seed madagascar
sustainable environment, education & development

A Report for

EMERGENCY FOOD DISTRIBUTION

Round I Assessment

September 2021

Background

Food Insecurity in Southern Madagascar

There are over 1.14 million people are suffering from high acute food insecurity in Madagascar, of whom 14,000 are in Catastrophe (IPC Phase 5).[1] An additional 2.3 million Malagasy people are at risk of poverty, potentially reversing progress achieved against extreme poverty over the past decade.[2] Southern Madagascar is experiencing extreme food shortages and rising prices caused by the economic impact of COVID-19 and its worst drought since 1981 drought.[3] Over 1.5 million people in the region, approximately half of the population, cannot find enough food to eat.[4] Exacerbated by high poverty levels in the region, women and children face heightened vulnerability to hunger, contributing to life-threatening surges in the incidence of malnutrition.

Emergency Food Distribution, Round I

In collaboration with local community health centres, the medicine inspector, the Operational Coordination Centre against Famine, SEED Madagascar (SEED) is responding to this crisis through the implementation of an Emergency Food Distribution Project, which commenced in February 2021. SEED's Emergency Food Distribution Project has targeted children aged six-month to five years suffering from Moderate Acute Malnutrition (MAM) and Severe Acute Malnutrition (SAM) and their families.

In June 2021, SEED completed the first 60-day round of food distribution in seven rural health centres (Centres de Santé de Base, CSBs) in southern Madagascar, spanning across a total of 41 villages and supporting 653 malnourished children and their families. The project distributed 47,942 sachets of ready-to-use therapeutic food (RUTF) to 515 children with MAM. A total of 36,006 kilograms of rice, 24,301 cups of beans, and 3,588 litres of fortified oil were distributed to all families of malnourished children, with a total of 4,119 family members receiving unprepared food. Alongside food distribution, SEED-trained community health agents delivered 3,366 targeted nutrition sessions to families to promote long-term nutritional support.

Treatment Procedure

SEED provided children suffering from MAM with either one or two daily doses of RUTF, given in 15-day increments.[1] Children with SAM were given two daily doses of RUTF, provided weekly through a government funded programme in local CSBs. Due to the heightened risk of COVID-19, children diagnosed with SAM and other complications, such as respiratory infection, oedema, or dehydration, received treatment at their local CSB instead of the hospital in Fort Dauphin. The three children diagnosed with SAM with complications were closely monitored by local healthcare workers, who visited their homes every three days. Initially, each household was to receive 30 kilograms of rice, 20 cups of beans, and three litres of oil every 30 days while their child underwent treatment. However, due to a rise in malnutrition cases and the associated accelerated budget spend, the difficult decision was made to reduce the ration portions by half (16 kilograms of rice, 10 cups of beans, and 1.75 litres of oil) midway through the project. Targeted nutrition education sessions were provided to the primary caregivers of children with MAM or SAM during RUTF and unprepared food distributions.

[1] SEED distributed two types of RUTF to children with moderate acute malnutrition. Plumpy'Sup has a dose of one sachet per day, and PECMAM has a dose of two sachets per day. The type of RUTF was procured based on availability from the production factory in the capital, Antananarivo.

Methods

Data Collection Tools

Data collection included two Open Data Kit (ODK) surveys: the Distribution Survey and Nutrition Survey. The Distribution Survey was designed to ascertain the quantities of RUTF and unprepared food distributed to families of SAM and MAM children across the seven sites. The Nutrition Survey was formulated to track beneficiaries' recovery over the course of their 60-day treatment cycle, assessing each child's Mid-Upper Arm Circumference (MUAC), weight, and height measured at baseline and endline[2]. The Nutrition Survey also covered demographic details and parents' behaviours regarding health and nutrition. Data collection tools were developed in English and translated into Malagasy.

Study Setting and Population

All primary caregivers of children with SAM and MAM who attended the distributions were surveyed with additional inputs including the MUAC, weight, and height measurements recorded by CSB staff that were manually entered into the survey by SEED staff. In total, 138 caregivers of SAM children and 515 caregivers of MAM children from five communes in the Anosy region were surveyed. Surveys were completed at seven CSBs (target sites), located in the five communes, with catchment areas spanning across 41 villages.

