

**Nutrition Surveillance Among Post Conflict  
Displaced Children under five years in Vavuniya  
District-December 2009**

**Department of Nutrition, Medical Research Institute  
Ministry of Healthcare and Nutrition  
With collaboration of UNICEF  
2010**

# CHAPTER 1

## BACKGROUND

Since the Arrival of the Internally Displaced Populations (IDP) in Menikfarm Camps, Ministry of Healthcare and Nutrition had been conducting nutrition assessment at regular interval and providing health and nutrition services in the camps. A large scale nutrition survey was conducted during May in all Menikfarm Camps with about 1,120 children under-five that showed a high level of undernutrition with 35.6 percent wasting (acute undernutrition). A huge nutrition programme was launched by Ministry of Healthcare and Nutrition through the coordination of Family Health Bureau with technical and financial support from UNICEF, field support from Sarvodaya. The target of the programme was to reduce the prevalence of undernutrition by at least 10% in 3 months time (i.e. September 2009) and less than 20% in 6 months time (i.e., December 2009). In order to assess the progress of implementation and measuring how far the target has been reached, a repeat survey was done by the Department of Nutrition, Medical Research Institute (MRI) in collaboration with UNICEF during 28<sup>th</sup> August to 01<sup>st</sup> October, 2009 that aimed at looking at the trends of nutrition status of the under-five children in IDP camps of Vavuniya. Four different cross sectional surveys were done to represent Zone 0 & 1 (as one unit- Z1)), Zone 2 (including those who have moved out recently in puram villages & zone 7- Z2), Zone 3 (as one unit- Z3) and Zone 4 & 5 (as one unit- Z4).

The findings and recommendations of baseline survey were presented and discussed at the national forum that brought together all stakeholders involved in nutrition work in Vavuniya. The survey was instrumental to inform partners how the nutritional status of children evolved over time and the measures that need to be taken to positively change the situation.

This report depicts the findings and recommendations of the third round nutrition survey conducted six months after the first assessment. The reports also compares the findings of the first and second round nutrition surveillance with that of the third round and gives a better understanding of how the nutritional status of children evolved over time.

### Objectives

1. To measure the trends in nutritional status and determinants of the displaced children under five living in camps in Vavuniya District
2. To assess the coverage and monitor nutrition interventions and food aids
3. To assess the mortality among them during the past 3 months

## CHAPTER 2

### METHODS

This was a representative cross sectional survey among displaced children under five living in welfare centers in Vavuniya. These locations were named as zones. There were 7 zones and 5 transit camps at the time of the survey. Assessment was done to cover all displaced population: Zone 0, 1, 2, 3, 4, 5, 7 and transit camps (Weerapurum, Sumathipurum and Dharmapurum). Zone 0 and 1 were considered as one zone and the zone 2, 7 and transit camps as one and zone 4 and 5 as one. Zone 3 was taken as independent area. The study population was identified as children less than 5 years. SMART methodology was adopted for this assessment.

#### Sample size

The required sample size for the survey was calculated considering the prevalence of wasting among children under 5 years as 25%, confidence interval as 95% and precision as 5% by using ENA package. The non-response rate was taken as 5%. When calculating the size of the sample following factors were taken into consideration using the formula given below:

$$n = t^2 \times (p \times q) / d^2$$

n = sample size

t = confidence interval

p = expected prevalence of malnutrition in the population

q = 1 - p, expected proportion of children not presenting malnutrition

d = absolute precision.

A sample size of 350 for each zone and a total of 1400 for all zones.

#### Sampling

Welfare centers were named as zones. All the zones were well organized as blocks and in each block there were rows of tents and semi permanent houses arranged in a systematic manner. Cluster sampling technique.

- 30 Blocks were randomly selected from each zone and blocks were taken as clusters.
- The required number of children from each block (cluster) was 15.
- If more than one eligible child was found in a household, youngest child was included in the sample. If a child was not present at the time of the visit, the data collectors went back to the household in order to measure the child.

#### Data collection

A survey team composed of 15 people: the supervisor, ten enumerators and 4 measurers. One day training was done and the objectives of the survey, the sampling method and its rationale were detailed, stressing the importance of a representative sample. All measurers are well trained people who had previous experience in participating in national nutrition surveys for the last 10 years and they are staff members of the Department of Nutrition. Data collection period was 15<sup>th</sup> to 30<sup>th</sup> December 2009.

All the health staff was informed about the study and permission was obtained from the relevant health authorities and security personnel. Verbal consent was taken from the parent or guardian of children prior to the study, after explaining to them the purpose and the study methods to them.

Data was collected using the following techniques.

**Interviewer administered questionnaire:** An interviewer-administered questionnaire was used to collect information from the mother of the child or from a responsible caregiver. The following information was gathered: basic information (date of birth if not age, sex); morbidity and feeding data; access to water and sanitation; measles immunization status, duration of displacement, availability of food and coping mechanisms; coverage of supplementation programme etc.

**Anthropometric measurements:** Weight and height/length of children were measured using standard techniques described by the World Health Organisation (WHO) [2]. Measurements were taken by the staff of MRI who were especially trained. Weight was measured with minimal clothing and without shoes to the nearest 100 g with Seca electronic weighing scale and accuracy checked using the standard weights (no corrections have been made for the weight of the clothing). Length was measured for children under 2 years of age and height was measured for children over 2 years to the nearest 0.1 cm with a measuring board.

### **Data analysis**

Data was entered in Epi6 software package and the analysis was carried out by using SPSS software package and ENA package for mortality. Age was calculated in months from the child's birthday. Weight-for-age, weight-for-height and height-for-age were calculated for children by using Anthro 2007 software. The WHO 2005 standard was used and the Z score below -2SD was taken as cut off values to estimate prevalence of stunting, wasting and underweight according to the recommendations made by the World Health Organisation (WHO) [3]. The children below the -3SD of weight-for-height was taken as cut off values to estimate severe acute under nutrition (SAM) and moderate acute under nutrition ((MAM) between -3SD and -2SD of weight-for-height according to the recommendations made by WHO (1995).

