

WORLD VISION MOZAMBIQUE
HEALTH AND NUTRITION PROGRAMME



SOFALA PROVÍNCIA

CAIA AND CHEMBA DISTRICT

- NUTRITION SURVEY

CHEMBA DISTRICT - CHEMBA
- MULIMA

- NUTRITION EVALUATION

CAIA DISTRICT - CAIA SEDE
- MURRAÇA
- SENA

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SUMMARY

Since September 1991, World Vision has been working in response to the emergency situation caused by war and famine which was identified among the populations living along the Zambezi river valley. Activities are concentrated in a number of strategic sites along the river bank; The villages of Caia, Murraca, Sena (Caia district) and Chemba (Chemba district) in the province of Sofala and the villages of Mutarara, Inhangor (Mutarara district) in Tete province, have benefited from air-lift distribution of food, seeds and agricultural tools. Nutritional surveys were carried out twice a year for the duration of the airlift operations in accordance with OFDA requirements.

A nutritional survey was completed at all air-lift sites in November 1993. Since that time, products to Caia and Mutarara have been transported by road instead of air, food supplies continue to be air-lifted to Chemba and a program of air-lift supply to Mulima (a Renamo controlled area in Chemba district) was begun in January 1994 where a high rate of malnutrition was identified.

The following report describes the objectives, methodology, results and recommendations of a nutritional survey carried out during July 21 - 27, 1994 in the localities of Chemba and Mulima. A brief analysis of the nutritional situation in the district of Caia based on the previous survey is also given.

1. Objectives

- i. To evaluate the impact of World Vision activity in these areas:- Food distribution, distribution of seeds and tools and nutritional rehabilitation therapy.
- ii. To evaluate the need to continue activities in these areas.
- iii. To comply with OFDA requirements.

2. Methodology

Methodology using thirty agglomerations in two stages (as defined by the Ministry of health/Nutritional section "Nutritional survey") was used.

To analyse the nutritional data, EPI INFO 5.0 and EPINUT 2.1 programs were used. The results were expressed in Z score (WHO) and in percentile (MOH).

3. Results

The following tables give a summary of the results:-

Table 1. Prevalence of Global Acute Malnutrition (MOH Mozambique criteria)

VILLAGE	No. of children surveyed	Gender Ratio M:F	Global Acute Malnutrition MOH = <3%il +/-or Edema
CHEMBA	366	0,84	4,4% ± 2,7%
MULIMA	446	1,10	9,9% ± 4,0%

Table 2. Prevalence of Global Acute and Severe Acute Malnutrition (Criteria of WHO) and edema.

VILLAGE	No of children surveyed	Acute Global Maln. <-2SD +/-or edema	Acute Severe Malnutrition <-3SD +/-or edema
CHEMBA	446	3.6% ± 2,5%	0.8% ± 1,2%
MULIMA	366	7.8% ± 3,5%	1.8% ± 1,8%

INTRODUCTION/CONTEXT

A brief description of the history of each village; its context and other information collected by the survey team in co-ordination with the district administrators, is given below. Data gathered from the MSF CIS monthly "Food Habit" questionnaires and the results of past surveys are also referred to.

A. DISTRICT OF CHEMBA

1. CHEMBA

The capital of the district of Chemba is located on the edge of the Zambezi river with Sena (Caia district) to the East, Chiramba to the West and Mulima (district of Chemba) to the South. The population rose from 4,000 to 9,355 in November 1993 due mainly to the refugees returning from Malawi and Sofala. Data from UNHCR shows that around 1,713 people returned to the district during the months of April to June and 1012 for the month of July alone. According to a survey made by MSF-F in Malawi, 688 families (2752 people) are expected to return soon from the rural area of NSANJE district.

Answers given by 30 women interviewed at the end of June indicate that the nutritional situation is still unstable and needs to be monitored. None of those interviewed had food reserves. 13.3% were living on food from their farms and 86.7% relied on donated food products.

