MABAN REFUGEE CAMPS

SOUTH SUDAN

Survey conducted: February/March 2013

IN COLLABORATION WITH

WFP, UNICEF, SP, MSF-B, GOAL, IMC & ACTED

NUTRITION SURVEY FINAL REPORT

ACKNOWLEDGMENTS

UNHCR commissioned and coordinated the Maban camps surveys with the support of **WFP, UNICEF, MSF-B, SP, GOAL, IMC and ACTED**. We particularly acknowledge the valuable contributions made by those who dedicated their time and energy to preparation, training facilitation and data collection supervision: Robert AKUA (UNICEF), Haile GEBRU (WFP), Grace OMONDI (SP), Jillian EMERSON, Anna FRAENZEL , Emily MONAGHAN and Maia McFadden (GOAL) , Thomas NDAMBU and Ralph MYERS (IMC),Miriam COUNTERMAN and Emily BEADLE (ACTED),Laurence SAILY and Ayub SAID (MSF-B)

We are grateful to Allison OMAN and Ismail KASSIM (UNHCR Regional Support Hub-Nairobi) , Melody TONDEUR (ENN) for usual support and review of survey report as well as Marianne WARD and Gloria KUSEMERERWA (WFP-Juba) for their inputs.

Thanks to UNHCR Juba Management and staff, UNHCR Bunj and Jammam (Maban) staff and Heads of Sub/Field offices, Adan ILMI, Frederic CUSSIGH, Murat MYRADOV, Christian BAUREDER for assistance during the exercise. Thanks to Lucy MUKAMI to have avail WFP field support .Thanks also to all drivers. A list of names of all people involved in the completion of this exercise is provided in the list of participants.

Finally, we thank members of the refugee population for consenting to participate.

Map of Maban Camps

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ACRONYMS AND ABBREVIATIONS

ACTED	Agency for Technical Cooperation and Development
AWD	Acute Water Diarrhoea
BSFP	Blanket Supplementary Feeding Programme
CBHP	Community Based Health Programme
CI	Confidence Interval
CMR	Crude Mortality Rate
CHWs	Community Health Workers
CSB	Corn-Soya Blend
DEFF	Design effect
DPT 3	Diphteria, Pertussis,Tetanus combined vaccine
ENA	Emergency Nutrition Assessment
ENN	Emergency Nutrition Network
EPI	Expanded Programme on Immunization
Epi Info	CDC software for epidemiological investigations
GAM	Global Acute Malnutrition
GFD	General Food Distribution
HAZ	Height-for-Age z-score
Hb	Haemoglobin
HH	Household
HIS	Health Information System
IMC	International Medical Corps
IYCF	Infant and Young Child Feeding
KAP	Knowledge Attitude and Practices
LRTI	Low Respiratory Tract Infection
MAM	Moderate Acute Malnutrition
MSF-B	Médecins sans Frontières-Belgium
MUAC	Middle Upper Arm circumference
NCHS	National Centre for Health Statistics
OTP	Out-patient Therapeutic Programme
PDM	Post Distribution Monitoring
PLW	Pregnant and Lactating Women
ProGres	UNHCR registration database for refugees
SAM	Severe Acute Malnutrition
SC	Stabilization Centre
SD	Standard Deviation
SENS	Standardized Expanded Nutrition Survey (Guidelines)
SFP	Supplementary Feeding Programme
SMART	Standardised Monitoring & Assessment of Relief & Transitions
SP	Samaritan's Purse
TFP	Therapeutic Feeding Programme
TSFP	Therapeutic Supplementary Feeding Programme
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Funds
URTI	Upper Respiratory Tract Infection
WASH	Water Sanitation and Hygiene
WAZ	Weight-for-Age z-score
WHZ	Weight-for-Height z-score
WFP	World Food Programme
WHO	World Health Organization

EXECUTIVE SUMMARY

The Nutrition situation in South Sudan has remained precarious over the years owing to chronic food insecurity. The populations displaced from South Kordofan and Blue Nile states from 2011 owing to conflict, were installed into camps in the Maban county and high levels of malnutrition among the children was described as a humanitarian crisis. A survey conducted by Médecins sans Frontières -Belgium (MSF-B) in Batil camps subsequently in August 2012, revealed Global Acute Malnutrition (GAM) rate of 39.8%.

The The United Nation High Commissioner for Refugees (UNHCR), in collaboration with World Food Programme (WFP), United Nations Children's Fund (UNICEF), and partners Samaritan's purse (SP), Goal, International Medical Corps (IMC), Médecins sans Frontières -Belgium and Agency for Technical Cooperation and Development (ACTED), carried out a nutrition survey in each of the four main camps of Maban County, Upper Nile state: Gendrassa, Doro, Batil and Jammam Camps. The four surveys took place between 20th February and 6th March 2013, targeting the refugee population.

Objectives:

- To determine the prevalence of acute malnutrition among children 6-59 months.
- To determine the prevalence of chronic malnutrition (stunting) among children 6-59 months.
- To assess crude and under-five mortality rates in the last 3 months.
- To assess Infant and Young Child Feeding (IYCF) practices among children 6-23 months.
- To assess the prevalence of anaemia among children 6-59 months and non-pregnant women of reproductive age (15-49 years).
- To determine the coverage of measles vaccination among children 9-59 months.
- To determine vitamin A supplementation in the last six months among children 6-59 months.
- To assess the coverage of selective feeding programmes for children 6-59 months.
- To determine mosquito net coverage
- To establish recommendations on actions to be taken to address the situation.

A Cross-sectional study using the Standardized Monitoring and Assessment of Relief and Transitions (SMART) methodology (Version 1, April 2006) and UNHCR's Standardized Nutrition Survey Guidelines for Refugee Populations (June 2011) was used. Food security at the household level and WASH indicators were excluded due to on-going similar assessments and existing secondary reports.
Simple random sampling was used to select the Households; Doro (n= 527) Batil (n= 695, Gendrassa (n= 501) and Jammam (n= 501).The total number of children included was in Doro (n=384), Batil (n=450 695), Gendrassa (n= 438 501) and Jammam (n=385 501)

A total of thirty one enumerators divided in seven teams (3 teams of five each and 4 teams of 4 each) conducted the data collection. To ensure the quality of data, A standardized training lasting for five days was provided followed by a one-day pre-testing. Survey teams were headed by a team leader and supervised by survey coordinators throughout the duration of the data collection. Data were entered and analyzed using EPI INFO-ENA software (Delta version, June 2011).

The main anthropometric results showed the GAM rates in Jammam **17.8%** (9.5 – 30.8, 95% CI) ,Yusuf Batil **15.3%** (13.1 - 17.8, 95% CI), Doro **10.0%** (8.1 - 12.2, 95% CI) and Gendrassa **12.1%** (9.8 - 14.7, 95% CI).

The Crude mortality rates (CMR) (total deaths/10,000 people / day) were: Doro: **0.04** (0.01-0.22 95%; CI); Batil **0.38** (0.20-0.73, 95% CI); Jammam **0.27** (0.11-0.62 , 95% CI); Gendrassa **0.05** (0.01-0.27 , 95% CI).

The Under-five mortality rates (total deaths/10,000 people / day) were Doro: **0.12** (0.02-0.67, 95% CI); Batil **0.39** (0.13-1.14 , 95% CI); Jammam **0.31** (0.09-1.13, 95% CI); Gendrassa **0.16** (0.03-0.90 , 95% CI)

Child anaemia rate was found to be high in Batil **57.3%** (53.6 – 60.9 ,95% CI), Jammam **54.8%** (50.3 – 59.3, 95% CI), Doro **47.9%** (43.4 – 52.4, 95% CI) and medium in Gendrassa **32.6%** (28.5 – 37.0, 95% CI).

Summary of key results

Surveyed area	Maban Camps					Classification of public health significance or target (where applicable)
	Doro	Yusuf Batil	Gendrassa	Jammam	Combined (%)	
Date of survey						
	CHILDREN (6-59 months) % (95% CI)					
	Acute Malnutrition (WHO 2006 Growth Standards)					
Global Acute Malnutrition (GAM)	**10.0** (8.1-12.2)	**15.3** (13.1-17.8)	**12.1** (9.8-14.7)	**17.8** (9.5-30.8)	**13.1**	Critical if ≥ 15%
Moderate Acute Malnutrition (MAM)	**8.3** (6.6-10.4)	**11.8** (9.9-14.1)	**10.6** (8.5-13.1)	**14.3** (7.4-25.8)	**10.6**	
Severe Acute Malnutrition (SAM)	**1.7** (1.0- 2.8)	**3.5** (2.4- 4.9)	**1.4** (0.8- 2.6)	**3.5** (2.3- 5.4)	**2.5**	
Oedema	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	
	Stunting (WHO 2006 Growth Standards)					
Total stunting	**35.4** (31.7- 39.2)	**38.3** (35.0 - 41.6)	**27.2** (24.0 - 30.7)	**45.3** (30.7-60.7)	**36.6**	Critical if ≥ 40%
Severe stunting	**9.7** (7.6-12.3)	**15.3** (13.0-17.9)	**7.0** (5.3 - 9.2)	**20.5** (9.3-39.3)	**12.7**	
Mid Upper Arm Circumference (MUAC)						
Global Acute Malnutrition (GAM)	**6.9** (5.3-8.8)	**13.9** (11.9 – 16.2)	**6.9** (5.3 – 9.1)	**17.5** (7.3 – 36.4)	**10.7**	
Moderate Acute Malnutrition (MAM)	**5.8** (4.4.-7.6)	**10.2** (8.5 – 12.2)	**6.5** (4.9 - 8.6)	**10.0** (1.0 – 55.0)	**7.9**	
Severe Acute Malnutrition (SAM)	**1.1** (0.6-2.0)	**3.7** (2.7 - 5.1)	**0.4** (0.1 – 1.2)	**7.5** (0.0 – 93.5)	**2.8**	
Mortality						
Crude Death Rate (CDR)	**0.04** (0.01-0.22)	**0.38** (0.20-0.73)	**0.05** (0.01-0.27)	**0.27** (0.11-0.62)	**0.2**	
Under 5 Death Rate	**0.12** (0.02-0.67)	**0.39** (1.13-1.14)	**0.16** (0.03-0.90)	**0.31** (0.09-1.13)	**0.2**	

Surveyed area	Maban Camps					Classification of public health significance or target (where applicable)
	Doro	Yusuf Batil	Gendrassa	Jammam	Combined (%)	
Date of survey						
Anaemia (6-59 months)						
Total Anaemia (Hb < 11.0 g/dl)	**47.9** (43.4 – 52.4)	**57.3** (53.6 – 60.9)	**32.6** (28.5 – 37.0)	**54.8** (50.3 – 59.3)	**49.8**	High if ≥ 40%
Mild (Hb 10.0 – 10.9)	**29.4** (25.5 – 33.7)	**22.5** (19.6 – 25.8)	**16.7** (13.6 – 20.4)	**32.9** (28.8 – 37.3)	**25.9**	
Moderate (Hb 7.0 – 9.9)	**16.0** (13.0 – 19.6)	**20.1** (17.2 – 23.2)	**10.9** (8.4 – 14.1)	**21.3** (17.8 – 25.2)	**17.4**	
Severe (Hb < 7.0)	**2.4** (1.3 – 4.3)	**14.7** (12.2 – 17.5)	**4.9** (3.3 – 7.4)	**0.6** (3.3 – 7.4)	**6.5**	
Anaemia (6-23 months)						
Total Anaemia (Hb < 11.0 g/dl)	**58.0** (50.9 – 64.8)	**70.7** (64.4 – 76.5)	**50.4** (41.7- 59.0)	**64.9** (57.5 – 71.7)	-	High if ≥ 40%
Mild (Hb 10.0 – 10.9)	**31.4** (25.1 – 38.2)	**29.3** (23.5 – 35.6)	**22.6** (15.9 – 30.6)	**33.5** (26.8 – 40.8)	-	
Moderate (Hb 7.0 – 9.9)	**24.6** (18.9 – 31.1)	**28.4** (22.7 – 34.7)	**27.0** (19.8 – 35.3)	**30.8** (24.2 – 38.0)	-	
Severe (Hb < 7.0)	**1.9** (0.5 – 4.9)	**12.9** (8.9 – 17.9)	**0.7** (0.0 – 4.0)	**0.5** (0.0 – 3.0)	-	
Programme Coverage						
TFP (Based on WFH and MUAC)	**45.9**. (33.1 – 59.2)	**60.0** (14.7 – 94.7)	**56.0** (44.1 – 67.5)	**11.8** (6.4 – 19.4)	-	Target of >= 90%
SFP (Based on WFH and MUAC)	**84.1** (75.8-90.5)	**66.7** (9.4 – 99.2)	**80.6** (71.8 – 87.5)	**5.9** (2.4 – 11.7)	-	Target of >= 90%
Measles vaccination with card (9-59 months)	**20.4** (17.8 – 23.2)	**49.9** (47.0 – 52.8)	**26.0** (23.2 – 29.1)	**26.9** (24.1 – 29.9)	-	
Measles vaccination recall (9 – 59 months)	**49.9** (46.6 -53.2)	**25.1** (22.7 – 27.7)	**45.9** (42.5 – 49.2)	**39.8** (36.6 – 43.0)	-	Target of >= 95%
DPT 3 Vaccination with card	**15.8** (13.5 – 18.4)	**35.5** (32.8 – 38.4)	**26.8** (23.9 – 29.9)	**25.2** (22.4 – 28.1)	-	
DPT 3 Vaccination recall	**52.2** (48.9- 55.5)	**25.4** (22.9 – 28.0)	**44.0** (40.7 – 47.4)	**43.2** (40.0 – 46.5)	-	

Surveyed area	Maban Camps					Classification of public health significance or target (where applicable)
	Doro	Yusuf Batil	Gendrassa	Jammam	Combined (%)	
Date of survey						
Vitamin A supplementation coverage with card the past 6 Months (6-59 months)	**22.3** (19.7- 25.2)	**38.1** (35.3 – 40.9)	**51.7** (48.3 – 55.1)	**25.6** (22.8 – 28.6)	-	Target of >= 90%
Vitamin A supplementation coverage recall the past 6 Months (6-59 months)	**43.0** (39.8 – 46.3)	**28.3** (25.8 – 31.0)	**36.6** (33.4 - 40.0)	**42.0** (38.3 – 45.3)	-	
Morbidity						
Diarrhoea the past two weeks (6-59 months)	**27.0** (24.1 – 30.0)	**27.7** (25.2 – 30.4)	**23.2** (20.4 – 26.1)	**23.9** (21.2 – 26.8)	-	
Mosquito net coverage	**77.0** (74.1 – 79.7)	**76.5** (73.8 – 79.0)	**62.6** (58.9 – 66.1)	**74.1** (71.5 – 77.2)	-	
Infant and Young Child Feeding Practices (6- 23 months)						
Child ever breastfeed	**93** (89.6 – 96.0)	**85.7** (81.9 – 88.9)	**92.0** (88.3 -94.7)	**92.4** (88.5 – 95.3)	-	
Exclusive Breastfeeding	**44.4** (13.7 – 78.8)	**55.1** (40.2- 69.3)	**80.0** (56.3 - 94.3)	**15.**0 (3.2. – 37.9)	-	
Early initiation of breastfeeding	**77.2** (71.7 – 82.1)	**67.1** (63.1 – 70.9)	**67.4** (61.9 – 72.6)	**33.8** (29.3 – 38.7)	-	
Introduction of solid or semi - solid foods	**64.6** (58.6 – 70.3)	**57.7** (53.6 – 61.7)	**74.2** (69.1 – 78.9)	**61.9** (56.9 – 66.7)	-	
Children bottle fed	**29.5** (24.2- 35.3)	**16.5** (13.6 – 19.9)	**3.4** (1.8 – 6.2)	**26.7** (22.4 – 31.4)	-	
Children given infant formula	**22.9** (18.0 – 28.3)	**18.4** (15.4 – 21.9)	**0.9** (0.2 – 2.9)	**42.9** (38.1 – 47.9)	-	
Women (15 – 59 years)						
Anaemia (Non pregnant women)						

Surveyed area	Maban Camps					Classification of public health significance or target (where applicable)
	Doro	Yusuf Batil	Gendrassa	Jammam	Combined (%)	
Date of survey						
Total Anaemia (Hb < 12.0 g/dl)	**27.4** (23.2 – 32.0)	**32.6** (28.9 – 38.6)	**10.4** (7.6.0 – 14.1)	**33.6** (29.1 – 38.4)		High if ≥ 40%
Mild (Hb 11.0 – 11.9)	**18.5** (15.0 – 22.7)	**17.4** (14.5 – 20.7)	**8.2** (5.7 – 11.6)	**18.2** (14.7 – 22.4)		
Moderate (Hb 8.0 – 10.9)	**8.4** (6.0 – 11.6)	**11.1** (8.8 – 14.0)	**1.9** (0.8 – 4.1)	**15.1** (11.8 – 19.0)		
Severe (Hb < 8.0)	**0.5** (0.1 – 1.9)	**4.1** (2.7 – 6.1)	**0.3** (0.0 – 1.8)	**0.2** (0.0 – 1.6)		
ANC Coverage (Pregnant women)						
ANC enrolment	**26.8** (21.5 – 32.6)	**23.8** (18.1 – 30.2)	**38.5** (32.5 – 44.5)	**65.8** (17.7 – 25.2)		
Iron/Folate supplementation	**24.2** (18.9 – 30.1)	**23.2** (17.3 – 30.0)	**37.8** (32.0 – 43.9)	**69.6** (47.1 -86.8)		

Interpretation

- The overall nutrition situation in the Maban camps is of concern with the GAM rates in Jammam at 17.8% and Yusuf Batil at 15.3% above the emergency threshold of 15% as per World Health Organization (WHO) classification.

- The GAM rates in Doro 10.0% and Gendrassa 12.1% are below 15% but with aggravating factors the camps are still precarious. The difference in GAM between Doro and Gendrassa is not statistically significant.

- The prevalence of SAM was unacceptably high in Jammam and Batil camps at 3.5%, while Doro and Gendrassa were just below threshold.

- The death rates both crude and under-five are within acceptable levels.

- The stunting rates are below threshold of 40% in 3 camps apart from Jammam with 45.3% which is critical. Stunting results should however should be interpreted with caution due to low coverage of age documentation in the camps. Age accuracy is key for this indicator (Height for Age).

- The anaemia rates in children 6-59 months are above 40% level of public health significance in all camps apart from Gendrassa. Children aged 6-23 months are most affected with up to 70.7% in Batil.

- Among women of reproductive age the anaemia prevalence is not critical with Doro camp at 10.4% and Jammam at 33.6%.

- The coverage of therapeutic feeding programme is below 90% sphere standards in all camps, but in Jammam is critically low at 11.8%.

- The coverage of Supplementary feeding programme is critically low in Jammam camp at 5.9%.Although coverage should be interpreted with caution due to the small sample size, cross-referencing with programme enrolment data in the months of February showed 36% coverage for TFP and 25% for SFP.

- Coverage of measles and Vitamin A supplementation is less than 25% by card; however cumulating by card and by recall responses gives 70% for measles and 75% for Vitamin A supplementation.

- Incidence of diarrhoea in the past two weeks among the respondents was found to range between 23 and 25% which is similar to 25% AWD proportional morbidity among under-fives as shown in the HIS reports. Malnutrition and diarrhoea co-morbidity was found to be between 25.7% (Jammam) and 43.2% (Y. Batil) within moderately malnourished children while between 19.1% (Jammam) and 28.0% (Gendrassa) of severely malnourished ones had diarrhoea.

- Early initiation of breastfeeding is above 60% in all camps, but low in Jammam at 33.8%.

- Exclusive breastfeeding rate was from 15.0 % (Jammam) to 80.0 (Gendrassa)

- Although 55- 75% indicated timely introduction of solid or semi-solid food to children, the younger children aged 6-17 months are still more affected by malnutrition and those aged 6-23 months have higher anaemia. This should be investigated if is more knowledge rather than practise.

Recommendations

Immediate term

- In Batil, Kaya and Gendrassa, WFP to continue Blanket Supplementary Feeding Programme (BSFP) for all children under-five along-side General Food Distribution (GFD) until malnutrition rates reduce to acceptable levels and anaemia rates stabilize below critical levels. UNHCR and partners to continue monitoring and addressing underlying factors to high malnutrition rate.

- Health and nutrition agencies to continue with Therapeutic and Supplementary Feeding Programmes (TFP and SFP) for malnourished children while increasing coverage and decentralization of Therapeutic Supplementary Feeding Programmes (TSFP) and Outpatient Therapeutic Programmes (OTP), strengthening linkages between the programmes and ensuring quality of care.

- Health and nutrition agencies to conduct active case finding for malnutrition in the community and during blanket feeding distribution. Community awareness and recognition of signs of malnutrition to be highlighted.

