



# Summary findings of Nutrition Survey Using SMART methods

## For Typhoon Yolanda affected areas of Regions VI, VII and VIII

The Philippines - February-March 2014



### 1. Introduction

On 8 November 2013 Typhoon Haiyan, locally known as Yolanda, hit the Philippines. In its wake, 14.1 million people have been affected and 4.1 million displaced. Infrastructure, water and sanitation, food security and medical services were badly affected, as well as the shelter and security of domestic households.

The National Nutrition Cluster developed a Strategic Response Plan (SRP) to guide the implementation of nutrition services in 81 municipalities that were identified as priority areas in Regions VI, VII, and VIII by the Department of Health Emergency Management Staff (DOH-HEMS). To date, the Nutrition in Emergencies (NiE) activities have focused on the promotion and protection of Infant and Young Child Feeding (IYCF), the prevention of acute malnutrition and micronutrient deficiencies, and treatment of acute malnutrition.

The Nutrition Assessment and Monitoring Technical Working Group, including UNICEF, WFP, WHO, ACF, the National Nutrition Council (NNC) and other non-government organizations, conducted a nutrition survey based on the SMART (Standardized Monitoring and Assessment of Relief

and Transitions) methodology, in the areas most severely affected by Typhoon Haiyan. The survey was conducted in coordination with country and provincial authorities.

The main objectives of this survey were to determine the nutritional status of children 6-59 months and women 15-49 years old in typhoon affected areas; to assess coverage of Vitamin A supplementation, deworming, measles vaccination and feeding programmes; to determine the prevalence of child illness (diarrhoea and acute respiratory infection); and to provide information on breastfeeding practices.

A cross-sectional cluster sample survey with three stage sampling method was employed to undertake the survey. Sample size was calculated to be representative of typhoon affected areas for the 3 regions. Estimation of global acute malnutrition rate of 10%, with a desired precision of +/-3.0 percent and a design effect of 1.7 were used. All efforts were made to follow SMART methods to ensure the quality of the survey.

This summary report presents partial results of the nutrition survey conducted in severely affected areas of Region VI, VII and VIII from February 3<sup>rd</sup> to March 14<sup>th</sup>, 2014. Data were collected from a total of 1386 households, 645 children 6-59 months, 265 children 0-23 months and 1424 women of reproductive age (15-49 years) in 60 clusters (barangays).

## 2. Results

### 2.1 Child Nutritional Status

The nutritional status of children was analyzed using WHO child growth standards and SMART flags were excluded (-3/+3 SD) from the observed survey mean. Prevalence of global, moderate and severe acute malnutrition in children 6-59 months of age is shown in Table 1 below.

Table 1: Prevalence of acute malnutrition (global, moderate and severe) in children 6-59 months of age, by sex and by age group (WHZ WHO 2006 & MUAC WHO/UNICEF 2009)

N	WHZ WHO 2006			MUAC WHO/UNICEF 2009		
	GAM (WHZ < -2 z-score and/or edema)	MAM (WHZ < -2 z-score & >= -3 z- score, no edema)	SAM (WHZ < -3 z-score and/or edema)	GAM (MUAC < 12.5 cm and/or edema)	MAM (MUAC < 12.5 cm & >= 11.5 cm)	SAM (MUAC < 11.5 cm and/or edema)
	% [95% CI] (n)	% [95% CI] (n)	% [95% CI] (n)	% [95% CI] (n)	% [95% CI] (n)	% [95% CI] (n)
All	4.1 [2.9-5.9] (26)	3.8 [2.6-5.6] (24)	0.3 [0.1-1.3] (2)	0.8 [0.3-1.9] (5)	0.6 [0.2-1.6] (4)	0.2 [0.0-1.2] (1)
Boys	4.0 [2.3-7.0] (13)	3.7 [2.0-6.7] (12)	0.3 [0.0-2.3] (1)	0.6 [0.2-2.4] (2)	0.3 [0.0-2.2] (1)	0.3 [0.0-2.2] (1)
Girls	4.3 [2.6-6.9] (13)	3.9 [2.3-6.5] (12)	0.3 [0.0-2.4] (1)	1.0 [0.3-3.0] (3)	1.0 [0.3-3.0] (3)	0.0 [0.0-0.0] (0)

