



**EVALUATION OF THE
NUTRITIONAL SURVEILLANCE ACTIVITIES OF ACF-USA**

AND

ANALYSIS OF THE NUTRITIONAL SITUATION

IN

**SOUTH SUDAN
2005**

By:

**Josephine Querubin, Medical-Nutrition Coordinator
Onesmus Muinde, Nutrition Surveillance Program Manager**

**ACTION AGAINST HUNGER
SOUTH SUDAN MISSION**

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	3
LIST OF ACRONYMS	4
LIST OF TABLES AND MAPS	5
INTRODUCTION	6
I. EVALUATION OF HUMANITARIAN RESPONSE TO NUTRITION EMERGENCIES IN 2005	7
1. POLITICAL AND HUMANITARIAN CONTEXT, SOUTH SUDAN.....	7
2. INDICATORS OF ACUTE MALNUTRITION	7
3. NUTRITION SURVEY AND ADVOCACY ACTIVITIES OF ACF-USA IN 2005.....	8
4. RESPONSE TO SURVEY RECOMMENDATIONS AND ADVOCACY INITIATIVES	10
II. CAPACITY DEVELOPMENT TO IMPLEMENT NUTRITION SURVEYS AND TREATMENT PROGRAMS	14
III. ANALYSIS OF NUTRITIONAL SITUATION IN SOUTH SUDAN IN 2005	16
1. FRAMEWORK FOR ANALYSIS	16
1.1. <i>Survey Methodology</i>	16
1.2. <i>Estimated Average of Malnutrition in southern Sudan</i>	16
1.3. <i>Geographical Coverage</i>	16
1.4. <i>Seasonal Variations</i>	17
2. NUTRITIONAL SURVEILLANCE COVERAGE AND MALNUTRITION SITUATION IN SOUTHERN SUDAN IN 2005	17
2.1. <i>Nutrition Situation and Malnutrition Trends in Upper Nile</i>	22
2.2. <i>Nutrition Situation and Malnutrition Trends in Bahr el Ghazal</i>	27
2.3. <i>Nutrition situation and malnutrition Trends in Equatoria</i>	30
CONCLUSION	32

ACKNOWLEDGEMENTS

ACF-USA would like to express its gratitude to:

- ◆ OFDA and ECHO for funding ACF-USA nutrition surveillance activities;
- ◆ UNICEF for funding Sudanese participants for Trainings organized by ACF-USA
- ◆ SRRC and all partner agencies, OLS and non-OLS, for their collaboration;
- ◆ All the communities who so willingly shared their personal information and assisted with the surveys.

LIST OF ACRONYMS

ANA	Annual Needs' Assessment – World Food Program
ACF-USA	Action Against Hunger USA
ARC	American Refugee committee
ACHA	The African Centre for Human Advocacy
BEG	Bahr El Ghazal
BYDA	Bahr El Ghazal Youth Development Agency
CEAS	Church Ecumenical Action for Sudan
CMA	Christian Mission Aid
CPA	Comprehensive Peace Agreement
CRS	Catholic Relief Services
ECHO	European Commission Humanitarian Aid Office
EPI	Expanded Program of Immunization
FAO	Food and Agriculture Organization
FEWSNET	Famine Early Warning System Network
GAM	Global Acute Malnutrition
GRADS	Global Relief and Development Services
ICRC	International Committee of the Red Cross
IDP	Internally Displaced Person
INGO	International Non-Governmental Organization
IRC	International Rescue Committee
IRIN	Integrated Regional Information Networks
MoH	Ministry of Health
MUAC	Mid-Upper Arm Circumference
NFI	Non Food Item
NSCSE	New Sudan Centre for Statistics and Evaluation
OFDA	Office of Foreign Disaster Assistance
OLS	Operation Lifeline Sudan
OLS EP&R	Operation Lifeline Sudan Emergency Preparedness and Response
PHCC	Primary Health Care Centre
PHCU	Primary Health Care Unit
PRDA	Presbyterian Relief & Development Association
SAM	Severe Acute Malnutrition
SC-UK	Save the Children – United Kingdom
SC-US	Save the Children – United States of America
SFC/P	Supplemental Feeding Centre/ Program
SINGO	Sudanese Indigenous Non-Governmental Organization
SPLM/A	Sudanese People Liberation Movement/Army
SRRC	Sudan Relief and Rehabilitation Commission
SUHA	Sudanese Health Association
SUVAD	Sudanese Voluntary Agency for Development
TDA	Toposa Development Association
TFC/P	Therapeutic Feeding Centre/ Program
UN	United Nations
UNDP	United Nations Development Program
UNICEF	United Nations International Children's Emergency Fund
UNICEF WES	UNICEF Water, Environmental and Sanitation
UNOCHA	United Nations Office of the Coordination for Humanitarian Affairs
WFP	World Food Program
WFP/TSU	World Food Program/ Technical Support Unit
WHO	World Health Organization

LIST OF TABLES AND MAPS

TABLE 1: NUTRITION SURVEYS IN SOUTH SUDAN, 2005, ACF-USA.....	9
TABLE 2: RECOMMENDATIONS AND RESPONSES PER LOCATION, ACF-USA NUTRITION SURVEYS IN SOUTH SUDAN, 2005.	10
TABLE 3: RECOMMENDATIONS AND RESPONSES PER LOCATION, NUTRITION SURVEYS IN SOUTH SUDAN, ACF-USA, 2004.....	11
TABLE 4: RECOMMENDATIONS AND RESPONSE PER LOCATION, ACF NUTRITION SURVEYS IN SOUTH SUDAN, 2003.	11
TABLE 5: RECOMMENDATIONS PER SECTOR OF INTERVENTION, ACF NUTRITION SURVEYS IN SSD, 2005.	12
TABLE 6: NAME OF NGO AND NUMBER OF TIMES STAFF WERE SENT TO A NUTRITION SURVEY TRAINING.	14
TABLE 7: NAME OF NGO AND NUMBER OF TIMES STAFF WERE SENT TO A NUTRITION TREATMENT TRAINING. ...	15
TABLE 8: RESULTS OF ALL NUTRITION SURVEYS IMPLEMENTED IN SOUTHERN SUDAN IN 2005, EXPRESSED IN Z-SCORE.....	17
TABLE 9: RESULTS OF NUTRITION SURVEYS IN UPPER NILE, 2005.	22
TABLE 10: RESULTS OF NUTRITION SURVEYS IMPLEMENTED IN BEG, 2005.....	27
TABLE 11: RESULTS OF NUTRITION SURVEYS IMPLEMENTED IN EQUATORIA, 2005.....	31
Map 1. Nutritional Situation in south Sudan 2005.	Page 20
Map 2. Nutritional Situation in south Sudan 2004.	Page 21

INTRODUCTION

The mandate of Action Against Hunger (ACF-USA) is fighting malnutrition, which is achieved through nutritional, medical, water/sanitation, food security and advocacy projects. In South Sudan, one of its major areas of intervention has been on Nutrition, having established its expertise and reputation on nutritional surveillance and treatment since 2001.

The nutritional surveillance component of the program has been embarking on the following activities:

- **Rapid nutrition assessments**, which offers a rough indication of the nutritional situation of a population;
- **Nutrition surveys**, which estimate the rate of global and severe acute malnutrition among a certain population within a given period.
- **Advocacy**, following a plan outlining recommendations formulated after a nutritional survey, in order to obtain adequate and appropriate responses on the areas of concern identified – these could be on sectors of emergency nutrition treatment programs, food aid, primary health care, food security, water and sanitation, and basic living conditions.
- **Training**, to promote standardized methodologies and increase the technical capacity of other agencies to implement nutritional surveys and consequently increase coverage of nutritional surveillance in South Sudan.

Being undertaken over the past 3 years, this document similarly aims to review and evaluate the impact of the nutritional surveillance activities of ACF-USA in 2005. This is in terms of:

- ☞ Response by the humanitarian actors in South Sudan to the nutritional emergencies detected and to advocacy initiatives from nutritional surveys and assessments carried out (Section I); and,
- ☞ Outcome of the development of capacity for more national and international organizations to implement nutrition surveys (Section II).

Section III presents the nutritional situation in southern Sudan in 2005, and in locations where surveillance is maintained, to compare trends in the nutritional status over the last 2 years. The analysis is drawn from all nutrition surveys carried out by ACF-USA and other agencies.

I. EVALUATION OF HUMANITARIAN RESPONSE TO NUTRITION EMERGENCIES IN 2005

1. Political and Humanitarian Context, south Sudan

On 9th January 2005, the Sudan People's Liberation Movement (SPLM) and the Government of Sudan (GOS) signed the Comprehensive Peace Agreement (CPA) which officially ended 22 years of one of the longest and bloodiest wars of the African continent.

The conflict that broke out in 1983 claimed the lives of between 500,000 and 2 million civilians. Millions were forced to flee to safety both within Sudan and to other countries in Africa and elsewhere in the world. It is estimated that around 4 million people are internally displaced (IDPs), out of which around 2 million are in Khartoum. Sadly this puts Sudan as the country with highest number of IDPs in the entire world.

Apart from the enormous physical and psychological suffering that the conflict caused to the millions, the war has halted the social and economical development of the country. According to the UNDP Human Development Report, Sudan ranks 138th out of 162 countries worldwide in Human Development Index (HDI)¹. This clearly shows not only that Sudan remains one of the most underdeveloped countries in the world, but indicates the challenges that the country needs to address on the way to securing better prospects for its citizens in the future. The delivery of basic services like primary health care, sanitation or education to ordinary citizens, especially the most neglected ones in southern Sudan might de facto be the most important factor influencing the success of the CPA.