- Health and nutrition agencies to scale up preventative programmes and essential nutrition actions: Promotion of optimal nutrition for women; prevention and control of anemia for women and children; promotion of optimal breastfeeding during the first six months; promotion of optimal complementary feeding; prevention of vitamin A deficiency in women and children

- Health agencies to scale up Community Based Health Programme (CBHP) and enhance the linkages between primary health care, nutrition and WASH interventions.

- WASH agencies to continue with monitoring of WASH facilities to ensure utilization, cleanliness and coverage maintained above sphere standards.

- Water, Sanitation and Hygiene (WASH) agencies to strengthen hygiene promotion component and ensure regular soap distribution. UNHCR to ensure replacement of old Jerrican while WASH agencies continue with Jerrican cleaning campaigns.

Medium Term – (3-6 months)

- All stakeholders to continue with established food distribution monitoring systems, to ensure refugee aware of and receive entitlements.

- WFP and UNHCR to explore provision of milling vouchers to facilitate milling needs for refugees

- UNHCR to plan for construction of additional food distribution centres to reduce distance and diversion of food to pay for transport.

- Partners to engage community in Behaviour change activities to ensure uptake of health and nutrition services.

- Given the high rates of anaemia in the under five children and the medium/high rates of malnutrition in three of the four camps, UNHCR, WFP and Partners to determine what is the most effective method of distribution of an iron rich food to which age group, using which product, for what time period. Ideally these issues will be informed and decided during the JAM. This should go hand in hand with public health interventions: malaria prevention through bed net distribution, deworming, immunization campaigns etc

- UNICEF, WHO, UNHCR and Partners to avail sufficient vaccines and cold chain to support immunization campaigns

- UNHCR and Partners to Institute a community-based nutrition surveillance systems collecting MUAC data to monitor trends in nutritional status among refugees

- Partners and UNHCR to investigate and ascertain the underlying drivers of the better of situation of Gendrassa , capitalize the findings and promote attributes in other camps

Long term

- UNHCR to Conduct nutrition survey after 12 months

- All stakeholders to scale up food security and livelihood/Income generating interventions to reduce reliance on food aid.

- Strengthen capacity building of local and refugee health and nutrition staff for quality and sustainability of programmes

1. INTRODUCTION

1.1. Background

Maban County in Upper Nile state houses four refugee camps Doro, Yusuf Batil, Gendrassa and Jammam Camps which were established from April 2012, to cater for mass influx from Blue Nile state. The region is a semi-arid desert with sparse vegetation and no surface water. The climate is harsh with extreme temperatures during the dry season and flooding during the wet season. The survey was conducted during the dry season in February.

The total registered population was 114,000 as at February 19th 2013.The key ethnic groups in the area are Ingassana and Uduk while the main religions practised are Islam and Christianity. The refugees have limited access to additional sources of income, the environment is not suitable for agricultural activities and very few manage to keep livestock. The majority of the refugee population is thus largely dependent on the general food ration from WFP.

The land surface in Maban is composed of clay soil which is impassable with rain, however significant work has been done between and within camps to upgrade the quality of roads using murram. This ensures that humanitarian work is not hampered. Each of the camps has a market area which is accessible to all refugees as well as the main Bunj market run by the local host community and business people from Ethiopia.

The United Nations High Commission for Refugees (UNHCR) and the World Food Programme (WFP) have been working together, in partnership, to ensure that food security and related needs of the refugees are adequately addressed. WFP is responsible for the provision of the general food ration while UNHCR and its Implementing Partners provide health services, water and sanitation, shelter, and basic non-food items.

The registered population is on food aid at 585 grammes/person/day, providing slightly above 2100 kcal.

Table 1: General Food distribution Rations

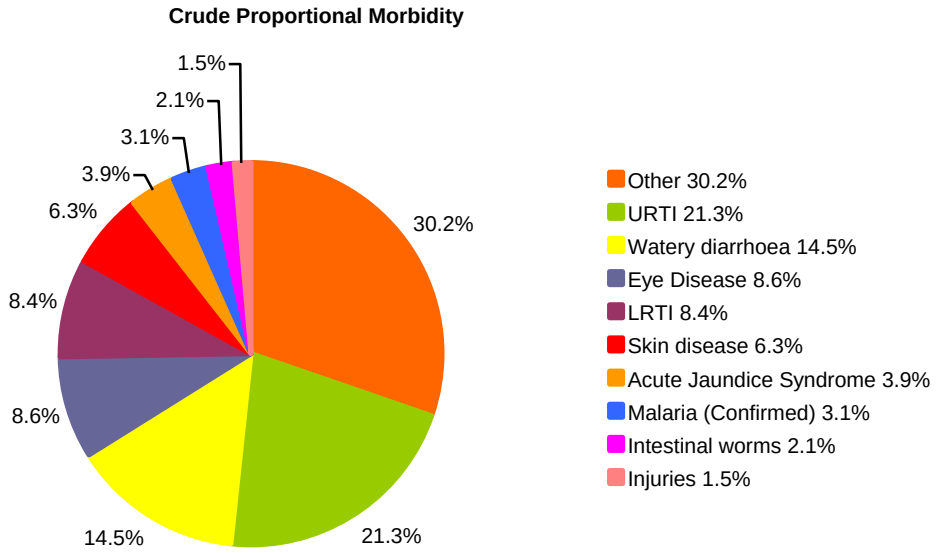
Food Item	Grammes/person/day	Kilo Calories	% Energy
Sorghum	500	1675	79.3%
Pulses	50	171	8.0
Vegetable oil	30	266	12.6
Salt	5	0	0
Total	585	2112	

Health Situation

Primary Health care services are available in the camps, with each camp having a hospital and 3 or 4 satellite health-posts. Jammam camp however, only has one health centre Other services provided include immunization, antenatal and post natal care.

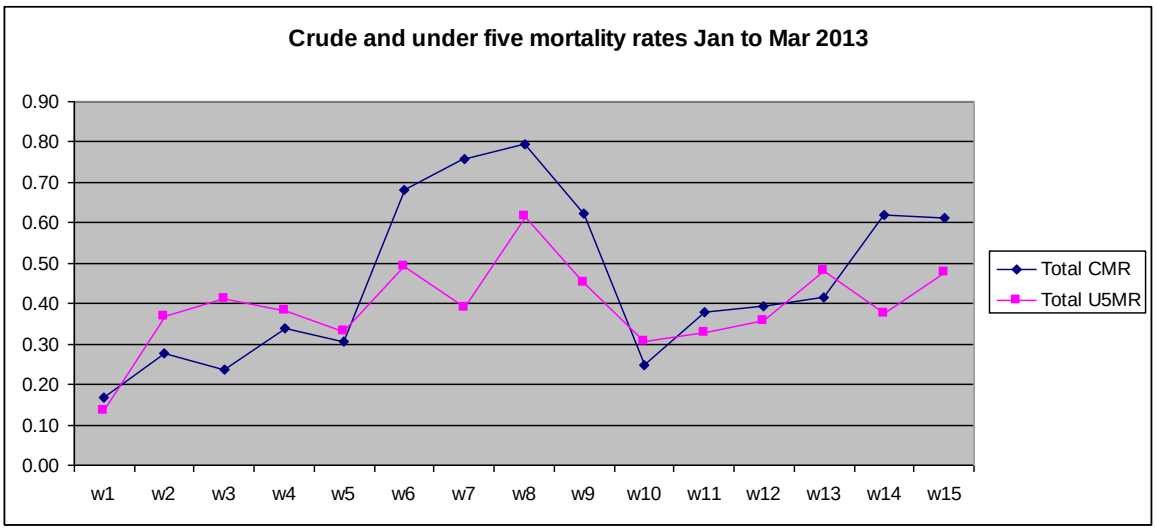
The top 5 cause of morbidity between January and March 2013. were Upper Respiratory Tract Infection (URTI) (21.3%), Low Respiratory Tract Infection (LRTI) (8.4%), Acute Water Diarrhoea (AWD) (14.5%), Eye disease (8.6%) and skin diseases (6.3%).A big portion of 30.2% were generally not classified.

Figure 1: MORBIBITY HIS- Jan to March 2013[1]



Both crude and under-five mortality rates increased steadily from week 1 at 0.15/10,000/day peaking at week 7 at 0.80/10,000/day CMR. Batil camp registered 1.03/10,000/day CMR which is above threshold in the month of February due to Hepatitis related deaths. deaths were reported since the outbreak began in August 2012.

Figure 2: Crude and under 5 mortality rates January to March 2013



Nutrition situation

Facility based screening in Doro camp showed a steady decline in Proxy GAM from 15.31% in July 2012 to 8.68% in March 2013. Community screening at Batil camp also indicated similar trend with 27.3% Proxy GAM in August 2012 to 7.7% in February 2013.

Admissions to feeding programs (TFP and SFP) peaked in October and have continued to decline since then, indicating that the situation that is slowly improving despite being still at threshold levels.

Figure 3: MAM admissions – October 2012 to February 2013

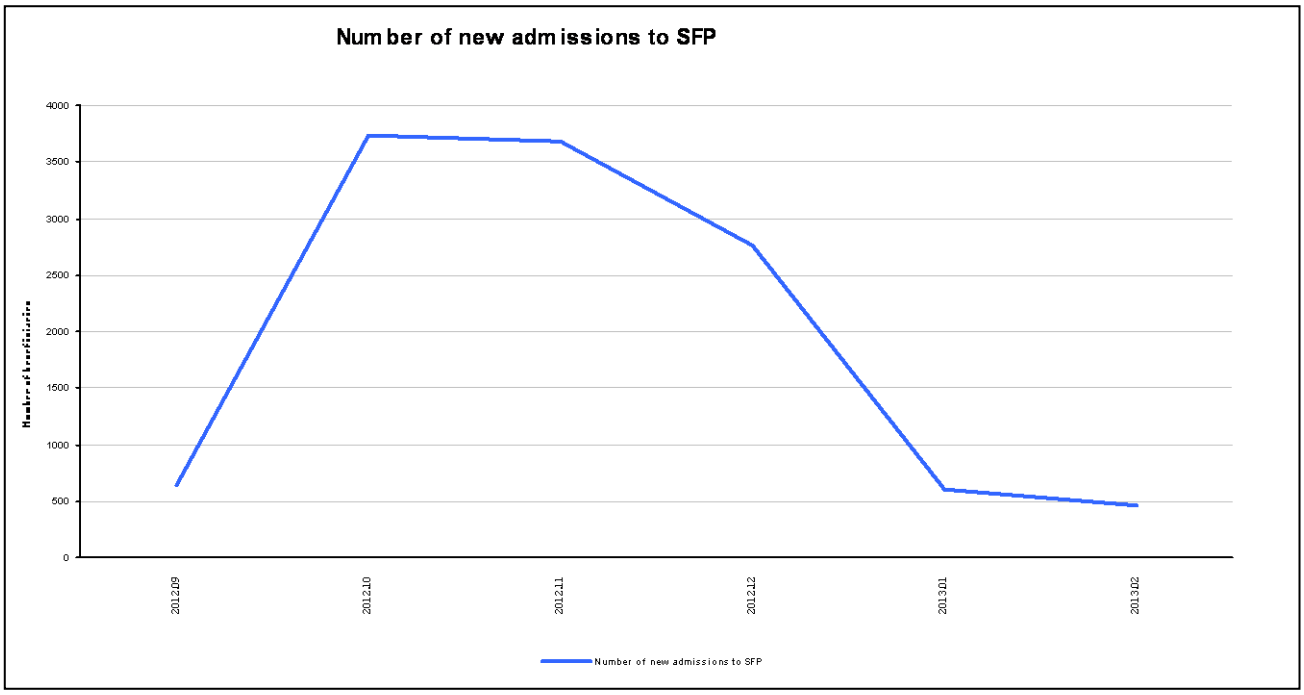
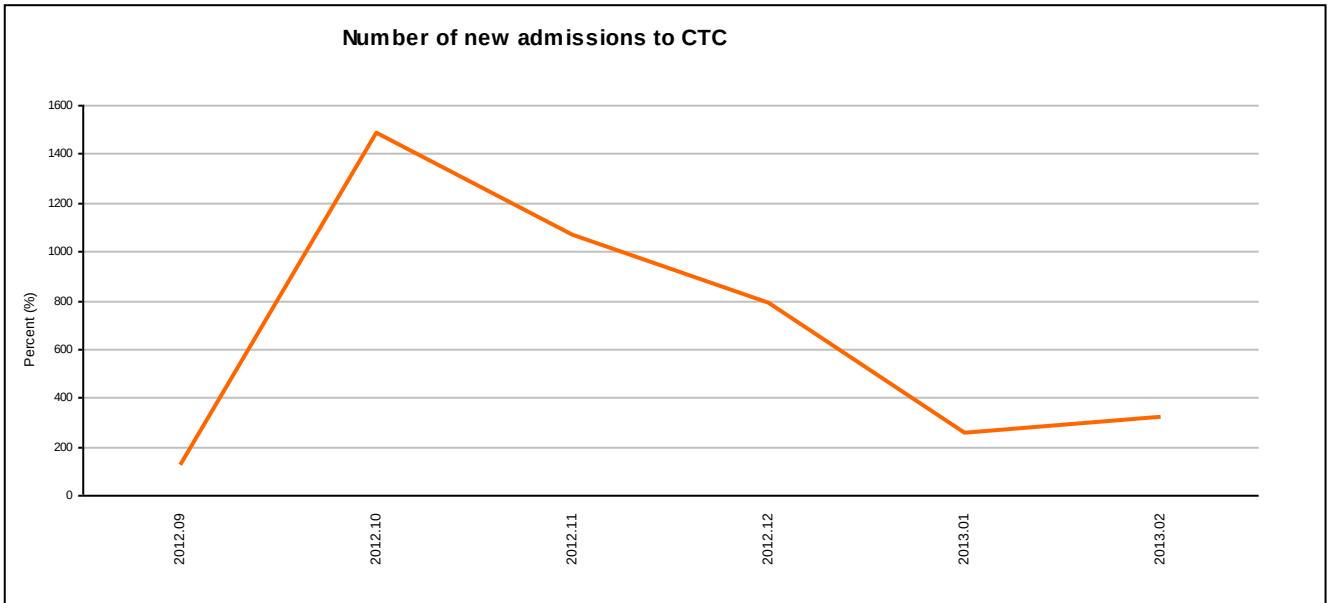


Figure 4: SAM admissions- October 2012 to Feb 2013



Current Nutrition Services and Activities

- Targeted supplementary feeding programmes for moderately malnourished children
- Outpatient and inpatient therapeutic feeding programmes for severely malnourished
- Blanket supplementary feeding programme for all under-fives
- Routine Middle Upper Arm circumference (MUAC) screening of children 6-59 months
- IYCF- Infant and Young child feeding programmes
- Mass deworming and Vitamin A supplementation for under 5s.

1.2. Survey Objectives:

- To determine the prevalence of acute malnutrition among children 6-59 months.
- To determine the prevalence of chronic malnutrition (stunting) among children 6-59 months.
- To assess crude and under-five mortality rates in the last 3 months.
- To assess Infant and Young Child Feeding (IYCF) practices among children 6-23 months.
- To assess the prevalence of anaemia among children 6-59 months and non-pregnant women of reproductive age (15-49 years).
- To determine the coverage of measles vaccination among children 9-59 months.
- To determine vitamin A supplementation in the last six months among children 6-59 months.
- To assess the coverage of selective feeding programmes for children 6-59 months.
- To determine mosquito net coverage
- To establish recommendations on actions to be taken to address the situation.

2. METHODOLOGY

2.1 Sample size

Simple random Sampling (SRS) design was used for sample size calculation. Cluster sampling method could not be used since the camp is not well organized and some village number don't exceed 22 (minimum number of 25 villages required for cluster sampling).

UNHCR PROGRESS[2] database was used for the population figures.Sample size was calculated for the three population groups a) children 6-59 months b) infants 0-23 months c) women of reproductive age 15-49 years.The anaemia sample size in children 6-59 months was the same as sample size for GAM as recommended in UNHCR Standardized Expanded Nutrition Survey (SENS) guidelines.

The sample size justification, assumptions and rationale used for the household level and individual level indicators are summarized in the table below:

Table 2: Sample size calculation- Anthropometric and Mortality for Maban (Simple Random Sampling)

Anthropometric sample size calculation					**Mortality sample size calculation**				
	Doro	**Batil**	**Gendrassa**	**Jamam**		**Doro**	**Batil**	**Gendrassa**	**Jamam**
Estimated prevalence (%)	20	25	24	20	Estimated prevalence (%)	1.5	2	1.5	1.5
± Desire precision (%)	4	4	4	4	± Desire precision (%)	1	1	1	1
Design effect	1	1	1	1	Design effect	1	1	1	1
Average household size	4.5	4	4.5	3.9	Average household size	4.5	4.1	4.5	3.9
<5 population (%)	20	20	24	24					
Non response households (%)	10	10	10	10	Non response households (%)	10	10	10	10
Children to be included	384	450	438	384	Population to be included	640	854	768	640
Households to be included	527	695	501	501	Households to be included	158	231	194	162
Anaemia 6-59 months	384	450	438	384	Anaemia NPW 15-49 years (HHs)	384	450	438	380

* The estimated sample size calculated by using ENA-Delta for the Anthropometry and Mortality resulted different number of households. The estimated sample size for mortality was less than that for anthropometry rate therefore the higher HH sample size will be used for both indicators

Anthropometry

Estimated prevalence: The admission figures from all camps were used to estimate the prevalence at the time of final planning (December 2012) since in most of the camps no survey was conducted a part from Batil survey conducted in August 2012

Precision: precision of 4 % was chosen to allow both for manageable sample size and reliable precision.

Design effect: 1 is used as a design effect referring to the simple random sampling

Average household size: computed from registration data at the time of the planning

Under 5 population: from UNHCR registration data at the time of the planning

% of non-response households: The size was adjusted for non-response. A non-response rate of 10% was used to cope with the intra and inter-camp mobility of populations.

The number of children was computed from elements above and derived into number of households by ENA planning tool.

Mortality

Estimated prevalence: based on admission figures in Jammam at the time of the planning

Precision: same precision as anthropometry (4)

Design effect: 1

The sample size for mortality was compute also from ENA planning sheet.. However, the sample size of anthropometry was used since the sample size is bigger

2.2. Sampling procedure

Prior to data collection, Random numbers were generated to select the households to be surveyed in each camp.Teams were then assigned to label the tents in each camp.

However, once in the field, it was impossible to locate the marked tents since the numbers had been erased by strong winds and some camps had errors in labelling.Therefore, a modified Expanded Programme on Immunization (EPI) method was used to locate the households.

The centre of the block was located with the help of the village leader, then spin-the-pen method was used to located the direction; two of the team members then walked from the centre to the end of the village while counting the house-holds on either side. Random numbers were used to choose the first household to begin. Subsequent household was selected by walking to the nearest on the left and keeping the same pattern. Since it was noticed that each village was allocated a certain number of random number according to size, the survey team maintained the same number of tents per village as per allocated by the random number computing

Choice of above EPI method:

- Labelled numbers of tents erased
- Cluster approach could not be used at the last moment since in some camps, the villages number don't exceed 22 (25 minimum number of 25 villages required for cluster sampling)
- Time constrains: starting already the data collection, any shift to methodology would request delay/postponing /abandon of the survey

In all four surveys, standardised procedures were followed by all teams. All households were selected, whether or not they had an eligible individual, until the quota was reached.

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

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

If a selected household was abandoned, the household was replaced by another household.

If a selected child was disabled with a physical deformity preventing certain anthropometric measurements, the child was still included in the assessment of the other indicators.

2.3. Case definitions and inclusion criteria

A household was defined as all people living together and eating in the same pot. The respondent was the mother of the child or in her absence the primary caretaker. In households with no eligible children, the female head was the respondent. The age range for children for anthropometry was 6-59 months. If age was unknown, an EPI card or a calendar of events was used to estimate. Any child less than 87 cm was measured length while lying down, while any child greater than 87 cm was measured height while standing. The main anthropometric results were reported using WHO Z scores 2006, as

indicated in table below. The recall period for mortality was the last 3 months. Households with no eligible children for anthropometry were also included for mortality.

- **Measurement methods**

Household-level indicators

Mortality: The individual-level mortality form recommended by SMART was used to collect mortality occurring within the camp and analysis was done with the household-level summary data derived from the form.

Individual-level indicators

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

Birth date or age in months for children 0-59 months: the exact date of birth (day, month, year) was recorded from either an EPI card or child health card if available. If no reliable proof of age was available, age was estimated in months using a local event calendar or by comparing the selected child with a sibling whose ages were known, and was recorded in months on the questionnaire. If the child's age could absolutely not be determined by using a local events calendar or by probing, the child's length/height was used for inclusion; the child had to measure between 65 cm and 110 cm.