6-23 mo	200	6.0 [3.4-10.4] (12)	5.5 [3.0-10.0] (11)	0.5 [0.1-3.6] (1)	200	2.0 [0.8-5.1] (4)	1.5 [0.5-4.5] (3)	0.5 [0.1-3.6] (1)
24-59 mo	428	3.3 [2.0-5.4] (14)	3.0 [1.8-5.2] (13)	0.2 [0.0-1.7] (1)	439	0.2 [0.0-1.7] (1)	0.2 [0.0-1.7] (1)	[0.0-0.0]

The Global Acute Malnutrition rate (the sum of severe and moderate acute malnutrition cases) based on Weight-for-Height z-scores was 4.1% (2.9-5.9) and Severe Acute Malnutrition (SAM) was 0.3% (0.1- 1.3).

Based on MUAC, the prevalence of GAM was 0.8% (0.3-1.9) and SAM 0.2% (0.1-1.2). GAM and SAM prevalence calculated by MUAC was much lower than the prevalence obtained from Weight-for-Height z scores. The prevalence of oedema was 0.0%.

Stunting, or low Height-for-Age, generally occurs due to poor nutrition during pregnancy and the first two years of life (the first 1,000 days) and frequent infections; its effects are largely irreversible after 24 months of age. Stunting prevents children from reaching their full physical and mental potential as it impairs brain development, which makes children less capable in school and reduces productivity as they grow into adulthood. Prevalence of stunting or chronic malnutrition is shown in Table 2 below.

*Table 2: Prevalence of stunting or chronic malnutrition (global, moderate and severe) in children 6-59 months of age by sex and by age group (HAZ WHO 2006)*

N		Stunting (HAZ <-2 z-score)	Moderate Stunting (HAZ <-2 z-score & >=-3 z- score)	Severe Stunting (HAZ <-3 z-score)
		%	%	%
		[95% CI] (n)	[95% CI] (n)	[95% CI] (n)
All	628	30.6 [25.6-36.0] (192)	22.6 [18.7-27.1] (142)	8.0 [5.8-10.8] (50)
Boys	323	33.7 [27.6-40.5] (109)	26.6 [21.1-33.0] (87)	7.1 [5.0-10.1] (23)
Girls	305	27.2 [21.0-34.5] (83)	18.4 [13.8-24.0] (56)	8.9 [5.8-13.2] (27)
6-23 mo	198	27.3 [21.2-34.3] (54)	23.7 [18.0-30.7] (47)	3.5 [1.6-7.7] (7)
24-59 mo	431	32.3 [26.3-38.9] (139)	22.0 [17.6-27.3] (95)	10.2 [7.3-14.1] (44)

Nearly **one third (30.6%) of children were affected by stunting.** This prevalence of chronic malnutrition is close to the prevalence found in the 2011 FNRI National Nutrition Survey (NNS-2011) (33.6%).

Underweight, or low Weight-for-Age, is a composite measure for stunting and wasting. Prevalence of underweight is shown in Table 3. The prevalence of underweight was 20.7% (17.3-24.6) and very close to the national prevalence of 20.2% (NNS-2001).

*Table 3: Prevalence of underweight (global, moderate and severe) in children 6-59 months of age by sex and by age group (WAZ WHO 2006)*

N		Under-weight (WAZ <-2 z-score)	Moderate Under-weight (WAZ <-2 z-score & >=-3 z- score)	Severe Under-weight (WAZ <-3 z-score)
		%	%	%
		[95% CI] (n)	[95% CI] (n)	[95% CI] (n)
All	632	20.7 [17.3-24.6] (131)	17.4 [14.3-21.0] (110)	3.3 [2.1-5.3] (21)
Boys	325	21.2 [16.4-27.0] (69)	18.5 [14.1-23.8] (60)	2.8 [1.4-5.4] (9)
Girls	307	20.2 [15.8-25.5] (62)	16.3 [12.6-20.9] (50)	3.9 [2.1-7.1] (12)
6-23 mo	198	17.2 [12.1-23.8] (34)	14.6 [10.0-21.0] (29)	2.5 [1.1-5.7] (5)
24-59 mo	434	22.4 [18.3-27.0] (97)	18.7 [15.0-23.0] (81)	3.7 [2.4-5.7] (16)

## 2.2 Morbidity / Health Status

The survey found that 4.3% of children aged 6-59 months reportedly suffered from diarrhea during the past 24 hours (Table 4) and 37.2% from ARI during the past two weeks (Table 5).

