Nutrition And Mortality Survey Final Report

Zalingei Camps

Central Darfur State

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GLOSSARY OF ACRONYMS	
ARI	Acute Respiratory Infection
CI	Confidence Interval
CMR	Crude Mortality Rate
CMAM	Community Management of Acute Malnutrition
ENA	Emergency Nutrition Assessment
EPI	Extended Programme of Immunization
GAM	Global Acute Malnutrition
HAC	Humanitarian Aid Commission
IDP	Internally Displaced Person
IYCF	Infant and Young Child Feeding practice
SMoH	State Ministry of Health
MUAC	Mid Upper Arm Circumference
NCHS	National Centre for Health Statistics
OTP	Out-patient Therapeutic Programme
SAM	Severe Acute Malnutrition
IC	Inpatient Care
SMART	Standardize Monitoring and Assessment in Relief and Transitions
U5MR	Under 5's Mortality Rate
WHZ	Weight for Height in Z-score
WAZ	Weight for Age in Z- Score
HAZ	Height for Age in Z- score

Executive Summary

NCA has conducted nutrition and mortality survey in zalingei camps together with SMoH and HAC. The main objective of the survey was to measure and assess the nutritional and health status of the target population and generates recommendations that can inform NCA and other stakeholders on the future programming the methodology used for the survey was two stage random cluster sampling methodology following stages of a standardized monitoring and assessment in Relief and Transition (SMART according to national nutrition survey guidelines SUDAN. ENA for smart software was used for the 1st stage of selection (selection of clusters), and random selection for the second stage (selection of households). Thirty clusters were selected and 900 households have been selected in the secondary sampling stage. The target population from which extrapolation of results made. Anthropometric, IYCF, immunization coverage, vitamin A supplementation and household's food security are the components of the survey data collects from children aged 6-59 months.

The estimated prevalence of Global Acute Malnutrition (GAM) during the survey period in Zalingei camps 25.3 % (21.9 - 29.0 95% C.I.) based on WHO 2006 standards. According to the classification of severity of malnutrition, the estimated prevalence of acute malnutrition is classified emergency. The survey was conducted in rainy season period therefore the evolution of change in the level of malnutrition is expected to increase in the coming months. The prevalence of Severe Acute Malnutrition (SAM) reported at 8.1 % (6.0 - 10.8 95% C.I.) indicated over emergency threshold.

Morbidity: The overall morbidity rate found among under-five children was reported to be (49.5%) (459). Diarrhea had the highest prevalence at 40.3% (n=185) of the total illness, followed by ARI 28.8% (n=132), and malaria 13.1% (n=60).

Immunization coverage and vitamin A supplementation: Measles were assessed from the child's immunization card or by recall of mothers/caretakers, Vitamin A supplementation was assessed by demonstrating Vitamin A capsule to the mother or caretaker. The findings of the survey shown encouraging slightly high rate of immunization and supplementation. The immunization coverage for measles (by card and recall) is 91.7% (n=782), the supplementation coverage for vitamin A is 96.3% (n=894). This entire are close or higher to the WHO recommended coverage levels. However, vaccination card retention is high (88.7% immunization of measles by card).

Mortality: Retrospective mortality data over the 90 days period prior to the survey was collected in all sampled households containing 4896 household members. Over the 90 days prior to the assessment there were a total of 11 adult and 11 under-5 deaths. The Under 5 death rate 1. 25 (0.52-2. 99 95% CI) deaths/10,000/day) and crude mortality rate 0.51(0.26-1.02 95% CI).

Household Food Security:

To assess the general food security of households a number of questions were asked. The not settlement status of the survey population has important implication on their general

food security situation. It is clear that they are insecure population and will not invest more on its farms and business, resulting in bad food security status. The surveyed population is IDPs communities. This implies that any solution to this population should take in to consideration the nonresident status of the population, their coping mechanism and their respective livelihood profile. The respondents asked whether they engaged in cultivation this year 50.4 % are engaged cultivation. Early initiation (immediately, less than one hour) of breast feeding, exclusive breast feeding for the first six months, and introduction of solid, semi-solid or soft foods at 6 months of age were assessed based on the survey findings an impressive 95.9% (305) of the children were put to the breast within one hour of births.

Nearly a half (41.8%) of the total sample households with children less than 24 months practice exclusive breast feeding within six months.