Weight of children 6-59 months: measurements were taken to the closest 100 grams using an electronic scale with a wooden board to stabilise it on the ground. Most children were weighed with clothes. Previous experience has shown that it is very difficult to convince caregivers to remove clothes from children during weighing in nutrition surveys. Hence, samples of typical clothes from children aged 6 months to 5 years were weighed and the mean weight of 115 grams was taken into consideration during data analysis.

Height/Length of children 6-59 months: children's height or length was taken to the closest millimetre using a wooden height board. Height was used to decide on whether a child should be measured lying down (length) or standing up (height). Children less than 87cm were measured lying down, while those greater than or equal to 87cm were measured standing up.

Oedema in children 6 -59 months: bilateral oedema was assessed by applying gentle thumb pressure on to the tops of both feet of the child for a period of three seconds and thereafter observing for the presence or absence of an indent. All oedema cases reported by the survey teams were verified by the survey coordinators and were referred immediately.

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

Child enrolment in selective feeding programme for children 6-59 months: selective feeding programme coverage was assessed for the outpatient therapeutic programme and for the supplementary feeding programme using the direct method.

Measles vaccination in children 6-59 months: measles vaccination was assessed by checking for the measles vaccine on the EPI card if available or by asking the caregiver to recall if no EPI card was available.

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

Deworming in last 6 months in children 6-59 months: whether the child received a deworming pill over the past six months was recorded from the EPI card if available or by asking the caregiver to recall if no card is available.

Haemoglobin concentration in children 6-59 months and women 15-49 years: Hb concentration was taken from a capillary blood sample from the fingertip and recorded to the closest gram per decilitre by using the portable HemoCue Hb 301 Analyser. If severe anaemia was detected, the child or the woman was referred immediately.

Diarrhoea in last 2 weeks in children 0-59 months: an episode of diarrhoea was defined as three loose stools or more in 24 hours. Caregivers were asked if their child had suffered episodes of diarrhoea in the past two weeks.

ANC enrolment and iron and folic acid pills coverage: if the surveyed woman was pregnant, it was assessed by card or recall whether she was enrolled in the ANC programme and was receiving iron-folic acid pills.

Infant and young child feeding practices in children 0-23 months: Infant and young child feeding practices were assessed based on standard WHO recommendations (WHO 2007).

Referrals: Children aged 6-59 months were referred to health post for treatment when MUAC was < 12.5 cm, when oedema was present or when haemoglobin was < 7.0 g/dL. Women of reproductive age were referred to the hospital for treatment when MUAC was below 16.0 cm or haemoglobin was < 6.0 g/dL.

- **Case definitions and calculations**

Mortality: The crude death rate (CDR) and the U5 death rate (U5DR) were expressed in number of deaths per 10,000 people per day. The formula below was applied:

Crude Death Rate (CDR) = 10,000/a*f/ (b+f/2-e/2+d/2-c/2)
Where:
a = Number of recall days
b = Number of current household residents
c = Number of people who joined household during recall period
d = Number of people who left household during recall period
e = Number of births during recall period
f = Number of deaths during recall period

Malnutrition in children 6-59 months: Acute malnutrition prevalence was estimated from the weight-for height-index values combined with the presence of oedema and classified as show in the table below. Main results are reported according to the WHO Growth Standards 2006. Results using the National Centre for Health Statistics (NCHS) Growth Reference 1977 are reported in **Appendix 1**.

Table 3: Definitions of acute malnutrition using weight-for-height and/or oedema in children 6–59 months

Categories of acute malnutrition	Percentage of median (NCHS Growth Reference 1977 only)	Z-scores (NCHS Growth Reference 1977 and WHO Growth Standards 2006)	Bilateral oedema
Global acute malnutrition	<80%	< -2 z-scores	Yes/No
Moderate acute malnutrition	<80% to ≥70%	< -2 z-scores and ≥ -3 z-scores	No
Severe acute malnutrition	>70%	> -3 z-scores	Yes
	<70%	< -3 z-scores	Yes/No

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

Table 4 : Definitions of stunting using height-for-age in children 6–59 months

Categories of stunting	Z-scores (WHO Growth Standards 2006 and NCHS Growth Reference 1977)
Stunting	<-2 z-scores
Moderate stunting	<-2 z-score and >=-3 z-score
Severe stunting	<-3 z-scores

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

Table 5 : Definitions of underweight using weight-for-age in children 6–59 months

Categories of underweight	Z-scores (WHO Growth Standards 2006 and NCHS Growth Reference 1977)
Underweight	<-2 z-scores
Moderate underweight	<-2 z-scores and >=-3 z-scores
Severe underweight	<-3 z-scores

Mid Upper Arm circumference (MUAC) was classified according to the following cut-offs in children 6-59 months:

Table 6 Classification of acute malnutrition based on MUAC in children 6-59 months (WHO)

Categories of Malnutrition	MUAC Reading
At risk of malnutrition	≥ 12.5 cm and <13.5 cm
Moderate malnutrition	≥ 11.5 cm and <12.5 cm
Severe malnutrition	< 11.5 cm

Child enrolment in selective feeding programme for children 6-59 months: selective feeding programme coverage was assessed using the direct method as follows:

Coverage of SFP programme (%) =
100 x No. of surveyed children with MAM according to SFP admission criteria who reported being registered in SFP
No. of surveyed children with MAM according to SFP admission criteria

Coverage of OTP programme (%) =

100 x No. of surveyed children with SAM according to OTP admission criteria who reported being registered in OTP

No. of surveyed children with SAM according to OTP admission criteria

Infant and young child feeding practices in children 0-23 months: Infant and young child feeding practices were assessed as follows based on standard WHO recommendations (WHO 2007).

WHO core indicator 1. Early initiation of breastfeeding:

Proportion of children born in the last 24 months who were put to the breast within one hour of birth.

Children born in the last 24 months who were put to the breast within one hour of birth

Children born in the last 24 months

WHO core indicator 2. Exclusive breastfeeding under 6 months:

Proportion of infants 0–5 months of age who are fed exclusively with breast milk: (including milk expressed or from a wet nurse, ORS, drops or syrups (vitamins, breastfeeding minerals, medicines)

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

Infants 0–5 months of age

WHO core indicator 3. Continued breastfeeding at 1 year:

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

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

Children 12–15 months of age

WHO core indicator 4. Introduction of solid, semi-solid or soft foods:

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

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

Infants 6–8 months of age

WHO optional indicator 9. Children ever breastfed:

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

Children born in the last 24 months who were ever breastfed

Children born in the last 24 months

WHO optional indicator 10. Continued breastfeeding at 2 years:

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

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

Children 20–23 months of age

WHO optional indicator 14. Bottle feeding:

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

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

Children 0–23 months of age

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

Table 7 : Definition of anaemia (WHO 2000)

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

Classification of public health problems and targets

Mortality: The following thresholds are used for mortality.

Table 8 : Mortality benchmarks for defining crisis situations

Assumed baseline	**Emergency threshold**
Fixed at: CDR: 0.5 /10,000 / day U5MR: 1/ 10,000 /day	CDR > 1/10,000 / day: 'very serious' CDR > 2 /10,000 /day: 'out of control' CDR > 5 /10,000 /day: 'major catastrophe' (double for U5MR thresholds)

Anthropometric data: UNHCR Strategic Plan for Nutrition and Food Security (2008-2012)[4] states that the target for the prevalence of Global Acute Malnutrition (GAM) for children 6-59 months of age by camp, country and region should be < 5% and the target for the prevalence of Severe Acute Malnutrition (SAM) should be <1%. The table below shows the classification of public health significance of the anthropometric results for children under-5 years of age.

Table 9 : Classification of public health significance for children under 5 years of age (WHO 1995, 2000)

Prevalence %	**Critical**	**Serious**	**Poor**	**Acceptable**
Low weight-for-height	≥15	10-14	5-9	<5
Low height-for-age	≥40	30-39	20-29	<20
Low weight-for-age	≥30	20-29	10-19	<10

Selective feeding programmes: UNHCR Strategic Plan for Nutrition and Food Security 2008-2012 states the following:

- % of supplementary feeding programmes that meet SPHERE standards for performance: recovery >75%, case fatality <3%, defaulter rate <15%, and coverage >50% for rural areas, >70% for urban areas and >90% for camps – by camp and country.
- % of programmes for management of SAM that meet SPHERE standards for performance and adhere to standard treatment protocols: recovery >75%, case fatality <10%, defaulter rate <15%, and coverage >50% for rural areas, >70% for urban areas and >90% for camps regardless of

whether facility based or community based – by camp or facility (if non camp-based).

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

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

Anaemia data*:* UNHCR Strategic Plan for Nutrition and Food Security (2008-2012) states that the targets for the prevalence of anaemia in children 6-59 months of age and in women 15-49 years of age should be low i.e. <20%. The severity of the public health situation should be classified according to WHO criteria as shown in Table 14 below.

Table 10 : Classification of public health significance (WHO 2000)

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

WASH: Diarrhoea caused by poor water, sanitation and hygiene accounts for the annual deaths of over two million children under five years old. Diarrhoea also contributes to high infant and child morbidity and mortality by directly affecting children's nutritional status. Refugee populations are often more vulnerable to public health risks and reduced funding can mean that long term refugee camps often struggle to ensure the provision of essential services, such as water, sanitation and hygiene. Hygienic conditions and adequate access to safe water and sanitation services is a matter of ensuring human dignity and is recognised as a fundamental human right. The following standards (amongst others) apply to UNHCR WASH programmes:

Table 11 : UNHCR WASH Programme Standards

UNHCR Standard	**Indicator**
Average quantity of water available per person/day	> or = 20 litres
Communal latrine coverage	20 people/latrine
Provision of soap	> 250 g per person per month

2.4. Questionnaire, training and supervision

Questionnaires

The questionnaires are included in **Appendix 6.**
The questionnaires were prepared in English language and administered in Arabic and Uduk languages via translators. The questionnaires were pre-tested before the survey.

Seven module questionnaires were designed to provide information on the relevant indicators of the different target groups as indicated in the survey objectives.

The seven module questionnaires covered the following areas and the following measurements:
Module 1*: Mortality*- This included questions related to mortality in the last three months among the whole population.

***Module 2**: Children 6-59 months*- This included questions and measures on children aged 6-59 months. Information was collected on anthropometric status, oedema, and enrolment in selective feeding programmes, immunisation (measles and DPT3), vitamin A supplementation and deworming in last six months, morbidity from diarrhoea in past two weeks, haemoglobin assessment for all children.

***Module 3**:* Feeding practices for children aged 0-24 months only.

***Module 4:** Women 15-49 years*- This included questions and measures on women aged 15-49 years. Information was collected on women's pregnancy and lactating status, coverage of iron-folic acid pills and post-natal vitamin A supplementation, and haemoglobin assessment for non-pregnant women only.

Survey teams and supervision

A total of thirty one enumerators divided in seven teams (3 teams of five each and 4 teams of 4 each) conducted the data collection. Each team was composed of four members; a team leader, two measurers, a HB measurer and a mobilizer for some teams.

The supervision of data collection was conducted on a daily basis by a team of 2 UNHCR nutritionists, 1 WFP, 1 UNICEF,1 Samaritan purse, 2 staff from IMC and 2 staff from Goal. (See annex)

The team leader was the interviewer for all questionnaires while the rest of the team members took the anthropometric measurements and assisted with sampling, age determination and reading of health/vaccination cards or birth certificates. Each of the surveyors was employed by the health and nutrition agencies and had some experience in conducting assessments in the camps.

Training

The training lasted four days followed by a one day pre-test. The training was from 12/02/2013 to 18/02/2013.

The training focused on: the purpose and objectives of the survey; roles and responsibilities of each team member, systematic familiarization with the questionnaires by reviewing the purpose for each module and question; interviewing skills and recording of data; interpretation of calendar of events and age determination; how to take anthropometric measurements and haemoglobin measurements. The practical session on anthropometric measurements involved volunteer children for practice as well as a standardisation test. Each team measured ten children twice and the data was entered and analysed n ENA SMART.

A pre-test was also done whereby each team interviewed two households and administered the questionnaire and took anthropometric measurements.

2.5. Data analysis

Data entry was completed at UNHCR Maban and was done as the surveys were on-going. All questionnaires were manually checked for completeness, consistency and range before data entry by the supervisors and coordination team. This check was also used to provide feedback to the teams to improve data collection as the survey progressed.

Data for children 6-59 months and mortality were entered using ENA for SMART software (delta version November 2011). After completion of the survey data entry, all entries were double checked one by one with the original questionnaire to ensure there were no data entry errors. Data for infants 0-24 months, women 15-49 years, WASH and food security indicators were doubled entered using Epi Info –ENA Software (Center for Disease Control).

All data files were cleaned before analysis.

Analysis was performed using ENA for SMART and Epi Info/ENA software. The SMART Plausibility Report was generated for each survey in order to check the quality of the anthropometric data and a summary of the key quality criteria is shown in **Appendix 2, 3, 4 and 5.**

3. RESULTS

DORO CAMP

3.1 Anthropometric results (based on WHO standards 2006):

Table 12: Distribution of age and sex of sample – Doro Camp (Feb-March. 2013)

	Boys		Girls		Total		Ratio
AGE (mo)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy:girl**
6-17	105	44.7	130	55.3	235	27.5	0.8
18-29	108	47.2	121	52.8	229	26.8	0.9
30-41	88	50.3	87	49.7	175	20.5	1.0
42-53	78	51.7	73	48.3	151	17.7	1.1
54-59	27	41.5	38	58.5	65	7.6	0.7
Total	406	47.5	449	52.5	855	100.0	0.9

Table 13: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex– Doro Camp (Feb-March. 2013)

	All n = 822	**Boys** n **=** 388	**Girls** n **=** 434
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(82) 10.0 % (8.1 - 12.2 95% C.I.)	(47) 12.1 % (9.2 - 15.7 95% C.I.)	(35) 8.1 % (5.9 - 11.0 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(68) 8.3 % (6.6 - 10.4 95% C.I.)	(36) 9.3 % (6.8 - 12.6 95% C.I.)	(32) 7.4 % (5.3 - 10.2 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(14) 1.7 % (1.0 - 2.8 95% C.I.)	(11) 2.8 % (1.6 - 5.0 95% C.I.)	(3) 0.7 % (0.2 - 2.0 95% C.I.)

The prevalence of oedema is 0.0 %

Table 14: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema– Doro Camp (Feb-March. 2013)

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	210	11	5.2	35	16.7	164	78.1	0	0.0
18-29	228	3	1.3	14	6.1	211	92.5	0	0.0
30-41	169	0	0.0	9	5.3	160	94.7	0	0.0
42-53	148	0	0.0	10	6.8	138	93.2	0	0.0
54-59	62	0	0.0	0	0.0	62	100.0	0	0.0
Total	817	14	1.7	68	8.3	735	90.0	0	0.0

Figure 5: GAM categories in children 6-59 months-Doro camp, (Feb-March.2013)

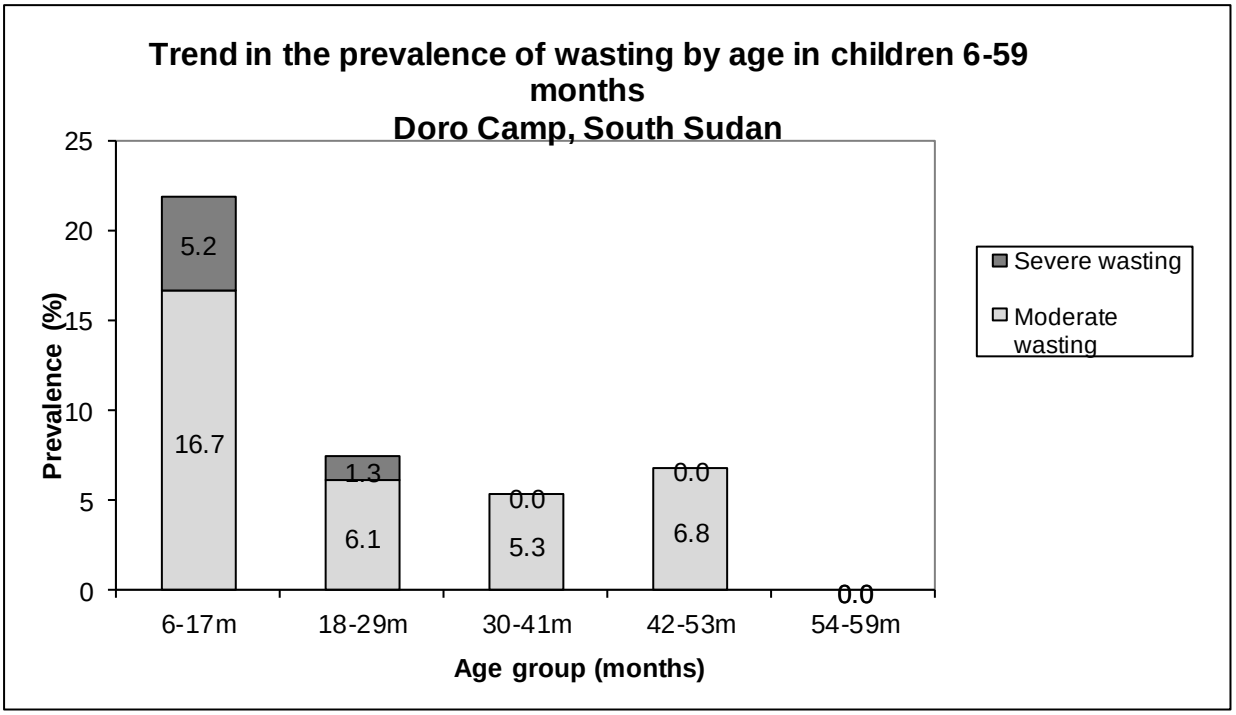


Figure 6: Distribution of weight-for-height z-scores (based on WHO Growth Standards; the reference population is shown in green) of survey population compared to reference population- Doro Camp, (Feb-March .2013)

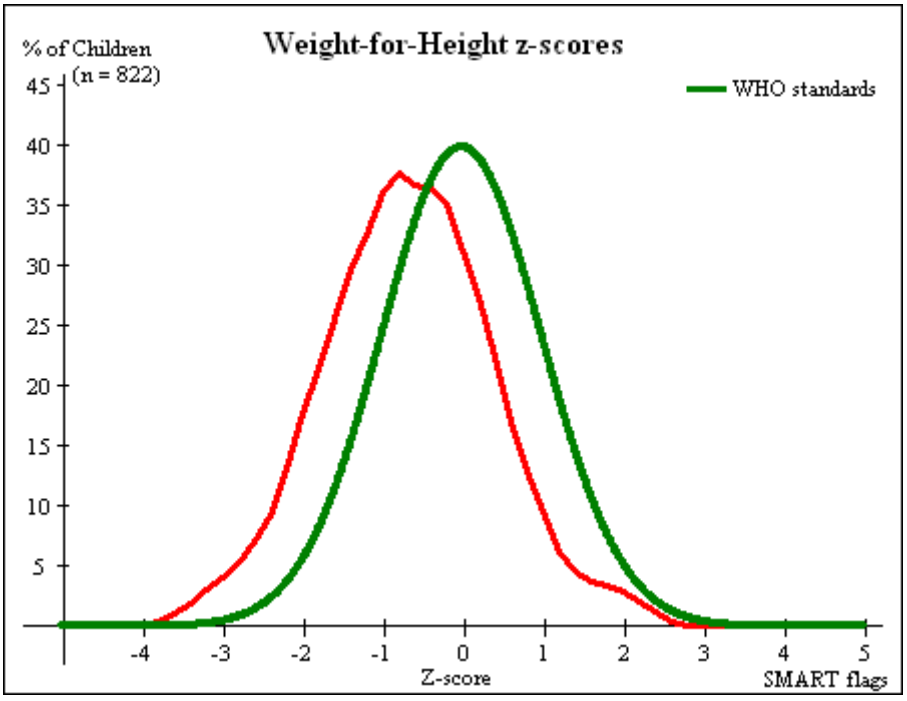


Table 15: Distribution of acute malnutrition and oedema based on weight-for-height z-scores– Doro Camp (Feb-March. 2013)

	<-3 z-score	**>=-3 z-score**
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 14 (1.7 %)	Not severely malnourished No. 808 (98.3 %)

Table 16: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex– Doro Camp (Feb-March. 2013)

	All n = 846	**Boys** n = 402	**Girls** n = 444
Prevalence of global malnutrition (< 125 mm and/or oedema)	(58) 6.9 % (5.3 - 8.8 95% C.I.)	(26) 6.5 % (4.5 - 9.3 95% C.I.)	(32) 7.2 % (5.2 - 10.0 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(49) 5.8 % (4.4 - 7.6 95% C.I.)	(24) 6.0 % (4.0 - 8.7 95% C.I.)	(25) 5.6 % (3.8 - 8.2 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(9) 1.1 % (0.6 - 2.0 95% C.I.)	(2) 0.5 % (0.1 - 1.8 95% C.I.)	(7) 1.6 % (0.8 - 3.2 95% C.I.)