## CHAPTER 3

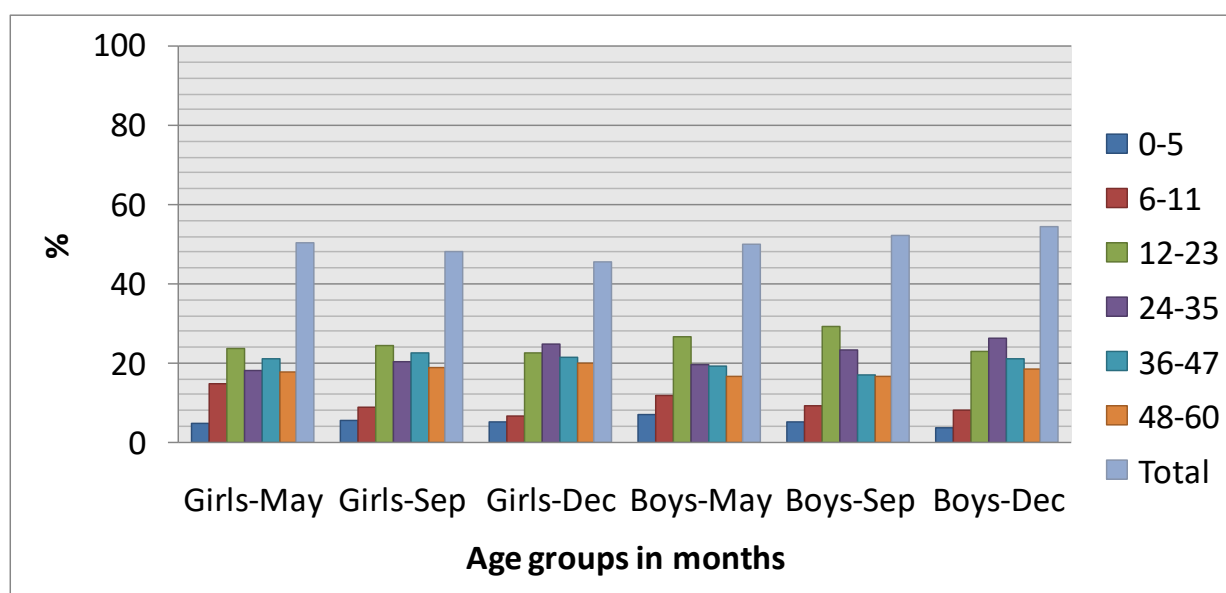
### RESULTS

A total of 1,294 children less than five years among the displaced population in Vavuniya district were covered by the study. From this point onward, welfare centers in Zone 0 and 1 were considered as Zone 1, Zone 2, 7 and transit camps (Dharmapuram, Veerapuram and Sumathipuram) were considered as Zone 2 and zone 4 and 5 was considered as Zone 4.

#### 3.1. Demographic characteristics

As shown in Figure 3.1, 23.1% were infants and 8.5% were below 6 months of age in the study sample. The highest number of children (26.8%) was present in the age group of 12-23 months. There were 54.4% boys and 45.6% girls.

**Figure 3.1**  
**The age group distribution of children studied by sex**



#### 3.2. Nutritional situation

##### 3.2.1. Prevalence of wasting, stunting and underweight in children

Using the default settings for flagging records in the ANTHRO software based on extreme Z-score values of -6 and +6 for height/length-for-age (HAZ), weight-for-age (WAZ); and weight-for-height/length (WHZ), a total of 16 records were flagged. The final analysis for the anthropometric analysis was based on 1294 children.

The findings of the study revealed that the prevalence of wasting (percentage below the -2SD of weight-for-height WHO standard) was 13.0%. The prevalence of stunting (percentage below the -2SD of height-for-age WHO standard) was 36.9%. The prevalence of underweight (percentage below the -2SD of weight-for-age WHO standard) was 36.4%. None were found with oedema (Table 3.1).

**Table 3.1**  
**Prevalence of under nutrition (Wasting, Underweight and Stunting)**  
**In September and December 2009 by age group**

Age (months)	Wasting <sup>1</sup>		Stunting <sup>2</sup>		Underweight <sup>3</sup>		Number	
	September	December	September	December	September	December	September	December
0 – 5	16.5	24.1	16.5	18.5	25.9	27.8	85	54
6 – 11	27.8	16.8	19.0	21.1	38.0	30.5	158	95
12 – 23	24.2	11.6	32.5	34.4	35.6	30.3	480	294
24 – 35	21.0	11.5	40.9	44.2	46.8	40.3	391	330
36 – 47	22.2	10.9	35.5	43.6	44.3	38.2	352	275
48 – 60	29.0	15.0	31.8	32.9	51.3	40.7	314	246
<b>Total</b>	<b>23.9</b>	<b>13.0</b>	<b>32.9</b>	<b>36.9</b>	<b>42.3</b>	<b>36.4</b>	<b>1780</b>	<b>1294</b>

There is a reduction of wasting in each age group except among children between 0-5 months. Overall reduction of acute undernutrition is remarkable from 23.9% in September to 13.0% in December. This is about 45.6% reduction in the prevalence of acute undernutrition (Table 3.1).

The prevalence of underweight also showed a reduction from 42.3% to 36.4% over the period of time. There was a slight increase in the prevalence of stunting from 32.9% in September to 36.9% in September.