Although the CPA paves the beginning of the arduous reconstruction of the south, the lack of basic infrastructure, limited capacity of local human resources, numerous security threats and incidents that continued to disrupt efforts in rebuilding lives and communities, and thousands of IDPs moving back to their places of origin, along with the still inadequate access to food, water and basic health services, illustrates the context of south Sudan in 2005.

2. Indicators of Acute Malnutrition

Malnutrition is a state resulting from nutritional inadequacy in which an individual's physiological and physical functions are impaired. The condition may stem from a series of causes ranging from basic or structural factors to the immediate which is the individual's/population's insufficient intake of food. The latter is directly related to inadequate access to or availability of food or from loss of appetite or inability to absorb nutrients as a consequence of disease. The duration of exposure to these factors could either be chronic leading to growth failure or stunting in an individual (i.e., low weight or height in respect to age), an acute state manifested as wasting or thinness (i.e. low weight in respect to height), or both. Acute malnutrition carries with it a higher risk of mortality, the risk increasing with the severity.

The degree of acute malnutrition could either be moderate (weight for height index between 80% and 70% of the median²; or -3 and -2 Z-scores³) or severe (weight for height index below 70% of the median; or -3 Z-scores; and /or oedema). Global acute malnutrition (GAM) includes both moderately and severely malnourished cases within the population, i.e., all that are below 80% of the median or -

¹ 2001 UNDP Human Development Report

² The expression of malnutrition in percentage of the median takes in account the median weight of the reference population (NCHS).

³ The expression of malnutrition in Z-scores takes in account the median weight as well as the standard deviation from this median weight.

2 Z-scores, or oedema. Per default, all rates are expressed in 95% confidence interval, meaning the true value falling within that range at 5% error risk.

Nutritional surveys estimate the rate of global and severe acute malnutrition among a certain population within a given period. As newborns and younger children are most vulnerable to and would immediately manifest the effect of a change in the nutritional status of a population, anthropometrics surveys are performed among children under-five. The methodology to be used and the sample of children to be measured are determined according to the total population size and dispersion. In addition to the anthropometric measurements (age, sex, weight, height, oedema, MUAC⁴), nutrition surveys gather information on health, food security, and water and sanitation. A retrospective mortality survey is normally concurrently done with a nutrition survey, i.e. estimating the number of deaths among the total and the under-five population from the preceding 3 months and identifying the presumed cause.

A global acute malnutrition rate equal or above 15% and/or a rate of severe acute malnutrition above 3%⁵ are considered as the emergency and critical threshold for South Sudan.

3. Nutrition Survey and Advocacy Activities of ACF-USA in 2005

Twenty-eight nutrition surveys were carried out by 13 different international NGOs in 2003 and a third of these were done by ACF-USA; likewise in 2004, it has delivered 8 which more than a quarter of all surveys undertaken in south Sudan during the year.

To have better representativeness of the nutritional data collected, ACF-USA in 2005 increased its survey coverage to an average of 2.5 payams per survey (with a mean population of 20,000 per payam). The promptness in delivering nutritional survey results was also evaluated:

- ↳ An average of 3 weeks was spent in a surveyed location for data collection and field editing, and out of the field 3-4 days was used for processing and analysis (with Epi-Info and ANA software.). Completion, validation (at mission and headquarters level), and release of preliminary finding reports took a maximum of 5 days after the latter, while for the Final Report at a maximum of 10-12 days after the latter.

With continued support from ECHO, OFDA and UNICEF, nutritional and mortality data were collected and analyzed from 12 different locations across the 3 regions during the year:

⁴ MUAC: Mid-Upper Arm Circumference; this is a relevant indicator of the risk of mortality among children aged 1 to 5 years: MUAC is more significant for children aged 1 year and plus (≥ 75 cm in height) since MUAC does not change a lot from 6 months up to 1 year.

⁵ World Health Organization, 1995. *Classification of wasting prevalence in under five's*.

Table 1: Nutrition Surveys in south Sudan, 2005, ACF-USA.

No	Location	Region	Month	GAM	SAM
	Gogrial West Payams, Gogrial County, Warab State	BEG	December	25.2% [22.4%-28.2%]	3.8 % [2.7%-5.4%]
1	Bunagok, Awerial County	BEG	January	11.6%*	0.9%*
2	Kapoeta South County	WEQ	January	10.1% [7.3%-13.8%]	1.6% [0.6%-3.6%]
3	Kiechkuon, Luakpiny County	UN	February	24.0% [20.1%-28.3%]	4.4% [2.8%-6.9%]
4	Twic/Abyei, Warab State	BEG	March	31.0% [28.0%-34.2%]	5.1% [3.9%-6.9%]
5	Payuer, Renk County	UN	April	28.1% [23.4%-33.3%]	4.5% [2.6%-7.4%]
6	Kajokeji County	EEQ	June	8.3% [6.0%-11.4%]	1.5% [0.6%-3.5%]
7	Padak, Jonglei	UN	June	39.9% [34.7%-44.1%]	5.9% [4.0%-8.6%]
8	Akobo and Nyandit Payams, Jonglei	UN	September	20.3% [16.7%-24.4%]	2.4% [1.2%-4.4%]
9	Mvolo Payam, Mvolo County	WEQ	September	8.0%*	1.1%*
10	Guit County	UN	October	13.5% [10.3%-17.4]	1.1% [0.4%-3.0%]
11	Pagak, Maiwut County	UN	October	15.0% [11.8%-18.9%]	0.2% [0.0%-1.5%]
12	Old Fangak, Zeraf County	UN	October	17.3% [13.6%-21.6%]	1.7% [0.7%-3.8%]

* Exhaustive surveys

** Rapid Assessment in February 2005 confirmed persistence of malnutrition rate from December 2005, survey results presented.

BEG=Bahr el Ghazal, UN=Upper Nile, EEQ=Eastern Equatoria, WEQ= Western Equatoria

Upper Nile and Bahr el Ghazal continued to have high rates of malnutrition as it has been in the previous years, and among the 12 nutrition surveys conducted, global acute malnutrition (GAM) rate $\geq 15\%$ were detected in 7 locations (with a rapid assessment confirming the persistence of a critical nutritional situation in one other location surveyed by end of 2004) within these 2 regions (highlighted in table 1). Equatoria was the least nutritionally vulnerable region, recording a GAM rate less than 15% in the surveys done.

4. Response to Survey Recommendations and Advocacy Initiatives

Alongside the nutritional results, an analysis of the its cause/s as well as the related general needs of the population in terms of food security, health, water and sanitation, among others, are also undertaken in each survey. Consequently, multi-sectoral recommendations for responses to address the findings are always brought forward by ACF-USA. To allow the recommendations advocated for to be acted on, each survey report produced is always disseminated to a wide range of partners whether or not a nutritional emergency is detected; these include:

- The Federal Ministry of Health;
- All Agencies operating where the surveys have been done;
- All Nutrition Agencies operating in South Sudan;
- UN Agencies (UNICEF, WHO, FAO, UNOCHA and WFP);
- Surveillance bodies (FEWSNET, United Nation System Standing Committee on Nutrition (SCN) ;
- SRRC, both at Lokichoggio level and in the areas where the surveys were implemented;
- Centre for Research on the Epidemiology of Disasters (CRED), in Brussels.

The advocacy for the implementation of the recommendations was continued for 2 months following the release of each nutrition survey report. The following tables show the locations where surveys were done, number of recommendations made and respective responses over the last three years.

Table 2: Recommendations and Responses per location, ACF-USA nutrition surveys in South Sudan, 2005.

Surveyed Locations	Number of Recommendations	Number taken up	Number not taken up
Kapoeta	5	4	1
Bunagok	5	4	1
Kiechkuon, Kier	5	4	1
Twic Abyei	6	5	1
Panomdit, Koladar	6	6	0
Kajokeji*	0	0	0
Baidit, Jalle	3	3	0
Mvolo*	0	0	0
Akobo, Nyandit	5	2	3
Nimni	3	3	0
Pagak, Turu	7	2	5
TOTAL	45	33 (73%)	12 (27)

*: in Kajokeji and Mvolo, there were no advocacies done as a result of low malnutrition (Below 10% GAM) rates revealed by the nutrition surveys conducted in the areas. Recommendations made were predominantly on maintaining and improving the activities that were ongoing in the two locations.

Table 3: Recommendations and Responses per Location, Nutrition Surveys in South Sudan, ACF-USA, 2004.

Surveyed Locations	Number of Recommendations	Number taken up	Number not taken up
Kapoeta	7	2	5
Old Fangak	7	3	4
Keew	8	7	1
Duk	9	5	4
Mayiandit	7	4	3
Nyadin/Toch	8	2	6
Nuba	4	4	0
TOTAL	50	27 (54%)	23 (46%)

Table 4: Recommendations and response per location, ACF Nutrition surveys in South Sudan, 2003.

Surveyed Locations	Number of Recommendations	Number taken up	Number not taken up
Pandomit/Chuei	10	5	5
Old Fangak	11	9	2
Pagak	11	3	8
Lekuangle	11	8	3
Bugaya, Maaban	6	5	1
Gumriak	8	3	5
Nyadin/Toch	8	5	3
Khorfoulos (Atar)	6	4	2
TOTAL	71	42 (59%)	29 (41%)

During the year, 45 focused recommendations were made all-in-all and 73% of these were taken up by the targeted agencies. In past evaluations, the response rate has remained static at less than 60% from 2004 to previous years.

The recommendations encompassed different sectors including: food aid delivery, emergency or sustained nutritional treatment programs, promotion and delivery of sufficient primary health care services (including health education, EPI, etc), or immediate and long-term food security and water programs among others.

