95% C.I.)	(72) 19.9 % (16.6 - 23.7 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(142) 18.9 % (16.4 - 21.5 95% C.I.)	(85) 21.7 % (18.3 - 25.6 95% C.I.)	(57) 15.7 % (12.9 - 19.1 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(31) 4.1 % (2.9 - 5.8 95%	(16) 4.1 % (2.7 - 6.2 95%	(15) 4.1 % (2.4 - 7.0 95%

	C.I.)	C.I.)	C.I.)

When the data is disaggregated into the different age-groups, the same trend as seen with wasting is observed, i.e. more children aged 6-17 months are affected by being underweight as compared to the other age groups. This is true for both severe and moderate underweight where out of all the children affected by severe underweight and moderate underweight, 6.5% and 21.4% respectively are aged between 6-17 months. This is as shown in the table below.

Table 8: Prevalence of underweight by age, based on weight-for-age z-scores

		Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
Age mo.	**Total**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	168	11	6.5	36	21.4	121	72.0
18-29	199	10	5.0	38	19.1	151	75.9
30-41	167	3	1.8	32	19.2	132	79.0
42-53	143	4	2.8	21	14.7	118	82.5
54-59	76	3	3.9	15	19.7	58	76.3
Total	753	31	4.1	142	18.9	580	77.0

d) Stunting

Stunting is an indicator of chronic (long-term) malnutrition which is mainly due to long term food deprivation, micronutrient deficiencies, recurrent illnesses, and other factors which interrupt normal growth. Findings indicated an overall global chronic malnutrition prevalence of 14.9 % (12.0 - 18.4 95% C.I.) and severe chronic malnutrition prevalence of 3.0 % (1.8 - 4.9 95% C.I.). Stunting was slightly higher among boys 18.1 % (13.7 - 23.7 95% C.I.) than girls 11.5 % (8.9 - 14.6 95% C.I.). However, there was no significant difference in the level of stunting between the boys and girls, indicating that boys and girls are at equal risk of being stunted. This is as shown in the table below:

Table 9: Prevalence of stunting based on height-for-age z-scores and by sex

	All n = 744	**Boys** n = 386	**Girls** n = 358
Prevalence of stunting (<-2 z-score)	(111) 14.9 % (12.0 - 18.4 95% C.I.)	(70) 18.1 % (13.7 - 23.7 95% C.I.)	(41) 11.5 % (8.9 - 14.6 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(89) 12.0 % (9.7 - 14.6 95% C.I.)	(54) 14.0 % (10.8 - 17.9 95% C.I.)	(35) 9.8 % (7.5 - 12.7 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(22) 3.0 % (1.8 - 4.9 95% C.I.)	(16) 4.1 % (2.3 - 7.5 95% C.I.)	(6) 1.7 % (0.7 - 4.1 95% C.I.)

Mortality

The retrospective mortality rate was calculated based on data collected on the 106 day recall. Out of 576 households planned to be sampled for mortality data, data was collected in 567 households.

There were 4,629 individuals recorded as present during the recall period, 879 of whom were children under 5 (20.1%). Among all deaths recorded, 32 occurred in persons aged 18 – 49 years, 4 in 50-64 years age group, 2 in 12-17, 5 in the 65-120 years age group, 6 in under-fives, and 4 in 5-11 years age group.

The Crude Mortality Rate (CMR) was 1.08 deaths per 10,000 per day [0.79 – 1.48, 95% C.I.] while the Under 5 Mortality Rate (U5MR) was 0.64 deaths per 10,000 per day [0.21 – 1.98 95% C.I.], as summarized in table 8 below. The CMR mortality rates were below the emergency level as per the WHO thresholds[2].

This is as summarized in the table below:

Table 10: Retrospective mortality results

Parameters	Results (CI 95%)
CMR(deaths/10,000/day)	**1.08 [**0.79-1.48, 95% CI] **DEFF 1.34**
U5MR(deaths in children <5/10,000/day	**0.64** [0.21-1.98, 95% CI] **DEFF 1.91**
Number of current HH residents	4629
Number of current HH residents <5years old	879
Number of deaths during recall period	53
Number of deaths during recall period (<5 years)	6
Recall period (days)	106
Average Household size	8.2
% Non-response Households	2%

Of the deaths recorded during the recall period, 66% were caused by injury/traumatic, 1.9% were caused by illness, and 32.1% were unknown. A total of 67.9**%** of the deaths reported occurred in the current place, 15.1% in the place of last residence, and 13.2% during migration.