**Figure 3.2**  
**Prevalence of wasting, stunting and under weight with severity in September and Dec**

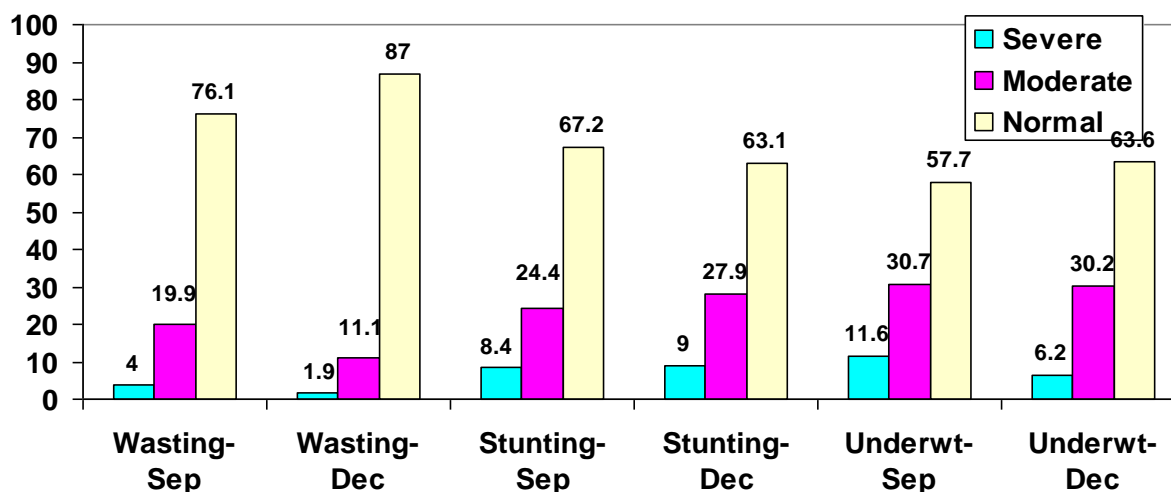


Figure 3.2 shows that the reduction has been more in case of severe acute undernutrition which reduced from 4.0% in September to 1.9% during December- a net 52.5% reduction.

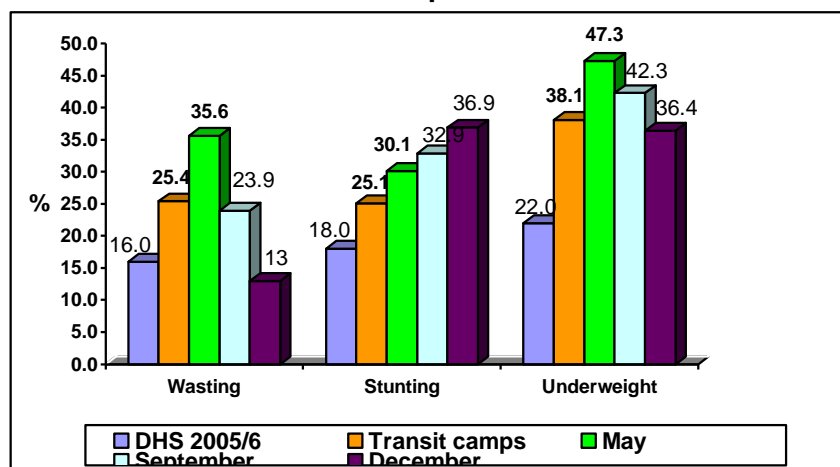
**Table 3.2**  
**Undernutrition (Wasting, Underweight and Stunting) by Zone in September and December 2009**

Welfare Centers	Wasting %		Stunting %		Underweight %		N	
	Sep	Dec	Sep	Dec	Sep	Dec	Sep	Dec
<b>Zone 1</b>	20.4	11.2	30.0	31.1	40.6	31.4	446	411
<b>Zone 2</b>	27.6	14.9	36.4	43.8	45.2	40.2	434	356
<b>Zone 3</b>	23.4	10.5	29.8	35.1	38.2	35.1	440	276
<b>Zone 4</b>	24.1	16.0	35.2	38.8	45.2	40.8	460	250
<b>Total</b>	<b>23.9</b>	<b>13.0</b>	<b>32.9</b>	<b>37.0</b>	<b>42.3</b>	<b>36.4</b>	<b>1780</b>	<b>1293</b>

Reduction of wasting reflected in all zones and the highest percentage of reduction was detected in Zone 2. As indicated in Table 3.2, stunting has increased in all zones and underweight has reduced in all Zones.

### 3.2.2. Comparison of child nutritional status

**Figure 3.3**  
**Prevalence Wasting, Stunting and underweight compared with National and previous data**



The prevalence of wasting is lower and stunting and underweight are still high in this survey compared to the results of the National data (Figure 3.3). This comparison indicates the burden of the problem and the challenge of reducing the percentages to the national level.

### 3.2.3. Acute Under nutrition (wasting)

In Table 3.3, it is noted that boys appeared to have higher prevalence of wasting than girls (15.2% in boys and 10.3% in girls). The prevalence of severe wasting among boys (3.0%) was higher than that of the girls (0.5%). The difference between girls and boys were more in September than in December.