Data Analysis

Survey data was uploaded to the ODK Aggregate server from the ODK Collect Application. The Monitoring, Evaluation, and Learning (MEL) Specialist downloaded and extracted the various datasheets from the two surveys using ODK Briefcase. Data was imported to R, a statistical software programme, wherein data cleaning was undertaken. Microsoft Excel was used as the primary analysis tool.

Ethical Considerations

Prior to data collection, SEED staff members conducted an informed consent process with all participating parents. All parents verbally consented after the aims and research process were explained in Malagasy. The consent process was ongoing, meaning that parents could withdraw or decline to answer any questions at any time throughout data collection. Data was transferred and stored securely using a password protected ODK server and cloud storage to ensure confidentiality of the beneficiaries' health data and prevent potential data loss.

[2] Endline data was collected on the last day of distribution (day 45) due to logistical reasons.

Results

Distribution Survey Results

Demographics

RUTF and unprepared food were distributed across seven CSBs in five communes in the southeast Anosy region(Table 1). The communes of Mahatalaky and Soanierana had the highest numbers of SAM and MAM cases, respectively. Over half (50.6%) of all children treated in Round I were from the commune of Soanierana. Mandromondromotra and Ampasy had the lowest number of SAM and MAM cases, respectively.

Table 1: Malnutrition by commune

Question	SAM	MAM	Percent Malnourished
Commune			**N=653**
Mandromondromotra	1	56	8.7%
Soanierana	24	306	50.6%
Manambaro	36	35	10.9%
Ampasy	5	29	5.2%
Mahatalaky	72	89	24.7%
Total	138	515	100.0%

Female children proved to be disproportionately affected by malnutrition, with 57.5% and 52.9% suffering from MAM and SAM, respectively (Table 2). The average household size was 6.3, with a range of 2 to 15. 40.9% of households lived more than a one hour walk away from the nearest CSB, with only 21.5% living 30 minutes away or less (Table 2). 50.8% of malnourished children came from female-headed single-parent homes. The average maternal age was 30, with 75.0% of mothers having never received formal education. The average paternal age was 38, with the youngest being 18 and the oldest at 58 (Table 2).

Table 2: Demographic information of beneficiaries

Variable	n	%
Sex of child		
Moderate Acute Malnutrition	**n=515**	
Male	219	42.5%
Female	296	57.5%
Severe Acute Malnutrition	**n=138**	
Male	65	47.1%
Female	73	52.9%
Father's Age (years)	**n=321**	
Mean	38.0	
Range	18,58	
Mother's Age (years)	**n=651**	
Mean	29.8	
Range	15,58	
Mother's level of education	**n=653**	
Pre-primary school	71	10.9%
Primary school	90	13.8%
Secondary school	2	0.3%
University	0	0.0%
No formal Education	490	75.0%

Average Household Size	**n=347***	
Mandromondromotra	5.76	
Soanierana	7.37	
Manambaro	6.3	
Ampasy	5.16	
Mahatalaky	7.95	
Total Average	6.3	
Distance to the nearest medical centre	**n=638**	
Less than 30 minutes	137	21.5%
More than 30 minutes	117	18.3%
More than 1 hour	261	40.9%
More than 2 hours	91	14.3%
More than 3 hours	0	0.0%
Don't know	32	5.0%

**Sample size restricted by lack of responses/changes to survey*

At baseline and endline, 100.0% of families surveyed responded that in the 30 days prior to the survey, there was a time when they were worried about not having enough food to eat. 2.9% of beneficiaries at baseline and 0.0% at endline said that they had experienced food scarcity caused by the Covid-19 pandemic more than 10 times in the last 30 days (*Table 3*). Apart from breastmilk, mothers responded that they generally fed their children cassava, sweet potatoes, or rice, when it was affordable.