Table 17: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema– Doro Camp (Feb-March. 2013)

		Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	223	8	3.6	39	17.5	176	78.9	0	0.0
18-29	228	1	0.4	7	3.1	220	96.5	0	0.0
30-41	173	0	0.0	2	1.2	171	98.8	0	0.0
42-53	151	0	0.0	1	0.7	150	99.3	0	0.0
54-59	65	0	0.0	0	0.0	65	100.0	0	0.0
Total	840	9	1.1	49	5.8	782	93.1	0	0.0

Table 18: Prevalence of underweight based on weight-for-age z-scores by sex– Doro Camp (Feb-March. 2013)

	All n = 818	**Boys** n **=** 393	**Girls** n **=** 425
Prevalence of underweight (<-2 z-score)	(209) 25.6 % (22.7 - 28.6 95% C.I.)	(116) 29.5 % (25.2 - 34.2 95% C.I.)	(93) 21.9 % (18.2 - 26.1 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(156) 19.1 % (16.5 - 21.9 95% C.I.)	(85) 21.6 % (17.8 - 26.0 95% C.I.)	(71) 16.7 % (13.5 - 20.5 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(53) 6.5 % (5.0 - 8.4 95% C.I.)	(31) 7.9 % (5.6 - 11.0 95% C.I.)	(22) 5.2 % (3.4 - 7.7 95% C.I.)

Table 19: Prevalence of underweight by age, based on weight-for-age z-scores– Doro Camp (Feb-March. 2013)

		Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	209	26	12.4	49	23.4	134	64.1	0	0.0
18-29	222	11	5.0	54	24.3	157	70.7	0	0.0
30-41	171	7	4.1	31	18.1	133	77.8	0	0.0
42-53	149	7	4.7	13	8.7	129	86.6	0	0.0
54-59	65	2	3.1	8	12.3	55	84.6	0	0.0
Total	816	53	6.5	155	19.0	608	74.5	0	0.0

Table 20: Prevalence of stunting based on height-for-age z-scores and by sex– Doro Camp (Feb 2013)

	All n = 782	**Boys** n **=** 375	**Girls** n **=** 407
Prevalence of stunting (<-2 z-score)	(274) 35.0 % (31.8 - 38.4 95% C.I.)	(147) 39.2 % (34.4 - 44.2 95% C.I.)	(127) 31.2 % (26.9 - 35.9 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(191) 24.4 % (21.5 - 27.6 95% C.I.)	(94) 25.1 % (20.9 - 29.7 95% C.I.)	(97) 23.8 % (20.0 - 28.2 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(83) 10.6 % (8.6 - 13.0 95% C.I.)	(53) 14.1 % (11.0 - 18.0 95% C.I.)	(30) 7.4 % (5.2 - 10.3 95% C.I.)

Table 21: Prevalence of stunting by age based on height-for-age z-scores (Feb-March. 2013)

		Severe stunting (<-3 z-score)		**Moderate stunting (>= -3 and <-2 z-score)**		**Normal (> = -2 z score)**	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	201	21	10.4	51	25.4	129	64.2
18-29	209	29	13.9	57	27.3	123	58.9
30-41	158	21	13.3	37	23.4	100	63.3
42-53	149	8	5.4	32	21.5	109	73.2
54-59	63	4	6.3	13	20.6	46	73.0
Total	780	83	10.6	190	24.4	507	65.0

Table 22: Mean z-scores, Design Effects and excluded subjects– Doro Camp (Feb-March. 2013)

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	822	-0.68±1.05	1.00	26	19
Weight-for-Age	818	-1.27±1.12	1.00	26	23
Height-for-Age	782	-1.41±1.25	1.00	28	57

* contains for WHZ and WAZ the children with edema.

3.2 Mortality results (retrospective over x months/days prior to interview)

Table 23: Mortality rates– Doro Camp (Feb-March. 2013)

CMR (total deaths/10,000 people / day): **0.04** (0.01-0.22 95% CI)
U5MR (deaths in children under five/10,000 children under five / day): **0.12** (0.02-0.67 95% CI)

Table 24: Prevalence of anaemia and haemoglobin concentration in children 6-59 months of age - Doro Camp (Feb-March. 2013)

Anaemia – Children 6-59 months	**All** n = 493
Total Anaemia (Hb<11.0 g/dL)	(236) 47.9 % (43.4 - 52.4 , 95% CI)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(145) 29.4 % (25.5 -33.7 , 95% CI)
Moderate Anaemia (7.0-9.9 g/dL)	(79) 16.0 % (13.0 -19.6 , 95% CI)
Severe Anaemia (<7.0 g/dL)	(12) 2.4 % (1.3 -4.3 , 95% CI)
Mean Hb (g/dL)	10.8 g/dL (11.3-11.8, 95% CI) [1.0 min, 14.8 max]

Table 25: Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 years) - Doro camp, (Feb-March.2013)

Anaemia – Non-pregnant women of reproductive age 15-49 years	**All** n = 406
Total Anaemia (<12.0 g/dL)	(114) 27.4 % (23.2- 32.095% CI)
Mild Anaemia (11.0-11.9 g/dL)	(77) 18.5 % (15.0 - 22.7 95% CI)
Moderate Anaemia (8.0-10.9 g/dL)	(35) 8.4 % (6.0 – 11.6 95% CI)
Severe Anaemia (<8.0 g/dL)	(2) 0.5 % (0.1 – 1.9 95% CI)

Table 26: Diarrhoea rate in children in the two weeks prior to interview- Doro Camp (Feb-March. 2013)

	6-59 months
Diarrhoea % (95% CI)	27.0 (24.1 -30.0)

3.3 Vaccination Results

Table 27: Vaccination coverage: measles for 9-59 months Doro Camp (Feb-March. 2013)

	Measles (with card) n= 184	**Measles (with card or confirmation from mother) n= 451**
YES	**20.4** % (17.8 – 23.2 95% C.I.)	**49.9** % (46.6 -53.295% C.I.)

3.4. Programme coverage

Table 28: SFP and TFP Programmes Coverage- Doro Camp (Feb-March. 2013)

Programme type	
Supplementary feeding programme coverage	84.1 % (75.8-90.5 95% C.I.)
Therapeutic feeding programme coverage	45.9 % (33.1 – 59.2 95% C.I.)

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3.5. Anthropometric results (based on WHO standards 2006):

Table 29: Distribution of age and sex of sample-Batil Camp (Feb-March. 2013)

	Boys		**Girls**		**Total**		**Ratio**
AGE (mo)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy:girl**
6-17	103	45.2	125	54.8	228	22.5	0.8
18-29	129	50.2	128	49.8	257	25.4	1.0
30-41	137	55.0	112	45.0	249	24.6	1.2
42-53	102	50.0	102	50.0	204	20.1	1.0
54-59	33	44.0	42	56.0	75	7.4	0.8
Total	504	49.8	509	50.2	1013	100.0	1.0

Table 30: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex - Batil Camp ((Feb-March. 2013)

	All n = 998	**Boys** n **=** 499	**Girls** n **=** 499
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(151) 15.1 % (13.0 - 17.5 95% C.I.)	(81) 16.2 % (13.3 - 19.7 95% C.I.)	(70) 14.0 % (11.3 - 17.4 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(116) 11.6 % (9.8 - 13.8 95% C.I.)	(59) 11.8 % (9.3 - 15.0 95% C.I.)	(57) 11.4 % (8.9 - 14.5 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(35) 3.5 % (2.5 - 4.8 95% C.I.)	(22) 4.4 % (2.9 - 6.6 95% C.I.)	(13) 2.6 % (1.5 - 4.4 95% C.I.)

The prevalence of oedema is 0.0 %

Table 31: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema- Batil Camp (Feb-March. 2013)

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	214	19	8.9	40	18.7	155	72.4	0	0.0
18-29	253	5	2.0	37	14.6	211	83.4	0	0.0
30-41	243	5	2.1	14	5.8	224	92.2	0	0.0
42-53	199	4	2.0	17	8.5	178	89.4	0	0.0
54-59	73	1	1.4	5	6.8	67	91.8	0	0.0
Total	982	34	3.5	113	11.5	835	85.0	0	0.0

Figure 7 : GAM categories in children 6-59 months-Yusuf Batil camp, (Feb-March.2013)

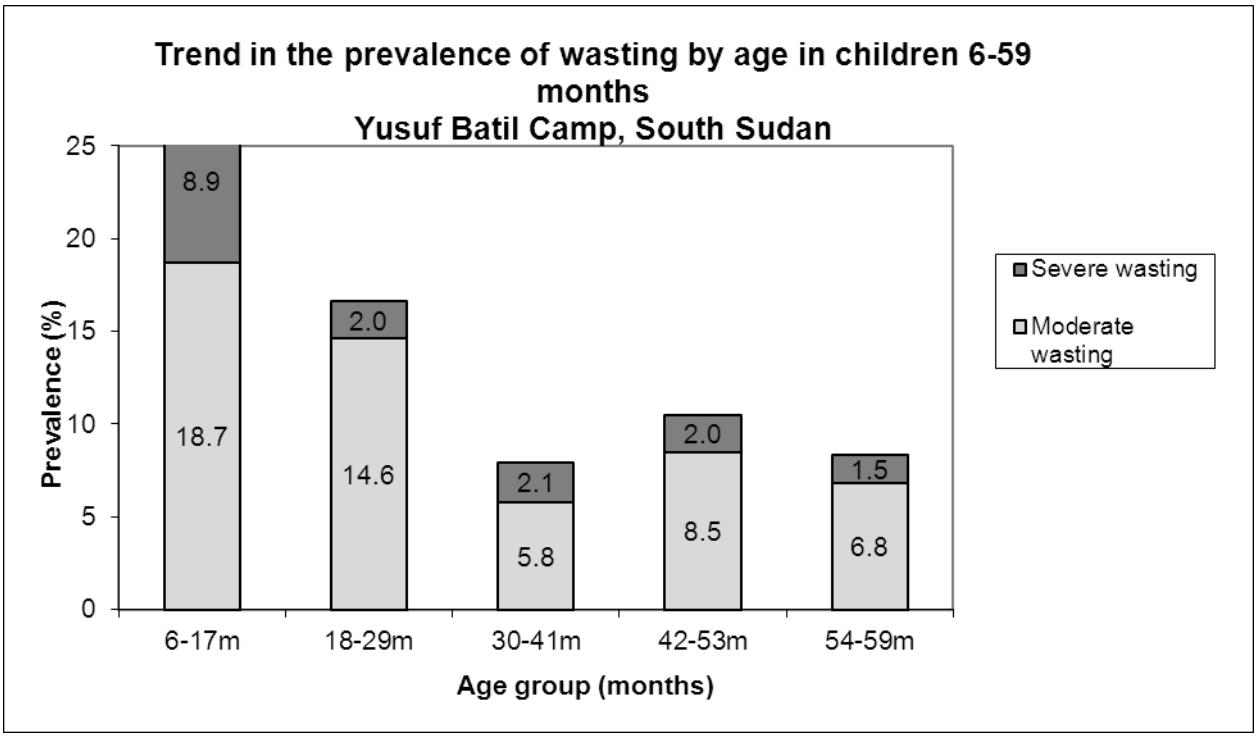

Figure 8: Distribution of weight-for-height z-scores (based on WHO Growth Standards; the reference population is shown in green) of survey population compared to reference population- Batil Camp, (Feb-March. 2013)

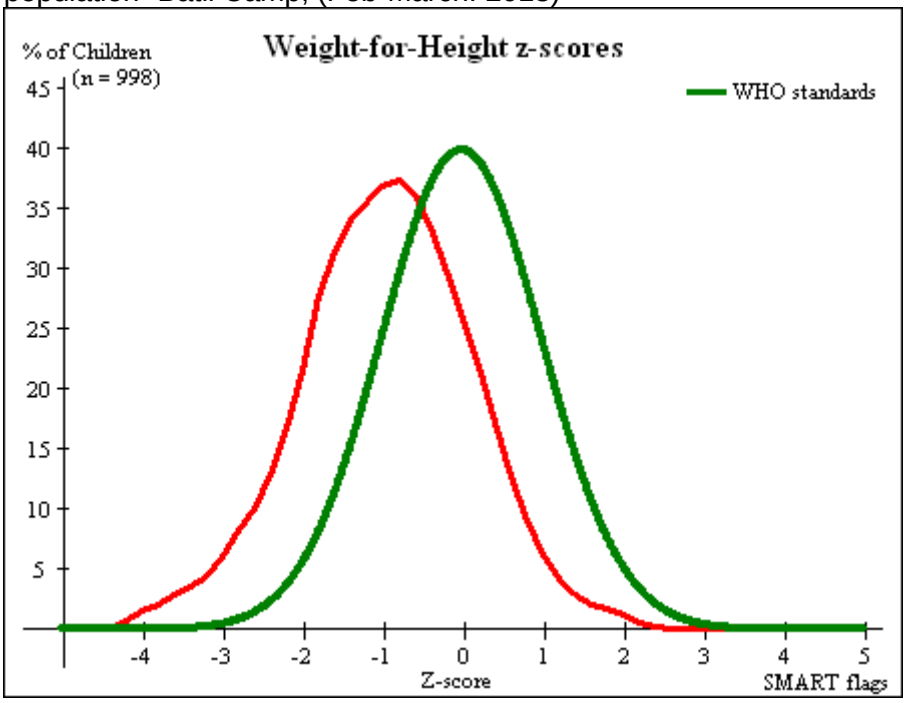

Table 32: Distribution of acute malnutrition and oedema based on weight-for-height z-scores- Batil Camp (Feb-March. 2013)

	<-3 z-score	**>=-3 z-score**
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 35 (3.5 %)	Not severely malnourished No. 963 (96.5 %)

Table 33: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex- Batil Camp (Feb-March. 2013)

	All n = 1022	**Boys** n = 512	**Girls** n = 510
Prevalence of global malnutrition (< 125 mm and/or oedema)	(142) 13.9 % (11.9 - 16.2 95% C.I.)	(55) 10.7 % (8.3 - 13.7 95% C.I.)	(87) 17.1 % (14.0 - 20.6 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(104) 10.2 % (8.5 - 12.2 95% C.I.)	(38) 7.4 % (5.5 - 10.0 95% C.I.)	(66) 12.9 % (10.3 - 16.1 95% C.I.)
Prevalence of severe	(38) 3.7 %	(17) 3.3 %	(21) 4.1 %

malnutrition (< 115 mm and/or oedema)	(2.7 - 5.1 95% C.I.)	(2.1 - 5.3 95% C.I.)	(2.7 - 6.2 95% C.I.)

Table 34: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema- Batil Camp (Feb-March. 2013)

		Severe wasting (< 115 mm)		**Moderate wasting (>= 115 mm and < 125 mm)**		**Normal (> = 125 mm)**		**Oedema**	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	224	81	36.2	32	14.3	111	49.6	0	0.0
18-29	257	102	39.7	25	9.7	130	50.6	0	0.0
30-41	247	82	33.2	5	2.0	160	64.8	0	0.0
42-53	202	74	36.6	2	1.0	126	62.4	0	0.0
54-59	75	22	29.3	0	0.0	53	70.7	0	0.0
Total	1005	361	35.9	64	6.4	580	57.7	0	0.0

Table 35: Prevalence of underweight based on weight-for-age z-scores by sex- Batil Camp (Feb-March. 2013)

	All n = 977	**Boys** n **=** 489	**Girls** n **=** 488
Prevalence of underweight (<-2 z-score)	(314) 32.1 % (29.3 - 35.1 95% C.I.)	(170) 34.8 % (30.7 - 39.1 95% C.I.)	(144) 29.5 % (25.6 - 33.7 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(199) 20.4 % (18.0 - 23.0 95% C.I.)	(98) 20.0 % (16.7 - 23.8 95% C.I.)	(101) 20.7 % (17.3 - 24.5 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(115) 11.8 % (9.9 - 13.9 95% C.I.)	(72) 14.7 % (11.9 - 18.1 95% C.I.)	(43) 8.8 % (6.6 - 11.7 95% C.I.)

Table 36: Prevalence of underweight by age, based on weight-for-age z-scores- Batil Camp (Feb-March. 2013)

		Severe underweight (<-3 z-score)		**Moderate underweight (>= -3 and <-2 z-score)**		**Normal (> = -2 z score)**		**Oedema**	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	213	41	19.2	61	28.6	111	52.1	0	0.0
18-29	251	42	16.7	62	24.7	147	58.6	0	0.0
30-41	241	21	8.7	39	16.2	181	75.1	0	0.0
42-53	197	9	4.6	28	14.2	160	81.2	0	0.0
54-59	75	2	2.7	9	12.0	64	85.3	0	0.0
Total	977	115	11.8	199	20.4	663	67.9	0	0.0

Table 37: Prevalence of stunting based on height-for-age z-scores and by sex- Batil Camp (Feb-March. 2013)

	All n = 931	**Boys** n = 462	**Girls** n = 469
Prevalence of stunting (<-2 z-score)	(359) 38.6 % (35.5 - 41.7 95% C.I.)	(184) 39.8 % (35.5 - 44.4 95% C.I.)	(175) 37.3 % (33.1 - 41.8 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(210) 22.6 % (20.0 - 25.4 95% C.I.)	(97) 21.0 % (17.5 - 24.9 95% C.I.)	(113) 24.1 % (20.4 - 28.2 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(149) 16.0 % (13.8 - 18.5 95% C.I.)	(87) 18.8 % (15.5 - 22.6 95% C.I.)	(62) 13.2 % (10.5 - 16.6 95% C.I.)

Table 38: Prevalence of stunting by age based on height-for-age z-scores- Batil Camp (Feb-March. 2013)

		Severe stunting (<-3 z-score)		**Moderate stunting (>= -3 and <-2 z-score)**		**Normal (> = -2 z score)**	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	208	37	17.8	55	26.4	116	55.8
18-29	234	53	22.6	77	32.9	104	44.4
30-41	226	34	15.0	41	18.1	151	66.8
42-53	192	18	9.4	31	16.1	143	74.5
54-59	71	7	9.9	6	8.5	58	81.7
Total	931	149	16.0	210	22.6	572	61.4

Table 39: Mean z-scores, Design Effects and excluded subjects - Batil Camp (Feb-March. 2013)

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	998	-0.96±1.06	1.00	10	21
Weight-for-Age	977	-1.53±1.15	1.00	23	29
Height-for-Age	931	-1.57±1.33	1.00	26	72

* contains for WHZ and WAZ the children with edema.

3.6 Mortality results (retrospective over x months/days prior to interview)

Table 40: Mortality rates- Batil Camp (Feb-March. 2013)

CMR (total deaths/10,000 people / day): 0.38 (0.20-0.73) (95% CI)
U5MR (deaths in children under five/10,000 children under five / day): 0.39 (0.13-1.14) (95% CI)

Table 41: Prevalence of anaemia and haemoglobin concentration in children 6-59 months of age – Batil Camp (Feb-March. 2013)

Anaemia – Children 6-59 months	**All** n = 728
Total Anaemia (Hb<11.0 g/dL)	(417) 57.3 % (53.6 - 60.9 , 95% CI)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(164) 22.5 % (19.6 -25.8 , 95% CI)
Moderate Anaemia (7.0-9.9 g/dL)	(146) 20.1 % (17.2 -23.2 , 95% CI)
Severe Anaemia (<7.0 g/dL)	(107) 14.7 % (12.2 -17.5 , 95% CI)
Mean Hb (g/dL)	10.8 g/dL (11.3-11.8, 95% CI) [1.0 min, 14.8 max]

Table 42: Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 years) - Batil camp, (Feb-March.2013)

Anaemia – Non-pregnant women of reproductive age 15-49 years	**All** n = 592
Total Anaemia (<12.0 g/dL)	(193) 32.6 % (28.9.2- 36.6 95% CI)
Mild Anaemia (11.0-11.9 g/dL)	(103) 17.4 % (14.5 - 20.7 95% CI)
Moderate Anaemia (8.0-10.9 g/dL)	(66) 11.1 % (8.8 – 14.0 95% CI)
Severe Anaemia (<8.0 g/dL)	(24) 4.1 % (2.7 – 6.1 95% CI)

3.7. Children's morbidity

If you have collected data on children's morbidity using a household questionnaire then you should present in the format shown below.