**Table 3.3**

#### **Weight for height Z- score (wasting) by sex**

Sex	Wasting							
	Normal >-2		Moderate ≥ -3 &<-2		Severe <-3		Total	
	Sep	Dec	Sep	Dec	Sep	Dec	Sep	Dec
<b>Female</b>	76.4	89.7	20.2	9.8	3.4	0.5	852	590
<b>Male</b>	75.9	84.8	19.6	12.2	4.5	3.0	928	704
<b>Total</b>	<b>76.1</b>	<b>87.0</b>	<b>19.9</b>	<b>11.1</b>	<b>4.0</b>	<b>1.9</b>	<b>1780</b>	<b>1294</b>

**Table 3.4**

#### **Weight for height Z- score (wasting), by age group in September & Dec**

Age group	Wasting							
	Normal ≥-2		Moderate ≥ -3 &<-2		Severe <-3		Total	
	Sep	Dec	Sep	Dec	Sep	Dec	Sep	Dec
<b>0 - 5</b>	83.5	75.9	12.9	18.5	3.5	5.6	85	54
<b>6 - 11</b>	72.2	83.2	20.3	15.8	7.6	1.1	158	95
<b>12 - 23</b>	75.8	88.4	21.9	9.2	2.3	2.4	480	294
<b>24 – 35</b>	79.0	88.5	16.9	9.7	4.1	1.8	391	330
<b>36 – 47</b>	77.8	89.1	18.5	9.8	3.7	1.1	352	275
<b>48 - 60</b>	71.0	85.0	23.9	13.4	5.1	1.6	314	246
<b>Total</b>	<b>76.1</b>	<b>87.0</b>	<b>19.9</b>	<b>11.1</b>	<b>4.0</b>	<b>1.9</b>	<b>1780</b>	<b>1294</b>



Table 3.4 shows that the prevalence of wasting in relation to age among children compared to the results in September. It showed a higher prevalence of severe and moderate wasting between 0-6 months in December and September was 5.6% versus 3.5% and 18.5% versus 12.9% respectively. Current survey have shown a lower level of severe wasting and moderate wasting in all age groups than the survey carried out in September except among children between 0-5 months.

**Table 3.5**  
**Weight for height Z- score (wasting), by zones**

Welfare centers	Wasting							
	Normal $\geq -2$		Moderate $\geq -3 \text{ \& } < -2$		Severe $< -3$		Total	
	Sep	Dec	Sep	Dec	Sep	Dec	Sep	Dec
<b>Zone 1</b>	79.6	88.8	17.0	9.5	3.4	1.7	446	411
<b>Zone 2</b>	72.4	85.1	22.8	12.9	4.8	2.0	434	356
<b>Zone 3</b>	76.6	89.5	19.8	9.1	3.6	1.4	440	276
<b>Zone 4</b>	75.9	84.0	20.0	13.6	4.1	2.4	460	250
<b>Total</b>	<b>76.1</b>	<b>87.0</b>	<b>19.9</b>	<b>11.1</b>	<b>4.0</b>	<b>1.9</b>	<b>1780</b>	<b>1293</b>

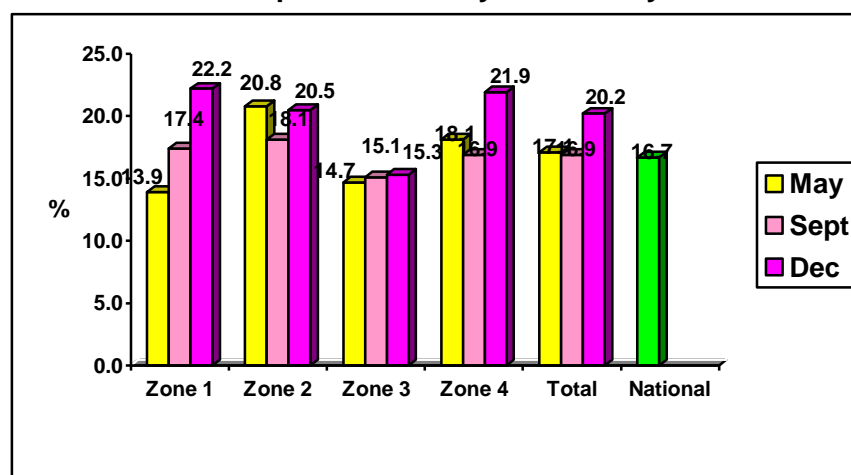
All Zones showed a reduction of the prevalence of wasting among children under five years. (Table 3.5).

#### **3.1.4. Low Birth Weight (LBW)**

Birth weight were taken from the Child Health Development Records (CHDR). From the total surveyed sample birth weight could only be obtained from 97.3% of the children (n=1748) due to non availability of child health development record (CHDR) or not recording in CHDR.

Figure 3.4 shows that the prevalence of low birth weight has increased from 16.9% in September to 20.2% in December. Presently the highest prevalence was reported from Zone 1 (22.2%) and the lowest low birth weight prevalence was reported from Zone 3 (15.3%).

**Figure 3.4: Distribution of birth weight of surveyed children in Zones compared to survey data in May**



### 3.3. Determinants of child nutritional status and child survival

The main findings from the survey hereafter have been compared with the findings of the survey carried out in May by following UNICEF conceptual framework.

#### 3.3.1. Immediate causes

##### a. Diseases

The prevalence of important child illnesses 2 weeks prior to the study was determined. Diarrhoeal diseases were determined by passing 3 or more stools per day. Acute respiratory tract infection (ARI) was defined as cough or cold with or without fever. Breathing rate was counted by the trained health personnel in the Department of Nutrition when the child had ARI to determine the lower respiratory tract infections (LRTI). When the breathing rate is more than 50 breaths per minutes for children less than one year and more than 40 breaths per minute for children 1-5 years was considered as LRTI (WHO 2005).

It is also important to note here that there has been substantial amount of reduction in the morbidity situation also. Prevalence of Diarrhoea has reduced from 21.4% in September to 7.6%, Acute Respiratory Infection (ARI) reduced from 27.3% in September to 23.9% in December and Lower respiratory tract infections (LRTI) has reduced from 4.1% to 1.6%. Similar observation was noted in all age groups (Table 3.6).