Further analysis is done of the population demographics to explain the CMR. On disaggregation of the data by gender, the results show that the males are highly affected with mortality cases as compared with the females with CMR of **1.98** (1.40-2.78) and **0.30** (0.13-0.70) respectively. On further disaggregation of the data by age groups, the results show that the persons aged above 18 years are mostly affected by the mortality i.e. 18-49 years (1.81), 50-64 years (1.47), and 65-120 years (3.70).

This is as depicted by the following population demographic pyramid.

[2] WHO emergency threshold of <2deaths/10,000/day (U5MR) mortality rate and <1 death/10,000/day Crude Mortality Rate(CMR)

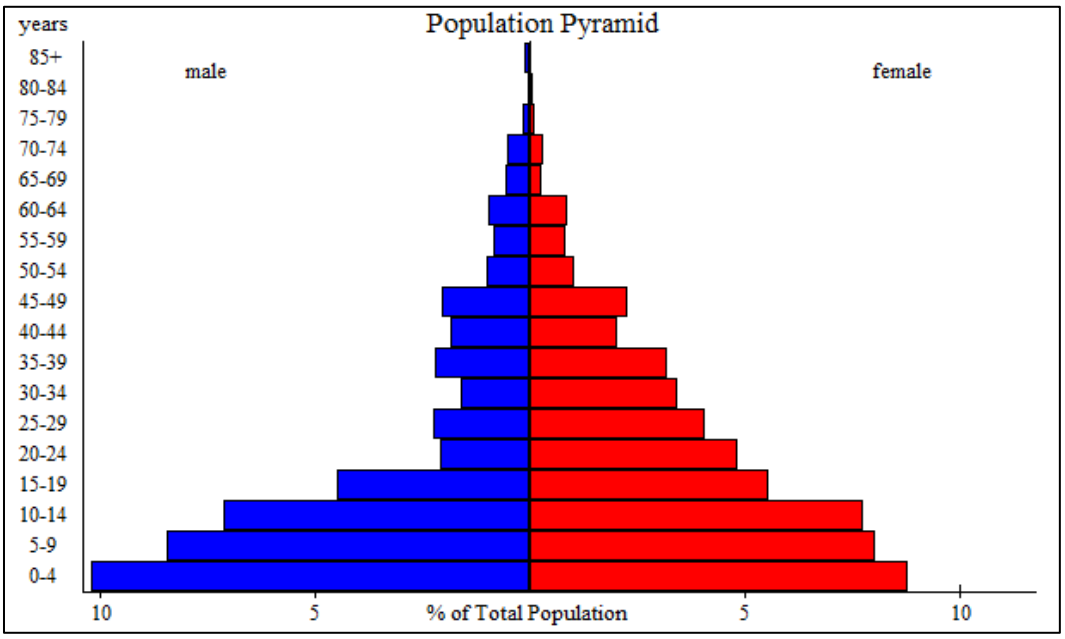


Figure 3: Population pyramid

Child Morbidity and Health Seeking Behavior

Retrospective morbidity data was collected among children 6-59 months (two-week recall) to assess the occurrence of main diseases. Results showed that 55.9% (n=461) of children were reportedly sick in the two weeks prior to the survey (Table 2). Among children reported sick, 63.6 % (n=293) had episodes of fever, 32.1% (n=148) of cough, 47.1% (n=217) of diarrhea, 10% (n=46) of skin infection, and 4.1% (n=19) of eye infection.

Health seeking behavior was assessed by asking the respondents what they did the last time their child was sick. Quality of health care services and duration taken before a sick child receives medical attention contributes to the severity of illness. Survey findings indicate an average health seeking behaviors by the caregivers with 81.1% of the caregivers seeking assistance. Of those who sought assistance, (96.3%) sought assistance from health facilities (PHCU). Only a few of the caregivers (2.1%) sought assistance from the traditional healers and hospital (0.8%).