*Table 4: Children 6-59 months with diarrhea during the past 24 hours*

N	Diarrhea		No Diarrhea		Don't know		Total
	n	% [95% IC]	n	%	n	%	%
645	28	4.3 [2.3-6.4]	615	95.4	2	0.3	100.0

*Table 5: Children 6-59 months with Acute Respiratory Infection (ARI) during the past 2 weeks*

N	ARI		No ARI		Don't know		Total
	n	% [95% IC]	n	%	n	%	%
645	240	37.2 [29.2-45.2]	404	62.6	1	0.2	100.0

## 2.3 Children Access to programs/services

Immunization is an important public health intervention which protects children from illness and disability. A mass campaign for measles was conducted in November 2013 in typhoon affected areas.

The results showed that based on vaccination card records, measles vaccination for children aged 9-59 months was only 47.7%; however this increased to 91.2% when those without cards were considered (Table 6 below).

Table 6: Coverage of Measles vaccination in children 9-59 months of age

N	With card	Without card	Total Measles vaccination	No Measles vaccination	DK
	% (n)	% (n)	% [95% IC] (n)	% (n)	% (n)
606	47.7 (289)	43.5 (264)	91.2 [88.4-94.1] (553)	6.8 (41)	2.0 (12)

Provision of vitamin A supplementation every 6 months can help protect a child from death and disease associated with vitamin A deficiency and is recognized as one of the most cost-effective approaches to improve child survival. Vitamin A was distributed simultaneously with measles vaccinations last November 2013. The proportion of all children aged 6-59 months who had received vitamin A (based solely on recall) in the last 6 months was 78.3% (Table 7). About 20.0% of the children did not receive vitamin A supplement, which is alarming.

Table 7: Coverage of Vitamin A supplementation (VAS) during the last 6 months in children 6-59 months of age

N	VAS		No VAS		Don't know	
	n	% [95% IC]	n	%	n	%
645	505	78.3 [73.3-83.3]	122	18.9	18	2.8

Helminths or intestinal worms represent a serious public health problem in areas where climate is tropical and inadequate sanitation and unhygienic conditions prevail. Helminths cause significant malabsorption of vitamin A and aggravate malnutrition and anemia, which eventually contributes to retarded growth and poor performance in school. Children under five years old are extremely vulnerable to the deficiencies induced by worm infections, therefore deworming is critical for the reduction of child morbidity and mortality. Deworming was conducted simultaneously with measles vaccinations in November 2013 and in October 2013 during the Garantisadong Pambata (a biannual, week long package of health services for children 0-59 months with the aim of reducing morbidity and mortality). The proportion of all children aged 12-59 months who had received deworming in the last 6 months was 54.7% (Table 8).

Table 8: Coverage of Deworming during the last 6 months in children 12-59 months of age

N	Deworming		No Deworming		Don't know	
	n	% [95% CI]	n	%	n	%
574	314	54.7 [48.1-61.3]	249	43.4	11	1.9

## 2.4 Women Nutritional Status

Women are particularly vulnerable to undernutrition from a physiological point of view due to their increased nutrient requirements, for both their own development and their reproductive role. Undernourished mothers are likely to give birth to low birth weight babies than adequately nourished mothers.

MUAC was used to assess nutritional status of women of reproductive age (15-49 years) and results are shown in Table 9 below.

Table 9: Percent of women of child-bearing age with acute malnutrition (MUAC < 21.0 cm)

N	n	Low MUAC (MUAC < 21.0 cm)
		% [95% CI]
All (15-49 years)	1150	42 3.6 [2.5-4.8]

The prevalence of undernutrition among women of reproductive age based on MUAC (<21.0 cm) was 3.6%.

## 2.5 Infant and Young child Feeding Practices (IYCF)

Infant and Young Child Feeding recommendations in the Philippines are aligned with the Global Strategy for Infant and Young Child Feeding and include initiation of breastfeeding within the first hour of life, exclusive breastfeeding for six months, and provision of appropriate, adequate and safe complementary food at six months while continuing breastfeeding until two years of age and beyond. More than 30 studies from around the world, in the developing and developed countries alike, have shown that optimal and appropriate breastfeeding and complementary feeding practices dramatically reduces the risk of dying in infants and young children.