At present, returning refugees, demobilized soldiers and vulnerable individuals benefit from food distribution.

Eleven children were admitted to the World Vision nutritional rehabilitation center in June. The majority originated from Renamo areas and from the opposite bank of the Zambezi river (Mutarara district) which have not benefitted from food distribution.

Water supply to Chemba is a problem. The only available source of water is a plastic tank mounted by MSF-F, to which water is pumped and chlorinated daily. The Rural Water service began to open a bore-hole, but the process has been delayed.

2. MULIMA

This is an area situated 40 km to the south of Chemba town with a population of 22,971 inhabitants, divided into five "regulos" (XAVIER, NHARUGUE, LUIS, MUSSOSSOTO and GOE) in a radius of 15km from the

regulo of Mulima. A few returnees from the district of Nsanje (Malawi) are expected to arrive (21 families source MSF-F Malawi).

An informal nutritional survey was carried out in this area in November of 1993 using a sample of 80 children of 6 - 59 months. The results demonstrated a prevalence of 5,1% Acute Global Malnutrition and 1,3% Acute Severe Malnutrition (WHO).

Following this survey, World Vision commenced airlift distribution of seeds and agricultural tools in December 1993, and food distribution began at the end of January 1994.

Rains during the months of February and April were poor and inconsistent resulting in unsatisfactory harvest of maize, millet and guinea corn.

In January, 1994, World Vision initiated a program of assistance to the health post. A World Vision technician of Curative Medicine was placed there to work alongside the Renamo trained nurses and essential medicines were provided by World Vision.

A total of 3,036 patients were examined at the health post from January to June 1994. All the malnourished children identified were transferred to the nutritional center in Chemba.

AISPO an Italian NGO involved with health programs at district level, is responsible for vaccination coverage in the area in co-ordination with the District Department of Health. During the month of March 1994, a small epidemic of measles occurred, 25 cases were reported from FUMO BAIRA near to the Regulo of NHARUGU out of which two died (it is likely that there were other cases which were not reported) A campaign to immunize children in neighbouring zones was immediately implemented but because of poor mobilization of the population few children were vaccinated and the impact was weak.

B. DISTRICT OF CAIA

CAIA, MURRACA AND SENA

The district of Caia is situated in the North of the Province of Sofala, reaching to the river Zambezi on the Northeast side sharing a border with the district of Mopeia, to the West the district of Cheringoma, to the south the districts of Maringue and Chemba.

During the war, the three main villages were occupied and controlled by the Frelimo and Renamo successively. As a consequence of the instability caused, most of the people fled and went to Malawi and other zones in the country. After the signing of the peace accord in October 1992, the refugees began to return and were integrated into the food assistance program. Since the beginning of the year 1994, numbers of returning refugees have gradually increased and the majority of returnees are expected to return from Malawi during August.

1912 families (7648 people) to Caia town, 616 families (2464 people) to Murraca and 1940 families (7766 people) to Sena are expected to return, (UNHCR information).

In November 1993, the total population of these villages was 53,200 habitants but with the influx of refugees in recent months, the population had risen to 97,511 people by the end of June 1994 (information from local administrator).

Food security has continued to improve during the last three months partly due to the continued regular distribution by World Vision of food, seeds and tools and availability of nutritional rehabilitation at the feeding centers. During the last agricultural campaign, the rains were good which encouraged people to work in their farms. The harvests were excellent in comparison to the previous year.

However, the data revealed by MSF-F CIS monthly "Food Habits" questionnaires in which 90 people were interviewed in June 1994, demonstrated a low reserve of food. 53 of the interviewees, (59%) did not have any reserve of food, 30 (33%) had reserves for 1 - 2 months and the rest (8%) had a reserve for three months or more.

At district level, AICF (Accao Internacional Contra Fome) is working in the administrative posts of Murrac and Sena, RRR is involved with the program of re-habilitation of the health net and aid assistance, AISPO now work in the health post of Caia, in the place of MSF-F.