Table 11: Prevalence of reported illness in children in the two weeks prior to interview, Mayendit County, Unity State, South Sudan, May 2016.

	n	N	Proportion
Morbidity	**461**	**825**	**55.9%**
Fever	293	461	63.6%
Cough	148		32.1%
Diarrhea	217		47.1%
Skin Infection	46		10%
Eye Infection	19		4.1%
Sought treatment	374	461	81.1%

Immunization and Supplementation

i. Vitamin A

WHO recommends that Vitamin A supplementation starts at 6 months and subsequently at 6 months intervals until a child reaches 5 years old. Caregivers were shown Vitamin A capsules and asked whether their children had taken a similar one in the preceding 6 months of the survey. The survey findings indicate that only 25% (n=206) of children 6-59 months had received Vitamin A supplementation within the last 6 months prior to the survey, which is below the recommended coverage of 80%.

ii. Measles Vaccination

The source of information on measles immunization was either the child's health card or mother's recall. The proportion of children 9-59 months vaccinated against measles was 60.8% (n= 465). Of these children the ones verified by card was 76.8% while 23.2% was according to their mothers recall. These coverage rates are below the recommended EPI coverage cut off points of 80%.

iii. Deworming

Deworming of children under the age of 5 years is recommended by WHO in order to improve their health and nutrition status. Analysis was done for children aged 12-59 months. From the survey results, only 29.7% (n= 219) of the children were found to have been dewormed in the last 6 months.

This information is summarized in the graph below:

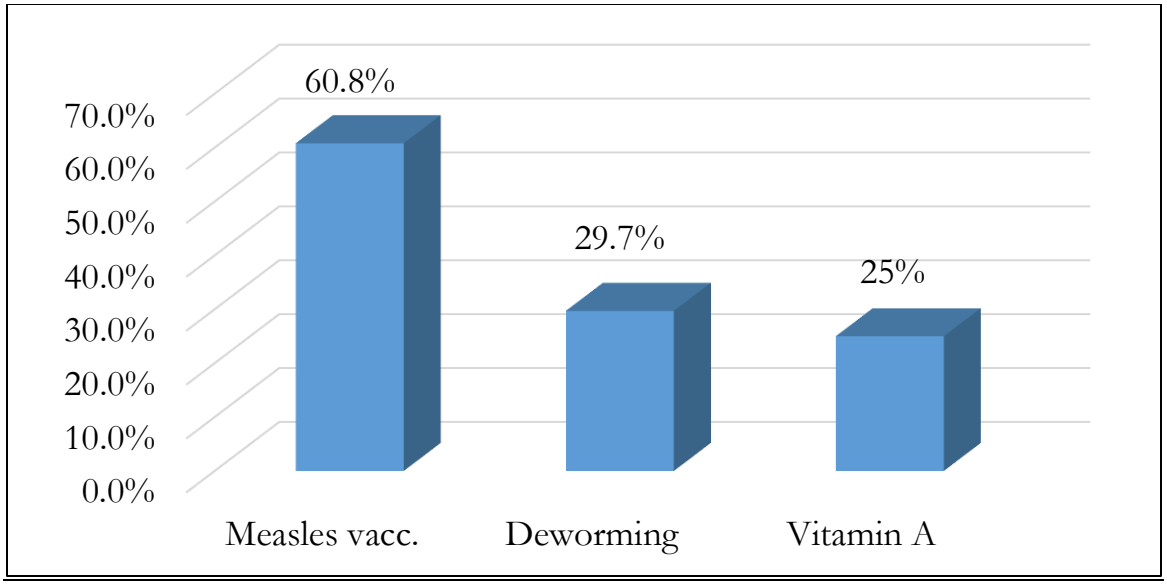


Figure 4: Immunization and supplementation coverage

Food Security and Livelihoods (Qualitative)

The Sphere Standards definition of food security considers a population to be food secure when all people, at all times, have physical and economic access to sufficient, safe and

nutritious food for a healthy and active life. Within this definition, the two elements of food security are:

- Availability (the quality and quantity of the food supply); and
- Access (entitlement to food through purchases, exchange and claims).