Table 5: Recommendations per sector of intervention, ACF nutrition surveys in SSD, 2005.

Sectors of intervention	Overall Recommendations	Frequency of response
FOOD AID: - Food distribution	4	4
NUTRITION: - Emergency feeding programs - Nutrition surveillance	5 0	3 0
HEALTH: - EPI services (measles) - Health education/promotion - Maintain or increase health services	5 5 5	5 5 4
FOOD SECURITY: - Distribution of seeds and tools - Distribution of fishing equipments - Veterinary services - Food security monitoring	0 0 1 5	0 0 0 5
WATER & SANITATION: - Drilling of boreholes	1	1

The overall response to recommendations made was greater compared to past experience and more encouraging was the marked improvement in direct nutritional interventions. This could be attributed to a higher effort for financial and programmatic flexibility by capable agencies this year following the poor response rate and capacity amid the high nutrition emergencies in 2004 that was highlighted then.

Out of the 5 emergency-targeted feeding programs that have been recommended for implementation in different locations with existing nutritional crises (i.e., particularly those with SAM rate >3%), three were implemented as compared to only two out of seven that were opened during the previous year:

- ↪ In Twic, collaboration between ACF-USA, GOAL and Mercy Corps in implementing nutritional treatment programs in the county was done. GOAL established 10 Supplementary Feeding Centers (SFC) in 5 of the 6 payams of Twic and where PHCC/Us are already being managed by them, ACF-USA implemented Therapeutic Feeding Center – Home Treatment Programs in 2 payams (Wunrok and Akak), while MC carried out preventive activities and a PD/Hearth program in Turalei. All in all, 200 severely and more than 1,000 moderately malnourished have been treated. Meanwhile, programs on food security, health, and water and sanitation being implemented by respective agencies on ground were strengthened.
- ↪ In Payuer, Malut County, the critical malnutrition rate exposed in April was attributed to a huge food deficit within the community, the minimal access to primary health care (especially immunization) and water, along with poor health-seeking behavior of majority of the population. MEDAIR has been the main agency providing humanitarian programs in the location, operating three Primary Health Care Units (PHCUs) located in Mading, Thiangrial and Maker villages in Panomdit Payam. The agency has since implemented a Therapeutic Feeding Program within its catchment area while technical assistance was provided by ACF-USA in its initial setting-up stage. Notably, plans are underway to drill boreholes in Malut County which had remained without any for a long time.

- ↵ In South Bor, intensive advocacy was done by ACF-USA together with the MoH, and MSF-Belgium later established a TFC in Padak while also technically supporting the local NGOs that are managing the PHC services in the county (CMA and SMC). Food security activities and initiatives being undertaken by several humanitarian NGOs on ground were also intensified.

Meanwhile, in Gogrial West, a rapid assessment carried out by ACF-USA in February 2005 confirmed a continuing nutritional deterioration signaled by another survey completed by World Vision in December 2005. Consequently, therapeutic and supplementary feeding programs were established and managed by ACF-USA in Alek payam that targeted treatment of 200 severely and 800 moderately malnourished children.

In Kiechkuon, considering the functional health services and facilities provided by ADRA and the number of expected SAMs (based on the survey and population of the area), a sustainable approach was advocated by ACF-USA to develop the capacity of the PHCC to integrate and implement nutritional therapeutic services for the population. Full primary health care package, especially immunization (EPI), was also recommended and the collaborated support by the MoH, UNICEF, and ADRA was enjoined. Eventually, two Community Health Workers from the PHCC were given full training course by ACF in July 2005 on the guidelines, standards and protocols on treatment of severely malnourished individuals. However, no nutrition service was yet delivered within the PHCC thereafter.

Likewise in Akobo, with an already existing primary health care network in the county, ACF-USA has recommended for delivery of treatment of malnourished cases within these facilities and has since liaised with the MoH and concerned agencies particularly World Relief that supports the PHCC/Us in the county. ACF-USA would continue to monitor the area in 2006 and would provide technical assistance to the PHCC.

II. CAPACITY DEVELOPMENT TO IMPLEMENT NUTRITION SURVEYS AND TREATMENT PROGRAMS

For the past 3 years, ACF-USA has been backed by OFDA and UNICEF in delivering nutrition training for multiple humanitarian partners operating in south Sudan. 23 organizations in 2002, 26 in 2003 and 19 in 2004 had sent personnel to the different trainings offered. Most of the trained personnel from international agencies had been able to directly implement nutritional surveys and an increase in number of surveys by the respective agencies was seen from 2003 to 2004. On the other hand, no survey was actually yet carried out independently by a national NGO.

In 2005, the general thrust towards increasing the local capacity was heightened and ACF-USA joined this collaborated effort and aimed to reach more Sudanese personnel and national NGOs for the capacity building component of its nutrition programs. The following levels and number of trainings were accomplished throughout the year:

- Introductory Skills-Building Sessions on Nutrition Surveys (target-2, completed-4): overview of nutrition/malnutrition; nutrition anthropometric surveys indicators; and sampling methodology.
- Advanced Skills-Building Sessions Focusing on Nutrition Surveys (target-2, completed-2): data processing, analysis and reporting using EPI 5/EPI NUT 2.2 software.
- Workshop on Rapid Assessment (target-2, completed-4): emergency nutrition and other sector need assessments. The workshop content includes rapid assessment methodologies in nutrition, health, food security, water and sanitation, and other domains crucial in cases of emergency.

All in all in 2005, the 6 nutritional survey trainings conducted covered 102 individuals representing 10 national and 21 international NGOs; of these, 58 are Sudanese nationals. These trainings were all conducted in Lokichoggio, each over a one-week period. The four rounds of rapid nutritional assessment trainings (as part of the multi-sectoral EP&R training organized and supported by OCHA/OLS) were carried out in Yei, Yambio and Rumbek, having 96 Sudanese nationals from the SRRC, local authorities and national NGOs.

The organizations with personnel trained are listed in the following table:

Table 6: Name of NGO and number of times staff were sent to a Nutrition Survey Training.

National NGO			
DOT (Diocese of Torit)	2	PRDA (Presbyterian Relief and Development Association)	2
TDA (Toposa Development Association)	1	SMC (Sudan Medical Care)	4
SUHA (Sudan Health Association)	2	ACHA (The African Center for Human Advocacy)	3
GRADS (Global Relief and Development Services)	2	NESI (Network for Sudanese Indigenous Organizations)	1
SUVAD (Sudanese Voluntary Agency for development)	1	BYDA (Bahr-el Ghazal Youth Development Agency)	1

International NGO			
SC-UK	2	Medair	1
WFP	1	World Vision International	2
MSF-B	2	Concern	2
GOAL	2	ICRC	2
IRC	1	CMA	2
UNICEF	1	Merlin	4
SC-USA	2	Tearfund	1
CEAS	1	Oxfam-GB	2
CRS	3	NCA	1
FHI	1	IR-UK	1
MSF-H	2		
Rapid Assessment Training			
SRRC (Sudan Relief and Rehabilitation Commission)	4	BYDA	2
OCHA	4		

To contribute to increasing the response rate and technical capability for targeted nutrition interventions in south Sudan, the training on Treatment of Acute Malnutrition was started by ACF-USA in 2005. The patho-physiology of acute malnutrition, systematic nutritional and medical treatment, home-based treatment, case management of acute complications associated with severe acute malnutrition, as well as designing, monitoring and evaluation of nutrition programs were the focus of the 3 training sessions conducted throughout the year.

All in all, 39 individuals have been trained on the treatment of malnutrition, 17 of which are Sudanese nationals.

Table 7: Name of NGO and number of times staff were sent to a Nutrition Treatment Training.

National			
DOT (Diocese of Torit)	1	SMC (Sudan Medical Care)	1
SUHA (Sudan Health Association)	2	ACHA (The African Center for Human Advocacy)	1
International			
SC-UK	1	Medair	2
World Vision International	1	MSF-B	2
Concern	2	GOAL	1
CMA	1	Merlin	2
SC-USA	1	Tearfund	2
CRS	1		

During the year as well, ACF-USA and Mercy Corps partnered with 3 national Sudanese NGOs – the African Centre for Human Advocacy (ACHA), the Sudanese Voluntary Agency for Development (SUVAD), and the New Sudanese Indigenous Non-Governmental Organization Network (NESI). All 3 have been extensively trained on organizational management, program monitoring and evaluation, advocacy, and on how to conduct, analyze and report nutritional surveys; additionally ACHA has been trained on designing and management of nutritional treatment programs.

ACHA and SUVAD have already each carried out a nutritional survey in 2005 while further support is being sought to enable ACHA to implement nutritional treatment programs.

III. ANALYSIS OF NUTRITIONAL SITUATION IN SOUTH SUDAN IN 2005

1. Framework for Analysis

1.1. Survey Methodology

There are two survey methodologies employed in the nutrition surveys included in this analysis, mainly depending on the size of the population:

- The exhaustive survey where all children aged 6 to 59 months of the target area are measured; as it includes the whole of the target population, the exhaustive survey gives the exact prevalence of malnutrition in that population.
- The sampling surveys where only a representative sample of children aged 6 to 59 months of the target area is measured. The results provide an estimated prevalence of malnutrition among that population, the true value for malnutrition being contained within the confidence interval. In this method there are three types of sample surveys namely simple, systematic and cluster sample surveys. Due to emergency situation in South Sudan

Thus, the analysis of the anthropometric data of 2005 includes results from:

- Exhaustive survey – in two locations where the under-5 population was inferior to 1,000 individuals.
- Two-stage cluster sampling methodology for the other surveys: with the two-stage cluster sampling, the sample is randomly selected among the target population on the basis of 30 *clusters*, ideally including 30 children in each cluster. However, the number of children in the clusters can be reduced according to the population figures. The *first stage* consists of the random selection of villages and the *second stage* of the random selection of families in the villages. All the children aged 6 to 59 months of the selected families are included in the survey. In all data that is presented, the prevalence of malnutrition is estimated with a 95% confidence interval (this value of the Confidence Interval is taken per default).