**Table 3.6**  
**Morbidity pattern by age group**  
(illnesses during the 2 weeks preceding the study)

Age group (months)	Diarrhoea <sup>1</sup>		ARI <sup>2</sup>		Number*		LRTI <sup>3</sup>		Number**	
	Sep	Dec	Sep	Dec	Sep	Dec	Sep	Dec	Sep	Dec
<b>0 – 5</b>	13.8	9.3	21.3	20.4	94	54	3.3	0.0	16	6
<b>6 – 11</b>	27.3	12.6	31.7	30.5	161	95	1.3	0.0	46	14
<b>12 – 23</b>	24.5	8.5	32.2	26.5	482	294	7.9	3.1	150	34
<b>24 – 35</b>	22.3	7.0	26.6	24.8	391	330	4.9	2.1	98	38
<b>36 – 47</b>	22.7	5.5	23.8	21.5	353	274	2.3	1.8	79	30
<b>48 – 60</b>	13.7	7.3	24.1	20.3	315	246	0.6	0.0	73	17
<b>Total</b>	<b>21.4</b>	<b>7.6</b>	<b>27.3</b>	<b>23.9</b>	<b>1796</b>	<b>1293</b>	<b>4.1</b>	<b>1.6</b>	<b>462</b>	<b>139</b>

(\*Children responded for diarrhoea and ARI; \*\*Number of children were counted for breathing rate)

**Table 3.7**  
**Morbidity pattern by Zones**  
(illnesses during the 2 weeks preceding the study)

Welfare centers	Diarrhoea <sup>1</sup>		ARI <sup>2</sup>		Number		LRTI		Number	
	Sep	Dec	Sep	Dec	Sep	Dec	Sep	Dec	Sep	Dec
<b>Zone 1</b>	20.2	8.0	33.6	24.1	450	411	4.7	3.2	152	93
<b>Zone 2</b>	23.1	7.0	23.1	21.1	437	355	3.4	2.0	100	41
<b>Zone 3</b>	17.5	7.2	22.0	27.2	445	276	1.4	0.4	71	5
<b>Zone 4</b>	24.9	8.0	30.1	24.0	465	250	6.5	0.0	139	0
<b>Total</b>	<b>21.5</b>	<b>7.6</b>	<b>27.3</b>	<b>23.9</b>	<b>1797</b>	<b>1292</b>	<b>4.1</b>	<b>1.6</b>	<b>462</b>	<b>139</b>

The reduction of diarrhea, ARI and LRTI in different zones has shown in Table 3.7.

#### **a. Dietary intake**

##### ***Frequency of meals***

This study also revealed the frequency of feeding among children over 6 months to compare the finding of the survey carried out in September (Table 3.8).

**Table 3.8**

**Number of meals consumed by children > 6 months per day by age group**

Number of meals <sup>1</sup>	Age groups in months											
	6 - 11		12 - 23		24 - 35		≥ 36		Total		No.	
	Sep	Dec	Sep	Dec	Sep	Dec	Sep	Dec	Sep	Dec	Sep	Dec
Once	1.2	2.2	0.8	0.3	0.5	0.0	0.3	0.2	0.6	0.3	10	4
Twice	18.6	9.0	9.6	3.7	5.7	2.7	4.3	1.2	7.5	2.8	127	34
3 – 4 times	64.6	49.4	80.4	77.2	84.8	73.0	87.6	77.0	82.7	74.0	1405	913
≥ 5 times	7.5	11.2	7.1	8.8	8.7	13.0	7.8	9.8	7.8	10.5	132	130
No answer	8.1	28.1	2.1	9.9	0.3	11.2	0.0	11.9	1.4	12.4	24	153
<b>Total No.</b>	<b>161</b>	<b>89</b>	<b>480</b>	<b>294</b>	<b>389</b>	<b>330</b>	<b>668</b>	<b>521</b>	<b>1698</b>	<b>1234</b>	<b>1698</b>	<b>1234</b>
<b>%</b>	<b>9.5</b>	<b>7.2</b>	<b>28.3</b>	<b>23.8</b>	<b>22.9</b>	<b>26.7</b>	<b>39.3</b>	<b>42.2</b>	<b>100.0</b>	<b>100.0</b>	<b>1698</b>	<b>1234</b>

**Type of food**

Table 3.9 shows the food consumption of children over 6 months during the past 24 hours prior to the interview day.

**Table 3.9**

**Type of food eaten by children >6 months during last 24 hours by age groups (n=1017)**

Type of food given*	Age groups in months									
	6 - 11		12 - 23		24 - 35		≥ 36		Total	
	Sep	Dec	Sep	Dec	Sep	Dec	Sep	Dec	Sep	Dec
Family food	72.7	54.9	95.9	96.6	96.9	99.4	98.3	99.0	95.2	95.3
Milk in Bottle	39.2	34.1	30.5	22.1	12.5	7.9	5.2	2.7	17.2	11.0
Milk in cup	19.3	16.5	46.1	35.5	54.1	48.2	52.8	48.5	48.3	42.9
BP-100	2.9	3.3	0.9	1.4	1.4	0.6	1.3	1.3	1.4	1.3
UNIMIX	13.9	8.8	21.6	22.9	29.0	30.9	34.7	29.8	27.9	26.9
Plumppy nut	1.5	0.0	0.5	2.0	1.1	0.3	1.0	0.2	0.9	0.6
Thripasha	19.3	0.0	32.1	5.1	23.1	3.3	24.1	5.6	25.7	4.5
HEB	1.5	1.1	1.6	1.7	0.8	1.8	2.3	1.2	1.7	1.5
Others (biscuits etc.)	77.4	53.8	60.7	64.6	63.3	61.2	60.4	64.1	62.7	62.7

(\*Multi responses)

There is a reduction of consuming milk in bottle, milk in cup, and Thriposha consumption in this survey than the previous one.