Food insecurity is at the heart of food crises and food-related emergencies. It is an underlying cause of malnutrition and mortality, and a significant factor in longer term livelihood security. Food insecurity may cause irreparable damage to livelihoods, thereby reducing self-sufficiency. It is therefore part of the process leading to malnutrition, morbidity, and mortality. In addition, the state of being food insecure directly contributes to destitution and damaged livelihoods in the long term. In other words, if there is acute food insecurity, there is a nutritional risk.

The IPC Acute Food Insecurity Analysis released on February 8, 2016, highlights that the situation in south-central Unity is severe and likely to deteriorate even further during January to March 2016 period as most significant and flood related food sources become unavailable with the onset of the dry season. In addition, the IPC Technical Working Group in South Sudan had projected that Unity State would be classified as an emergency between January and March 2016.

Based on this, SP sought to understand the current food security situation by incorporating a qualitative component on food security in the Mayendit County SMART survey.

Results

The food security information was collected through KIIs and FGDs; a total of 18 FGDs (in each of the 13 payams) and 21 KIIs (community, SP, UNIDO, WFP). A total of 21 respondents participated in the KIIs while 144 respondents were from the FGDs.

The qualitative data was first transcribed and then analyzed using the emerging themes.
From the results for FSL:

i. Theme 1: Food Security and Livelihoods

- Most of the respondents (64%) reported that they do not have seed for planting this season. Some of the households reported current sharing of food rations due to insufficient monthly rations.
- A majority of the respondents (67%) rely on the food rations provided while some (16%) reported selling of fish and firewood. A total of 17% of the respondents relied on the crops they were planting and from the previous harvest. However, most of the respondents reported that they did not have enough seed for planting this season. Some reported to use the food ration seeds for planting.
- Conflict and frequent cattle raids, especially in the North caused loss of cattle on which they relied mainly for milk consumption and sale as reported by majority (83%) of the respondents.

ii. Theme 2: Food prices

- Most of the respondents (72%) reported increased food prices as compared with December last year and less variety of food products in markets. This however varied during food drops/rations where the food prices went down.

iii. Theme 3: Coping strategies

- A majority (60%) of the respondents reported that when food insecure they reduced the number of meals per day. Others (26%) relied on neighbors who received food rations, or were working, 8% who had cattle reported to selling them to get money to buy food. A few reported going for fishing and eating water lilies as their main coping strategy mechanism.

iv. Theme 4: Vulnerability

- Most of the respondents (68%) reported that households with single mothers/widows were most vulnerable to food insecurity. Others (28%) highlighted that internally displaced persons (IDPs) due to conflict or floods were more vulnerable to food insecurity. A total of 4% of the respondents reported that households not registered or having ration cards were most vulnerable to food insecurity.

DISCUSSION

The results indicate that children aged 6-59 months are also affected by malnutrition as evidenced by the GAM prevalence of 22.8% (19.3 - 26.7 95% C.I.) which is classified as an emergency nutrition situation as per WHO standards. The prevalence of underweight 23.0% (20.2 - 26.0 95% C.I.) is also classified as medium depicting a poor nutrition situation in Mayendit South. The poor nutrition situation in Mayendit County could be explained by an interplay of several basic, immediate and underlying factors that influence nutrition outcomes as per the UNICEF conceptual framework on the causes of malnutrition.

a) Immediate factors

As shown by the survey results, the morbidity of the children aged 6-59 months was high with 55.9% of the children being sick within the last 2 weeks and suffering from the main childhood illnesses known to aggravate the nutrition situation of children under 5 years i.e. fever (63.6%), diarrhea (47.1%), cough (32.1%), etc. This calls for increased focus and scale-up on integrated management of childhood illnesses (IMCI) which can be addressed by the existing health program being implemented by various implementing partners e.g. UNIDO and Medair. In addition, there is need to integrate with WASH interventions in order to address the high prevalence of diarrhea (47.1%). This calls for an integrated approach for nutrition interventions implemented in the area by the partners.