Table 43: Diarrhoe rate in the children in the two weeks prior to interview - Batil Camp (Feb-March. 2013)

	6-59 months
Diarrhoea % (95% CI)	27.7 % (25.2 – 30.4)

3.8. Vaccination Results

Table **44:** Vaccination coverage: measles for 9-59 months- Batil Camp (Feb-March. 2013)

	Measles (with card) n=594	**Measles (with card or confirmation from mother)**

		n=299
YES	49.9 % (47.0 – 52.8 , 95% C.I.)	25.1 % (22.7 – 27.7, 95% C.I.)

3.9. Programme coverage

Table 45: SFP and TFP Programmes Coverage- Batil Camp (Feb-March. 2013)

Programme type	
Supplementary feeding programme coverage % (95% CI)	66.7 (9.4 – 99.2)
Therapeutic feeding programme coverage % (95% CI)	60.0 (14.7 – 94.7 .)

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3.10. Anthropometric results (based on WHO standards 2006):

Table 46: Distribution of age and sex of sample-Gendrassa Camp (Feb-March. 2013)

	Boys		**Girls**		**Total**		**Ratio**
AGE (mo)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy:girl**
6-17	78	56.9	59	43.1	137	19.3	1.3
18-29	92	50.0	92	50.0	184	25.9	1.0
30-41	84	45.2	102	54.8	186	26.2	0.8
42-53	65	51.2	62	48.8	127	17.9	1.0
54-59	34	44.7	42	55.3	76	10.7	0.8
Total	353	49.7	357	50.3	710	100.0	1.0

Table 47: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex- Gendrassa Camp (Feb-March. 2013)

	All n = 697	**Boys** n **=** 345	**Girls** n **=** 352
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(84) 12.1 % (9.8 - 14.7 95% C.I.)	(44) 12.8 % (9.6 - 16.7 95% C.I.)	(40) 11.4 % (8.5 - 15.1 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(74) 10.6 % (8.5 - 13.1 95% C.I.)	(39) 11.3 % (8.4 - 15.1 95% C.I.)	(35) 9.9 % (7.2 - 13.5 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(10) 1.4 % (0.8 - 2.6 95% C.I.)	(5) 1.4 % (0.6 - 3.3 95% C.I.)	(5) 1.4 % (0.6 - 3.3 95% C.I.)

The prevalence of oedema is 0.0 %

Table 48: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema - Gendrassa Camp (Feb-March. 2013)

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	133	6	4.5	19	14.3	108	81.2	0	0.0
18-29	177	2	1.1	25	14.1	150	84.7	0	0.0
30-41	184	1	0.5	15	8.2	168	91.3	0	0.0
42-53	127	0	0.0	6	4.7	121	95.3	0	0.0
54-59	74	1	1.4	9	12.2	64	86.5	0	0.0
Total	695	10	1.4	74	10.6	611	87.9	0	0.0

Figure 9: GAM categories in children 6-59 months-Gendrassa camp, (Feb-March.2013)

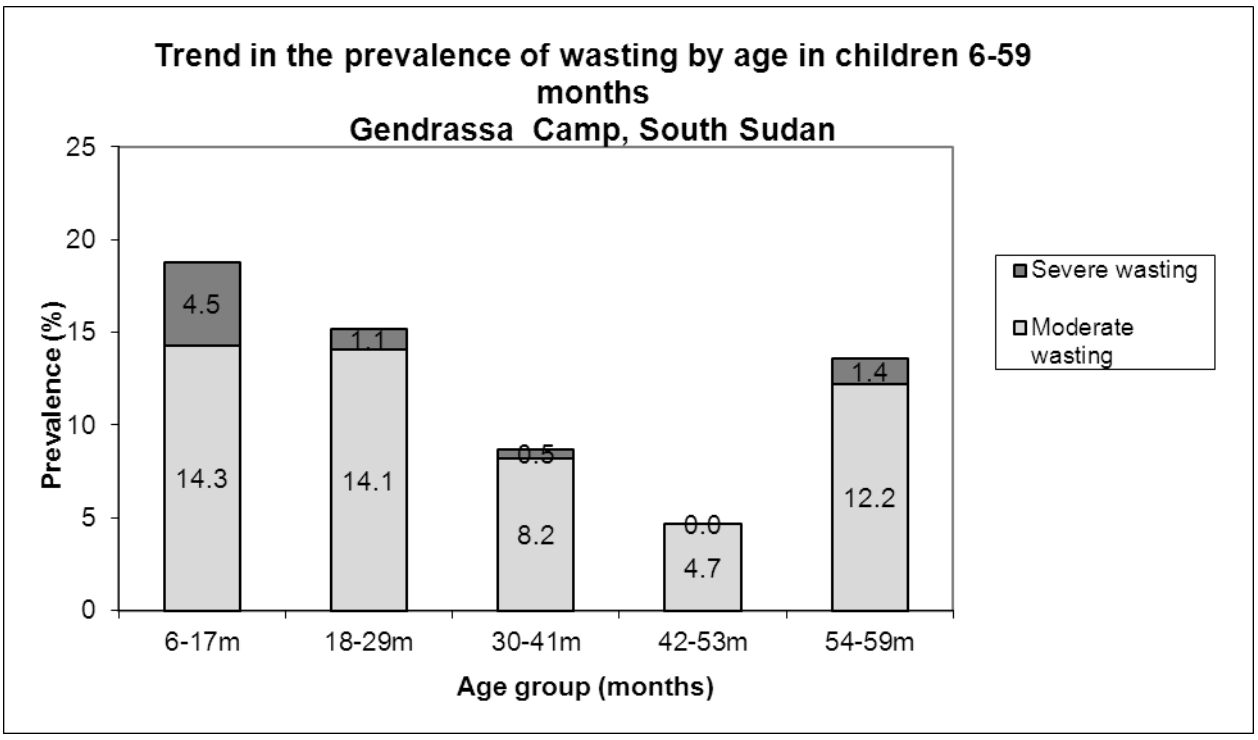

Figure 10: Distribution of weight-for-height z-scores (based on WHO Growth Standards; the reference population is shown in green) of survey population compared to reference population- Gendrassa Camp , (Feb 2013)

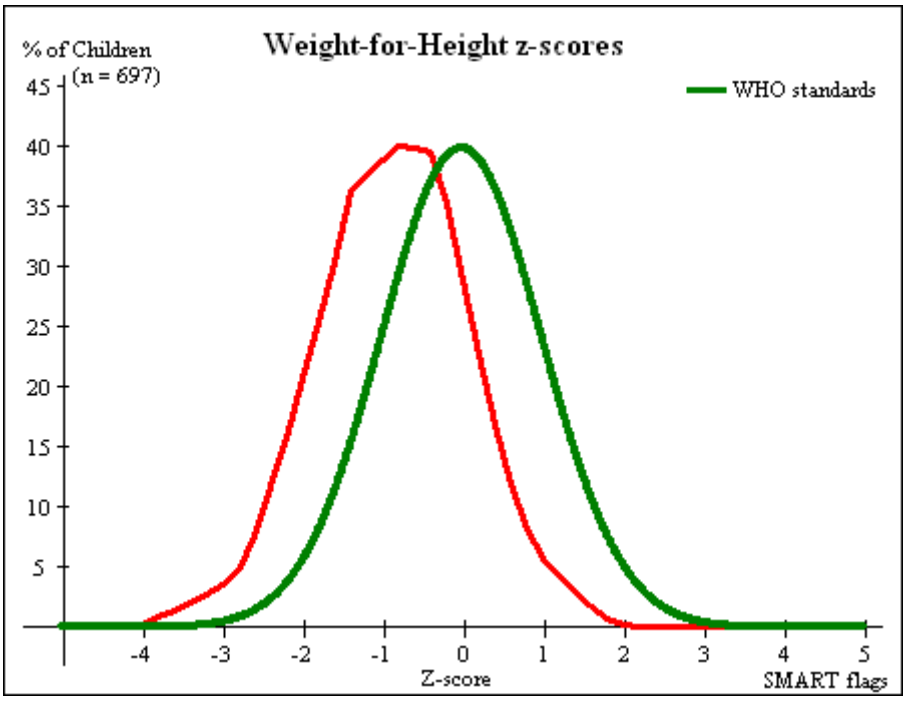

Table 49: Distribution of acute malnutrition and oedema based on weight-for-height z-scores - Gendrassa Camp (Feb-March. 2013)

	<-3 z-score	**>=-3 z-score**
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 10 (1.4 %)	Not severely malnourished No. 687 (98.6 %)

Table 50: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex- Gendrassa Camp (Feb-March. 2013)

	All n = 706	**Boys** n = 351	**Girls** n = 355
Prevalence of global malnutrition (< 125 mm and/or oedema)	(49) 6.9 % (5.3 - 9.1 95% C.I.)	(19) 5.4 % (3.5 - 8.3 95% C.I.)	(30) 8.5 % (6.0 - 11.8 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(46) 6.5 % (4.9 - 8.6 95% C.I.)	(16) 4.6 % (2.8 - 7.3 95% C.I.)	(30) 8.5 % (6.0 - 11.8 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(3) 0.4 % (0.1 - 1.2 95% C.I.)	(3) 0.9 % (0.3 - 2.5 95% C.I.)	(0) 0.0 % (0.0 - 1.1 95% C.I.)

Table 51: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema- Gendrassa Camp (Feb-March. 2013)

		Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	135	30	22.2	22	16.3	83	61.5	0	0.0
18-29	182	48	26.4	12	6.6	122	67.0	0	0.0
30-41	185	48	25.9	2	1.1	135	73.0	0	0.0
42-53	127	17	13.4	2	1.6	108	85.0	0	0.0
54-59	75	12	16.0	0	0.0	63	84.0	0	0.0
Total	704	155	22.0	38	5.4	511	72.6	0	0.0

Table 52: Prevalence of underweight based on weight-for-age z-scores by sex- Gendrassa Camp (Feb-March. 2013)

	All n = 693	**Boys** n **=** 345	**Girls** n **=** 348
Prevalence of underweight (<-2 z-score)	(153) 22.1 % (19.1 - 25.3 95% C.I.)	(85) 24.6 % (20.4 - 29.4 95% C.I.)	(68) 19.5 % (15.7 - 24.0 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(125) 18.0 % (15.4 - 21.1 95% C.I.)	(67) 19.4 % (15.6 - 23.9 95% C.I.)	(58) 16.7 % (13.1 - 20.9 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(28) 4.0 % (2.8 - 5.8 95% C.I.)	(18) 5.2 % (3.3 - 8.1 95% C.I.)	(10) 2.9 % (1.6 - 5.2 95% C.I.)

Table 53: Prevalence of underweight by age, based on weight-for-age z-scores- Gendrassa Camp (Feb-March. 2013)

		Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	131	5	3.8	28	21.4	98	74.8	0	0.0
18-29	177	13	7.3	47	26.6	117	66.1	0	0.0
30-41	184	9	4.9	30	16.3	145	78.8	0	0.0
42-53	127	0	0.0	15	11.8	112	88.2	0	0.0
54-59	74	1	1.4	5	6.8	68	91.9	0	0.0
Total	693	28	4.0	125	18.0	540	77.9	0	0.0

Table 54: Prevalence of stunting based on height-for-age z-scores and by sex- Gendrassa Camp (Feb-March. 2013)

	All n = 673	**Boys** n = 337	**Girls** n = 336
Prevalence of stunting (<-2 z-score)	(183) 27.2 % (24.0 - 30.7 95% C.I.)	(106) 31.5 % (26.7 - 36.6 95% C.I.)	(77) 22.9 % (18.7 - 27.7 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(136) 20.2 % (17.3 - 23.4 95% C.I.)	(72) 21.4 % (17.3 - 26.1 95% C.I.)	(64) 19.0 % (15.2 - 23.6 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(47) 7.0 % (5.3 - 9.2 95% C.I.)	(34) 10.1 % (7.3 - 13.8 95% C.I.)	(13) 3.9 % (2.3 - 6.5 95% C.I.)

Table 55: Prevalence of stunting by age based on height-for-age z-scores- Gendrassa Camp (Feb-March. 2013)

		Severe stunting (<-3 z-score)		**Moderate stunting (>= -3 and <-2 z-score)**		**Normal (> = -2 z score)**	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	129	7	5.4	22	17.1	100	77.5
18-29	170	23	13.5	50	29.4	97	57.1
30-41	174	10	5.7	41	23.6	123	70.7
42-53	127	6	4.7	15	11.8	106	83.5
54-59	73	1	1.4	8	11.0	64	87.7
Total	673	47	7.0	136	20.2	490	72.8

Table 56: Mean z-scores, Design Effects and excluded subjects- Gendrassa Camp (Feb-March. 2013)

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	697	-0.87±0.94	1.00	17	7
Weight-for-Age	693	-1.25±0.99	1.00	16	12
Height-for-Age	673	-1.20±1.18	1.00	19	29

* contains for WHZ and WAZ the children with edema.

3.11. Mortality results (retrospective over x months/days prior to interview)

Table 57: Mortality rates- Gendrassa Camp (Feb-March. 2013)

CMR (total deaths/10,000 people / day): 0.05 (0.01-0.27) (95% CI)
U5MR (deaths in children under five/10,000 children under five / day): 0.16 (0.03-0.90) (95% CI)

Table 58: Prevalence of anaemia and haemoglobin concentration in children 6-59 months of age – Gendrassa Camp (Feb-March. 2013)

Anaemia – Children 6-59 months	**All** n = 485
Total Anaemia (Hb<11.0 g/dL)	(158) 32.6 % (28.5 – 37.0 , 95% CI)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(81) 16.7 % (13.6 -20.4 , 95% CI)
Moderate Anaemia (7.0-9.9 g/dL)	(53) 10.9 % (8.4 -14.1 , 95% CI)
Severe Anaemia (<7.0 g/dL)	(24) 4.9 % (3.3 – 7.4 , 95% CI)
Mean Hb (g/dL)	10.9 g/dL (10.6-12.4, 95% CI) [5.0 min, 14.7 max]

Table 59: Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 years) – Gendrassa camp, (Feb-March.2013)

Anaemia – Non-pregnant women of reproductive age 15-49 years	**All** n = 365
Total Anaemia (<12.0 g/dL)	(38) 10.4 % (7.6.2- 14.1 95% CI)
Mild Anaemia (11.0-11.9 g/dL)	(30) 8.2 % (5.7 – 11.6 95% CI)
Moderate Anaemia (8.0-10.9 g/dL)	(7) 1.9 % (0.8 – 4.1 95% CI)
Severe Anaemia (<8.0 g/dL)	(1) 0.3 % (0.0 – 1.8 95% CI)

3.12. Children's morbidity

If you have collected data on children's morbidity using a household questionnaire then you should present in the format shown below.

Table 60: Diarrhoa rate in the children in the two weeks prior to interview- Gendrassa Camp (Feb-March. 2013)

	6-59 months
Diarrhoea % (95% CI)	23.2 (20.4 – 26.1)

3.13. Vaccination Results

Table 61: Vaccination coverage: Measles for 9-59 months Gendrassa Camp (Feb-March. 2013)

	Measles (with card) n=	**Measles (with card or confirmation from mother) n=**
YES	26.0 % (23.2 – 29.195% C.I.)	(No.) 45.9 % (42.5 – 49.295% C.I.)

3.14. Programme coverage

Table 62: SFP and TFP Programmes Coverage- Gedrassal Camp (Feb-March. 2013)

Programme type	
Supplementary feeding programme coverage % (95% CI)	80.6 (71.8 – 87.5)
Therapeutic feeding programme coverage % (95% CI)	56.0 (44.1 – 67.5.)

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3.15. Anthropometric results (based on WHO standards 2006):

Table 63: Distribution of age and sex of sample– Jammam Camp (Feb-March.2013)

	Boys		**Girls**		**Total**		**Ratio**
AGE (mo)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy:girl**
6-17	95	56.2	74	43.8	169	23.9	1.3
18-29	81	46.6	93	53.4	174	24.6	0.9
30-41	78	49.1	81	50.9	159	22.5	1.0
42-53	74	52.1	68	47.9	142	20.1	1.1
54-59	29	46.0	34	54.0	63	8.9	0.9
Total	357	50.5	350	49.5	707	100.0	1.0

Table 64: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex– Jammam Camp (Feb-March.2013)

	All n = 686	**Boys** n **=** 350	**Girls** n **=** 336
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(122) 17.8 % (9.5 - 30.8 95% C.I.)	(73) 20.9 % (10.2 - 38.1 95% C.I.)	(49) 14.6 % (0.9 - 75.3 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(98) 14.3 % (7.4 - 25.8 95% C.I.)	(62) 17.7 % (5.2 - 45.6 95% C.I.)	(36) 10.7 % (0.2 - 87.5 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(24) 3.5 % (2.3 - 5.4 95% C.I.)	(11) 3.1 % (0.5 - 18.1 95% C.I.)	(13) 3.9 % (1.8 - 8.2 95% C.I.)

The prevalence of oedema is 0.0 %

Table 65: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema– Jammam camp (Feb-March.2013)

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	164	11	6.7	45	27.4	108	65.9	0	0.0
18-29	165	5	3.0	19	11.5	141	85.5	0	0.0
30-41	150	6	4.0	16	10.7	128	85.3	0	0.0
42-53	138	1	0.7	11	8.0	126	91.3	0	0.0
54-59	62	1	1.6	6	9.7	55	88.7	0	0.0
Total	679	24	3.5	97	14.3	558	82.2	0	0.0

Figure 11: GAM categories in children 6-59 months-Jammam camp, (Feb-March.2013)

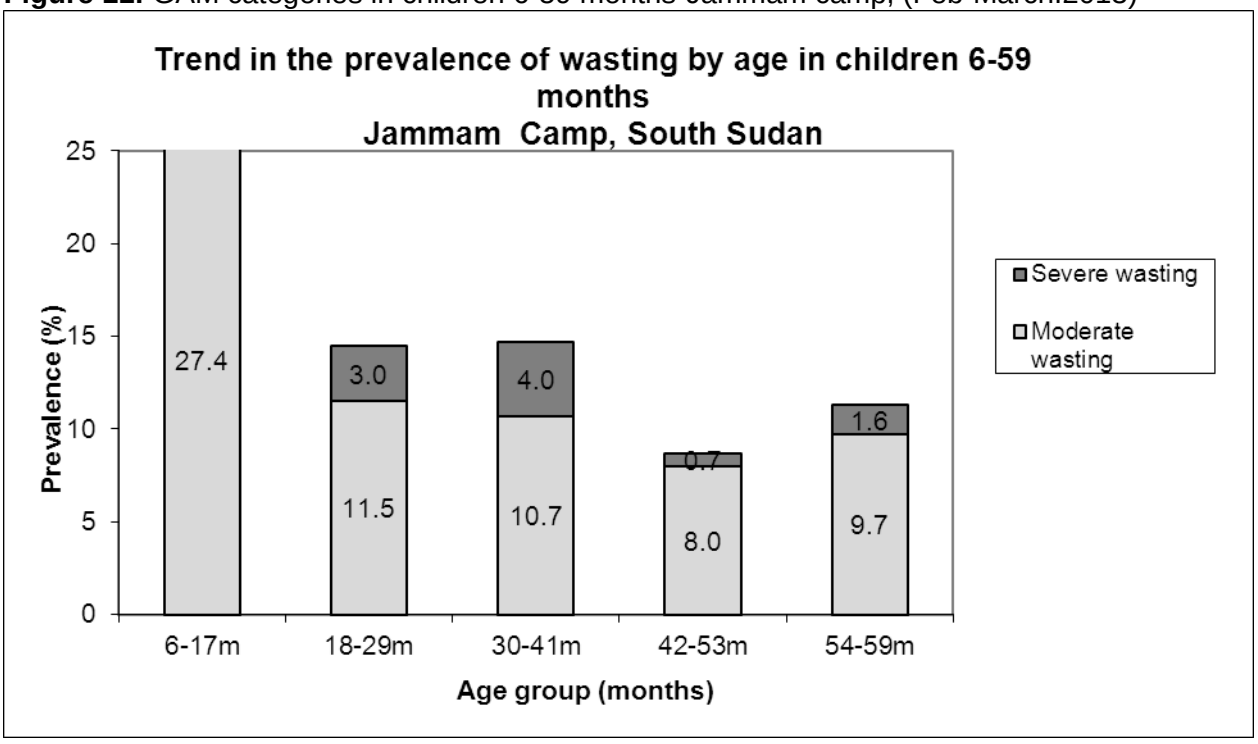

Figure 12: Distribution of weight-for-height z-scores (based on WHO Growth Standards; the reference population is shown in green) of survey population compared to reference population- Jammam Camp , (Feb-March.2013)

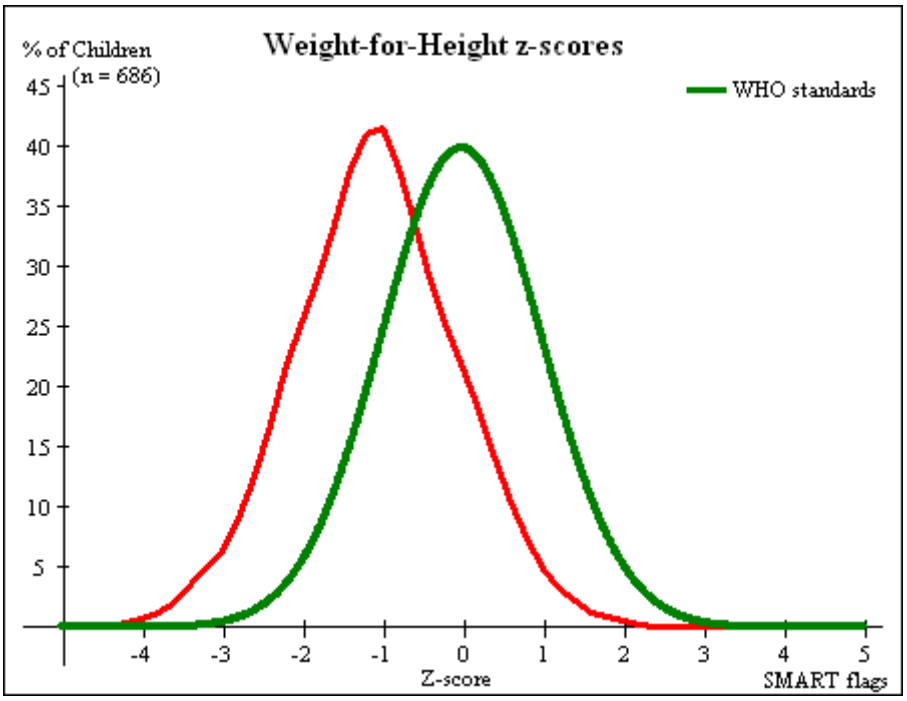

Table 66: Distribution of acute malnutrition and oedema based on weight-for-height z-scores– Jammam Camp (Feb-March.2013)

	<-3 z-score	**>=-3 z-score**
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 24 (3.5 %)	Not severely malnourished No. 662 (96.5 %)

Table 67: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex– Jammam Camp (Feb-March. 2013)

	All n = 708	**Boys** n = 356	**Girls** n = 352
Prevalence of global malnutrition (< 125 mm and/or oedema)	(124) 17.5 % (7.3 - 36.4 95% C.I.)	(53) 14.9 % (13.2 - 16.8 95% C.I.)	(71) 20.2 % (3.5 - 63.8 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(71) 10.0 % (1.0 - 55.0 95% C.I.)	(30) 8.4 % (0.3 - 70.9 95% C.I.)	(41) 11.6 % (2.3 - 42.0 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(53) 7.5 % (0.0 - 93.5 95% C.I.)	(23) 6.5 % (0.1 - 77.0 95% C.I.)	(30) 8.5 % (0.0 - 98.0 95% C.I.)