1- Introduction .

NCA started providing supplementary feeding programme (SFP) in zalingei since 2004. To reduce the rate of MAM cases among children under five years, as well as pregnant and lactating women (PLW) from IDP and host populations. Following the National SFP Guidelines of the Ministry of Health, moderately malnourished children and PLW receive a pre-mix ration every 2 weeks, supplied by World Food Programme (WFP) and distributed at the supplementary feeding centres (SFCs) in (Hassahisa, Khamsadagaig and Hamedia) in Zallingie central Darfur state.

2- Survey Objective

The main objective of the survey is to assess nutritional situation among under-five children by estimating the prevalence of acute malnutrition and mortality in zalingei camps .

Specific Objectives

To assess the nutritional status of children 6-59 months currently residing in Location of .survey

.To assess the morbidity rate over the two weeks prior to the survey in all locations

To estimate the crude and under five mortality rates for the survey populations using a 3 .month recall

.To estimate immunization coverage in the area

.To examine child feeding practices and their effect on child malnutrition in the community

To collect basic information on drinking water source, water accessibility and availability, .and hygiene practices within the community

.To assess current results in relation to those of previous surveys conducted in the area

.To make recommendations for future integrated programming based on the survey results

.Recommendations for future integrated programming based on the survey results

3- Methodology .

Two stage random cluster sampling methodology was used following stages of a standardized monitoring and assessment in Relief and Transition (SMART according national nutrition survey guidelines SUDAN. ENA for smart software was used for the 1st stage of selection (selection of clusters), and random selection for the second stage (selection of households).

Clusters were assigned from the listed sectors according to the population. The probability of cluster selection was proportion to population size in each sector. The second level of sampling (selection of households) was done randomly through "spinning pencil method" to select the first household to be surveyed. A total of 30 clusters with minimum of 27 households per cluster were required to provide valid estimates of the prevalence of malnutrition with at least 95% of confidence. Weight-for-height was used throughout the survey as the anthropometric indicator for nutritional status. Information on population for the retrospective mortality survey was collected from all households selected in the survey. If a child was found to be absent at the time of the data collection, the team planned to record the name of the care taker and child and to return later to find the child. However, no children were found to be absent during the survey.

The target group for the study was 826 households and the sample universe was the entire population of zalingei camps (hassahisa, khamsa dagaig and hamidia). The trained data collectors carried out this survey are six teams of three people. Data was collected on anthropometry, mortality, morbidity, breast feeding, vaccination status and Vitamin A supplementation. For specific child-related survey questions the target group was children aged between 6 and 59 months for the anthropometric survey or (65-110 cm in height), while the breastfeeding survey targeted children aged between 0 and 23 months. At each household, the Nutrition and Food Security survey questionnaires were administered to the mother or main care-giver while anthropometric measurements were taken for all children 6 to 59 months old available in the household

3.1 Questionnaire, training and supervision

Data collection

Four sets of questionnaires were used over the 5 days of data collection. These were child/anthropometric questionnaires, mortality questionnaires, IYCF questionnaire and household questionnaires. All of the questionnaires were translated in to Arabic and tested in the field before use in data collection.

Age: If documents such as vaccination cards or birth certificates were available, these were used to determine the age of children. Team leaders were trained in how to assess age accurately using a local seasonal calendar for use when documentation was not available. When age was not clear, only children with height between 65cm and 110cm (proxy 6 to 59 .months) were included for anthropometric measurements

Weight: A 25 kg Salter scale was used. Weight was recorded to the nearest 100g. Scales were calibrated every morning with a known weight and adjusted to 0 with measuring pants before each weighing.

Height/Length: Children were measured barefoot using standard UNICEF height boards Children less than 87cm were measured lying down (length) while those 87cm and above height). All height/length measurements were taken to the)were measured standing up .nearest 0.1cm.

Oedema: All data collectors were trained to determine the presence of nutritional oedema (retention of fluid). Oedema was diagnosed by applying a medium thumb pressure on the upper side of both feet for three seconds. Oedema was diagnosed if a bilateral depression remained on both feet after the pressure was released. Any child identified with oedema .was referred to an OTP site

MUAC: Mid-upper arm circumference (MUAC) is an effective predictor of risk of mortality. It is measured on the upper left arm and recorded to the nearest mm using a MUAC tape. Any child with a MUAC <115mm or 115-124mm and not registered in the relevant OTP or .SFP programmes were immediately referred

Vaccination Status: Data on immunization for measles was collected to estimate their coverage. Measles vaccination was confirmed by vaccination card or verbal response from mothers was confirmed by checking on the card or mother recall.