1.2. Estimated Average of Malnutrition in southern Sudan

The report gives estimated averages of the rates of acute malnutrition in southern Sudan, broken down for Upper Nile and Bahr el Ghazal; however it has to be noted that these are not a statistical representation of the nutritional situation throughout the South, but rather give an indication of the general situation.

Also significant is the number of nutrition surveys that detected nutritional emergencies, i.e. surveys for which the detected average rate stood at $\geq 15\%$ of global acute malnutrition. This information will be used in the following analysis as a key indicator of the gravity of the nutrition situation in the assessed areas.

1.3. Geographical Coverage

The report also gives an estimated representation of the geographical coverage of the nutrition surveillance activities in 2005. For practical reasons, the reference unit used is the county.

Again, the maps do not give a statistical representation of the coverage but rather an indication of the number of counties covered and the estimated average of the rates of malnutrition detected there.

1.4. Seasonal Variations

While the results of the nutrition surveys could suggest seasonal variations – higher rates of malnutrition detected during the hunger period (March to September) – the limited number of surveys per months and locations prevents a detailed analysis of seasonal trends over the year.

2. Nutritional Surveillance Coverage and Malnutrition Situation in southern Sudan in 2005

The selection of locations surveyed by the different agencies considers any or all of the following criteria:

- Recommendations formulated after rapid assessments to confirm the presence of a nutritional crisis in a particular area and estimate the rate of acute malnutrition;
- Monitoring of the nutrition situation of specific locations on a regular basis;
- Lack of baseline information on nutrition with a particular concern in the area;
- Evaluation of the effectiveness of agencies' intervention.

27 nutrition surveys were conducted in southern Sudan in 2005, covering 21 counties - 10 in Upper Nile (UN), 8 in Bahr-el Ghazal (BEG), and 3 in Equatoria (EQ).

By comparison, 13 counties (7 in BEG, 5 in UN and 1 in EQ) were covered in 2004, 15 counties (8 in UN, 6 in BEG and 1 in EQ) in 2003, and 15 counties (9 in UN, 5 in BEG and 1 in EQ) in 2002.

Table 8: Results of all nutrition surveys implemented in Southern Sudan in 2005, expressed in Z-Score.

	LOCATION	REGION	AGENCY	MONTH	GAM	SAM
1	Bunagok, Awerial County	BEG	ACF-USA	January	11.6%*	0.9%*
2	Kapoeta South County	EQ	ACF-USA	January	10.1% [7.3%-13.8%]	1.6% [0.6%-3.6%]
3	Malualbai, Mang'ok, Mangartong, Wunlang, Madhol and Yargot Payams, Aweil East County	BEG	TEARFUND	January	15.9% [12.7%-19.8%]	2.2% [1.1%-4.1%]
4	Motot, Pieri and Pulchuol Payams. Wuror County	UN	TEARFUND	February	22.9% [19.2%-27.2%]	2.5% [1.3%-4.5%]
5	Kurmuk County, Southern Blue Nile Region	UN	GOAL	February	9.1% [7.1% - 11.1%]	1.0% [0.4% - 1.7%]
6	Aweil West and North Counties	BEG	CONCERN	February	18.3% [15.2%-22.0%]	1.2% [0.5% -2.5%]
7	Kiechkuon, Luakpiny County	UN	ACF-USA	February	24.0% [20.1%-28.3%]	4.4% [2.8%-6.9%]
8	Bentiu, Rubkuona County, Unity State	UN	ACF-F	February	16.2% [13.0%-19.9%]	1.0% [0.4%-2.6%]
9	Rubkuona, Rubkuona County, Unity State	UN	ACF-F	February	16.1% [12.9%-19.9%]	2.1% [1.0%-4.0%]
10	Twic/Abyei Counties, Warab State	BEG	ACF-USA / GOAL	March	31.0% [28.0%-34.2%]	5.1% [3.9%-6.9%]

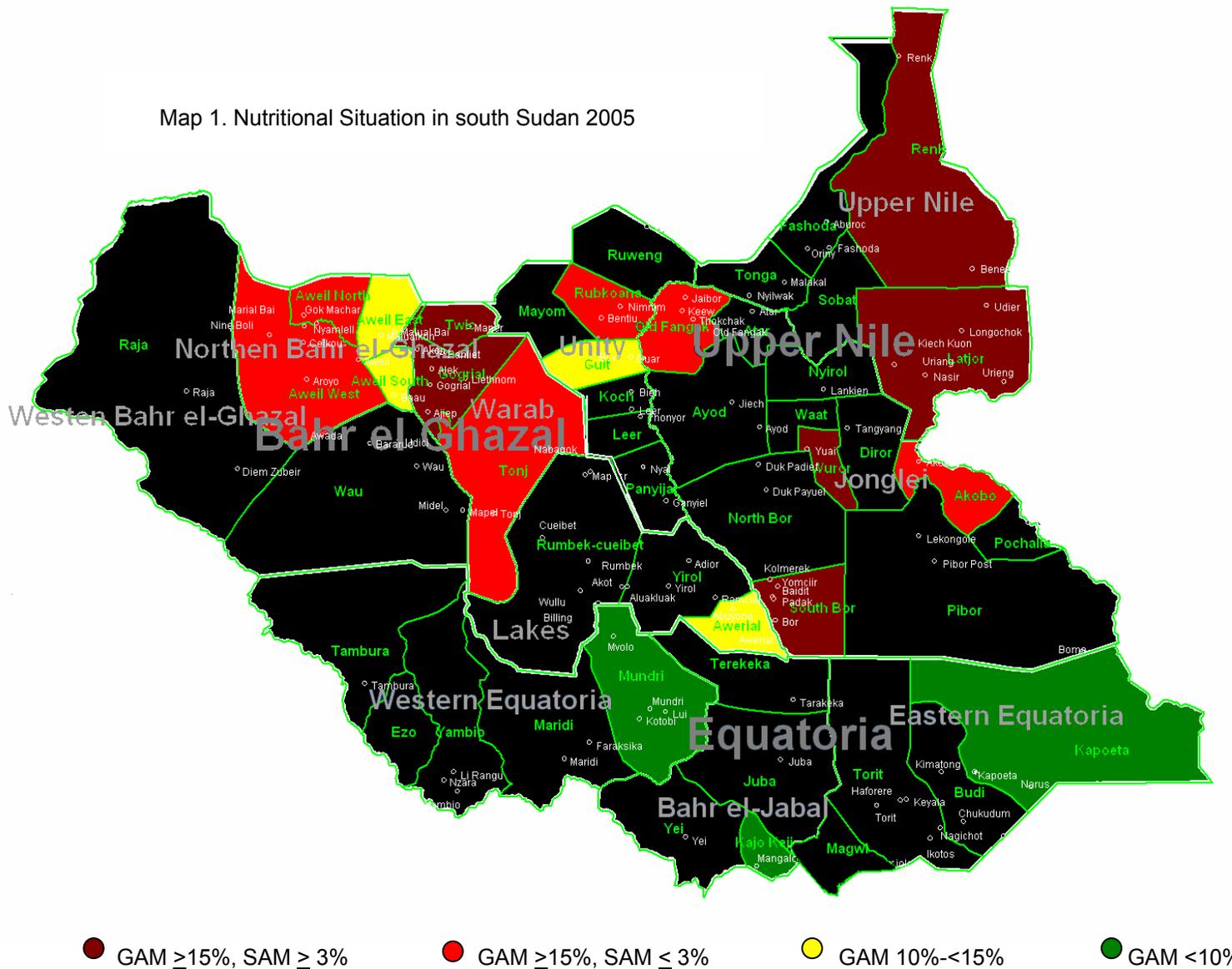
11	Tonj County, Lakes region	BEG	MSF-CH	March	20.9% [19.7% -22.0%]	2.8% [1.3%-4.3%]
12	Payuer, Malut County	UN	ACF-USA	April	28.1% [23.4%-33.3%]	4.5% [2.6%-7.4%]
13	Tieraliet, Panthou, Ayai, Wathmouk, Gakrol Payams, Aweil South	BEG	TEARFUND	April	20.5% 16.9%-24.8%]	3.4% [1.9%-5.7%]
14	Kajokeji County	EQ	ACF-USA/ ARC	June	8.3% [6.0%-11.4%]	1.5% [0.6%-3.5%]
15	Padak, South Bor County Jonglei State.	UN	ACF-USA/ CMA	June	39.9% [34.7%-44.1%]	5.9% [4.0%-8.6%]
16	Motot, Pieri and Pulchuol Payams, Wuror County	UN	TEARFUND	June	24.5% [20.6%-28.8%]	3.3% [1.9%-5.5%]
17	Mangok, Yargot, Wunlang and Mangar Tong Payams Aweil East County	BEG	MSF-F	July	26.3% [22.9%-29.6%]	4.0% [2.8%-5.1%]
18	Aweil west and north Counties	BEG	CONCERN	August	19.8% [16.4%-23.8%]	2.3% [1.2%-4.3%]
19	Akobo and Nyandit Payams, Akobo County	UN	ACF-USA/ ACHA	September	20.3% [16.7%-24.4%]	2.4% [1.2%-4.4%]
20	Mvolo Payam, Mvolo County	EQ	ACF-USA/ SUVAD	September	8.0%*	1.1%*
21	Nimni, Guit County	UN	ACF-USA	October	13.5% [10.3%-17.4]	1.1% [0.4%-3.0%]
22	Pagak, Mawuit County	UN	ACF-USA	October	15.0% [11.8%-18.9%]	0.2% [0.0%-1.5%]
23	Old Fangak, Zeraf County	UN	ACF-USA	October	17.3% [13.6%-21.6%]	1.7% [0.7%-3.8%]
24	Baac, Malualbai, Mang'ok, Mangartong, Wunlang, Madhol and Yargot Payams Aweil East County	BEG	TEARFUND	November	14.4% [11.3%- 18.2%]	1.6% [0.7%- 3.3%]
25	Ayai, Wathmouk, Gakrol, Panthou and Tieraliet Payams, Aweil South County	BEG	TEARFUND	November	14.0% [11.0%-17.6%]	1.8% [0.8%-3.7%]
26	Bentiu, Unity State	UN	ACF-F	November	20.8% [17.2%-24.8%]	1.9% [0.9%-3.7%]
27	Rubkuona, Unity State	UN	ACF-F	November	22.2% [18.6%-26.3%]	1.8% [0.8%-3.6%]
Average					18.7	2.4

* Exhaustive sampling, no confidence interval.