### 3.3.2. Underlying causes

#### a. Care for children

##### **Breastfeeding**

There were 420 children under 2 years of age. Percentages of children currently breastfeeding has increased from 89.3% to 91.2% as shown in Table 3.12. This increase was noted in all zones except in Zone 1.

**Table 3.10**  
**Breast-feeding practices among children under 2 years in Zones**

Currently	Zone									
Breast feeding <sup>1</sup>	0 & 1		2		3		4		Total	
	Sep	Dec	Sep	Dec	Sep	Dec	Sep	Dec	Sep	Dec
Yes	90.5	86.5	85.4	97.1	89.0	92.9	92.1	90.2	89.3	91.2
No	9.5	13.5	14.6	2.9	11.0	7.1	7.9	9.8	10.7	8.8
Total	169	141	164	102	163	85	178	92	674	420
Reasons for stopping breastfeeding										
No milk	41.2	52.6	30.4	100.0	55.6	25.0	13.3	50.0	35.6	48.6
Mother sick	17.6	21.1	30.4	0.0	16.7	62.5	13.3	12.5	20.5	27.0
Mother not with the child	17.6	15.8	8.7	0.0	0.0	0.0	0.0	12.5	6.8	10.8
Other reasons	23.5	10.5	30.4	0.0	27.8	12.5	73.3	25.0	37.0	13.5
Total	17	19	23	2	18	8	15	8	73	37

#### b. Household food security

##### **Availability**

Majority of the households (99.5%) received dry ration compared to the results in September as shown in Table 3.11. Only 0.5% of households received cooked food currently which was 23.3% in September.

Table 3.11

## Food availability of households and the quality of food

Type of food	Zone									
	1		2		3		4		Total	
	Sep	Dec	Sep	Dec	Sep	Dec	Sep	Dec	Sep	Dec
Dry ration	93.7	99.3	7.8	99.2	98.7	100.0	99.6	100.0	75.5	99.5
Cooked food	1.6	0.7	92.2	0.8	1.3	0.0	0.4	0.0	23.3	0.5
Others	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0
Total	450	411	437	354	445	276	465	250	1797	1291
Satisfied with food										
Yes	90.4	92.2	19.7	98.6	99.8	98.6	93.3	98.4	76.3	96.5
No	9.6	7.8	80.3	1.4	0.2	1.4	6.7	1.6	23.7	3.5
Reason for dissatisfaction*										
Amount not enough	28.6	38.7	0.0	0.0	100.0	0.0	50.0	50.0	6.9	34.1
Taste not good	7.1	58.1	72.9	50.0	0.0	50.0	37.5	50.0	63.5	56.1
Bad smell	2.4	23.3	11.0	100.0	0.0	75.0	3.1	50.0	9.5	35.0
Not properly cooked	0.0	10.0	12.7	50.0	0.0	50.0	6.3	0.0	10.9	15.0
Not used to	59.5	100.0	0.9	100.0	0.0	100.0	0.0	100.0	6.6	100.0
Other	2.4	100.0	2.6	100.0	0.0	100.0	3.1	100.0	2.6	100.0

(\*multi responses)

**Accessibility of nutrition services**

Food access for many households has improved with food aid.

**Visit to health centre**

Table 3.12 shows that 99.6% of children were brought to health centres to measure weight.

Table 3.12

## Visit to health center to obtain nutrition services by zones

Visit to health center to check weight/height of the child	Zone									
	1		2		3		4		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Yes	407	99.0	355	99.7	276	100.0	249	100.0	1287	99.6
No	4	1.0	1	0.3	0	0.0	0	0.0	5	0.4
Total	411	31.8	356	27.6	276	21.4	249	19.3	1292	100.0
Frequency and interval of visiting health center among children >6months	Mean days	SD	Mean days	SD	Mean days	SD	Mean days	SD	Mean days	SD
Time elapsed from the last visit 1	45.7	41.6	71.8	65.7	94.0	76.5	88.7	74.2	71.7	66.6
Time elapsed from the last visit 2	14.0	22.6	19.9	25.2	15.3	13.7	21.0	28.1	17.2	23.1

***Food supplementation programme***

Children over 6 months with SAM were included in a therapeutic feeding programme using therapeutic food such as BP-100 and Plumpy Nut. Children who were enrolled in this programme were provided with a special card named Nutrition Rehabilitation card (NRP). Table 3.13 shows the food supplements received by the children in each category.

**Table 3.13**  
**Food supplements received from the health center by zones**

Received BP100 / Plumppy nut for SAM children	Zone									
	1		2		3		4		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Ever	0	0.0	0	0.0	0	0.0	1	16.7	1	4.8
In the last visit	0	0.0	2	33.3	2	50.0	1	16.7	5	23.8
Never	5	100.0	4	66.7	2	50.0	4	66.7	15	71.4
Total	5	23.8	6	28.6	4	19.0	6	28.6	21	100.0
Received HEB for MAM children	No.	%	No.	%	No.	%	No.	%	No.	%
Ever	2	5.7	5	11.9	1	4.2	3	9.1	11	8.2
In the last visit	16	45.7	20	47.6	6	25.0	20	60.6	62	46.3
Never	17	48.6	17	40.5	17	70.8	10	30.3	61	45.5
Total	35	26.1	42	31.3	24	17.9	33	24.6	134	100.0
Received Micro Nutrient Powder as blanket	No.	%	No.	%	No.	%	No.	%	No.	%
Ever	47	12.2	2	0.6	2	0.7	7	2.9	58	4.7
In the last visit	23	6.0	0	0.0	0	0.0	0	0.0	23	1.9
Never	314	81.8	341	99.4	266	99.3	237	97.1	1158	93.5
Total	384	31.0	343	27.7	268	21.6	244	19.7	1239	100.0
	Zone									
	1		2		3		4		Total	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
No of days from last visit	11.3	13.9	20.8	32.9	16.8	20.8	25.4	37.5	17.9	27.5

Table 3.14 shows the coverage of feeding programmes.