Secondly, the qualitative results pointed to inadequate food consumption for children aged 6-59 months. A majority of the respondents reported intra-household food sharing which included the half-ration provided by WFP. As highlighted from the household demographics results, the average household size was 8.2 and the proportion of children under the age of 5 years was 20.1%. This meant that there were a lot of household members who were vulnerable to malnutrition. This was also highlighted by the current coping mechanisms adopted by the households, which included reducing the number of meals consumed per day. The results concur with the recent IPC report (February 2016) that highlights Unity State to be in emergency (phase 4) in terms of food insecurity.

b) Underlying factors

From the qualitative results of the survey, household food insecurity was highlighted as a point of concern in Mayendit County. Most of the respondents (64%) reported that they do not have seed for planting this season. This is also similar to the SP Rapid Staple Crop Seed Assessment results in Southern Mayendit County (conducted in April 2016) which highlighted that 87% of households do not have any seed for the upcoming planting season. In addition, some of the households reported sharing of food rations due to insufficient monthly rations.

Households also reported that the coming months i.e. June, July, and August, would be lean months as it is the planting season. The results concur with the recent IPC report (February 2016) that highlights Unity State to be in emergency (phase 4) in terms of food insecurity.

In addition, from the qualitative results, respondents from most of the households had begun to adopt different coping mechanisms to mitigate the increasing household food insecurity. This included the majority (60%) of the respondents reporting that when food insecure they reduced the number of meals per day. Others (26%) relied on neighbors who

received food rations, or were working, while 8% who had cattle reported selling them to get money to buy food as their main coping strategy mechanism.

Secondly, the survey results also showed increased food prices and decreased variety from the local markets as compared to the same period last year. This has impacted the purchasing power of the household which affects household access to food. As reported by the recent Food Security Assessment done by SP in October 2015, in Mayendit, 47% relied on purchased food while 24% of respondents relied on their own production. Most of the respondents (72%) reported increased food prices as compared with December last year. This however varied during food drops/rations where the food prices went down. This highlights financial barriers to access the limited food sold in the local markets. Also, in terms of vulnerability, some of the respondents reported that female-headed households were more vulnerable to food insecurity due to increased work load for the caregivers and given the high numbers of persons per household.

In addition, inaccessibility and vastness of Mayendit County contributed to the limited coverage of the food security program. This was particularly evident by the pockets of malnutrition found in the villages that are deep in the swamp and those that border other counties, where they are more vulnerable to cattle raids. This shows that household food insecurity is one of the contributing factors to high malnutrition.

c) Basic causes

The main basic causes that were highlighted from the qualitative assessment was instability of the area due to conflict and frequent cattle raids, especially in the North which caused loss of cattle which the community relied mainly for milk consumption and sale as reported by majority (83%) of the respondents. The insecurity and frequent cattle raid attacks affected the nutrition situation by continuous disruption of relief and development operations in the remote villages affected. This was especially true for Mayendit North (villages bordering Koch County) and South (villages deep in the swamps). This in turn had an impact on accessibility due to lack of proper infrastructure in the flood-prone area.

This calls for political goodwill to ensure stability in the region, especially with the recent signing of the peace agreement. In addition, more peace and conflict-resolution initiatives are required to ensure stability in the region.

CONCLUSION

The findings of the assessment depict a poor nutrition situation, above the WHO emergency threshold in Mayendit County which is being caused by an interplay of factors ranging from household food insecurity, disease, poor maternal care practices, and limited program coverage. This calls for concerted efforts with an integrated intervention approach with a special focus on BSFP since the nutrition situation is classified above emergency in Mayendit County. In addition, TSFP should be scaled up due to the high cases of moderately malnourished children and OTP due to the high numbers of severely malnourished children.

In addition, the nutrition program currently being implemented by the various partners requires integration of a BCC with an emphasis on infant and young child feeding in order to improve the nutrition situation. In addition, the health programs implemented both in the North and South Mayendit should be scaled up and increase focus on IMCI and supplementation of Vitamin A and deworming in an integrated approach. In addition, the FSL programs implemented in the area require immediate scale-up as the population starts the dry period and as drought makes most of the households vulnerable to food insecurity and eventually malnutrition.