The 27 surveys covered 20 locations (other locations were surveyed more than once during the year), and GAM rates above 15% were demonstrated in 14 or 70% of these locations with 7 having SAM rates above 3%.

The following maps show the counties of the locations/payams surveyed and the corresponding malnutrition levels seen during the year and previous.

Map 1. Nutritional Situation in south Sudan 2005



** The last survey is taken for locations repeated.

2.1. Nutrition Situation and Malnutrition Trends in Upper Nile

The Upper Nile region borders BEG on the east, Nuba Mountains on the north and Equatoria on the south. It is administratively divided into three states namely Upper Nile, Jonglei and Unity. The states are further sub-divided into counties - Upper Nile comprising of Mabaan, Tonga, Fashoda, Sobat, Ulang/Latjor, Baliet, Longuchok, Maiwut, Lokongole and Luakpiny; Jonglei comprising of Old Fangak, Atar, Ayod, Nyirol, Waat, Wuror, Diror, North Bor, South Bor, Pibor, Akobo and Pochalla counties; and Unity State comprising of Ruweng, Rubkuona, Mayom, Guit, Koch, Leer and Panyijar.

The region is characterized by fertile land and is rich in oil. The Nile and numerous rivers pass through the region and provide important sources of food and income as well as transport routes to many parts of southern Sudan. With so many rivers, seasonal flooding is widespread. The food economy is based on agro-pastoralism and fishing, which account for more than 90 percent of the people's livelihood in SPLM/A areas. The main crops are sorghum and maize. Despite all the oil revenues, rivers and fertile land, the region has some of the highest malnutrition rates in the country⁶.

Fourteen nutrition surveys were conducted in the region in 2005. Six nutrition surveys provided either baseline information in areas where no nutritional data existed before or updated information in areas where surveillance was not consistent. These were in:

- ✧ Kiechkuon, Luakpiny county by ACF-USA;
- ✧ Payuer, Malut County, by ACF-USA;
- ✧ Padak, South Bor County by ACF-USA;
- ✧ Akobo and Nyandit payams, Akobo County by ACF-USA;
- ✧ Nimni, Guit County, in October by ACF-USA; and
- ✧ Pagak, Mawuit County by ACF-USA.

The rest were surveys monitoring and comparing malnutrition trends over certain periods (whether by the same organization or another). These were in:

- ✧ Motot, Pieri and Pulchuol payams, Wuror County by TEARFUND;
- ✧ Kurmuk County, Southern Blue Nile by GOAL;
- ✧ Bentiu, Unity State by ACF-F;
- ✧ Rubkuona, Unity State by ACF-F; and
- ✧ Old Fangak, Zeraf County by ACF-USA.

Table 9: Results of Nutrition Surveys in Upper Nile, 2005.

	LOCATION	MONTH	GAM	SAM
1	Motot, Pieri and Pulchuol Payams. Wuror County	February	22.9% [19.2%-27.2%]	2.5% [1.3%-4.5%]
2	Kurmuk County, Southern Blue Nile Region	February	9.1% [7.1% - 11.1%]	1.0% [0.4% - 1.7%]
3	Kiechkuon, Luakpiny County	February	24% [20.1%-28.3%]	4.4% [2.8%-6.9%]
4	Bentiu, Unity State	February	16.2% [13.0%-19.9%]	1.0% [0.4%-2.6%]
5	Rubkuona, Unity State	February	16.1% [12.9%-19.9%]	2.1% [1.0%-4.0%]
6	Payuer, Malut County	April	28.1% [23.4%-33.3%]	4.5% [2.6%-7.4%]
7	Padak, South Bor County Jonglei State.	June	39.9% [34.7%-44.1%]	5.9% [4.0%-8.6%]

⁶ Sudan Annual Needs Assessment 2004/2005

8	Motot, Pieri and Pulchuol Payams, Wuror County	June	24.5% [20.6%-28.8%]	3.3% [1.9%-5.5%]
9	Akobo and Nyandit Payams, Akobo County	September	20.3% [16.7%-24.4%]	2.4% [1.2%-4.4%]
10	Nimni, Guit County	October	13.5% [10.3%-17.4]	1.1% [0.4%-3.0%]
11	Pagak, Mawuit County	October	15.0% [11.8%-18.9%]	0.2% [0.0%-1.5%]
12	Old Fangak, Zeraf County	October	17.3% [13.6%-21.6%]	1.7% [0.7%-3.8%]
13	Bentiu, Unity State	November	20.8% [17.2%-24.8%]	1.9% [0.9%-3.7%]
14	Rubkuona, Unity State	November	22.2% [18.6%-26.3%]	1.8% [0.8%-3.6%]
Average			20.8%	2.5

* The average rate in locations where there is more than one survey is taken and counted only once in general average.

82% of the locations surveyed in Upper Nile in 2005 displayed global acute malnutrition rates that were equal or above 15%, with nutritional emergencies especially highlighted in 4 areas where even the SAM rates were in critical level.

In all 11 locations surveyed, the GAM and SAM prevalence averaged 20.8% and 2.5%, respectively; in 2004, the GAM was 19.7% and SAM 3.4%. *Taking only the rates in detected critical areas in 2005 (n=9), the prevalence ranged from 3.0% severely to 20.0% moderately malnourished (or GAM of 23%) children under-five in these surveyed areas:*

☞ In Kiechkuon, Luakpiny County⁷:

The food security situation has been vastly affected by the inadequate rainfall in the previous year; harvesting took place in November 2004 with lesser yield compared to the past harvest. There was little to no food available at the household level seen during the conduct of the survey. Families have been relying on WFP drops and on scarce fish from water points. Only 38.5% of mothers interviewed had their children vaccinated against measles, but only 2.9 could provide EPI cards. Apart from measles, diarrhea was also reported as a leading cause of morbidity in the county especially among younger children. Statistical comparative analysis of the survey results indicated that the 6-29 age group is 1.76 times at higher risk of malnutrition than the 30-59 age group ($1.4 < RR < 2.23$). There are functional boreholes in the location but is not sufficient to serve the whole population who continue to source water from the river and swamps, especially during wet seasons. Filtering or boiling of water for drinking consumption is not practiced. Availability and use of latrines is not common in the community; latrines were observed to be present only within NGO compounds and at the health centers.

☞ In Payuer, Malut County:

The community did not have adequate food during the time of survey in April that was within the hunger gap period. This was attributed to late and erratic rains in the past year which led to

⁷ Nutrition Survey report, ACF-USA Feb, 2005

destruction of crops and in turn poor harvest. Measles immunization coverage for children aged 9 to 59 months is low, 32.7% according to both mothers/caretakers and the evidence of vaccination card. Access to primary health care is also low with poor health-seeking behavior of majority of the population. There is no water system facility in the location and the attitude and practice towards taking safe drinking water as well as hygiene and sanitation are also negative. Though no death was reported for the under-fives in the last three months, water and sanitation related medical conditions (diarrhea reported as prevalent) remains one of the leading causes of morbidity in the location. As expected, these factors compromise the immune system especially of younger children and in turn affect their nutritional status. All household members consume two meals per day regardless of the age. Children aged 24 months and above are left to feed on their own in the same family bowl. This exposes them to malnutrition risk since they are likely to underfeed as compared to the older ones. Moreover, children consume poor quality foods such as "apach" stem and wild leaves for breakfast and even lunch. Poor weaning practices were observed: most children are weaned early at the age of four months with the same food given to adults; i.e., cow milk and sorghum porridge. Moreover, by custom, women, even when lactating, are responsible for most of the household and farming chores, compromising the time and care for their infants and consequently the nutritional condition. The 6-29 months children were found to be more malnourished and at risk than those of 30-59 months; the survey showed acute malnutrition of 4.0% among children under-six months.

☞ In Padak, South Bor County:

The most relevant factors seen to have contributed to the critical nutritional state among the under-five population are the low access to food and to health services. After the long dry spell and erratic rains of 2004, worsened by crops destruction from pests and strong winds, minimal harvest of maize in October which has been exhausted by the 1st quarter of 2005 was reported by residents. During the time of survey, majority of the communities have been depending on limited sorghum stocks from the November harvest, and on wild foods. Rivers Magol Bior and Nile provide source of fish, however, access is constrained by lack of tools and means for fishing - NGOs such as FAO and CRS deliver programs and activities related to fishing, but its full potential is yet to be realized. Similarly, milk or meat from livestock is meager, with majority of families owning maximum of 15 cattle to none. Moreover, although no significant movement was observed during the time of survey, more than 5000 returnees were recorded in December 2004, accordingly depleting the available food among the host families even more. WFP last carried out general food distribution in April, providing 50% ration for resident households and 100% ration for returnees; these have lasted for only a month. Utilization of health services from the existing primary health care facilities is not practiced among the majority of the households surveyed. The health-seeking practices, especially on drinking safe water, hygiene and sanitation were minimal.