**Table 3.14**  
**Coverage of food supplementation programme in children over 6 months**  
**in May and September**

Type of food supplementation programme	Coverage		Mean (SD) amount of pkts. received at the last visit
	Sep	Dec	
<b>Therapeutic Feeding among severe wasted children</b>			
BP-100	11.8	4.8	4.0
Plumppy Nut	5.9	19.0	57.0
<b>Feeding among moderately wasted children</b>			
HEB	9.7	46.3	4.0
UNIMIX	1.5	-	-
<b>Blanket feeding among children &gt; 6 months</b>			
CSB / Thriposha	20.3	-	-
Micro Nutrient Powder		1.9	6.8

***c. Health services and Healthy Environment***

Ministry of Healthcare and Nutrition conducted a child health campaign in June to enhance the coverage of polio vaccine, Vitamin A megadose and deworming.

***Measles Immunisation***

As shown in Table 3.15, 90.5% of children over 9 months were given measles vaccination in December.

**Table 3.15**

**Proportion of children over 9 months given the measles or MR vaccine**

Welfare centers	Coverage of measles / MR vaccination No. (%)				
	September		December		
	During Campaign	Total	Yes	No	Not yet
<b>Zone 1</b>	94 (24.7)	312 (82.1)	307(83.4)	51(13.9)	10(2.7)
<b>Zone 2</b>	129 (34.2)	315 (83.6)	295(90.8)	21(6.5)	9(2.8)
<b>Zone 3</b>	197 (49.4)	303 (75.9)	251(95.4)	12(4.6)	0(0.0)
<b>Zone 4</b>	144 (35.5)	302 (74.4)	225(95.7)	8(3.4)	2(0.9)
<b>Total</b>	<b>564 (36.1)</b>	<b>1232 (78.9)</b>	<b>1078(90.5)</b>	<b>92(7.7)</b>	<b>21(1.8)</b>

***Vitamin A supplementation***

All children above 6 months were given a dose of Vitamin A, 100,000IU to children 6-12 months and 200,000IU to children above one year. Coverage has increased from 79.2% to 93.5% (Table 3.16)

**Table 3.16**

**Proportion of children who received the Vitamin A mega dose after being displaced**

Welfare centers	Coverage of Vitamin A megadose No. (%)				
	September		December		
	During Campaign	Total	Yes	No	Not yet
<b>Zone 1</b>	337 (83.2)	393 (97.0)	355(92.7)	20(5.2)	8(2.1)
<b>Zone 2</b>	319 (80.4)	379 (95.5)	308(90.1)	24(7.0)	10(2.9)
<b>Zone 3</b>	326 (78.6)	392 (94.5)	250(93.6)	17(6.4)	0(0.0)
<b>Zone 4</b>	318 (75.0)	370 (87.3)	227(93.0)	11(4.5)	6(2.5)
<b>Total</b>	<b>1300 (79.2)</b>	<b>1534 (93.5)</b>	<b>1140(92.2)</b>	<b>72(5.8)</b>	<b>24(1.9)</b>

***Polio vaccination***

All children under five were given a dose of polio after the displacement and currently 95.8% children had received polio after the displacement (Table 3.17).

Table 3.17

Proportion of children who received the oral polio vaccine after being displaced

Welfare centers	Coverage of polio vaccine No. (%)				
	September		December		
	During Campaign	Total coverage	Yes	No	Not yet
<b>Zone 1</b>	156 (35.6)	416 (95.0)	379(92.4)	26(6.3)	5(1.2)
<b>Zone 2</b>	170 (40.7)	401 (95.9)	342(96.1)	12(3.4)	2(0.6)
<b>Zone 3</b>	98 (22.5)	410 (94.0)	271(98.5)	4(1.5)	0(0.0)
<b>Zone 4</b>	98 (22.2)	408 (92.5)	245(98.0)	1(0.4)	4(1.6)
<b>Total</b>	<b>522 (30.1)</b>	<b>1635 (94.3)</b>	<b>1237(95.8)</b>	<b>43(3.3)</b>	<b>11(0.9)</b>

**Deworming**

The Ministry of Health has provided all children above two years with an additional dose of mebendasole 500mg for deworming after the displacement. Presently 90.6% children received deworming medication (Table 3.18).

Table 3.18

Proportion of children who received the Deworming tablets after being displaced

Welfare centers	Children above 2 year received deworming tablets			
	September		December	
	During Campaign	Total coverage	Yes	No
<b>Zone 1</b>	208 (89.7)	225 (97.0)	240(90.6)	25(9.4)
<b>Zone 2</b>	201 (81.4)	222 (89.9)	231(93.9)	15(6.1)
<b>Zone 3</b>	192 (70.8)	253 (93.4)	158(85.9)	26(14.1)
<b>Zone 4</b>	167 (64.5)	199 (76.8)	141(91.0)	14(9.0)
<b>Total</b>	<b>768 (76.1)</b>	<b>899 (89.1)</b>	<b>770(90.6)</b>	<b>80(9.4)</b>

**Availability of CHDR**

This study revealed that 97.2% of children had CHDR (Table 3.19).

**Table 3.19**  
**Proportion of children with the availability of CHDR**

Welfare centers	Availability of child's CHDR			
	September		December	
	N	%	N	%
<b>Zone 1</b>	441	98.0	402	97.8
<b>Zone 2</b>	418	95.7	343	96.3
<b>Zone 3</b>	438	98.4	270	98.2
<b>Zone 4</b>	441	94.8	240	96.4
<b>Total</b>	<b>1738</b>	<b>96.7</b>	<b>1255</b>	<b>97.2</b>

### 3.3.3. Basic causes

#### ***Number of household members***

Table 3.20 shows the similar pattern in both rounds.