Vitamin A Supplementation: Mother's or caretakers recall were used to confirm vitamin A

Supplementation. They were shown a sample vitamin A capsule and asked if the child had .received it in the past 6 months prior to the survey

Retrospective morbidity of children: Caretakers were asked about any incidence of illness during the 2 week period prior to the survey. The team probed to confirm the nature of the illness, the relative seriousness of the illness (diarrhea=3 or more loose motions per day, cough/difficulty breathing=rapid short or fast breaths, and persistent cough) and whether or not the illness was 'confirmed' (malaria was confirmed at clinic level and medication prescribed.

Mortality data: The mortality questionnaire captured the probable cause of death as determined by verbal autopsy by the household respondent from the previous 90-day period. It also collected information on household composition, household members (under 5 and above 5), births, lefts people, joints people and deaths in the 3 months prior to the .survey

Household Characteristics: a standard household questionnaire was designed and used to collect information on sources of drinking water both (dry and rainy season), sanitation and related information from 900 households. The sampled households were selected randomly from the total anthropometry/mortality sample (900) households.

3.2 Training and supervision

A total of 15 data collectors were recruited and trained for data collection. The recruitment considers previous experience as well as knowledge of anthropometric measurements Training was conducted over three days 28- 30/7/2015 on the survey objectives, methodology, how to measure and record anthropometric information, basic nutrition and use of nutritional indices, household selection procedures, signs and symptoms of malnutrition, data collection and basic interview skills. A pretest and review session were also included. This consisted of field practice including completing a height, weight and MUAC measurement exercise in a nearby sub sector that had not been selected for the actual study and one supervisor was involved in this survey field work completed in 5 days 31/7- 4/8/2015.

. **3.3Data analysis**.

The anthropometric data were entered in excel and imported into ENA software version 2011. Data quality checks were done using the new plausibility check. Other information was analyzed using Epi info software 3.5.1. Confidence intervals were calculated using the complex sampling mode of the software. Based on the new SMART ENA 2011 software SMART flags were excluded from the final analysis. A SMART flag means z scores of +/- 3 SD of WHZ from the observed WHZ mean. Based on these criteria 847 children were included in the analysis.

4- Results .

4.1 Anthropometric results (Age and sex distribution)

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	815	-1.24±1.20	1.31	6	106
Weight-for-Age	835	-1.64±1.22	1.00	2	90
Height-for-Age	749	-1.43±1.27	1.74	1	177

The Overall sex ratio of boys and girls is 1.1. Statistical tests show that for the overall sex ratio boys and girls are equally represented (p=0.815)

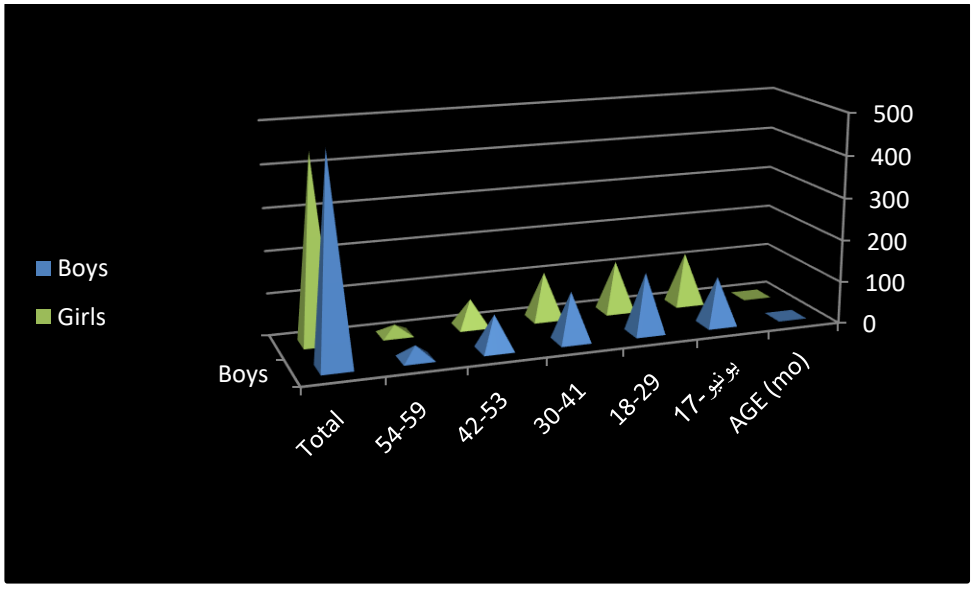
Table 1: Distribution of age and sex of sample