The FSL program needs to focus on empowering the livelihoods of the population e.g. giving fishing nets, in order for them to be able to mitigate household food insecurity. In addition, there is urgent need to review the half-ration per month currently provided by WFP to full rations, especially in the coming months which are expected to be lean. This is also to address the issue of intra-household and inter-household food sharing. Lastly, there is an urgent need to increase the coverage and scale up of the programs currently implemented in Mayendit County, due to its vastness and inaccessibility, in order to have a wider reach of the vulnerable populations.

RECOMMENDATIONS

Theme	Recommendations	By Who
Nutrition Situation	• Consider a BSFP to address the poor nutrition situation. • Urgent scale-up of the TSFP and increase its coverage by having multiple distribution points in Mayendit County (especially the payams that are far). • Strengthening the referral systems of malnourished children from the community and active case-finding to the nutrition programs. Continuous screening of children under-five and the pregnant and lactating women is required using MUAC.	**Samaritan's Purse, UNIDO, Medair and other implementing partners**
	• Scale-up of the OTP should be in the area and increase its coverage by setting up the program in multiple payams/PHCU/PHCC due to the spatial barriers in accessing the existing OTP sites which are centralized. • Provision of integrated nutrition and health interventions e.g. deworming and Vitamin A supplementation. • Adoption of community outreach nutrition activities to improve the coverage of nutrition interventions.	
Health status	• Strengthening primary health care by increasing the coverage of the health program and interventions with a focus to IMCI by decentralizing the services to other payams. Integrate with WASH interventions in order to address the high prevalence of diarrhea (47.1%).	
Food Security	• Strengthen the livelihoods of the communities by provision of seeds for planting and proper farm equipment during this season. Education on better farming practices may also be considered. • There is need to increase the half-ration per month currently provided to full rations, especially in the coming months which are anticipated to be lean. This is also to address the issue of intra-household and inter-household food sharing. • Consider integrated food assistance programs, e.g. food for work, in order to reduce over-reliance of the population on food assistance.	**WFP, Samaritan's Purse**
Insecurity	• Political goodwill should be fostered, especially with the signing of the peace agreement in order to reduce the insecurity in the region. • Additionally, peace and conflict resolution initiatives should be considered in the county in order to address the recurrent cattle raiding which leads to loss of lives and property.	**GOSS and Partners**

ANNEXES

Annex 1: Selected Clusters

Village Name	Population	Cluster Number
Guomguol	200	1
Loang	210	2
Darwet	350	3
Letwech	600	4
Kerthiang	310	5
Dhorbuoni	592	6
Dhorchak	500	7
Poolnor	400	8
Kech Biel Joak	110	9
Tharkek	200	10
Hele	500	11
Tiem Chiek	220	12
Dablual	980	13
Kat	870	14
Kuiew	800	15
Kapngaydeng	240	16
Beer	405	17
Ngoal	405	18
Mangoy	461	19
Kuerbuowni	462	20
Panthiang	258	21
Panthiang	258	22
Thokwath riak	300	23
Dhiach	654	24
Dhoarnyanyal	204	25
Pan yak ruey	186	26
Ganyang	233	27
Pathiat	262	28
Kuany Kueet	261	29
Pompom	190	30
Chuohjiok	870	31
Chidar	1200	32
Pantotyiey	1800	33
Dhoar Gatluok	792	34
Tuochluak	450	35
Maperchiengkuony	438	36
Nyinwaar	510	37
Nyang	678	38

Gem	786	39
Dhoarleek	732	40
TokGok	672	41
Dhoartiel	1108	42
Thok pan gier	610	43
Thok pan koat	315	44
Pading	710	45
Pan Lualni	347	46
Thardhuany	363	47
Tuoy	573	48
Mayiek/ Mayar	400	RC
Chotchor	320	RC
Buoth	1404	RC
Kuok	1320	RC

Annex 2: Plausibility Results

	Value	Comment
Missing/Flagged data	0.1%	Excellent
Overall Sex ratio	p=0.308	Excellent
Overall Age distribution	p=0.115	Good
Dig preference score - weight	0	Excellent
Dig preference score - height	0	Excellent
Dig preference score - MUAC	2	Excellent
Standard Dev WHZ	1.05	Excellent
Skewness WHZ	0.00	Excellent
Kurtosis WHZ	0.07	Excellent
Poisson dist WHZ-2	p=0.102	Excellent
Overall	**2%**	**Excellent**