About 86% of children 0-23 months reported to have been ever breastfed in the affected areas (Table 10). This is lower than the average regional rate of 96% (NNS-2011); An alarming 14% of children 0-23 months **were never breastfed** in the Yolanda affected areas, compared with the 4% regional average recorded in 2011 (NNS-2011).

Table 10: Ever breastfed children 0-23 months

N	Proportion of children born in the last 24 months who were ever breastfed	
	n	% [95% CI]
265	228	86 [82-90]

Early initiation of breastfeeding has the potential to prevent 22% of newborn deaths. The survey revealed that 67% of

children 0-23 months initiated breastfeeding within 1 hour, while 30% initiated after 1 hour (Table 11). This result is very close to the 66% average early initiation rate for Region 6, 7 and 8 recorded in 2011 (NNS-2011).

Table 11: Early Initiation of Breastfeeding (0-23 months)

N	Proportion of children born in the last 24 months who were put to the breast within one hour of birth	
	n	% [95% CI]
236	159	<b>67</b> [61-73]

While it is not possible to provide conclusive information on the infant feeding practices below six months of age because of the small sample size for this age group, the SMART survey suggests that less than 50% of infants less than 6 months of age were exclusively breastfed in the Yolanda affected areas. This is below the average of the 3 regions which is 57% reported in 2011 (NNS-2011). About 42% of infants less than 6 months of age were given infant formula the day before the interview (95% CI: 31-53). This is higher than the 36% national average recorded in 2008 (DHS-2008).

About 46% of children 0-23 months are bottle fed (Table 12), a substantial increase from the 39% average of the 3 regions recorded in 2011 (NNS-2011).

Table 12: Bottle feeding among children 0-23 months

N	Proportion of children 0-23 months of age who are fed with a bottle	
	n	% [95% CI]
265	122	<b>46</b> [41-51]

Unfortunately, in this survey, no data are available for specific complementary feeding practices, namely: timely introduction, diversity and frequency. The GAM rate of 6.0% recorded in 200 children 6-23 months of age being higher than the 4.1% overall GAM rate, is suggesting that breastfeeding and complementary feeding practices after the age of six months are far from optimal and appropriate.

## 2.6 Quality of Survey Data

The Plausibility Check highlights the excellent quality of the anthropometric data, both in terms of sample representativeness and quality of anthropometric measurements. Slightly more children aged 30-59 months were surveyed than those aged 6-29 months but this difference was not significant. With a Standard Deviation of 0.94 for Weight-for-Height, the Global Acute Malnutrition observed prevalence can be interpreted with confidence. Similarly, for Height-for-Age, the Standard Deviation is very close to 1 (SD=1.05) and this indicates that results for Stunting are of very good quality with 99.9% of children having exact birth dates (644 children) versus age estimations (1 child).

## 3. Conclusion and Recommendations

According to the WHO classification, the results of the survey showed a level of Global Acute Malnutrition considered "acceptable", not exceeding the 5% threshold. The prevalence of GAM is lower than the 2011 levels (5.8%, 5.3% and 7.8% for region 6, 7 and 8 respectively). Prevalence of GAM using Weight-for-Height in z-score (WHZ) was 4.1% whereas using MUAC was 0.8%.

The large discrepancy between the two measures merit further study. WHZ is considered to be the base measure for Global Acute Malnutrition, but it should be clearly noted that it is not by any means a "gold standard" measure for acute malnutrition. Following the release of WHO Child Growth Standards, the relationship between Weight-for-Height and the risk of dying was reassessed in existing epidemiological studies. The analysis showed that children with a Weight-for-Height below -3 z-score based on WHO growth standards have a high risk of death exceeding 9-fold that of children with a Weight-for-Height above -1 z-score. Similar studies using MUAC as diagnostic criteria showed that the risk of dying is increased below 115mm. MUAC is an important measure of acute malnutrition that has a much closer relation to infant and child mortality than WHZ. **Hence it is imperative to use both methods as independent criteria for enrollment of children in feeding programs.** Only about 20% of children identified by either of the methods overlaps over the other.