	Boys		**Girls**		**Total**		**Ratio**
AGE (mo)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy:girl**
6-17	114	48.1	123	51.9	237	25.6	0.9
18-29	142	54.2	120	45.8	262	28.3	1.2
30-41	116	51.1	111	48.9	227	24.5	1.0
42-53	82	55.8	65	44.2	147	15.9	1.3
54-59	31	57.4	23	42.6	54	5.8	1.3
Total	485	52.3	442	47.7	927	100.0	1.1

Age ratio of 6-29 months to 30-59 months is found to be 0.90. This is close to the expected value for the ratio of the two groups (value should be around 1.0). The age to sex distribution of the children follows a normal distribution with the younger age (6-29 months) representing 47.3% and the older age group (30-59 months representing 52.7% of the sample. The younger age group slightly lower and the older age group slightly higher.

The population age and sex pyramid for this survey is presented in Figure 1 below

Figure 1 Population age and sex pyramid



Global Acute Malnutrition (GAM), Moderate Acute Malnutrition (MAM) and Severe Acute Malnutrition (SAM) are most widely used key nutrition indicators for measuring the prevalence of acute malnutrition in humanitarian emergencies. GAM is the term used to include all moderate acute malnutrition and severely acute malnutrition children. MAM is the term used to include all children with moderate. SAM is the term used includes all children with severe wasting and oedema. In term of Z- score GAM is defined as <-2 z scores weight-for-height and/or edema.

Tab le 2: Prevalence of Acute Malnutrition based on Weight for Height Z – score

	All n = 815	**Boys** n **=** 436	**Girls** n **=** 379
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(206) 25.3 % (21.9 - 29.0 95% C.I.)	(127) 29.1 % (23.6 - 35.4 95% C.I.)	(79) 20.8 % (17.0 - 25.3 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(140) 17.2 % (14.8 - 19.8 95% C.I.)	(85) 19.5 % (15.8 - 23.9 95% C.I.)	(55) 14.5 % (11.1 - 18.7 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(66) 8.1 % (6.0 - 10.8 95% C.I.)	(42) 9.6 % (6.7 - 13.6 95% C.I.)	(24) 6.3 % (3.8 - 10.3 95% C.I.)

Previous Survey August 2014 GAM	**23.1 % (19.7 - 26.9 95% C.I.)**		
Previous Survey 2014 SAM	**6.8 % (5.0 - 9.1 95% C.I.)**		

Table 3: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	205	22	10.7	41	20.0	142	69.3	0	0.0
18-29	230	21	9.1	38	16.5	171	74.3	0	0.0
30-41	205	11	5.4	26	12.7	168	82.0	0	0.0
42-53	125	8	6.4	26	20.8	91	72.8	0	0.0
54-59	50	4	8.0	9	18.0	37	74.0	0	0.0
Total	815	66	8.1	140	17.2	609	74.7	0	0.0

The prevalence of GAM for age groups showed in the table above there is no significant deference but slightly higher in all age groups. Therefore both groups can affect by malnutrition.