Annex 3: Mortality Questionnaire

DEMOGRAPHY & MORTALITY QUESTIONNAIRE

DATE OF INTERVIEW: [D][D]/[M][M]/ [Y][Y]

COUNTY:	**PAYAM:**	**NAME OF INTERVIEWER:**
BOMA:	**VILLAGE:**	
CLUSTER NO. [ ][ ]	**TEAM NO. [ ][ ]**	**HOUSEHOLD[3] NO. [ ][ ]**

01	02	03	04	05	06	07	08	09	10
No.	Name	Sex (M/F)	Age (years)	Joined on or after: _____ (Start date of the recall period - ex. Jan. 1, 1900) **WRITE 'Y' for YES. Leave BLANK if NO.**	Left on or after:	Born on or after:	Died on or after:	Cause of death 1= illness 2=injury 66=unknown	Location of death 1=current location 2=during migration 3=in place of last residence 4=other
a) List all the people that slept in this household last night.									
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
b) List all the people that slept in this household on the **first night of the recall period (FILL IN DATE/EVENT)** but did **NOT sleep** in the **household last night**.									
1					Y				
2					Y				
3					Y				
4					Y				
5					Y				
6					Y				
7					Y				
c) List all the people that slept in this household on the **first night of the recall period but have since died**									
1							Y		
2							Y		
3							Y		
4							Y		
5							Y		

Was anyone in the household pregnant at the start of the recall period? No [ ] Yes [ ] If yes, how many? _____

[3] HH definition: Group of people living under same roof & sharing food from the same pot for a period of at least 6 months. In home with multiple wives, those living and eating in different houses are considered as separate HHs. Wives living in different houses and eating from same pot are considered as one HH.

Annex 4: Food Security and Livelihoods Guide

FGD/ KII GUIDE

Food Availability

- What are the main food crops on the ground this season?
- What condition do you expect the next harvest to be (good, poor)? Explain and give reasons why. For example,

(Poor because of pest infestation, lack of rain, late rain, not sufficient seeds planted, etc.). OR Good because the rains were good this season, fertiliser was used, no pests experienced....etc.)

- How much does it cost to buy 1kg of the staple from the market? How does this compare to the same month last year (more, less, how much more?)

Food Access

- Explain the main income sources/livelihoods of this community this season.
- How many of you have more than one income source (e.g., work in the fields during harvest time, have daily labour work in the town in other seasons, other HH member contributes earnings too).
- Tell me about stored food in your home: what staple do you store, how long does it last?
- What do you do when you finish the stored food?
- How many of you keep livestock? What do you keep? How do you use these animals (sell the milk, breed and sell after xx months, fatten and sell after x months).

Vulnerability and Coping Mechanisms during Food Insecurity

- Have you faced food insecurity in the last 3 months?
- What months are you most likely to face food insecurity in this area?
- What do you do when you don't have enough food for three meals a day (base this on experience if possible using the most recent examples).
- In your opinion, which households face food shortage in this community?
- WHY?