These results have significant programmatic implications as follows:

- **There is a need to recalibrate the targets for acute malnutrition in line with the findings;**
- **The implementation of CMAM needs to be targeted to areas with high acute malnutrition, where the situation is of concern (10% GAM and above);**
- **There is an urgent need to identify and address bottlenecks in the implementation of Infant and Young Child Feeding interventions.**

Based on the WHO classification, the survey results, though lower than the 2011 levels (41%, 38.6% and 38.8% for Regions 6, 7 and 8 respectively), show a level of chronic malnutrition considered "high", exceeding the 30% threshold. This reflects the existence of long term undernutrition and highlights the need to prioritize stunting prevention interventions. **Programming for stunting prevention interventions will require a more comprehensive and long-term approach (outside emergency context).** It has been estimated that the prevalence of chronic malnutrition can be reduced by about a third if effective interventions are implemented on a large scale (2008 Lancet series on Maternal and Child Undernutrition). The most effective interventions in preventing stunting occur during the window of opportunity, from the time of pregnancy until the end of the first two years of life of the child and to achieve them the Nutrition Cluster should:

- **Invest in the establishment of community, health and nutrition system workplaces and public places for promoting, supporting and protecting exclusive breastfeeding for the first six months of life and continued breastfeeding up to two years of age and beyond;**

- Support community-based programs to provide information and counseling on optimal and appropriate complementary feeding practices;
- Link with livelihood, food security and social welfare clusters and programs to ensure increased access by vulnerable families to appropriate and safe diets;
- Reduce infections by educating households on proper care and hygiene practices and improving health seeking behavior for management of children's infections;
- Educate pregnant women about the importance of prenatal care and protect maternal nutrition and health to prevent low birth weight babies;
- Promote regular growth monitoring and include measurement of length/height (not just weight) in nutrition programs;
- Invest in a mass communication campaign for development based on preventive activities: nutrition of pregnant women, promotion of exclusive breastfeeding, complementary feeding and continued breastfeeding, good hygienic practices, the production and consumption of available complementary foods;
- Continue distribution of micronutrient powders (MNPs) for children 6-23 months old after the end of the emergency operation.

Regarding the prevalence of underweight, the level can be considered "high" by WHO cut-offs for level of public health significance (>20%). Weight-for-Age is a composite index of Height-for-Age and Weight-for-Height. It takes into account both acute and chronic malnutrition. While Underweight is used for monitoring the MDGs (MDG1), it is no longer in use for monitoring individual children as it cannot detect children who are stunted with a normal weight and does not detect acute malnutrition that threatens children's lives. **Investments should be made to allow measurement of children length/height for timely nutrition intervention.**

Efforts should be strengthened to improve coverage of vitamin A supplementation and deworming (80% target) and address key concerns including those on:

- Raising awareness of mothers on micronutrient supplementation and deworming campaigns;

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- Strengthening distribution channels of vitamin A and deworming supplies and monitoring and evaluation of campaigns;
- Planning the achievement of mass activities around supplementation and deworming at least twice a year, through Garantisadong Pambata days (April and October).

Regarding IYCF, the findings show suboptimal and inappropriate infant and young child feeding practices, that may affect the health and development of children;

Major efforts have been exerted prior to typhoon Yolanda, and renewed during the acute phase of the emergency response. Preliminary data show the need to ensure that supportive environments for optimal and appropriate infant and young child feeding practices are established or maintained through:

- Organization of IYCF community support systems through deployment of trained local health and nutrition volunteers, NGOs, other civil society organizations;
- Ensure that high quality IYCF counseling and support services are integrated in the health care delivery system;
- All Hospitals and health facilities assisting deliveries should comply with the Revitalization of the Mother Baby Friendly Hospital Initiative in Health Facilities with Maternity and Newborn Care Services (AO 2007-0026);
- Strengthen the enforcement and accountability mechanisms for key legislations like the Milk Code (EO51), the Enhanced Breastfeeding Promotion Act of 2009 (RA 10028) and the Rooming-in Enhanced Act, (RA 7600);
- Development of and investment in a massive communication / behavior and social change campaign based on a sound formative research study.

Finally, in order to monitor the effect of present and future interventions on trends of malnutrition, it is recommended that **a follow-up SMART survey be implemented in September 2014** following the same methodology as the present investigation.

#### For further information:

National Nutrition Council  
<http://www.nnc.gov.ph/about-nnc/contact-us>

Philippines Humanitarian Response Info  
<https://philippines.humanitarianresponse.info/>