METHODOLOGY

Survey Methodology and sample size

A methodology of 30 agglomerations was used in this survey. The agglomerations were chosen according to the size of population in each traditional division.

The sample size was calculated using the following formula:-

$$N = \frac{Z^2 (p \cdot q)}{d^2}$$

N = Sample size Z = risk of error of 5% = 1,96

p = estimated prevalence of malnutrition

d = desired precision = 4%

The prevalence of malnutrition was estimated according to the results of the nutritional survey of November 1993.

In Chemba the percentage of the total sample population which were children was greater than 10%. A corrective calculation was made:

$$n = \frac{N}{1+N} \quad \text{/Total population of children}$$

Population in the villages and the bairros was determined using the data given by the local administrative structures. For Mulima, the data was based on a recent population census made by the World Vision

department of Agriculture.

The following table shows the data estimated before the survey and the actual number of children examined

ALDEIA	POPULATION	NO. CHILDREN	PREVALENC MALNUT.	DESIRED PRECISION	SAMPLE SIZE (N)	SAMPLE SIZE (n)	SAMPLE SIZE	
CHEMBA	9355	1871	10%	04%	432	350	350	366
MULIMA	22971	4594	10%	04%	432		432	446

Variables:-

Children between the ages of six to 59 months were included in the survey. They were checked for age, weight, height and the presence of edema.

The height of the children was approximated to within 0,5cm. Those with heights of between 55cm and 90cm were measured lying down and those of more than 90cm were measured standing.

The children were weighed on a spring scales approximated to within 1kg.

To verify the presence of Edema, the two feet were firmly pressed with the thumb for three seconds, observing the depression caused.

In the case of children not possessing a health card, age was calculated using a calendar of annual and monthly occurrences (such as the sowing time, harvest time, important local events) to help the parents estimate the age of their children. The ages were registered in months.

Training:

Before the survey was realized, a day of training was held for the team leaders, all had already had experience in this work. The topics included methodology, choosing the sample size, analysis, work routine, completing forms. The necessity for strict supervision of weighing and measuring activities was emphasised.

RESULTS

EPINUT AND EPI-INFO Programs were used to analyse the data following NHCS standards. The confidence interval was calculated manually using the formula:-

$$d = Z * \text{square root of } [2(p*q)/N]$$

Analysis were as follows: (1) distribution of sample by age and gender; (2) distribution in Z score by age; (3) distribution in percentile by age.

The results of the nutritional survey in the villages of the district of Caia (Caia, Sena and Murraca) are from November 1993 with the same distribution as indicated above.

A. CHEMBA (District of Chemba, Province of Sofala)

BREAKDOWN OF THE RESULTS BY AGE AND GENDER

AGE GROUP (in months)	BOYS		GIRLS		TOTAL		RATIO OF GENDER
	No.	%	No.	%	No.	%	
06 - 17	57	48,7%	60	51,3%	117	32,0%	0,95
18 - 29	39	38,2%	63	61,8%	102	27,9%	0,62
30 - 41	40	47,1%	45	52,9%	85	23,2%	0,89
42 - 53	31	50,0%	31	50,0%	62	16,9%	1,00
TOTAL	167	45,6%	199	54,4%	366	100,0%	0.84

WEIGHT/HEIGHT: BREAKDOWN BY AGE IN Z-SCORE

AGE MONTHS	N	<-3 Z		>-3&<-2ZS		≥-2ZS		EDEMA	
		no.	%	no.	%	no.	%	no.	%
06-17	117	3	2,6%	3	2,6%	111	94,9%	0	0,0%
18-29	102	0	0,0%	6	5,9%	96	94,1%	0	0,0%
30-41	85	0	0,0%	1	1,2%	84	98,8%	0	0,0%
42-53	62	0	0,0%	0	0,0%	62	100,0%	0	0,0%
TOTAL	366	3	0,8%	10	2,7%	353	96,4%	0	0,0%