☞ In Wuror County⁸:

The survey done at the start of 2005 likewise established that the food production in the county was low compared to previous years and increased food aid needs for the population was predicted for the year⁹ During the time of the survey, barely two months after the harvest, many households only had approximately one month's store of sorghum. Other crops harvested such as sesame, millet, maize had already been totally consumed. Some families had already started preparing "lalop" (wild foods for coping). As much as inadequate dietary intake remains the prime factor causing malnutrition among the population, other underlying factors such as low EPI coverage, poor health seeking behaviors, lack of adequate health facilities and poor health and sanitation contributed to the critical malnutrition rates. In June 2005¹⁰ another survey was conducted in the same payams, and the results were higher than those revealed by the

⁸ All data taken from the nutrition survey report of TEARFUND, Feb 2005.

⁹ Source: WFP Annual Needs Assessment, Bieh State, 2004.

¹⁰ All data taken from the nutrition survey report, TEARFUND June 2005.

February one. This indicates that the situation had worsened during the five months despite the selective feeding and general food distribution interventions.

☞ In Akobo County¹¹:

With the poor October/ November 2004 harvest like most parts of Upper Nile, most households had already exhausted the green maize and sorghum harvested and has been surviving on wild food and kinship support by the 2nd quarter of 2005. The last WFP distribution was done in June 2005 and the community reported that these have been depleted as well. Although fish is available in the rivers, there was a general shortage of fishing equipment and boats that limit its accessibility. Infant breastfeeding up to 4-6 months was generally practiced, and infants beyond 6 months and older children share meals twice daily with the rest of the household members/adults. Because of the already insufficient availability and variety of food, however, the quantity and quality of food received by the children is naturally inadequate to meet their increasing growth requirements. Basic hygiene practices during breastfeeding, food preparation or storage was not observed; constant exposure to contaminants and pathogens was not ruled out. Although there are boreholes installed in some locations, unsafe river water is still more commonly used for all household needs. Personal and environmental sanitation is not practiced by the general community; open defecation takes place. Utilization and delivery of health services from the existing primary health care facilities has not yet expanded throughout the county; medical attention is first sought from traditional healers or through customary self-medication. Malaria, acute lower respiratory infections and diarrhea diseases are recorded as the leading causes of consultations at the PHC facilities. There is no regular immunization program implemented in the different payams, and measles immunization coverage among the children surveyed is low at 28% and only 2% showed immunization cards. Especially for children below five, infectious and communicable diseases immediately affect their nutritional status; likewise, malnutrition increases the risk for acquiring more severe forms of infection and medical complications. Cases of malnutrition have been recorded at the PHCC, but there has been no service yet in place at the PHC facilities for its treatment.

☞ In Maiwut County¹²:

Sustained food deficits of 36%, 21% and 13% among the poor, middle and better off socioeconomic groups, respectively, lasting from October 2004 to September 2005 have been predicted in the ANA report on Latjor state. Indeed, food deficit in Maiwut County is linked to the dry spell and to general lack of seeds and tools for farming. Birds and grasshoppers were reported to have furthermore contributed to overall reduction of sorghum harvest in Pagak and Turu payams. Outbreak of livestock diseases killed cattle and reduced livestock products at the household level while fish which is the main source of animal protein was not available in adequate amounts. The five boreholes serving a population of 22,532(SRRC) falls short of the Sphere standard and SRRC recommendation of water pump to people ratio of 1: 500. Boiling of drinking water is rarely practiced and households interviewed did not understand the importance of treating water. Observation revealed that most adults and children hardly clean hands after defecation, before eating, and general body and environmental hygiene is poor. Access to and utilization of services at the available primary health care facilities is still meager, at the same time the health seeking attitude and practice of majority of the population is poor - medical care from the health facilities are sought as a last resort in most instances. Communicable diseases like malaria, acute lower respiratory infections and diarrhea diseases were recorded as the leading causes of consultations at the PHC facilities.

☞ In Old Fangak County:

¹¹ Nutrition Survey report, ACF-USA, Sep 2005

¹² Nutrition Survey report, ACF-USA, Oct 2005

The nutritional monitoring was maintained by ACF-USA in 2005, which included 1 MUAC assessment at the start of the year and 1 nutritional survey in October, both of which were carried out by a network of trained local health surveyors. Although the rate of severe acute malnutrition remains non-critical, the global malnutrition is still within the same level as in the previous assessments (i.e., confidence interval ranging from 14% to 20%), reflecting a significant moderately malnourished population especially among the under-five children. The major causes of malnutrition in the region have been related to lack of adequate food, disease, poor health seeking behaviors, and feeble hygienic and sanitary practices.

↵ In Bentiu and Rubkuona¹³:

Statistically, the malnutrition rates in Bentiu and Rubkuona, expressed either in Z-score or in percentage of the median, does not show a significant difference between the two towns ($p > 0.05$). In both, children aged between 6 and 29 months have higher risk of being malnourished compared to the children aged between 30 and 59 months ($p < 0.05$). The results in October/November 2005 can be compared with those of December 2003, considering that these months are both in the post-harvest period. Comparisons show that the global acute malnutrition rates remained stable ($p > 0.05$) in both towns. Comparisons on the severe acute malnutrition rates show that the rate in Bentiu can be considered as similar as the one of December 2003 ($p > 0.05$), while in Rubkuona the rate has increased (Relative Risk = 2.42 [95% CI: 1.02 <RR< 5.81]; Uncorrected $\chi^2 = 4.19$; $p = 0.04$). In Bentiu, returnees represent almost 10.0% of the sample and 9.6% in Rubkuona. A majority of them are hosted by relatives, putting an additional strain to resident families who are already dependent on food aid.

Non-critical rates were seen in only 2 of the locations surveyed:

↵ In Kurmuk County¹⁴:

Although the malnutrition levels in SBN were not yet cause for concern, certain indicators suggested that the situation could become precarious. 74.7% of households reported that their harvest was less than half that of last year, and wild food was being eaten in many households even though it is not yet the traditional hunger gap. Poor hygiene practices were reported, with 38.3% households using unprotected water sources, 92.0% defecating in an undesignated open area, and only 40.0% washing their hands after defecation. Mortality and morbidity rates were reported to be high, particularly from diarrhea diseases. The survey found low vaccination coverage, particularly relating to routine vaccinations such as measles and BCG. Children are also being weaned at an early age, which is likely to contribute to disease incidence and may also lead to malnutrition.

↵ In Guit County¹⁵:

There has been a marked improvement on security situation in the location since the signing of CPA in January, 2005. This has seen progressive repatriation of cattle that had been hidden during the time of war which has ensured that cow milk is available and accessible to most households. This may have protected the nutritional status of the small infants considering that it is a major weaning food in the community. The community is also able to access the markets of ex-GoS controlled towns of Bentiu and Malakal. As a result, diversified food is available and accessible. Fish is a major component of the household diet, especially of the poor socio-economic group; dried fish is also sold in exchange for or to purchase non food items from the external markets. Additionally, the most vulnerable people in the community are currently being cushioned from food insecurity by WFP and NPA through food rations.

¹³ All data taken from nutritional survey report, ACF-France, November 2005.

¹⁴ All data taken from the nutrition survey report of GOAL, Feb 2005

¹⁵ Nutrition Survey report, ACF-USA Oct 2005

2.2. Nutrition Situation and Malnutrition Trends in Bahr el Ghazal

The Bahr el Ghazal region (BEG) is located in southwest Sudan and borders the states of South Darfur and West Kordofan in the north, Unity and Lakes in the east and West Equatoria in the south. BEG consists of four states: Northern Bahr El Ghazal (Aweil North, East, South and West); Western Bahr El Ghazal (Wau and Raja), Warab (Gogrial, Tonj, Twic and Abyei) and the Lakes (Rumbek, Cueibet, Yirol and Awerial). The total population of BEG is approximately 2,225,000 – or 30 percent of the population of southern Sudan. 10 percent of the population of BEG (about 224,000 people) resides in the GoS sector, namely Abyei, Wau and Raja areas.

The main sources of livelihood for 95 percent of the population are agriculture and livestock production. The rest depend on fishing and trade. Rainfall in northern Bahr El Ghazal and Warab in 2004 was below average and poorly distributed. The prolonged dry spell between June and July, in addition to the abrupt cessation of the rains, affected short-maturing sorghum during critical stages of growth. Although western BEG received average rainfall (998 mm in Raja and 983 mm in Wau), the distribution was uneven and sporadic, impeding robust cereal production. Furthermore, reduced seasonal flooding led to a complete failure of the rice crop in Aweil—the backbone of the food economy in this area.

As early as March, FEWSNET had indicated that food security in the Bahr el Ghazal region was becoming increasingly fragile because of shortages of off-farm food sources and the exhaustion of other dry season livelihood options. Returnees to this region were arriving only to find residents increasingly searching for food in order to compensate for their shortfalls. Sorghum has become scarce in local markets, forcing people to travel long distances to secure whatever may be available and affordable. While better-off households were expected to be able to meet their food needs in between harvests, poorer households faced significant food gaps between April and July. Additional returnee arrivals stressed the fragile food security of both host and returnee households even further. Ten Nutrition Surveys were carried out in Bahr El Ghazal in 2005 compared to 18 in 2004. The surveys were done within 5 counties in the region - Awerial (1), Aweil East (3) Aweil West and North (2), Twic and Abyei (1) and Aweil South (2). The results of the surveys are summarized in the table below.