Table 68: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema– Jammam Camp (Feb-March. 2013)

		Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	168	18	10.7	44	26.2	106	63.1	0	0.0
18-29	173	15	8.7	15	8.7	143	82.7	0	0.0
30-41	157	10	6.4	8	5.1	139	88.5	0	0.0
42-53	141	7	5.0	3	2.1	131	92.9	0	0.0
54-59	62	3	4.8	1	1.6	58	93.5	0	0.0
Total	701	53	7.6	71	10.1	577	82.3	0	0.0

Table 69: Prevalence of underweight based on weight-for-age z-scores by sex– Jammam Camp (Feb-March. 2013)

	All n = 698	**Boys** n **=** 353	**Girls** n **=** 345
Prevalence of underweight (<-2 z-score)	(277) 39.7 % (27.1 - 53.8 95% C.I.)	(155) 43.9 % (13.8 - 79.3 95% C.I.)	(122) 35.4 % (24.9 - 47.5 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(176) 25.2 % (19.2 - 32.4 95% C.I.)	(95) 26.9 % (18.6 - 37.2 95% C.I.)	(81) 23.5 % (8.0 - 52.0 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(101) 14.5 % (3.2 - 46.6 95% C.I.)	(60) 17.0 % (2.4 - 62.9 95% C.I.)	(41) 11.9 % (4.4 - 28.1 95% C.I.)

Table 70: Prevalence of underweight by age, based on weight-for-age z-scores– Jammam Camp (Feb-March. 2013)

		Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	164	26	15.9	56	34.1	82	50.0	0	0.0
18-29	172	32	18.6	49	28.5	91	52.9	0	0.0
30-41	155	28	18.1	39	25.2	88	56.8	0	0.0
42-53	139	8	5.8	22	15.8	109	78.4	0	0.0
54-59	62	5	8.1	9	14.5	48	77.4	0	0.0
Total	692	99	14.3	175	25.3	418	60.4	0	0.0

Table 71: Prevalence of stunting based on height-for-age z-scores and by sex– Jammam Camp (Feb-March. 2013)

	All n = 665	**Boys** n = 336	**Girls** n = 329
Prevalence of stunting (<-2 z-score)	(301) 45.3 % (30.7 - 60.7 95% C.I.)	(159) 47.3 % (33.0 - 62.1 95% C.I.)	(142) 43.2 % (28.1 - 59.6 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(165) 24.8 % (24.4 - 25.2 95% C.I.)	(86) 25.6 % (23.6 - 27.7 95% C.I.)	(79) 24.0 % (21.0 - 27.3 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(136) 20.5 % (9.3 - 39.3 95% C.I.)	(73) 21.7 % (9.2 - 43.1 95% C.I.)	(63) 19.1 % (9.2 - 35.6 95% C.I.)

Table 72: Prevalence of stunting by age based on height-for-age z-scores– Jammam Camp (Feb-March. 2013)

		Severe stunting (<-3 z-score)		**Moderate stunting (>= -3 and <-2 z-score)**		**Normal (> = -2 z score)**	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	157	27	17.2	54	34.4	76	48.4
18-29	161	44	27.3	40	24.8	77	47.8
30-41	146	44	30.1	30	20.5	72	49.3
42-53	137	17	12.4	29	21.2	91	66.4
54-59	59	3	5.1	12	20.3	44	74.6
Total	660	135	20.5	165	25.0	360	54.5

Table 73: Mean z-scores, Design Effects and excluded subjects– Jammam Camp (Feb-March. 2013)

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	686	-1.08±1.00	1.00	15	19
Weight-for-Age	698	-1.75±1.11	1.00	12	10
Height-for-Age	665	-1.83±1.32	1.00	13	42

* contains for WHZ and WAZ the children with edema.

3.16. Mortality results (retrospective over x months/days prior to interview)

Table 74: Mortality rates– Jammam Camp (Feb-March. 2013)

CMR (total deaths/10,000 people / day): 0.27 (0.11-0.62) (95% CI)
U5MR (deaths in children under five/10,000 children under five / day): 0.31 (0.09-1.13) (95% CI)

Table 75: Prevalence of anaemia and haemoglobin concentration in children 6-59 months of age – Jammam Camp (Feb-March. 2013)

Anaemia – Children 6-59 months	**All** n = 489
Total Anaemia (Hb<11.0 g/dL)	(268) 54.8 % (50.3 – 59.3 , 95% CI)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(161) 32.9 % (28.8 -37.3 , 95% CI)
Moderate Anaemia (7.0-9.9 g/dL)	(104) 21.3% (17.8 -25.2 , 95% CI)
Severe Anaemia (<7.0 g/dL)	(3) 0.6 % (3.3 – 7.4 , 95% CI)
Mean Hb (g/dL)	10.9 g/dL (10.1-11.5, 95% CI) [5.7 min, 14.7 max]

Table 76: Prevalence of anaemia and haemoglobin concentration in children 6-59 months of age – Gendrassa Camp (Feb-March. 2013)

Anaemia – Children 6-59 months	**All** n = 485
Total Anaemia (Hb<11.0 g/dL)	(158) 32.6 % (28.5 – 37.0 , 95% CI)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(81) 16.7 % (13.6 -20.4 , 95% CI)
Moderate Anaemia (7.0-9.9 g/dL)	(53) 10.9 % (8.4 -14.1 , 95% CI)
Severe Anaemia (<7.0 g/dL)	(24) 4.9 % (3.3 – 7.4 , 95% CI)
Mean Hb (g/dL)	10.9 g/dL (10.6-12.4, 95% CI) [5.0 min, 14.7 max]

Table 77: Prevalence of anaemia and haemoglobin concentration in non-pregnant women of reproductive age (15-49 years) - Jammam camp, (Feb-March.2013)

Anaemia – Non-pregnant women of reproductive age 15-49 years	**All** n = 411
Total Anaemia (<12.0 g/dL)	(138) 33.6 % (29.1.2- 38.4 95% CI)
Mild Anaemia (11.0-11.9 g/dL)	(75) 18.2 % (14.7 - 22.4 95% CI)
Moderate Anaemia (8.0-10.9 g/dL)	(62) 15.1 % (11.8 – 19.0 95% CI)
Severe Anaemia (<8.0 g/dL)	(1) 0.2 % (0.0– 1.6 95% CI)

3.17. Children's morbidity

If you have collected data on children's morbidity using a household questionnaire then you should present in the format shown below.

Table 78: Diarrhoea rate in the children in the two weeks prior to interview – Jammam Camp (Feb-March. 2013)

	6-59 months
Diarrhoea % (95% CI)	23.9 (21.3 – 26.8)

3.18. Vaccination Results

Table 79: Vaccination coverage: BCG for 6-59 months and measles for 9-59 months– Jammam Camp (Feb-March. 2013)

	Measles (with card) n= 247	Measles (with card or confirmation from mother) n= 365
YES	26.9 % (24.1 – 29.9)	39.8 % (36.6 – 43.0)

3.19. Programme coverage

Table 80: SFP and TFP Programmes Coverage- Jammam Camp (Feb-March. 2013)

Programme type	
Supplementary feeding programme coverage % (95% CI)	5.9 (2.4 – 11.7)
Therapeutic feeding programme coverage % (95% CI)	11.8 9(6.4 – 19.4)

LIMITATIONS

- **Poor quality of age data for children U5:** The coverage of age documentation among children 6-59 months was low in all camps. Due to this limitation and although an event calendar was used by the surveyors to ascertain age, stunting results are to be interpreted with caution because z-scores for height-for-age require accurate ages to within two weeks

- **Selective feeding programme results:** Selective feeding programme coverage results should be interpreted with caution due to the small number of cases that were sampled during the survey. In addition, although surveyors had sachets of Plumpy Nut and Plumy Sup to show to the respondents, admission to selective feeding programme was assessed by recall and hence it is possible that some children included in a selective programme were not detected because the caregiver misunderstood the question or that some children being admitted in the SFP were mixed with children admitted in the OTP and vice versa.

4. DISCUSSIONS

4.1 Nutritional status

The prevalence of GAM in the 4 main camps of Maban are just at the emergency threshold or slightly above. Although, no previous survey was undertaken in the Maban refugee camps, the results are comparable to nutrition surveillance data collected through community screening and during administration of blanket feeding programme for under-fives. Proxy GAM from MUAC screening ranges from 5.4% to 27.3% from August 2012 to February 2013. A survey conducted by MSF-B[5] in Batil camp in July 2012 shows a GAM rate of 39.8 %.

The prevalence of SAM was unacceptably high in Jammam and Batil camps at 3.5%, while Doro and Gendrassa was just below threshold of 2%.

The prevalence of malnutrition is typical of the area as shown above and also as compared to national surveys in the region. A survey conducted by Relief international among the host community living around the Maban camps, showed GAM rate of 18.1% and SAM of 3.5%. In surveys conducted in 7 states in 2012, the GAM ranged from 4.5% in Ezo, Western Equatoria to 30.2% in Rubkona, Unity state.

Generally, the full package of interventions that were provided in Maban in the last 6 months contributed to stabilize the GAM rate at just below and slightly above threshold. As compared to 6 months ago when the nutrition situation was a humanitarian crisis interventions were put in place resulting in reduced cases of malnourished children However, some of the camps like Batil also experienced a myriad of public health challenges at the same time including outbreaks of Hepatitis E, increasing trend of AWD and WASH related concerns.

Jammam is affected by low coverage of health services which can be attributed to poor health seeking practise of community as seen in very low coverage of SFP and TFP and above 20% defaulter rates in the targeted feeding programmes.

The difference in GAM between Doro and Gendrassa is not statistically significant. Doro is general considered to be more stable of the 4 camps and but with aggravating factors including disease burden especially high incidence of AWD and measles as well as poor infant feeding practises the situation is still precarious.

The prevalence of stunting ranged was only critical in Jammam at 45.3% indicating a chronic situation. However, stunting results need to be interpreted with caution due to problems with actual age estimation. The chronic causes of malnutrition are poverty (lack of livelihoods), illiteracy (lack of nutrition knowledge) and disease burden (with poor health seeking practise).

- **Programme coverage**

SFP, TFP

The coverage of SFP and TFP programmes is above sphere standards in all camps apart from Jammam where the coverage has been found to be very low.

Although coverage should be interpreted with caution due to the small sample size, the results are similar to programme enrolment data in the months of February as compared to the target. Given the prevalence of malnutrition in Jammam 108 children should have been admitted in TFP in February instead of 39, and 441 should have been admitted in SFP instead of only 113.

This is attributed to poor health seeking practises and low levels of screening at community level.

The proportion of surveyed women who were enrolled in ANC at the time of the survey ranged from 25.8% to 65.8% in the 4 camp. The coverage of iron/folate supplementation ranged 23.2% and 69.6%.

Vaccination and Vitamin A Coverage

Coverage of measles and Vitamin A supplementation is less than 25% by card, however cumulative calculation by card and by recall is 70% for measles and 75% for Vitamin A supplementation.

- **Anaemia in children and women.**

The anaemia rates in children 6-59 months are above 40% level of public health significance in all camps apart from Gendrassa. Children aged 6-23 months are most affected with 64.9% in Jammam.

Currently, the only anaemia related interventions include iron/folic supplementation for pregnant women attending antenatal care, blanket supplementary feeding with CSB++ for children aged 35-59 months and distribution of mosquito nets to pregnant women and under-fives.

Batil had the highest rate of Women anaemia (32.6 %), followed by Jammam (33.6). Doro (27.4%) and Gendrassa with the lowest rate (10.4%).

- **IYCF-Infant and Young Child Feeding Practises**

Early initiation of breastfeeding is above 60% in all camps, but low in Jammam at 33.8%. Also, exclusive breastfeeding rate is high in Gendrassa (80%), medium in Batil (55.1%) and Doro (44.4%) and low in Gendrassa (15%).

Although 55- 75% indicated timely introduction of solid or semi-solid food to children, the younger children aged 6-17 months are still more affected by malnutrition and those aged 6-23 months have higher anaemia. This should be investigated if is more knowledge rather than practise. About 18% to 50% reported using bottle feeding which is risky considering the poor hygiene practises and the rate of AWD. However, the KAP rapid assessment conducted by UNICEF in December 2012 reported early introduction of other foods from 2 month of age

Some of the camps have recently introduced mother to mother support groups to promote IYCF which should be further strengthened and mentored.

4.2 Mortality

The crude and under-five mortality rates were found to be just below threshold in all camps at the time of the survey. Although, no previous surveys were done, the data is comparable with mortality surveillance data from HIS weekly and monthly reports.

The mortality rate is typical although Batil was expected to be higher owing to morbidity related to Hepatitis E outbreak.

4.3 Causes of malnutrition

- **Immediate causes**

Disease burden

Diarrhoea associated with poor hygiene practise is a major cause of admission to inpatient admissions for severe acute malnutrition. The survey collected data on diarrhoea and the period prevalence (within two weeks prior to the survey) was based on care-givers recall. The rates ranged from 23% to 27% in the 4 camps .According to HIS reports (January to March 2013), disease burden for URTI, LRTI, AWD , Skin disease, eye infections contributes to the top causes of morbidity in under-fives with AWD Contributing to 25% of proportional morbidity. AWD was also on an increasing trend since January 2013. Hepatitis E that broke out since late 2012 has been a major cause of morbidity and mortality with Batil camp the most affected with 63% of the cases.

Reducing the disease burden involves also improving vaccines and cold chain availability in the camps which was reported to be an issue. However, UNHCR, with the support of UNICEF and partners is working on that.

Inadequate diet

Among the factors identified through community interviews, and secondary reports as contributing to less food at the household level include transportation costs, milling costs, sale of food aid to purchase other preferred foods and non-food items, thereby reducing quantity available for consumption.

Sharing of therapeutic and supplementary food at household level also results in extended length of stay in feeding programmes.

With regards to Anaemia, Other factors may be also of concern. Sorghum is rich on iron, vitamin and mineral. However, due to phytates and other anti-nutrients present in Sorghum, the bioavailability in some of the iron can be less than 1% unless process of fermentation and maltage (able to increase bioavailability to 30%) are undertaken. This may be exacerbated by the lack of potential sources of vitamin C which is known to increase iron bioavailability. Also, some nutrients quantities may decrease if milling takes out the outer part of the grain which is concentrated on nutrients. Worm infestation such as may also be one of the potential nutrient depleting factors since parasite infestation is high[1]

- **Underlying causes**

WASH indicators

WASH sector February reports indicate water supply ratio above sphere standards ranging from 23 litres/person/day in Jammam to 31 litres/person/day in Doro camp.

Latrine coverage was found to be ranging from 1:18 to 1: 20 while soap distribution was 500 grams/person/month.

The number of hygiene promoters averaged from 1:296 to 1: 319 across the camps.

Although WASH facilities were above minimum standards, some sections of the camps particularly Doro experienced periodic shortage due to some breakdowns. At < 500 persons per 1 promoter, however this may not translate to structured hygiene promotion

Personal hygiene was found to be a problem in the community as well as proper storage of water for household use (cooking and drinking).

Food security

There was no break in the food pipeline since January 2013 up to the time of the survey and 2100 kilo calories was provided per person per day. Additionally supplementary food was provided to all under-fives and pregnant and lactating women. Registration data showed that 99% of the population had a ration card which however may not exactly translate into food reaching the household and being utilized appropriately.

Post distribution monitoring reports show that nearly 80% of the interviewed beneficiaries are not satisfied with the ration received. Main reason given for not being satisfied with the ration was in regards to the ration not being enough for the family. This was especially for the case with pulses and salt. Some beneficiaries also cited the need to include other food and non-food commodities in the ration basket such as sugar and clothes. Also,21% of the interviewed beneficiary households indicated using a third party (using non-household members) to transport the ration back home, out of which majority (98%) paid in kind, approximately 7kg of cereal per bag. The milling appeared to be one of the big issues since in some camps about one third of the ration is sold or exchanged to cover for milling services

Infant feeding and care practises

Food sharing and other food issues (milling, exchange, food selling) as well as poor health seeking behaviour may hamper the nutritional intake of children under 5. However, complementary feeding in the camps is made with porridges (17.9% to 63.1%), some white tea and coffee (14.0% to 19.7%), some broth or clear Soup (4.6% to 34.4%).Yoghurt-based products are also used. Water is an important component of the feeding practices

- **Basic causes**

Socio-economic status of refugees is limited meaning that they rely on humanitarian agencies for all their basic needs. Reliance on food aid means limited options to diversify diet For the time being, although in Doro camps, some gardening production is on-going with small incomes opportunities, most of the camps are not yet endowed with income generating and livelihoods activities. Morbidity burden, land issues, influx likelihoods and dependency on food aid make the refugee socio-economic status still fragile

With the rainy season expected to begin in May 2013, morbidity among under-fives is expected to increase especially for RTIs, AWD and malaria, which can easily impact nutritional status.

Preparations are in place including plans to distribute mosquito nets, blankets and shelter materials. Epidemic preparedness and response plans and supplies are also in place.

The younger children between ages 6-23 months are more affected by malnutrition and anaemia. Frequent episodes of acute malnutrition, disease burden accompanied by chronic diet inadequacy, contributes to chronic malnutrition.

Other nutrients sources (proteins, macronutrients, etc) need to be added to the daily diet of refugee, especially children, either by specific programmes (micronutrient programmes), Food ration upgrading/modification or/and Integrated preventative and longer term approaches are needed to tackle chronic malnutrition such as food diversification.

Refugees expressed their concern about types of food donated and wished to be distributed some other types of cereals more culturally acceptable, less cumbersome, less costly and less nutrient depleting in term of processing

Despite receiving the same services as the other camps, Gendrassa particularly stands out with one of the lower GAM rates, anemia rates that are significantly lower than in the other camps for children and women (with statistical significance of the children 6-59 months), as well as better IYCF indicators. As a potential cause, it was noticed that Gendrassa population is known to be more educated, originated from urban settlements. Also, Gendrassa camps is the most advanced camps in terms of IYCF programming since IMC was implementing already pioneer IYCF programmes from last year .This is a phenomenon worth investigating further to ascertain what could be the underlying drivers for this and how to capitalize on this in Gendrassa as well as how to promote these attributes in the other camps.