EDEMA	WEIGHT/HEIGHT > -2Z MARAS./KWASH.		INDICATOR VS.OR EDEMA ≥-2Z KWASHIORKOR	
	YES	NO	YES	NO
YES	0	0,0%	0	0,0%
NO	13	3,6%	353	96,4%

WEIGHT/HEIGHT: BREAKDOWN BY AGE IN PERCENTILE

AGE MONTHS	N	≤3o P		>3o P		EDEMA	
		no.	%	no.	%	no.	%
06-17	117	6	5,1%	111	94,9%	0	0,0%
18-29	102	9	8,8%	93	91,2%	0	0,0%
30-41	85	1	1,2%	84	98,8%	0	0,0%
42-53	62	0	0,0%	62	100,0%	0	0,0%
TOTAL	366	16	4,4%	350	95,6%	0	0,0%

	WEIGHT/HEIGHT INDICATOR VS. EDEMA			
	<=3o P		≥3o P	
	MARASM/KWASH		KWASHIORKOR	
YES	0	0,0%	0	0,0%

EDEMA	MARASMO		NORMAL	
NO	16	4,4%	350	95,6%

B. MULIMA (Chemba district, Sofala Province)

BREAKDOWN BY AGE AND GENDER

AGE MONTHS	BOYS		GIRLS		TOTAL		RATIO OF GENDER
	no.	%	no.	%	no.	%	
06-17	77	54,6%	64	45,4%	141	31,6%	1,20
18-29	61	45,5%	73	54,5%	134	30,0%	0,84
30-41	43	48,9%	45	51,1%	88	19,7%	0,96
42-53	52	63,4%	30	36,6%	82	18,4%	1,73
54-59	01	100,0%	0	0,0%	1	0,2%	0
TOTAL	234	52,5%	212	47,5%	466	100,0%	1,10

WEIGHT/HEIGHT: BREAKDOWN BY AGE IN Z-SCORE

AGE IN MONTHS	N	<-3 ZS		≥-3&<-2ZS		≥-2 ZS		EDEMA	
		no.	%	no.	%	no.	%	no.	%
06-17	141	4	2,8%	13	9,2%	124	87,9%	0	0,0%
18-29	134	3	2,2%	10	7,5%	121	90,3%	0	0,0%
30-41	88	1	1,1%	3	3,4%	84	95,5%	0	0,0%
42-53	82	0	0,0%	1	1,2%	81	98,8%	0	0,0%
54-59	1	0	0,0%	0	0,0%	1	100,0%	0	0,0%
TOTAL	466	8	1,8%	27	6,1%	411	92,2%	0	0,0%

	WEIGHT/HEIGHT INDICATOR VS.EDEMA			
	<-2ZS		≥-2ZS	
	MARAS/KWASH		KWASHIORKOR	
YES EDEMA	0	0,0%	0	0,0%
NO	35	7,8%	411	92,2%

WEIGHT/HEIGHT: BREAKDOWN BY AGE IN PERCENTILE

AGE MONTH	N	< =3o		P > 3o P		EDEMA	
		no.	%	no.	%	no.	%
06-17	141	21	14,9%	120	85,1%	0	0,0%
18-29	134	16	11,9%	118	88,1%	0	0,0%
30-41	88	5	5,7%	83	94,3%	0	0,0%
42-53	82	2	2,4%	80	97,6%	0	0,0%
54-59	1	0	0,0%	1	100,0%	0	0,0%
TOTAL	446	44	9,9%	402	90,1%	0	0,0%

	WEIGHT/HEIGHT INDICATOR VS. EDEMA			
	< =3o P		≥3o P	
	MARAS/KWASH.		KWASHIORKOR	
YES EDEMA	0	0,0%	0	0,0%
NO	44	9,9%	402	90,1%
	MARASMUS		NORMAL	

DEBATE

A. DISTRICT OF CHEMBA

The results of this survey demonstrate a similar nutritional situation to that found in November 1993 in the locality of Chemba. The rate of acute, global malnutrition, increased marginally, rising from 2,2% ± 1,5% to 3,6% ± 2,5%. The rate of acute severe malnutrition remained at 0,8%. There were no cases of Kwashiorkor (results in Z-score). The increase is not significant as the maximum limit of confidence interval in November coincides with the minimum interval limit in July.