Table 10: Results of Nutrition Surveys implemented in BEG, 2005.

	LOCATION	MONTH	GAM	SAM
1	Bunagok, Awerial County	January	11.6%*	0.9%*
2	Malualbai, Mang'ok, Mangartong, Wunlang, Madhol and Yargot Payams, Aweil East County	January	15.9% [12.7%-9.8]	2.2% [1.1%-4.1%]
3	Aweil West and North Counties	February	18.3% [15.2%-22.0%]	1.2% [0.5% -2.5%]
4	Twic/Abyei Counties, Warab State	March	31.0% [28.0%-34.2%]	5.1% [3.9%-6.9%]
5	Tonj County, Lakes region	March	20.9% [19.7% -22.0%]	2.8% [1.3%-4.3%]
6	Tieraliet, Panthou, Ayai, Wathmouk, Gakrol Payams, Aweil South	April	20.5% [16.9%-24.8%]	3.4% [1.9%-5.7%]
7	Mangok, Yargot, Wunlang and Mangar Tong Payams Aweil East County	July	26.3% [22.9%-29.6%]	4.0% [2.8%-5.1%]

8	Aweil west and North Counties	August	19.8% [16.4%-23.8%]	2.3% [1.2%-4.3%]
9	Baac, Malualbai, Mang'ok, Mangartong, Wunlang, Madhol and Yargot Payams Aweil East County	November	14.4% [11.3%- 18.2%]	1.6% [0.7%- 3.3%]
10	Ayai, Wathmouk, Gakrol, Panthou and Tieraliet Payams, Aweil South County	November	14.0% [11.0%-17.6%]	1.8% [0.8%-3.7%]
Average			19.8%	2.6%

* The average rate in locations where there is more than one survey is taken and counted only once in general average.

6 locations were surveyed in 2005, where 3 have been consistently monitored by agencies running nutrition and other programs in the area for a long period of time (i.e., Tearfund in Aweil south and together with MSF-F in Aweil east and south, and Concern in Aweil north/west).

Global acute malnutrition rates above 15% were detected in 83% of these areas/counties (whether persistently or at least once in locations with repeated surveys), with nutritional emergencies more prominent in 3 areas with SAM rates above 3%.

The over-all GAM and SAM prevalence among the surveys in 2005 averaged 19.8% and 2.6%, respectively; in 2004, the GAM was 18.6% and SAM 2.5%. *Again, taking only the rates in detected critical areas in 2005 (n=5), the prevalence ranged from 3.0% severely to 18.4% moderately malnourished (or GAM of 21.4%) children under-five in these surveyed areas:*

↪ In Twic¹⁶:

On top of an already compromised food security due to minimal past harvest, Twic and Abyei Counties have been experiencing an influx of returnees mostly since the beginning of last year. The returnee households are integrated in the host community and depend on resident families for their food, further increasing food shortage. Diarrhea and malaria are the leading causes of morbidity and also associated with the high rate of malnutrition. In addition, poor health seeking behavior, distance to health facilities for a big part of the population, inadequate water and sanitation facilities are also contributing factors. The analysis of the rates of malnutrition for the age groups 6-29 months and 30-59 months revealed a significant difference in the nutritional status ($p < 0.05$) with children in the 6-29 months age group 1.89 times [1.53 <RR< 2.33] more at risk of malnutrition than the 30-59 months-old children. This significant difference between the age groups is associated with feeding practices as weaning is introduced late to the diet and the weaning food is mainly sorghum.

↪ In Tonj County¹⁷:

The TFC admissions rose from an average of 25-30 children in 2004 to 79 children during the same period in 2005. There was also notable increase in the mortality rates of under-5 population, attributed to a high incidence in cases of malaria, respiratory tract infections and bloody diarrhea. There have been outbreaks of communicable diseases like measles and

¹⁶ Nutrition Survey report ACF-USA/GOAL, March 2005

¹⁷ Nutrition Survey Report, MSF-CH, March 2005.

whooping cough indicating poor immunization coverage which leaves the children vulnerable to malnutrition. Due to poor hygiene aggravated by lack of water, increase in incidence of diarrhea diseases was also recorded. The harvest for the 2004 season was poor due to delayed and erratic rains leading to poor harvest; most of the populations were feeding on wild fruits and leaves called thou. The inter clan fights between the communities of Aliek and Langap, and the subsequent looting of food and animals has deteriorated the food security further.

☞ Aweil West and North^{18,19}:

It was evident from the results of the surveys in early 2005 and six previous surveys conducted in the area that the 6-59 month population of Aweil West and North suffer from a chronic state of acute malnutrition, with roughly one in five children acutely malnourished throughout most of the agriculture year. With the exception of a brief period following the November 2003 harvest, there has been no evidence of a significant reduction in the proportion of children suffering from global acute malnutrition since March 2003. The poor crop harvest at the end of 2004 has left survey households with an average of 15.6 kg of sorghum in their stores. This was expected to last a maximum of one month, or until mid-March at the latest, if households were able to stretch their stores by continuing to employ traditional coping mechanisms which include collection of wild foods, sale of livestock and sale of local beer/wine, grass, firewood and timber. After this time and without external intervention, these coping mechanisms will not be adequate to supplement the diets of the typical six-member family until the next harvest in seven months time. A large number of households had relied on the WFP general ration as a primary source of food over the hunger period; however similar findings were reported by CONCERN on the six month gaps in ration delivery similar to the previous year. The follow-up survey in August 2005 showed no significant difference compared to the July-November 2004 and February 2005 survey results. Household food insecurity and inadequate health, water and sanitation services are among the persistent underlying reasons for high rate of malnutrition in these counties.

☞ Aweil East²⁰:

The malnutrition levels in January 2005 were predicted to have increased in the months of March proceeding through May and August of the previous year, during the hunger period. According to analysis per food economy and livelihood zones – Aweil lying within the western flood plains – the GAM in the lowlands was 18.5% with SAM of 2.4%. At the time of the survey, the highlands was characterized by high population movement to the lowland in search of pasture for the livestock; this zone which is normally a surplus agricultural area had 10.8% globally malnourished with 1.6% severely malnourished children. The midland had GAM and SAM rates of 17.5% and 2.3%, respectively. In comparison, there is no significant difference in the nutritional status in the 3 zones (i.e. confidence intervals overlap). Little fish was available during the period of the survey, which is expected to persist because there was little upstream movement from the River Nile due to inadequate flooding. Contribution from fish is, therefore, predicted to be very low (only 2%) of the annual food requirement of socio-economic groups across the board. Measles coverage has improved tremendously with the UNICEF campaign, showing 89% coverage, as opposed to 7.9% in February and 11% in November in the previous year. However, the provision of medical services remains low with a clinic to patient ratio of 1:42,000. Poor sanitary environment and lack of knowledge in health care and proper hygiene also contributed to the high morbidity in the area.

MSF-F conducted another survey in Aweil East County in July 2005 that revealed a GAM and SAM of 26.3% [22.9-29.6] and 4.0% [2.8-5.1] respectively. The nutrition survey, carried out at

¹⁸ Nutrition Survey Report, CONCERN, February 2005.

¹⁹ Preliminary Nutrition survey report CONCERN, August 2005

²⁰ Nutrition Survey Report, TEARFUND, January 2005

the peak of the traditional hunger gap, describes a precarious nutrition situation in Aweil East, with the prevalence of GAM higher than for the same period in previous years.

☞ In Aweil South^{21,22}:

The immediate factors contributing to the level of malnutrition seen in April were associated to the poor harvest due to erratic rains last year coupled with low fish levels in the main rivers during the usual fishing season. These recent livelihood shocks aggravated the already tenuous household coping strategies that usually revolve largely around dry-land sorghum cultivation, cattle and seasonal fishing. The protracted periods of civil strife and displacements have also resulted to the diminishing coping mechanism of the population. Another survey done in the same County in November showed a drastic improvement of the nutritional status and could be as a result of availability of food as the survey was done just after harvest. Nonetheless, the nutritional status in the county still remains serious at a time when it is expected to be at its annual low due to the harvest.

☞ In Awerial County²³

Although the cases of Malnutrition were below emergency thresholds, the cases of malnutrition found in the location were most likely linked to general poor sanitation, limited health prevention and some of the observed childcare practices. While most of the people seems to have access to sufficient water, the hygiene and sanitary practices remain at risk, explaining the high incidence of diarrhea among the population. The practices observed regarding breastfeeding and weaning might have had a significant impact on the condition of the infant's since inadequate feeding during the first age of the child is likely to compromise his/her growth.

2.3. Nutrition situation and malnutrition Trends in Equatoria

The greater Equatoria region is in the far south of Sudan and borders the states of West Bahr El Ghazal, Lakes and Jonglei to the north and Kenya, Uganda, the Democratic Republic of Congo to the south and the Central African Republic to the west. The region comprises the states of West Equatoria (Mvolo, East Mundri, West Mundri, Maridi, Iba, Yambio, Nzara, Ezo, Tambura and Nagero Counties), Bahr El Jebel (Yei, Lainya, Morobo, Terkeka, Juba west, Juba center, Juba South and Kajokeji Counties) and East Equatoria (Budi, Kapoeta East, Kapoeta Central, Kapoeta South, Kapoeta North, Lopit, Ikotos, Torit and Magwei Counties) and has a total population of 1.3 million. The area is extremely diversified ethnically and climatically, including the most productive area of southern Sudan in the west and, in contrast, semi-arid conditions in the east. Although the west is known as a surplus food producing area, it lacks market infrastructure. The east, meanwhile, is destabilized by conflict and experiences chronic food insecurity²⁴.