**Table 3.20**  
**Number of people per household in zones**

Welfare centers	Number of people per household							
	< 5		5 – 7		≥ 8		Total	
	Sep	Dec	Sep	Dec	Sep	Dec	Sep	Dec
<b>Zone 1</b>	68.6	64.4	29.6	33.2	1.8	2.4	<b>449</b>	<b>410</b>
<b>Zone 2</b>	64.5	63.0	33.0	34.5	2.5	2.5	<b>437</b>	<b>354</b>
<b>Zone 3</b>	67.9	58.0	30.3	41.2	1.8	0.7	<b>445</b>	<b>274</b>
<b>Zone 4</b>	71.8	71.1	26.5	26.5	1.7	2.4	<b>465</b>	<b>249</b>
<b>Total</b>	<b>68.3</b>	<b>63.9</b>	<b>29.8</b>	<b>34.0</b>	<b>1.9</b>	<b>2.1</b>	<b>1796</b>	<b>1287</b>
<b>Total No.</b>	<b>1226</b>	<b>823</b>	<b>535</b>	<b>437</b>	<b>35</b>	<b>27</b>	<b>1796</b>	<b>1287</b>

#### ***Number of children under five***

Table 3.21 shows the similar pattern in both rounds.

**Table 3.21**

**Number of children under the age of five per household in zones**

Welfare centers	Number of children under five per household					
	≤ 2		3-4		Total	
	Sep	Dec	Sep	Dec	Sep	Dec
Zone 1	98.4	98.3	1.6	1.7	450	410
Zone 2	98.6	98.9	1.4	1.1	437	355
Zone 3	99.3	98.5	0.7	1.5	445	275
Zone 4	98.1	98.8	1.9	1.2	464	250
Total	98.6	98.6	1.4	1.4	1796	1290
Total No.	1771	1272	25	18	1796	1290

***Current status of parents***

Table 3.22 shows the status of parents.

**Table 3.22**

**Distribution of households studied by status of parents**

Status of the	Welfare centers									
parents	Zone 1		Zone 2		Zone 3		Zone 4		Total	
Father	Sep	Dec	Sep	Dec	Sep	Dec	Sep	Dec	Sep	Dec
Dead	7.1	10.7	6.9	8.4	5.8	7.2	7.3	9.6	6.8	9.1
Alive & together	80.2	81.5	84.4	82.0	82.0	85.5	81.9	80.4	82.1	82.3
Alive & separated	11.3	5.8	7.1	6.7	10.1	5.4	8.4	7.2	9.2	6.3
Missing / unknown	1.3	1.9	1.6	2.8	2.0	1.8	2.4	2.8	1.8	2.3
Mother**										
Dead	2.0	3.6	1.8	2.0	0.9	1.1	2.2	2.4	1.7	2.4
Alive & together	97.1	94.9	97.9	97.5	98.7	98.9	97.6	97.2	97.8	96.9
Alive & separated	0.9	1.5	0.2	0.3	0.2	0.0	0.2	0.0	0.4	0.5
Missing / unknown	0.0	0.0	0.0	0.3	0.2	0.0	0.0	0.4	0.1	0.2
Total	25.1	31.8	24.3	27.5	24.8	21.3	25.8	19.3	100.0	100.0
Total No.	450	411	437	356	445	276	464	250	1796	1293

### ***Education of the mother***

Table 3.23 shows there is a similar pattern with regards to the educational level of mothers in both surveys.

**Table 3.23**  
**Level of education of mothers in Zones**

Mother's education in years	Welfare centers									
	Zone 1		Zone 2		Zone 3		Zone 4		Total	
	Sep	Dec	Sep	Dec	Sep	Dec	Sep	Dec	Sep	Dec
No education	1.6	2.7	1.4	2.5	1.3	1.8	0.9	1.2	<b>1.3</b>	<b>2.2</b>
Primary ( 1- 5)	12.1	19.5	14.6	15.2	10.3	14.1	11.6	14.8	<b>12.2</b>	<b>16.2</b>
Secondary (6-11)	70.1	68.1	71.9	73.0	74.4	73.6	70.9	74.0	<b>71.8</b>	<b>71.8</b>
Tertiary (12-13)	14.5	8.5	11.0	8.1	12.8	10.1	14.2	8.4	<b>13.2</b>	<b>8.7</b>
Higher (Degree/Diploma /Postgraduate)	1.8	1.2	1.1	1.1	1.1	0.4	2.4	1.6	<b>1.6</b>	<b>1.1</b>

### ***Displacement***

Duration of living in the current place varied (Table 3.24).

**Table 3.24**  
**Details on displacement**

Mean number of days of displacement	Welfare center									
	Zone 1		Zone 2		Zone 3		Zone 4		Total	
	Mean (SD)		Mean (SD)		Mean (SD)		Mean (SD)		Mean (SD)	
	Sep	Dec	Sep	Dec	Sep	Dec	Sep	Dec	Sep	Dec
Living in this place	124.8 (29.9)	170.5 (85.9)	120.7 (24.1)	222.8 (26.8)	146.6 (20.7)	235.0 (32.1)	107.9 (21.1)	215.3 (30.2)	<b>124.9 (28.0)</b>	<b>207.3 (60.1)</b>

## **Conclusions and Recommendations**

- SAM has reduced below the national level.
- Wasting has also reduced but stunting has increased
- It is recommended to:
  - Continue RUTF and target to increase the coverage
  - Target the supplementary feeding for MAM to increase the coverage.
  - Continue the nutrition surveillance in resettled population to monitor stunting and wasting at least every 6 months.