Table 3: Food Insecurity Experience

Question	Baseline n (%)	Endline n (%)
During the last 30 days, was there a time when you were worried about not having enough food to eat?		
Yes	653 (100.0%)	653 (100.0%)
No	0 (0.0%)	0 (0.0%)
Was it due to the Covid-19 pandemic?		
Rarely (1-2 times)	527 (80.7%)	404 (61.9%)
Sometimes (3-10 times)	107 (16.4%)	199 (30.5%)
Often (> 10 times)	19 (2.9%)	0 (0.0%)
Don't know	0 (0.0%)	50 (7.7%)

Food Distributed

A total of 47,942 sachets of RUTF, either Plumpy'Sup (one dose per day) or PECMAM (two doses per day), were distributed to 515 children with MAM (*Table 4*). Each child received four 15-day increments of RUTF over the 60-day treatment cycle. Although dosage differed, children received the same nutritional intake from Plumpy'Sup or PECMAM. Families of children with SAM or MAM received two parcels of unprepared food while their child underwent treatment. A total of 36,006 kgs of rice, 3,588 litres of fortified oil and 24,301 cups of beans were distributed during Round I of the Emergency Food Distribution Project.

Table 4: Food Quantities Distributed

Food	Quantities
Ready-to-use Therapeutic Food (RUTF)	47,942 sachets
Unprepared Food	
Rice	36,006 kilograms
Oil	3,588 litres
Beans	24,301 cups

Nutrition Survey Results

The assessment of recovery from malnourishment involves measuring the MUAC of children. For children under five years old, SAM diagnosis includes children with MUAC < 115mms and the MAM diagnosis includes children with MUAC < 125mms. Changes in height and weight are also taken into consideration. Overall, 99.3% of children treated for SAM and 97.9% of children treated for MAM recovered over the course of the first round of distributions, with an overall malnutrition recovery rate of 98.2%.

Table 5: Number of children who recovered from Malnutrition (Round I)

Malnutrition status	Treated	Recovered	Recovery Rate (%)
SAM	138	137[1]	99.3%
MAM	515	504	97.9%
Overall	**653**	**641**	**98.2%**

[1] *10 children that recovered from SAM need continued treatment as MAM cases in Round II of the project, with 115mm<MUAC <125mm at endline.*

All children diagnosed with SAM at baseline recovered, except for one child from Ampasy, who will receive continued treatment for SAM. Out of 138 SAM cases, 128 had MUAC measurements of >125mms at endline, meaning that 92.7% of the children treated for SAM had also recovered from MAM. A total of 10 children diagnosed with SAM at baseline will need continued treatment as MAM cases. Despite Mahatalaky and Soanierana having the highest numbers of SAM and MAM cases respectively, both communes showed a 100.0% recovery rate within the first round of SEED's Emergency Food Distribution Project (*Table 6,7*).

Table 6: SAM recovery rate

Question	SAM (Baseline)	SAM (Endline)	Recovery Rate
Commune			
Mandromondromotra	1	0	100.0%
Soanierana	24	0	100.0%
Manambaro	36	0	100.0%
Ampasy	5	1	80.0%
Mahatalaky	12	0	100.0%
Sainte Luce	19	0	100.0%
Tsagnoriha	41	0	100.0%
Total	**138**	**1**	**99.3%**

Across all seven CSBs, only 11 children had MUAC measurements <125mm at endline and required continued treatment for MAM (*Table 7*). The commune of Ampasy, which had the lowest number of MAM cases (29), also had the lowest recovery rate of 82.7% at endline.

Table 7: MAM recovery rate

Question	MAM (Baseline)	MAM (Endline)	Recovery Rate
Commune			
Mandromondromotra	56	4	92.9%
Soanierana	306	0	100.0%
Manambaro	35	0	100.0%
Ampasy	29	5	82.8%
Mahatalaky	50	1	98.0%
Sainte Luce	23	1	95.7%
Tsagnoriha	16	0	100.0%
Total	**515**	**11**	**97.9%**

On average, children with SAM saw a 5.8 percentage point higher increase in MUAC from baseline to endline, compared to children with MAM. The average increase in MUAC from baseline to endline among SAM and MAM cases was 14.20mm and 8.13mm, respectively. On average, children with SAM had a 12.6% increase in MUAC, whilst children with MAM had a 6.8% increase (*Table 8*).