4.1.1 Weight for height distribution and the reference population

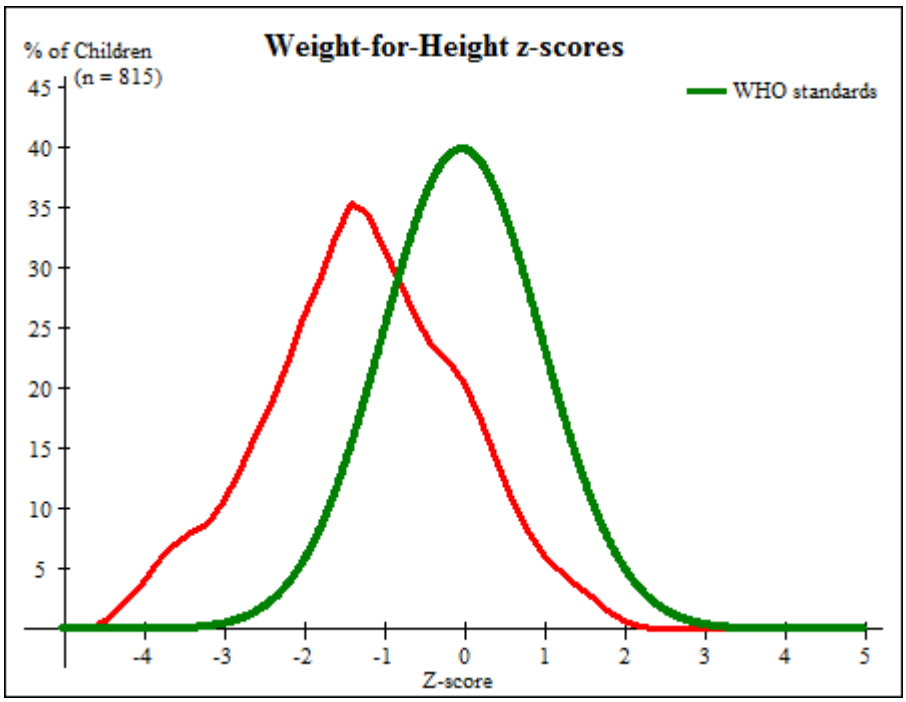
The summary statistics of the z scores is another way of expressing prevalence of malnutrition for population based assessment. This mean there are two ways of expressing child growth survey results using Z-scores. One is the commonly used cut-off-based prevalence; the other includes the summary statistics of the Z-scores, mean standard deviation, standard error, and frequency distribution. A mean z score significantly lower than zero (the expected value for the WHO standard population distribution) usually means that the entire distribution has shifted to the left, suggesting that most individuals have been affected based on this measure the mean of the weight for height z score is-1.0. The mean of the standard population is to show the prevalence of malnutrition at the population is plotted on a graph and compared to the reference population.

Therefore the population of surveyed camps -2.0 point to the left of the standard . population close to -3.0 SD.

Distribution curves of z-scores give a complete picture of the nutritional status for the whole population compared to that of the healthy reference population From the WHZ distribution curve shown in figure 2, the distribution lies to the left of the reference curve (the

red one) indicating that the nutrition status of the population in zalingei camps is very critical than that of the reference population and has a higher prevalence of malnutrition

Figure 2



4-1.2 Distribution of Acute Malnutrition and Oedema

Distribution of the population according to weight-for-height and presence of oedema allows for the differentiation of children presenting with kwashiorkor from those presenting with marasmic-kwashiorkor. This classification is important in emergency nutritional assessments because individuals with marasmic kwashiorkor have a higher risk of mortality than other groups and require immediate therapeutic treatment. No odema case reported during this survey 0.0% (see Table 4). The result show that 8.1% (=66) of the children are marasmic and the remaining 91.9 %(n=749) were not severely malnourished.

Table.4: Distribution of acute malnutrition and oedema based on weight-for-height z-scores

	<-3 z-score	**>=-3 z-score**
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 66 (8.1 %)	Not severely malnourished No. 749 (91.9 %)

4.1.3 MUAC Distribution

MUAC has a stronger association with risk of mortality than WFH among children between six and five years of age. Direct comparisons of prevalence data based on WFH and MUAC .are not recommended, as they are two different criteria and select different groups

The survey result shows that based on MUAC GAM is 20.7% (17.8-23.9 95% CI), MAM is (18.9% (16.0-22.2 95% CI) and SAM is 1.8% (1.2- 2.7 95% CI

Mid upper Arm circumference (MUAC) analysis, children 6-59 months (N=928)

Table 5:

Status	Number of children	Percentage
Prevalence of global malnutrition (< 125 mm and/or oedema)	192	20.7% (17.8-23.9 95% CI)
Severe acute malnutrition (MUAC < 115mm)	17	1.8(1.2- 2.7 95% CI)
Moderate acute malnutrition (MUAC >=115 to <125mm)	175	18.9%(16.0 – 22.2 95% CI)
Normal/well nourished (MUAC>135mm)	813	90.5%
Total	898	100%

4.1.4 Under weight

Table 6: Prevalence of underweight based on weight-for-age z-scores by sex
The survey results showed that underweight generally is high which indicated in this survey among boys and girls clearly boys is the highest under weight than the girls.