5. CONSLUSION

Even though the nutrition situation of Maban camps has improved as compared to the period of the peak of the influx (first half of 2013), the situation in some camps (Batil and Jammam) remains critical while in other camps it is still serious (Gendrassa and Doro). To date, Tremendous and concerted efforts were done by UNHCR, WFP and Nutrition, Health and WASH partners to tackle malnutrition and other morbidity patterns. However, those efforts need to sustain for a while to bring malnutrition rates to acceptable or low levels. With respect to that, immediate measures must be taken to improve access to services for management of acute malnutrition, considering the above emergency levels of malnutrition in Jammam and Batil. This should include screening and treatment of malnutrition; blanket supplementary feeding for children aged 6-59 months; scaled-up infant and young child feeding programmes; Hygiene promotion to arrest the increasing diarrhoea trends. All these prevention measures should cut across all the 4 camps due to all the aggravating factors. This is especially considering the small window of time remaining before the beginning of the rainy season. UNHCR, WFP and partners need to explore and implement all mechanisms that will reduce dilution of food quantity at the household level.

In the mid-term, Concerted integrated efforts is needed to bring the GAM rates to the WHO low level of <5%.

6. RECOMMENDATIONS AND PRIORITIES

Recommendations

Immediate term

- WFP to continue blanket supplementary feeding for all children under-five along-side General Food Distribution (GFD) until malnutrition and anaemia rates reduce to acceptable levels. UNHCR and partners to continue monitoring and addressing underlying factors to high malnutrition rate.

- Health and nutrition agencies to continue with therapeutic and supplementary feeding for malnourished children while increasing coverage and decentralization of TSFP and OTP, strengthening linkages between the programmes and ensuring quality of care.

- Health and nutrition agencies to conduct active case finding for malnutrition in the community and during blanket feeding distribution. Community awareness and recognition of signs of malnutrition to be highlighted.

- Health and nutrition agencies to scale up preventative programmes and essential nutrition actions: Promotion of optimal nutrition for women; prevention and control of anemia for women and children; promotion of optimal breastfeeding during the first six months; promotion of optimal complementary feeding; prevention of vitamin A deficiency in women and children

- Health agencies to scale up CBHP-Community based health programme and enhance the linkages between primary health care, nutrition and WASH interventions.

- WASH agencies to continue with monitoring of WASH facilities to ensure utilization, cleanliness and coverage maintained above sphere standards.

- WASH agencies to strengthen hygiene promotion component and ensure regular soap distribution. UNHCR to ensure replacement of old Jerrican while WASH agencies continue with Jerrican cleaning campaigns.

Medium Term – (3-6 months)

- All stakeholders to continue with established food distribution monitoring systems, to ensure refugee aware of and receive entitlements.

- WFP and UNHCR to explore provision of milling vouchers to facilitate milling needs for refugees

- UNHCR to plan for construction of additional food distribution centres to reduce distance and diversion of food to pay for transport.

- Partners to engage community in Behaviour change activities to ensure uptake of health and nutrition services.

- Given the high rates of anaemia in the under five children and the medium/high rates of malnutrition in three of the four camps, UNHCR, WFP and Partners to determine what is the most effective method of distribution of an iron rich food to which age group, using which product, for what time period. Ideally these issues will be informed and decided during the JAM. This should go hand in hand with public health interventions: malaria prevention through bed net distribution, deworming, immunization campaigns etc

- UNICEF, WHO, UNHCR and Partners to avail sufficient vaccines and cold chain to support immunization campaigns

- UNHCR and Partners to Institute a community-based nutrition surveillance systems collecting MUAC data to monitor trends in nutritional status among refugees in between the surveys allowing to better detect potential crisis and respond in a timely manner

- Partners and UNHCR to investigate and ascertain the underlying drivers of the better of situation of Gendrassa , capitalize the findings and promote attributes in other camps

Long term

- UNHCR to Conduct nutrition survey after 6 to 12 months

- All stakeholders to scale up food security and livelihood/Income generating interventions to reduce reliance on food aid.

- Strengthen capacity building of local and refugee health and nutrition staff for quality and sustainability of programmes

UNHCR should conduct a nutrition survey in the next 6 to 12 months. The survey methodology should be changed to cluster sampling method due to difficulties of SRS in camps not well organized and with problems in labelling.

Nutrition surveillance should be continuously done to monitor trends in nutritional status. and WFP should continue with EFSA- emergency food security assessments.

7. REFERENCES

[1]HIS-Jan to March 2013

[4]UNHCR Strategic Plan for Nutrition and Food Security (2008-2012)

[3]UNICEF / WHO. Indicators for assessing infant and young child feeding practices, 2007.

[2]UNHCR PROGRESS database-November 2012

[5] MFS-B,/EPICENTRE .Retrospective Mortality,Non Food Items and Nutrition Survey. Batil Refugee Camp, Maban County,Unity State, South Sudan. August 2012

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Pictures

Training Session

Height measurement

Weight measurement

Anaemia testing

9. APPENDICES

Appendix 1 -*Table 81 :* Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex – NCHS 1977 Growth Reference

		Doro	Batil	Jammam	Gendrassa
All	n	831	1007	693	697
Global Acute Malnutrition	n (%)	92 (**11.1**)	142 (**14.1**)	110(15.9)	84 (**12.1**)
(<-2 z-scores and/or oedema)	(95% CI)	(9.1 - 13.4)	(12.1 - 16.4)	(12.3 - 20.3)	(9.8 - 14.7)
Moderate Acute Malnutrition	n (%)	80 (**9.6**)	127 (**12.6**)	101 (**14.6**)	74 (**10.6**)
(<-2 and >=-3 z-scores, no oedema)	(95% CI)	(7.8 - 11.8)	(10.7 - 14.8)	(11.1 - 18.9)	(8.5 - 13.1)
Severe Acute Malnutrition	n (%)	12 (**1.4**)	15 (**1.5)**	9 (**1.3**)	10 (**1.4**)
(<-3 z-score and/or oedema)	(95% CI)	(0.8 - 2.5)	(0.9 - 2.4)	(1.2 - 1.4)	(0.8 - 2.6)
Oedema		(0)0.0	(0)0.0	(0)0.0	(0)0.0

Appendix 2: Plausibility Check Report -Doro

DORO: Plausibility check for: Anthro Ena.as

Standard/Reference used for z-score calculation: WHO standards 2006
(If it is not mentioned, flagged data is included in the evaluation. Some parts of this plausibility report are more for advanced users and can be skipped for a standard evaluation)

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	**Score**
Missing/Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-10	>10	
(% of in-range subjects)			0	5	10	20	**0** (2.3 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<0.000	
(Significant chi square)			0	2	4	10	**0** (p=0.141)
Overall Age distrib	Incl	p	>0.1	>0.05	>0.001	<0.000	
(Significant chi square)			0	2	4	10	**10** (p=0.000)
Dig pref score - weight	Incl	#	0-5	5-10	10-20	> 20	
			0	2	4	10	**0** (2)
Dig pref score - height	Incl	#	0-5	5-10	10-20	> 20	
			0	2	4	10	**4** (16)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>1.20	
			0	2	6	20	**0** (1.05)
Skewness WHZ	Excl	#	<±1.0	<±2.0	<±3.0	>±3.0	
			0	1	3	5	**0** (0.06)
Kurtosis WHZ	Excl	#	<±1.0	<±2.0	<±3.0	>±3.0	
			0	1	3	5	**0** (0.07)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<0.000	
			0	1	3	5	**0** (p=)
Timing	Excl	Not determined yet					
			0	1	3	5	
OVERALL SCORE WHZ =			0-5	5-10	10-15	>15	**14** %

At the moment the overall score of this survey is 14 %, this is acceptable.

Evaluation of Standard deviation, Normal distribution, Skewness and Kurtosis using the 3 exclusion (Flag) procedures

.	**no exclusion**	**exclusion from reference mean (WHO flags)**	**exclusion from observed mean (SMART flags)**
WHZ			
Standard Deviation SD:	1.21	1.17	1.05
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	10.9%	10.7%	10.0%
calculated with current SD:	13.7%	12.7%	10.4%
calculated with a SD of 1:	9.3%	9.2%	9.3%
HAZ			
Standard Deviation SD:	1.81	1.60	1.25
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	35.3%	35.3%	35.0%
calculated with current SD:	35.3%	33.8%	32.1%
calculated with a SD of 1:	24.8%	25.2%	27.9%
WAZ			
Standard Deviation SD:	1.29	1.27	1.12
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			

observed:	25.4%	25.5%	25.6%
calculated with current SD:	26.9%	26.8%	25.8%
calculated with a SD of 1:	21.4%	21.6%	23.4%

Results for Shapiro-Wilk test for normally (Gaussian) distributed data:

WHZ	p= 0.000	p= 0.000	p= 0.161
HAZ	p= 0.000	p= 0.000	p= 0.001
WAZ	p= 0.000	p= 0.000	p= 0.080

(If p < 0.05 then the data are not normally distributed. If p > 0.05 you can consider the data normally distributed)

Skewness

WHZ	0.23	0.22	0.06
HAZ	0.75	0.57	0.12
WAZ	0.56	0.40	-0.05

If the value is:
-below minus 2 there is a relative excess of wasted/stunted/underweight subjects in the sample
-between minus 2 and minus 1, there may be a relative excess of wasted/stunted/underweight subjects in the sample.
-between minus 1 and plus 1, the distribution can be considered as symmetrical.
-between 1 and 2, there may be an excess of obese/tall/overweight subjects in the sample.
-above 2, there is an excess of obese/tall/overweight subjects in the sample

Kurtosis

WHZ	2.63	1.43	0.07
HAZ	13.13	1.41	-0.53
WAZ	2.16	1.36	-0.22

(Kurtosis characterizes the relative peakedness or flatness compared with the normal distribution, positive kurtosis indicates a relatively peaked distribution, negative kurtosis indicates a relatively flat distribution)
If the value is:
-above 2 it indicates a problem. There might have been a problem with data collection or sampling.
-between 1 and 2, the data may be affected with a problem.
-less than an absolute value of 1 the distribution can be considered as normal.

Are the data of the same quality at the beginning and the end of the clusters?

Evaluation of the SD for WHZ depending upon the order the cases are measured within each cluster (if one cluster per day is measured then this will be related to the time of the day the measurement is made).

Time	SD for WHZ														
point	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3

(when n is much less than the average number of subjects per cluster different symbols are used: 0 for n < 80% and ~ for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the different time points)

Appendix 3: Plausibility Check Report -Batil

BATIL: Plausibility check for: Ena Anthro Batil.as

Standard/Reference used for z-score calculation: WHO standards 2006
(If it is not mentioned, flagged data is included in the evaluation. Some parts of this plausibility report are more for advanced users and can be skipped for a standard evaluation)

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	**Score**
Missing/Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-10	>10	
(% of in-range subjects)			0	5	10	20	**0** (2.1 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<0.000	
(Significant chi square)			0	2	4	10	**0** (p=0.875)
Overall Age distrib	Incl	p	>0.1	>0.05	>0.001	<0.000	
(Significant chi square)			0	2	4	10	**4** (p=0.001)
Dig pref score - weight	Incl	#	0-5	5-10	10-20	> 20	
			0	2	4	10	**0** (3)
Dig pref score - height	Incl	#	0-5	5-10	10-20	> 20	
			0	2	4	10	**2** (10)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>1.20	
			0	2	6	20	**0** (1.06)
Skewness WHZ	Excl	#	<±1.0	<±2.0	<±3.0	>±3.0	
			0	1	3	5	**0** (-0.12)
Kurtosis WHZ	Excl	#	<±1.0	<±2.0	<±3.0	>±3.0	
			0	1	3	5	**0** (0.08)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<0.000	
			0	1	3	5	**0** (p=)
Timing	Excl	Not determined yet					
			0	1	3	5	
OVERALL SCORE WHZ =			0-5	5-10	10-15	>15	**6** %

At the moment the overall score of this survey is 6 %, this is good.

Evaluation of Standard deviation, Normal distribution, Skewness and Kurtosis using the 3 exclusion (Flag) procedures

.	**no exclusion**	**exclusion from reference mean (WHO flags)**	**exclusion from observed mean (SMART flags)**
WHZ			
Standard Deviation SD:	1.21	1.13	1.06
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	16.2%	15.9%	15.1%
calculated with current SD:	20.0%	18.2%	16.2%
calculated with a SD of 1:	15.3%	15.2%	14.9%
HAZ			
Standard Deviation SD:	1.77	1.61	1.33
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	39.8%	39.1%	38.6%
calculated with current SD:	41.1%	38.8%	37.4%
calculated with a SD of 1:	34.5%	32.4%	33.4%
WAZ			
Standard Deviation SD:	1.35	1.28	1.15
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	33.1%	33.0%	32.1%

calculated with current SD:	37.3%	36.7%	34.2%
calculated with a SD of 1:	33.1%	33.1%	31.9%

Results for Shapiro-Wilk test for normally (Gaussian) distributed data:

WHZ	p= 0.000	p= 0.000	p= 0.059
HAZ	p= 0.000	p= 0.000	p= 0.000
WAZ	p= 0.000	p= 0.000	p= 0.000

(If p < 0.05 then the data are not normally distributed. If p > 0.05 you can consider the data normally distributed)

Skewness

WHZ	0.20	-0.12	-0.12
HAZ	0.05	0.23	-0.04
WAZ	0.27	-0.29	-0.17

If the value is:
-below minus 2 there is a relative excess of wasted/stunted/underweight subjects in the sample
-between minus 2 and minus 1, there may be a relative excess of wasted/stunted/underweight subjects in the sample.
-between minus 1 and plus 1, the distribution can be considered as symmetrical.
-between 1 and 2, there may be an excess of obese/tall/overweight subjects in the sample.
-above 2, there is an excess of obese/tall/overweight subjects in the sample

Kurtosis

WHZ	3.96	0.76	0.08
HAZ	2.26	0.62	-0.73
WAZ	5.93	0.55	-0.28

(Kurtosis characterizes the relative peakedness or flatness compared with the normal distribution, positive kurtosis indicates a relatively peaked distribution, negative kurtosis indicates a relatively flat distribution)
If the value is:
-above 2 it indicates a problem. There might have been a problem with data collection or sampling.
-between 1 and 2, the data may be affected with a problem.
-less than an absolute value of 1 the distribution can be considered as normal.

Are the data of the same quality at the beginning and the end of the clusters?

Evaluation of the SD for WHZ depending upon the order the cases are measured within each cluster (if one cluster per day is measured then this will be related to the time of the day the measurement is made).

Time point	SD for WHZ														
	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3

(when n is much less than the average number of subjects per cluster different symbols are used: 0 for n < 80% and ~ for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the different time points)

Appendix 4: Plausibility Check Report -Batil

GENDRASSA: Plausibility check for: Gendrassa merged anthro files preliminary.as

Standard/Reference used for z-score calculation: WHO standards 2006
(If it is not mentioned, flagged data is included in the evaluation. Some parts of this plausibility report are more for advanced users and can be skipped for a standard evaluation)

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	**Score**
Missing/Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-10	>10	
(% of in-range subjects)			0	5	10	20	**0** (1.0 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<0.000	
(Significant chi square)			0	2	4	10	**0** (p=0.881)
Overall Age distrib	Incl	p	>0.1	>0.05	>0.001	<0.000	
(Significant chi square)			0	2	4	10	**4** (p=0.001)
Dig pref score - weight	Incl	#	0-5	5-10	10-20	> 20	
			0	2	4	10	**0** (5)
Dig pref score - height	Incl	#	0-5	5-10	10-20	> 20	
			0	2	4	10	**4** (20)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>1.20	
			0	2	6	20	**0** (0.94)
Skewness WHZ	Excl	#	<±1.0	<±2.0	<±3.0	>±3.0	
			0	1	3	5	**0** (-0.10)
Kurtosis WHZ	Excl	#	<±1.0	<±2.0	<±3.0	>±3.0	
			0	1	3	5	**0** (0.03)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<0.000	
			0	1	3	5	**0** (p=)
Timing	Excl	Not determined yet					
			0	1	3	5	
OVERALL SCORE WHZ =			0-5	5-10	10-15	>15	**8** %

At the moment the overall score of this survey is 8 %, this is good.

Evaluation of Standard deviation, Normal distribution, Skewness and Kurtosis using the 3 exclusion (Flag) procedures

.	**no exclusion**	**exclusion from reference mean (WHO flags)**	**exclusion from observed mean (SMART flags)**
WHZ			
Standard Deviation SD:	1.09	0.99	0.94
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	12.4%		
calculated with current SD:	14.6%		
calculated with a SD of 1:	12.6%		
HAZ			
Standard Deviation SD:	1.53	1.39	1.18
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	27.9%	27.5%	27.2%
calculated with current SD:	29.3%	27.1%	25.1%
calculated with a SD of 1:	20.2%	19.8%	21.3%
WAZ			
Standard Deviation SD:	1.12	1.09	0.99

(The SD should be between 0.8 and 1.2)

Prevalence (< -2)		
observed:	22.6%	22.6%
calculated with current SD:	24.9%	24.5%
calculated with a SD of 1:	22.4%	22.7%

Results for Shapiro-Wilk test for normally (Gaussian) distributed data:

WHZ	p= 0.000	p= 0.001	p= 0.628
HAZ	p= 0.000	p= 0.000	p= 0.006
WAZ	p= 0.000	p= 0.000	p= 0.480

(If p < 0.05 then the data are not normally distributed. If p > 0.05 you can consider the data normally distributed)

Skewness

WHZ	1.33	-0.11	-0.10
HAZ	0.69	0.56	0.05
WAZ	0.50	0.07	0.00

If the value is:
-below minus 2 there is a relative excess of wasted/stunted/underweight subjects in the sample
-between minus 2 and minus 1, there may be a relative excess of wasted/stunted/underweight subjects in the sample.
-between minus 1 and plus 1, the distribution can be considered as symmetrical.
-between 1 and 2, there may be an excess of obese/tall/overweight subjects in the sample.
-above 2, there is an excess of obese/tall/overweight subjects in the sample

Kurtosis

WHZ	12.76	1.05	0.03
HAZ	4.84	1.95	-0.53
WAZ	3.99	1.36	-0.17

(Kurtosis characterizes the relative peakedness or flatness compared with the normal distribution, positive kurtosis indicates a relatively peaked distribution, negative kurtosis indicates a relatively flat distribution)
If the value is:
-above 2 it indicates a problem. There might have been a problem with data collection or sampling.
-between 1 and 2, the data may be affected with a problem.
-less than an absolute value of 1 the distribution can be considered as normal.

Are the data of the same quality at the beginning and the end of the clusters?

Evaluation of the SD for WHZ depending upon the order the cases are measured within each cluster (if one cluster per day is measured then this will be related to the time of the day the measurement is made).

Time point	SD for WHZ															
	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3

(when n is much less than the average number of subjects per cluster different symbols are used: 0 for n < 80% and ~ for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the different time points)

Appendix 5: Plausibility Check Report -Jammam

JAMMAM : Plausibility check for: Jammam merged files.as

Standard/Reference used for z-score calculation: WHO standards 2006
(If it is not mentioned, flagged data is included in the evaluation. Some parts of this plausibility report are more for advanced users and can be skipped for a standard evaluation)

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	**Score**
Missing/Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-10	>10	
(% of in-range subjects)			0	5	10	20	**5** (2.7 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<0.000	
(Significant chi square)			0	2	4	10	**0** (p=0.792)
Overall Age distrib	Incl	p	>0.1	>0.05	>0.001	<0.000	
(Significant chi square)			0	2	4	10	**0** (p=0.370)
Dig pref score - weight	Incl	#	0-5	5-10	10-20	> 20	
			0	2	4	10	**0** (3)
Dig pref score - height	Incl	#	0-5	5-10	10-20	> 20	
			0	2	4	10	**2** (10)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>1.20	
			0	2	6	20	**0** (1.00)
Skewness WHZ	Excl	#	<±1.0	<±2.0	<±3.0	>±3.0	
			0	1	3	5	**0** (0.03)
Kurtosis WHZ	Excl	#	<±1.0	<±2.0	<±3.0	>±3.0	
			0	1	3	5	**0** (-0.02)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<0.000	
			0	1	3	5	**5** (p=0.000)
Timing	Excl	Not determined yet					
			0	1	3	5	
OVERALL SCORE WHZ =			0-5	5-10	10-15	>15	**12** %

At the moment the overall score of this survey is 12 %, this is acceptable.