A more rigorous methodology was used in Mulima. The results showed a deteriorating state of nutrition. The rate of acute, global malnutrition rose from 5,1% to 7,8% ± 3,5% and the rate of acute severe malnutrition went from 1,3% to 1,8%, no cases of Kwashiorkor were registered (results in Z-Score). The nutritional situation in Mulima is concerning and will continue to require close monitoring.

In both villages, the age group most affected is from 6 - 29 months;- 12 out of 13 examined in Chemba (92.3%) and 30 out of 35 in Mulima (85,7%).

The small increase in malnutrition could be due to a number of factors:

- 1) Since April 1994, the influx of returning refugees mainly from Malawi and also from the rest of the

province has intensified. These people arrive in varied nutritional states.

2) A plague of rats destroyed many of the crops in the farms. This, combined with the late and insufficient rains, severely reduced the expected harvest.

3) Social problems such as abandoned children, orphans, separation from parents, poor family planning, poor weaning practices, chronic illnesses such as pulmonary Tuberculosis. These have higher impact on malnutrition in the 6 - 29 month age group when the children are in a particularly vulnerable stage of transition from dependence on their mothers milk to independent feeding.

4) From May 1994, the food distribution program benefitted only the returning refugees, demobilized soldiers and vulnerable groups.

The existence of the World Vision nutritional rehabilitation center in Chemba helped to prevent a rise in severe malnutrition.

B. DISTRICT OF CAIA (Caia, Murraça and Sena towns)

The following data is taken from the nutritional survey carried out in November 1993 when the air-lift stopped.

<u>ACUTE GLOBAL MALNUTRITION</u>	<u>ACUTE SEVERE MALNUTRITION</u>
<u>VILLAGE (OMS < -2SD +/- or edema)</u>	<u>(OMS < -3SD +/- or edema)</u>
Caia 1,1% ± 1,1%	0,2% ± 0,5%
Murraça 2,5% ± 1,7%	0,7% ± 0,9%
Sena 1,5% ± 1,1%	0,8% ± 0,8%

These results show a clear improvement in levels of malnutrition. They indicate a normal level of nutrition in all three villages in terms of national standards of rates of malnutrition.

WV Nutritional rehabilitation activities initiated in November 1992 continue although numbers of admissions have reduced. From January to June 1994 inclusive, a total of 437 admissions were registered in the three centers, four times less than the number registered during the same period of last year (1.752 entrants).

Number of cases of kwashiorkor diminished from 547 cases in the first six months of 1993 to 108 during the first six months in 1994. Most admissions are in the age group of 0 - 4 years, There was a considerable reduction of malnutrition in the age group from 5 - 14 years and among adults.

Currently, the majority of the admissions come from Malawi and the zones most distant from the villages such as CHIMUARA, NTOPA, PHAZA, MAGAGADA, CHINDIO, zones controlled by Renamo which have no had access to food aid.

An estimated total of 10,307 returning refugees were registered in these towns over the last seven months. This should not affect the actual nutritional situation given the sufficient and regular food distribution supply to this vulnerable group.

RECOMMENDATIONS

Based on the results of this survey, recommendations are as follows:-

1. To continue with distribution of seeds and tools for the year 1995 particularly for returning refugees, while at the same time providing technical assistance and training to farmers.
2. Given the plague of rats, and the drought which partially affected the district of CHEMBA, Food distribution for vulnerable groups among resident populations in addition to returning refugees and the demobilized soldiers, should be considered.
3. To continue supply of products to the returning refugees and demobilized soldiers in the CAIA District until the next harvest.
4. The functioning of the nutritional centers in the two districts should be continued until the end of the year 1994 when a global evaluation of the situation should be carried out.

Glossary:-

Regulo Small administrative division of a locality.
Bairro Village