Table 6 : Prevalence of underweight by age, based on weight-for-age z-scores by sex

	All n = 835	**Boys** n **=** 442	**Girls** n **=** 393
Prevalence of underweight (<-2 z-score)	(309) 37.0 % (33.8 - 40.3 95% C.I.)	(182) 41.2 % (37.9 - 44.6 95% C.I.)	(127) 32.3 % (27.6 - 37.5 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(194) 23.2 % (20.1 - 26.7 95% C.I.)	(111) 25.1 % (21.0 - 29.7 95% C.I.)	(83) 21.1 % (16.8 - 26.1 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(115) 13.8 % (10.9 - 17.2 95% C.I.)	(71) 16.1 % (12.2 - 20.8 95% C.I.)	(44) 11.2 % (7.9 - 15.7 95% C.I.)

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

		Severe underweight (<-3 z-score)		**Moderate underweight (>= -3 and <-2 z-score)**		**Normal (> = -2 z score)**		**Oedema**	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	201	31	15.4	51	25.4	119	59.2	0	0.0
18-29	242	36	14.9	61	25.2	145	59.9	0	0.0
30-41	212	28	13.2	44	20.8	140	66.0	0	0.0
42-53	132	16	12.1	28	21.2	88	66.7	0	0.0
54-59	48	4	8.3	10	20.8	34	70.8	0	0.0
Total	835	115	13.8	194	23.2	526	63.0	0	0.0

4.1.5 Chronic malnutrition

There are cut offs for height or length based on globally accepted standards. Stunting presents when a child's height-for-age is less than -2 standard deviations from the mean. A

child, whose height-for-age score is less than -3 standard deviations, is severely stunted. Based on these cut-off points the GAM prevalence of stunting is 34.4 %,

Moderate stunting is 24.2 % and severe stunting is 10.3 %

Table 8: Prevalence of stunting based on height-for-age z-scores and by sex

	All n = 749	**Boys** n = 389	**Girls** n = 360
Prevalence of stunting (<-2 z-score)	(258) 34.4 % (29.9 - 39.3 95% C.I.)	(147) 37.8 % (32.4 - 43.5 95% C.I.)	(111) 30.8 % (25.0 - 37.4 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(181) 24.2 % (20.6 - 28.1 95% C.I.)	(101) 26.0 % (21.5 - 31.0 95% C.I.)	(80) 22.2 % (17.6 - 27.7 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(77) 10.3 % (8.0 - 13.1 95% C.I.)	(46) 11.8 % (9.2 - 15.1 95% C.I.)	(31) 8.6 % (5.5 - 13.2 95% C.I.)

4.2 Immunizations and Vitamin A Coverage

Measles vaccination coverage was assessed among children 9-59 months by checking the vaccination card. If the card was not available, mothers were asked if the child received measles vaccination. Vitamin A supplementation was assessed for 6 months period prior to the survey date by displaying a vitamin A capsule to the mothers or caretakers and confirming if the child had consumed capsules.

Vaccination coverage

Table 9

	Number	%
Measles by Card(9-59 months) N= 853	757	88.7
Measles by recall (9-59 months) = 853	25	2.9
Vitamin A in last 6 months (6-59) n= 928	894	96.3

Statistical comparisons show these results are almost close to WHO rates. Therefore it can be said that the efforts need to maintain the high level of immunization rates throughout the year.