Table 8: Nutrition Status Measurements

Nutrition Status	Baseline	Endline	Change (n)	Change (%)
SAM	**n=138**	**n=138**		
Average MUAC	112.68 mm	126.88 mm	14.20mm	12.6%
Average Weight	6.76 kg	8.89 kg	2.13 kg	31.5%
Average Height	66.87 cm	86.92 cm	20.05 cm	30.0%
MAM	**n=515**	**n=515**		
Average MUAC	119.60 mm	127.73 mm	8.13mm	6.8%
Average Weight	7.69 kg	9.78 kg	2.09 kg	27.2%
Average Height	72.68 cm	85.10 cm	12.42 cm	17.1%

Discussion

Round I of SEED's Food Distribution Project was crucial in protecting the lives of 653 malnourished children and their families through the distribution of RUTF and unprepared food parcels, complimented by targeted nutritional education sessions. Overall, 99.3% of children treated for SAM and 97.9% of children treated for MAM recovered during the first round of distributions, with an overall malnutrition recovery rate of 98.2%.

More than half of the children treated during Round I were from single-parent households headed by mothers, a globally recognised risk factor for malnutrition in children.[5] In response, future interventions should prioritise treating children in single-parent households to address this heightened vulnerability. Data collection also revealed that female children were more affected by SAM (52.8% of children) and MAM (57.5% of children) than male children. Project staff do not attribute this disparity to gender discrimination within households, however the lack of access to population and sex ratio data in the five communes makes this claim difficult to substantiate.

Children from the commune of Ampasy had noticeably lower recovery rates for SAM and MAM than the other four communes. It is possible that the lower recovery rates could be attributed to Ampasy's proximity to regional capital of Fort Dauphin, with some parents and caregivers travel to Fort Dauphin for work, inhibiting them from providing consistent treatment to their malnourished children.

On average, children with SAM saw a 5.8 percentage point increase in MUAC from baseline to endline, compared to children with MAM. This could be because children with SAM were immediately treated with Plumpy'Nut (paste form of RUTF), whist children with MAM were treated with a mix of PECMAM (cereal form of RUTF) and Plumpy'Sup. Qualitative data collected during distributions revealed that PECMAM needs to be boiled before consumption, resulting the treatment being shared amongst additional family members, reducing the dosage received by the malnourished child. Families were less inclined to share Plumpy'Sup and Plumpy'Nut, and as such, malnourished children were more likely to receive the full dose of RUTF. In response, only Plumpy'Sup will be distributed to children with MAM in Round II of the project.

Round I of the project was based on international best practice to respond to the rising rates of malnutrition and effectively treat malnourished children. The project strategy of providing RUTF, in combination with unprepared food, complemented by the delivery of nutritional education sessions, proved to be a highly successful approach. The monitoring and evaluation surveys that were carried out by SEED, with the support of community health workers and CSB personnel, ensured a highly rigorous methodology to assess the nutritional status of all the children receiving treatment. The resulting 98.2% recovery rate average of SAM and MAM cases is testimony to the effectiveness of this food distribution project strategy.

Due to SEED's rigorous monitoring and learning throughout the project, findings from Round I have provided further insights into strengths and barriers to food distribution and nutrition. Lessons learned from the first round have informed the planning and project development for Round II. With the rates of food insecurity escalating in southern Madagascar at an alarming rate, Round II aims to: alleviate immediate nutritional and medical needs of children with acute malnutrition; increase capacity of healthcare providers to diagnose, treat, and support children with acute malnutrition and their families; and deliver education sessions to increase the capacity of families to promote the nutrition of their children. Unprepared food and RUTF is scheduled to be distributed across the same seven community health centres that were targeted in Round I of the project, with expansion to one additional health centres and surrounding villages, if funding allows.

References

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