Evaluation of Standard deviation, Normal distribution, Skewness and Kurtosis using the 3 exclusion (Flag) procedures

.	**no exclusion**	**exclusion from reference mean (WHO flags)**	**exclusion from observed mean (SMART flags)**
WHZ			
Standard Deviation SD:	1.26	1.12	1.00
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	18.3%	18.1%	
calculated with current SD:	22.3%	19.9%	
calculated with a SD of 1:	16.8%	17.3%	
HAZ			
Standard Deviation SD:	1.77	1.52	1.32
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	45.5%	44.9%	45.3%
calculated with current SD:	45.9%	44.2%	45.0%
calculated with a SD of 1:	42.9%	41.2%	43.4%
WAZ			
Standard Deviation SD:	1.21	1.16	1.11
(The SD should be between 0.8 and 1.2)			

Prevalence (< -2)

observed:	39.8%	39.8%	39.7%
calculated with current SD:	41.7%	41.5%	41.1%
calculated with a SD of 1:	40.0%	40.2%	40.2%

Results for Shapiro-Wilk test for normally (Gaussian) distributed data:

WHZ	p= 0.000	p= 0.000	p= 0.889
HAZ	p= 0.000	p= 0.001	p= 0.000
WAZ	p= 0.000	p= 0.229	p= 0.036

(If p < 0.05 then the data are not normally distributed. If p > 0.05 you can consider the data normally distributed)

Skewness

WHZ	0.96	0.46	0.03
HAZ	0.51	0.28	-0.05
WAZ	0.23	-0.08	-0.09

If the value is:
-below minus 2 there is a relative excess of wasted/stunted/underweight subjects in the sample
-between minus 2 and minus 1, there may be a relative excess of wasted/stunted/underweight subjects in the sample.
-between minus 1 and plus 1, the distribution can be considered as symmetrical.
-between 1 and 2, there may be an excess of obese/tall/overweight subjects in the sample.
-above 2, there is an excess of obese/tall/overweight subjects in the sample

Kurtosis

WHZ	5.73	2.05	-0.02
HAZ	4.71	0.63	-0.65
WAZ	2.44	0.15	-0.32

(Kurtosis characterizes the relative peakedness or flatness compared with the normal distribution, positive kurtosis indicates a relatively peaked distribution, negative kurtosis indicates a relatively flat distribution)
If the value is:
-above 2 it indicates a problem. There might have been a problem with data collection or sampling.
-between 1 and 2, the data may be affected with a problem.
-less than an absolute value of 1 the distribution can be considered as normal.

Appendix 6: Questionnaire -SENS- MORTALITY QUESTIONNAIRE (One questionnaire per HH)

Date (dd/mm/yyyy) / يوم مقابلة:	**Camp**المعسكرة	**Cheikh/Boma…….**	**Block/Code Number/**رغم مربع
|___|___|/|___|___|/|___|___||___|___|	Doro=1, Yusuf Batil =2 , Gendrassa=3 , Jammam=4 , Yida=5 |___|	|___||___|___|	|___||___|___|
Cluster Number(*in cluster survey only*)……	**HH Number**رغم ربة البيت	**House/Tent Number** رغم خيمة/بيت	**Team Number**رغم فريق
|___|___|	|___|___||___|___|	|___|___||___|___|	|___|

#	COL11 مربع	COL2	COL3	COL4	COL5	COL6
	NAME اسم	SEX نوع /زكر/انثى M/F	AGE IF **≥5 YRS** سنة<5 **UNIT:** وحدة **YRS**	AGE IF **< 5 YRS** سنة ازا <5سنة **SPECIFY UNIT:** حدد الوحدة **DAYS / MONTHS / YRS** يوم /شهر/سنة	BORN BETWEEN **LAST 3 MONTHS** AND TODAY تم ميالد فى بين واليوم (ازكر اليوم) **(Y/N)**	JOINED HOUSEHOLD BETWEEN **END (3 MONTHS)** AND TODAY **(Y/N) بيت مزدوزة بين اخر و اليوم**
A.	**LIST ALL MEMBERS WHO ARE CURRENTLY LIVING IN THIS HOUSEHOLD AND EATING FROM THE SAME POT**(سجل كل اعضاء الزين يسكنون الان فى هزى البيت وياكلون فى نفس هلا(قدر					
01						
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
B.	**DID ANY MEMBERS OF THE HOUSEHOLD LEAVE BETWEEN LAST 3 MONTHS AND TODAY? IF SO LIST THEM** هل اعضاء البيت يسكن بين نهاية (ازكر اليوم) و اليوم ازا نعم سجلهم					
01						
02						
03						
C.	**DID ANY MEMBERS OF THE HOUSEHOLD DIE BETWEEN LAST 3 MONTHS AND TODAY? IF SO LIST THEM** هل العضاء البيت يموتون بين نهاية(ازكر اليوم)واليوم؟ازا نعم سجلهم					
01						
02						

MORTALITY SUMMARY (for supervisor only) خلاصة الوفيات (خاص لمشرف)			
		TOTAL	**Under 5**
1. Members present now	**A.** COL **1**		
2. Joined household between last 3 months) and today	**A**. COL **6**		
3. Members that left the household between last 3 months) and today	**B**. COL **1**		
4. Births between last 3 months) and today	**A, B**. COL **5**		
5. Deaths between last 3 months) and today	**C**. COL **1**		

NB:

- Household members are defined as members who are living together *in the camp* and who are eating from the same cooking الاعضاء البيت هم الزين يسكنون فى معسكرة وياكلون فى نفس اكل
- Members of the household present now are the members who slept in the household last night. Members of the household who slept here last night but who are away today to the market/elsewhere and will return before the end of the day should be listed here also. الاعضاء البيت الموجدين الان و نامو فى البيت فى الليل الماضيى وايضا الاضاء البيت الزين نامو فى البيت فى الليل الماضى وزهبوا الى شوق وسوف يعودون قبل نهية اليوم يمكن تسجيل ايضا
- A child who was born and dead during the recall period is counted as a death only when entering data in ENA (SMART Version 1, April 2006). الطفل الزى تم ميلادة و مات خلال فترة زكر يمكن تسجلة كلا ميت

SENS CHILDREN 6-59 QUESTIONNAIRE

Date (dd/mm/yyyy) / يوم مقابلة:	Campالمعسكرة	Cheikh/Boma…….	Block/Code Number/رغم مربع
|___|___|/|___|___|/|___|___|___|___|	Doro=1, Yusuf Batil =2 , Gendrassa=3 , Jammam=4 , Yida=5 |___|	|___|___|___|	|___|___|___|
Cluster Number(*in cluster survey only*)……	**HH Number**رغم ربة البيت	**House/Tent Number** رغم خيمة/بيت	**Team Number**رغم فريق
|___|___|	|___|___|___|___|	|___|___|___|	|___|

If child is less than 6 months stop at the dark line (CH6) and proceed to IYCF.

Date of interview (dd/mm/yyyy): التاريخ المقابلة يوم/شهر/سنة |___|___|/|___|___|/|___|___|___|___|						**Cluster Number (*in cluster survey only*)** رغم المجموع |___|___|						**Team number**رغم الفريق |___|					
CH1	**CH2**	**CH3**	**CH4**	**CH5**	**CH6**	**CH7**	**CH8**	**CH9**	**CH10**	**CH11**	**CH12**	**CH13**	**CH14**	**CH15**	**CH16**	**CH17**
ID البطاقة	**HH ربة البيت**	**Consent الموفقة given** 1=yes نعم 2=no لا 3=absent غاب	**Sex** نوع (m/f) **زكر/انثى**	**Birthdate* تاريخ الميلاد** dd/mm/yyyy يوم/شهر/سنة	**Age*** سنة * شهور) ((months)	**Weight** وزن(kg) ±100g -جرام100 +	**Height طول (سنتمتر)**(cm) ±0.1cm	**Oedema وزمة الامعاء** (y/n)	**MUAC مقياس يد الاعلى** (mm)	**Child enrolled الطفل المسجل** 1=SFP الكل الاضافى 2=TFP الكل اللعلاج 3=None لاشيئ	**Measles الحصبة** 1=yes card نعم لى بطاقة 2=yes recall نعم ازكر 3=no or don't know لا عرف	**DPT3** 1=yes card نعم لى بطاقة 2=yes recall نعم ازكر 3=no or don't know لا عرف	**Vit. A in past 6 فيتامين ا فى فتر 6شهور months**أ (SHOW CAPSULE) 1=yes card نعم لى بطاقة 2=yes recall نعم ازكر 3=no or don't know لا اعرف	**Diarrhoea in past 2 weeks اسهلات خلال فترة 2اسبوع الماضية** 1=yes نعم 2=no لا 8=DK لا اعرف	**Hb** *(g/dL)*	**Do you own a mosquito net?** **1=Yes** **2=No** **If Yes, Physically verify (get Consent first).**
01				/ /												
02				/ /												
03				/ /												
04				/ /												

05				/ /													
06				/ /													
07				/ /													
08				/ /													
09				/ /													
10				/ /													
11				/ /													
12				/ /													
13				/ /													

*The exact birth date should only be taken from an age documentation showing day, month and year of birth. It is only recorded if an official age documentation is available; if the mother recalls the exact date, this is not considered to be reliable enough. **Leave blank if no official age documentation is available.**

**If no age documentation is available, estimate age using local event calendar. If an official age documentation is available, record the age in months from the date of birth.

الالواثائق فية التاريغ/شهر/سنة الميلاد ازا يوجد سجل الواثائق الرسمية ولا تسجل حتى لوالام يتزكر التاريغ الميلاد اترك خالية ازا الوثائق رسمية غير موجود.وازا لا توجد وثائق الميلاد خمن حسب حواديث المحلى. وازا سجل التاريغ ا موجود سجل

Annex -SENS IYCF questionnaire

No	QUESTION الاسئللة	ANSWER CODES الجابات	
SECTION IF1			
IF1	Sex نوع	Male زكر ..... 1 Female انثى 2	|___|
IF2	Birthdate التاريخ الميلاد RECORD FROM AGE DOCUMENTATION. LEAVE BLANK IF NO VALID AGE DOCUMENTATION سجل من وثيق	Day/Month/Year……|___|___| /|___|___| / |___|___|___|___| **يوم/شهر/سنة**	
IF3	Child's age in months سنة الطفل فى شهر	IF AGE DOCUMENTATION NOT AVAILABLE, ESTIMATE USING EVENT CALENDAR. IF AGE DOCUMENTATION AVAILABLE, RECORD THE AGE IN MONTHS FROM THE DATE OF BIRTH *ازا لا توجد وثيقةتاريخ الميلاد خمن التارغ خلال حدث فى المحلى*	|___|___|
IF4	Has [NAME] ever been breastfed? هل (الاسم) دائما يرضى	Yes نعم..... 1 No لا.....2 DK لا اعرف 8	|___| **IF ANSWER IS 2 or 8 GO TO IF7**
IF5	How long after birth did you first put [NAME] to the breast? بعد الميلاد مباشراً كم من زمن رضيض الطفل؟	Less than one hour بعد اقل من ساعة ..... 1 Between 1 and 23 hours بين 1 و 23 ساعة .....2 More than 24 hours اكثر من 24 ساعة .....3 DK لا اعرف 8	|___|
IF6	Was [NAME] breastfed yesterday during the day or at night? هل رضيض الفللك خلال نهار ام الليل؟	Yes نعم ..... 1 No لا .....2 DK لا اعرف 8	|___|
SECTION IF2			
IF7	Now I would like to ask you about liquids that [NAME] may have had yesterday during the day and at night. I am interested in whether your child had the item even if it was combined with other foods. Yesterday, during the day or at night, did [NAME] receive any of the following? الان اريد اسال عن السائل ممكن اخزت خلال النهار امس و فى ليل.لى رغبة لمعرفة ازا طفلك لة مواد حتلا لو مغلوط مع بعض من اكل خلال يوم او ليل امس(اسم) هل استلام بعض من مزكورة: ASK ABOUT EVERY LIQUID. IF ITEM WAS GIVEN, CIRCLE '1'. IF ITEM WAS NOT GIVEN, CIRCLE '2'. IF CAREGIVER DOESN'T KNOW, CIRCLE '8'. EVERY LINE MUST HAVE A CODE. اسال عن السائل ازا اخزوا ضع دئرة فى (1) و ازا لم تاخز ضع دئرة فى (2) و ام ازا لاعرف ضع دئرة فى (8)		

		Yes	No	DK
7A. Plain water مياة السهل	7A……1	2	8	
7B. Infant formula: for example (Libto Mama)] طفل مرضيى على سبيل المثال اضيف عيش الماحلى من اكل قوى غير قوى(مبتومامة, لبتونيل)	7B……1	2	8	
7C. Milk such as tinned, powdered, or fresh animal milk: for example (Nido, Formost) لبن علبة المجفيف او لحم حيوان طازج على سبيل المثل اضيف بعض لبن علب	7C……1	2	8	
7D. Juice or juice drinks (Gungules-Aradeb, Kedem) عصير او مشروب عصير اضيف مشروبات المحلى (قنفوليس, اريديب, قديم) .	7D……1	2	8	
7E. Clear broth or Soup مرق الصافى	7E……1	2	8	
7F. Sour milk or yogurt for example: (Zabadi , Roob) لبن حامض (زبادي , روب)	7F……1	2	8	
7G. Thin porridge for example: (Medida Khafif) **نثة خفيف ازكر اسم المحلى** (مديدة خفيف)	7G……1	2	8	
7H. Tea or coffee with milk الشاى لبن او قهوة	7H……1	2	8	
7I. Any other water-based liquids (kastar), Serilak): for example sodas, other sweet drinks, herbal infusion, gripe water, clear tea with no milk, black coffee, ritual fluids ازكر بعض من السوائل مثل مشروبات غازية و مشرونيا ت الشاى خالى من لبن مشروبات الحلوة مشروبات عشبية	7I……1	2	8	

IF8	Yesterday, during the day or at night, did [NAME] eat solid or semi-solid (soft, mushy) food? امس خلال اليوم او اليل هل (اسم) اكلت اكل صلب ام شبة صلب (لين عصبى)	Yesنعم……..….1 No لا ……....2 DK… لااعرف……....8	|___|
SECTION IF3			
IF9	Did [NAME] drink anything from a bottle with a nipple yesterday during the day or at night? هل (اسم) شرب اى شئ من زجاج لة حلمةا امس خلال النها ر او اليل	Yes نعم.....1 No لا ……..….....2 DK لا اعرف ……..….....8	|___|
SECTION IF4			
IF10	Is child aged 6-23 months? هل طفلك عمره 6-23 شهر REFER TO IF2	Yes نعم ……...……1 Noلا ……..….….2	|___| **IF ANSWER IS 2 STOP NOW** **ازا اللجا بة 2 قف الان**
IF11	Now I would like to ask you about some particular foods [NAME] may eat. I am interested in whether your child had the item even if it was combined with other foods. Yesterday, during the day or at night, did [NAME] consume any of the following? الان اريد عن اسا ل بعض غزاء ت (اسم)توكل طفلك لة هزى المواد حتى لو مخلوت مع اغزية اخرى امس خلال اليل او نها ر (اسم) يا كل التا لي: ASK ABOUT EVERY ITEM. IF ITEM WAS GIVEN,CIRCLE '1'. IF ITEM WAS NOT GIVEN, CIRCLE '2'. IF CAREGIVER DOESN'T KNOW, CIRCLE '8'. EVERY LINE MUST HAVE A CODE. اسا ل كل المواد ازا المواد قد ضع دائرة (1)ازا المواداعطى دائرة (2)و ازا لم تعرف ضع دائرة (8) كل خطوط عن تكن لة رمز		
			Yes No DK
IF12	11A. **Flesh foods** for example: beef, goat, lamb, mutton, pork, rabbit, chicken, duck, liver, kidney, heart غزاء لحمى (سجل كل لحم العا مة مثل سمك دجاج وكبد)على سبيل مثا ل لحم بقر ضا ن بط ارنب لحم خنزير كبد كلية	11A…….....1	2 8
	11B CSB+ Premix الغزاء المخلوتة وقوى وسجل الموجود فى المنطقة	11B……...……1	2 8
	11C. **FBF++** : for example CSB++ الغزاء الـ قوى مـ ثل زرة وفـ ول صويـ ا	11C…….....1	2 8
	11D. **RUTF** : for example Plumpy'Nut® (SHOW SACHET) الـ جا هزة يـ سـ تعامل فـ ى الـ علاج سجل هزى الـ غزئـ ية الـمحـ لى الـ غزاء	11D……..…1	2 8
	11E. **RUSF** : for example Plumpy'Sup® (SHOW SACHET) محـ لى دالا ضا فـ ى سجل هزة الـ كل الـموجو الـ كل الـ جاهزة	11E……...…1	2 8
		11F……...…1	2 8
	11G. Infant formula: for example Libto Mama .االـ قوى لـ و صـ فة الـ طـ فل الـ ر ضى ازكر بـ عض من هزة ا سماء الـ غزئـ ية الـ حديـ دى	11G……...……..……....1	2 8
	11H. **List any *iron fortified* solid, semi-solid or soft foods designed specifically for infants and young children available in the local setting that are different than distributed commodities. سجل لـ ين الـمـ صـ نـع لـ لاط فال والاط فال يـ ر ضى الـموجون فـ ى الـمـ نط قة ولـة فـ رق من الـ غزي بـ عض الـ غزئـ ي شـ بة صـلب و صـلب او**	11H……..…….....1	2 8

Appendix 7: Calendar of Events

JANUARY	CPA celebrations New Year 1st January	**49 -** CPA celebrations New Year 1st January	**37 -** CPA celebrations 20th January New Year 1st January	**25-** CPA celebrations Referendum vote 9th – 15th January New Year 1st January	**13 -** CPA Referendum celebrations 9th JanuaryNew Year 1st January	**1** - CPA Referendum celebrations 9th January New Year 1st January
FEBRUARY	Repartition day (1st January- 1st April) Sorghum harvest	**48 -** Repartition day (1st January – end February) Sorghum harvest	**36 -** Sorghum Harvest	**24-** Sorghum Harvest	**12 –** Sorghum Harvest	**0 (New born baby)**
MARCH	**59-** International women day 8th March	**47 -** International women day 8th March	**35 -** International women day 8th March	**23-** International women day 8th March	**11 -** International women day 8th March	
APRIL	**58 -**Cultivation month	**46 -** Easter day 12th April / Census in Sudan & cultivation month	**34 -** Easter day 4th April / Cultivation month General election day Governor 11th April	**22-** Easter day 24th April/ General election/ Cultivation month	**10 -** Easter day 8th April / Cultivation month	
MAY	**57 -** SPLA day 15th May 1st crop planting	**45-** SPLA day 15th May / 1st crop planting	**33 -** SPLA day 15th May / 1st crop planting	**21-** SPLA day 15th May 1st crop planting	**9 -** SPLA day 15th May 1st crop planting	
JUNE	**56 -** World refugee day 20th June / weeding of crops	**44 -** World refugee day 20th June / weeding of crops	**32-** World refugee day 20th June / weeding of crops	**20-** World refugee day 20th June / weeding of crops	**8 -** World refugee day 20th June / weeding of crops TSFP distributions at Doro camp 23rd June	
JULY	**55-** Hunger period	**43 -** Hunger period	**31 -** Hunger period	**19-** Hunger period Independent Republic of South Sudan 9th July	**7 -** Hunger period	
AUGUST	**54 -** Maize, sorghum, yield seed and fishing	**42 -** Maize, sorghum, yield seed and fishing	**30 -** Maize, sorghum, yield seed and fishing	**18-** Maize, sorghum, yield seed and fishing	**6 -** Maize, sorghum, yield seed and fishing Ramadhan 20th August BSFP distributions at Doro way station	
SEPTEMBER	**53 -** Flooding Conference 24th -29th Sept	**41 -** Flooding Conference 24th – 29th September	**29 -** Flooding Conference 24th – 29th September	**17-** Flooding Conference 24th – 29th September Khartoum and Blue Nile crisis 2nd September	**5 -** Flooding Conference 24th – 29th September Eid adha 26th October	
OCTOBER	**52**	**40**	**28**	**16**	**4 -** 2nd cycle distributions at Belila nutrition center 22nd October	
NOVEMBER	**51 -** Thanks giving 27th November	**39 -** Thanks giving 26th November	**27 -** Thanks giving 25th November	**15 -** Thanks giving 24th November	**3 -** Thanks giving 22nd November 1st round of polio campaign 5th – 9th November	
DECEMBER	**50 -** Christmas 25th December World AIDS day 1st December	**38 -** Christmas 25th December World AIDS day 1st December	**26 -** Christmas 25th December World AIDS day 1st December	**1 4-** Christmas 25th December World AIDS day 1st December	**2 -** Christmas 25th December World AIDS day 1st December 2nd round polio campaign 3rd – 7th December	