4.3 Morbidity

Caretakers were asked whether their children had been ill in the two weeks prior to the survey. The findings showed that (459 out of 928 children reported ill 49.5%. , Diarrhea reported as the highest (185) 40.3%, ARI reported 132 (28.8%) then malaria reported 60(13.1%) and bloody diarrhea 40(8.7%) were the main causes of illness among the children under 5 years

Prevalence of Illness

Prevalence reported	Number	% of children
	461	49.7%

Illness	Number	% of Illness

Fever/Malaria	60	13.0
ARI	132	28.7
Diarrhea	185	40.3
Eye infection	14	3.0
Bloody stools	40	8.6
Others (specify)	21	4.5
Measles	9	1.9
Total	461	100

4.4 Mortality

Retrospective mortality rate (90 days prior to interview)

Mortality Rates using Sudan National Nutrition Survey Guidelines

	CMR deaths/10000/day	0-5MR deaths/10,000/day
Number	11	11
CMR &U5MR 95% confidence interval	0.51 (0.26-1.02) (95% CI)	1. 52 (0.52-2. 99) (95% CI)
Sphere emergency threshold for SSA	0.8	2.1
Previous survey results)	0.41 (0.20-0.84) (95% CI)	0.49(0.17- 1. 38) (95% CI)

Both mortality rates close and less than Sphere emergency threshold.

4.5 household Food Security and Program Coverage

From total of 634 household 537(81.5%) male were head of the households and 117(18.5%) were female head of the household. 548(86.4%) of the respondents reported their main sources of water is common pipes. Only 135 (21.3%) of mothers have received vitamin A within six week after delivery.126(19.9%) of households reported have pregnant women and 62.8%(398) of respondents received iron during their last pregnancy.412 (65%) of mothers reported delivered at home and 255(40.2%) of mother delivered under trained cadir .The majority of the households (420) 66.2% using traditional latrines for usual defecate .30%(171) of households reported have mosquito nets out of those 51(8.%) were pregnant slept under mosquito net ,66((10.4%) were children under five slept under mosquito net and 75 (11.8%) were other slept under mosquito net .

211(33.3%) of respondents reported their main source of food is food aid this is the first and second also food aid 325(51.3%).

437(68.9%) of households know that HIV/Aids can be transferred.

4.7 Infant and Young Child Feeding Practices

Initiation of breast feeding, exclusive breast feeding and complementary feeding practices of mothers with a child 2years of age were assessed during the survey (n= 348). The survey indicated that the initiation of breast feeding immediately or within one hour after birth was 70.1% (244) , 27.8%(97) of the mothers begun breastfeeding 2 to 24 after delivery and 1.4%

5 - Discussion and Conclusions

The nutritional status of children for these communities deteriorated in comparison with last survey conducted in August 2014. The current Global Acute Malnutrition (GAM) rate is 25.3 % (21.9 - 29.0 95% C.I.). Close to 23.1 % (19.7 - 26.9 95% C.I.) in August 2014, The GAM rate showed high than the 15% emergency cut-off point, which indicates nutritional stress in the target areas. The Severe Acute Malnutrition (SAM) rate shows high compared with 2014 survey result as the current SAM rate is 8.1 % (6.0 - 10.8 95% C.I.), while 2014 survey showed 6.8 % (5.0 - 9.1 95% C.I.). Food insecure may also explain the difference in the SAM rates. Another consideration is the household status of the respondents in this area ,As IDPs households are typically less food secure, but they may purchasing food from the market this could also explain the difference in the SAM rates .

This survey used updated more inclusive MUAC cut-offs[1] for risk of death among children 6-59 months. In this survey 20.7% of children were found to be at risk of death globally MUAC bases a much higher proportion 1.8% of the children are considered at severe risk of death (MUAC<11.5 cm) and 18.9% of children at moderate risk (MUAC 11.5 to < 12.5 cm). Crude and U5 death rates showed 0.51 (0.26-1.02) (95% CI) and 1. 52 (0.52-2. 99) (95% CI).Early initiation of breastfeeding practiced by more than 70.1% indicated good , efforts need to improve IYCF practices .high morbidity rate indicated in this survey 49.7% .

6- Recommendations

- Strengthen the current CMAM program during and until next harvest and include all malnourished children to the program.
- Strengthen the health education awareness on promotion of improved hygiene practices to reduce the high incidence of malaria and diarrhea
- Priority should be given to behavioral change among mothers/caregivers to ensure optimal breast feeding practices and mother seeking for care when child ill are adopted.
- Kitchen gardens should be promoted to improve the availability of vegetables, focusing on early maturing crops and fruits and initiative generation income
- WFP should improve the ration size and timely distribution of general food ration
- Establish good referral system by training the community outreach, traditional healers, community leaders, VMWs and mother to mother support group on MUAC for active cases finding.

7- Annexes: