2013 NUTRITION SURVEY REPORT TO CCSDPT* HEALTH AGENCIES

The Border Consortium
American Refugee Committee, International
Malteser International
International Rescue Committee
Première Urgence – Aide Médicale Internationale

*The Committee for Coordination of Services to Displaced Persons in Thailand (CCSDPT) is the coordinating committee for 20 NGOs working in nine refugee camps along the Thailand / Myanmar border.

Prepared by:

The Border Consortium (TBC)
12/5 Convent Road, Silom, Bangrak
Bangkok 10500, Thailand
Website: www.tKŜō2ЫŘŜЫŎ2yã2ЫúΰdzY↑2ЫΞ

"Working with the displaced people from Burma"

NUTRITION SURVEY REPORT TO CCSDPT HEALTH AGENCIES

This report contains the following information:

ACRONYMS

AS	Angular Stomatitis
BCC	Behavior Change Communication
BDY	Ban Don Yang
CCSDPT	Committee for Coordination of Services to Displaced Persons in Thailand
CDC	Centers for Disease Control and Prevention
CI	Confidence Interval
GAM	Global Acute Malnutrition
HHS	Household Hunger Scale
IYCF	Infant and Young Child Feeding
MGRS	Multicentre Growth Reference Study
MLA	Mae La
MLO	Mae La Oon
MRML	Mae Ra Ma Luang
NCHS	National Center for Health Statistics
NP	Nu Po
TBC	The Border Consortium
SFP	Supplementary Feeding Program
TFP	Therapeutic Feeding Program
TH	Tham Hin
TPD	Total Population Database
UMP	Umpiem Mai
UNHCR	United Nations High Commissioner on Refugees
WFP	World Food Programme
WHO	World Health Organization

DEFINITIONS AND BENCHMARKS

Malnutrition

TERM	MEASURE	CUTOFF (WHO)
Acute Malnutrition - Wasting		
global acute **(GAM)**	weight for height	<-2 z scores
moderate acute		<-2 to ≥-3 z scores
severe acute	w/h or edema	<-3 z scores
Chronic Malnutrition - Stunting		
global chronic **(GCM)**	height for age	<-2 z scores
moderate chronic		<-2 to ≥-3 z scores
severe chronic		<-3 z scores

WHO Classification: Global Acute Malnutrition

severity	prevalence in <5 population
acceptable	<5%
poor	5-9%
serious	10-14%
critical	>15%

'emergency' refers to acute malnutrition rates >20%

WHO Classification: Global Chronic Malnutrition

severity	prevalence in <5 population
Low	<20%
Medium	20-29.9%
High	30-39.9%
Very high	> 40%

Micronutrient Malnutrition

Angular stomatitis = presence of bilateral fissures on corners of mouth (fresh wounds or scars) as symptom of ariboflavinosis (vitamin B_2 deficiency)

Edema = pitting, bi-lateral on top of foot

Selective Feeding Programs

Selective feeding program coverage = no. children <-2 z-scores WH / no. children <-2 z-scores WH enrolled in selective feeding program during time of survey.
Selective feeding program coverage should be >90% in camp setting (Sphere, 2011)

Vitamin A

Vitamin A coverage = no. children with record of receiving vit. A dose within past 6 months / no. children screened.
Vitamin A coverage should be ≥95% in children <5 receive 6 monthly preventive dose (Burma Border Protocol, Sphere 2011)

EXECUTIVE SUMMARY

TBC and CCSDPT Health Agencies conducted collaborative nutrition surveys of children 6-59 months of age in all camps in 2013. Additionally, the Household Hunger Scale, a simple indicator to measure household hunger in the refugee camps, was added to the Nutrition Survey. The Household Hunger Scale will be used to inform TBC and its partners about the impact of the 2013 ration changes.

Survey Methods

Random sampling was used to select households with children 6-59 months of age in all camps using TBC's Total Population Database. TBC trained health agency staff to implement surveys in all camps, and supervised all surveys to completion. Data were analyzed using SPSS software (version 19). WHO growth standards were used to report principal anthropometry results.

Results

A total number of 4,782 children were surveyed in all camps.

Malnutrition Rates

An average of 2.1% of children surveyed were found with global acute (wasting) malnutrition. Average **acute (wasting) malnutrition rates for children under 5 are "acceptable"** according to WHO benchmarks for all camps and border-wide. Acute (wasting) malnutrition rates in camps remain significantly lower than in Thailand or Myanmar. Graph 1.7 highlights the wasting prevalence in previous nutrition surveys conducted – the rate has been "acceptable" border-wide for every survey.

An average of 40.8% (range 24.8-49.7% border-wide) of children surveyed were found with global chronic (stunting) malnutrition. Average **chronic (stunting) malnutrition rates range between "medium" and "very high"** according to WHO benchmarks, and the average rate border-wide is classified as "very high." Chronic (stunting) malnutrition rates in the camps are significantly higher than Thailand and comparable to Myanmar. Graph 1.8 highlights the stunting prevalence in previous nutrition surveys conducted – the rate has ranged from "high to very high" border-wide for every survey.

By age group, the highest rates of wasting malnutrition were found in children 6-24 months of age in all camps. The effect is cumulative – by the age of 5 years, nearly half of all children were found to be stunted.

Micronutrient Deficiencies

Of children surveyed, **3.8% were diagnosed with angular stomatitis** (AS), a symptom of ariboflavinosis (vitamin B_2 deficiency). Additionally, the rate increases linearly with each increase in age group (i.e., 0.08% in 6-11 month olds up to 7.3% in 48-59 month olds). While there is no Sphere 2011 cutoff to indicate a problem of public health significance, the **rate has steadily increased since 2006** (Graph 2.5).

Supplementary/Therapeutic Feeding Program (SFP/TFP) Coverage

Feeding program **coverage for moderate and severely wasted children was poor in most camps (23.0% and 16.7%**, respectively), indicating that malnourished children are not being identified and treated effectively. Since 2006, program coverage has ranged from 15.4%- 42.4%.

Vitamin A/Anti-helminthes

Vitamin A supplementation coverage was below the Sphere standard (>95% of children <5 years of age receive 6 monthly preventive dose), but has

steadily improved since 2007 (37.2%, Graph 2.6) with an average of **69.6% of children surveyed receiving Vitamin A supplements within the last 6 months**.

De-worming coverage is relatively good in some camps, but is either not conducted or poorly reported in others, averaging **74.7% of children receiving anti-helminthes within the past 6 months**. Compared to the 2011 Nutrition Survey for this indicator (31.9%), the coverage rate has more than doubled.

Feeding Practices

A new section was added to the 2013 Nutrition Survey called Feeding Practices. These questions were added to further understanding of potential contributors to the very high rate of stunting.

Border-wide **19% of mothers with children 6-24 months of age were not currently breastfeeding**, even though breastfeeding is recommended to 24 months of age. Those camps with higher rates of mothers who are currently breastfeeding were in some of the more isolated camps (MRML, BDY and MLO).

The first meal is not recommended until 6 months of age, with exclusive breastfeeding until 6 months of age; however, **33.4% of mothers indicated they had given their child's first meal before 6 months of age**. In particular, the rates were strikingly higher in Sites 1 and 2, at 71.3% and 62.5%, respectively (Graph 2.2).

All children ≤18 years of age receive Asia ReMix as part of the general monthly ration. Although ≥90% of households in the survey reported they had received Asia ReMix during the most recent ration distribution, **only 29% stated their child had consumed Asia ReMix during the past week**. Further **only 15.7% were consuming Asia ReMix on a daily basis** as recommended, with the most frequent reason being that they **ran out of Asia ReMix**.

Nursery School Enrolment

Enrolment in Nursery Schools was 73.4%, border-wide, which means most children are ensured at least one nutritious lunch on weekdays. This is slightly lower than the previous 2011 reported rate of 78.9%. While there was not an additional question on the Nutrition Survey to systematically determine the reasons why over 25% of children were not attending Nursery School, some of the reasons mentioned to surveyors were: MLO - schools are too far from home and difficult to get to, especially in rainy season; MLA and UMP - some families stated they had many children to care for and the mother was too busy caring for younger children in the home, thus not available to bring the older child to school; and in TH - some parents stated that they had to pay for their child to attend Nursery School and they could not afford it.

Household Hunger Scale (HHS)

The Household Hunger Scale (HHS) was computed as a baseline indicator to monitor the prevalence of hunger in the camps, particularly in view of the ration changes implemented in late 2013, whereby rations are distributed depending on a pre-determined self-reliance scale. Therefore, not all refugees receive the same amount of the rice ration. For all 9 camps at a household level, **82.3% reported little to no hunger; 15.1% reported moderate hunger; and 2.6% reported severe hunger**.

RECOMMENDATIONS

Prevent chronic (stunting) malnutrition

1. Continue implementation of community-based Infant and Young Child Feeding (IYCF) Campaign with Behavior Change Communication (BCC), and Growth Monitoring and Promotion programming in all camps, targeting families with children 6-24 months of age; promote healthy maternal status as part of IYCF Campaign.
2. Include length/height measurement for children 6-24 months of age in Growth Monitoring and Promotion.
3. Focus on camps with higher rates of not currently breastfeeding (i.e., more open camps) for exclusive breastfeeding education and BCC. Provide additional support to Sites 1 and 2 to address appropriate timing of complementary foods.
4. Intensify Asia ReMix promotion activities to improve knowledge of benefits by households with children 6-59 months, focusing on importance of providing the Asia ReMix to the children in the household.

Treat moderate acute (wasting) malnutrition & SFP Program Coverage

1. Continue training of health and other community workers to effectively: identify and enroll moderately malnourished children into SFP; and provide nutrition counseling to care-givers during Growth Monitoring and Promotion.
2. Ensure children discharged from SFP receive regular follow-up in the household by health workers.
3. Further develop program monitoring and basic standardized nutrition curriculum.

Prevent micronutrient malnutrition

1. Emphasize nutrition education and promotion activities, particularly regarding AsiaREMix benefits for children, to ensure adequate consumption of micronutrients to prevent deficiencies.
2. Follow TBC Supplementary Feeding and Medical Facility Food Provision Guidelines, 2012, for vitamin A protocol for children, and pregnant and lactating women. Provide anti-helminthes 6-monthly for all children 1-12 years.
3. Document ALL vitamin A supplementation and de-worming in standard document - yellow card (children) or in lemma (lactating women).

Nursery School Enrolment

1. Promote Nursery School enrolment and attendance in camps where enrolment is low (MLA, BDY, MLO and UMP all reported <70% coverage).
2. Continue to provide support to Nursery Schools and advocate for nutrition-related support (e.g., hand washing soap, kitchen gardens, etc.)
3. Revise Nutrition Survey for 2015 to include a follow-up question to capture reasons why children are not attending Nursery School to better understand and address the current rate of >25% of children not attending Nursery School.

Household Hunger Scale (HHS)

Conduct HHS follow-up to baseline survey as part of 2015 Nutrition Survey to identify trends and develop recommendations as appropriate.

BACKGROUND

Prevalence of Wasting and Stunting Malnutrition

TBC and CCSDPT Health Agencies conducted collaborative nutrition surveys of children 6 to 59 months of age in all camps in 2013. These **surveys are conducted biennially to estimate the prevalence and examine trends in acute (wasting) and chronic (stunting) malnutrition**, micronutrient deficiencies, and SFP and Vitamin A supplementation coverage in the refugee population residing in 9 camps.

Child Growth and Nutrition Indicators

This report presents the prevalence of two key indicators for malnutrition as recommended by the World Health Organization (WHO), UNHCR, and the World Food Programme (WFP: **weight-for-height or wasting** and **height-for-age or stunting**.

Wasting is generally indicative of recent and severe weight loss, often associated with acute starvation and/or recent disease. Wasting is considered the best indicator of acute malnutrition and a strong predictor of mortality among children under five years of age.

Stunting is generally indicative of a more chronic process that results from suboptimal nutrition and/ or health conditions. Stunting may have long-term effects, negatively impacting cognitive development, school performance and maternal reproductive outcomes. Ultimately, stunting may impact the economic growth potential of a country.

This report provides camp-by-camp and border-wide prevalence of wasting and stunting in children <5. Surveys were completed in the second half of 2013 in all camps.

WHO Growth Standards

Previous Nutrition Surveys used the Centers for Disease Control and Prevention (CDC) National Center for Health Statistics (NCHS) growth curves, published in 1977. These growth curves were generated from data on the growth of multi-ethnic children from the United States, all of whom were bottle-fed. The CDC growth curves were previously used to compare the nutritional status of populations and to assess the growth of individual children throughout the world.

In 2006, the WHO published the results of the "Multicentre Growth Reference Study (MGRS), which generated new growth curves for assessing the growth and development of infants and young children around the world. These growth curves are based on growth data and related information from approximately 8,500 children from very different ethnic backgrounds and cultural settings (Brazil, Ghana, India, Norway, Oman and the USA.) Of note, the children included in the WHO study were all breast-fed, which affects the rate of growth in infants.

The WHO growth curves provide a single international standard that represents the best description of physiological growth for all children from birth to five years of age and establishes the breastfed infants as the normative model for growth and development. The WHO growth curves reflect the evidence that until approximately five years of age, children who receive good nutrition and care practices, regardless of ethnicity, should grow at the same rate. After five years, ethnic differences may become evident.

For wasting (low weight for length/height), the main difference between the WHO and CDC references is during infancy, when acute malnutrition- wasting rates will be substantially higher using the WHO reference. However, nutrition surveys do not normally include infants under 6 months of age, so wasting in this population is not reported. For stunting, rates will be substantially higher.

METHODOLOGY

SAMPLING

Sampling

Sample Size Calculation:

$$n = \frac{k \times t^2 \times (1-p) \times p}{\gamma^2}$$

n= sample size
k= design effect- for simple random sample, use 1
t= confidence interval (1.96 for 95% confidence interval)
p= estimated prevalence of malnutrition
γ= precision

Sample Size from Above Formula (using 95% CI and a design effect of 1). The minimum sample size of children for each camp was calculated using estimated prevalence and desired precision, with an added 10% added for non-respondents. The higher sample size of 506 children was used.

Estimated Prevalence of Malnutrition	Precision	Minimum Sample Size	Minimum Sample +10%
50% chronic	5%	426	469
5% acute	**2%**	**456**	**506**

SAMPLING PROCESS

TBC used the TBC Total Population Database (TPD) for selecting households and children for the Nutrition Surveys in the nine TBC camps in 2013.

Outline of steps in the method for random selection of households with children, and individual children:

1. The most recent TPD population dataset of all individuals in each camp (monthly camp dataset, usually for two months prior to field work) was used as the basis to develop each Sample Frame for each camp.
2. Required variables for sampling were selected from the TPD dataset, and cleaned and recoded in MS Excel format. This includes coding all individual children within the required age range of 6-59 months, based on their age in days from their birth date.
3. A list of all household heads with children 6-59 months was generated as the Sample Frame for random selection of households in each camp.
4. Random selection of households, from among all household heads with children 6-59 months, was completed using an MS Excel Addin "Random Sorter for Excel software".
5. The required minimum sample for each camp was 506 children, but random sample selection was by household, so 506 households with children were selected. Children were therefore over-sampled, to allow for potential data errors or absences of some children. Since BDY and Site 2 camps had less than a total of 506 households with children 6-59 months of age in each camp, a census listing of these households and their children were used for the Nutrition Survey in both camps.

6. The above process produced the final list of random sample household heads and their children for use in the nutrition survey.

7. Nutrition field staff contacted the randomly selected households (only) to bring children for interview and measurement at the central interview stations.

Definitions and inclusion criteria

Children 6-59 months of age were included in the survey. Children whose age was unknown were not included. >85 cm was used as the cut-off to measure children standing up (this will be revised to reflect WHO cut-off of >87 cm during upcoming surveys).

Definitions for global, moderate and severe wasting and stunting were based on current WHO cut-offs. Global acute and chronic malnutrition are defined as <-2 z scores weight-for-height and/or oedema, severe acute malnutrition is defined as <-3 z score weight-for-height and/or oedema.

WHO growth standards were used to report principal anthropometry results.

Angular stomatitis (riboflavin deficiency) was identified by a trained medic. Last date for vitamin A supplementation and de-worming were determined using the child's health card or health "lemma."

Supplementary and Therapeutic Feeding (SFP/TFP) Program coverage was obtained by first identifying moderate and severely malnourished children by height and weight measurements taken as part of the survey, and then asking the caregiver accompanying the child during the survey if the child was currently enrolled in either SFP or TFP. Nursery School Program Feeding Program coverage was determined by asking the caregiver accompanying the child during the survey if the child was currently enrolled in the Nursery School.

Questionnaire, Training and Supervision

Questionnaire

Questionnaires were translated and back-translated into Burmese and Karen, pre-tested, and interviews were conducted in the household's primary language. Key topics of the questionnaire included Household Information; Household Hunger Scale (HHS); Feeding Practices, and Child Health Card data. Additionally, a Clinical Exam was conducted by a medic, and Weight and Height were taken. See Appendix 2 for the 2013 Nutrition Survey Questionnaire.

Survey Training and Supervision

Survey teams for each camp were composed of TBC Nutrition Field Officers, and Health Agency staff (medics, nurses, and community health workers).

Teams were trained by the TBC Nutrition Manager and Nutrition Field Officers for 2 days prior to the survey, and training included a trial run of the survey process. The survey teams were supervised during the surveys by the TBC Nutrition Manager and/or Nutrition Field Officers, and by senior camp-based health agency staff. The training outline is presented in Appendix 3.

Survey Procedure

All households were called according to a schedule developed by the survey staff. All households selected were surveyed (which included the HHS survey questions), even if the target number of children had already been reached.

Households were requested to bring the child's health card, ration book and Outpatient Patient lemma to the survey.

Every child between 6-59 months in the selected household was surveyed. If a child was found not to be between 6-59 months of age, they were not surveyed.

If a household failed to come to the survey, runners followed up 3 times. If after 3 visits the household was not available, they were no longer included in the survey and were not replaced.

Data Analysis

Data sheets were coded and entered into an Excel database. The database was then imported into SPSS version 19. Data entry and analyses were conducted by the Institute of Nutrition, Mahidol University.

Quality control included random checks of data, preliminary analysis to identify flags and mistakes, and review of all data sheets with data entered. Plausibility checks were run on all data, and indicated that error in data collection and entry were minimal, and that measurements were not skewed.

Exclusions included: age out of range or unknown; and anthropometric outliers [z-scores from zero (reference mean) WHO flags: WHZ -5 to 5; HAZ -6 to 6].

RESULTS

AGE AND SEX DISTRIBUTION OF SAMPLE

A total number of 4,782 children were surveyed in all camps (Table 1.1).

Table 1.1 Distribution of age and sex of sample

	Boys		Girls		Total		Ratio
AGE (mo)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy : girl**
6-11	257	49.6	261	50.4	518	10.8	1.0
12-23	548	49.0	571	51.0	1119	23.4	1.0
24-35	540	51.4	510	48.6	1050	22.0	1.1
36-47	568	52.3	519	47.7	1087	22.7	1.1
48-59	493	48.9	515	51.2	1008	21.1	1.0
Total	**2406**	**50.3**	**2376**	**49.7**	**4782**	**100.0**	**1.0**

MALNUTRITION RATES

ACUTE (WASTING) MALNUTRITION

An average of 2.1% of children border-wide were found with global acute (wasting) malnutrition (Table 1.2)

- 12 children (0.3%) were severely wasted (z score<-3).
- More boys (2.2%) than girls (1.9%) were malnourished.

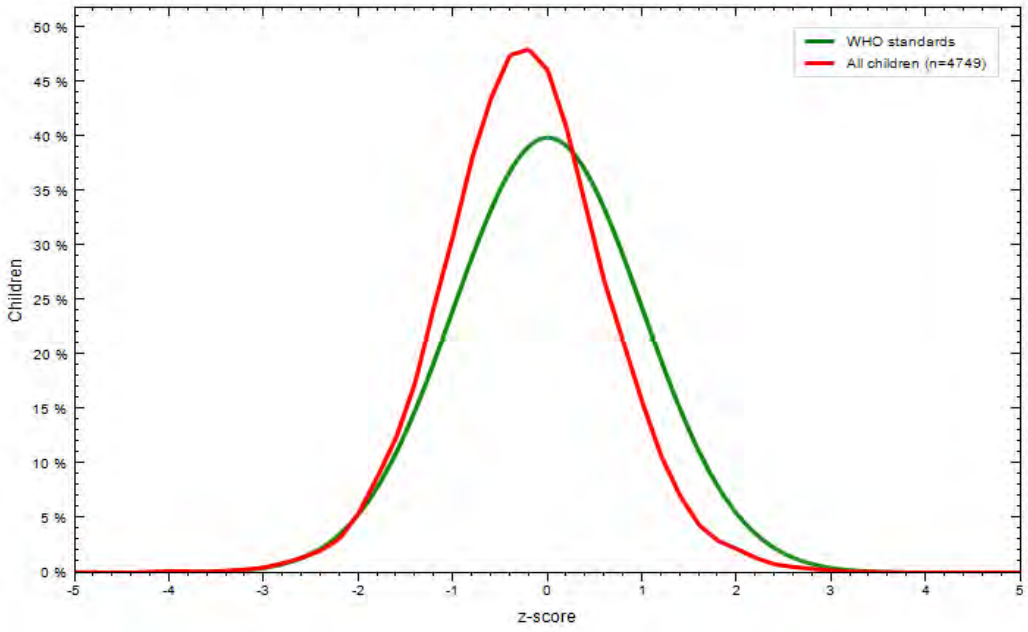
Table 1.2: Prevalence of acute malnutrition based on weight-for-height z-scores by sex

ACUTE – WASTING - MALNUTRITION	All n = 4749	Boys n = 2390	Girls n = 2359
Prevalence of global malnutrition (<-2 z-score)	**2.1 %** (99) (1.7 – 2.5 95% C.I.)	**2.2 %** (53) (1.7 – 2.9 95% C.I.)	**1.9 %** (46) (1.5 – 2.6 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score)	1.8 % (87) (1.5- 2.3 95% C.I.)	2.0 % (47) (1.5- 2.6 95% C.I.)	1.7 % (40) (1.3 - 2.3 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score)	0.3 % (12) (0.1 - 0.4 95% C.I.)	0.3 % (6) (0.1 – 0.6 95% C.I.)	0.3 % (6) (0.1 - 0.6 95% C.I.)

Mean z-score for weight for height

The mean z-score for weight for height was only slightly shifted to the left (mean z-score = -0.25±0.87) as compared to WHO standard normal distribution, indicating population within normal limits for wasting malnutrition (Graph 1.1)

Graph 1.1: Weight-for-Height z-scores

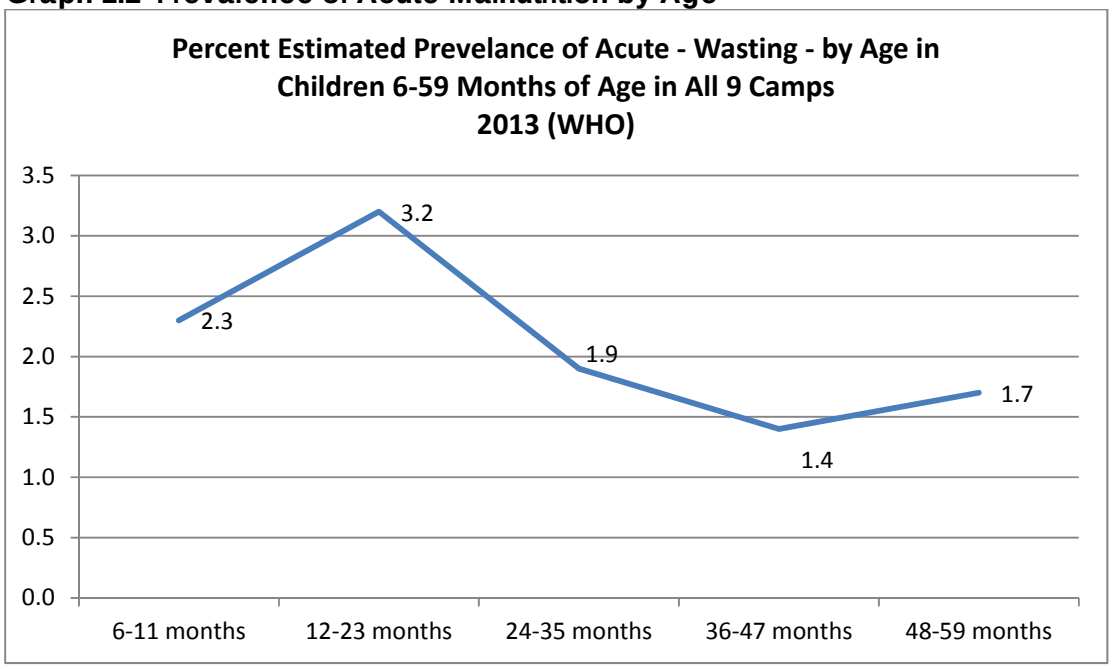


The prevalence of Global Acute Malnutrition (GAM) was highest among children between 12-23 months of age. Most of the children who had GAM were moderately wasted (Table 1.3, Graph 1.2).

Table 1.3: Prevalence of acute malnutrition by age, based on weight-for-height z-scores

		Global wasting <-2 z score)		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
Age (mo)	**Total no.**	**No**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-11	517	12	2.3	**2**	**0.4**	10	1.9	505	97.7
12-23	**1107**	**35**	**3.2**	3	0.3	**32**	**2.9**	**1072**	**96.8**
24-35	1041	20	1.9	3	0.3	17	1.6	1021	98.1
36-47	1081	15	1.4	1	0.1	14	1.3	1066	98.6
48-59	1003	17	1.7	3	0.3	14	1.4	986	98.3
Total	4749	99	2.1	12	0.3	87	1.8	4650	97.9

Graph 1.2 Prevalence of Acute Malnutrition by Age



The average prevalence of acute (wasting) malnturition rates by camp are presented in Appendix 1, Table 2, and ranged from 1.0%-4.3%, considered at an accpetable level according to WHO benchmarks (See Definitions and Benchmarks).

CHRONIC (STUNTING) MALNUTRITION

An average of 40.8% of children border-wide were found with global chronic (stunting) malnutrition (Table 1.4)

- More boys (42.6%) than girls (39.0%) were stunted (p=0.01).
- 480 children (10.1%) were severely stunted (z score<-3), with significantly more boys (11.7%) than girls (8.5%) severely stunted (p = 0.00).

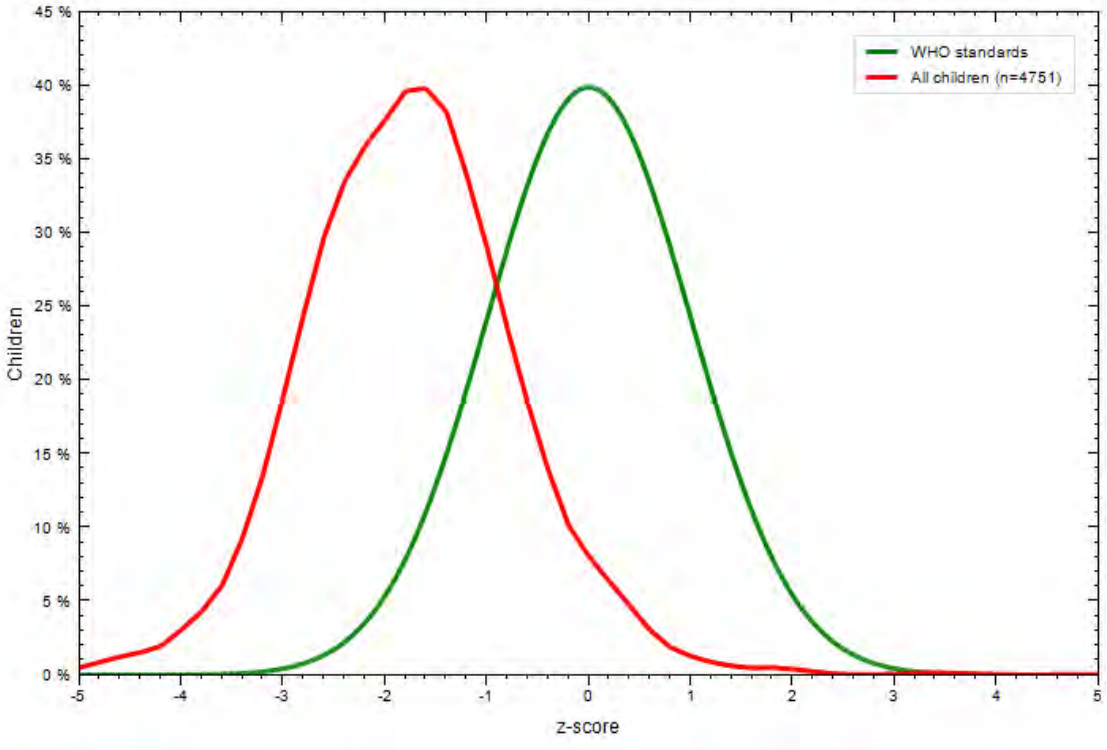
Table 1.4: Prevalence of stunting malnutrition based on height-for-age z-scores and by sex

CHRONIC – STUNTING - MALNUTRITION	All n = 4751	Boys n = 2393	Girls n = 2358
Prevalence of stunting (<-2 z-score)	40.8 % (1939) (39.4-42.2 95% C.I.)	42.6 % (1019) (40.6-44.6 95% C.I.)	39.0 % (920) (37.1-41.0 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	30.7 % (1459) (29.4-32.0 95% C.I.)	30.9 % (740) (29.1-32.8 95% C.I.)	30.5 % (719) (28.7-32.4 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	10.1 % (480) (9.3-11.0 95% C.I.)	11.7 % (279) (10.4-13.0 95% C.I.)	8.5 % (201) (7.5-9.7 95% C.I.)

Mean z-score for height for age

The mean z-score for height for age was significantly shifted to the left (mean z-score = -1.75±1.06) as compared to WHO standard normal distribution, indicating a significantly stunted population (Graph 1.3)

Graph 1.3: Height-for-Age z-scores

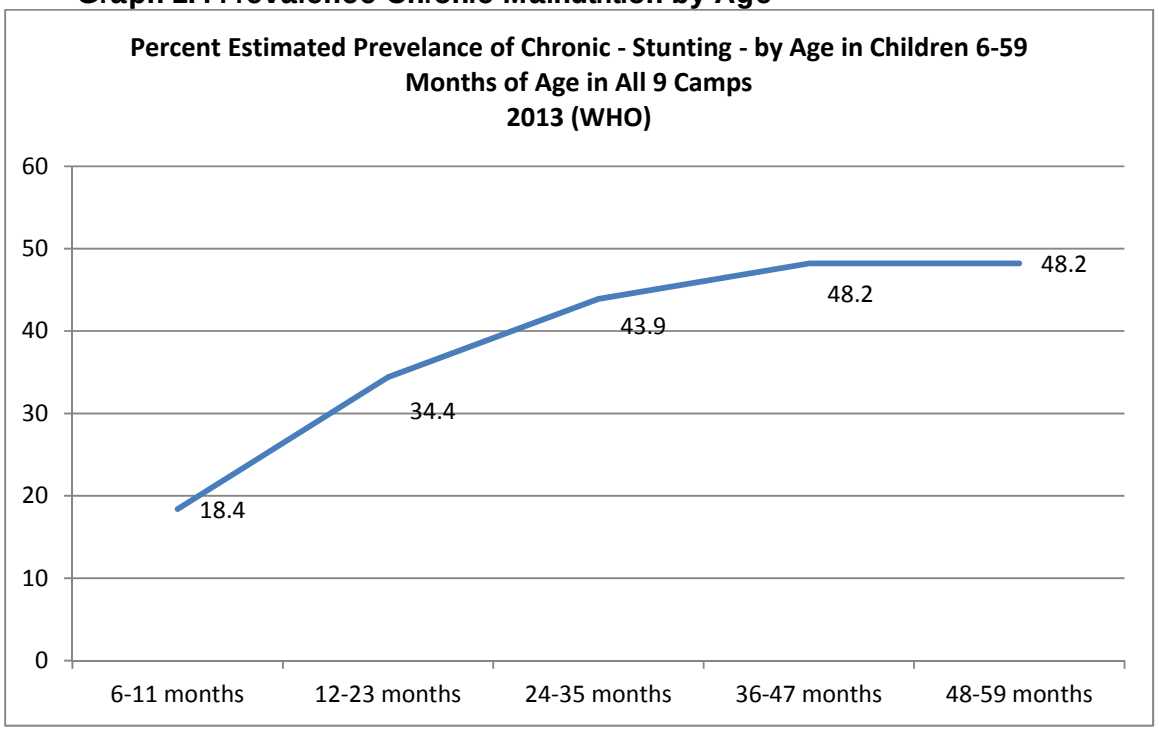


The prevalence of Global Chronic Malnutrition (moderate and severe stunting) increased with age and was highest in children 24 months and older (Table 1.5, Graph 1.4)

Table 1.5: Prevalence of stunting by age based on height-for-age z-scores

		Global stunting <-2 z score)		Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-11	516	95	18.4	26	5.0	69	13.4	421	81.6
12-23	1107	381	34.4	94	8.5	287	25.9	726	65.6
24-35	1043	458	43.9	95	9.1	363	34.8	585	56.1
36-47	1081	521	**48.2**	142	13.1	379	35.1	560	51.8
48-59	1004	484	**48.2**	123	12.3	361	36.0	520	51.8
Total	**4751**	**1939**	**40.8**	**480**	**10.1**	**1459**	**30.7**	**2812**	**59.2**

Graph 1.4 Prevalence Chronic Malnutrition by Age



The average prevalence of chronic (stunting) malnturition rates by camp (Table 1.6 below and Appendix 1, Table 3) ranged from 24.8%-49.7%, considered medium to very high rates according to WHO benchmarks (See Definitions and Benchmarks). From the last Nutrition Survey (2011), the prevalence in MLA, UM and TH increased; MS, MLO and NP decreased; and Site 1, MRML and BDYremained the same.

The highest rates of stunting were found in the most remote camps (MLO, MRML and BDY), which also have very limited space for activities such as gardening and animal husbandry. Those camps which allow more opportunites for refugees to access outside employment (TH and UM) had the next highest stunting rates, which is likely due to more unaccompanied children (Table 1.6).

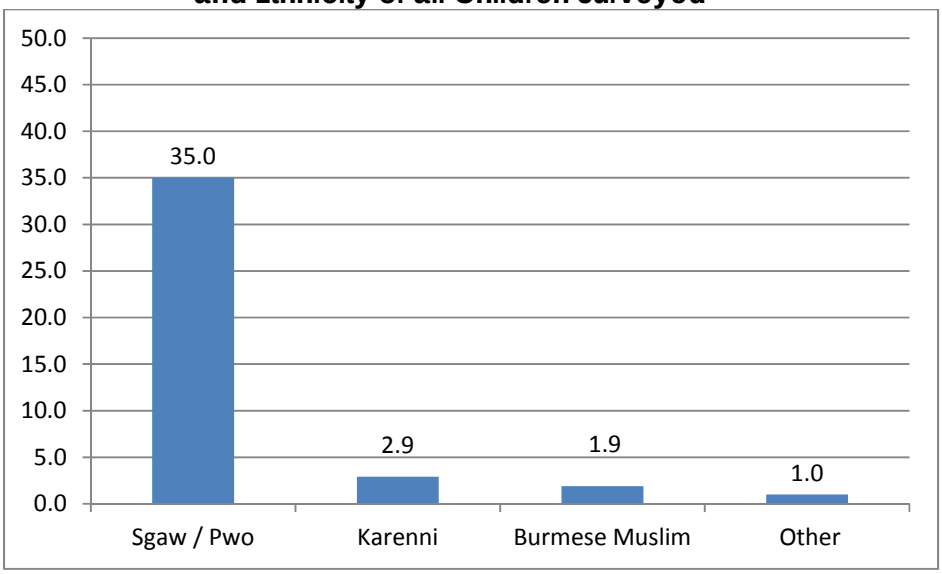
Table 1.6 Global Chronic (Stunting) Malnutrition Prevelance by Camp

	2011	2013
	%	%
Site 1	25.8	24.8
Site 2	48.8	35.6
MLO	53.6	49.7
MRML	48.8	49.2
MLA	32.8	37.8
UMP	35.7	42.6
NP	43.2	37.6
TH	40.1	42.6
BDY	44.3	44.6
All Camps	**41.5**	**40.8**

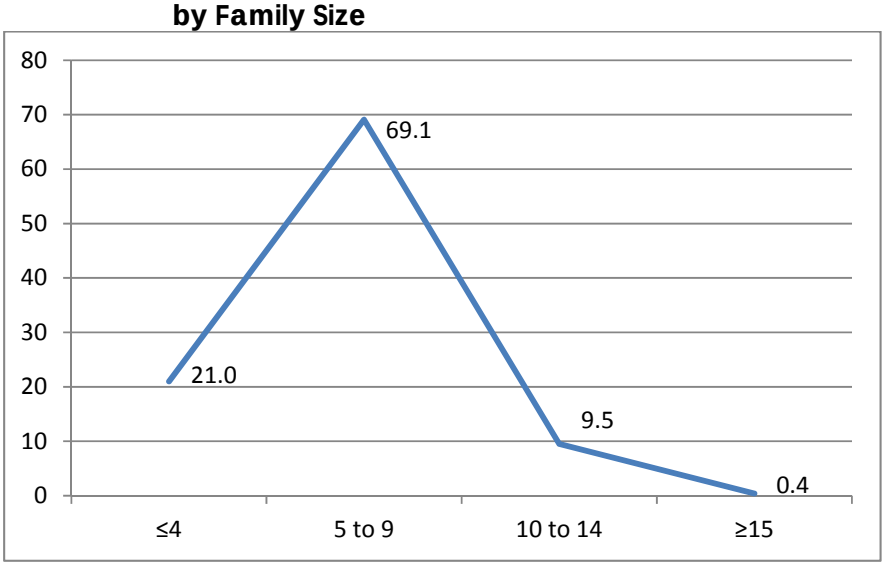
As stunting prevalence continues to be very high, further analysis were undertaken to determine other possible contributing factors. Additional findings included:

- Ethnicity that the family most closely identified with was significantly related to the child's stunting status ($p<.0.001$; Graph 1.5). Of all children surveyed, 35% were stunted (global chronic malnutrition) AND their family most closely identified themselves as Sgaw or Pwo Karen. This may be a reflection of the overall representation of ethnic distribution of the survey sample population (79.5% Sgaw/Pwo; 12.2% Karenni; 5% Burmese Muslim; and Other 3.4%).
- Households that were part of the nutrition survey with 5-9 family members had the highest rate of stunting compared to other household sizes ($p<0.001$; Graph 1.6).
- The length of time the child lived in the camp was found to be significantly related to the child's stunting status ($p<0.001$); however, this may also just be a reflection of the cumulative effects of stunting on age as well as less nutritious diets after breastfeeding is reduced or stopped.
- Whether the child was considered unaccompanied (parents were not available during the survey); the relationship of the caregiver or person interviewed to the child; and HHS category (little to no hunger in HH; moderate hunger in HH; or severe hunger in the HH) were all considered for this analysis. None of these variables were significantly related to the child's stunting status ($p>0.05$).

Graph 1.5 Prevalence of Stunting (Global Chronic Malnutrition) and Ethnicity of all Children Surveyed



Graph 1.6 Prevalence of Stunting (Global Chronic Malnutrition) by Family Size



Of the total population surveyed, weight, height, and/or age were unavailable to calculate z-scores for 33 children (weight-for-height) and 31 children (height-for-age) (Table 1.7)

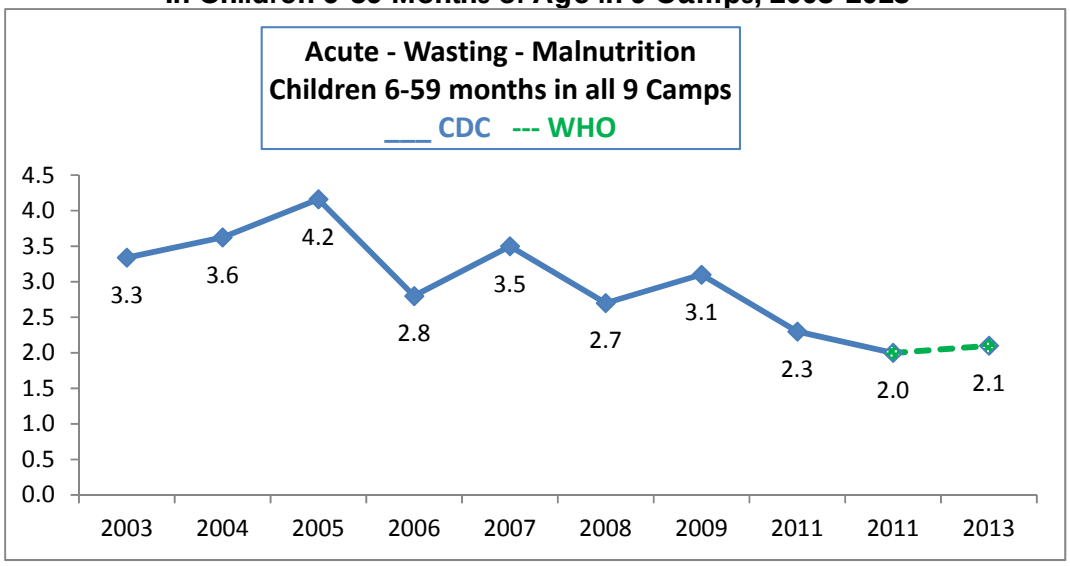
Table 1.7: Mean z-scores and excluded subjects

Indicator	n	Mean z-scores ± SD	z-scores not available	z-scores out of range
Weight-for-Height	4749	-0.25±0.87	33	0
Height-for-Age	4751	-1.75±1.06	31	0

Trends in Rates of Acute and Chronic Malnutrition

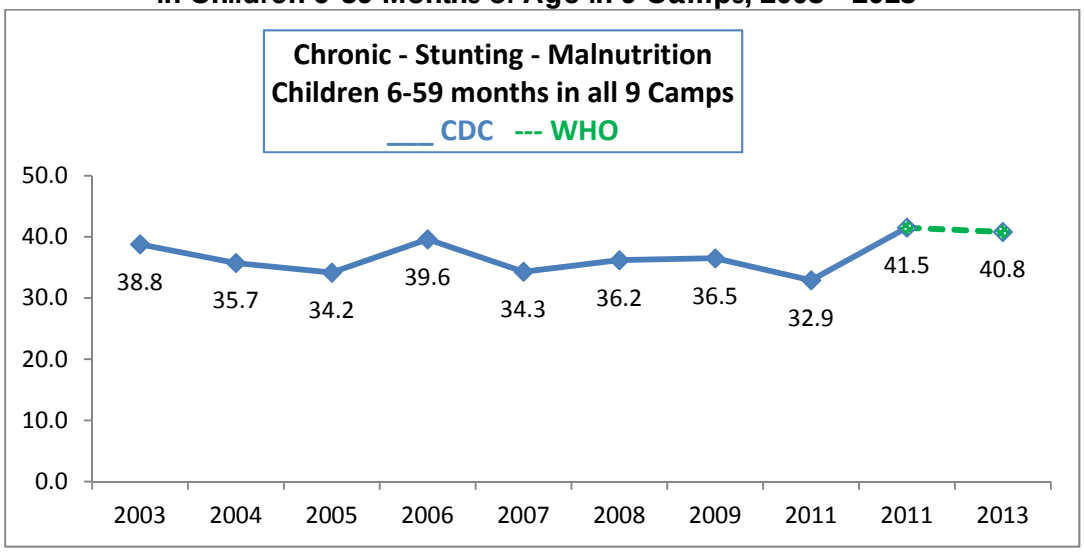
The border-wide rate of acute malnutrition has decreased since 2009 (Graph 1.7), and remains at acceptable rate per WHO guidelines of less than 5%.

Graph 1.7 Estimated Percent Prevalence of Acute – WASTING – Malnutrition In Children 6-59 Months of Age in 9 Camps, 2003-2013



Chronic malnutrition rates have remained consistently high since 2003 (Graph 1.8), and currently are considered at a very high level per WHO guidelines of greater than 40%.

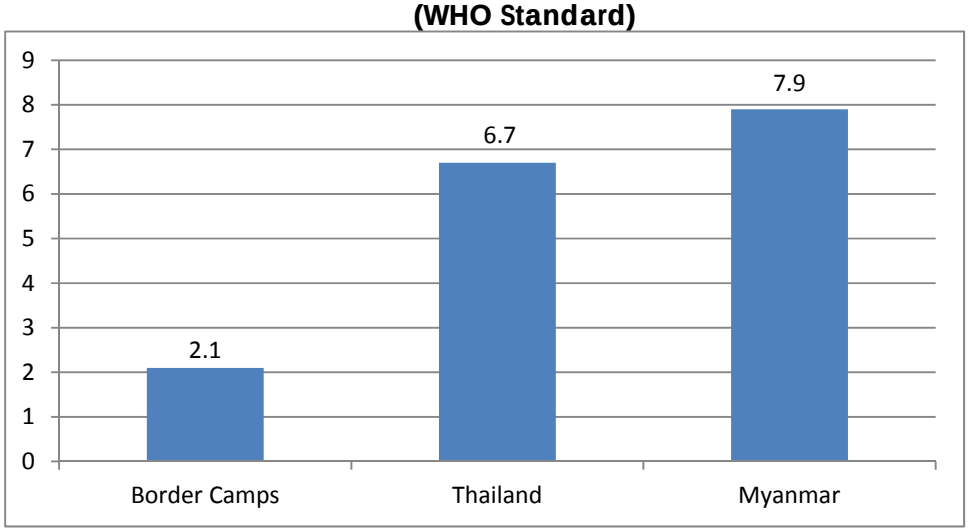
Graph 1.8 Estimated Percent Prevalence of Chronic – STUNTING – Malnutrition in Children 6-59 Months of Age in 9 Camps, 2003 - 2013



Regional Acute and Chronic Malnutrition Rate Comparisons

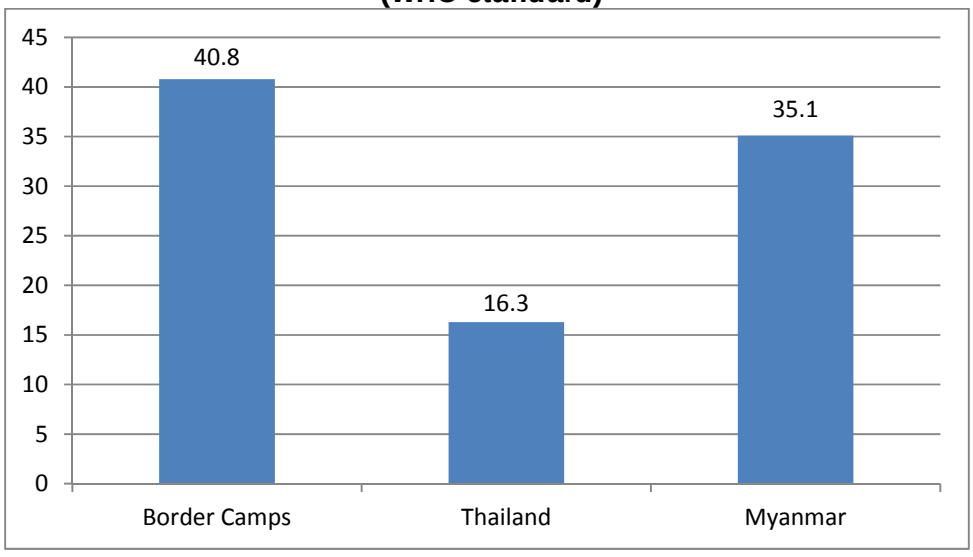
Acute malnutrition rates in camps remain significantly lower than in Thailand or Myanmar (Graph 1.9, Thailand and Myanmar data from Multiple Indicator Cluster Survey or MICS, 2012 and 2009-10, respectively).

Graph 1.9 Comparison of Percent Acute – WASTING – Malnutrition in Children 6-59 Months in Camps, Thailand & Myanmar, 2013 (WHO Standard)



Chronic malnutrition rates in camps are significantly higher than Thailand and comparable to Myanmar. (Graph 2.0, Thailand and Myanmar data from MICS, 2012 and 2009-10, respectively). Of note, stunting prevalence ranged from 24% in the Yangon Region to 58% in the Chin State.

Graph 2.0 Comparison of Percent Chronic – STUNTING – Malnutrition in children 6-59 Months in Camps, Thailand & Myanmar, 2013 (WHO Standard)

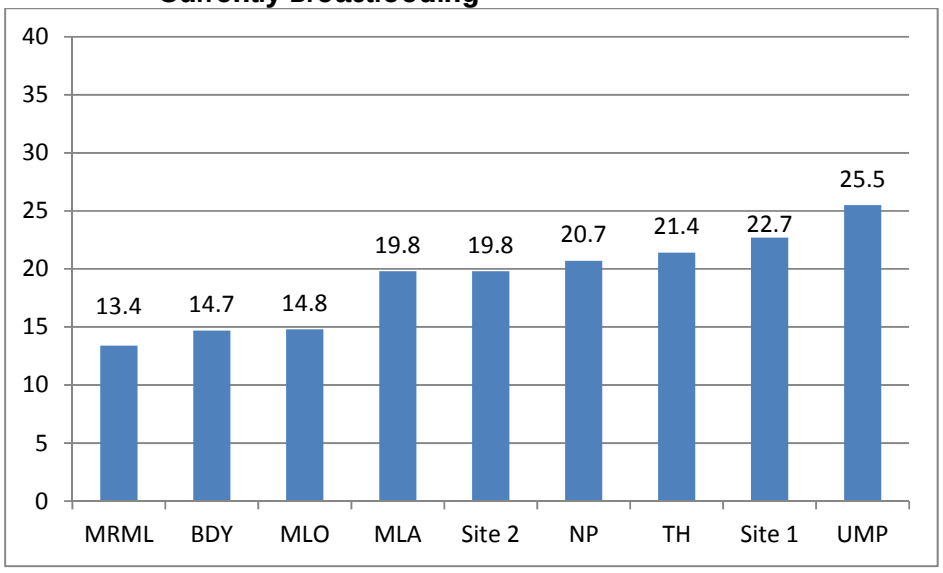


FEEDING PRACTICES

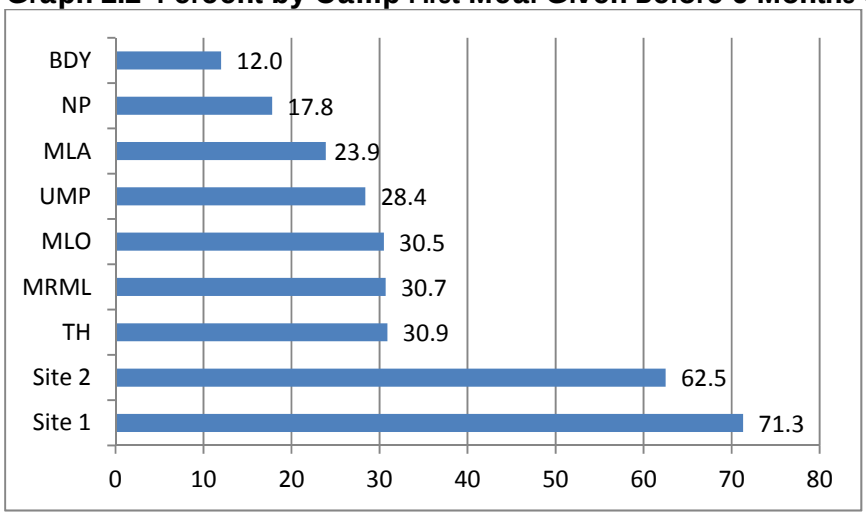
A set of questions was added to the 2013 Nutrition Survey to better understand factors that may be contributing to the very high stunting rates. Findings were as follows:

- Border-wide, 19.0% of mothers of children 6-24 months of age indicated that they were not currently breastfeeding. By camps, only MRML, BDY and MLO had <19% not currently breastfeeding (Graph 2.1).
- Border-wide, 33.9% of mothers reported giving the first meal to their child before 6 months of age. Mothers in Sites 1 and 2 gave their children a first meal before 6 months of age at rates more than double that of all other camps (Graph 2.2).
- Although for all camps, ≥90% reported receiving Asia ReMix at the most current ration distribution, 29% reported that their child had not consumed Asia ReMix during the past week, with less consumption as age increased (49.9% for 6-11 months old down to 23.4% for 48-59 months old). Over half (52.4%) reported their child ate Asia ReMix a maximum of 2 times/week, with only 15.7% consuming Asia ReMix daily, as recommended.
- By camp, the percent of children who did not consume Asia ReMix during the past week varied widely, from 7.7-57.4% (Graph 2.3).
- Reasons reported why Asia ReMix was not consumed are displayed in Graph 2.4, with running out of Asia ReMix as the most frequently reported reason. Reasons included in the "Other" category were: child goes to school; child was sick; and no time.

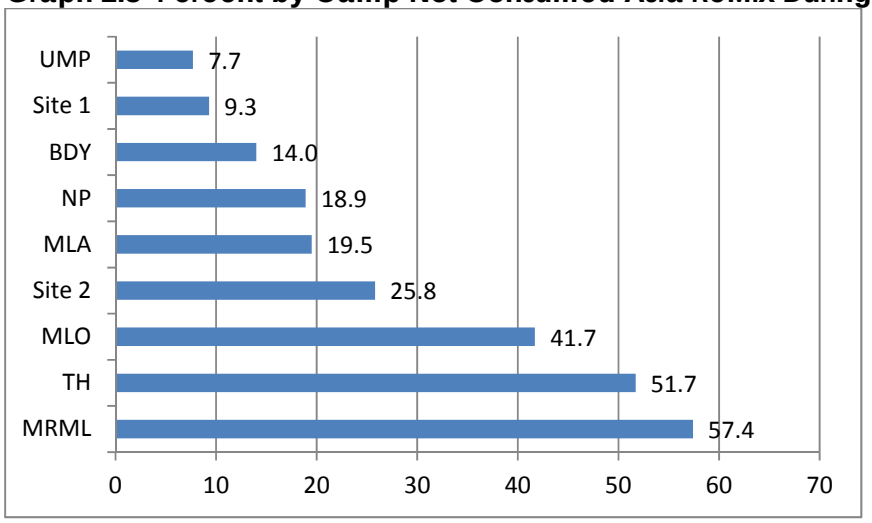
Graph 2.1 Percent by Camp of Mothers of Children 6-24 months Not Currently Breastfeeding



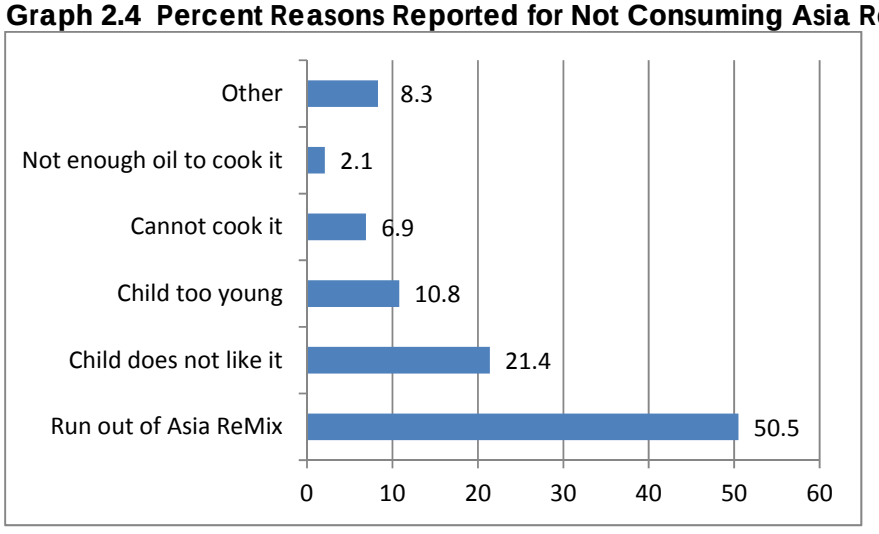
Graph 2.2 Percent by Camp First Meal Given Before 6 Months of Age



Graph 2.3 Percent by Camp Not Consumed Asia ReMix During Past Week



Graph 2.4 Percent Reasons Reported for Not Consuming Asia ReMix



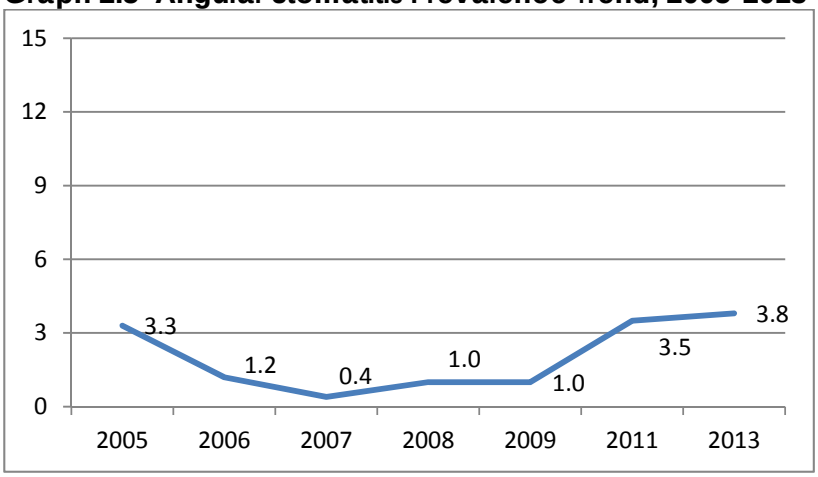
MICRONUTRIENT DEFICIENCIES

3.8% of all children in 9 camps were found with angular stomatitis (AS), a symptom of aribоflavinosis (vitamin B_2 deficiency) with the highest rates in Site 1, UMP, TH and MLA. AS also indicates general vitamin B deficiencies in a population (Table 1.8). The prevalence linearly increased with increasing age group from 0.8% in 6-11 month olds to 7.3% in 48-59 month olds. There was no significant different between boys and girls (4.3% and 3.3%, respectively). As shown in Graph 2.5, AS has been gradually rising since 2011.

Table 1.8: Angular Stomatitis Prevalence

Camp	No. children with bi-lateral angular stomatitis	% children with bi-lateral angular stomatitis	Total Screened
Site 1	33	5.7	583
Site 2	12	3.6	331
MRML	25	3.8	660
MLO	13	2.1	622
MLA	24	4.3	559
UMP	26	5.2	497
NP	12	2.2	544
BDY	9	2.3	391
TH	27	4.6	583
All Camps	**181**	**3.8**	**4770**

Graph 2.5 Angular Stomatitis Prevalence Trend, 2005-2013



SUPPLEMENTARY/THERAPEUTIC FEEDING PROGRAM COVERAGE

Supplementary and therapeutic (selective) feeding program coverage in a camp setting should be at least 90% (e.g., at least 90% of children with wasting malnutrition <-2 wt/ht z scores are enrolled in feeding programs) (Sphere, 2011).

- 20 of 87 (23.0%) children identified with moderate acute malnourished were already enrolled in SFP (Table 1.9). Only 2 of the 12 children identified with severe acute malnutrition were enrolled in either the TFP or SFP(16.7% Table 2.0). Over time, the highest reported rate of SFP/TFP coverage was 42.4% in 2011.
- The number of children with wasting was relatively low; however, of those camps with lowest coverage rates, most were open camps which likely means more unaccompanied children who may not then be taken to Growth Monitoring and Promotion activities. Overall, population movement, which is likely to continue and increase, may also be contributing to the low coverage rates.

Table 1.9: SFP Feeding Programme Coverage – Moderate Wasting

Camp	no. children with wasting malnutrition	no. of children with wasting malnutrition enrolled in SFP	% Coverage
Site 1	7	0	0
Site 2	5	4	80.0
MLO	14	3	21.4
MRML	17	7	41.2
MLA	9	0	0
UMP	8	3	37.5
NP	2	2	100.0
BDY	3	0	0
TH	22	1	4.5
All Camps	**87**	**20**	**23.0%**

Table 2.0: TFP/SFP Feeding Programme Coverage – Severe Wasting

Camp	no. children with wasting malnutrition	no. children with wasting malnutrition enrolled in TFP	no. children with wasting malnutrition enrolled in SFP	% Coverage
Site 1	3	0	0	0
Site 2	0	0	0	NA
MLO	0	0	0	NA
MRML	2	0	0	0
MLA	0	0	0	NA
UMP	2	0	1	50.0
NP	1	0	1	100.0
BDY	1	0	0	0
TH	3	0	0	0
All Camps	**12**	**0**	**2**	**16.7%**

VITAMIN A SUPPLEMENTATION COVERAGE

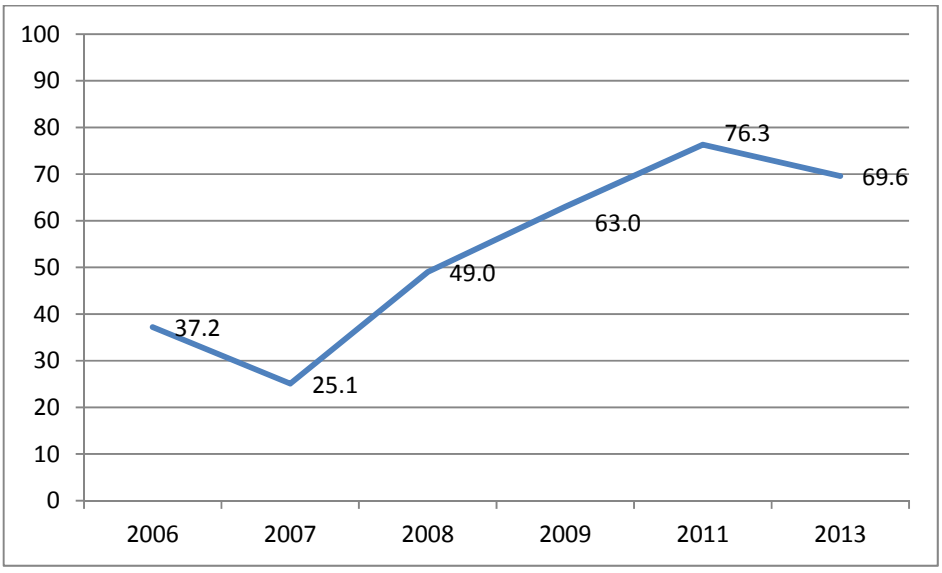
At least 95% of children under 5 years of age should receive a high-dose vitamin A supplement at 4-6 month intervals to prevent illness and blindness associated with vitamin A deficiency (Table 2.1) (Sphere 2011).

- 69.6% of all children in received Vitamin A supplements within the last 6 months.
- 29.9% had a record of supplementation between 6 – 39 months.
- 6.8% had no record of ever receiving vitamin A.
- Vitamin A supplementation coverage continues to fall below the acceptable criteria (Sphere 2011), although has steadily improved since 2007 (Graph 2.6).

Table 2.1: Vitamin A Supplementation Programme Coverage

Camp	No. received within 6 months	No. children screened	% Coverage
Site 1	507	510	99.4
Site 2	296	307	96.4
MLA	323	608	53.1
MRML	529	654	80.9
ML	383	522	73.4
UMP	261	473	55.2
NP	184	456	40.4
BDY	292	360	81.1
TH	327	566	57.8
All Camps	**3102**	**4456**	**69.6**

Graph 2.6 Prevalence of Vitamin A Supplementation Coverage 2006-2013



DE-WORMING COVERAGE

All children under 5 years of age should receive anti-helminthes treatment at 6 month intervals to prevent illness and malnutrition associated with helminthes infection, including anemia and vitamin A deficiency. (Table 2.2)

- 74.7% of all children in 9 camps received anti-helminthes treatment within the last 6 months. Compared to the 2011 Nutrition Survey when this indicator was first collected, the rate has improved, more than doubling from 31.9%.
- 25.1% had a record of treatment between 6 – 37 months.
- 35.0% had no record of ever receiving anti-helminthes.

Table 2.2: Anti-helminthes Coverage

Camp	No. received within 6 months	No. children screened	% Coverage
Site 1	456	457	99.8
Site 2	206	217	94.9
MLO	156	293	53.2
MRML	265	344	77.0
ML	232	301	77.1
UMP	218	416	52.4
NP	170	384	44.3
BDY	228	244	93.4
TH	387	446	86.8
All Camps	**2318**	**3102**	**74.7**

NURSERY SCHOOL FEEDING PROGRAM COVERAGE

Nursery School Feeding Programs are designed to provide a nutritious lunch and promote learning in young children attending nursery schools, thus ensuring that for at least one meal/weekday, this vulnerable population is provided with good nutrition. Children between 2.8 and 5 years of age were included in the analysis. (Table 2.3)

- Enrolment coverage ranges from 52.6% to 95.2% of children of nursery school age, with an average enrolment border-wide of 73.4%. This was a slightly lower enrolment than that reported during the 2011 Nutrition Survey (78.9%).

Table 2.3: Nursery School Program Coverage by Camps

Camp	No children 2.8-5 years in Sample	No children 2.8-5 years Enrolled	% Boys Enrolled	% Girls Enrolled	% Nursery School Coverage
Site 1	315	300	45.7	54.3	95.2
Site 2	179	170	49.4	50.6	95.0
MRML	308	241	56.4	43.6	78.2
MLO	287	184	49.5	50.5	64.1
MLA	302	159	49.7	50.3	52.6
UM	244	168	46.4	53.6	68.9
NP	313	244	50.0	50.0	78.0
BDY	201	128	50.0	50.0	63.7
TH	310	210	52.9	47.1	67.7
All Camps	**2459**	**1804**	**49.5%**	**50.3%**	**73.4%**

HOUSEHOLD HUNGER SCALE (HHS)

The FANTA-2 HHS is comprised of 3 questions with frequency reported for each, which results in a HHS score between 0-6, with 6 indicating more household hunger. The HHS score can be further collapsed into 3 categories: Little to no hunger in the household; moderate hunger in the household; and severe hunger in the household (Graph 2.7 and Table 2.4).

- For all 9 camps (n=4,606) at a household level, 82.3% (n=3.790) reported little to no hunger; 15.1% (694) reported moderate hunger; and 2.6% (n=122) reported severe hunger. Due to the small number (n=122) that reported severe hunger at the household level, further analyses to determine related factors (such as ethnicity and family size) were not meaningful.
- Close to or greater than 50% of surveyed households in Site 1, NP and MRML reported having no food to eat of any kind in the house because of lack of resources to get food, at least on one day during the preceding 30 days.
- MLA and Site 2 had the highest rates of households that reported there was a time when someone in the household went to sleep at night hungry without eating anything because there was not enough food in the past 30 days (47.8% and 30.9%, respectively); **AND** someone in the household went a whole day and night without eating anything at all because there was not enough food in the past 30 days (42.7% and 34.5%, respectively).

Graph 2.7 HHS Category Frequency by Camp

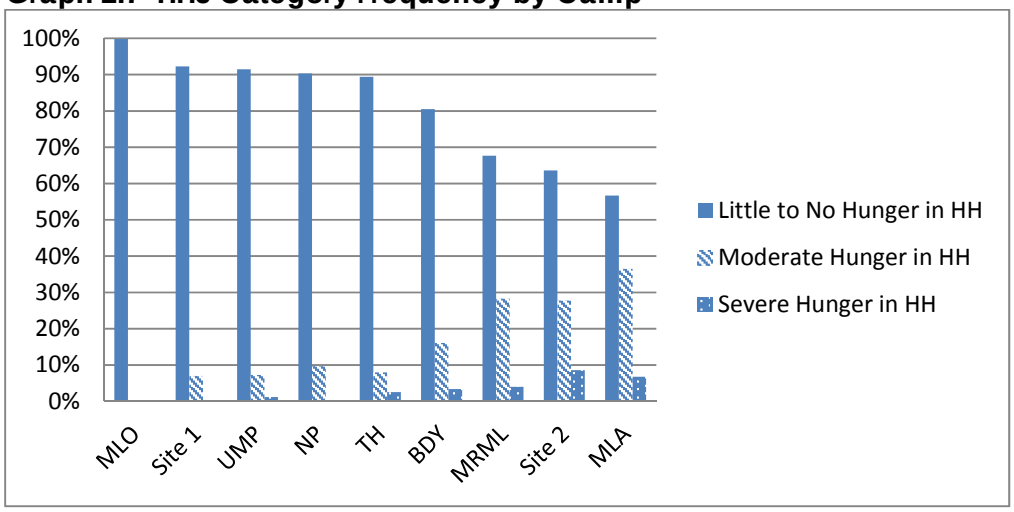


Table 2.4: HHS Scores by Camp*

Camp	Ever No Food to Eat Because of Lack of Resources to Get Food		Went to Sleep Hungry Because Not Enough Food		Whole Day & Night Without Eating Because Not Enough Food	
	Yes	No	Yes	No	Yes	No
Site 1	53.9% (310)	46.1% (265)	7.8% (45)	92.2% (531)	0.9% (5)	99.1% (571)
Site 2	35.6% (117)	64.4% (212)	30.9% (102)	69.1% (228)	34.5% (113)	65.5% (215)
MRML	48.0% (316)	52.0% (343)	27.6% (182)	72.4% (477)	27.8% (183)	72.2% (476)
MLO	0	100% (622)	0.8% (5)	99.2% (617)	0.2% (1)	99.8% (621)
MLA	44.0% (243)	56.0% (309)	47.8% (267)	52.2% (291)	42.7% (238)	57.3% (319)
UM	10.5% (52)	89.5% (443)	7.6% (38)	92.4% (459)	1.6% (8)	98.4% (489)
NP	49.5% (267)	50.5% (272)	13.0% (70)	87.0% (469)	4.6% (25)	95.4% (514)
BDY	23.2% (91)	76.8% (301)	22.7% (89)	77.3% (303)	26.3% (103)	73.7% (289)
TH	17.1% (99)	82.9% (480)	11.4% (66)	88.6% (514)	8.8% (51)	91.2% (529)
All Camps	**31.5% (1495)**	**68.5% (3247)**	**18.2% (864)**	**81.8% (3889)**	**15.3% (727)**	**84.7% (4023)**

*HHS reference period is for the past 30 days.

DISCUSSION AND RECOMMENDATIONS

CONCLUSIONS

Malnutrition Rates

Average **acute (wasting) malnutrition rates for children under 5 continue to be "acceptable"** according to WHO benchmarks for all camps and border-wide.

Average **chronic (stunting) malnutrition rates range between "medium" and "very high"** according to WHO benchmarks, and the average rate border-wide is classified as "very high."

Camps with the highest stunting rates are located in the most remote areas of the border.

The Relationship between Acute (Wasting) and Chronic (Stunting) Malnutrition

Stunting often goes unrecognized by families from communities where short stature is so common that it seems normal. Even among health workers, **stunting generally does not receive the same attention as wasting** (low weight-for-height), especially if height is not

routinely measured as part of community health programs.

Many families, health workers, and policymakers are unaware of the consequences of stunting, so it may not be viewed as a public health issue.

The effects of stunting are serious and lifelong. Stunting is strongly linked to the ability to learn and cognitive development in children, and negatively affects maternal and adult health.

Children 6-24 months of age are most vulnerable to both wasting and stunting malnutrition. Introduction of complementary foods and diets of poor nutritional quality during infancy and early childhood lead to inadequate nutrient intake. Frequent infections during the first 2 years of life also contribute to the high risk of becoming wasted and/or stunted during this period.

Wasting is an acute response to food shortages or infectious diseases. Whether wasting leads to stunting may depend upon if a child can recover linear growth with catch-up growth. Studies have shown, however, that wasting increases the risk of reduced linear growth, although wasting may not be the main cause of stunting.

By age group, **the highest rates of wasting malnutrition were found in children 6 – 24 months border-wide**, whereas the prevalence of **stunting increased with each increasing age group**. The effect is cumulative – by the age of 5, nearly half of all children were found to be stunted.

Feeding Practices

Feeding practices are shown to be related to stunting. Feeding practices from this survey show that **breastfeeding, complementary feeding timing and consumption of Asia ReMix by children 6-59 months of age need to be strengthened**.

Micronutrient Deficiencies

Angular stomatitis is used as an easily detectable clinical indicator of micronutrient deficiency, and can indicate a more widespread problem of other micronutrient deficiencies.

Sphere 2011 does not provide a cutoff to indicate a problem of public health significance. Although the rate of micronutrient deficiencies has remained stable since the 2011 Nutrition Survey, since 2006 there is a **gradual upward trend**. As the prevalence increased with each increase in age group, this may indicate that as children grow older and rely less on breast milk as a source of dietary intake, more attention needs to be focused on the **diet quality and diversity of complementary foods**. Continued monitoring and early detection of malnutrition to include micronutrient deficiencies is essential.

SFP/TFP Program Coverage

The SFP/TFP aims to treat acute – wasting – malnutrition, both moderate and severe cases.

Feeding program coverage indicates the effectiveness of growth monitoring as a screening tool to identify wasting malnutrition in children under 5 years of age, and effectively implement the feeding program to treat children.

Although rates for moderately and severely malnourished children are very low, **feeding program coverage for wasted children continues to be poor (prior survey highest reported rate of**

42.4%) in most camps, indicating that not all malnourished children are being identified and treated effectively.

Vitamin A Supplementation

Vitamin A deficiency is a major contributor to childhood mortality and illness. Vitamin A supplementation is necessary in the refugee camps to ensure adequate intake. Vitamin A supplementation **coverage was below Sphere standards**, as in the previous survey in 2011; **however, the rate continues to improve, almost tripling since 2007**.

Documentation remains an issue as supplementation is documented inconsistently, and coverage may be higher than reported.

Anti-Helminthes Prevention

Worm infections contribute to malnutrition in general, and to vitamin A deficiency and anemia. 6 monthly de-worming is necessary in the refugee camps to ensure that worm infection is prevented in children.

De-worming coverage is relatively good in most camps, but either not conducted or not reported in some. However, **overall, the coverage was much improved from the previous survey (31.9% to currently 74.7%)**.

Nursery School Enrolment

Border-wide, the **majority of children are enrolled in nursery school**, indicating that most children are ensured a nutritious lunch on weekdays. However for >25% of children of Nursery School age in this sample, reasons for non-attendance were not collected.

Household Hunger Scale (HHS)

Border-wide, **most households reported little to no hunger**. As this is the baseline reporting of HHS, further follow up is planned as part of the 2015 Nutrition Survey.

RECOMMENDATIONS

Malnutrition Rates

Prevent chronic malnutrition (stunting)

Current evidence suggests that stunting may be prevented by:

1) Promoting appropriate infant and young child feeding practices between 6-24 months including exclusive breastfeeding until 6 months of age; continued breastfeeding until 2 years with complementary feeding initiated at 6 months of age;
2) Promoting healthy maternal status; and
3) Early detection and treatment of acute malnutrition in young children.

Actions proposed include:

1. Continue implementation of IYCF Campaign with community-based Behavior Change Communication (BCC) and Growth Monitoring and Promotion in all camps, targeting families with children 6-24 months of age.

2. Train health workers and community facilitators to collaborate and conduct uniform, intensive IYCF promotion activities in all camps.

3. Consider factors such as family size, ethnicity, and child's age (factors identified as related to stunting)

when implementing campaign and promotion activities.

4. Include length/height measurement for children 6-24 months in Growth Monitoring.

5. Train health workers and community facilitators in BCC techniques to counsel pregnant and lactating women to promote maternal health and proper IYCF practices. Provide additional support to camps identified as having lower currently breastfeeding rates (i.e. more open camps) and Sites 1 and 2 for timing of first meal.

6. Coordinate more closely with Section Leaders and share data to identify unaccompanied children and ensure they participate in Growth Monitoring and Promotion activities.

SFP/TFP Program Coverage

Treat moderate acute (wasting) malnutrition

1. Continue training of health and other community workers to effectively: identify and enroll moderately malnourished children into SFP; and provide nutrition counseling to care-givers during Growth Monitoring and Promotion.

2. Coordinate more closely with Section Leaders and share data to identify unaccompanied children and ensure they participate in Growth Monitoring and Promotion activities.

3. Ensure children discharged from SFP receive regular follow-up in the household by health workers.

4. Further develop program monitoring tools.

5. Review and revise as needed the TBC TFP Guidelines (2008) with input solicited from health agency partners to determine challenges.

6. Screen patients to identify malnourished children at Outpatient and Inpatient Departments (OPD/IPD).

Micronutrient Deficiencies

Prevent micronutrient malnutrition

1. intensify nutrition education and AsiaREMix promotion activities, such as cooking demonstrations, to ensure children consume adequate micronutrients for deficiency prevention.

2. Focus on education to ensure beneficiaries understand the benefit of AsiaREMix for children. This includes development of a standardized nutrition curriculum to be used in educating health agency and stipend staff.

3. Focus on TBC program integration, particularly with the Livelihood and Food Security and Shelter and Settlement Programs, to improve household access, as well as the understanding of benefits of a more diversified diet via kitchen gardens and income generation.

Vitamin A Supplementation

1. Follow TBC SFP Protocol 2012 vitamin A protocol for children, and pregnant and lactating women.

2. Document ALL vitamin A supplementation in standard document - yellow card (children) or in lemma (lactating women).

Anti-Helminthes Prevention

1. Ensure anti-helminthes are provided 6-monthly for all children 1-12 years of age.
2. Document ALL de-worming in standard document - yellow card.

Nursery School Enrolment

Promote Nursery School enrolment and attendance in camps where enrolment is low (MLA, MLO and BDY). Continue to provide support to Nursery Schools and advocate for nutrition-related support (e.g., hand washing soap, kitchen gardens, etc.) Revise Nutrition Survey for 2015 to include a follow-up question to determine reasons for children not attending Nursery School.

HHS

Conduct follow-up survey to monitor potential impacts of ration distribution changes.

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APPENDIX 1

RESULTS BY CAMP

Table 1. Prevalence of Global ACUTE and CHRONIC Malnutrition in Children 6 mos to <5 years: Comparison 2013 to 2011 Nutrition Surveys using WHO Growth Standards 2006

Camps	Global ACUTE Malnutrition (weight-for-height <-2 z-scores)		Global CHRONIC Malnutrition (height-for-age <-2 z-scores)	
	2013	2011	2013	2011
	%	%	%	%
Ban Mai Nai Soi (S1)	1.7	1.0	24.8	25.8
Mae Surin (S2)	1.5	1.6	35.6	48.8
Mae Ra Ma Luang	2.9	2.1	49.2	48.8
Mae La Oon	2.3	1.0	49.7	53.6
Mae La	1.6	3.2	37.8	32.8
Umpiem Mai	2.0	2.2	42.6	35.7
Nu Po	0.6	1.7	37.6	43.2
Ban Don Yang	1.0	2.2	44.6	44.3
Tham Hin	4.3	3.1	42.6	40.1
All Camps:	**2.1**	**2.0**	**40.8**	**41.5**
Thailand (MICS 2012)	**6.7**	n/a	**16.3**	n/a
Myanmar (MICS 2009-10)*	**7.9**	n/a	**35.1**	n/a

*Stunting prevalence ranged from 24% in Yangon Region to 58% in Chin State.

Table 2. Prevalence of Global Acute Malnutrition (GAM) in Children 6 mos to <5 years, 2003 to 2013

Camps	Global Acute Malnutrition (weight-for-height <-2 SD)										
	CDC 1977									WHO 2006	WHO 2006
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2011	2013
	%	%	%	%	%	%	%	%	%	%	%
Ban Mai Nai Soi (Site 1)	3.4	2.0	2.6	3.2	3.2	1.5	1.6	-	1.3	1.0	**1.7**
Mae Surin (Site 2)	2.2	1.3	2.3	1.0	5.8	2.2	-	3.3	2.0	1.6	**1.5**
Mae La Oon	2.9	5.7	3.6	3.6	4.9	3.0	3.7	-	1.6	1.0	**2.3**
Mae Ra Ma Luang	2.5	2.4	5.0	5.0	3.0	2.8	4.5		3.1	2.1	**2.9**
Mae La	2.9	4.5	4.0	4.0	4.8	5.5	3.2	2.8	3.7	3.2	**1.6**
Umpiem Mai	3.9	3.8	3.4	2.1	3.5	1.4	2.1	-	1.6	2.2	**2.0**
Nu Po	4.1	5.0	-	1.6	2.9	1.7	1.9	-	1.5	1.7	**0.6**
Tham Hin	-	-	2.7	2.1	2.8	2.5	3.0	-	3.4	3.1	**4.3**
Ban Don Yang	4.3	2.9	3.9	1.6	2.2	2.0	4.2	-	2.2	2.2	**1.0**
All Camps:	**3.3**	**3.6**	**4.2**	**2.8**	**3.5**	**2.7**	**3.1**	**-**	**2.3**	**2.0**	**2.1**
Thailand (MICS 2012)											**6.7**
Myanmar (MICS 2009-10)											**7.9**

Note: Surveys were not conducted in Tham Hin camp in 2003; 2005 data for Nu Po camp were not completed due to staffing changes in the health agency; Mae Surin was not included in 2009 and only Mae Surin and Mae La were surveyed in 2010. Site 2 survey in 2010 reported a rate of 7.6% GAM, and was re-surveyed. The actual rate was 3.3%.

Table 3. Prevalence of Global Chronic Malnutrition in Children 6 mos to <5 years, 2003 to 2013

Global Chronic Malnutrition (height-for-age <-2 SD)											
Camps		CDC 1977								WHO 2006	WHO 2006
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2011	2013
	%	%	%	%	%	%	%	%	%	%	%
Ban Mai Nai Soi (S1)	31.9	29.8	30.0	25.5	24.0	22.5	29.1	-	18.9	25.8	**24.8**
Mae Surin (S2)	37.1	35.3	37.1	45.3	25.1	29.8	-	36.8	37.5	48.8	**35.6**
Mae La Oon	43.2	39.0	37.9	49.0	42.4	44.3	43.3	-	43.7	53.6	**49.7**
Mae Ra Ma Luang	30.9	40.5	33.1	47.6	38.8	40.0	39.9	-	40.2	48.8	**49.2**
Mae La	43.2	37.8	39.5	37.6	32.3	36.2	32.8	32.0	25.0	32.8	**37.8**
Umpiem Mai	48.4	42.0	38.2	32.9	29.2	33.1	29.8	-	26.5	35.7	**42.6**
Nu Po	42.7	28.5	-	37.9	41.5	34.0	37.8	-	37.1	43.2	**37.6**
Tham Hin	-	-	28.8	38.0	35.6	39.4	38.2	-	30.9	40.1	**42.6**
Ban Don Yang	34.1	46.7	36.6	41.8	37.7	38.8	40.1	-	35.8	44.3	**44.6**
All Camps:	**38.8**	**35.7**	**34.2**	**39.6**	**34.3**	**36.2**	**36.5**	**-**	**32.9**	**41.5**	**40.8**
Thailand (MICS 2012)											**16.3**
Myanmar (MICS 2009-10)*											**35.1**

*Stunting prevalence ranged from 24% in Yangon Region to 58% in Chin State.

1. SITE 1

Results Tables for WHO Growth Standard, 2006

Table 1.1: Distribution of age and sex of sample

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:Girl
6-11	32	51.6	30	48.4	62	10.6	1.1
12-23	59	44.7	73	55.3	132	22.6	0.8
24-35	66	54.5	55	45.5	121	20.8	1.2
36-47	66	44.6	82	55.4	148	25.4	0.8
48-59	56	46.7	64	53.3	120	20.6	0.9
Total	279	47.9	304	52.1	583	100.0	0.92

Table 1.2: Prevalence of acute malnutrition based on weight-for-height z-scores by sex

	All n = 577	Boys n = 276	Girls n = 301
Prevalence of global malnutrition (<-2 z-score)	(10) 1.7 % (0.9 - 3.2 95% C.I.)	(5) 1.8 % (0.8 – 4.2 95% C.I.)	(5) 1.7 % (0.7 – 3.8 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score)	(7) 1.2 % (0.6 - 2.5 95% C.I.)	(4) 1.4 % (0.6 - 3.7 95% C.I.)	(3) 1.0 % (0.3 - 2.9 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score)	(3) 0.5 % (0.2 – 1.5 95% C.I.)	(1) 0.4 % (0.1 – 2.0 95% C.I.)	(2) 0.7 % (0.2 – 2.4 95% C.I.)

Table 1.3: Prevalence of acute malnutrition by age, based on weight-for-height z-scores

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
Age (mo)	Total no.	No.	%	No.	%	No.	%
6-11	62	1	1.6	0	0.0	61	98.4
12-23	129	1	1.8	3	2.3	125	96.9
24-35	119	1	1.8	1	0.8	117	98.3
36-47	147	0	0.0	1	0.7	146	99.3
48-59	120	0	0.0	2	1.7	118	98.3
Total	577	3	0.5	7	1.2	567	98.3

2. SITE 1 (con't)

Table 1.4: Prevalence of stunting based on height-for-age z-scores and by sex

	All n = 577	**Boys** n = 276	**Girls** n = 301
Prevalence of stunting (<-2 z-score)	(143) 24.8 % (21.4 - 28.5 95% C.I.)	(66) 23.9 % (19.3 – 29.3 95% C.I.)	(77) 25.6 % (21.0 - 30.8 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(117) 20.3 % (17.2 - 23.8 95% C.I.)	(53) 19.2 % (15.0 - 24.3 95% C.I.)	(64) 21.3 % (17.0 - 26.2 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(26) 4.5 % (3.1 – 6.5 95% C.I.)	(13) 4.7 % (2.8 - 7.9 95% C.I.)	(13) 4.3 % (2.5 - 7.3 95% C.I.)

Table 1.5: Prevalence of stunting by age based on height-for-age z-scores

		Severe stunting (<-3 z-score)		**Moderate stunting (>= -3 and <-2 z-score)**		**Normal (> = -2 z score)**	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-11	62	2	3.2	4	6.5	56	90.3
12-23	129	0	0.0	17	13.2	112	86.8
24-35	119	5	4.2	32	26.9	82	68.9
36-47	147	12	8.2	35	23.8	100	68.0
48-59	120	7	5.8	29	24.2	84	70.0
Total	577	26	4.5	117	20.3	434	75.2

Table 1.6: Mean z-scores and excluded subjects

Indicator	n	Mean z-scores ± SD	z-scores not available	z-scores out of range
Weight-for-Height	577	-0.10±0.88	6	0
Height-for-Age	577	-1.37±1.03	6	0

2. Site 2

Results Tables for WHO Growth Standard, 2006

Table 2.1: Distribution of age and sex of sample

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:Girl
6-11	18	40.9	26	59.1	44	13.2	0.7
12-23	27	42.9	36	57.1	63	18.9	0.8
24-35	33	44.0	42	56.0	75	22.5	0.8
36-47	41	56.9	31	43.1	72	21.6	1.3
48-59	37	46.8	42	53.2	79	23.6	0.9
Total	156	46.8	177	53.2	333	100.0	0.9

Table 2.2: Prevalence of acute malnutrition based on weight-for-height z-scores by sex

	All n = 329	Boys n = 155	Girls n = 174
Prevalence of global malnutrition (<-2 z-score)	(5) 1.5 % (0.7 - 3.5 95% C.I.)	(2) 1.3 % (0.4 - 4.6 95% C.I.)	(3) 1.7 % (0.6 - 4.9 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score)	(5) 1.5 % (0.7 - 3.5 95% C.I.)	(2) 1.3 % (0.4 - 4.6 95% C.I.)	(3) 1.7 % (0.6 - 4.9 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score)	(0) 0.0 % (0.0 – 1.2 95% C.I.)	(0) 0.0 % (0.0 – 2.4 95% C.I.)	(0) 0.0 % (0.0 – 2.2 95% C.I.)

Table 2.3: Prevalence of acute malnutrition by age, based on weight-for-height z-scores

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
Age (mo)	Total no.	No.	%	No.	%	No.	%
6-11	44	0	0.0	1	2.3	43	97.7
12-23	62	0	0.0	2	3.2	60	96.8
24-35	73	0	0.0	1	1.4	72	98.6
36-47	72	0	0.0	0	0.0	72	100.0
48-59	78	0	0.0	1	1.3	77	98.7
Total	329	0	0.0	5	1.5	324	98.5

2. Site 2 (con't)

Table 2.5: Prevalence of stunting based on height-for-age z-scores and by sex

	All n = 331	**Boys** n = 155	**Girls** n = 176
Prevalence of stunting (<-2 z-score)	(118) 35.6 % (30.7 – 41.0 95% C.I.)	(57) 36.8 % (29.6 – 44.6 95% C.I.)	(61) 34.7 % (28.0 – 42.0 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(97) 29.3 % (24.7 – 34.4 95% C.I.)	(45) 29.0 % (22.5 – 36.6 95% C.I.)	(52) 29.5 % (23.3 - 36.7 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(21) 6.3 % (4.2 – 9.5 95% C.I.)	(12) 7.7 % (4.5 - 13.0 95% C.I.)	(9) 5.1 % (2.7 – 9.4 95% C.I.)

Table 2.6: Prevalence of stunting by age based on height-for-age z-scores

		Severe stunting (<-3 z-score)		**Moderate stunting (>= -3 and <-2 z-score)**		**Normal (> = -2 z score)**	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-11	44	1	2.3	4	9.1	39	88.6
12-23	63	4	6.3	16	25.4	43	68.3
24-35	74	5	6.8	22	29.7	47	63.5
36-47	72	7	9.7	29	40.3	36	50.0
48-59	78	4	5.1	26	33.3	48	62.5
Total	331	21	6.3	97	29.3	213	64.4

Table 2.7: Mean z-scores and excluded subjects

Indicator	n	Mean z-scores ± SD	z-scores not available	z-scores out of range
Weight-for-Height	329	-0.33±0.78	4	0
Height-for-Age	331	-1.67±0.96	2	0

3. Mae Ra Ma Luang

Results Tables for WHO Growth Standard, 2006

Table 3.1: Distribution of age and sex of sample

	Boys		Girls		Total		Ratio
AGE (mo)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy:Girl**
6-11	42	57.5	31	42.5	73	11.1	1.4
12-23	90	51.7	84	48.3	174	26.4	1.1
24-35	83	53.9	71	46.1	154	23.3	1.2
36-47	75	52.8	67	47.2	142	21.5	1.1
48-59	65	55.6	52	44.4	117	17.7	1.3
Total	355	53.8	305	46.2	660	100.0	1.2

Table 3.2: Prevalence of acute malnutrition based on weight-for-height z-scores by sex

	All n = 659	**Boys** n = 354	**Girls** n = 305
Prevalence of global malnutrition (<-2 z-score)	(19) 2.9 % (1.9 – 4.5 95% C.I.)	(13) 3.7 % (2.2 – 6.2 95% C.I.)	(6) 2.0 % (0.9 – 4.2 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score)	(17) 2.6 % (1.6 – 4.1 95% C.I.)	(12) 3.4 % (2.0 – 5.8 95% C.I.)	(5) 1.6 % (0.7 – 3.8 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score)	(2) 0.3 % (0.1 - 1.1 95% C.I.)	(1) 0.3 % (0.1 – 1.6 95% C.I.)	(1) 0.3 % (0.1 – 1.8 95% C.I.)

Table 3.3: Prevalence of acute malnutrition by age, based on weight-for-height z-scores

		Severe wasting (<-3 z-score)		**Moderate wasting (>= -3 and <-2 z-score)**		**Normal (> = -2 z score)**	
Age (mo)	***Total no.***	***No.***	***%***	***No.***	***%***	***No.***	***%***
6-11	73	0	0.0	1	1.4	72	98.6
12-23	174	1	0.6	7	4.0	166	95.4
24-35	153	0	0.0	5	3.3	148	96.7
36-47	142	0	0.0	2	1.4	140	98.6
48-59	117	1	0.9	2	1.7	114	97.4
Total	659	2	0.3	17	2.6	640	97.1

3. Mae Ra Ma Luang (con't)

Table 3.4: Prevalence of stunting based on height-for-age z-scores and by sex

	All n = 657	**Boys** n = 353	**Girls** n = 304
Prevalence of stunting (<-2 z-score)	(323) 49.2 % (45.4 – 53.0 95% C.I.)	(176) 49.9 % (44.7 - 55.0 95% C.I.)	(147) 48.4 % (42.8 - 54.0 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(247) 37.6 % (34.0 – 41.4 95% C.I.)	(125) 35.4 % (30.6 - 40.5 95% C.I.)	(122) 40.1 % (34.8 – 45.7 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(76) 11.6 % (9.3 – 14.2 95% C.I.)	(51) 14.4 % (11.2 - 18.5 95% C.I.)	(25) 8.2 % (5.6 - 11.9 95% C.I.)

Table 3.5: Prevalence of stunting by age based on height-for-age z-scores

		Severe stunting (<-3 z-score)		**Moderate stunting (>= -3 and <-2 z-score)**		**Normal (> = -2 z score)**	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-11	73	5	6.8	11	15.1	57	78.1
12-23	174	16	9.2	65	37.4	93	53.4
24-35	153	17	11.1	59	38.6	77	50.3
36-47	140	19	13.6	62	44.3	59	42.1
48-59	117	19	16.2	50	42.7	48	41.0
Total	657	76	11.6	247	37.6	334	50.8

Table 3.6: Mean z-scores and excluded subjects

Indicator	n	Mean z-scores ± SD	z-scores not available	z-scores out of range
Weight-for-Height	659	-0.46±0.87	1	0
Height-for-Age	657	-1.97±0.98	3	0

4. Mae La Oon

Results Tables for WHO Growth Standard, 2006

Table 4.1: Distribution of age and sex of sample

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:Girl
6-11	39	48.1	42	51.9	81	13.0	0.9
12-23	75	48.1	81	51.9	156	25.1	0.9
24-35	73	51.4	69	48.6	142	22.8	1.1
36-47	77	55.0	63	45.0	140	22.5	1.2
48-59	51	49.5	52	50.5	103	16.6	1.0
Total	315	50.6	307	49.4	622	100.0	1.0

Table 4.2: Prevalence of acute malnutrition based on weight-for-height z-scores by sex

	All n = 620	Boys n = 314	Girls n = 306
Prevalence of global malnutrition (<-2 z-score)	(14) 2.3 % (1.4 – 3.8 95% C.I.)	(5) 1.6 % (0.7 – 3.7 95% C.I.)	(9) 2.9 % (1.6 – 5.5 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score)	(14) 2.3 % (1.4 – 3.8 95% C.I.)	(5) 1.6 % (0.7 – 3.7 95% C.I.)	(9) 2.9 % (1.6 – 5.5 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score)	(0) 0.0 % (0.0 - 0.6 95% C.I.)	(0) 0.0 % (0.0 - 1.2 95% C.I.)	(0) 0.0 % (0.0 - 1.2 95% C.I.)

Table 4.3: Prevalence of acute malnutrition by age, based on weight-for-height z-scores

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
Age (mo)	Total no.	No.	%	No.	%	No.	%
6-11	81	0	0.0	2	2.5	79	97.5
12-23	155	0	0.0	6	3.9	149	96.1
24-35	142	0	0.0	3	2.1	139	97.9
36-47	140	0	0.0	1	0.7	139	99.3
48-59	102	0	0.0	2	2.0	100	98.0
Total	620	0	0.0	14	2.3	606	97.7

4. Mae La Oon (con't)

Table 4.4: Prevalence of stunting based on height-for-age z-scores and by sex

	All n = 620	**Boys** n = 314	**Girls** n = 306
Prevalence of stunting (<-2 z-score)	(308) 49.7 % (45.6 – 53.6 95% C.I.)	(160) 51.0 % (45.5 – 56.4 95% C.I.)	(148) 48.4 % (42.8 – 54.0 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(224) 36.1 % (32.4 – 40.0 95% C.I.)	(111) 35.4 % (30.3 – 40.8 95% C.I.)	(113) 36.9 % (31.5 – 42.5 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(84) 13.5 % (11.1 – 16.5 95% C.I.)	(49) 15.6 % (12.0 – 20.0 95% C.I.)	(35) 11.4 % (8.3 - 15.5 95% C.I.)

Table 4.5: Prevalence of stunting by age based on height-for-age z-scores

		Severe stunting (<-3 z-score)		**Moderate stunting (>= -3 and <-2 z-score)**		**Normal (> = -2 z score)**	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-11	81	3	3.7	11	13.6	67	82.7
12-23	155	19	12.3	39	25.2	97	62.6
24-35	142	15	10.6	66	46.5	61	43.0
36-47	140	24	17.1	70	50.0	46	32.9
48-59	102	23	22.5	38	37.3	41	40.2
Total	620	84	13.5	224	36.1	312	50.3

Table 4.6: Mean z-scores and excluded subjects

Indicator	n	Mean z-scores ± SD	z-scores not available	z-scores out of range
Weight-for-Height	620	-0.32±0.82	2	0
Height-for-Age	620	-1.95±1.03	2	0

5. Mae La

Results Tables for WHO Growth Standard, 2006

Table 5.1: Distribution of age and sex of sample

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:Girl
6-11	29	56.9	22	43.1	51	9.1	1.3
12-23	63	48.1	68	51.9	131	23.4	0.9
24-35	72	55.0	59	45.0	131	23.4	1.2
36-47	65	54.6	54	45.4	119	21.3	1.2
48-59	58	45.7	69	54.3	127	22.7	0.8
Total	287	51.3	272	48.7	559	100.0	1.1

Table 5.2: Prevalence of acute malnutrition based on weight-for-height z-scores by sex

	All n = 557	Boys n = 287	Girls n = 270
Prevalence of global malnutrition (<-2 z-score)	(9) 1.6 % (0.1- 3.1 95% C.I.)	(5) 1.7 % (0.8- 4.0 95% C.I.)	(4) 1.6 % (0.6- 3.7 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score)	(9) 1.6 % (0.1- 3.1 95% C.I.)	(5) 1.7 % (0.8- 4.0 95% C.I.)	(4) 1.5 % (0.6- 3.7 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score)	(0) 0.0 % (0.7- 0.9 95% C.I.)	(0) 0.0 % (0.0- 1.3 95% C.I.)	(0) 0.0 % (0.2- 1.4 95% C.I.)

Table 5.3: Prevalence of acute malnutrition by age, based on weight-for-height z-scores

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
Age (mo)	Total no.	No.	%	No.	%	No.	%
6-11	51	0	0.0	0	0.0	51	0.0
12-23	131	0	0.0	3	2.3	128	97.7
24-35	130	0	0.0	1	0.8	129	99.2
36-47	118	0	0.0	3	2.5	115	97.5
48-59	127	0	0.0	2	1.6	125	98.4
Total	557	0	0.0	9	1.6	548	98.4

5. Mae La (con't)

Table 5.4: Prevalence of stunting based on height-for-age z-scores and by sex

	All n = 558	**Boys** n = 287	**Girls** n = 271
Prevalence of stunting (<-2 z-score)	(211) 37.8 % (33.9-41.9 95% C.I.)	(115) 40.1 % (34.6-45.8 95% C.I.)	(96) 35.4 % (30.0-41.3 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(159) 28.5 % (24.9-32.4 95% C.I.)	(85) 29.6 % (24.6-35.1 95% C.I.)	(74) 27.3 % (22.4-32.9 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(52) 9.3 % (7.2-12.0 95% C.I.)	(30)10.5 % (7.4-14.5 95% C.I.)	(22) 8.1 % (5.4-12.0 95% C.I.)

Table 5.5: Prevalence of stunting by age based on height-for-age z-scores

		Severe stunting (<-3 z-score)		**Moderate stunting (>= -3 and <-2 z-score)**		**Normal (> = -2 z score)**	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-11	51	3	5.9	11	21.6	37	72.5
12-23	131	11	8.4	30	22.9	90	68.7
24-35	131	12	9.2	40	30.5	79	60.3
36-47	118	10	8.5	40	33.9	68	57.6
48-59	127	16	12.6	38	29.9	73	57.5
Total	558	52	9.3	159	28.5	347	62.2

Table 5.6: Mean z-scores and excluded subjects

Indicator	n	Mean z-scores ± SD	z-scores not available	z-scores out of range
Weight-for-Height	557	-0.25±0.89	2	0
Height-for-Age	558	-1.62±1.19	1	0

6. Umpiem Mai

Results Tables for WHO Growth Standard, 2006

Table 6.1: Distribution of age and sex of sample

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:Girl
6-11	19	37.3	32	62.7	51	10.3	0.6
12-23	69	51.9	64	48.1	133	26.8	1.1
24-35	49	54.4	41	45.6	90	18.1	1.2
36-47	53	49.1	55	50.9	108	21.7	1.0
48-59	60	52.2	55	47.8	115	23.1	1.1
Total	250	50.3	247	49.7	497	100.0	1.0

Table 6.2: Prevalence of acute malnutrition based on weight-for-height z-scores by sex

	All n = 488	Boys n = 246	Girls n = 242
Prevalence of global malnutrition (<-2 z-score)	(10) 2.0 % (1.1- 3.7 95% C.I.)	(4) 1.6 % (0.6- 4.1 95% C.I.)	(6) 2.5 % (1.1- 5.3 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score)	(8) 1.6 % (0.8- 3.2 95% C.I.)	(3) 1.2 % (0.4- 3.5 95% C.I.)	(5) 2.1 % (0.4- 4.8 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score)	(2) 0.4 % (0.1- 1.5 95% C.I.)	(1) 0.4 % (0.1- 2.3 95% C.I.)	(1) 0.4 % (0.1- 2.3 95% C.I.)

Table 6.3: Prevalence of acute malnutrition by age, based on weight-for-height z-scores

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
Age (mo)	Total no.	No.	%	No.	%	No.	%
6-11	50	0	0.0	0	0.0	50	100.0
12-23	128	0	0.0	1	0.8	127	99.2
24-35	88	1	1.1	2	2.3	85	96.6
36-47	108	0	0.0	2	1.9	106	98.1
48-59	114	1	0.9	3	2.6	110	96.5
Total	488	2	0.4	8	1.6	478	98.0

6. Umpiem Mai (con't)

Table 6.4: Prevalence of stunting based on height-for-age z-scores and by sex

	All n = 486	**Boys** n = 246	**Girls** n = 240
Prevalence of stunting (<-2 z-score)	(207) 42.6 % (38.3-47.0 95% C.I.)	(123) 50.0 % (43.8-56.2 95% C.I.)	(84) 35.0 % (29.2-41.2 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(167) 34.4 % (30.3-38.7 95% C.I.)	(101) 41.1 % (35.1-47.3 95% C.I.)	(66) 27.5 % (22.2-33.5 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(40) 8.2 % (6.1-11.0 95% C.I.)	(22) 8.9 % (6.0-13.2 95% C.I.)	(18) 7.5 % (4.8-11.5 95% C.I.)

Table 6.5: Prevalence of stunting by age based on height-for-age z-scores

		Severe stunting (<-3 z-score)		**Moderate stunting (>= -3 and <-2 z-score)**		**Normal (> = -2 z score)**	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-11	50	3	6.0	9	18.0	38	76.0
12-23	126	13	10.3	40	31.7	73	57.9
24-35	88	5	5.7	36	40.9	47	53.4
36-47	108	10	9.3	38	35.2	60	55.6
48-59	114	9	7.9	44	38.6	61	53.5
Total	486	40	8.2	167	34.4	279	57.4

Table 6.6: Mean z-scores and excluded subjects

Indicator	n	Mean z-scores ± SD	z-scores not available	z-scores out of range
Weight-for-Height	488	-0.21±0.96	9	0
Height-for-Age	486	-1.75±1.04	11	0

7. Nu Po

Results Tables for WHO Growth Standard, 2006

Table 7.1: Distribution of age and sex of sample

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:Girl
6-11	26	55.3	21	44.7	47	8.6	1.2
12-23	56	47.5	62	52.5	118	21.7	0.9
24-35	60	50.8	58	49.2	118	21.7	1.0
36-47	67	55.8	53	44.2	120	22.1	1.3
48-59	60	42.6	81	57.4	141	22.5	0.7
Total	269	49.4	275	50.6	544	100.0	1.0

Table 7.2: Prevalence of acute malnutrition based on weight-for-height z-scores by sex

	All n = 544	Boys n = 269	Girls n = 275
Prevalence of global malnutrition (<-2 z-score)	(3) 0.6 % (0.2 – 1.6 95% C.I.)	(2) 0.7 % (0.2 – 2.7 95% C.I.)	(1) 0.4 % (0.1 - 2.0 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score)	(2) 0.4 % (0.1 – 1.3 95% C.I.)	(1) 0.4 % (0.1 – 2.1 95% C.I.)	(1) 0.4 % (0.1 - 2.0 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score)	(1) 0.2 % (0.0 - 1.0 95% C.I.)	(1) 0.4 % (0.1 - 2.1 95% C.I.)	(0) 0.0 % (0.0 - 1.4 95% C.I.)

Table 7.3: Prevalence of acute malnutrition by age, based on weight-for-height z-scores

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
Age (mo)	Total no.	No.	%	No.	%	No.	%
6-11	47	0	0.0	1	2.1	46	97.9
12-23	118	1	0.8	1	0.8	116	98.3
24-35	118	0	0.0	0	0.0	118	100.0
36-47	120	0	0.0	0	0.0	120	100.0
48-59	141	0	0.0	0	0.0	141	100.0
Total	544	1	0.2	2	0.4	541	99.4

7. Nu Po (con't)

Table 7.4: Prevalence of stunting based on height-for-age z-scores and by sex

	All n = 543	**Boys** n = 269	**Girls** n = 274
Prevalence of stunting (<-2 z-score)	(204) 37.6 % (33.6 – 41.7 95% C.I.)	(94) 34.9 % (29.5 – 40.8 95% C.I.)	(110) 40.1 % (34.5 - 46.2 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(151) 27.8 % (24.2 – 31.7 95% C.I.)	(63) 23.4 % (18.8 – 28.8 95% C.I.)	(88) 32.1 % (26.9 – 37.9 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(53) 9.8 % (7.5 – 12.6 95% C.I.)	(31) 11.5 % (8.2 – 15.9 95% C.I.)	(22) 8.0 % (5.4 – 11.9 95% C.I.)

Table 7.5: Prevalence of stunting by age based on height-for-age z-scores

		Severe stunting (<-3 z-score)		**Moderate stunting (>= -3 and <-2 z-score)**		**Normal (> = -2 z score)**	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-11	47	3	6.4	4	8.5	40	85.1
12-23	118	10	8.5	28	23.7	80	67.8
24-35	118	9	7.6	39	33.1	70	59.3
36-47	119	18	15.1	34	28.6	67	56.3
48-59	141	13	9.2	46	32.6	82	58.2
Total	543	53	9.8	151	27.8	339	62.4

Table 7.6: Mean z-scores and excluded subjects

Indicator	n	Mean z-scores ± SD	z-scores not available	z-scores out of range
Weight-for-Height	544	-0.01±0.83	0	0
Height-for-Age	543	-1.70±1.05	1	0

8. Ban Don Yang

Results Tables for WHO Growth Standard, 2006

Table 8.1: Distribution of age and sex of sample

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:Girl
6-11	21	50.0	21	50.0	42	10.7	1.0
12-23	42	48.3	45	51.7	87	22.2	0.9
24-35	36	40.9	52	59.1	88	22.4	0.7
36-47	53	56.4	41	43.6	94	24.0	1.3
48-59	38	46.9	43	53.1	81	20.7	0.9
Total	190	48.5	202	51.5	392	100.0	0.9

Table 8.2: Prevalence of acute malnutrition based on weight-for-height z-scores by sex

	All n = 388	Boys n = 186	Girls n = 202
Prevalence of global malnutrition (<-2 z-score)	(4) 1.0 % (0.4- 2.6 95% C.I.)	(3) 1.6 % (0.6- 4.6 95% C.I.)	(1) 0.5 % (0.1- 2.8 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score)	(3) 0.8 % (0.3 – 2.2 95% C.I.)	(2) 1.1 % (0.3- 3.8 95% C.I.)	(1) 0.5 % (0.1- 2.8 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score)	(1) 0.3 % (0.1- 1.5 95% C.I.)	(1) 0.5 % (0.3- 3.8 95% C.I.)	(0) 0.0 % (0.0- 1.9 95% C.I.)

Table 8.3: Prevalence of acute malnutrition by age, based on weight-for-height z-scores

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
Age (mo)	Total no.	No.	%	No.	%	No.	%
6-11	42	0	0.0	0	0.0	42	100.0
12-23	86	0	0.0	2	2.3	84	97.7
24-35	87	0	0.0	0	0.0	87	100.0
36-47	92	0	0.0	0	0.0	92	100.0
48-59	81	1	1.2	1	1.2	79	97.5
Total	388	1	0.3	3	0.8	384	99.0

8. Ban Don Yang

Table 8.4: Prevalence of stunting based on height-for-age z-scores and by sex

	All n = 390	**Boys** n = 188	**Girls** n = 202
Prevalence of stunting (<-2 z-score)	(174) 44.6 % (39.8-49.6 95% C.I.)	(88) 46.8 % (39.8-53.9 95% C.I.)	(86) 42.6 % (36.0-49.5 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(127) 32.6 % (28.1-37.4 95% C.I.)	(62) 33.0 % (26.7-40.0 95% C.I.)	(65) 32.2 % (26.1-38.9 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(47) 12.1 % (9.2-15.7 95% C.I.)	(26) 13.8 % (9.6-19.5 95% C.I.)	(21) 10.4 % (6.9-15.4 95% C.I.)

Table 8.5: Prevalence of stunting by age based on height-for-age z-scores

		Severe stunting (<-3 z-score)		**Moderate stunting (>= -3 and <-2 z-score)**		**Normal (> = -2 z score)**	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-11	42	2	4.8	7	16.7	33	78.6
12-23	86	9	10.5	19	22.1	58	67.4
24-35	87	10	11.5	27	31.0	50	57.5
36-47	94	14	14.9	37	39.4	43	45.7
48-59	81	12	14.8	37	45.7	32	39.5
Total	390	47	12.1	127	32.6	216	55.4

Table 8.6: Mean z-scores and excluded subjects

Indicator	n	Mean z-scores ± SD	z-scores not available	z-scores out of range
Weight-for-Height	388	-0.20±0.77	4	0
Height-for-Age	390	-1.85±1.04	2	0

9. Tham Hin

Results Tables for WHO Growth Standard, 2006

Table 9.1: Distribution of age and sex of sample

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:Girl
6-11	31	46.3	36	53.7	67	11.3	0.9
12-23	67	53.6	58	46.4	125	21.1	1.2
24-35	68	51.9	63	48.1	131	22.1	1.1
36-47	71	49.3	73	50.7	144	24.3	1.0
48-59	68	54.4	57	45.6	125	21.1	1.2
Total	305	51.5	287	48.5	592	100.0	1.1

Table 9.2: Prevalence of acute malnutrition based on weight-for-height z-scores by sex

	All n = 587	Boys n = 303	Girls n = 284
Prevalence of global malnutrition (<-2 z-score)	(25) 4.3 % (2.9- 6.2 95% C.I.)	(14) 4.6 % (2.8- 7.6 95% C.I.)	(11) 3.9 % (2.2- 6.8 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score)	(22) 3.7 % (2.5- 5.6 95% C.I.)	(13) 4.3 % (2.5- 7.2 95% C.I.)	(9) 3.2 % (1.7- 5.9 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score)	(3) 0.5 % (0.2- 1.5 95% C.I.)	(1) 0.3 % (0.1- 1.9 95% C.I.)	(2) 0.7 % (0.2- 2.5 95% C.I.)

Table 9.3: Prevalence of acute malnutrition by age, based on weight-for-height z-scores

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
Age (mo)	Total no.	No.	%	No.	%	No.	%
6-11	67	1	1.5	5	7.5	61	91.0
12-23	124	0	0.0	7	5.6	117	94.4
24-35	131	1	0.8	4	3.1	126	96.2
36-47	142	1	0.7	5	3.5	136	95.8
48-59	123	0	0.0	1	0.8	122	99.2
Total	587	3	0.5	22	3.7	562	95.7

9. Tham Hin (con't)

Table 9.4: Prevalence of stunting based on height-for-age z-scores and by sex

	All n = 589	**Boys** n = 305	**Girls** n = 284
Prevalence of stunting (<-2 z-score)	(251) 42.6 % (38.7-46.6 95% C.I.)	(140) 45.9 % (40.4-51.5 95% C.I.)	(111) 39.1 % (33.6-44.9 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(170) 28.9 % (25.4-32.7 95% C.I.)	(95) 31.1 % (26.2-36.6 95% C.I.)	(75) 26.4% (21.6-31.8 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(81) 13.8 % (11.2-16.8 95% C.I.)	(45) 14.8 % (11.2-19.2 95% C.I.)	(36) 12.7 % (9.3-17.1 95% C.I.)

Table 9.5: Prevalence of stunting by age based on height-for-age z-scores

		Severe stunting (<-3 z-score)		**Moderate stunting (>= -3 and <-2 z-score)**		**Normal (> = -2 z score)**	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-11	66	4	6.1	8	12.1	54	818
12-23	125	12	9.6	33	26.4	80	64.0
24-35	131	17	13.0	42	32.1	72	55.0
36-47	143	28	19.6	34	23.8	81	56.6
48-59	124	20	16.1	53	42.7	51	41.1
Total	589	81	13.8	170	28.9	338	57.4

Table 9.6: Mean z-scores and excluded subjects

Indicator	n	Mean z-scores ± SD	z-scores not available	z-scores out of range
Weight-for-Height	587	-0.31±0.92	5	0
Height-for-Age	589	-1.84±1.08	3	0

APPENDIX 2

SURVEY FORM

Number/ID_______________ *(refer to survey list)* Today's Date________________
နီၣ်ဂံၢ်/နီၢ်ကစၢ်နီၣ်ဂံၢ် *(မၤန့ၢ်အီၤလၢတၢ်ဃုသ့ၣ်ညါတၢ်အစရီပူၤ)* တနံၤအံၤအမုၢ်နံၤမုၢ်သီ

Child's Name______________ Child's PIN number ____________*(refer to ration book)*
ဖိသၣ်အမံၤ ဖိသၣ်နီၢ်ကစၢ်အနီၣ်ဂံၢ် *(မၤန့ၢ်အီၤလၢတၢ်နီၤလီၤတၢ်အီၣ်အလံာ်အစရီပူၤ)*

Camp__________________ Zone_______ Section _______ House No.__________
ဒဲကဝီၤ ကဝီၤဖိၣ်/ဖိၤန် ကဝီၤဒ ဟံၣ်နီၣ်ဂံၢ်

HOUSEHOLD INFORMATION ဟံၣ်ဖှၣ်ဃီထၢအတၢ်ဂ့ၢ်တၢ်ကျိၤ

1. Do you live in the same household as this child? မ့ၢ်နအိၣ်လၢဟံၣ်တဖျၢၣ်ဃီအပူၤဒီးဖိသၣ်အဝဲအံၤန့ၣ်ဓါ.

(1)☐ Yes အိၣ်တပူၤဃီ (2)☐ No တအိၣ်တပူၤဃီ (if no, skip to Child Health Card Section)
(မ့ၢ်တအိၣ်တပူၤဃီဘၣ်န့ၣ်,လဲၤဆူတၢ်သံကွၢ်လၢအမ့ၢ်ဖိသၣ်တၢ်အိၣ်ဆူၣ်အိၣ်ချ့အလဲးမးက့အပတိၢ်)

1a. What is your relationship with this child?နတၢ်ဘၣ်ထွဲဘၣ်ဃးလိာ်သးဒီးဖိသၣ်တဂၤအံၤဒ်လဲၣ်.

____

2. How long has the child lived in the camp (including time spent in other camps)?
ဖိသၣ်အဝဲအံၤန့ၣ်အိၣ်လၢဒဲကဝီၤပူၤယံာ်ဆံးယံာ်လဲလဲၣ်. (ဃုာ်ဒီးအအိၣ်လၢဒဲကဝီၤအဂုၤအဂၤတဖၣ်အပူၤ)

Years နံၣ် _________ Months လါ ________ (99) ☐Don't know တသ့ၣ်ညါဘၣ်

3. How many people live in the same house as this child (including this child)?
ပှၤအိၣ်တပူၤဃီဒီးဖိသၣ်အံၤလၢဟံၣ်တဖျၢၣ်ဃီအပူၤန့ၣ်အိၣ်ပှဲၤဂၤလဲၣ်. (ဟ်ဃုာ်ဒီးဖိသၣ်အဝဲအံၤအနီၢ်စၢ်)

3a. No. of people ပှၤအနီၣ်ဂံၢ် <5 စုၤန့ၢ်၅နံၣ်________(1) 5-17 ၅နံၣ်–၁၇နံၣ်________(2)
18+ ၁၈နံၣ်ဒီးပှၤသးပှၢ်________(3)

4. Does your household have a TBC ration book?မ့ၢ်နဟံၣ်ဖှၣ်ဃီထၢဒီးန့ၢ်အိၣ်ဒီးထံၣ်ဘံၣ်စံၣ်**(TBC)** အတၢ်နီၤလီၤတၢ်အလံာ်စ့ၢ်ဓါ.

(1)☐Yes အိၣ် (2)☐No တအိၣ် (99)☐Don't know တသ့ၣ်ညါဘၣ်

5. How many of HH members are listed on TBC ration book?
ဟံၣ်ဖိဃီဖိအနီၣ်ဂံၢ်အိၣ်ပှဲၤဂၤလၢထံၣ်ဘံၣ်စံၣ်အလံာ်နီၤလီၤတၢ်အစရီအပူၤန့ၣ်လဲၣ်. ____________

5a. Only CMT Camps(refer to ration book)– HH ration book stamped: ထဲဒ်CMT အဒဲကဝီၤတဖၣ်
(မၤန့ၢ်အီၤလၢတၢ်နီၤလီၤတၢ်အလံာ်စရီပူၤ) – ဟံၣ်ဖှၣ်ဃီထၢအလံာ်နီၤလီၤတၢ်လၢတၢ်တိၢ်လီၤ တၢ်စဲပနီၣ်လၢအပူၤ.

(1) ☐ SR (2)☐MV (3)☐V (4)☐ None (Standard Ration)နီတခါ (တၢ်နီၤလီၤတၢ်အတီၤပတိၢ်)

6. Which ethnicity does your family most closely identify with?
နဟံၣ်ဖိဃီဖိန့ၣ်ဘၣ်တၢ်သ့ၣ်ညါအီၤအဘူးကတၢၢ်လၢအမ့ၢ်ကလုာ်ဖဲလဲၣ်တကလုာ်လဲၣ်.

(1) ☐**Sgaw / Pwo** စှီၤ/ဖှိၤ
(2) ☐**Karenni** ကရ့ၣ်နံၣ်
(3) ☐**Burmese Muslim** ပယီၤမူးစလ့ၣ်
(4) ☐**Arakan** ရၢၣ်ခၢၣ်
(5) ☐**Burman** ပှၤပယီၤဖိ
(6) ☐**Mon** တလၢၤ
(7) ☐**Shan** ပှၤယိၤဖိ
(8) ☐**Kachin** ကခ့ၣ်
(9) ☐ Chinခ့ၣ်
(10) ☐ Otherကလုာ်အဂုၤအဂၤ_______________

HOUSEHOLD HUNGER SCORE တ်မၤနိၣ်မၤဃါဟံၣ်ဇူၣ်ဃီထၢအတ်သၣ်ဝံၤလီၤဖိအမး

7. In the past 4 weeks (30 days), was there ever **no food to eat** of any kind in your house because of lack of resources to get food?
လၢအပူၤကွံၥ်လွံၤ်နွံ(၃၀သီ)နူၣ်, မ့ၤ်တ်ၤအိၣ်တအိၣ်ဘၣ်လၢနကအိၣ်အီၤလၢနဟံၣ်ပူၤခီဖျိလၢတ်ၤဖိတ်ၤလံၤလၢကလဲၤမၤန့ၤ်တ်ၤအိၣ်အဂီၤ် တအိၣ်ဘၣ်နူၣ်အိၣ်တဘျီဘျိဧါ.

(1)☐Yes အိၣ် (2)☐No တအိၣ် (99)☐Don't know တသ့ၣ်ညါဘၣ်

7a. How often did this happen? တ်ၤဒ်အံၤကဲထိၣ်ညီနု၊်အသးဒ်လဲၣ်.
(1)☐Rarely (1 – 2 times) တညီနု၊်မၤအသး(၁–၁၀ ဘျီ)
(2) ☐Sometimes (3-10 times) မ့တမ့၊် တဘျီတခီၣ်
(3) ☐Often (more than 10 times) ကဲထိၣ်သးခဲအံၤခဲအံၤ (အါန့၊် ၁–၁၀ ဘျီ)
(99)☐Don't know/ Don't remember တသ့ၣ်ညါဘၣ်/တသ့ၣ်နီၣ်ဘၣ်

8. In the last 4 weeks, was there a time when you or any household member went to sleep at night hungry without eating anything at all because there was not enough food?
လၢအပူၤကွံၥ်လွံၤ်နွံနူၣ်, မ့ၤ်နၤဒီးနဟံၣ်ဖိဃီဖိန့ၣ်မံလၢမ့ၤ်နၤခီဒီးတ်ၤသၣ်ဝံၤအသးမ့ၤ်လၢတ်ၤအိၣ်တအိၣ်နီတမံၤလၢကအိၣ်အီၤအဂီၤ်ခီဖျိလ ၢတ်ၤ အိၣ်တအိၣ်လၢလၢပဲၤပဲၤဘၣ်နူၣ်အိၣ်တဘျီဘျိဧွင

(1)☐Yes အိၣ် (2)☐No တအိၣ် (99)☐Don't know တသ့ၣ်ညါဘၣ်

8a. How often did this happen? တ်ၤဒ်အံၤကဲထိၣ်ညီနု၊်အသးဒ်လဲၣ်.
(1)☐Rarely (1 – 2 times) တညီနု၊်မၤအသး(၁–၁၀ ဘျီ)
(2) ☐Sometimes (3-10 times) မ့တမ့၊် တဘျီတခီၣ်
(3) ☐Often (more than 10 times) ကဲထိၣ်သးခဲအံၤခဲအံၤ (အါန့၊် ၁–၁၀ ဘျီ)
(99)☐Don't know/ Don't remember တသ့ၣ်ညါဘၣ်/တသ့ၣ်နီၣ်ဘၣ်

9. **I**n the last 4 weeks was there a time when you or any household member went a whole day and night without eating anything at all because there was not enough food?
လၢအပူၤကွံၥ်လွံၤ်နွံနူၣ်, နၤဒီးနဟံၣ်ဖိဃီဖိတအိၣ်ဘၣ်တ်ၤအိၣ်နီတမံၤလၢမ့ၤ်ဆါဒီးမ့ၤ်နၤအဆၢကတိၤ်ခီဖျိလၢတ်ၤအိၣ်တအိၣ်လၢလၢပဲၤပဲၤ ဘၣ် နူၣ်အိၣ်တဘျီဘျိဧါ.

(1)☐Yes အိၣ် (2)☐No တအိၣ် (99)☐Don't know တသ့ၣ်ညါဘၣ်

9a. How often did this happen? တ်ၤဒ်အံၤကဲထိၣ်ညီနု၊်အသးဒ်လဲၣ်.
(1)☐Rarely (1 – 2 times) တညီနု၊်မၤအသး(၁–၁၀ ဘျီ)
(2) ☐Sometimes (3-10 times) မ့တမ့၊် တဘျီတခီၣ်
(3) ☐Often (more than 10 times) ကဲထိၣ်သးခဲအံၤခဲအံၤ (အါန့၊် ၁–၁၀ ဘျီ)
(99)☐Don't know/ Don't remember တသ့ၣ်ညါဘၣ်/တသ့ၣ်နီၣ်ဘၣ်

FEEDING PRACTICES တ်မၤတ်ၤဒုးအီၣ်ဒုးအီတဖၣ်

10. Is this child currently breastfeeding? အဆၢကတိၤ်ခဲအံၤဖိသၣ်အဝဲအံၤန့ၣ်မ့ၤ်နဟ့ၣ်ဒုးအီအီၤနု၊်ထံဧါ.
(1)☐Yes အိၣ် (2)☐No တအိၣ် (99)☐Don't know တသ့ၣ်ညါဘၣ်

11. For how many months has this child been breastfeeding?၁၁. ဖိသၣ်အဝဲအံၤအီဘၣ်နု၊်ထံပဲၤလါလံလဲၣ်.

_____months လါ

(1)☐Don’t know/ don’t remember တသ့ဉ်ညါဘဉ်/တသ့ဉ်နီဉ်ဘဉ်

(2)☐Never breastfed တဒုးအီန့်ထံနီတဘျိဘဉ်

12. How old was this child when you give the first meal? (meal is solid food, or semi-solid food and soft food)
ဖိသဉ်အံၤဖဲလၢနဒုးအီဉ်အီၤတၢ်အီဉ်အခီဉ်ထံးကတၢ်တဘျိန္ဉ်အသးအိဉ်ပဲၤနံဉ်လဲဉ်.
(တၢ်အီဉ်လၢအအိဉ်ဒီးအသံးအကာ်,မ့တမ့် တၢ်အီဉ်ဟ်ဃုာ်ဒီးအသံးအကာ်တစဲးတမဲၤဒီးတၢ်အီဉ်လၢအကဟ်လုာ်)

(1)☐Less than 2 weeks စ့ၤန့်ခံန္ဒံ

(2)☐2 week – less than 1 month ခံန္ဒံ – စ့ၤန့်တလါ

(3)☐1 month – less than 4 months တလါ – စ့ၤန့်လွံၤလါ

(4)☐4 months – less than 6 months လွံၤလါ – စ့ၤန့်ဃုလါ

(5)☐At 6 months ဃုလါ

(6)☐Older than 6 months အါန့်ဃုလါ

(7)☐Has not yet given တဟ့ဉ်ဒုးအီဉ်ဘဉ်

(99)☐Don’t know / Don’t remember တသ့ဉ်ညါဘဉ်/တသ့ဉ်နီဉ်ဘဉ်.

13. How many meals did this child eat during last 24 hours? (meals refer staple food, not small snacks)
လၢအပူၤကွံဉ်၂၄နဉ်ရံဉ်အတၢ်ပူၤန္ဉ်, ဖိသဉ်အံၤအီဉ်တၢ်အီဉ်ပဲၤဘျိလဲဉ်. (တၢ်အီဉ်တဖဉ်လၢအမ့ၢ်တၢ်အီဉ်မိၢ်ပှၤ်,
လၢအပဉ်ဃုာ်ဒီးကသူ မ့တမ့ၢ်တပဉ်ဃုာ်ဒီးတၢ်အီဉ်အဂုၤအဂၤ. ဘဉ်ဆဉ်တပဉ်ဃုာ်ဒီးတၢ်အီဉ်လၢနီဉ်တၢၤအီဉ်မ့ၤတတၢၤ)

Number of meals အီဉ်တၢ်အီဉ်အဘျိတဖဉ်_____

(99)☐Don’t know/ don’t remember တသ့ဉ်ညါဘဉ်/တသ့ဉ်နီဉ်ဘဉ်.

14. How many snacks did this child eat during last 24hours? (kanom, AsiaREMix snacks, fruit, other)
လၢအပူၤကွံဉ်၂၄နဉ်ရံဉ်အတၢ်ပူၤန္ဉ်, ဖိသဉ်အံၤအီဉ်တၢ်အီဉ်ကစဲးကစီး/တၢ်အီဉ်ကျၢၤသး တဖဉ်ပဲၤဘျိလဲဉ်.
(ကိဉ်, ကိဉ်အ့ရှဉ်ရံးမံးစ်, တၤသူတၤသဉ်,အဂုၤအဂၤတဖဉ်)

Number of snacks_____ အီဉ်တၢ်အီဉ်ကစဲးကစီးအဘျိတဖဉ်

(99)☐Don’t know / Don’t remember တသ့ဉ်ညါဘဉ်/တသ့ဉ်နီဉ်ဘဉ်.

15. At this ration distribution, did you receive AsiaRemix?
လၢတၢ်နီၤလီၤတၢ်အီဉ်နှဉ်, မ့ၢ်နဒိးန့ၢ်ဘဉ်အ့ရှဉ်ရံးမံးစ်(AsiaRemix)စၢ်.

(1)☐Yes အိဉ် (2)☐No တအိဉ် (99)☐Don’t know တသ့ဉ်ညါဘဉ်

16. During **this past week** did this child eat any AsiaREMix?
လၢအပူၤကွံဉ်နံ့အဝဲအံၤအတၢ်ပူၤန္ဉ်, မ့ၢ်ဖိသဉ်အံၤအီဉ်ဘဉ်အ့ရှဉ်ရံးမံးစ်(AsiaRemix)စၢ်.

(1)☐Yes အိဉ် (2)☐No တအိဉ် (99)☐Don’t know တသ့ဉ်ညါဘဉ်

16a. **If YES,**how many daysdid the child eat AsiaREMix?
၁ဖိက. မ့ၢ်အီဉ်ဘဉ်ဝဲတခီ, ဖိသဉ်အံၤအီဉ်ဝဲအ့ရှဉ်ရံးမံးစ်(AsiaRemix)ပဲၤသိလဲဉ်. _____ days သိ

(99)☐Don’t know တသ့ဉ်ညါဘဉ်

16b. **If NO**, why not? မ့ၢ်တအီဉ်ဘဉ်ဝဲတခီ, ဘဉ်မနုၤအဃိလဲဉ်.

(1)☐cannot cook it ဖိအီဉ်တဘဉ်ဘဉ်.

(2)☐run out of AsiaREMIX အ့ရှဉ်ရံးမံးစ်(AsiaRemix)လၢာ်ဝဲ.

(3)☐child does not like itဖိသဉ်အီဉ်တဝံဉ်ဘဉ်.

(4)☐not enough oil to cook သိတအိၵ်ဝဲလၢလၢလီၢ်လီၢ်လၢကဖီအိၵ်ဝဲအဂီၢ်

(5)☐other အဂုၤအဂၤ_____

CHILD HEALTH CARD ဖိသင်္ဘာ်အိဉ်ဆူဉ်အိဉ်ချ့အလဲးမးက့

17. Sex မှဉ်/ခွါ (1)☐Male ခွါ (2)☐Female မှဉ်
(refer to child's health card/lemma) (လၢဖိသင်္ဘာ်အိဉ်ဆူဉ်အိဉ်ချ့အခးကၠလိၤ/တၢ်မၤနီဉ်အပူၤ)

18. What is the birth date of this child?ဖိသင်္ဘအအိဉ်ဖျဉ်မ့ၢ်နံၤမ့ၢ်သီအနံဉ်အလါမ့ၢ်မနုၤလဲဉ်.
Day (dd) မ့ၢ်နံၤ _____ Month(mm) လါ _____ Year (yyyy) နံ့ဉ် _____
(99)☐Don't know/ don't remember တသ့ဉ်ညါဘဉ်/တသ့ဉ်နီဉ်ဘဉ်

AGE IN MONTHS_____
လါအဝဲန္ဉ်အပူၤ အသးနံ့ဉ်_____

19. Birth weight အိဉ်ဖျဉ်အတယၢ်ၣၢ _____g / kg
(refer to child's health card/lemma)FROM CHILD'S HEALTH ကြၢးမ် / ကံလိကြၢးမ်
*(ကွၢ်လၢဖိသင်္ဘာ်အိဉ်ဆူဉ်အိဉ်ချ့အခးကၠလိၤ/တၢ်မၤနီဉ်အပူၤ)*လၢဖိသင်္အတၢ်အိဉ်ဆူဉ်အိဉ်ချ့.
(99)☐Don't know/ don't remember တသ့ဉ်ညါဘဉ်/တသ့ဉ်နီဉ်ဘဉ်

20. Does this child attend nursery school in the camp? (a*sk mother – does not include kindergarten)*
မ့ၢ်ဖိသင်္အဝဲအံၤထိဉ်ဝဲတီၤဘျိကွိလၢဒဲကဝီၤအပူၤန္ဉ်ဓါ. *(သံကွၢ်အမိ် – တဟ်ဃုာ်ဒီးတီၤဖိသင်္ဘဉ်.)*
(1)☐Yes အိဉ် (2)☐No တအိဉ် (99)☐Don't know တသ့ဉ်ညါဘဉ်

21. Is this child currently enrolled in:*(refer to child's health card/lemma)*
မ့ၢ်ဖိသင်္အံၤန္ဉ်အခဲအံၤဆဲးလီၤအမံၤလၢ – *(ကွၢ်လၢဖိသင်္ဘာ်အိဉ်ဆူဉ်အိဉ်ချ့အခးကၠလိၤ/တၢ်မၤနီဉ်အပူၤ)*
(1)☐SFP (2)☐TFP (3)☐Not Enrolled တဆဲးလီၤမံၤဘဉ်
(99)☐Don't know တသ့ဉ်ညါဘဉ်/တသ့ဉ်နီဉ်ဘဉ်

21a. **If YES**, how long has this child been enrolled in SFP / TFP?
မ့ၢ်ဆဲးလီၤမံၤတခိ, ဖိသင်္အဝဲအံၤန္ဉ်ဆဲးလီၤအမံၤလၢ SFP / TFP ဆံးယာ်လံလဲဉ်. –
(1)☐Less than 2 weeks စ့ၤန့ၢ် ၂ နှဲ့
(2)☐2-6 weeks ၂ – ၆ နှဲ့
(3)☐more than 6 weeks အါန့ၢ် ၆ နှဲ့
(99)☐Don't know တသ့ဉ်ညါဘဉ်.

22. Has this child ever been enrolled SFP / TFP? မ့ၢ်ဖိသင်္အံၤန္ဉ်အခဲအံၤဆဲးလီၤအမံၤလၢ SFP / TFP တဘျိဘျိဓါ.
(1)☐Yes အိဉ် (2)☐No တအိဉ် (99)☐Don't know တသ့ဉ်ညါဘဉ်

22a. **If YES**, what was the reason for exit?
မ့ၢ်ဆဲးလီၤမံၤတခိ, တၢ်ဂ့ၢ်မနုၤလဲဉ်လၢအဘဉ်ဟးထိဉ်ဝဲန္ဉ်လဲဉ်.
(1)☐cured ဘျါဝဲအဃ
(2)☐default တမၤလၢမၤဟ့ဉ်ၤဝဲဘဉ်
(3)☐non-cured – long termတဘျါဝဲ –ဘဉ်အိဉ်ယာ်
(99)☐Don't know တသ့ဉ်ညါဘဉ်

23. Date of last vitA supply (refer to child's health card/lemma)
မ့ၢ်နံၤမ့ၢ်သီလၢတၢ်ဟ့ဉ်လီၤ vitamin A

လၢအလိၢ်ခံကတၢ်တဘျိ *(ကွၢ်လၢဖိသၣ်တၢ်အိၣ်ဆူၣ်အိၣ်ချ့အခးက့လိၤ/တၢ်မၤနှိၣ်အပူၤ)*

Day (dd) မ့ၢ်နံၤ _____ Month(mm) လါ _____Year (yyyy) နံၣ် _____

☐ တၢ်ကွဲးနိၣ်ကွဲးဃါတအိၣ်

24. Date of last de-worm(refer to child's health card/lemma)

မ့ၢ်နံၤမ့ၢ်သီလၢတၢ်ဟ့ၣ်ဒုးအီကသံၣ်ထိးကလဲာ်အကတၢ်တဘျိ *(ကွၢ်လၢဖိသၣ်တၢ်အိၣ်ဆူၣ်အိၣ်ချ့အခးက့လိၤ/ တၢ်မၤနှိၣ်အပူၤ)*

Day (dd) မ့ၢ်နံၤ _____ Month(mm) လါ _____Year (yyyy) နံၣ် _____

☐ တၢ်ကွဲးနိၣ်ကွဲးဃါတအိၣ်

CLINICAL EXAM တၢ်မၤကွၢ်တၢ်ဆူးတၢ်ဆါအတၢ်သံကွၢ်

25. Within this month, has child been ill?လၢတလါအံၤအတီၢ်ပူၤန့ဉ်, ဖိသၣ်အံၤဆိးက့တဘျီဘျီဓါ.

(1)☐Yes ဆိၣ် (2)☐No တအိၣ် (99)☐Don't know တသ့ၣ်ညါဘၣ်

24a. I**f YES**, was the illness serious? (eg malaria, acute diarrhea, pneumonia, had to go to clinic…)

မ့ၢ်ဆိးကွနှဉ်, မ့ၢ်အဆိးကွနးနးဓါ. (အဒိ, တၢ်ညၣ်ဂိၢ်, တၢ်ဟၣဖၣလူသတူၢ်ကလာ်, ပသိၣ်တၢ်ခုၣ်ဘၣ်, ဘၣ်လဲၤဆူတၢ်ဟ့ၣ်ကသံၣ်ဒၤးလီၢ်.....)

(1)☐Yes ဆိၣ် (2)☐No တအိၣ် (99)☐Don't know တသ့ၣ်ညါဘၣ်

26. Angular Stomatitis (both sides) ကိာ်ပူၤကနူၤထံးညိး/ပူၤလီၢ်ထိၣ်(ခံကပၤလၢာ်)

(1)☐Yes ဆိၣ် (2)☐No တအိၣ် (99)☐Don't know တသ့ၣ်ညါဘၣ်

WEIGHT AND HEIGHT တယၢ်ဃၢဒီးအနီၢ်ထိ

27. Weight of child ဖိသၣ်အတယၢ်ဃၢ _____ kg

☐unable to measureထိၣ်ကွၢ်စိၤကွၢ်တသ့ဘၣ်

28. Height / Length of childဖိသၣ်အဒိၣ်အထိ _____ cm

☐unable to measureထိၣ်ကွၢ်စိၤကွၢ်တသ့ဘၣ်

29. Does this child has disability?

ဖိသၣ်အဝဲအံၤမ့ၢ်ဖိသၣ်လၢအိၣ်ဒီးအကွၢ်ဂီၤတလၢပဲၤ/ဟူးဂဲၤဖံးမၤတသ့နှဉ်ဓါ.

(1)☐Yes ဆိၣ် (2)☐No တအိၣ် (99)☐Don't know တသ့ၣ်ညါဘၣ်

29a. **If yes,** what is the disability?*(ask the caretaker for their common word)*

မ့ၢ်အိၣ်နှဉ်, အကွၢ်ဂီၤတလၢတပဲၤ/ဟူးဂဲၤဖံးမၤတသ့နှဉ်မ့ၢ်တၢ်မနုၤလဲၣ်.

(သံကွၢ်ပှၤကွၢ်ထွဲတၢ်လၢအဝဲသ့ၣ်အတၢ်ကတိၤညီနၢ်)

Z SCORE AND REFERRAL မၤန့ၢ်အမး Z (z-score) ဒီးတၢ်ဆုၤဃီၤဆူညါတတီၤ

30. Weight-for-height z-score အနိၢ်ဒိဉ်နိၢ်ထိတယၢ်ဃၤလၢအမးအိဉ်ဝဲ z
(refer to WHO table for Z score and referral - use CDC table for above ≤1.5 for home visit and follow up)

(ကွၢ်သဃဲၤအီၤလၢဟိဉ်ခိဉ်ဒီဘ့ဉ်ဆူဉ်ချ့ကရၢအစရီပူၤလၢအမ့ၢ် အမးဒီးတၢ်ဆုၤဃီၤဆူညါ – သူCDCအစရီလၢတၢ်ဖိခိဉ်အဂီၢ် ≤1.5 လၢတၢ်ဟးအိဉ်သကိးဟံဉ်ဒီးလူၤကွၢ်ထွဲကှၤအီၤ)

(1)☐**< -3** (2)☐**< - 2** (3)☐ **- 2** (4)☐**≤ -1.5** (5)☐**>-1.5**

31. Referred to ကွၢ်သဃဲၤအီၤလၢ (1)☐TFP (2)☐SFP (3)☐CHE/CHW (4)☐No referral necessary

တလိဉ်တၢ်ကဘဉ်ဆုၤဃီၤဆူညါတတီၤဘဉ် ***NO REFERRAL IF ≤-2 AND ALREADY ENROLLED IN SFP/TFP***

တလိဉ်လၢတၢ်ကဘဉ်ဆုၤဃီၤဆူညါတတီၤဘဉ်လၢအမ့ၢ်အိဉ်ဒုၤန့ၢ်မ့တမ့ၢ်ထဲသိးသိး (≤-2) ဒီးဆဲးလီၤလံအမံၤလၢ SFP/TFPအပူၤ.

APPENDIX 3

TRAINING OUTLINE AND NUTRITION SURVEY PROTOCOL

Nutrition Survey Training Outline			
TIME NEEDED	**TOPIC**	**SUBTOPICS**	**ACTIVITIES/MATERIALS**
20 min	Introductions	1. Role in health, how long, experience w/ surveys	- participation/discussion
30 min	Overview of malnutrition	2. Acute versus chronic 3. Micronutrient deficiencies 4. Causes of malnutrition	- discussion - malnutrition pictures (wasting, stunting, edema, vit A, B2)
20 min	Surveys and surveillance	1. What is the difference btwn survey & growth monitoring 2. Why both – coverage, can use 'snapshot' to compare to SFP 3. Frequency of surveys and why 4. Other PH opportunities	- Discussion - purpose of growth monitoring and surveys - Growth charts (from camp) - Survey results
20 min	Last year's nutrition survey results	1. GAM – all camps, by camp and by age groups 2. GCM – all camps, by camp and by age groups 3. SFP coverage 4. Vitamin A	- Charts on poster board
60 min	Survey Tool	1. survey form 2. confidentiality 3. survey participation request 4. write clearly – boxes, letters & numbers 5. survey sections – review with all	- survey form – 3 languages - questions/clarity
60 min	Practice weighing and measuring	1. Height 2. Weight 3. Edema	- length/height boards - scales - pictures / illustrations

		4. AS	measuring height/length, measuring weight measuring edema measuring AS - children
60 min	Survey Plan	1. equipment needed 2. survey setup 3. staffing – assign sections 4. supervision	- whiteboard or flip chart paper & pens - handout of survey setup
2 hours	Survey Run-through	1. stations and staff	- survey forms - boards/scales - z-score tables - WHO - children

NUTRITION SURVEY PROCEDURES
for Refugee Camps on the Thailand Burma Border

The Border Consortium, 2013
12/5 Convent Road, Silom Road
Bangkok, Thailand 10500

CONTENTS:

SOURCES

Leisel Tally MPH, International Health Branch, Centers for Disease Control and Prevention

The Management of Nutrition in Major Emergencies; WHO, 2000

Field Guide on Rapid Nutritional Assessment in Emergencies; WHO, 1995

Nutrition Guidelines; MSF, 1995

How To Weigh and Measure Children; UN Dept of Technical Co-operation for Development and Statistical Office, 1986

Community Nutritional Assessment, Jelliffe, et al., 1989

FOR INFORMATION, CONTACT:

Andrea Menefee, MPH, RD andrea@tbbc.org

I. SURVEY COORDINATION

The Border Consortium (TBC) provides technical support, training, and supervision to health agency staff for annual nutrition surveys conducted in all camps on the Thailand Burma border. TBBC organizes and supervises the survey and analyzes and reports survey data back to the health agency and the CCSDPT Health Information Systems (HIS) Officer.

Health agency staff are responsible for survey staffing, including medics/nurses for anthropometric measurements, home visitors for calling selected households and completing survey questionnaires,. Staffing numbers needed for surveys are outlined in the next section.

Survey dates are arranged in advance between TBC and health agencies. Responsibilities are outlined below:

TBC	• Overall survey organization • Survey questionnaire • Sampling • Survey training (practical) • Survey supervision • Data entry • Data analysis • Survey report writing
HEALTH AGENCY	• Survey staff (medics/nurses and home visitors) • Survey equipment in good working order • Translator (if necessary) • Logistics (eg transportation if necessary)

II. STAFFING AND EQUIPMENT NEEDED

The health agency will coordinate the following staff to conduct the survey:

Survey Staffing

No.	Staff member	Role
1	nurse/CHW	survey supervisor
3	CHW	registrar
5-6 depending on topic in each session	CHW	interviewer
1	medic/nurse	clinical exam
2	nurse/CHW	weight
3	nurse/CHW	height
1	CHW	z scores/review form
1-2	CHW	runners

The health agency insures that the following equipment is prepared and in ***good working order***:

- Salter spring-type hanging scale to 25 kg
- height board to 110 cm (UNICEF 'Shorr Board' or made to specifications – see Appendix)
- tables, chairs, pens

III. SURVEY TRAINING

Training will be conducted by TBBC in the camp for 1-2 days.

Training will include:

- registration and follow up procedures
- review of survey questionnaire
- clinical examination
- weight and height/length measurements
- z-score tables and referrals
- survey staff roles/jobs
- practice sessions

IV. METHODOLOGY

Sampling

The TBC Nutritionist will calculate the sample size for the survey.

Data needed for sample size calculation and sampling:

- household lists for entire camp from camp committee or home visitors
- current total population
- current <5 years population
- household size or number of households in the camp

Sampling Method: systematic random sampling from household lists (camp committee or home visitor/community health worker)

Sample Size Calculation: $n = \frac{k \times t^2 \times (1-p) \times p}{\gamma^2}$

n= sample size

k= design effect- for simple random sample, use 1

t= confidence interval (1.96 for 95% confidence interval)

p= estimated prevalence of malnutrition

γ= precision

To ensure the sample size is large enough to compensate for households that do not participate, an extra 10% is added to the calculated sample size.

Sample sizes for various prevalences derived from above formula (using 95% CI and a design effect of 1)

Prevalence	Precision	Sample Size	Add 10%
Acute			
4%	2%	368	408
5%	2%	456	506
Chronic			
50%	5%	384	426
40%	5%	368	408
30%	5%	276	306
40%	4%	576	640

If the population of children 6 to 59 months of age is less than 5000 the following formula is used:

$$\text{Revised sample size} = \frac{\text{sample size from formula}}{1 + (\text{sample size} / \text{total} < 5 \text{ pop})}$$

The revised sample is then divided by 0.9 to build in an additional 10% to ensure that the sample size is large enough.

$$\text{New sample size with additional 10\%} = \text{revised sample size} / 0.9$$

Sampling Interval Calculation

STEPS	HOW TO CALCULATE
1. determine the total population of children <5	use camp committee or home visitor lists
2. determine the no. households in the camp	use camp committee or home visitor lists
3. calculate the no. children <5 per household	= pop children <5 / no. households in camp
4. calculate the no. households needed to achieve the sample size	= sample size / no. children <5 per household
5. calculate the sampling interval	= no. households in the camp / no. households needed = every '*nth*' household

Sample Selection Process

1. The starting zone and section is randomly selected.

2. The first household in the zone or section is selected and marked, and then every *'nth'* household is selected and marked.

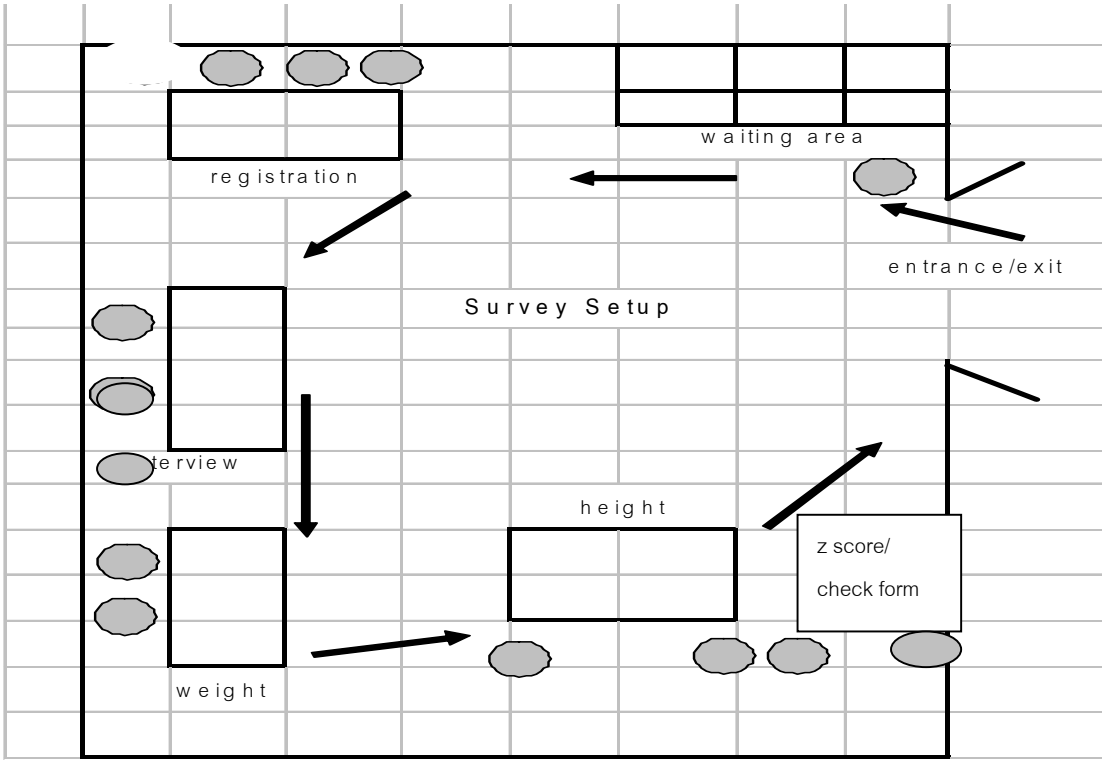
3. The process continues sequentially through the sections until all sections are completed (eg if section 9 is randomly selected, the selection will go on to section 10, 11...etc. and then back to one until the whole camp is sampled)

4. All households selected are recorded to a comprehensive list.

5. Home visitors or section leaders will check all households included in the sample to see if they have children between the age of 6-59 months prior to the survey. Checks should be done by CHWs responsible for those sections/households. Only households with children <5 will be called to the survey. CHWs will make a list of the number of children <5 in households with children <5. Households without children 6-59 months will not be called to the survey.

Survey Procedures

The survey will be conducted in a central location that households can easily access. In larger camps, surveys will take place in several areas, consecutively. The set-up will follow the general plan below:



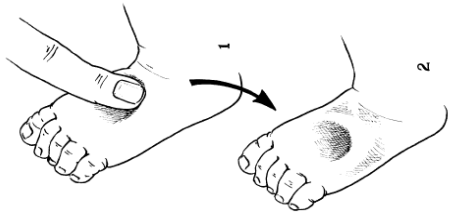
All households will be called according to a schedule developed by the survey staff. All households selected are surveyed, even if the target number of children has already been reached. Households will be requested to bring the child's health card to the survey.

Every child between 6-59 months in the selected household is surveyed. If a child is found not to be between 6-59 months of age, they are not included in the survey. If the child is a patient at the In-patient Department (IPD), the questionnaire is completed with the mother and the child will be weighed and measured at the IPD.

If households fail to come to the survey, runners will follow up 3 times. If after 3 visits the household is not available, they are no longer included in the survey.

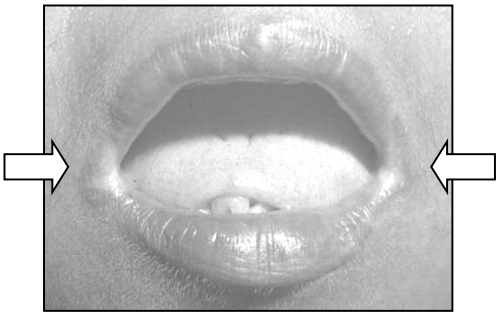
Clinical Exam and Measurements

Children are examined for bi-lateral angular stomatis (a fresh wound or healed wound) and bilateral pitting edema (below).



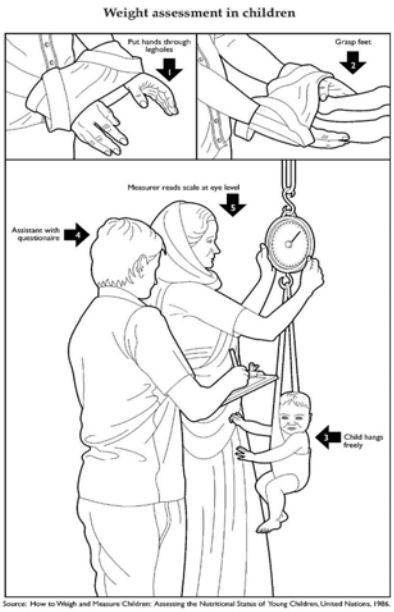
Pitting oedema on dorsum of foot. After applying pressure for a few seconds, a pit remains after the finger is removed.

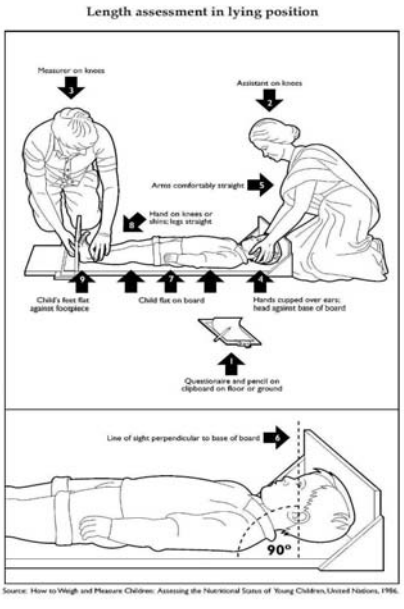
bilateral pitting edema

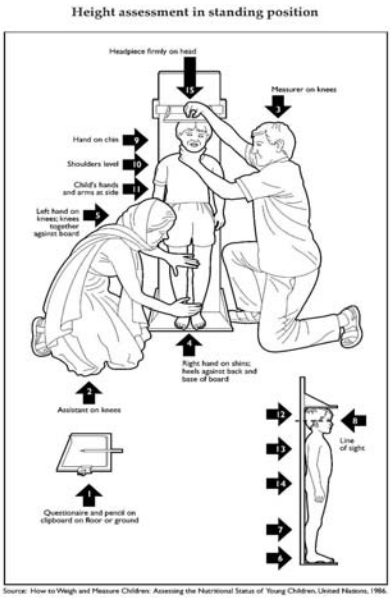


angular stomatitis

Weight measurements are taken using a Salter spring-type hanging scale to 25 kg and are measured to the nearest 0.1 kilogram. Height/length measurements are taken using a height board in good condition (UNICEF 'Shorr Board' or made to specifications) and are measured to the nearest millimeter.







Male and female z-score tables will be used to find and refer children who are <-2 z scores to selective feeding programs. Any child found with bilateral pitting edema will be referred to the IPD.

V. DATA INPUT AND ANALYSIS

Data Entry

The Institute of Nutrition, Mahidol University, will conduct data entry, clean and analyze data. The TBC Nutrition Technical Specialist and Nutrition Team staff will report back to the health agency.

Analysis

Demographics

- number of children and % male and female
- age and age group distributions
- new arrivals (living in camp ≤3 months)

Nutrition Status

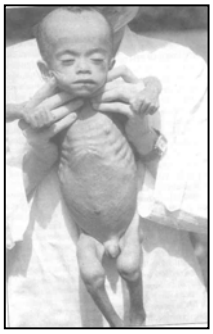
- mean/median weight-for-height and height-for-age z-scores
- % severe, moderate and global acute malnutrition (total, age, sex, new arrival status)
- % severe, moderate and global chronic malnutrition (total, age, sex, new arrival status)
- % edema and angular stomatitis

Programme Coverage

- % currently enrolled in SFP/TFP and % below -2 z-scores who are not enrolled in SFP/TFP
- % that received vitamin A supplement within last 6 months, last 1 year, last 2 years, last 3 years, last 4 years and % never received vitamin A supplement
- number referred to SFP/TFP during survey

VI. DATA INTERPRETATION

Malnutrition and Indicators



Acute malnutrition is measured by weight-for-height or bilateral pitting edema. Acute malnutrition (wasting) is usually caused by illness and/or shortage of food, and results in a thin and wasted child. Children with acute malnutrition are at increased risk of morbidity, including increased duration and severity of the infection, as well as an increased risk of mortality. Severe acute malnutrition is treated in the In-patient department (IPD) with therapeutic feeding, and moderate acute malnutrition in the (take home) supplementary feeding program.

Chronic malnutrition is measured by height-for-age. Chronic malnutrition (stunting) is caused or influenced by long-term food deficiency, OR poor quality diet that does not have vitamins and minerals, OR previous acute malnutrition, OR poor maternal nutrition status, OR low economic status, OR poor feeding practices, or various combinations of these, and results in a short child.

Chronic malnutrition cannot be addressed by therapeutic or supplementary feeding. It must be addressed in other ways, such as improving the diet, improving feeding practices, providing nutrition and health education to mother, ensuring good access to health care, water and sanitation, etc.

Underweight is a combination of both weight-for-height and height-for-age and therefore reflects both long-term and recent malnutrition or a combination of both. It is does not tell us the cause of malnutrition. Underweight is assessed by weight-for-age and should only be used for growth monitoring.

Micronutrient malnutrition can be caused by deficiency of one or more micronutrients. Angular stomatitis – fissures on both sides of the mouth – indicates B2 deficiency (riboflavin deficiency) or multiple B-vitamin deficiencies. This is a common deficiency in this population and is clinically apparent, and gives an indication of overall B vitamin adequacy and overall micronutrient status.

Definitions

MAM = **moderate acute malnutrition**

= weight-for-height <-2 to -3 Z scores

SAM = **severe acute malnutrition**

= weight-for-height <-3 Z scores or bilateral pitting edema

GAM = **global acute malnutrition**

= weight-for-height <-2 Z scores

MCM = **moderate chronic malnutrition**

= height-for-age <-2 to -3 Z scores

SCM = **severe chronic malnutrition**

= height-for-age <-3 Z scores

GCM = **global chronic malnutrition**

= height-for-age <-2 Z scores

Angular stomatitis = presence of bilateral fissures on mouth (fresh wounds or scars)

Nutritional Edema = bilateral pitting edema

WHO Classification: Global Acute Malnutrition (<-2 z scores)

severity	prevalence in <5 population
acceptable	<5%
poor	5-9%
serious	10-14%
critical	>15%

WHO Classification: Global Chronic Malnutrition (<-2 z scores)

severity	prevalence in <5 population
low	<20%
medium	20-29.9%
high	30-39.9%
very high	> 40%

ဒိၣ် ကစၢ်နီၣ်ဂံၢ် /(မှတ်ပုံတင်နံပါတ်) **Number/ID**………………… မုၢ်နံၤ (ရက်စွဲ) **Date**…………………

မံၤ (အမည်) Name ______________________________ ဒဲကဝီၤ /(စခန်း) Camp___________________

ကဝီၤ / ကဝီၤဒ့ /(ဇုန်၊ ရပ်ကွက်) Zone/Section _________ ဟံၣ်နီၣ်ဂံၢ်/ (အိမ်နံပါတ်) House number ____________

ဒဲကဝီၤ အပူၤတၢ်ဆၢကတီၢ်(စခန်းအတွင်းအချိန်) Time in Camp နံၣ် (နှစ်) Years _________ လါ (လ) Months________

---

1. မုၣ်/ ခွါ (လိင်) Sex: ခွါ (ကျား) Male ☐ (M) မုၣ် (မ) Female ☐ (F)

2. အိၣ်ဖျဲၣ်မုၢ်နံၤ /(မွေးနေ့ သက္ကရာဇ်) Birth date:

မုၢ်နံၤ(ရက်) Day(dd) _________ လါ /(လ) Month(mm) _________ နံၣ် (နှစ်) Year (yyyy) ___________

သးနံၣ် (အသက်) Age: နံၣ် (နှစ်)Years ______ လါ/(လ)Months _____ တသ့ၣ်ညါဘၣ်/(မသိ)don't know ☐ (DK)

3. ဒိၣ်ကစၢ် အတယၢ်(ကိုယ်အလေးချိန်) Birth weight __________kg တသ့ၣ်ညါဘၣ်/(မသိ) don't know ☐ (DK)

4. ခဲအံၤတၢ်တူၢ်လိာ်အီၤဖဲ / (လက်ရှိလက်ခံထားခြင်း (တစ်ခုကိုဝိုင်းပါ)) Currently enrolled in:

SFP ☐ (S) TFP ☐ (T) တသ့ၣ်ညါဘၣ်/(မသိ) don't know ☐ (DK)

5. မုၢ်နံၤမုၢ်သီလီၢ်ခံကတၢၢ်လၢအဒိးန့ၢ်ဘၣ် (ဗီတာမင်အေ နောက်ဆုံးရရှိသောနေ့ ရက်) Date of last vitA suppl (check card):

မုၢ်နံၤ(ရက်) Day (dd)________ လါ /(လ) Month(mm) ________နံၣ် (နှစ်) Year (yyyy) _________

တဒိးန့ၢ်ဘၣ်/(မရှိ) no record ☐ (NR)

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6. ထးခိၣ်အနၢ်တဲၤသ့ၣ်/(ခံကပၤလၢၢ်)/(ကျိုးကန်းပါးစပ် (နှစ်ဘက်စလုံး)) Angular Stomatitis (both sides)

အိၣ်/(ရှိ) Yes ☐ (Y) တအိၣ်/(မရှိ) No ☐ (N)

7. ကညီၤထိၣ် (ခီၣ်ခံခီလၢၢ်)/(ဖေါရောင်ခြင်း (ခြေနှစ်ဖက်စလုံး)) Edema (both feet):

အိၣ်/(ရှိ) Yes ☐ (Y) တအိၣ်/(မရှိ) No ☐ (N)

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8. ဖိသၣ်အတယၢ်/(ကလေး၏ကိုယ်အလေးချိန်) Weight of child ___________ kg

တၢ်ထိၣ်အီၤတန့ၢ်ဘၣ် (တိုင်းတာ၍မရ) unable to measure ☐

9. ဖိသၣ်အနီၢ်ထိ /(ကလေး၏အရပ်အမြင့်) Height / Length of child ___________ cm

တၢ်ထိၣ်အီၤတန့ၢ်ဘၣ် (တိုင်းတာ၍မရ) unable to measure ☐

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10. ဒိၣ်ကစၢ်အတယၢ် / အထီ /Z- score(ကွၢ်ထံၣ်တဲၤယၢၤတက့ၢ်) (ကိုယ်အလေးချိန်နှင့်အရပ်အမြင့် Z-score *(ဇယားကိုကြည့်ပါ)*)

Weight-for-height z-score (refer to table): < -3 ☐ < - 2 ☐ ≥-2 ☐

11. တၢ်ဆှၢအီၤဆူ (လွှဲပြောင်းခြင်း (တစ်ခုဝိုင်းပါ)) Referred to: SFP ☐ (S) TFP ☐ (T)