Additional Questions

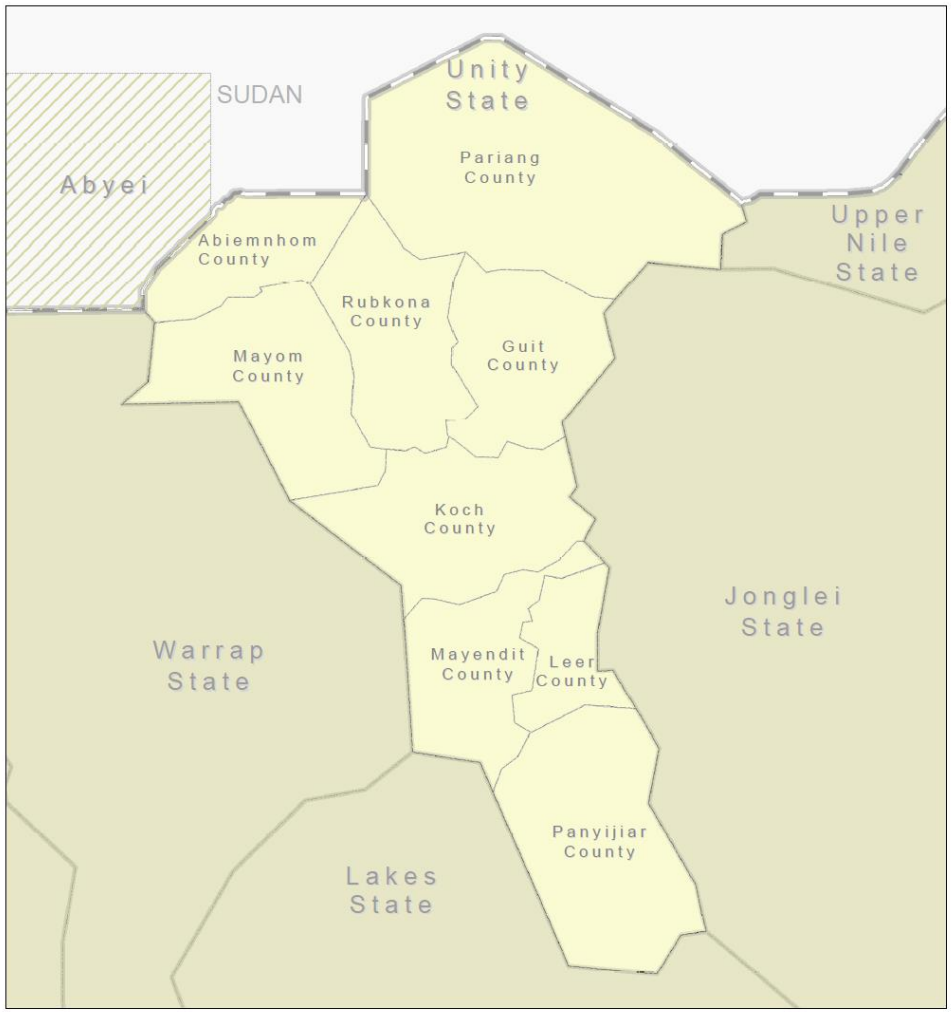
- **[Partners]** Are you currently implementing any FSL programs?
- What are the main challenges with regard to food security in the area?
- In your opinion, what is the current food security situation of the local population?
- In your opinion, what do you recommend to be done in order to improve the food security situation in Mayendit South?

Annex 5: Anthropometry Questionnaire

ANTHROPOMETRIC & HEALTH QUESTIONNAIRE

(To be conducted in EVERY HH with children 6-59 months - from the random starting point onwards)

Date (D/M/Y): …..../…..../….. Cluster No: …… Team No: …..… State: …….. County: ……..…….. Payam: ……. Boma: ……..……..
Village:……...……

1.1 Child no.	1.2 HH ref. no.*	1.3 Sex --------- **m** = male **f** = female	1.4 Age in months (use local calendar of events)	1.5 Weight in Kg (ex 12.4)	1.6 Height in cm (ex 78.1)	1.7 Oedema ---------- **n** = No **y** = Yes	1.8 MUAC in cm (ex 11.3)	1.9 Vit. A in last 6 mths ---------- - **0** = No **1** = Yes	1.1 Deworming in last 6 months …… **0 =** No **1 =** Yes	1.11 Measles Vaccine ---------- ------ **0** = No **1** = Yes with EPI card **2** = Yes recall **88** = Child <9m	1.12 Illness in past 2 weeks? ---------- **0** = No **1** = Yes If no, END SURVEY.	1.13 Type of Illness ---------- ---- **1** = Fever* **2** = Cough** **3** = Diarrhoea*** **4** = Skin Infections **5** = Eye infections **66** = Other (specify)	1.14 Treatment sought: **0** = None sought **1** = Hospital **2** = PHCC/PHCU **3** = Mobile /outreach clinic **4** = Village health care worker **5** = Private physician **6** = Relative/ friend **7** = Shop **8** = Traditional practitioner **9** = Pharmacy **66** = Other (specify)
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													

Annex 6: Map of Mayendit County