Just like 2004, only three surveys were done in the region. The table below summarizes the results of the three locations surveyed in 2005.

²¹ Nutrition Survey report, TEARFUND, April 2005.

²² Nutrition Survey report TEAFUND, Nov 2005

²³ Nutrition survey report, ACF-USA, January, 2005

²⁴ Annual Needs Assessment, 2004/2005

Table 11: Results of nutrition surveys implemented in Equatoria, 2005.

	LOCATION	MONTH	GAM	SAM
1	Kapoeta South County	January	10.1% [7.3%-13.8%]	1.6% [0.6%-3.6%]
2	Kajokeji County	June	8.3% [6.0%-11.4%]	1.5% [0.6%-3.5%]
3	Mvolo Payam, Mvolo County	September	8.0%*	1.1%*
	Average		8.8%	1.4%

The region has been thought to have stable food security and is considered as the food basket of south Sudan. Most of the inhabitants of the region practice extensive agriculture hence most of the households in the location are food secure. The communities have good access to vibrant markets in the neighboring countries of Kenya and Uganda, where they can be able to get food in cases of food shortages cushioning them from food shortages. Health services quality and delivery is also generally sufficient along with other numerous programs implemented in the region. The average GAM and SAM for the three locations surveyed were below emergency cut off of 15% and 3% respectively.

CONCLUSION

In 2005, ACF-USA maintained and strengthened its nutrition activities in south Sudan, mainly in detecting and responding to nutritional emergencies or precarious malnutrition situation, in assisting National and international NGOs to have enhanced and sustained capacity for nutritional surveys and treatment programs, and lastly in advocating for appropriate response to reduce malnutrition in the Country.

ACF-USA had undertaken 12 nutritional surveys in 2005, an increase from 8 in 2004, and along with 3 rapid nutritional assessments covered different counties across the 3 regions. The coverage was also expanded to a minimum of two payams for every location surveyed to ensure wider representation and analysis of the targeted population. Along with strengthened coordination with the Ministry of Health and advocacy strategy within the NGO network (in collaboration with NESI), these surveys contributed to an increased effort among the government and international humanitarian bodies to highlight and address gaps in primary health care services (including immunization, nutrition, maternal and child health, and sanitation and health education), and in the access to and availability of water and food, among others.

Global acute malnutrition rates of more than $\geq 15\%$ were detected by ACF-USA in 8 locations (7 through surveys and 1 through rapid nutritional assessment), with nutritional emergencies (i.e., SAM rate also at critically high levels) highlighted in 6 of these areas. As a result, emergency therapeutic/supplementary programs to treat and reduce morbidities and mortalities among severely and moderately acutely malnourished children were implemented in 4 of these locations (by MEDAIR, MSF-B, GOAL and ACF-USA).

Over-all, the rate of response to the multi-sectoral recommendations advocated from the survey findings was 73% in 2005; this signifies a 15% increase from 2004 and even from previous years. There was 100% response for food aid and 60% for emergency nutrition treatment programs; likewise, high reception and concerted efforts to enhance delivery and access to food security, primary health care, water, and hygiene and sanitation services – whether as short or longer term interventions - were witnessed during the year.

Meanwhile, the thrust towards increasing the coverage and standardizing nutritional surveys and treatment programs continued in 2005. Being also the only agency providing such training, ACF-USA has gained increasing support from different agencies and donors since it begun this endeavor in 2002: from OFDA that continue to fund the regular Nutrition Training Program, from UN-OCHA that organizes rapid assessment training, from UNICEF that facilitates transport and accommodation of all Sudanese participants, from the NESI network that promotes and advocates for bigger NNGO participation, and from all other agencies that continue to send their colleagues/staffs to the trainings. Six full training-workshops on nutritional survey methodology and analysis, 3 on nutrition rapid assessments, and 3 on nutritional treatment protocols, were delivered by ACF-USA for multiple partners throughout the year. A total of 237 personnel from 12 national and 21 international NGOs have been trained, and more importantly, 171 are Sudanese nationals. Additionally as a separate focused capacity-building program, two National NGOs (ACHA and SUVAD) have been partnered with and fully trained on nutrition and have already participated in conducting nutrition surveys during the year. Acknowledged by the MoH and UNICEF, ACF-USA remains one of the international agencies that strongly support development of the local capacity on the detection and treatment of malnutrition in south Sudan

Several analysis and assessments have been and are being undertaken in Sudan, all to allow reflection of the humanitarian situation of its population. Likewise, ACF-USA has been contributing in the analysis of the nutritional status in the country for the past years.

The combined results from 27 surveys included in the 2004 analysis estimate the average prevalence of Global Acute Malnutrition at 19% (Standard Deviation: 4.6) and Severe Acute Malnutrition at 2.7%

(Standard Deviation: 1.3), both expressed in Z-Score. The analysis in the previous year showed average rates of Global and Severe Acute Malnutrition of 20.8% (Std Deviation: 6.6) and 3.6% (Std Deviation: 1.9) respectively²⁵.

In 2005, 27 nutrition surveys were carried out altogether by 10 organizations: ACHA, SUVAD, CMA, TEARFUND, CONCERN, GOAL, MSF-CH, MSF-F, ACF-F, and ACF-USA. The surveyed locations or payams were across 21 counties in south Sudan - 10 in Upper Nile, 8 in Bahr-el Ghazal, and 3 in Equatoria. The estimated average among all surveys was 18.7% GAM and 2.4% SAM.

More significantly, 70% of all the surveyed locations displayed critical malnutrition rates, ranging from 15%-39% global and 3.3%-5.9% severe acute malnutrition among the under-five population.

Attention was drawn particularly in these areas (with dark red shaded bullet for those with both critical GAM and SAM rates):

In Upper Nile,

- Kiechkuon, Luakpiny County, surveyed in February;
- Payuer, Malut County, surveyed in April;
- Padak, South Bor County Jonglei State, surveyed in June;
- Motot, Pieri and Pulchuol Payams, Wuror County, surveyed in February and June;
- Akobo and Nyandit Payams, Akobo County, surveyed in September;
- Pagak, Mawuit County, surveyed in October;
- Old Fangak, Zeraf County, surveyed in October; and,
- Bentiu and Rubkuona, Rubkuona County, surveyed in February and November.

And in Bahr el Ghazal,

- Twic/Abyei Counties, Warab State, surveyed in March;
- Tonj County, surveyed in March;
- Malualbai, Mang'ok, Mangartong, Wunlang, Madhol and Yargot Payams, Aweil East County, surveyed in January, July and November;
- Aweil West and North Counties, surveyed in February and August; and,
- Terialiet, Panthou, Ayai, Wathmouk, Gakrol Payams, Aweil South, surveyed in April and November.

Analysis of the cause/s of the level and prevalence of malnutrition in 2005 were common and related to the same factors that were expected to affect the population of south Sudan during the year.

The WFP annual needs assessment reported deterioration of food security in 2005 as compared to 2004 particularly affecting Jonglei, BEG and Upper Nile. This was attributed to below average rainfall in the previous planting period, massive and unprepared for influx of returnees, insecurity incidents still occurring, and displacements which disrupted farming activities. The erratic and unevenly distributed rainfall in 2004 was highlighted in most, if not all, surveys as a primary cause of the inferior harvest and consequently depleted availability of food within households. Food deficit was projected to begin in March and was already expected to stretch towards September; however, although the limited number of surveys per month and locations prevents a detailed analysis of seasonal trends over the year, 2005 saw seriously elevated GAM and SAM rates in certain surveyed areas starting even from February and has not dropped to the typical level by the harvest season in October to November. Indeed, perceptible extension of the hunger gap period was experienced in many parts of south Sudan during the year.

²⁵ Results are based on the compilation of several surveys and while the methodology cannot yield statistical meaning on aggregate, it does provide a range of best available estimates.

Health care is also not yet in a state of adequacy in the country in general; where they are available they are not evenly distributed across the regions or are not fully accessed due to still unimproved health-seeking behavior among the population. Albeit with the MoH strongly pursuing it together with all the humanitarian actors in south Sudan, efforts to raise the nutrition, health, water, hygiene and sanitation condition throughout the country still have a long way to go.

In conclusion, this review demonstrates that persistence of nutritional emergencies still exist in many parts of south Sudan as a result of the ensuing inadequate availability and/or access to food and basic services like health care or water in these areas, together with the lack of means and resources of the communities to overcome structural causes like poverty from the protracted political instability in the past. Still, the coverage of nutritional surveillance remains narrow and there is recognition that there may be more nutritionally critical areas that have not even been accessed yet.

It is therefore clear that in the coming period, ACF-USA, as it is with the Government and with all humanitarian partners, will be challenged by combining the response to the emergencies and the needs of the most vulnerable ones, and the new situation where more sustainable approach of work is needed.

For 2006, ACF-USA's objective in southern Sudan remains to prevent, detect and treat acute malnutrition. The signature of the Comprehensive Peace Agreement in January 2005 however allows to expand this approach, hitherto emergency based, to a careful re-direction towards a long term public nutrition objective aiming at a full handover of the organization's activities to local partners (GoSS authorities and south Sudanese civil society, primarily). But as local capacity remains incipient at best, ACF-USA will remain active in south Sudan, in the short to medium term, and this continued presence should allow for a gradual and effective handover should the political and security environment remain stable and, should it not, for a resumption of full scale emergency operations.